

TOWARDS A LONGER WORKLIFE!

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TOWARDS A LONGER WORKLIFE!

Ageing and the quality of worklife
in the European Union

Finnish Institute of Occupational Health

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Preface

Extending the human lifespan is one of our most important social objectives. We have also been very successful. The life expectancy of men has increased phenomenally over the last 30 years. Life expectancy has increased by 1 year every decade. We are extremely happy for this increase and hope that this development will continue also in the future.

The extended lifespan has been accompanied by an increase in the number of years people have with good functional capacity. People are more fit during old age than ever before. At least in principle, the need for nursing and care is delayed as much as lifespan is extended. Does this also happen in reality? It is essentially dependent on whether we are able to organize care according to changing expectations and improved functional capacity.

Together with the extension of the lifespan, another social development has taken place. People have desired more free time. Daily, weekly, and yearly workhours have become shorter. This change is not enough, however, to explain the development. The length of the work period within the course of life has also decreased. The time required to obtain an education has increased, and people have moved into worklife later than before. This change is understandable, since increased productivity has been made possible only by improving competence.

On the other hand, the question can be asked of why improved work ability has not extended people's worklives, respectively. Only about 20 years ago, a general lowering of the retirement age was discussed. It was not implemented, but other means of early retirement were offered to employees.

Only during the last decade have determined actions been taken to increase the retirement age. Changing the prevalent mindset and turning the trend around have been challenging tasks. The expertise developed over the years in the Finnish Institute of Occupational Health has been of great help. Several prejudices have been proved faulty, and, at the same time, it has been proved that it is useful to invest in work ability. Investing in work ability is a long and exacting job—as is the research on functional capacity. Luckily for us, the Finnish Institute of Occupational Health has been active in good time.

Special merit for advancing research on the relationships between work ability, functional capacity, and age must be given to Professor Juhani Ilmarinen. In this book, which has been financed by the Finnish Ministry of Social Affairs and Health, Juhani Ilmarinen has multifacetedly and thoroughly illustrated the facts associated with ageing, information from different countries, and the possibilities to change the development. This book is a valuable tool for researchers and people making practical decisions both in enterprises and in government. I believe that it offers commendable assistance for the development of both worklife and social security.

I thank Professor Ilmarinen not only for this book itself, but also for those gentle, yet gutsy measures that he has used, over the years, to force his readers and audiences to relinquish their faulty assumptions about age and accept the fact that we need people of all ages.

Helsinki, 14 December 2005

Markku Lehto
Permanent Secretary

To the Reader

Research shows that the interest of the large generation of baby boomers in continuing in worklife depends more on the atmosphere of their workplace and their supervisors than on the size of their pension. Accordingly, the attitudes and methods of operation concerning ageing must be improved both in Finland and in the other European Union (EU) member states. Many aspects of worklife and attitudes should be changed, but there is very little time to achieve the needed changes, especially among the baby-boom generation.

An extended career has been promoted by reforms in the pension system and by several other actions in the EU member states during the beginning of the 21st century. Worklife has not, however, been extended as wished in several countries. New and more effective means are needed.

Several national programs were initiated in the 1990s and 2000s in Finland to improve the appeal of worklife and to keep ageing workers in worklife, projects that have provided ample knowledge that can be shared with other countries. This handbook compiles the essential parts of that information and experience into one presentation. It offers material for different agents to distribute information and offer training on age management. I also hope it will spark new projects and studies.

The most important force for change is the workplace

Workplaces will ultimately affect how the age challenge is received and how successfully practices will be changed. Together the employer and the worker form a team that can change age practices and methods of operation. International cooperation, states, governments, ministries and local organizations, research, insurance, rehabilitation and training institutions, and occupational health care and safety professionals create the requisites that help the ageing workforce to cope and motivation to be maintained in workplaces. They offer resources, training, information, and other support to ensure that the positive experiences that have been acquired are distributed as broadly as possible to improve workplace atmospheres and good results.

Acknowledgements

The commission of the Finnish Ministry of Social Affairs and Health and its VETO program (promoting the attractiveness of worklife) initiated and made possible the creation of this book. Many thanks for this go to Markku Lehto, Permanent Secretary, and Ismo Suksi, Project Manager of the Veto program, who also supervised this project, and to Rolf Myhrman, Deputy Department Head.

The Director General of the Finnish Institute of Occupational Health (FIOH), Harri Vainio, supported this project, and the 3-month leave of absence I was granted from the post of Director of the Department of Physiology enabled me to concentrate on the writing process. I especially want to thank my colleagues at FIOH: Dr Jorma Seitsamo, who analyzed the European survey data, Ms Maija Jokinen, who produced the hundred and so figures and tables, and Ms Leena Roisko, who compiled and wrote the reference list. I was given valuable assistance with the literature search by Mr Keijo Halonen, and Mr Timo Haaponen provided important aid with respect to information technology.

The book was edited by Virve Mertanen. Her precise and critical comments and suggestions and editing and re-writing of the text improved the readability of the book considerably. Arja Tarvainen did the graphic design for the book. Anne Raninen compiled and constructed the index. To all these people I wish to offer my warm thanks.

Many experts offered comments on parts of the manuscript and provided me with valuable advice. I would especially like to thank the following persons: Professor Guy Ahonen from the Swedish School of Economics and Business Administration Hanken; Dr Harri Lindholm, Professor Matti Ylikoski, Professor Veikko Louhevaara and Dr Anne Punakallio from FIOH; Ove Näsman, Chief Occupational Medical Specialist at Dalmed Ltd; and Hannu Jokiluoma (Chief of Development), Erkki Yrjänheikki (Negotiating Officer) and Marja-Liisa Parjanne (Negotiating Officer) of the Finnish Ministry of Social Affairs and Health.

I owe special thanks to the compilers of the examples of age management in enterprises: Laila Malinen, Epitest Ltd; Terhi Penttilä, Länsilinjat Ltd; and Pia Viklund, Abloy Ltd. I was able to acquire summaries of the “Let’s Build Work Ability Together” project through the aid of Ms Eva Tuominen and Ms Elina Wilenius of FIOH.

This book is the result of the cooperation of numerous persons. Similar cooperation is necessary to solve the age challenge. Although I feel my mission is to support and defend ageing workers, it is not because they are weaker or more vulnerable than other age groups or because they would need special protection. On the contrary, they are a genuine resource which strengthens our well-being

if we are able to use their strengths. And the only thing that can limit their use is our own attitudes.

Helsinki, 28 November 2005
Professor Juhani Ilmarinen
Finnish Institute of Occupational Health

Structure of the book

The first chapter of this book explains why worklife needs a new type of charisma and management methods. The subsections depict the challenges that the changes in age structures will bring with them within the European Union (EU). Fertility, life expectancy, employment and its different forms, and the dependency ratios will affect the EU member states more than the other countries among the western democracies.

The second chapter introduces both international and Finnish age policies, such as the need for reform in worklife, redefining management, and renovating attitudes towards age.

The human course of life, of which worklife comprises a considerable proportion (often the 25th through the 65th year of life) is examined in Chapter 3. It emphasizes the fact that worklife can have both positive and negative effects on the fluctuations and transitions of the course of life. The end of the chapter evaluates whether it is possible to age within worklife.

The fourth, substantial chapter is about the facts of ageing. It creates a base of information that enables a person to change his or her views on ageing and improves the ways in which ageing workers are treated in worklife. The fifth chapter deals with management and its significance: good age management (i.e., the fair treatment of workers of different ages) should become a part of everyday leadership. Some examples of enterprises show how this can be achieved.

The sixth chapter of this book is a broad introduction to the quality and changes in European worklife. The aspects of quality are depicted and analyzed from the point of view of over-45-year-old men and women. The section on workers' health and leisure-time activity, on the other hand, depicts the physical condition of the workforce and whether workers will be able to cope at work at the age of 60 years.

The seventh chapter summarizes the previous data into the form of recommendations: what should be done to ensure a better and longer worklife. Recommendations are given for ageing workers, workplaces, and society. At the end, the prerequisites for improving worklife in the EU15 countries (the first 15 countries to enter the European Union) are introduced in tables.

CHAPTER 1

CHALLENGES CREATED BY
CHANGES IN AGE STRUCTURES

CHAPTER 1

CHALLENGES CREATED BY CHANGES IN AGE STRUCTURES

- 1.1 WORKLIFE MUST BE LENGTHENED
FOR THE SAKE OF SOCIETY
- 1.2 THE REVEALING RATES
- 1.3 EMPLOYMENT IN DIFFERENT AGE
GROUPS IN THE EUROPEAN UNION

1 CHALLENGES CREATED BY CHANGES IN AGE STRUCTURES

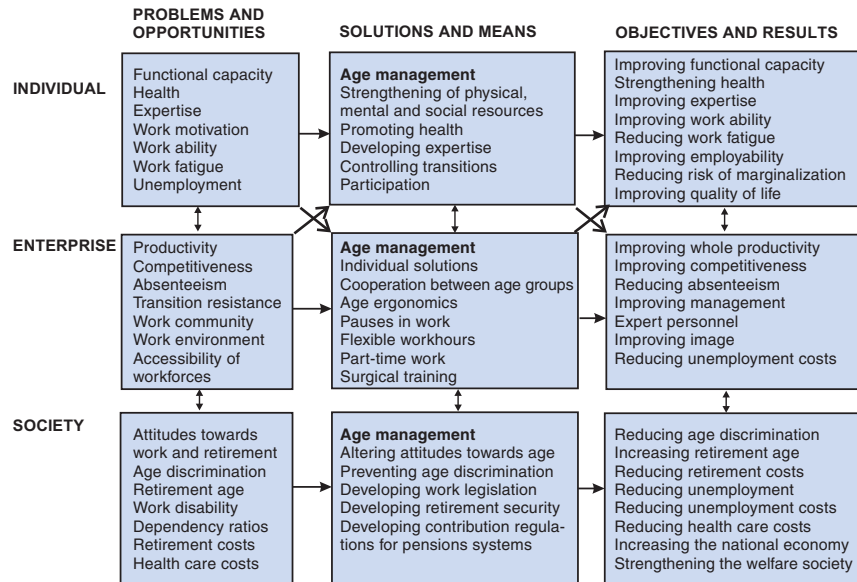
The great generation of baby boomers that followed the Second World War from 1945 into the 1950s has been the backbone of today's Finnish workforce. It has enabled Finland to develop into a prosperous and, in many ways, exemplary welfare state. In 2005, the baby boomers were 55 to 60 years of age. In the 15 years that will follow, approximately 900 000, about 40% of the current workforce, will exit worklife. As a consequence, approximately 150 000 jobs will become available in the industrial sector and approximately 100 000 jobs will be open in the construction industry. The proportion of people over 65 years of age will increase to 25% of the population by 2020. The Finnish workforce is predicted to decrease by about 0.35% every year. The growth of the economy is threatened because there will not be enough young workers to replace those that retire. We may be facing a workforce shortage.

Ageing affects us all: individuals, enterprises, organizations, and also societies. Everyone takes a personal stand on it, workers in their workplaces as nurses, supervisors or, for example, as policymakers. Ageing is also a global phenomenon for which both developed and less developed countries are searching strategies for survival. The situation for Finland and its age strategies are, therefore, significantly influenced by the common policies agreed upon in the European Union (EU), for example.

The problems, solutions, and objectives of individuals, enterprises, and society are presented from the point of view of the responsible parties in Figure 1. The solutions and measures are forms of age management. From the point of view of the individual, age management means managing oneself and participating in the realization of age management on one's part. From the point of view of enterprises, age management presents sets of actions for the needs of people of different ages, and, from the point of view of society, age management depicts the control of age structures by compiling effective actions into entities.

Official statements and means of control, as well as the setting of mutual goals, are necessary, but they alone are not enough. In addition, if the appeal of worklife is to be enhanced, worklife must be remodeled. The most important objectives would be to increase the years of active worklife and to make work more attractive. For these objectives to be achieved, the changes that are taking place in worklife must be better managed, and well-being in

Figure 1. Ageing and work, a challenge for everyone.



worklife must be enhanced. Equality must be promoted and the demands of work and the other sectors of life must be fitted together.

All parties, enterprises, and their personnel, as well as society, are, therefore, responsible for the successful consolidation of ageing and worklife. Even though the threats may seem to differ for the different parties, they are, nevertheless, part of the same phenomenon. There are no shortcuts to an improved society comprised of different ages. Progress is generated by changes in the work cultures of enterprises that create a new sort of worklife that is better-suited for workers of all ages.

1.1 Worklife must be lengthened for the sake of society

Society is concretely affected by the problems and challenges of the ageing population. People are retiring too early, dependency ratios are becoming an increasingly heavy burden, and costs of retirement and health care are growing. Ageing also challenges the sufficiency and quality of social and health care services. At the same time, public administrators must look at ageing from the point of view of the employer, since civil servants are starting to retire in large numbers. For these reasons, it is necessary to create positive attitudes towards a longer worklife and to prevent age discrimination in society.

Even though the lifespans of people have been increasing significantly during the last few decades, the length of worklife has not increased respectively.

At the same time, there are many reasons why people have favored exiting from worklife before normal retirement age. Too, the reduction in birth rate that has taken place during recent decades has made the dependency ratio increasingly burdensome. There are fewer and fewer payers, and the young adults of today enter worklife much later than the large generation of baby boomers did in the 1960s. It seems that, even in 2005, as many people do not work as those who do work.

The ageing of the population and workforce creates serious economic and social implications for Finland. The costs of retirees' health and care-giving services are rising. In addition, the demand for these services is increasing at the same time that the shortage of providers is becoming critical. According to an estimate of the OECD (Organization for Economic Co-operation and Development), the public costs of ageing will rise in Finland by 27.9% of the GDP (gross domestic product) by 2050, when, in 2000, it was 19.4%.

All of these factors combined have generated a great deal of pressure to create an environment in which people are able and willing to continue to work longer. Provided that the large generation of baby boomers exits worklife prematurely, as did the generations before them, Finland faces a threat, since

- economic growth will decline and the foundation for funding public costs will collapse
- the services of the affluent society will shrink and fall into decline
- the burdensome dependency ratio will prevent the development of society and its competitiveness
- it will be necessary to raise taxes or increase loans or both
- the standard of living of future generations will decline.

Once again, society imposes great pressure on the generation of baby boomers. While it is true that they have a crucial role in guaranteeing well-being in the future, it is important to realize that a longer career in worklife can also be promoted by making it easier for younger generations to enter worklife and by preventing unemployment and gaps in employment. The best solution to date seems to be to extend the period of worklife of the baby boomers and their successors.

1.2 The revealing rates

The ageing of the population and workforce is a result of both a reduction in birth rates and an increase in lifespan. The differences between regions and countries are affected, for example, by immigration. This chapter presents an overview of the population of the European Union (European Communities 2004).

1.2.1 Birth rate and life expectancy in the European Union

About fertility

The total fertility rate portrays the average number of babies born to fertile women. It also indicates whether a population is being regenerated or not. The expected total fertility rate should be at least 2.1 in developed countries if their populations are to be constantly regenerated as desired.

In 1965, the total fertility rate of the EU15 countries (the first 15 countries to enter the European Union: Belgium, France, Germany, Italy, Luxembourg, Denmark, Ireland, the United Kingdom, Greece, Portugal, Spain, Austria, Finland, and Sweden) was 2.7. By 1995, it had dropped to 1.5, after which it remained somewhat stable until 2001. This trend indicates that the population has not been regenerated for almost 10 years (Table 1, Figure 2). On the other hand, the average age for giving birth has increased among women. The reproductive age of women is generally perceived to be between 15 and 49 years. In 2002, the average age for women to give birth was over 29 years of age for the EU15 countries, and for the EU25 countries (the first 25 countries to enter the European Union: Belgium, France, Germany, Italy, Luxembourg, Denmark, Ireland, the United Kingdom, Greece, Portugal, Spain, Austria, Finland, Sweden, Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia, and Slovenia) as well. This figure had risen by 1 year since 1992. The average age for giving birth was the highest in Ireland and the lowest in Lithuania. The situation in Japan was somewhat similar to that of the European Union, but women with children in the United States were a couple of years younger. Nevertheless, the figures indicate that the average age for giving birth is relatively high in all developed countries (Table 1).

Effects of age structures on workforces

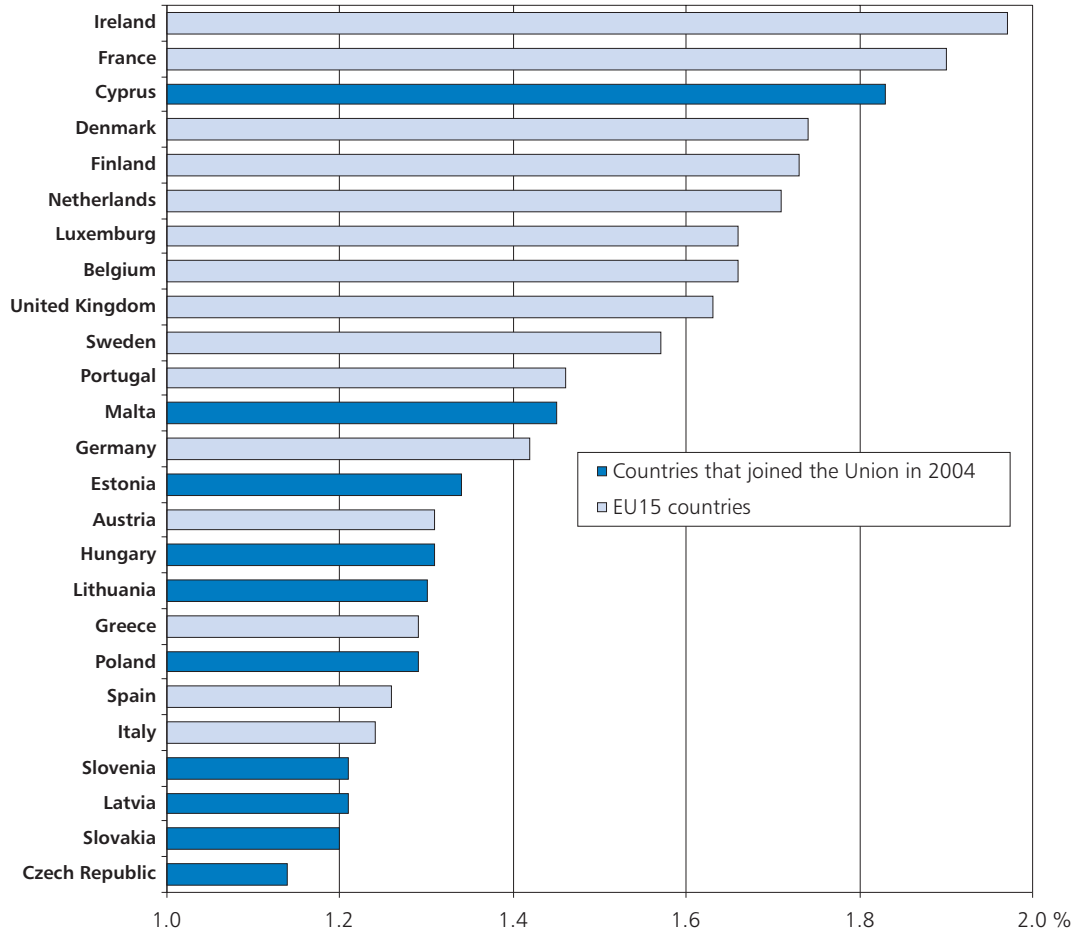
The changes predicted for the number of 0- to 4-year-old children in the EU15 countries in 2002–2020 indicate that the proportion of young people will increase only in Ireland; in all other countries it will decline. The decreasing trend will be the strongest in Austria (16.8%) and Italy (15.9%). In Finland, the number of young people will have declined by approximately 10.4% by 2020 (Figure 3) and by 18.7% by 2040.

At the same time, the number of 15- to 64-year-olds in the EU15 countries is expected to grow, especially in Ireland (19.9%) and Luxembourg (10.4%), before 2020, but to decline in many countries. The decline will be the strongest in Italy (7.6%) and Finland (5.7%) (Figure 4). It is believed that this trend will continue until at least 2040, at which point the workforce will

Table 1. EU population statistics (summary table).

Total fertility rate	1960	2000
EU15 countries	2.5	1.5
Mean age of women giving birth	1992	2002
EU15 countries	28.6	29.4
EU25 countries	28.5	29.2
– Ireland (highest)		30.6
– Lithuania (lowest)		26.9
– Japan		29.7
– United States		27.4
Life expectancy rate		2002
EU15 countries		
– at birth, man/woman		76/82
– at 60 years of age, man/woman		20/24
EU25 countries		
– at birth, man/woman		75/81
– at 60 years of age, man/woman		19/24
Japan		
– at birth, man/woman		78/84
– at 60-years-of-age, man/woman		
United States		
– at birth, man/woman		74/80
– at 60 years of age, man/woman		
Proportion of >65-year-olds	1992	2003
EU15 countries	14.9	16.8
EU25 countries	14.3	16.1
– Germany (highest)		17.5
– Ireland (lowest)		11.1

Figure 2. Total fertility rates of the EU15 and EU25 countries in 2001. (European Council, cited by Nieminen 2003)



have decreased by 26.6% in Italy and 20.9% in Spain when compared with the situation in 2002. The decline of the workforce will be significant also in Finland (12.5%) when compared with current circumstances (Nieminen 2003).

Life expectancy

Life expectancy is the average number of years a person of a certain age has left to live if the mortality risks of the person's age group remains unchanged throughout the rest of the person's life. In other words, life expectancy as a term does not predict; instead it describes mortality during a certain year. Thus an estimate of life expectancy at one's time of birth can be an underestimation since the probability of dying can be expected to decline during the forthcoming decades (Martelin et al. 2003).

Life expectancy was high in the European Union in 2003. During the preceding 40 years, it had increased by 8 years for both men and women. Although it continued to be approximately 6 years higher for women than for men, the difference had slightly decreased. The reason for the decrease may be that the lives, also worklives and life circumstances, of men and women are more alike now than they were earlier.

There was a small, but systematic difference in the life expectancy rates of the EU15 and EU25 countries in 2006. The expected lifespan of people at birth was approximately 1 year higher in the EU15 than in the EU25 countries. Life expectancy at birth in the EU25 countries was 75 years for men and 81 years for women in 2003 (Table 2). At the age of 60 years, men and women had approximately 19 and 24 years left to live, respectively, the difference between the genders being smaller at 60 years of age than at birth. Life expectancy at the time of birth was slightly better in the European Union than in the United States, but decidedly lower than in Japan.

The risk of dying has a significant effect on life expectancy. In addition to age and period of time, mortality is affected by gender, residential area, and socioeconomic status. The difference in the mortality of men and women in Finland is great when compared with that of many other western European countries. It is greatest for the 20- to 29-year group, and, even though it decreases with time, the mortality of men is approximately twofold that of women at 70 years of age.

Figure 3. Change (%) in the number of 0- to 14-year-olds in the EU15 countries in 2002–2020. (European Communities: scenario 1999, cited by Nieminen 2003)

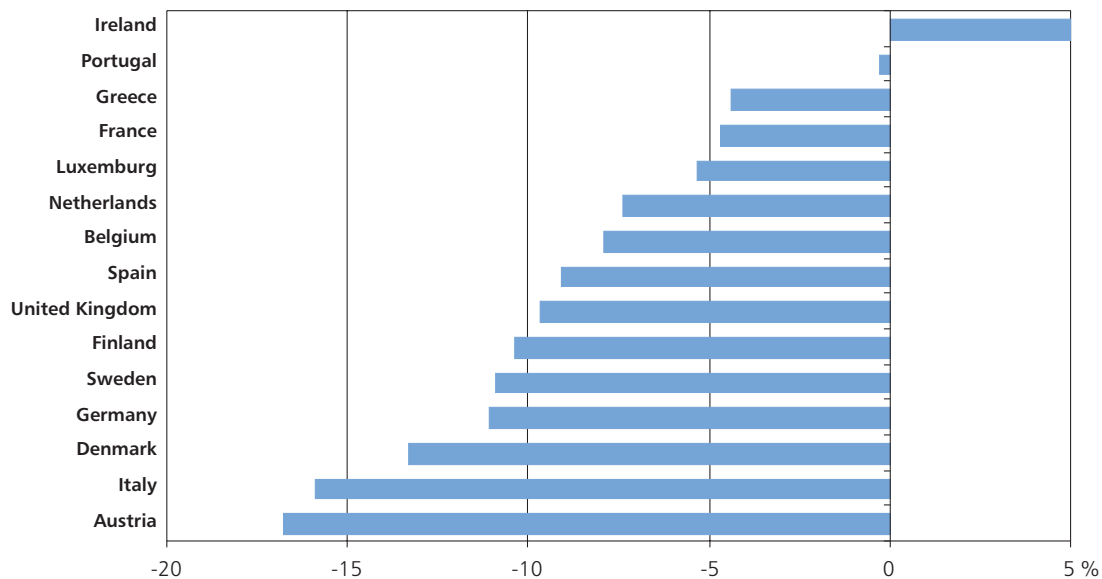
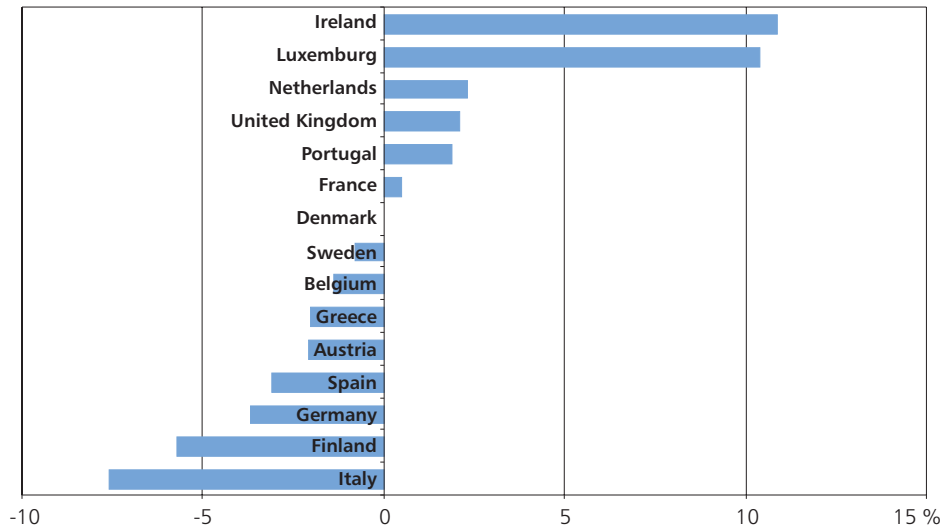


Figure 4. Change (%) in the number of 15- to 64-year-olds in the EU15 countries in 2002–2020. (European Communities: Scenario 1999, cited by Nieminen 2003)



The increased mortality of young men in comparison with that of young women is primarily explained by accidents and violent deaths. In Finland, it is thought that, together with the effects of alcohol use and smoking, gender differences cause about half of the difference between the life expectancies of men and women. The socioeconomic mortality differences are also great in Finland when compared with those of other western European countries. For example, the different life expectancy rates of white- and blue-collar workers are affected by the level of education and the accident and violent death rates. The differences between social groups are present far into old age. For example, the life expectancy for a 65-year-old man that has previously been a white-collar worker is almost 3 years higher (2 years, respectively, for a woman) than for a blue-collar worker of the same age.

A person's marital status and mother tongue also affect life expectancy in Finland. The mortality of married people is significantly lower than that of single persons and divorcees of both genders, and also for widows and widowers. The difference may be affected by a selection process based on health issues and also on the health-promoting effects of marriage. There is also a strong Swedish-speaking minority in Finland whose mortality ratio is lower than that of the rest of the population. This difference is clearer between the Swedish-speaking and Finnish-speaking male populations than between the respective female populations. The mortality of working-aged Swedish-speaking men is almost 40% lower than that of the rest of the population. At retirement age this difference is 10–20% (Martelin et al. 2003).

Table 2. Life expectancy at birth in the EU25 and other countries in 2003. The countries are listed from the lowest to the highest life expectancy of the men. (European Communities 2004)

Country	Men	Women
Estonia	65.2	77.0
Latvia	65.5	76.8
Lithuania	66.3	77.7
Hungary	68.3	76.6
Slovakia	69.9	77.8
Poland	70.5	78.9
Czech Republic	72.0	78.5
Slovenia	72.3	79.9
Portugal	74.0	80.5
Luxemburg	74.9	81.5
Denmark	74.9	79.5
Finland	75.1	81.8
Ireland	75.2	80.3
Greece	75.4	80.7
Germany	75.5	81.3
Belgium	75.6	81.7
France	75.8	82.9
Malta	75.9	81.0
Austria	76.0	81.8
Cyprus	76.1	81.0
The Netherlands	76.1	80.8
United Kingdom	76.2	80.7
Italy	76.9	82.9
Spain	77.2	83.7
Sweden	77.9	82.4
Developing countries	58.2	61.5
India	62.9	64.4
China	70.1	73.3
United States	74.4	80.0
Developed industrial countries	76.6	83.1
Japan	77.6	84.3
EU25 countries	74.8	81.1

It is difficult to set theoretical or practical limits for life expectancy, and positive development cannot be taken for granted. The polarization of the population into better-off and worse-off segments may slow down the decrease in mortality. Changes in health-related behavior, for example, among the growing number of displaced persons may, in the worse-case scenario, even stop the positive development that has evolved for decades. Increasing alcohol consumption and obesity can slow down the lengthening of life expectancy, among other things. In addition, the differences between genders may decrease further, primarily because of the increase in smoking and alcohol use among women (Martelin et al. 2003).

Will the number of healthy years increase?

An even more important indicator of well-being than life expectancy is the expected number of healthy and functionally unrestricted years. The expected number of healthy and functionally unrestricted years of life depicts the average length of healthy and unrestricted life a person of a certain age can expect to have if the current mortality and morbidity trends remain unchanged.

With respect to functional restrictions, long-term morbidity, and perceived health, the situation of 65-year-olds significantly improved from 1980 to 2000. During that time, the lifetime expectancy increased by 3.0 years for a 65-year-old man, and by 2.8 years for a woman of the same age. These years were perceived as a period in which people maintained the ability to perform basic functions and had better health as a whole.

On the other hand, the expected years spent chronically ill increased more than the expected healthy years. Of the 3 years that life expectancy increased, an average of 1 year is healthy, and the other 2 years are spent chronically ill. The increase in lifespan seems to indicate that women can expect to live longer than men but that they will also have more functional restrictions and more chronically ill years than men (Sihvonen et al. 2003).

Will worklife become longer?

The increase in the expected number of healthy and functionally unrestricted years could also translate into a longer worklife. According to Hytti's calculations for Finland, however, the worklife expectancy did not increase at all during 1970–1997, and the additional years were spent in retirement (Ilmarinen 1999b). The new calculations on worklife expectancy indicate that a 50-year-old Finn would have an average of 30.7 years left to live, 9.3 of these years would be active, and 8.7 years would be spent working. Even though there is a big difference between the life expectancy of men and

women, their expected active years and expected years in worklife were similar (Hytti & Nio 2004).

Worklife expectancy in Finland has also been calculated by the method of Nurminen et al. (2004a, 2005). According to the calculation, the worklife expectancy for both men and women was 11 years. Of the remaining expected years of life up to 64 years of age, the share of worklife decreased among the men over 50 years of age by about 10 percentage points from 1980 to 2001. The decline was primarily affected by unemployment, unemployment pensioning, or early retirement rather than by work disability, the share of which had declined among both genders since 1996.

The estimates of Nurminen et al. for the worklife expectancy of 50-year-olds were 1.0–1.3 years shorter than Hytti's calculations. The difference could be due differences in the methods used or to a difference in the ages reached in worklife [64 years of age for Nurminen et al. (2004a, 2005) and 74 years of age for Hytti & Nio (2004)]. It is clear, however, according to both studies, that the worklife expectancies are too short if the employment rate is to be increased significantly. Reaching a higher rate of employment (i.e., 75%) before 2010 is largely based on increasing the employment rate of the older population. If this objective is to be achieved, worklife will have to undergo structural changes, for example, a significant increase in opportunities to work part-time.

People over 65 years of age and the prediction of dependency ratios

The proportion of people over 65 years of age has increased steadily during the last 10 years. The elderly population is proportionally slightly larger in the EU15 countries than in the EU25 countries, but was over 16% of the entire population in both groups in 2003. The proportion of 65-year-olds was largest in Germany and smallest in Ireland (see Table 1).

Predictions for the increase in the 65-year-old population before 2020 and 2040 indicate that the proportion of retired people will grow significantly in all of the EU15 countries. It is anticipated that the number over 65 years of age will double before 2020 in Ireland, the Netherlands, and Finland when compared with the situation in 2002 (Figure 5). The number of retirees today will double by 2040 in Ireland, Luxembourg, and the Netherlands. In 2040 the proportion of retired people in Finland will be 66% greater than in 2002 (Nieminen 2003).

The low birth rate and the increase in life expectancy will have a significant effect on the dependency ratios. According to predictions, the dependency

Figure 5. Change (%) in the number of people over 65 years of age in 2002–2020. (European Communities, Scenario 1999, cited by Nieminen 2003)

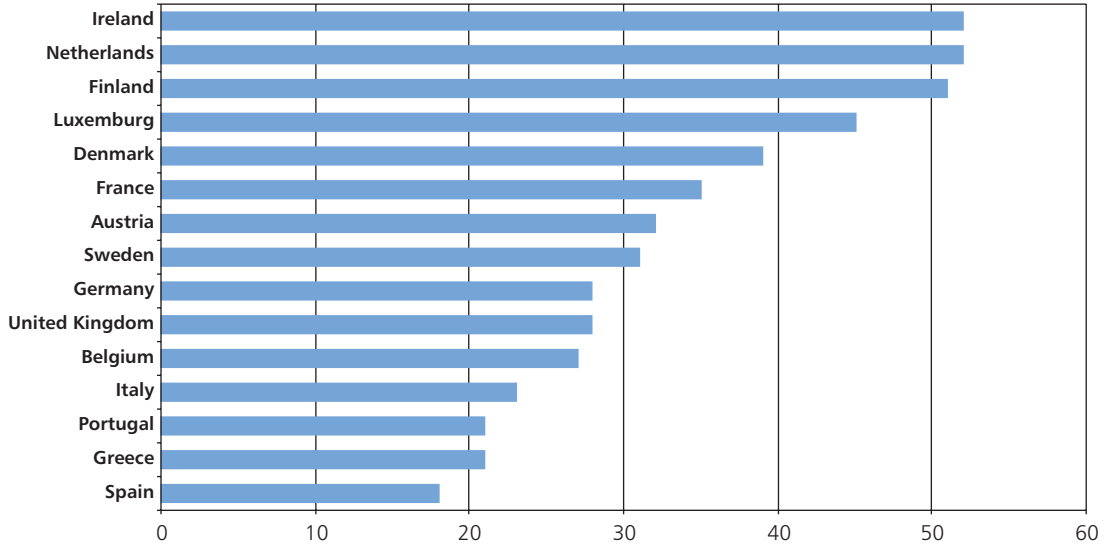
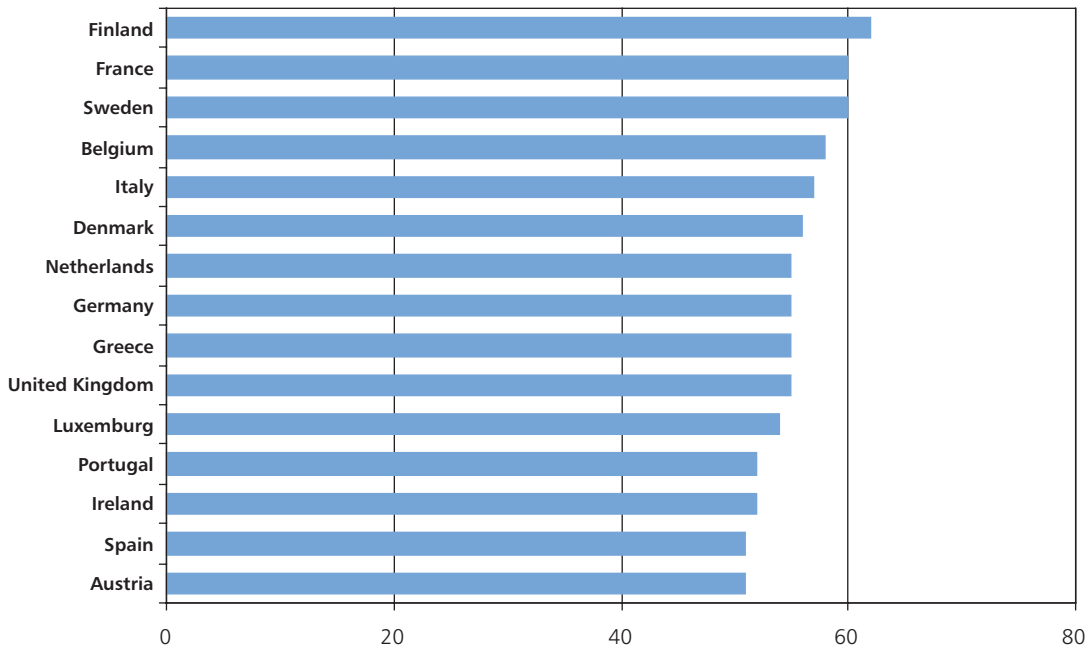


Figure 6. Population-based dependency ratio for the EU15 countries in 2020 (age groups 0–14 and over 65 years to 100 15- to 64-year-olds). (European Communities, Scenario 1999, cited by Nieminen 2003)



ratio of the EU15 populations (the ratio of those 0–14 years and those >65 years of age to 100 15- to 64-year-olds) would be the greatest in Finland in 2020, 100 workers carrying the responsibility for the “costs” of 62 non-working people. The population-based dependency ratio will also increase in France and Sweden to up to 60 (Figure 6). The situation will not be better in 2040. According to predictions, the dependency ratio in Italy and Spain will reach as high as 82 and 75, respectively. The corresponding ratio for Finland and Sweden will reach 68 (Nieminen 2003).

1.2.2 Global ageing: true or false?

The ageing of the population is a global phenomenon. The Second World Assembly on Ageing was organized by the United Nations (UN) in 2002 in Madrid, Spain (UN 2001). It was stated in the congress that global ageing is (i) an unprecedented, new phenomenon, (ii) all pervasive, (iii) profound, and (iv) an enduring change in nature. The proportion of people over 60 years of age was 8% of the population in 1950 and 10% in 2000, and it is predicted that it will increase to up to 21% by 2050. In developed regions (such as Japan, the European Union, and the United States), people over 60 years of age are estimated to account for 33% of the entire population. The respective figure for less developed countries is approximately 20%. According to the prediction, the proportion of the population over 60 years of age will increase from 600 million to 2000 million in the next 50 years. In 2050 the youngest country by population will be Nigeria (mean age 20 years), and the oldest will be Spain (mean age 55 years). The fastest growing age group globally will be those over 80 years of age, whose proportion is expected to increase fivefold, from 70 million to 350 million by 2050.

The ageing of the population is considered to be inevitable, and it is not expected that the large birth rates of the 1900s will reoccur. Ageing will not only have profound effects on the life of individual persons, but also on national, international, and small size communities. Ageing will reflect on life itself: the social, economic, political, cultural, psychological and mental actions of people.

Global ageing will also affect worklife in many ways. The workforce will age, and there will be a shortage of young workers in many countries. Global enterprises will not be able to recruit young people in the same way as at the end of the 1900s since the number of young workers will also decrease in the developing countries, where there will also be a growing need for them to develop the infrastructure and worklife. The ageing population will need many health and social services. The service sector will grow significantly, and the public and private organizations that provide the services will become significant employers.

It is not certain that young people will be willing to enter the service trades. Thus it may well be that those who belong to the ageing sector of the population may themselves offer services to others in their age group. If so, the employment of women, and especially ageing women, may increase significantly. On the other hand, new technologies and the accompanying digital revolution may significantly reduce the need for workers also in the health sector.

At the same time, ageing in developing countries is related to poverty. Without work, the ageing sector of these countries will be left without health and social services or pensions. Therefore the employment of ageing populations is an absolute necessity in these countries in the battle against poverty.

1.3 Employment in different age groups in the European Union

1.3.1 Employment rates

One objective of the European Union is to increase the employment rate of 55- to 64-year-olds to 50% before 2010. In 2003, this rate was 41.7% in the EU15 countries (European Communities 2004). Thus there was still a gap of 8.3 percentage points between reality and the set the goal. The differences between countries were substantial, however (Table 3).

Sweden had the highest employment rate (68.6%), and also Denmark, the United Kingdom, Estonia, Portugal, and Cyprus had reached the target by 2003. On the other hand, improvement amounting to over 20 percentage points was still needed in Slovenia, Slovakia, Poland, Belgium, Hungary, and Luxembourg. Ireland and Finland were close to the target of 50% employment of the 55- to 64-year-old population. In Finland, the employment rate of the older population increased the most between 1998 and 2003, by 13.4% to be precise. A significant increase had also taken place in Hungary and the Netherlands (>10 percentage points).

Among other things, the EU Labour Force Survey (EU-LFS) reports employment rates on a quarterly basis. The reports on the second quarter of 2004 indicated that the entire workforce (15- to 64-year-olds) of the EU15 countries was 64.7% (72.5% for men and 56.9% for women). The rates of the EU25 countries were slightly lower (63.2% for the entire workforce, 70.7% for men and 55.7% for women). The employment rates were over 70% in four countries (Denmark, the Netherlands, Sweden, and the United Kingdom). On the other hand, the rates were below 60% in five countries (of which most were new members): Italy, Slovakia, Hungary, Malta, and Poland.

1.3 EMPLOYMENT IN DIFFERENT AGE GROUPS IN THE EUROPEAN UNION

Table 3. Employment rates of seniors in 2003, the difference between the rates and the target rate (50% employment before 2010) and the change in the employment rates in 1998–2003 and 2002–2003. (European Communities 2004)

	Employment rate of 55- to 64-year-old workers			
	2003 (%)	Difference (%)	Change (%) in 1998–2003	Change (%) in 2002–2003
Sweden	68.6	>	5.6	0.6
Denmark	60.2	>	8.2	2.3
United Kingdom	55.0	>	6.5	2.0
Estonia	52.3	>	2.1	0.7
Portugal	51.1	>	1.1	0.2
Cyprus ¹	50.4	>	1.0	1.0
Finland	49.6	0.4	13.4	1.8
Ireland	49.0	1.0	7.3	1.9
Netherlands	44.8	5.2	10.9	2.5
Lithuania	44.7	5.3	5.2	3.1
Latvia	44.1	5.9	7.8	2.4
Czech Republic	42.3	7.7	5.2	1.5
Greece	42.3	7.7	3.3	2.6
Spain	40.8	9.2	5.7	1.1
Germany	39.3	10.7	1.6	0.6
France	36.8	13.2	8.5	2.1
Austria	30.4	19.6	2.0	0.7
Italy	30.3	19.7	2.6	1.4
Malta ¹	30.3	19.7	–	–
Luxembourg ¹	29.5	20.5	4.4	–
Hungary	28.9	21.1	11.6	3.3
Belgium	28.1	21.9	5.2	1.5
Poland	26.9	23.1	–5.2	0.8
Slovakia	24.6	25.4	1.8	1.8
Slovenia	23.5	26.5	–0.4	–1.0
EU15 countries	41.7	8.3	5.1	1.6
EU25 countries	40.2	9.8	4.4	1.5

¹ Luxembourg and Malta 2002, Cyprus 2000–2003, Luxembourg 1998–2002

The employment rates depend on the educational level and the age of the workforce. The rate is the lowest among the youngest age groups (15- to 24-year-olds) and the highest among 25- to 54-year-olds—seniors being in a slightly better situation than young people (Table 4). The rate increases in all age groups when the educational level is higher, the difference between people at the lowest educational level and the highest educational level being

Table 4. Employment rates (%) according to age, gender and level of education in the EU25 countries. (European Communities 2004)

	EU25 countries			
	15–64 years	15–24 years	25–54 years	55–64 years
Men	70.7	39.4	85.2	50.2
Elementary	57.1	28.0	78.9	42.5
Secondary	74.8	52.6	85.5	50.1
Higher	86.2	61.5	91.9	66.8
Women	55.7	33.1	68.9	30.9
Elementary	36.3	18.6	50.9	23.4
Secondary	62.2	45.1	71.7	36.4
Higher	79.3	60.9	84.1	55.9
All	63.2	36.3	77.0	40.3
Elementary	46.4	23.6	64.6	31.7
Secondary	68.6	48.8	78.7	43.6
Higher	82.8	61.1	88.0	62.4

almost triple among young people and double among older people. A high level of education among the 55- to 64-year age group ensured work for 62.4%, whereas the lowest level of education provided work for only 31.7% of that age group.

A lower level of education seemed to have a greater impact on the employment of women than on that of men. There was a difference of almost 20 percentage points in the employment rates of men and women in the oldest age group. Therefore, special attention is being given to increasing the employment rates of women in the EU25 countries (European Communities 2004).

1.3.2 Part-time employment

In the EU15 countries, 19.3% of the workforce had part-time jobs in 2004 (7.1% of men and as much as 35.0% of women). In the EU25 countries, part-time work was somewhat less common: 17.7% for the entire workforce, 6.9% for men, and 31.3% for women. Differences between nations were notable, however. The Netherlands was in its own class with respect to part-time employment (45.6% of the workforce, 74.8% of women). There were several EU member states in which part-time workers accounted for less than 10% of the workforce. Part-time work was the least common in the new member

1.3 EMPLOYMENT IN DIFFERENT AGE GROUPS IN THE EUROPEAN UNION

Table 5. Total workforce employed part-time (%) in the EU25 countries according to age group, gender and type of industry. (European Communities 2004)

	EU25 countries			
	<15 years	15–24 years	25–54 years	>55 years
Men	6.9	17.9	4.1	14.9
Agriculture, forestry, game husbandry and fishery	12.5	27.9	6.3	24.3
Industry, including energy	2.9	6.5	1.6	8.3
Construction	2.8	4.4	1.8	7.9
Trade, transportation and information services	8.6	28.0	4.4	14.0
Business and finance	8.1	17.9	4.9	21.1
Other services	10.0	25.0	7.2	17.3
Women	31.3	32.0	29.6	42.3
Agriculture, forestry, game husbandry and fishery	29.4	(12.2) ¹	23.6	42.8
Industry, including energy	18.0	12.8	17.4	30.9
Construction	33.8	12.2	34.5	47.8
Trade, transportation and information services	34.3	42.0	31.3	43.5
Business and finance	31.3	24.3	30.6	45.9
Other services	33.3	29.5	32.3	42.5
All	17.7	24.3	15.5	25.6
Agriculture, forestry, game husbandry and fishery	18.5	30.7	12.6	31.0
Industry, including energy	7.3	8.4	6.3	13.4
Construction	5.4	4.8	4.6	11.3
Trade, transportation and information services	19.9	35.1	16.0	25.2
Business and finance	18.7	21.3	16.9	29.9
Other services	25.0	28.0	23.5	31.8

¹ Few cases, figure unreliable

states (e.g., Slovakia, Hungary, the Czech Republic), where the percentage of women working part-time was under 10% (European Communities 2004).

The youngest and oldest workers were most often employed part-time (24.3% of the 15- to 24-year age group and 25.6% of the over-55-year age

Table 6. Total workforce temporarily employed (%) in the EU25 countries according to age group, gender and type of industry. (European Communities 2004)

	EU25-countries			
	<15 years	15–24 years	25–54 years	>55 years
Men	12.6	38.5	9.5	6.9
Agriculture, forestry, game husbandry and fishery	26.7	46.3	24.1	20.8
Industry, including energy	9.8	40.4	6.4	4.0
Construction	20.6	41.2	17.4	11.3
Trade, transportation and information services	11.2	32.4	7.4	4.9
Business and finance	10.6	34.7	7.9	8.9
Other services	13.1	46.8	11.0	7.4
Women	14.1	37.2	11.4	7.5
Agriculture, forestry, game husbandry and fishery	34.7	55.4	32.8	26.2
Industry, including energy	12.3	39.3	9.4	5.1
Construction	10.4	39.4	7.2	
Trade, transportation and information services	14.3	32.6	10.2	6.0
Business and finance	11.6	35.5	8.7	5.9
Other services	14.7	41.6	12.8	8.4
All	13.3	37.9	10.4	7.2
Agriculture, forestry, game husbandry and fishery	29.1	48.7	26.8	22.2
Industry, including energy	10.5	40.1	7.3	4.3
Construction	19.7	41.1	16.4	10.6
Trade, transportation and information services	12.6	32.5	8.7	5.4
Business and finance	11.1	35.1	8.3	7.6
Other services	14.1	43.2	12.2	8.0

group). Part-time employment was the most frequent in the service sector¹. Senior men (>55 years of age) had abundant part-time work also in agriculture, hunting, and fishing. On the other hand, senior women had part-time jobs in almost every sector of employment (Table 5).

¹ The proportion of part-time work was the greatest in the service sector (trade, transport and communication services, business activities and financial services, and other services).

1.3.3 Temporary employment

In the EU15 countries, 18 065 000 people were temporarily employed (i.e., 13.1% of the workforce). Temporary employment was slightly more common among women than men. In the EU25 countries, the respective figures were 21 394 000 people (i.e., 13.3% of the entire workforce). Women had temporary jobs 2% more often than men. There were notable differences between the member states. Temporary employment was the most common in Spain (30.4%), but approximately one-fifth of the workforce had temporary jobs also in Poland and Portugal. The smallest proportion of temporary jobs occurred in Estonia, Malta, and Ireland (less than 5% of the entire workforce) (European Communities 2004).

The proportion of temporary employment decreased with age. It was the highest among the 15- to 24- year age group (37.9%) and the lowest among the over-55-year age group (7.2%). Temporary employment was the most common in agriculture, hunting, and fishing regardless of gender (Table 6).

1.3.4 Unemployment

There were 13 970 000 unemployed people in the EU15 countries in 2004. The unemployment rate was 7.9%. In the EU25 countries, the respective figures were 18 786 000 unemployed and an unemployment rate of 9.0%. Unemployment was slightly over 1 percentage point more common among women than among men. Unemployment was the highest in Poland (19.4%) and Slovakia (18.6%). On the other hand, the respective figure was less than 5% for Cyprus, the United Kingdom, Ireland, the Netherlands, and Austria in the beginning of 2004.

Unemployment was related to both age group and level of education. It was less common in the older age groups (17.9% in the youngest age group, but only 6.5% in the oldest age group). The direction was similar for both men and women. Unemployment was lower among both genders with a high level of education as well. It decreased to half in the youngest and middle-aged age groups from the lowest educational level to the highest. Among the seniors, there was no difference in unemployment in the groups with the lowest educational levels, but among those with the highest educational level, the unemployment rate was notably lower (Table 7).

There were 5 640 000 persons (3.2%) in the EU15 countries and 8 225 000 people in the EU25 countries (3.9%) who had been unemployed on a long-term basis in the beginning of 2004. Slightly more of the long-term unemployed were women (0.5%). The largest groups of chronically unemployed

Table 7. Long-term unemployment (%) according to age group, gender and educational level. (European Commission 2004)

	EU25 countries			
	15–64 years	15–24 years	25–54 years	55–64 years
Men	3.6	5.3	3.2	3.9
Elementary	5.0	6.7	4.8	4.1
Secondary	3.7	4.8	3.4	4.4
Higher	1.5	(2.0) ¹	1.3	2.7
Women	4.4	5.4	4.3	4.1
Elementary	6.6	7.3	7.0	4.3
Secondary	4.5	5.3	4.4	4.6
Higher	2.0	2.2	1.9	2.5
All	3.9	5.3	3.7	4.0
Elementary	5.7	6.9	5.7	4.2
Secondary	4.1	5.1	3.8	4.4
Higher	1.8	2.1	1.6	2.6

¹ Few cases, figure unreliable

were found in Slovakia (11.9%) and Poland (10.4%), and the smallest groups were located in the United Kingdom, Sweden, Cyprus, Denmark, and Austria, where less than 1.5% of the populations were classified as such (European Communities 2004).

Long-term unemployment was the most common in the youngest age group (5.3%) and the least common among the 25- to 54-year-olds (3.7%). Approximately 4% of the 55- to 64-year age group was chronically unemployed. Education made a difference. Long-term unemployment was less common among the well-educated, being almost half of that in the two groups of the lowest educational level. Only 2.5% and 2.7% of the well-educated women and men, respectively, were chronically unemployed (European Communities 2004).

CHAPTER 2

CHALLENGES FOR AGE POLICIES

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CHALLENGES FOR AGE POLICIES

- 2.1 INTERNATIONAL AGE POLICIES
- 2.2 FINNISH AGE POLICIES
- 2.3 NEEDS FOR REFORM IN WORKLIFE
- 2.4 MANAGEMENT REFORM FROM THE
- 2.5 REMODELING ATTITUDES TOWARDS AGE

2 CHALLENGES FOR AGE POLICIES

2.1 International age policies

2.1.1 United Nations

The members of the United Nations (UN)—both developed and less developed countries—are well aware of the challenges ageing imposes. Some may be surprised to hear that significant age strategies have been devised in many developing countries. It is a fact, however, according to prognoses, that ageing will hit the developing countries, where the oldest sector of the population will quadruple by 2050, the most rapidly. Therefore, ageing must be taken into account also in developmental policies.

This need was evident in the Second World Assembly on Ageing, an international meeting held in Madrid in 2002. Over 170 member states participated with delegations led by ministers, along with representatives of international civic organizations and UN organizations. The members of the participating countries reported on the ageing of their populations, its effects, and the actions that have been planned and realized.

A resolution was proposed and the International Plan of Action on Ageing was introduced in Madrid. The resolution, including 19 items, was accepted by the 58th General Assembly of the UN. The objective was to oblige the member states and international organizations to enforce policies to control ageing (UN 2004a).

In the 59th General Assembly, the Secretary General reported on the follow-up of the actions agreed upon in Madrid. The report considered the implementation of the plans as inter-governmental, national, international, and regional actions and assessed the advances and obstacles. It emphasized that ageing should be a central mainstreaming theme in national and global strategies.

The UN emphasized the weak prospects of the developing countries in not only rising to the challenge of ageing, but also in dealing with inadequate retirement security, health, education and poor employment possibilities, especially among ageing women. Most of the oldest age groups in the developing countries live in poverty without adequate social security. The challenge imposed by ageing is, therefore, seen from a totally different light depending

on the point of view, that of a developing country or that of a developed country (UN 2004b).

Important international organizations and institutes related to ageing include the following:

- Economic Commission for Europe (ECE) of the UN
- United Nations Population Fund (UNFPA)
- International Labour Organization (ILO)
- Food and Agriculture Organization (FAO) of the UN
- World Health Organization (WHO)
- International Institute on Ageing in Malta
- International Association of Gerontology (IAG)
- United Nations Development Programme (UNDP)
- HelpAge International
- World Bank
- International Social Security Association
- The International Federation on Ageing
- International Council for Caring Communities (ICCC)
- The International Longevity Center
- The International Network for the Prevention of Elderly Abuse
- European Centre for Social Welfare Policy and Research.

A mass of organizations, along with governments, deal with the ageing of the global population. The objective of the UN is to maintain connections between these agents and to follow how the implementation of the international plan prepared in Madrid proceeds. The main focus of the UN concerning ageing is naturally on the developing countries and the prevention of poverty, the improvement of social security, and the organization of health care services for senior citizens in these countries. The ageing of workforces does not reach a central stage in the resolutions, and the responsibility of ageing workers is transferred to national governments. Nevertheless, work is the most effective means with which to prevent poverty and gain social security also in developing countries. Thus it should be possible to make use of the actions and experiences of the developed countries in other countries.

2.1.2 Recommendations of the International Labour Organization

The International Labour Organization (ILO) covered the situation of ageing workers in its recommendations as early as 1980 (ILO 1980). ILO defined ageing workers as follows “all those who are liable to encounter difficulties in employment and occupation because of advancement in age”. This description is broad and emphasizes the willingness to confront difficulties in employment or occupation without mention of chronological limits. The

recommendations state that the employment of ageing workers should be part of a well-balanced strategy that aims for full employment. Employment problems should not be made the burden of certain age groups. On the contrary, governments should strive to reach full employment for all age groups.

The recommendations also mention the prevention of age discrimination. The member states are urged to practice national policies that promote equal opportunities and equal treatment of workers of all ages. The discrimination of ageing workers must be prevented especially in the following ways:

- ageing workers must have access to occupational counseling and placement services
- they must be able to choose their work according to their individual skills, experience, and competence
- they must have access to advanced occupational training and supplementary education
- they must be able to trust that their jobs are secure.

Furthermore, the recommendations emphasize that work conditions and the work environment must be improved in all stages of workers' careers and the improvements must take into consideration the special needs of ageing workers so that they can continue working in satisfactory conditions. ILO also considers the final stages of careers and retirement. The recommendations emphasize that the retirement process should be gradual, retirement should be voluntary, and the retirement age should be flexible.

ILO reported on the views it upholds for older workers in its labor report in 1995 (ILO 1995). The report emphasized the prevention of discrimination because of gender and age. According to ILO, work should be divided between everyone throughout people's lifespans, and, to do so, worktimes should become more flexible to ensure work for all generations. The recommendation suggested that retirement systems should be changed so that every worker would have a certain amount of years of work and pension would be determined according to the best years. According to this plan, people could stop working for a period of time without endangering their social security. This plan would also add flexibility from the point of view of both the individual worker and the employer and ensure that pension costs were under control in the future.

In a summit of the Group of Seven (G7) in 1988, ILO emphasized the importance of repairing the imbalance between younger and older workers. At that time, it was thought that, if older workers maintained their careers longer, it would take more time for young workers to integrate into worklife. Therefore, the report stated, the only means of securing the needs of both groups would be to increase the number of jobs. The next World Employ-

ment Report 1998–1999 paid attention to the displacement of especially older workers from worklife in developing countries. Returning to worklife is very difficult once one has dropped out. For this reason, ILO emphasized the importance of the prevention of displacement from the labor market (Auer & Fortuny 2000).

These 25-year-old ILO recommendations are still topical. They reflect the fact that the member states have not been able to solve the problems of worklife in relation to ageing according to the recommendations. One prediction has not been realized, however. The longer worklife of older workers has not denied younger workers jobs, as was anticipated. The proportion of young workers has declined notably, and the retirement of older employees has been used to cut the manpower in organizations.

Age discrimination is deeply embedded in worklife, and ensuring equal employment in all age groups has failed broadly throughout the global labor market. Currently, the longer ageing workers are unemployed, the more likely it becomes that they will be completely displaced from the labor market.

2.1.3 Recommendations of the World Health Organization

The World Health Organization (WHO) discussed improving the situation of ageing workers in its meeting in Helsinki in 1991 (WHO 1993, Lehtinen 1995). The discussion focused on the health, functional capacity, and work ability of ageing workers. Workers over 45 years of age were defined as ageing from the point of view of occupational health. The division was based on research showing that significant changes in certain functions take place with regard to work demands after the age of 45 years at the latest. If no preventive measures are taken, the decline in work ability accelerates especially in physical work, but also in mental worktasks after the age of 50 years. It is true that the process of ageing is very personal, and, therefore, the 45-year dividing age is relative. At the same time, the age limit emphasizes the necessity to prevent the decline in the work and functional capacity and work ability as early in life as possible.

One expert committee of WHO compiled the following recommendations for its member states:

1. Governments should assume national action policies that aim at keeping ageing workers in socially and economically meaningful work. This aim should be supported by appropriate legislation.
2. Governments should support the labor market parties in creating work environments and occupational health services that enable workers to participate fully and productively in worklife until old age.

3. Governments should consider reward and incentive systems that encourage older workers to stay in worklife as long as their health allows.
4. Employers should produce detailed instructions on how work and work environments should be adjusted to meet the needs of ageing workers.
5. Employers, business managers, supervisors, planners, and designers who make decisions and plans regarding the work environment (processes, machines, tools) should be given training on the needs of ageing workers as they adapt to worklife.
6. Experts on occupational health and safety, such as occupational physicians and nurses, physiotherapists, and safety engineers, should be provided with knowledge on ageing and work as part of their basic, advanced, and supplementary education.
7. Research is needed to determine the strengths and special needs of ageing workers. The research should be able to distinguish between environmental and biological effects. Further knowledge is also needed on the factors that help the ageing thrive in worklife. The studies should also develop and test methods to make work meet the needs and potentials of ageing workers.
8. To enable the development of age-related health and employment issues, regular data on occupational accidents, periods of work disability, and disability pensions should be gathered according to gender, worktasks, and age. Databases can provide an organized picture of the participation of ageing workers in worklife and the special problems that they confront.
9. Periodic health examinations should be made mandatory for all workers 45 years of age and over. The examinations would have the following objectives:
 - to recognize deficiencies in the functioning of the musculoskeletal, respiratory, and cardiovascular systems that can then be rehabilitated with the aid of different physical exercises
 - to recognize age-related changes in vision, hearing, and the musculoskeletal system that would make it necessary to change the work environment and provide aids for workers
 - to recognize physical and mental risk factors that increase morbidity and mortality rates so that appropriate care can be organized and the needed changes in lifestyle made.
10. Employers and workers should be motivated to support long-term health education provided at the workplace and to initiate programs related to public health and living habits. Programs to stop smoking, reduce alcohol consumption, and change eating habits or the level of physical activity, for example, are known to sustain health and vitality with age.

WHO also offers the following recommendations to employers, trade unions, and authorities:

1. Work ability, not age, should be the basis of evaluation when a worker is employed and kept employed.
2. Employers should ensure adequate flexibility in work and the structuring of the work environment so that work environments suit ageing workers of very different kinds. Workers should be able to participate in decisions that affect their work.
3. Work arrangements should be flexible enough to enable work division if needed, part-time work, and periods of absence for personal reasons. Workers should be encouraged to work part-time during the traditional age period when early retirement is common.
4. Training should be part of every worker's job. Workers should be trained in advance with regard to technical changes at the workplace, the training should support workers, and their work needs to be rearranged due to age factors.

The expert committee also gave recommendations to WHO: the health issues between ageing and work should be taken into consideration in all important programs of the World Health Organization.

Adjusting work to meet workers' changes

The recommendations of ILO and WHO contain similar elements, but those of WHO are more concrete. The special instructions compiled for employers on the changes needed for an ageing workforce and the training of occupational health and safety personnel concerning age-related issues include clear recommendations for action. For example, the training plan of the National Programme on Ageing Workers 1998–2002 takes into consideration the training of occupational health and safety personnel. A guide in Finnish has been published on good practices in occupational services to aid planning and follow-up.

The most important joint policy of ILO and WHO was their acknowledgment of the need for worklife to change so that the circumstances of ageing workers can be improved. This necessity is very basic in quality and, for this reason, also one of the principles of worklife. Thus far, workers have usually had to adapt to their work—now work must adapt to the workers. A historical change is imperative because the age structures of the workforce will strongly demand it throughout at least the next generation. With hindsight, it can be noted that there has been at least 25 years to prepare for the new

situation. Apparently, though, it has not been possible to speed up development on the basis of knowledge and anticipation only—instead the situation has had to become critical. The time is now ripe for the international recommendations to be implemented.

Even though the general recommendations are currently valid, one has to take into consideration the massive changes in worklife created especially by globalization and the new technologies. They have made worklife more and more fervent and intense, stressed the importance of efficiency, created large structural changes and uncertainty in the continuity of production, and displaced ample numbers of ageing workers. Workload is involving mental overload more and more, and, as a result, mental problems exceed musculoskeletal problems as the cause of work disability in many countries. Therefore, it is increasingly important to develop the prevention of occupational psychosomatic risk factors (e.g., Järvisalo et al. 2005).

Much applicable research data have been compiled from numerous seminars on work and ageing (e.g., Goedhard 1992, Goedhard 1996, Nygård & Kilbom 1996), scientific conferences (e.g., Ilmarinen 1993, Snel & Cremer 1994, Kumashiro 1995, Kilbom et al. 1997, Shiraki et al. 2001, Kumashiro 2003) and international congresses [e.g., of the International Ergonomics Association (IEA), the International Commission for Occupational Health (ICOH)]. The results, experiences, and innovations have not, however, been compiled as a whole and distributed throughout worklife in different countries. Examples of Finnish enterprises (Section 4.6), nevertheless, indicate that good and viable solutions exist—similar examples can probably be found in all countries. The new EU framework programs include many projects that aim at gathering, analyzing, and distributing these good practices in order to strengthen European competitiveness.

The views on the ageing of the workforce are similar in the Scandinavian countries and Europe, as well as in Asia and the United States. The global change in age structures and the uniform necessity to solve the problems present increasingly better opportunities to develop worklife also for the ageing worker.

It is possible to establish recommendations according to research data that globally take into consideration the rights and needs of ageing workers in worklife. Practical guides can be published for employers on the changes that ageing impose on worklife. A database can be constructed concerning, for example, separate trade sectors that can be updated in real time and that reports good age practices in worklife. Networks between the EU member states can be created that promote the activity of national governments, labor market parties, expert organizations, and different trade branches (e.g., the

metal industry) to take even better account of the resources of ageing workers and to ensure their employment.

2.1.4 European Union's "active ageing" policy

The European Commission defined policies and objectives on the ageing of the workforce and sent them to the European Parliament (3 March 2004). According to the presentation, the European Union promotes "active ageing", the aims being (i) that 50% of 55- to 64-year age group be a part of the workforce by 2010 (2001 Stockholm European Council) and (ii) that the actual age for retirement be increased by 5 years by 2010 (2002 Barcelona European Council).

The European Union started to pay attention to the ageing of the workforce already in 1994. Ageing workers have since been on the agenda of all of its more important meetings. The first clear reference to ageing workers was made in the policies defined in 1999, when equal opportunities were discussed. During the 1999 Council Presidency of Finland, ageing workers became an important topic of discussion. The development has advanced towards the objectives set by the European Union during recent years, but, because the goals are still far from being realized, actions should be significantly intensified, especially among the member states.

The employment rate within the 55- to 64-year age group of the EU15 countries was 41.7% in 2003, which is 8.3 percentage points below the objective (see Section 1.3.1). The employment rate of women is especially low, approximately 30%, and calls for special measures to increase women's work contribution in nearly all member states except the Scandinavian ones. As the employment rates of the different countries are compared, it is important to note that, in some countries, some older workers work fewer than 15 hours a week (e.g., in the Netherlands, Denmark, and the United Kingdom), while, in others, nearly all older employees work 40 hours a week (e.g., in Finland). The distances of the European Union and its member states with regard to meeting their objectives for employment and retirement age differ greatly, and these differences clearly indicate the size of the challenge for the entire European Union.

Many measures have been taken in the European Union to promote the situation of ageing workers, for example, employment and retirement strategies, retirement and social security modifications, models for gradual retirement, prevention of age discrimination, support for lifelong learning, support for employers (both guidance and wage policies), and incentive systems (Taylor 2002, Reday-Mulvey 2005). Many member countries have been gratifyingly active in developing age policies, but, even so, the measures have not been

Table 8. Actions (1996–) aimed at extending the careers of ageing workers in the EU15 countries. (Reday-Mulvey 2005)

Action /country	Austria	Belgium	Denmark	Finland	France	Germany	Greece	Ireland	Italy	Luxemburg	Netherlands	Portugal	Spain	Sweden	United Kingdom	Switzerland
Retirement policy																
1. Increase in retirement age	x	x		x	x		x		x			x		x	x	x
2. Change in period used for calculating pensions	y			x	x		x		x		x	x	x	x	x	x
3. Introduction of flexible retirement age	x	y	y	y	x	x			y		x	x	x	y	y	y
4. Introduction of part-time pension	x	x	x	x	x	x			x	x	x		x	x		
5. Change in age-relatedness of retirement contribution	x	x	x	x	x	x	x	x	x		x	x	x	x	x	x
6. Change in working while retired	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Exiting workforce																
7. Reduction of work disability pensions			y	y		x					y					x
8. Reduction of early-retirement pensions	x	x	y	y	y	x					y		x	x	x	
9. Reduction of unemployment benefits	x	x		x	x	x					x			x	x	x
Employment policy (> 55 years)																
10. Provision of educational support	x	x	x	x	x		x								x	
11. Integration of unemployed (>50years)	x	x	x	x	x		x			x	x			x	x	
12. Promotion of part-time work (55–65 years)	x	x	x	x	x				x	x	x		x	x	x	x
13. Reduction of workforce costs	x	x	x		x		x		x	x	x		x	x	x	x
14. Reduction of age discrimination (law)	x	x	x	x	x		x		x	x	x		x	x	x	x
15. Use of information and education campaigns		x	y	x		x					y			x	y	

y = significant change

enough for the European Union to reach its objectives (Table 8). Therefore, national strategies must not only be based on public policies, but also on separate policies of enterprises and organizations. Examples of the progress and actions of some countries are available from the European Foundation for the Improvement of Living and Working Conditions (www.eurofound.eu.int).

In *New Policies for Older Workers* (Taylor 2002), the public policies of the Netherlands, Australia, Japan, Germany, Finland, and the United States are analyzed. The report states that public policies have been the most progressive in Australia, Finland, and Japan and the least so in the United States. National policies have been motivated by different issues in the separate countries. In Japan and Finland the incentive was a shortage of workforce, and in Australia, the Netherlands, and the United States it has been age as a question of equality. Furthermore, Taylor stated that the integrated approach was most developed in Finland. In the other countries, policies were clearly more fragmented. It has been difficult to assess the functionality and effectiveness of the different national policies and emphases because they have not been systematically evaluated. The impressions can, however, be reduced to the following three factors:

- Relinquishing the obligatory retirement age has not had a notable effect on retirement practices. Early retirement has remained a significant means of exiting from worklife, and employers have also had other means with which to rid themselves of ageing workers.
- Economic support for employment has not seemed to have had the anticipated effect on employment in the ageing sector, despite the fact that such support systems are popular in politics. Support for the employer to employ ageing workers may become a hindrance in that the discrimination of senior workers becomes greater and is formalized when it is thought that hiring older workers is not worthwhile unless the government compensates for the action. Offering temporary or part-time work to senior workers has also been problematic. Not everyone can manage with part-time work, and firms may use these forms of work as a means of reducing the high wage costs of older workers.
- The effectiveness of the actions and programs has not been proved. For example, workers who did not participate in the programs may have been displaced by those who did participate. On the other hand, it has not been taken into account that this displacement could have occurred with or without the effect of the programs (deadweight). It has been unclear why certain themes have been chosen, and why they have remained in the programs for so long, even

though they were related to marginal groups of society (for example, the Senior Community Service Employment program in the United States).

Taylor stated that policies on ageing and employment are new territories. He presented the following viewpoints as guidelines for better age policies:

- Active age policies need to be adequately funded. Extending worklife is not a cost-neutral activity. Delaying retirement and social costs and increasing tax revenues are balanced by the costs of education and employment. Many employers are reluctant to invest in training ageing workers and reorganizing work when there is cheaper labor available.
- Policymaking on ageing is the business of all sectors of politics. For example, lifelong learning is part of educational policies, and the consolidation of work and family concerns workers of all ages. Retirement policies have dominated age policies for too long; therefore, age should be more focused on in all areas of politics.
- Programs for the ageing should be seen as part of the diversity of worklife, their aim being to promote diversity. If they are not seen as such, the programs are in danger of stigmatizing senior workers and turning ageing into a problem. The chronological definition of “ageing” or “older” worker is artificial in itself. A better political approach would be that of a “life course” that aims at dissolving the employment obstacles of workers’ careers. It is, of course, natural that the obstacles vary for different aged workers and that they thus require partially different actions. It is also a fact that numerous segments of worklife, such as different occupations, sectors of trade, socioeconomic groups, the occupationally disabled, and the like, require tailored solutions. Occupational health services and safety measures should be high in quality regardless of the age, work, or status of the worker.
- The programs should be constructed from the micro- to the macro-level, and not vice versa. There are plenty of regional agents at workplaces, who are central in attaining impact. The role of the administrator is more of a sponsor, facilitator, coordinator, and gatherer and publisher of knowledge than that of a practical doer. General solutions do not serve practical reality very well; instead, tailored solutions created in and for enterprises are needed much more.
- The programs should be based on flexible models and solutions. People must be given options. For example, retirement reforms may pressure workers in low-status jobs to continue to work, while people with high-status jobs have the means to take early retirement. Safety

nets are, therefore, especially important for workers for whom continuing to work is unrealistic. Workers should also be able to switch to lighter jobs on the basis of, for example, health reasons.

- The programs should sufficiently emphasize the role of preventing problems. Many times programs for the ageing come too late to influence a person's situation. For example, reformulating and reorganizing work as a means of preventing the risks of work disability should also be directed towards younger workers. Small and middle-size enterprises need both economic and tax-related aid for such efforts.
- The programs should be tested and evaluated. Their objective is to affect and channel the practices of worklife into more age-positive directions. It is important to pin down, as specifically as possible, which actions are efficient and in which situations and circumstances they are efficient.
- The programs must be persistent, lasting, and positive. From the workers' point of view, it is important that the risks concerning their careers be addressed enough ahead of time and that sufficient time and support be given when workers prepare to terminate their careers. The economic aspects are the most important factors related to retirement, and it is, therefore, necessary for labor force policies and retirement policies to work together. The policy to support active ageing should cover a significant part of a person's career. Positive policies concerning the ageing of populations should be searched for, and they should avoid predictions of doom in questions concerning age. Over-emphasis of the situation of senior workers at the expense of other age groups also indicates age discrimination. Emphasizing the strengths of the different age groups would, instead, be positive, age-neutral policymaking.

The preceding views have been taken into consideration well in Finnish programs. They have, therefore, received ample attention around the world. Finnish solutions are appreciated and inquired about.

The policy of *active ageing* in the European Union is about tightening early retirement systems and improving work benefits. The right and necessity of lifelong learning, good work conditions, flexible worklife, and accessibility to health and social services are also emphasized. Work incentives must be developed so that they offer true options for people to continue to work.

The role of labor market parties is also emphasized. The will and skills of the parties are decisive in decisions on the direction of worklife development. The true concept of active ageing is realized within enterprises and organizations.

Seniority, rewarding productivity, improving occupational health and safety issues, training personnel, tightening the conditions for early retirement, rewarding a longer career, better retirement benefits, flexible employment conditions, reducing workloads through gradual retirement, supporting age management, and gathering knowledge on good practices and distributing this knowledge are all issues that the labor market parties can promote (The Geneva Association 2004).

Active ageing is perceived in the European Union as a model that benefits both workers and employers. In addition, the entire European Union will benefit from it through improved capacity, competitiveness, and well-being. Age management is repeatedly mentioned in the strategy of active ageing. The European Social Fund (ESF) and the 5th, 6th, and 7th framework programs also support active ageing.

The enlargement of the European Union has increased the challenges to meet the objectives by 2010. For approximately half of the new member states and about 80% of the “new” workforce, active ageing is an unknown concept and a very distant goal. Reaching the 2010 goals on employment and retirement will be based on the development of the so-called old EU15 member countries. The process of tailoring good practices and transferring them into practical situations in the new member states requires its own, efficient policy and procedure (<http://europa.eu.int>).

The European Council defined an ambitious strategy for change already in 2000 in Lisbon; it is appropriately called the Lisbon Strategy and is a mutual vision of the direction in which the economies and societies of the EU member states should be developed over the next 10 years. The Lisbon Strategy is an effort to combine the economic and social dimensions of EU policies in a new way.

There are plans to expedite and revise the Lisbon Strategy in the European Union. The strategy that was created in March of 2000 has become more and more topical and its realization more urgent. The group led by Wim Kok summed up the challenge for Europe as follows:

The Lisbon strategy is even more urgent today as the growth gap with North America and Asia has widened, while Europe must meet the combined challenges of low population growth and ageing. Time is running out and there can be no room for complacency. Better implementation is needed now to make up for lost time.

The competitiveness of Europe has decreased in comparison with that of other economic areas, and the productivity and investments in research and development have decreased. The workforce of Europe is older than that of

its competitors, and there are fewer young people. Therefore, the European Commission has made the following suggestions:

- Europe should be made attractive to investments and work.
- The competitiveness of Europe should be based on knowhow and innovation also in the future.
- More and better jobs should be created in Europe.

New and better jobs will not only help keep ageing workers in worklife longer, but will aid younger workers in finding their place in the domestic market. The member states, and especially their labor market parties, are urged to widen the possibilities and develop flexibility to adjust to new challenges. Lifelong learning should also be used as a true means with which to meet the challenges of changing worklife and improve the possibilities of workers in accepting new assignments regardless of age. The mobility of the workforce must be ensured and occupational qualifications must be unified. A clear policy on immigration is also needed.

Incentives and investments in human capital are emphasized in attempts to improve productivity and employment. The labor market must be for everyone, long careers should be rewarded, the consolidation of work and family should be promoted, and the preparedness of people to accept work should be improved. New models must be devised to promote the ability of the unemployed and those with poor educational backgrounds to return to worklife. Young people should have a program of their own. The European Commission plans to revise the employment strategy for Europe in 2005 (European Commission 2004b).

2.2 Finnish age policies

Research and development activities related to ageing and work have long traditions in Finland. The effects of the changing age structure of the Finnish population have recently been examined from the point of view of different administrative sectors (Parjanne 2004). The report states, among other things, that the proportionally large size of the baby-boom generation was alarming already 25 years ago, and it made it necessary to prepare for the forthcoming development. Multidisciplinary research, new methods of action, and developmental projects have been carried out that have included workers over 45 years of age in all occupational sectors. As a result, a sound intellectual and empirical basis has been constructed with which to confront the challenges of age in worklife.

The Finnish Institute of Occupational Health has been an important national agent with respect to the research and development as regards ageing and work. The Institute's actions have also been evaluated internationally (Fingerhut et al. 2004). The age challenge has been confronted by the Finnish ministries, which have carried out extensive national programs, as presented in a later section in this chapter on the Finnish state-of-the-art model for national development programs [see The Many Faces of the Finnish National Programme for Aging Workers (Ministry of Social Affairs and Health 2002b)].

The changes in the age structure will affect the entire society. The greatest challenge will be imposed on the sustainability of public sector finances as a reduced population of workers must take responsibility of the well-being of a growing number of non-working people. The underlying themes of the report are well-being for all ages, older workers as a resource, and active ageing. Another basic principle is that the ageing of the population does not, as such, determine the direction of development but that the future can be affected by timely interventions. Many sectors of society have already made changes and preparations, but this activity has, by no means, been sufficient.

It is imperative to delineate a unified national view and objective. Cooperation in preparing and implementing decisions is essential between both the different sectors of the administration and both regionally and locally. The actions of society must be coordinated, and their influence must be regularly evaluated, because changes may be necessary. The National Programme on Ageing Workers 1998–2002 is a good example of how cooperation between administrative bodies can add value and efficiency (see a later section in this chapter on the National Programme on Ageing Workers 1998–2002).

The challenges and possibilities for population development on a national level have been grouped as follows (Parjanne 2004):

- Health and an active population
 - from the point of view of the entire life course
 - promoting well-being, health and functional capacity
 - social participation
- A good society for all
 - cultural reconstruction and the re-enforcement of equality between generations
 - good living environment and modern infrastructure
- A sustainable economy and a high employment rate
 - balanced growth and sustainable funding of public expenditure
 - re-enforcement of employment

- guarantee of the quality of the workforce
- development of worklife
- Sufficient and high-quality services provided by the welfare state
 - improvement of service structures
 - care of civil servants
- Successful Finland
 - extensive network of schools and universities
 - regionally balanced development of society
 - extensive network of welfare services
 - regional networks of different agents
 - high-quality infrastructure of communication and network services
 - preparedness of citizens to manage the information society
 - good national strategy for information security

The basis for the cooperation of administrative sectors is the concepts of how the change in age structure is estimated to affect the different sectors, the type of preparations that can be made to confront these changes under different government administrations, and whether the preparations have been sufficient. The report reveals the views of 10 Finnish ministries on these issues. The great number and variety of the actions infer that the change in age structure will affect all sectors of administration. It also emphasizes the importance and necessity of mutual coordination and the evaluation of different actions on a national level (Parjanne 2004).

The challenges brought by ageing have also been examined from the view point of age policies for senior populations in Finland (Ministry of Social Affairs and Health 1999). Plans have been made on how occupational safety districts should take ageing populations into consideration (Ministry of Social Affairs and Health 2000), strategies to promote welfare have been produced (Ministry of Social Affairs and Health 2004), and the challenges imposed on technological innovations have been assessed (Väyrynen 2003). The ageing of the workforce has also been taken into consideration in varying ways in strategic policies on work (Ministry of Labour 2003a).

2.2.1 State authorities in search of solutions to the problem of ageing

Legislation offers solutions to social problems. Retirement reforms can create new alternatives, conditions for early retirement are tightened, employment security is improved, and general attitudes towards ageing are mended. National programs strengthen the attitudes of senior workers towards work, and

age discrimination is uprooted from society. The goals can be set high—for example, senior workers will work 2–3 years longer, the dependency ratios will decrease, and the retirement and health care costs will be reduced. The national economy will improve, and the basis of the welfare state will be strengthened.

These tasks are demanding since the attitudes towards age, to mention one challenge, are deeply rooted. Even a report on the future (*Finland for People of All Ages—Government Report on the Future: Demographic Trends, Population Policy, and Preparation for Changes in the Age Structure*) of the Finnish government itself contained false interpretations on, for example, the productivity of the older workforce. Some commendable results may have been achieved in Finland, but the problems brought by ageing are still far from solved.

Government policies on changes in the age structure of Finland

At the time of the aforementioned report, the Finnish government stated that it was striving to give Finland a facelift by creating work, entrepreneurship, and co-operation. Promoting the health of the population, preventing diseases, and supporting the individual's life-management skills, work ability, functional capacity, and independency are central goals of social and health policies. The goal of retirement policies is to create economic growth and general trust in a sound system and to promote conditions that help workers **cope longer at work** (Government Agenda, 24 June 2003, *www.valtionuuvosto.fi*).

The aim of the government is to ensure the full participation of citizens in worklife. It strives to extend the time people spend in worklife, improve the consolidation of work and family life, improve equality, and strengthen the appeal of work. The government is broadening its programs to develop worklife by taking into consideration small enterprises. The focus of development is as follows:

- promotion of equality
- consolidation of work and family life
- mental safety and well-being at work
- ability to cope at work and the intensification of worktime follow-up
- good management practices and knowhow
- maintenance of work ability
- special needs of the ageing workforce.

The government continues to state that preparations must be made to confront the retirement of the large numbers of ageing workers from the baby-boom generation. Jobs in the public sector must be made competitive, and

temporary employment should be made permanent. The mutual interaction between age groups should be strengthened in worklife so that the knowhow generated by extensive experience can be transferred to new workers. In addition, the government promises to promote possibilities for lifelong learning in worklife (Government Program, 24 June 2003, *www.valtioneuvosto.fi*).

The Ministry of Social Affairs and Health challenges current practices

The Finnish Ministry of Social Affairs and Health challenges contemporary practices. It enforces the government program in its own sector of administration that deals with the problems of worklife. The vision report of Finland for 2010 states, among other things, that

The work career will be extended by approximately 2–3 years, the functional ability of the population will have improved, the need of ageing populations to have access to care services will have been postponed and the differences in health within the population will have narrowed down.

The Ministry condenses the trends for social security in the forthcoming decades into the following four strategic policies:

- promoting health and functional capacity
- increasing the appeal of worklife
- preventing and managing marginalization
- developing efficient services and reasonable financial security.

These policies challenge the contemporary practices of worklife. In addition to containing suggestions to improve cooperation between public health work and special health care and emphasize environmental health, it advocates **strengthening occupational health care**, and **supporting the functional capacity of different aged people and lifelong learning**. In addition, the policies highlight **well-being in worklife, equality, and support for livelihood that creates motivation to work**. These objectives again emphasize the primary status of preventive policies.

The aim of the Ministry is that, in 2010, Finnish society will be socially vital, economically sound, and efficient and dynamic by nature. The social security system is still based on extensive solidarity. **The cornerstones for well-being are the maintenance of work ability and functional capacity and initiative.**

The work ability and functional capacity of the working population are promoted by making it possible for workers to continue to work longer. One pertinent matter concerning the older groups is compatibility between the

demands of worklife and physical and mental functional capacity. In occupational health care and safety, the prevention of mental problems in worklife is emphasized by giving it the same status as occupational accidents. Problems with work ability caused by ageing, as well as coping at work, and being able to continue to work are invested in by focusing on actions at the workplace. Rehabilitation is used to promote the ability of all segments of worklife, also that of the disabled, to continue to work. The workers' responsibility to maintain and improve their work ability is emphasized.

The Ministry of Social Affairs and Health still emphasizes the importance of life-management skills and the ability to learn new things in sustaining work ability and functional capacity throughout worklife. The strength of the national economy can be improved by intensifying education. Education in youth and adulthood form an entity that makes work more productive, delays the need to exit worklife, and enhances the equity in knowhow. The educational insurance that has been changed to educational support and education allowances supports workers that are entitled to unemployment benefits and intensifies their learning.

Public policies have already been used extensively to increase the appeal of worklife. These actions indicate that the challenge was taken seriously already at the end of the 1990s, and long-term development has been continued by political measures also in the beginning of the 21st century. The following list mentions the most important and recent actions to promote the appeal of worklife [from the presentation of Minister Mönkäre at the seminars of the VETO program (promoting the attractiveness of worklife) in 2005]:

- reforms to the earnings-related pension legislation 2005–
- Act on Equality between Women and Men 2005
- Act on Occupational Safety 2003
- Act on Occupational Health Care 2002
- Government Resolution on Developing Occupational Health Care 2004
- Prioritising Occupational Safety—Occupational Accident Prevention Programme 2001–2005
- reforms in early rehabilitation
- overall reform of the Act on Contracts of Employment
- consolidation of work and family-life
- the realization of the Occupational Safety and Health Strategy 1998 and its specifications 2002
- research and action program for coping at work 2000–2003
- workplace development programs 1996–1999 and 2000–2003
- proposals of the Resource Task Force for the Occupational Safety Districts 2002

- National Programme on Ageing Workers 1998–2002
- changes in the tax support system for individual pension insurance.

Actions on the government level create a sound basis for promoting the appeal of worklife on a macro-level. Finland is considered a progressive EU country because public policymaking actively confronts the age challenge. The Finnish model includes, however, the idea that, in addition to the public officials, the intermediate level (i.e., the support and supplier organizations) and micro-level (i.e., workplaces) should also actively participate in this work.

Finnish state-of-the-art model: national development programs

Finland is among the most active nations in the European Union when it comes to untangling the situation of the ageing workforce. Research has been done, and age programs have been carried out by the Finnish Institute of Occupational Health, the Ministry of Labour, the Ministry of Social Affairs and Health, and the Ministry of Education. The results are encouraging in that they have provided means with which to develop work conditions to fit workers of all ages. Finnish competency is based on, among other things, the following projects:

- Ikääntyvä arvoonsa [Respect for the Ageing] program: developing the health, work ability, and well-being of the ageing (1990–1996, Finnish Institute of Occupational Health)
- Committee on Ageing (1996, Ministry of Labour)
- National Programme on Ageing Workers 1998–2002 (Ministry of Social Affairs and Health)
- Coping at Work 2000–2003 (Ministry of Labour)
- Finnish Workplace Development Programme TYKES (2004–2009) (Ministry of Labour)
- VETO: program promoting the attractiveness of worklife (2003–2007, Ministry of Social Affairs and Health)
- KESTO: program for sustainable work career development (2004–2007, Finnish Institute of Occupational Health)
- NOSTE: program for uplifting the competency of working adults (2003–2007, Ministry of Education)

In 1990–1996, the Finnish Institute of Occupational Health carried out the Ikääntyvä arvoonsa (Respect for the Ageing) program to develop the health, work ability, and well-being of the ageing. The Institute tried out different measures to affect the work ability of workers over 45 years of age in both the private and public sectors in cooperation with universities and enterprises.

The paradigms and methods of the study were tested in practice and found to work (Ilmarinen & Louhevaara 1999).

This work was continued by the Committee on Ageing that was led by the Ministry of Labour and that proposed approximately 40 different actions to promote the situation of ageing workers (Ministry of Labour 1996a). The report of the Committee also included a broad survey on questions concerning the ageing workforce (Ministry of Labour 1996b).

Several ministries created the National Programme on Ageing Workers 1998–2002 together to carry out the recommendations of the report (Ministry of Social Affairs and Health 2002b). Because of the gratifying results it achieved, the program generated international interest. The summary of the program is presented in the following section. The program for coping at work of the Ministry of Labour examined worklife and work communities at the same time (Ministry of Labour 2002, Ministry of Labour 2003 a & b, www.mol.fi/jaksamisohjelma/svenska_english/eng_index.htm).

During the 1999 EU Council Presidency of Finland, an unofficial meeting of the ministers of the EU member states was arranged, along with numerous other events, to consider questions concerning the ageing workforce. Already at this point, it was noted that Finland had anticipated the age challenges of the workforce and was prepared for them. The EU members regard Finland as a pace-setter, as its active approach has also brought results. Finland improved the employment rate of 55- to 64-year-old workers, delayed the age of retirement, and reduced age discrimination in 1998–2003 proportionally the most in the European Union. These results are especially important in that the age structure of the Finnish workforce is one of the oldest in the European Union.

These results cannot, however, be interpreted as a sign of sustainable good development. Workers exit worklife far too early when the official retirement age is considered, and unemployment is still a problem. Notable improvements must be made before the dependency ratios will be reduced to an acceptable level. Even though the situation is worse in many other EU member states, these other members have more time to change than Finland has. Therefore, Finland cannot afford to wait for others to act. Solving the problems caused by the ageing workforce requires constant action and innovation and the ability to make the doctrines and experiences work in practice.

Finnish government officials, therefore, continue to initiate development programs that carry on where the previous ones left off. The VETO program (2003–2007), directed by the Ministry of Social Affairs and Health, encourages ageing workers to stay in worklife by adding to the appeal of

worklife and by urging young people to start working earlier. The program aims at combining occupational safety, health care, and social insurance still more concretely. The Act on Occupational Safety, the Act on Occupational Health Care, and the earnings-related pension legislation create new bases for actions and cooperation. The goal of the VETO program is to create new means of action and to develop and intensify existing ones (*www.klinikka.fi:VETO-ohjelma*)

The KESTO program of the Finnish Institute of Occupational Health supports the VETO program. The objective is to promote the work ability and functional capacity of citizens and the ability to continue to work and to develop work ability and occupational well-being at workplaces. The program gathers information and experiences from studies on the development of worklife practices. Information and experience is transferred to practical use through training and the distribution of information. KESTO has constructed a broad cooperative network that enables information to be passed on in practice (*http://www.ttl.fi/Internet/English/FIOH+in+action/Action+Programmes/Kesto/*).

The Finnish Workplace Development Programme TYKES (2004–2009) of the Ministry of Labour develops action methods to be used by Finnish enterprises and other work organizations. The program financially supports the development of occupational organizations through research that is based on cooperation between management and personnel. The aim is to improve productivity and the quality of worklife in parallel, the vision being that Finland would have a network of competency that would create national competitiveness, thus effectively promoting qualitatively sustainable production growth.

The total budget of TYKES is EUR 87 million, and the target-oriented annual budget is EUR 14.5 million. The program aims at providing support for approximately 1000 development projects and for the participation of about 250 000 workers—of which 45% is anticipated to be over 45 years of age. The cooperative network of the program includes public authorities and labor market organizations, enterprises, public communities, and third-sector occupational organizations, as well as research and development units (*www.tykes.fi*).

The NOSTE program (2003–2007) is administered by the Ministry of Education. The main goal is to improve the competency of working adults. The program was initiated by the labor market organizations and the Ministry, and it aims at helping the target group to stay in worklife and advance in their careers. It also aspires to affect employment and relieve the workforce shortages that are created by the retirement of large numbers of the ageing

population. The training provided by the program is mainly meant for 30- to 59-year-old adults who have ample work experience but who have only had elementary levels of education or do not have a certificate of further education, the lack of which, then, impedes employment. The program also supports 35- to 59-year-olds in finishing their elementary education (*www.noste-ohjelma.fi*).

National Programme on Ageing Workers 1998–2002

The following section is the concluding report of the National Programme on Ageing Workers 1998–2002 from the publication *Ikäohjelman monet kasvot* [Many Faces of the National Programme on Ageing Workers 1998–2002] (Ministry of Social Affairs and Health 2002b).

The objective of the National Programme on Ageing Workers was to strengthen the status of ageing persons in the labour market as well as to improve their possibilities of staying at work and help them get employment. The programme is based on the proposals of the committee surveying the prerequisites for ageing (45–55 years) and older (55–65) persons to be employed and work (Committee Report 1996:14). The Finnish Government made a decision-in-principle to start the Programme on Ageing Workers in February 1997.

The programme consisted of comprehensive information and training projects carried out simultaneously in different administrative sectors. It also aimed at promoting activities to maintain the working capacity of the labour force, boosting employment and producing knowledge to create positive attitudes towards ageing and older persons. Under the terms of the programme, resources were directed to the services provided for ageing and older people by the labour administration, occupational safety and health authorities and authorities of education. The programme also included extensive research and development projects carried out in work units. Comprehensive developments in legislation were also achieved under the “umbrella” of the programme.

The National Programme on Ageing Workers was conducted in 1998 - 2002. It was funded from the state budget and a total of FIM 25 million was reserved for that five-year period. The main responsibility for the programme was borne by the Ministry of Social Affairs and Health; other responsible parties were the Ministry of Labour and the Ministry of Education. One of the programme’s main targets was to influence general attitudes. Using various means of communication, discussion on the status, opportunities and strengths of the ageing labour force was stimulated both in the media and workplaces, and among the general

public. The experience of older people as a “national asset” was emphasised in information. It actually seems that the attitude towards older people in working life has become more positive.

Training had an important role in the Programme on Ageing Workers. Following the principles of life-long learning, resources were directed especially to improving the knowledge and skills of adults with an incomplete basic education and inadequate facilities for learning. To raise the level of vocational skills, conversion education, tailored training programmes, professional exams, apprenticeship systems and working life-oriented continuing studies for the vocational post-secondary level were developed. The programme offered older people better opportunities to learn and educate themselves when more education was provided for them.

Training was also provided for the authorities in charge of services, such as occupational health care staff, occupational safety and health personnel, the personnel of the labour administration, and teachers in adult education. The purpose was to take account of the age aspect in all the measures implemented and to root the objectives of the programme in daily activities.

In the programme attention was also paid to developing managerial skills and management culture. The purpose was to educate managers to take account of the age aspect when planning tasks and directing operations, and to develop good practices. A network of educational specialists was created in connection with the projects. Flexible working time solutions, such as part-time pension and leave of absence, have contributed to the development of work units and well-being at work.

In the research projects launched within the Programme on Ageing Workers, great attention was paid to maintaining the working capacity of the labour force, developing working life as well as to health and safety at work, age-based management, age discrimination, and to teaching older people and supporting their abilities to learn. On the basis of research results, enterprises have been provided with tailored development plans which are utilised to produce good practices and models for general use. The cooperation between research and service systems was developed in connection with an extensive survey on the needs for services among long-term unemployed older people.

A new Occupational Health Care Act came into force at the beginning of 2002. The reason for revising the act was, besides the changes in working life, especially to meet the needs of older employees while the

baby-boom generation is approaching the age of retirement. In the programme attention was also paid to ensuring a sufficient number of occupational health care personnel and the quality of their professional skills.

The action for maintaining the working capacity of the work force is one of the priorities in the activities of the occupational safety and health administration, and thus the objectives of the Programme on Ageing Workers have been taken into account in all supervision activities. In this work the administration's cooperation partners are the Employment and Economic Development Centres, occupational health care personnel and the departments of social affairs and health in the provincial governments.

Towards the end of the 1990's rehabilitation has been increasingly directed to over 45 year-old persons in working life. The volume of occupational rehabilitation arranged by employment pension institutions has been growing during the 1990's. To maintain and improve the working capacity of those at work, rehabilitation methods have been developed by the National Social Insurance Institution. In the light of experiences, rehabilitation carried out in different forms and by different methods is important for maintaining, improving and restoring the person's working capacity.

The Programme on Ageing Workers also included monitoring the volume, content and results of the action for maintaining working capacity. A barometer was developed for this purpose. It revealed (evaluations in 1998 and 2001) that the conditions for older employees to continue working seemed to have improved a little. The action for maintaining working capacity has been established in practice and slightly extended.

The labour market status of ageing persons has also been addressed by legislative measures. The purpose has been to defer retirement on the one hand by restricting benefits, and on the other hand by changing their content to encourage people to continue working. The pension legislation was comprehensively reformed at the beginning of 2000, and further legislative measures are being planned. The labour market organisations have had an important role in this work.

The service system of the labour administration was readjusted by research, development and experimental activities to meet the needs of ageing job-seekers. The aim was to consider the age issue in all activities of labour administration.

Due to the nature of the Programme on Ageing Workers many of its goals will be reached only during a longer period of time. The follow-up data shows that changes have taken place in line with the programme

objectives. The age for retiring on a pension has been increasing during the programme. The real age of retirement, including retirement by way of unemployment pension, has also risen. During the programme period the rate of employment has generally risen but among older persons (age groups of 55-59 and 60-64) it has increased more than the average and thus come close to the employment rate of the other age groups. Long-term unemployment among older persons has also reduced in recent years.

The Programme on Ageing Workers was conducted in the different sectors of administration by means of management by objectives and special projects included in wider development programmes. The programme had a follow-up and evaluation system. The internal audit took place by means of annual reports and the working capacity barometer.

The international peer review was carried out within the Peer Review Programme supporting the European employment strategy in 1999. The external evaluation was conducted by the evaluation group of Sosiaalikehitys Oy in January 2002.

(<http://pre20031103.stm.fi/suomi/tao/julkaisut/ikaloppulikaohjelmankasvot.pdf>.)

It is naturally difficult to prove a cause–effect relationship between the National Programme on Ageing Workers 1998–2002 and the situation of ageing workers in Finland. However, during the program in 1998–2002, many things changed in favor of the ageing, when the situation is compared with that in the other EU member states. For example, the employment rate of the 55- to 64-year-olds improved more in Finland than in other countries (by 12 percentage points), and the retirement age increased by almost 1.5 years to 59.5 years. The confidence of people over 55 years of age increased to the point that they believed it possible to continue to work in the same job for the next 2 years. Approximately three-fourths of workers over 55 years of age thought that their work was well organized. Age discrimination, for its part, had decreased the most clearly among both the youngest (<29 years of age) and the oldest (>55 years of age) groups of workers.

Both national and international evaluations have considered the National Programme on Ageing Workers 1998–2002 to be a success. It has received notable attention especially in the EU member states. The success has been generated by many structural, political, and economic factors, as well as by factors related to the program.

The National Programme on Ageing Workers 1998–2002 is more easily realized in countries with small populations. In addition, a homogeneous population base facilitates its execution. The Scandinavian model of a welfare state, along with its values that strive to consider also ageing workers, offers a good foundation for the age program. A high level of knowledge and competency of occupational health professionals is a sound basis for different actions.

The age program was actively supported by labor market parties. Both employee and employer organizations felt that improving the employment of ageing workers was an important mutual goal. The so-called tripartite system of the labor market organizations and the state has proved to be an effective system in solving questions related to worklife, especially those concerning income policy. A special strength of the age program was, however, the cooperation between ministries. The Ministry of Social Affairs and Health, the Ministry of Labor, and the Ministry of Education proved that a mutual goal and coordinated actions create great extra value and effectiveness.

During the age program the economy thrived, and, therefore, investments were encouraged and employment possibilities in general improved. At the same time, Finland's self-confidence was boosted by international evaluations that ranked it among one of the most competitive nations in the world. This trend built faith in success also in confronting the age challenge.

Despite the successful effects of the national age program, the problems of the ageing workforce have not, by any means, been permanently solved. Unemployment is still high among the ageing, and the return of occupationally marginalized sectors to worklife is scarce. The actual age of retirement has not continued to rise, even though the retirement reform that began in 2005 may affect the situation positively. The small number of younger workers available to replace the baby boomers as they retire in 5–10 years may lead to a shortage of workers and thus accelerate effective immigration policies. The good practices that the national age program developed, tested, and carried out should be distributed more broadly and with efficiency into Finnish worklife. This work is being continued by new national programs, VETO, KESTO, TYKES and NOSTE, among others.

Pension reform—a stimulus for worklife reform

A broad revision of the Finnish earnings-related pension system became active in the beginning of 2005. The revision primarily aimed at generating savings when people retire at older ages. One action was to tighten the terms for early retirement. In addition the terms for part-time pensions and early

old-age pensions became stricter, and unemployment pensions and early retirement pensions will gradually cease to exist. Senior workers are being encouraged to work by offering them an increase in the accrualment percentages set for pensions and new opportunities for rehabilitation. The pension reform was initiated to ensure the following:

- that the promised earnings-related pensions can be paid
- that the earnings-related pension contributions will remain reasonable
- that Finnish competitiveness and employment will be sustained
- that the worklife of citizens will lengthen and, as a result, improve the employment rate and decrease the dependency ratio.

Those benefiting from the reform include the young and old, students, and parents of small children, whose pension benefits have been increased. The most obvious winners in the new system are, however, people in their 60s who stay in worklife longer. Their work contribution will add an accumulation to their pension of 4.5% a year from the age of 63 years to the age of 68 years.

Central changes made in the earnings-related pension system:

- From the age of 18 years, all earnings add to workers' pensions.
- The percentage of accrualment increases with age: by 1.5% for 18- to 52-year-olds, by 1.9% for 53- to 62-year-olds, and by 4.5% for 63- to 68-year-olds.
- For people 53 years of age or over, a higher contribution to earnings-related pensions will compensate for approximately one-third of the costs of the pension accrualment increase.
- The 60% maximum limit for pensions has been removed.
- A flexible retirement age has been introduced for old-age pensions—the pension age ranges from 63 to 68 years, and it is decided upon by the individual.
- People 62–65 years of age are entitled to take early retirement, and, if so, their pensions are permanently reduced by 0.6% (maximum of 7.2%) for each month that the pensions are taken early.
- A wage coefficient that maintains gained pension rights has been introduced, and a unified pension index has been created for retirees.
- A life expectancy coefficient has been introduced—an increase in life expectancy reduces the monthly pension payment.
- The right for an individual early retirement pension will cease to exist for those who born in 1944 or later.

- The right for a disability pension emphasizes the vocational nature of work disability (i.e., a long career and a strenuous job).
- The threat of work disability is prevented by the right for vocational rehabilitation (since 2004).
- The conditions for unemployment pensions will remain the same for those born in 1949 or earlier; younger workers will maintain the right to an unemployment daily allowance until the age of 65 years and can retire at the age of 62 years on a pension based on earnings.
- The legislation in force before the reform applies to those who are on part-time pension or were born in 1946 or earlier; the following conditions concern people born in 1947 or later: the minimum age limit is 58 years and the accrument for the old-age pension has somewhat decreased.
- Extra reserve funds will be accumulated by 2013 with 7.5% of the insured wages.

The reform of the earnings-related pension system is versatile. It offers benefits for those who extend their career, while it tightens the conditions for an early exit from worklife. The success of the new system depends, however, on people's conceptions and worklife experiences. Therefore, the new pension system needs worklife reform to complement it. Everyone should have equal rights to pursue an extended career; therefore, significant improvements are vital in heavy and straining occupations in order for workers to be able to keep working longer.

Worklife reform will not succeed without a new concept of management. An important new approach for management is the ability to lead different aged workers. Chapters 4–6 introduce the ageing of the workforce from the point of view of enterprises. Age management and its background and directives are explained, and examples from single enterprises are presented.

Report on the future: Finland for people of all ages

The Finnish government has published a report on the future that presents a diverse and broad review of the challenges posed by ageing. It covers demographic trends, population policy, and preparation for changes in the age structure. The objective is to ensure the well-being of people, to find economically sound and socially equal solutions for all generations and for both genders (Prime Minister's Office 2005). At the same time, the report reveals how tightly age-related misinterpretations are rooted.

The demographic trends are expected to affect the Finnish society in many ways. According to the review, the greatest challenges lay in the following:

- the accessibility and quality of the workforce and its regional and professional mobility
- the continuity of economic growth
- economic balance in the public sector
- the supply and accessibility of services.

The changes can also create new opportunities for the economy, worklife, and the individual. Cost savings can be attained by increasing efficiency. Unemployment can be decreased and regional differences can be narrowed. Worklife can be revised and values changed. In this manner, culture, values, experience, and communality can be better appreciated.

Work and society is expected to change in many ways. As the workforce becomes smaller and older, more must be invested in the well-being and coping of people at work. The focus will be on education and learning and the atmosphere and management practices in work communities, because these features will create a boost in productivity. The change in age structures will renew organizations, and the cooperation of different aged workers will create a competitive edge as experience and new school knowledge are combined. The retirement of the baby boomers will also provide good opportunities for the re-evaluation of work and work methods.

It may be that an aged society will be less dynamic than a young one, but it will also be more experienced, more capable of reflection, and wiser. The older population can, nevertheless, be an active part of society. If the resources of older workers are directed towards managing common affairs, new meaning may be given to communality. A new long period of life, the so-called third age, will change and add to the demand for services. The new and large, albeit heterogeneous, group of consumers can affect the development of, for example, welfare services in many ways.

According to the report, the largest threat from ageing will be to economic growth, which is anticipated to decline. The reduction in the workforce will cut work contributions. It is supposed that the ageing of workers will slow down productivity since they will not be able to produce as much as younger workers in the changing circumstances. This point of view emphasizes an old-fashioned and false attitude towards the productivity of seniors, which is rectified in Section 4.4 “Economic Aspects of Ageing” of this publication.

The report on the future suggests that we must prepare for the change in the age structure in a coordinated, extensive, and persistent manner. The Council of State emphasizes the importance of investing in health and functional

capacity, increasing productivity and employment, and making use of the resources of older workers.

Health and functional capacity must be promoted at all stages of the life course and among all age groups, according to the review. Special mention is given to the health and functional capacity of men in the conclusions of the report. It is the responsibility of social and welfare policies to create health-promoting opportunities for people. The importance of culture and physical activity services with respect to the physical and mental well-being of people is also considered.

New means with which to increase the employment rate and productivity are needed. Management is given an important role in the justification for work-related immigration. Diversified working communities and management practices must be especially developed, and non-discriminate work environments must be promoted. Whether the questions concern the ageing or those immigrating, new requirements for management and work communities will arise.

The report on the future emphasizes the role of good management because productivity is dependent on management to a great extent:

Good management must also be encouraged in the public sector through workplace development programmes and by devising reward systems and other good management practices. According to the principle of so-called age management, special attention will be paid to considering the needs of workers of various ages.

(Prime Minister's Office 2005).

Report on globalization: a competent, open and regenerating Finland

The final report on Finland in the global economy examines the challenges created in a new stage of globalization and how these challenges should be met (Prime Minister's Office, 2004). The report considers ageing an important topic, but it is primarily written from the perspective of the anticipated threats of ageing and provides few solutions. The experiences and knowledge offered by age programs have not been presented in the report.

It is estimated that, because of the ageing of the population, Finland will be in a defending position for the next 10–15 years compared with the other EU member states, not to mention North America. The report states that older workers have poorer prerequisites than younger age groups for adjusting to changes in production, and this situation is anticipated to offer great chal-

allenges for worklife and the workforces in general, as well as for the development of the social security system. A notable problem is posed by the increase in pension, health, and care costs that put pressure on the tax system.

A strategy is proposed to strengthen and revise the competency, economy, and social openness of Finland. The report focuses on enforcing the education and innovation systems and suggests methods to enhance the efficiency of marketing, the workforce, and public services.

It is important to have an efficient vocational adult education system based on the needs of worklife because jobs will both appear and disappear rapidly as a result of technological change and tightening international competition. Occupations will disappear, qualifications will expire, new skills and competencies will be needed, and new occupations will be born. As workers should extend their careers, it is important to sustain and develop their occupational skills, motivation, and productivity.

Finland's position is demanding. The challenges of globalization and technological development must be met, while, at the same time, employment must be increased as the workforce ages. According to the report, ageing may hinder the flexible replacement of the workforce and the renewal of occupational competencies. Along with the problems caused by ageing, Finland has a difficult situation in relation to employment, because it has more younger and older unemployed people than other Scandinavian countries. To a great extent, the unemployment that strains the Finnish labor market is structural in nature.

According to the report, increasing the flexibility of workhours is a valid means with which to adjust to the fluctuation in demand from the point of view of enterprises. The use of part-time employment should be increased to consolidate worklife and other demands in life, such as ageing. According to the report, a part-time pension system is beneficial, but the pension equity of the old-age pension should be reduced accordingly for those on part-time pensions.

The report on Finland in the global economy depicts a grim image of ageing. Although it cannot be held responsible for validating age discrimination per se, it does not present age-strategic measures that would use the ageing and experienced labor force of Finland as a strengthening factor.

2.2.2 Evaluation of the new age policy of Finland

The central objective of the new age policy that emerged from the reports of the Committee on Ageing (Ministry of Labour 1996a & 1996b) was to keep older workers in worklife. It recommended that early retirement pensions should not be used to alleviate the employment problems of older workers; instead, their employability should be increased. This stand reversed that of previous policy. The use of early retirement was becoming too expensive, and it was not only leading to the squandering of the workforce, but also to an undervaluing of the contribution of older workers. If the revision had not been made, the working age groups would have no longer been able to raise their standard of living, or, alternatively, the standard of living of the elderly would have had to be reduced. To prevent a conflict between generations, the costs of early retirement had to be reduced, and the employment of the older generation improved.

The second step was then for the National Programme on Ageing Workers 1998–2002 to start executing the new age policy. During the program, the employment rate of 55- to 64-year-old seniors improved rapidly. In 1994–2004, it rose by as much as 17 percentage points. The employment rate of 60- to 64-year-old workers rose 12 percentage points, respectively. These results are the most successful in the European Union.

According to Sihto (2005), the success of the new age policy should be examined also from the point of view of the development of unemployment. The result is a completely different image. The unemployment of the 55- to 64-years-olds started to rise after 2002, as has that of the 60- to 64-year-old group. The different trends of employment and unemployment among older people have most importantly been affected by the flow from worklife to unemployment. Continuing longer in worklife increases the employment rate and decreases unemployment. On the other hand, as soon as older employees are laid off, it is increasingly difficult for them to return to work; and, even if they succeed, the employment periods are short. In other words, the reduction in early retirement pensions seems to have led to an increase in both employment and unemployment among the ageing.

The good experiences of Finland in increasing the employment rate can be explained by, for example, the good general development of employment and the so-called cohort effects, that is, the special characteristics of the baby boomers in comparison with the characteristics of their predecessors: better health and a higher level of education. This effect cannot, however, explain the positive trends because the employment rates of the same cohorts elsewhere in Europe have not risen. The employment rate of 60- to 64-year-old workers, who do not belong to the baby-boom generation, improved as

well in Finland. On the other hand, the size of the baby-boom generation may partly explain the rise in employment rates. Accordingly, it is presumable that, when the baby boomers become 60–64 years of age, by 2010, the employment rate of the entire ageing population will decrease by about 4.5 percentage points (Sihto 2005).

Labor force and retirement policies expedite age policies. The two have different roles in the process, but several perceptions of these roles have been presented. Nor is there a uniform view of the time span in which labor force and retirement policies have affected age policies (Ilmakunnas & Rantala 2005). It is, however, the mutual objective of both labor force policies and retirement policies to increase the employment rate of older employees. This goal can be reached by increasing cooperation between the policy sectors and by clarifying their roles.

From the point of view of age politics, the focus should be drastically shifted towards the reintegration of ageing unemployed people into worklife. This effort is something with which all countries have failed miserably, including Finland. The National Programme on Ageing Workers 1998–2002, nevertheless, affected Finnish age politics both mentally by changing attitudes and concretely by changing ways of action. The different agents—the government, the ministries, the labor market parties, the different supplier organizations, enterprises—were all active and pulled together. The overall effect of the different activities appeared as good results. The early retirement pensions underrated the skills and importance of older employees, and thus these backward attitudes were disposed of. The significance of the ageing population in relation to worklife was evaluated from the point of view of their qualities, and this assessment made a difference. It is, therefore, possible for national programs to prepare the grounds for improving age policies.

OECD evaluates the age challenges in Finland

The OECD (Organization for Economic Co-operation and Development) has prepared so-called country reports of approximately 20 nations. In these reports, the causes and consequences for ageing and age policies are evaluated. The OECD also introduces proposals for member states to support national strategies (OECD 2004).

The evaluating body was critical of Finnish age policies, but it also recognized Finland for its actions. According to the report, progress has been made in Finland. The pension system has been revised, working has been encouraged, and the work ability and employment of the ageing has been promoted by the National Programme on Ageing Workers 1998–2002.

These actions do not suffice, however, according to the OECD. On the contrary, the following steps should be intensively approached:

- The reform of other pension systems and unemployment policies should be initiated.
- Obstacles to hiring and employing ageing workers should be eliminated.
- Employment options of the ageing should be improved by, for example, means of education.

The report estimated that the effects of Finland's pension reform on employment were minor since the channels of early retirement were not examined. The unemployment pension path was transferred into the unemployment path to retirement (unemployment daily allowance until the age of 65 years), and suddenly older workers had special security when compared with other unemployed people in Finland. Even though the participation of older people tripled in the activities of the labor administration after 1997, their employability is still very limited. Thus the unemployment path to retirement can be perceived as a more honorable solution for older workers than the continuous and frustrating struggle to return to worklife.

According to the OECD, senior workers are expensive from the point of view of the employer in Finland, because certain expenses rise significantly along with age and the size of the enterprise. In Finland, large enterprises with over 800 employees are solely responsible for the disability and unemployment costs of their workers, whereas the respective costs of smaller enterprises with less than 50 employees are paid by society. Therefore, it is often economical for the employer to let an ageing worker with a threatening disability go. Although the risks have been slightly decreased by the 2000 changes, the last employer of an ageing worker is still primarily responsible for an ageing worker's disability and unemployment costs.

The Act on Age Discrimination has not prevented prejudices at workplaces. According to the OECD report, the lack of sufficient vigor in the intervention of age discrimination practices and the lack of legal protection for the displaced have been two of the main causes. The age attitudes of supervisors were also criticized. Middle management was especially reprehended since it is the body mainly responsible for recruiting and training decisions. As older workers are generally less educated and training is less common among them than among workers of other ages, advanced training and further education of the ageing should be a special interest. According to research, tight work schedules are one of the main reasons why older workers cannot participate in training. Work arrangements and schedules should be adjusted to allow older workers to develop their professional skills. Appropriate teaching and

learning methods should also be used in the training of senior workers.

The work conditions of ageing workers were heavily criticized in the OECD report. Factors such as Finnish work conditions, tasks, and flexibility were ranked relatively low in the comparison of OECD countries. The report suggested that the prevalence of occupational health problems among Finns could result from poor work conditions. According to the results, nearly half of Finnish men over 50 years of age and 22% of women in the same age range did heavy physical labor. Problems related to the workload of heavy labor in physical jobs are known to increase the risk of work disability with age.

Moreover, the report also paid attention to the general unemployment rate of men in Finland, the small number of workhours, the motives for part-time work, especially the rareness of part-time work among women, the reasons for laying ageing workers off, the benefits and disadvantages of occupational safety legislation, and the systems of accrument. Finally, the significance of immigration and increasing the birth rate was discussed. Even though the report is rather critical, it presents many good elements for rectifying the situation of ageing workers in Finland.

2.2.3 Does the pension reform extend careers?

The Finnish pension reform became effective in the beginning of 2005, and it offers a flexible retirement age (63–68 years) (see the earlier section on pension reform in Section 2.2.1). The system contains an accelerated accrual rate (4.5% per year) that notably improves retirement benefits. In addition workers now have a subjective right to decide that they want to keep working or retire. Third, the so-called life expectancy coefficient was introduced that calls for a cut in the monthly allowance if life expectancy increases.

Other details of the new system are the removal of the individual early retirement pension, the objective to decrease the number of disability pensions through the use of occupational rehabilitation, and the transformation of the unemployment pension into an unemployment daily allowance. Thus the new system contains many important changes that aim at extending the career of citizens by 2–3 years when compared with the current situation. The following section introduces the pension reform and presents some results of studies on whether or not ageing workers intend to extend the length of their careers.

Do Finnish workers intend to extend their careers?

The general view on the intentions of workers to continue working is that approximately half consider the age of 60 years to be an appropriate retirement

goal and about 25% are ready to work until the age of 63 years (Ahonen 2004, Forma et al. 2004, Hyrkkänen 2004, Takala 2004, Tuominen 2004). These views vary somewhat, however, depending on the sector of trade and gender.

Factors that motivate an exit from worklife in the public sector include diseases and strenuous and excessive work. Factors that promote coping at work, on the other hand, entail job security and the assurance of well-being at work. The well-educated cope with work longer than others.

Sickness absences are more prevalent among the municipal and state workers than among workers in the private sector. The situation in the municipal sector is also affected by the physical and mental strain of work. An acute concern in the municipalities is whether the workload will exceed the tolerance of the workers. On the other hand, the strength of the public sector is its job security and the continuity of employment in comparison with the unexpected and sometimes mass notices of layoffs given in the private sector, where workers have no actual protection against changes. The public sector has also clearly invested more in the well-being of workers than the private sector has.

Employees in the state sector are the most highly educated, and their level of education may have an important effect on intentions to continue to work. The different characteristics of the sectors also explain the different situations of workers and may be reflected in workers' decisions about retirement.

The effects of the accelerated pension accrual have also been estimated. The private sector regards the incentives more confidently than the public sector does. The 68-year objective is considered more feasible in the government sector than in other sectors. On the other hand, poor coping at work is predicted in the municipal sector, and exiting worklife may also be affected by the current lower ages of retirement.

Women are more reluctant to consider a delay in retirement than men. In other words, the longer lifespan of women does not seem to transform into longer years of worklife. Reasons for this lack of change probably need to be searched for in worklife itself, its appeal, and its compensation systems. The "lesser" status of women in worklife or the long-lasting double load of balancing between needs at home and worklife may affect women's plans to exit worklife. On the other hand, Nurminen's study estimates that women's workhours in 2006 will exceed those of men in Finland. Whether this difference can be interpreted more as a "lesser" result for men than as a "better" result for women remains to be seen (Nurminen et al. 2004a).

The significance of age with respect to intentions to continue to work is interesting. Workers over 60 years of age seem to consider continuing in

worklife more often than other ageing workers. This difference can apparently be explained by selection. If people crossed the 60-year age boundary in their careers, their attitude must be reinforced by sufficient resources and an appropriate job. In addition, it is natural for young people to find it hard to take a concrete stand on how long they might want to work. The job in which the question of continuing to work would arise, say, 20 years from now, may be totally different from the person's current job. Changes in health are hard to anticipate as well.

A high level of education, good health, support from the workplace, ability to affect one's work, and good supervisory leadership are factors that often explain willingness to continue to work. A long career, on the other hand, reduces the willingness to continue to work. This notion indicates that people have a mental picture of what is a reasonable length for a career, and this length is determined by, among other things, the amount and quality of their work. Apparently, a long career is not a burden in good jobs, because employees over 60 years of age are the most eager to continue working. On the other hand, a long and physically strenuous career from, say, 16 years of age, which is a typical history for a member of the baby-boom generation, would tire anyone out after 40 years of labor. Support from the workplace is manifest in actions of the employer. If the "pension path", for example, has been amply used as a means of giving notice in an enterprise, the interest of remaining workers to continue in worklife will lessen.

Despite reform of the pension system, many workers seem to plan early retirement. Half of workers consider 60 years of age an appropriate goal, but it is unclear why this specific age is so popular. Another landmark age is 58 years, which is apparently related to the minimum age for a part-time pension. The age of 63 years is also a clear target. It is the same as the earlier retirement age in the public sector and the borderline age for retiring in the new system. The general retirement age for those in the public sector, 65 years, is also in the minds of workers. Old practices and familiar retirement customs still seem to influence people, even though now more individual and flexible options exist. It remains to be seen if a more individual and flexible attitude towards retirement issues will catch on in the future.

Part-time work has generally been regarded as a natural and acceptable option for full-time employment with ageing. Part-time work has increased also in Finland because the flexibility of worklife has increased and the service sector has grown, for example. Part-time employment has also been supported by administrative means. It is either pursued or avoided. For many, especially in Finland, it may many times be a form of underemployment. People with both low-paid and well-paid jobs are interested in part-time work. Among

low-paid people, part-time work is wanted because of the workers' poor financial situations. It accumulates towards the old-age pension that would otherwise fall behind because of short or fragmented periods of work. The well-paid, instead, can afford to work part-time. They also want it and use the free time for other goals in life.

Part-time retirement is also a popular and safe way to ease the workload as retirement age approaches. The new pension system does not change the rules for part-time pension. One can retire part-time at the age of 58–67 years. To do so seems, however, to bring full-time retirement closer, either because of poor health or the mental strain caused by work. Apparently, it is not possible to rectify or compensate fully for the effects of a long and tiresome career even with part-time retirement.

Entrepreneurs differ from other workers in their attitudes towards a longer career. This situation is the same as before the pension reform. Approximately one-third of entrepreneurs calculate that they will work until the age of 63 years, and one-sixth plan to work until the age of 65. Working while on old-age pension is not an unfamiliar idea either. The prerequisites for a long career consist of good health, good work conditions, and economic security. Entrepreneurs carry private retirement insurance three times as often as other employees.

The additional voluntary security for retirement is thought to affect retirement decisions. Approximately 18% of Finnish employees carried voluntary retirement insurance in 2003. About 8% had saved for old age. Age and health did not explain the popularity of the voluntary additional security. The additional security had generally been sought to make early retirement possible. Every second 45- to 64-year-old entrepreneur had had this idea in mind. Some had aspired to increase their pension, and the additional security encouraged them to continue to work.

An additional pension paid by the employer is available to 19% of 58- to 63-year-old employees, and 15% have private retirement insurance. It is, therefore, possible for the employer to support a lower retirement age or a higher pension; early retirement seems to be the more popular option. The importance of private retirement insurance has lessened, however, since the pension reform was initiated. To benefit from it, the minimum age is 62 years. If a person retires at this age, the pension for old age decreases, and the accelerated accrual will not accumulate after the age of 63 years.

Work and work ability as predictors of intentions to retire

Earlier studies have shown that thoughts of retirement are related to actual retirement (Huhtaniemi 1999, Ilmarinen 1999b, Huuhtanen & Piispa 2001). A 16-year follow-up in the municipal sector examined the realization of thoughts of retirement (Huuhtanen & Tuomi, unpublished manuscript, cited with the permission of the authors). The report presents information on the work and work ability of the study participants from 1981 on, and the thoughts of retirement were investigated further in 1992. In 1997, the study participants had retired. In 1992 the cases (n=1067) were 55–63 years of age. The results confirm that thoughts of retirement have a strong relation to actual retirement. The earlier observed factors that created and prevented thoughts of retirement are realized in practice.

The study showed that work-related **thrust factors** that accelerated workers' orientation towards retirement especially included disadvantages related to physical work and the work environment, the uninspirational and binding nature of work, the mental load of work, and the difficulty and reluctance to go to work daily. **Appealing factors** that prevented thoughts of retirement included responsibility for people, good work ability, job satisfaction, and opportunities to develop and contribute to work and to make use of one's work experience.

External factors that supported continuing to work included regular physical activity, good social relationships, and control of one's life, and satisfaction with one's life. On the other hand, poor health, poor conditions in life, financial problems, and fear of the future accelerated thoughts of retirement.

It is, therefore, worthwhile to take serious notice of the appeal of work early on. In the study, thoughts about work affected thoughts of retirement 10 years later, and these thoughts, then, created the grounds for retirement. Workers also changed with age. Their focus shifted from factors concerning the work environment to the physical and mental strain caused by work. Issues related to the work community were emphasized among the appeal factors; instead of the emphasis being on opportunities to develop and contribute, the focus shifted towards making use of work experience.

The realization of expectations about retirement revealed surprising aspects. Freedom from schedules corresponded with the workers' expectations, but retirement life as a whole did not. There was not enough time for hobbies, schedules remained tight, and there was still not enough time for family and social relationships, contrary to expectations. In practice, the retirement of one's dreams and expectations proved to be idle time that people did not

know how to use. The departure from the occupational role may have made people less active.

The longitudinal study provided a good picture of the factors that predict retirement. Thoughts of retirement can be reduced by adding appeal to work and promoting work ability. It would be worthwhile to include thoughts of retirement in the supervisor–employee discussions held in conjunction with work development. It would then be possible to compile personal risk factors that strengthen thoughts of retirement and, then, to take preventive actions (Huuhtanen & Tuomi, unpublished manuscript, cited with the permission of the authors).

Will worklife be extended? The answer seems to be “yes” according to the research. How much it will be extended will be remain to be seen. It may be that retirement at the age at 63–65 years will become a trend, one which would mean a significant increase over the actual age of retirement in 2005. The results of a survey commissioned by the authorized pension provider concurred with this notion (TNS Gallup Oy 2004). In 2004, 64% of Finns thought that over 60 years of age was an appropriate time to retire, when the respective figure was 31% in 1998. Approximately 40% of the respondents who answered the question “If you were 63 years of age, would you retire or continue to work?” thought that continuing to work was an option. There was no notable difference in the responses obtained from the white-collar and blue-collar sectors.

According to the flexible retirement project, employers had more positive views of options to continue to work than employees did. What is interesting is why. One interpretation is that there is actual preparedness for supportive actions at workplaces. The pension reform intends to focus even more on readjusting management and worklife.

Employers and flexible retirement

The employers had positive views on the revised retirement system and the flexibility it offers (Tuominen et al. 2004). Employers estimated that, in approximately one-fourth of workplaces, the need for a larger workforce will grow. The state sector was an exception, where the number of jobs will decrease. At approximately half of the worksites, it was thought possible to hire more workers over 55 years of age, especially in the municipal sector and the least in the state sector. What was gratifying was that four-fifths of the employers had a positive attitude towards part-time work. Too, at approximately two-thirds of the workplaces, especially in the municipal sector, it was estimated that temporary or part-time jobs could be offered to retirees.

The result was interesting from the point of view of part-time jobs. Earlier it seemed that there were restrictions to organizing part-time work, but now there seems to be no obstacles from the point of view of the employer.

The employers have positive attitudes towards flexible old-age retirement because it allows freedom of choice and the ability to take individual situations related to issues such as health into account. Only approximately 25% of the employers had negative views of the pension reform, and in these cases the causes for criticism were the high age limits and the strenuousness and demands of the work. The 68-year limit was especially thought to be too high, reachable for only a fraction of workers.

An interesting question is who will decide about retirement. According to the new system, everyone has the subjective right to do so, but there is no experience as yet as to whether this will be the case. Most employers (73%) thought the worker and the employer should make the decision together. On the other hand, 14% was of the opinion that the worker should be able to decide whether or not to continue to work after the age of 63 years, and 7% thought the employer should have the power to decide. The surveys also revealed that there is not enough practical knowledge of the new retirement system at the workplace level. Only 15% of the employers thought they had a sufficient amount of information on the subject.

The employers were positive about the subject of whether or not workers will be allowed to continue to work until the age of 65 years. At approximately 50% of the workplaces, it was thought that workers could continue to work until the age of 65 years. There were no notable differences between the sectors. However, working up to the age of 68 years was considered possible only at 20% of the workplaces, the least in the municipal sector (11%).

Thus, according to the responses of employers, it seems that there are many more opportunities to continue to work than there are employees willing to work. Of the employees, about 20% believed they would cope at work until the age of 65 years, and only 2% thought they would work to the age of 68 years. The employers were satisfied with the accelerated pension accrual, and one-third of the employers believed it would have a positive effect. Of the workers, approximately one-fourth had the same opinion. Workers with government jobs had more faith in the effectiveness of the accrual system than workers in other sectors.

Continuing to work was supported in at least every other workplace. Some support was given at 46% of the workplaces, and it received strong support at 14% of the workplaces. Support was more common in the public sector than in the private sector and also more common in larger workplaces than in

smaller ones. The most important means of support provided by workplaces to help workers continue to work include the following:

- good work environment (71% of employers thought it to be important)
- atmosphere of the work community (82% of employers thought it to be important)
- flexible workhours (32% of employers thought it to be important)
- additional training (40% of employers thought it to be important)
- supervisory actions (68% of employers thought it to be important)
- opportunities to affect work (56% of employers thought it to be important)
- possibilities for rehabilitation (34% of employers thought it to be important)
- increases in wages (22% of employers thought it to be important).

The employer has focused attention on many factors that support workers continuing to work. A good work community and environment, supervisory actions, and possibilities to affect work are also all factors that affect work ability (see Section 4.3).

A follow-up study was carried out in the flexible retirement project (Pelkonen 2005). It examined the changes that had occurred in the intentions of older workers to retire. The focus was on changes in the thoughts of retirement over the past year among workers born in 1940–1945. The basic group consisted of workers in the private sector, and 1024 workers altogether participated in the study. Out of all the respondents, approximately one-third planned to continue to work after the age of 63 years, and the intentions to retire were concentrated between the ages of 63 and 65 years. Very few wanted continue to work after the age of 65 years. Women preferred to retire before the age of 62, and men more frequently at the age of 63 years. The younger the age group, the earlier the favored retirement age. People who daily experienced fatigue or exhaustion at work did not believe they would cope for long in worklife.

2.3 Needs for reform in worklife

The main challenge for coping at work is focused on developing and renewing worklife from the point of view of ageing. This challenge is demanding because there is not much time to extend the careers of the baby-boom gen-

eration. In just a couple of years, in 2008 at the latest, the age groups born in 1945 will be 63 years of age, which is the maximum age for this group to start thinking of retirement.

Fortunately, diverse activities to promote work ability and occupational well-being have been carried out for the last 10 years in Finland. In other words, practices and experiences gained from the development work have been accumulating in many workplaces. According to the MWA (maintenance of work ability) Barometer (see Section 4.3.3) the activities in over 80% of workplaces have developed in the right direction, and ageing workers have also been able to participate in activities that maintain their work ability. Accordingly, the potential to create changes that help workers continue to work exists, and workplaces now have the will and knowledge needed to proceed. In addition, employers have the positive attitude that is needed and trust that the workforce will actually work longer. The perceptions of what should be developed are also similar among employers and employees.

The gravest threat to a favorable change in worklife from the point of view of ageing is posed by the global economy and its harsh rules. The hard-core and softer values of worklife compete. The basic challenge is whether work and worklife will be developed according to the needs of people or to the terms of corporate economy. Siltala has published a significant work on this issue called *Työelämän huonontumisen lyhyt historia* [Short History of the Deterioration of Worklife]. This analysis, which paints a desolate image of worklife and its development, is a cry for help for a better and more human worklife (Siltala 2004). A more realistic objective, however, would be a combination in which the demands of the global economy and a more human worklife meet, as is stated in the definition for age management (see Section 4.1). Whether this objective is realistic will be proved in the next few years.

The following report summarizes the views of employees and employers on actions that are thought to be important for continuing in worklife². Finally, the results are compared with those of a questionnaire filled out by experts in the *Ikäjohtamisen tulevaisuus* [Future of Age Management] seminar that was part of the National Programme on Ageing Workers 1998–2002.

The following aspects were regarded as very important from the point of

² The information on the workers was gathered from the *Työolot 2003* [Work Conditions 2003] study of Statistics Finland. The data consisted of nearly 1800 workers 45–64 years of age (Forma et al. 2004). The information on employers has been taken from the *Työvoimapalvelut ja avoimet työpaikat* [Services for the Workforce and Job Vacancies] study that was carried out by the Finnish Centre for Pensions together with Statistics Finland in 2004. The section on flexible retirement age was compiled from a telephone interview of 1930 workplaces. The respondents were generally owner entrepreneurs or general managers (Tuominen et al. 2004).

view of both employees and employers in the study by the Finnish Centre for Pensions in 2003 (the figures reflect the proportions of employees and employers that considered the factor very important):

	Employee	Employer
1. Improving possibilities for rehabilitation	37%	34%
2. Increasing wages	35%	22%
3. Reducing workloads and tight schedules and increasing options to affect work	32%	56%
4. Improving the work environment and creating a good and functional work environment	28%	71%
5. Making workhours more flexible	27%	32%
6. Improving management skills and good supervisory actions	21%	68%
7. Increasing educational possibilities and training that promotes professional skills	13%	40%

In addition to the aforementioned, the following issues were included in the order of importance according to the *employees*:

1. Job security	59%
2. Occupational health care development	36%
3. Part-time pensions	20%
4. Sabbatical and job alternation leaves	17%

The most important issue for the *employers*, however, was:

1. A good atmosphere in the work communities	82%
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The employees and the employers considered the same seven items very important, although the question differed slightly in the studies. The order of importance also differed. The workers considered “job security” to be the most important. In addition to rehabilitation opportunities, the workers wanted occupational health care to be expanded. The occupational health care system acts as instant support for ageing employees. Apparently there is a demand to improve the accessibility and supply of its services.

The workers also considered part-time pensions, and sabbaticals and job alternation leaves important. With respect to the sabbaticals and job alternation leaves, they also wanted more versatility, as they felt that, with ageing, there was a need to create breaks to deal with the strain of worklife to intensify recovery and to strengthen resources. These leaves are taken to reduce

workload and tight schedules and to increase options to affect one's own work. They are also related to the use of flexible workhours that would support longer careers.

The employers considered a "good atmosphere in the work community" to be the most important factor. It is related to many other points of development, such as supervisory actions. It was interesting how the factors considered the most important differed between the workers and their employers. The employers were more in favor of improving the work environment, management skills, and possibilities to affect one's work, and they considered training that promotes expertise to be important more often than their employees did. Both parties had similar views of workhours and rehabilitation. Increases in wages were primarily hoped for by the workers.

Despite the differences in emphasis, it is essential to realize that the most important points of development were similar among the employees and their employers. This is a good basis for a mutual development of worklife for ageing workers and for supporting workers continuing in worklife (Tuominen et al. 2004).

In connection with the National Programme on Ageing Workers 1998–2002, the *Ikäjohtamisen tulevaisuus* [Future of Age Management] seminar was organized for experts. After the meeting, the participants were given a questionnaire to fill out. They were asked to mention the three most important factors that would help people continue to work for 2–3 years longer than before, the three most important factors that would prohibit workers from extending their worklife, and what actions supervisors could take in organizations to support longer careers. The respondents (n=154) primarily came from the private sector, but the results of state and municipal representatives, as well as those of organizations, could be analyzed separately.

The results are presented in Table 9 in order of importance. A very important factor for continuing to work was given the value 4.00, and a factor that was not important at all was given the value 1.00. The table presents the calculated means.

All sectors (private, state, municipal, and organizations) considered ageing workers' coping at work to be the most important, next came making use of the competencies of ageing workers, and more positive attitudes of supervisors towards ageing workers was third.

Factors that prohibited workers from continuing to work included the following five items in order of importance: repeating models of action from the 1990 recession (streamlining of the workforce, misuse of the unemployment pension path), negative attitudes of supervisors towards the ageing,

Table 9. Views of the participants (n=154) in the Ikäjohtamisen tulevaisuus [Future of Age Management] seminar with respect to factors that promote a longer career, in order of importance.

1. Promoting coping of ageing workers at work	3.62
2. Making use of the strengths of ageing workers	3.55
3. A more positive attitude of managers towards ageing workers	3.49
4. Maintaining and promoting the work ability of ageing workers	3.45
5. Developing the context of ageing workers' worktasks	3.38
6. Improving the organization of ageing workers' work	3.32
7. Supporting learning among ageing workers	3.25
8. Preventing age discrimination	3.19
9. A more positive attitude of colleagues towards ageing workers	3.17
10. Recruiting ageing workers who are able to work	3.08
11. Improving cooperation between the young and the ageing	3.03
12. Decreasing the dependency ratio of society	2.92
13. Preventing labor shortage by using ageing workers	2.71
14. Reducing the costs of early retirement	2.64
15. Using young foreign workers	1.95

negative general attitudes and language (“How can 40-year-old-workers be able to cope at work for 20 more years?”), inconsistent retirement policies (appealing early retirement options, voluntary pension insurance), and poor managerial and personnel policies.

For the question on what organizations and their managers should do, the following order was found:

- rectify negative attitudes towards age, to prevent age discrimination
- train ageing workers to the very end of their careers
- provide supervisors with training in age management
- transform the work culture
- make use of supervisory discussions (on workload, tight schedules, work ability, personal strengths, among others)
- construct personal plans for developing the span of workers' careers
- create changes in notice practices (the aim being to keep seniors at work)
- fit the job to the individual
- give responsibility of the meaningfulness of work environments and work methods to management
- create a market value out of the work experience of seniors
- develop cooperation between juniors and seniors.

Even though the aforementioned studies differed in nature and were conducted in different years, many of the concepts they convey are similar concerning how worklife should be developed in order to ensure longer careers. The versatile support for workers to cope at work also requires strengthening individual resources, improving rehabilitation options, and developing occupational health care services to meet the needs of the ageing. Work reorganization should include reducing workhours and tight schedules, increasing possibilities for workers to affect their work, and allowing flexible workhours. Part-time retirement, sabbaticals, and job alternation leaves are also organizational questions and means with which to promote coping at work. The development of managerial and supervisory work should involve changing attitudes towards ageing workers. Training and supporting learning go hand-in-hand. All of these measures have apparent positive effects on the atmosphere of the work community.

The positive qualities of work and the advantageous effects it has on people should be discussed more and with clarified terms. The discussions on occupational well-being often use terms of the unpalatability of work and work discontent. In addition, the conflicting interests that define the trends in worklife often give more room for the negative than the positive qualities of work (Siltala 2004).

If the appeal of work is to be strengthened, it is also necessary to emphasize the positive and inspiring qualities of work and the ways in which work can enhance well-being. Burnout and work engagement, the latter of which is comprised of vigor, dedication, and job satisfaction, have been offered as central concepts of occupational well-being. Work engagement is related to health, work ability and job satisfaction, and the lack of work engagement involves stress and thoughts of retirement and taking notice. Work engagement can be experienced in different occupations, just as burnout can (Hakanen 2004).

Job satisfaction is created by accomplishments at work. The more experiences of satisfaction in work, the better the work ability. This relationship applies to everyone, regardless of age or gender. Enthusiasm in one's work, which is probably close to work engagement on a conceptual level, is strongly reflected in work ability. As workers' enthusiasm declines, the poorer their work ability becomes. People that do not get enthused at least once a week have a significantly poorer work ability than those whose enthusiasm disappears a few times a month at the most. This result applies to both men and women and to all age groups (Tuomi et al, unpublished manuscript, cited with the permission of the authors).

Much research data exist on developing worklife to fit the ageing. When the results presented in this section are combined with results on how the MWA Barometer assesses the actions aimed at ageing workers and the development of these actions, the results presented in Section 4.3.3 on the development in the EU15 countries, and the 29 recommendations for securing and strengthening the work ability of ageing workers that were compiled in 1999 (Ilmarinen 1999b), it can be concluded that a cognitive basis exists for developing worklife in a holistic manner. The actual challenge is to develop worklife from the point of view of ageing workers in practice. The so-called knowing-doing gap, which is described in more detail in Section 7.2, is closely related to this challenge (Pfeffer & Sutton 2000).

2.4 Management reform from the point of view of ageing workers

The message of age management is clear: good management must take into consideration the effects of ageing that are related to all working aged people at one point in the course of life. The intensity of the ageing process leads to changes that differ from person to person and are both positive and negative. How can managers confront this challenge? What should be changed in daily supervision? Will managers be able to develop into good leaders with respect to the age challenge? This section examines these issues.

Every enterprise and organization has its own culture with complex rules, directions, and practices. These rules are for every worker, and they not only affect thinking, but also actions. In a study on age management, Juuti (2001) found that the discussion on age management proceeded along a certain path in group interviews (n=18). It began with an ideal situation and proceeded to creating an ethically correct image of human management in which people are taken into consideration. The risk for this sort of reasoning was felt to be the economic realities of the organization, which precede deep emotion, when managers make decisions.

The next step was to look at the topic from the point of view of corporate economy. Economy and results were prioritized in organizations, and age management could be seen as a threat and a negative issue with respect to achieving results. The discussion had a cynical air to it. Part-time retirees were mentioned as the guilty party. They were the truants against whom others were envious and bitter, which, in turn, could hinder work. Part-time retirees were easily seen as opportunists who took advantage of all possible situations.

The third phase was to move from strategic issues to personnel management. How was it possible to combine competitiveness and caring for human resources? Often the short-term goal of maximizing profits was set against the long-term goal of safeguarding success.

The group discussions organized by Juuti proved that it is a demanding environment into which the planning and execution of age management must fit. A questionnaire, which was aimed at over 770 persons, gave more insight into the reality of enterprises (Juuti 2001). Age management did not have substance at the workplaces, and aging workers were not even hired in many enterprises. Strong attitudes against ageing people were common. One-fourth of the respondents stated that ageing people are bitter, one-fourth said that too much is demanded from ageing people, and one-fourth thought that ageing workers would stick to their jobs. One-third of the respondents were also of the opinion that ageing workers are a cost item that should be let go. One-fifth told that ageing workers are not supervised properly, but only one-seventh of the respondents thought that managers had a negative attitude towards the ageing and that older workers were not valued.

The attitudes mentioned here were especially encountered by office workers, people with a low level of education, and workers in large workplaces. The most negative attitudes occurred among managers and young workers. Young workers were preferred, and especially their skills to master new technologies were emphasized. In addition, the physical and mental capacities of senior workers were thought to weaken, nor were their learning skills trusted.

Despite all this negative prejudice, it was thought that age management should be enforced at every workplace. Only academically educated young adults objected. In addition, 20% of the respondents objected to the hiring of ageing workers. Flexible and individual retirement policies were valued, and shorter workdays or even part-time retirement was supported. Nevertheless, the idea of tailored tasks specifically for ageing workers was not accepted.

It was thus evident that many negative attitudes regarding the work ability of ageing workers existed at workplaces, even though special arrangements to improve their situation were accepted. Especially young men and ageing women received attention. Young men opted for negative attitudes in organizations, particularly if they were in high positions. Senior female workers, on the other hand, were the most threatened. They were not valued or respected, and their expertise was not utilized. The lower the status in the organization, the less the amount of respect and encouragement the ageing workers received (Juuti 2001).

The reality of worklife was further investigated through interviews (n=80) at eight workplaces, of which half took place in the private sector and half were organized in public institutions. The general impression was that the retirement arrangements and notices given during the recession were still reflected in the reality of enterprises in 2000. The management culture of the public sector had started to shift towards that of the private sector, but the processes were still largely incomplete.

The management of a machine workshop valued short-term actions and used the unemployment path to retirement, among other means, to get results. The conflict with the goals of personnel management was obvious. The problems of work ability maintenance and long-term investments were not supported by top management. The ageing workers felt guilty for not retiring and for keeping jobs from younger people. The younger workers pressured the senior workers to retire.

In a food supply enterprise the “results” culture had a strong stature, and the efforts of personnel management were over-ridden. In a metal shop, reorganizations were vividly remembered. In addition, experts had been transferred to administrative duties, where they became embittered and lost interest in their work. The personnel also remembered the practice according to which workers retired at the age of 52 years. This overview shows how old and new stories found supporters and a foothold in the firm.

Enterprises that enforced new technologies endeavored to shift from an emphasis on management to a more discussion-type of leadership. However, middle management would not budge. Young experts were transferred to new units, and old ones remained where they were. The idealization of youth became unreal when the heavy work load exhausted also the young workers. The void between the juniors and the seniors grew, however, and the new basis for providing rearrangements for older workers was, not surprisingly, technological development.

The image presented by public organizations was not much more comforting. Different managerial styles met in an institute of education—a commanding manager and a respectful director willing to discuss matters—and the personnel were treated accordingly. There were fresh memories of reorganizations also in this workplace. A public utility decided to reduce its staff by 10% within a year. As the demands for reductions, on one hand, and maintaining job security, on the other, was considered, age management policies conflicted. Ageing workers were marginalized and given secondary tasks. The personnel were under pressure from two sides; staying in the job longer was required, while at the same time people were given notice. Part-time retirement was introduced as a compromise, but did not work.

A state organization intended to shift from an authoritarian, army-like form of management to more democratic team leadership. Seniority was valued, but the work ability of the older workers, signs of deterioration, and their expertise was relied on too strongly. The workers' experiences with teamwork and the support provided were positive, but as the seniors started to retire, the juniors were fated to face reality alone as their group support disappeared. A municipal organization found that managerial practices from the private sector did not work. An age management team and 15 senior vacancies were established to start the process. Soon it was realized that the aim of gaining practical effects was distant, with only the peak of the iceberg showing (Juuti 2001).

The previously described cases of reality in enterprises and organizations offer concrete examples of the type environment that is in need of better managerial styles that take ageing into consideration. A few of the traps with respect to age management are worth mentioning:

- Reorganizations and the use of the unemployment path to retirement will remain in the memories of personnel and erode the credibility of management and managing policies.
- Short-term quartile economics causes an on-going conflict between top management and personnel management, and the conflict seriously hinders age management and affects its practical credibility.
- The enterprise culture has its own approach to ageing. The previous tradition of early retirement remains in mind. A stiff culture that avoids new action models slows down the implementation of age management. Changing the enterprise culture into accepting age issues is essential. Whether or not there will be enough time is another matter.
- The age issues were received in the work community in different ways. The understanding and ability to deal with different views is necessary before age management can be effective.
- The over-idealization of youth leads to problems within the community and to the marginalization of senior workers. Cooperation between generations weakens and makes it difficult for the enterprise to make use of different types of expertise.
- The shift from a protected environment to a more open market economy will also change the attitudes towards ageing workers in the public sector. Action models that are copied from the private sector cause conflicts between old and new cultures. This conflict strains personnel and necessitates the strengthening of new mechanisms and management that support coping. Reductions in staff, bans on hiring new workers, and the use part-time retirement as a buffer are often directed towards ageing workers.

- There is equal danger in over-idealizing seniority as there is in idealizing youth. Strong commitment to work and self-sacrifice may lead to a vicious circle of overload and the wasting of resources on the part of senior workers.

2.4.1 Why must management be understood in a new way?

Age management could easily be lost among the several systems of management, management doctrines, and idealisms. Management models create the prerequisites for functioning in a large organization. Doctrines on management are, however, based on scientific research or a strong background of experience in the basics of success. The doctrines are developed from different points of view and for different purposes, but their mutual aim is to create the best possible management.

The tools for management are, however, practical models of action. Descriptions of the reality of organizations make it clear that it is not possible to support the careers of personnel in established systems of quality and result management. Joint solidarity is emphasized also in age management. From the point of view of age management, employers should create circumstances and practices in which workers can control their careers and ageing (Linkola 2002). This system enables a win-win situation.

Sydänmaanlakka (2004) has given the following reasons why new approaches are needed in management from the point of view of an intelligent leader:

- Management models grow old.
- There is a growing demand for management models that have been developed outside the Anglo-American culture.
- The management environment has changed drastically from the industrial circumstances for which the theories were developed.
- The post-industrialization era must redefine work, its workers, and the organization.
- Current theories are scattered, and their best qualities should be earned.
- The scientific paradigm has changed: a constructive paradigm is replacing the behaviorist paradigm.
- The “one and only” way of thinking should give way to the integration of different methods.
- Rational management should be combined with an emotional and spiritual way of thinking.
- Issue-centered management and humanistic management should be integrated.
- Management should not be made more difficult and complex than necessary.

All of these grounds for intelligent leadership can also be adapted to age management. Both concepts are based on a holistic idea. Age management demands the formation of a holistic image of people throughout their careers. The real challenge in forming this image is the drastic and individual way in which people change with age. Physical, mental, social, and spiritual resources and the changes in them, together with occupational resources, form an entity that requires good management from the entrance into work-life all the way to retirement.

Unlike many other aspects of the work environment that have changed significantly during short periods of time, the basic process of ageing can be regarded as a constant that has not changed in at least the last few hundreds of years, maybe even in some thousands of years. This statement is not meant to undervalue the effect of environment and behavior on the process of ageing, but it does provide a sound human basis for good management, despite the century.

Proposals for action

There is great human demand for a new kind of management regardless of what that the new leadership will be called. The question is not the need to overemphasize “soft” values, but to promote good management for the benefit of all, the individual and the enterprise. It is believed that both aspects can be combined if both the will and the knowhow exist. Good management promotes the well-being of workers and increases productivity. Supervisors are needed for both tasks, and they are dependent on each other.

The following actions arise in enterprises:

- Management and supervisors should be trained to become aware of the significance of age management.
- Management and supervisors should be trained to understand that ageing is a process that is related to everyone.
- Development programs should be built that are for all age groups of the workplace.
- The organizational culture should be developed to support all age groups.
- Management and supervisors should lead by their own example and by demonstrating how to treat different aged workers equally.
- The entire staff should be offered information on different ages and actions that support the cooperation of generations.
- Good practices for age management should be studied, reported, evaluated and developed.

To find support for appropriate actions, enterprises can use, for example, the following publications: *Ikäjohtamista kehittämään* [Working Book for Age Management] (Finnish Institute of Occupational Health, 2003) and *Kyvistä kiinni—ikäjohtaminen yritysstrategiana* [Holding on to Abilities—Age Management as Enterprise Strategy] (Ilmarinen, Lähteenmäki and Huuh-tanen 2003). The practices of age management and examples of enterprises are described in more detail in Chapter 6.

2.5 Remodeling attitudes towards age

Why are changes in attitudes towards age in society and worklife needed? The answer is simple—because many of us discriminate on the basis of age. Age discrimination is forbidden in many countries and, indeed, actual direct discrimination does not exist at workplaces—that would be illegal on the part of managers and employers. The law is not able to prevent indirect discrimination and discrimination among workers, however. There are always many ways in which to indirectly affect ageing workers, as well as young workers, in employment, access to training, or advancement in one's career. It is important to realize that not only ageing workers can be subjected to age discrimination, but also young adults can be the victims—discriminating persons have often reached the safe middle-age and have established themselves in the organization.

The following example is a summary of a study on age discrimination (Vaah-tio 2002). It reported on the attitudes of employers towards different aged workers. Workers over 50 years of age were described by adjectives such as tired, sick, reluctant, bureaucratic, experienced, loyal, and expensive. Older workers were perceived as reliable but also as somewhat stagnant. The attitudes towards young workers also reflected discrimination—they were inexperienced, unskilled, unreliable, moody, but also energetic and enthusiastic.

Unlike workers at both ends of the occupational age continuum, the age group of 30–40 years was assigned positive associations. They had a serious attitude, were experienced in life, had left daydreaming behind, and did not experience the symptoms of old age. These attitudes were also visible in recruiting. Only 4% of the recruited workers were under 20 years of age and only slightly over 10% were over 45 years of age. The 26- to- 45-year-olds were the most frequently employed, and only a few 50-year-olds were recruited. The borderline proved to be the age of 55 years. It was not passed.

Changes in the attitudes towards ageing begin by understanding the facts and facing them. The population irrevocably ages, also in worklife (see Section 1.3). There is no use to long for the “good old times” of the 1980s, when the size of all age groups in worklife were about the same. After decades of endeavors, the lifespan of people has begun rise, and, now that it is rising, there is no end in sight. In 2000, 268 people had reached the age of 100 in Finland (230 women and 38 men). In 2050, it is estimated that the respective figure will be nearly 10-fold, namely, 2300 (1810 women and 490 men). No wonder the basis for funding pensions must be revamped and the length of careers extended. It remains to be seen what the retirement age will be in 2050, when the heirs of the baby-boom generation will be pondering the same issues on ageing.

Why is it so difficult to accept different aged people in society and especially in worklife? There have always been people of every age in worklife, and there will continue to be so in the future as well. The difference is in the size of the age groups. There will be half as many young people working as seniors if the situation is not rectified by immigration and by an increasing birth rate. Is the fundamental threat that the baby-boom generation will steamroll the smaller age groups and interfere with occupational democracy? This is, indeed, possible, but the threat is alleviated by the fact that the seniors have been young themselves, they have expertise in dealing with situations successfully, and they also know their responsibility. Younger people should not worry about the size of their age group—if anything, it should bring them notable benefits.

The fast tempo of worklife and the continuous changes in it may, however, provoke negative phenomena and practices towards age. The agility and ability of the young to adapt to changes fit well with the contemporary course of the world. The experience and knowledge of the seniors make them more reserved when it comes to changes, and this reservation can be visible in the form of passive attitudes towards organizational changes. Successful changes cannot, however, be carried out if all age groups are not behind them and if the workers have not been able to affect the content and the implementation of the reform. Including senior workers in the planning, despite their reservations, is the beginning of wisdom. There should not be winners and losers in successful change. This is one of the practical guidelines for age managers (see Sections 2.4.1 and 5.4).

Negative attitudes towards ageing generally derive from ignorance and old myths and beliefs. The collection of information on age management contains a notable amount of “real” information on ageing (see Chapter 4). The critical false beliefs concern age and productivity, age and mental growth, and age and learning.

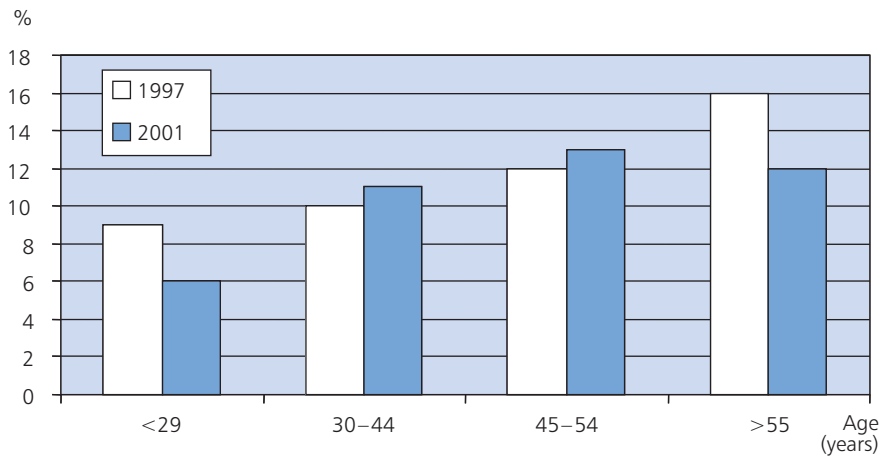
Perhaps the greatest challenge in accepting ageing is its dissimilar and individual nature. No two people age the same way. This phenomenon can, however, enrich life rather than encumber it. The process of ageing may be the strongest factor that regulates individuality. Origin, religion, language, and culture create individual traits in persons. They are, however, structural factors that divide nations and that are reflected in the individual. The variation between the individuals of one nation is much greater than the difference between nations.

Organizations benefit when their capital of knowledge consists of different kinds of expertise. If everyone had the same skills, work could perhaps be easier to organize and manage. Added value and competitiveness are created, however, from the skill of making use and developing different kinds of expertise, the strengths of separate workers. Standardizing knowledge goes strongly against natural ageing.

Dealing with, understanding, and accepting one's own ageing brings extra color to the control of ageing. We have strong ties to chronological age that easily dominate the more important dimensions of age, the biological and psychological characteristics of age (see Section 4.2.2). People can be different ages at the same time. If they accept themselves and their different ages, it is easier for them to accept others. Every stage of age is good and should be lived to the fullest. This approach does not prohibit people from longing for the past or believing in a better future. The course of life is full of surprises for people of all ages, and the longer people live, the more they gather these experiences. Worklife covers about half of the life course, 40 years. It seems incomprehensible to make this period of life a great age problem. The actual problems related to age begin much later, during the fourth age (i.e., over 85 years of age).

The National Programme on Ageing Workers 1998–2002 in Finland put great emphasis on the prevention of age discrimination. Valid information on ageing that aimed at correcting attitudes was continuously visible in the different media (Ministry of Social Affairs and Health 2002b). People well-known in public life were used, music was composed, and lyrics were written. Managers were given information in over 20 seminars in relation to a training campaign, and a great deal of popularized material was published. Measurements that were conducted after the program showed that age discrimination toward both the young and the old had declined in Finland (Figure 7). The effect of the campaign against age discrimination per se would be too difficult to define. At the same time, the proportion of age discrimination remained the same in other EU member states.

Figure 7. Age discrimination and the changes in it in Finland during the National Programme on Ageing Workers 1998–2002. Worklife Barometer. (Ministry of Social Affairs and Health & Ministry of Labour 2002)



Age discrimination has been prevented in many countries. In some, legislation has also been used (e.g., Australia, Finland, the United States). Japan and Asia in general have been regarded as societies in which the ageing sector of the population is valued. Market economics and globalization are, however, steamrolling the thousand-year traditions of respecting the ageing in, for example, Japan. Therefore, the Employment Measures Law was enacted in 2001 (Taylor 2002). It prohibits the mentioning of age in job advertisements and in the hiring of new employees.

There are, however, nine exceptions to the law that hinder its unambiguity. Nor are there any sanctions for breaking the law. Organizations are allowed to offer temporary jobs to 60-year-olds, but not to people under 60 years of age. This regulation may lessen the interests of organizations in recruiting workers under 60. Another law requires that organizations stabilize the status of senior workers in the labor market (Law for the Stabilization of Employment of Older Persons). For senior workers who must leave their jobs, firms are required to offer training and support in finding a respective job in other enterprises, as well as provide a certificate of recommendation. The organizations receive state funding for this activity (Taylor 2002). This model has similarities to the Finnish system of providing “protection against unemployment” that became effective in 2005.

A suggestion was made in 1999 that a program to prevent age discrimination be set up (Ilmarinen 1999b), and, after the National Programme on Ageing Workers 1998–2002, positive changes were seen in Finland. Promoting the employment of ageing unemployed persons has not succeeded satisfactorily,

however. It is understandable that rectifying the attitudes of employers does not suffice alone. The regulations that control rules and recruitment risks should also be changed.

2.5.1 Research on the causes of age discrimination is necessary

Research on age discrimination has revealed our attitudes towards ageing workers and how negative attitudes are present in practical situations. There must be reasons behind the attitudes and behavior that make us participate in this inhuman and illegal action. It is evident that we have not been able to pinpoint the reasons, the real reasons. Therefore, the battle against age discrimination is a fight against an unknown enemy, and, as such, it is difficult to uproot age discrimination from everyday practices.

Could one reason for age discrimination be the fear of dying and the fact that the time will come for everyone? The younger we are, the more time we have left—the older we are, the more concretely and invariably time is running out. Can one reason be a fear of disease and its effect on life and its quality? It is convenient to be young and healthy. Serious illnesses are a part of everyone's life eventually—that is clear from statistics. When we cling to youth, we shift the dire thoughts to the back of our minds.

Is it safer and comforting to look into the past rather than into the future? Everyone remembers something from their youth—who would not miss those times. Could it be that the idealization of youth keeps older people youthful? If we visit a continuing care retirement home, we feel older ourselves—if we visit a kindergarten or school, we become younger. Is this the reason why we would rather surround ourselves with younger people than with older ones, so that we can see life continuing? The model in which we ourselves are reflected and with which we identify can be a decisive part of our attitudes. We may have heard or read about the possibility to lead a good and happy life in old age, but will it be possible?

There are many questions and few answers. Research is needed to determine how the seeds of age discrimination are generated. Alongside the use of traditional research methods, a deeper and more sensitive research approach is needed to find answers to the most fundamental questions.

CHAPTER 3

WORKLIFE MUST ADJUST
TO THE COURSE OF LIFE

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WORKLIFE MUST ADJUST TO THE COURSE OF LIFE

- 3.1 COURSE OF LIFE
- 3.2 COURSE OF WORKLIFE
- 3.3 MANAGEMENT EXPECTATIONS
IN DIFFERENT PHASES OF LIFE
- 3.4 COURSE OF LIFE AMONG THE
BABY-BOOM GENERATION
- 3.5 SUCCESSFUL AGEING IN WORKLIFE—
UTOPIA?

3 WORKLIFE MUST ADJUST TO THE COURSE OF LIFE

In traditional thinking, an employee adjusts to the demands of work. When continuing in worklife becomes a primary objective, as is the case with the ageing workforce, the point of view must be changed: how must worklife change in order for employees to be able to continue to work longer? Before we can start changing corporate life, we must understand a thing or two about the human course of life, of which most is covered by worklife. Worklife gives us the strength to cope with everyday chores and provides a basis for a good retirement—or not.

No two courses of life are the same. The human life course includes several development processes related to age, and the transition from one stage of development to another, critical periods, and events that cannot be explained by age alone, but which may have significant consequences later in life. For example, moving from school into worklife, starting a family, and growing old are different experiences if they take place during economic growth or a recession.

Even though lives differ, each generation has its own unique characteristics, which come from the time and environment in which its members grow and live. In enterprises, different generations cooperate despite their different characteristics. Because worklife lasts for decades, the different phases of the life courses of employees of different generations can be seen and felt in everyday work. Members of the baby-boom generation, who have been in worklife for a long time and who are also expected to continue working longer than previous generations, give Finnish worklife its distinct features.

A person faces ageing in worklife in the form of many different difficulties, but also in the form of opportunities. The problems can occur as a deterioration of functional capacity or health, lack of competence, decreased work motivation, or burnout. Seniors also suffer from the fear of lay-offs or unemployment. There are, however, several possibilities to prevent these threats. Functional capacity and health can be improved, competence increased, and professional competence developed. Changes in worklife are also opportunities for self-development. Research has shown that good results can be achieved through participation. Work ability and work well-being are improved—regardless of one's age. Investing in personal resources pays off, and the investment also improves the quality of life.

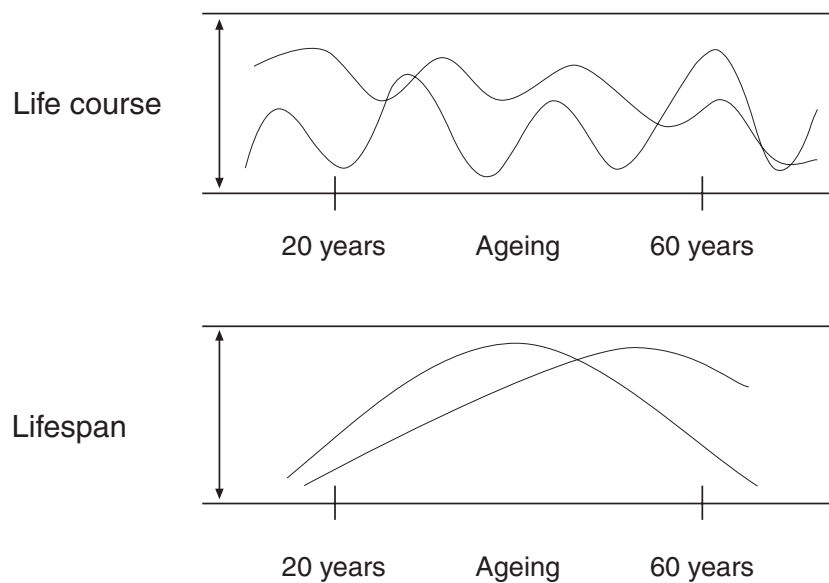
3.1 Course of life

There is much literature about the concept of the life course and its phases dating back to classical antiquity and the Middle Ages (Tuomi 2000). Theories about the life course have developed from the lifespan into the progressive line metaphor, according to which both the universe and society can be viewed as systems that develop in time (Figure 8).

Human life is referred to using the terms “life cycle”, “lifespan” and “life course”. Life cycle refers to biological aspects, lifespan to psychological aspects, and life course to the sociological approach to life. These approaches are consistent with the concepts of age. Biological age is connected with chronological age and life expectancy, psychological age to the ability of an individual to fulfill the demands of the environment, and social age to the different roles of an individual during life (Heikkinen & Tuomi 2001).

In different cultures, the life course of an individual is divided into different phases by age. People are guided into different statuses and roles, and their benefits, rights and responsibilities are based on their age. Long-term, age-specific phases of life that are related to, for example, family, education or professional career are called life trajectories. Opposite to life trajectories are short-term changes, transitions. They can be transitions to a life trajectory

Figure 8. The lifespan—and progressive line—metaphor in an examination of the life course.



(first job), along a life trajectory (changing jobs), or from a life trajectory (retirement).

Transitions can have long-term effects. A transition and a crisis differ. A transition can be normative (graduation, retirement) and a crisis non-normative (dropping out of school, unemployment). A transition, therefore, contains both opportunity and risk. It is typical of a life course transition, whether it is examined from the biological, psychological, or sociological point of view, that it is nonlinear or that the linearity is broken. In some way, each transition changes how we see ourselves and how others view us (Heikkinen & Tuomi 2001). Therefore, transitions also deserve attention during life trajectories.

3.2 Course of worklife

Worklife is one of the longest human life trajectories. It includes several transitions along the life trajectory that may be normative, or non-normative, opportunities and crises. There is no generally accepted normative approach to the worklife trajectory available, but at least the following phases and events can be easily attached:

- shifting from education to worklife (18–25 years)
- combining family and worklife (25–35 years)
- changes in worktasks and employers (35–45 years)
- changes in personal resources (over 45 years)
- changes in family and close communities (over 50 years)
- changes in attitudes towards work and retirement (over 55 years)
- leaving worklife and shifting to retirement (over 60 years).

Shifting from education to worklife (18–25 years)

This significant transition from the education life trajectory to the worklife trajectory has moved chronologically further from youth to adulthood. The ages of 18–22 years are called post-youth, and its characteristics include gradual mellowing and finding one's own place as a member of the community and society. The beginning of detachment from the sphere of influence of the home into one's circle of friends, partial replacement of friendship with dating relationships, finding suitable hobbies, finishing compulsory education, and beginning vocational education take place during this phase of life (Koivusilta & Rimpelä 2000).

The increased level of education has demanded that many young people spend additional years on education and extend their study times. Many work in addition to studying, both to earn money and to gain work experience. The combination of education and work may delay graduation and full transition to worklife.

A significant proportion, about 25% of the young people aged 15–24 years, are not, however, able to find work right away. The compatibility of education and prerequisites for worklife are tested also when work is found. The collision of the demands of young people, employers, and the work community often mean changes in young people's conceptions of their own role in worklife. Facing and accepting diversity in the work community and worklife are also parts of this phase in life. Growing to become a full member of a work community can take several years.

Combining family and worklife (25–35 years)

Building a home and family life are often connected with combining education and work in many ways. Among people aged 25–34 years, 83% of men and 64% of women work. Male students comprise 7.8% and female students 9.4% of the same age group. Unemployed men comprise 7.5% and unemployed women 8.0%. A total of 17.1% of women are full-time mothers. About one-third of working women and 10% of working men hold temporary jobs. The statistics show that work, education, family, and unemployment can be included in the same phase of life.

Building a family has shifted chronologically forward, and the average age of first-time mothers is now close to 30 years. As a result, it can be assumed that families will no longer be large and young generations will remain small also in the future.

Many important events accumulate in this phase of life, and it is no surprise that their combination has proved to be difficult. Society also puts pressure on young adults. They should start their worklife earlier and have more children. In this age group, 46.4% of men and as many as 62.5% of women have experienced extended or repeating psychosomatic symptoms during the last month (Piiirainen et al. 2003)

Changes in worktasks and employers (35–45 years)

In worklife, a phase begins during which finding one's own place and role is emphasized. Most young adults have already found their first steady job, but

about 16% of women and 12% of men are still in temporary jobs, and more than 6% are unemployed (Piiirainen et al. 2003).

Continuous changes in worklife as a result of, for example, globalization and new technology mean, however, continuous change also in worktasks and work communities. Continuous learning of new things and skills creates opportunities for both development and overload. Organizational reforms and mergers, as well as ownership policies that do not care for employees, cause non-normative crises. Zealous capitalism emphasizes continuous growth and increased efficiency, which must often be implemented by employees in their “best working age”. People in temporary jobs have their last chance to establish themselves. Career development or changes in employers, which motivate and reward successful people, also speed up in this phase of life. Continuous changes in worklife mean, however, that quiet and steady phases do not last long.

Changes in personal resources (over 45 years)

Employee’s resources (health, functional capacity, competence, attitudes) change significantly during their life courses, and, even though the beginning of these changes is often hard to identify, some changes become concrete and visible often before the age of 50 years. Work conditions cause many kinds of exposure to threats to health and functional capacity. There are significant differences in life expectancy, long-term illnesses, and exposure to accidents between different occupational groups. These changes are also a result of living habits and heritage.

Exposure that is harmful to health in work and living habits that deteriorate health will eventually break anyone’s health. On the other hand, healthy and rewarding work and living habits that support health ensure a healthy life course. Most of the workforce falls between these extremes. Different combinations of work and living habits are starting to be visible in the health and functional capacity of employees in this age group.

In the age group of 45–54 years, about one-third of working people feel that their health is mediocre or poor, and about one-fifth feel the same about their functional capacity. Because of their deteriorated health, more than one-fourth do not believe themselves to be able to work until retirement, and almost two-thirds think of retiring on health grounds before old-age retirement (Piiirainen et al. 2003). Statistics, therefore, show that, after the age of 45 years, changes occur in health that make people think about whether they will be able to continue to work or not.

A separate issue concerns the changes in functional capacity in cases in which living habits have not prevented it from deteriorating. Physical functional capacity (e.g., muscle strength and endurance, respiratory and circulatory performance, mobility) has, on the average, deteriorated about 20–25% from the best situation in life, which occurs at about the age of 25 years. Deteriorated functional capacity increases fatigue and slows down recovery from everyday activities.

Changes in family and close communities (over 50 years)

Functional limitations and illnesses of one's parents increase their need for assistance and care. The need for health services also increases both in one's own family and among friends. People 50 years of age have an average of one chronic symptom (musculoskeletal disorder, circulatory disease, mental disorder), and those 60 years of age have an average of two such symptoms. Close communities gather together more often at funerals than at christenings. The family circle also shrinks. Young people move away from their childhood home, and life together with a spouse or companion changes. This phase offers new opportunities, but also crises. Becoming a grandparent may take place in this phase and change the contents of life and tasks considerably.

Changes in attitudes towards work and retirement (over 55 years)

Changes in one's life situation, personal health, and functional capacity, as well as in worklife, speed up the changes in attitudes towards work and retirement. About one-third of men and women feel that their work ability is mediocre or poor in comparison with the physical demands of their work, and about one-fourth feel the same with regard to the mental demands of their work. Less than one-third do not believe that they will be able to continue in their current job until retirement.

One-fourth of men and one-third of women think often about retiring before retirement age for medical reasons. About 6% of men and 4% of women have already submitted their retirement applications. About 30% of men and women continue to work without thinking about retiring (Piiirainen et al. 2003). Statistics show that especially the deterioration of health and work ability increases thoughts of retirement. Even though these statistics do not show the effects of economic factors, worklife quality issues or, for example, the situation of the spouse or other close ones on thoughts of retirement, they nevertheless indicate that people over 55 years of age think about their own situation and its implications for their future more and more actively.

Leaving worklife and shifting to retirement (over 60 years)

The average age of leaving work has risen slightly during the last few years. Depending on the calculation method, people retire at the age of 59–60 years. Therefore, the need for extending worklife has been defined as 2–3 years. Leaving worklife is one of the most significant and largest transitions to occur during the life course. Whether it happens normatively or non-normatively is very important for a person.

Even if this transition happens in conjunction with old-age retirement, it does not mean that people have prepared carefully for the transition. Preparing for retirement is regrettably rather scarce. Preparing for changes, for example, in income, costs of living, residence, health services, functional capacity, and hobbies, as well as friends and schedules, help people to adjust to the new situation. Retirement training should be a part of the employment training of enterprises during the last decade of an employee's career. It would make the transition secure and successful. Retirement training could also offer gradual or partial retirement, and thus it would smooth this dramatic change in life. Leisure-time networks are built alongside worklife networks to prevent retirees from falling into loneliness and isolation.

The last years of worklife have an effect on a retiree's everyday life. Good work ability means good functional capacity and health, as well as better quality of life as a retiree, during the third age of a person. This important observation means that the work ability and well-being of seniors must be supported and promoted until the end of their careers. Investments are made for the third age already during worklife (Tuomi et al. 2001).

3.3 Management expectations in different phases of life

Expectations of management vary in different phases of life. A person's status in an organization and occupation stabilizes with experience. Experiences that prove professional competence and success in challenging tasks are expected from management. To see this opportunity to encourage employees is a challenge for management. Limiting work and opportunities against the will of an employee may lead to apathy. In order for work not to cause disappointment, it is important that management supports the striving of an adult towards creative, interactive, successful, and meaningful work. An

experienced professional becomes exceedingly independent of management, supervisors, and mentors (Ylikoski 2000, Salo & Tuunainen 1996).

Ylikoski (2000) has gathered together management expectations in different phases of life. In addition, also professional expectations and work community expectations were studied (Table 10). In the “student” phase, one expects coaching management, and in the “learning worker” phase, authorizing management. A “competent professional”, in turn, expects responsible management, and an “experienced instructor” expects appreciative management. At the end of their careers, seniors (i.e., “helping wise ones”) expect inquiring management, which respects, offers feedback, and utilizes the connections and visions of seniors.

Table 10. Employees’ expectations of their profession, management and the work community in different phases of worklife. (Ylikoski 2000)

Phase of life	Student	Learning worker	Competent professional	Experienced instructor	Helping wise ones
Age (about)	<20 years (25 years)	25–30 years (35 years)	35–45 years (50 years)	45–50 years (55 years)	>50 years (55 years)
Expectations of own profession	<ul style="list-style-type: none"> – to take one’s time learning – to attempt to find one’s special areas in safe challenges and even under pressure 	<ul style="list-style-type: none"> – to tutor newcomers – to implement independently and to sometimes even fail – to specialize and focus 	<ul style="list-style-type: none"> – to be able to give advice and guide broader and more profound sense – to use one’s entire expertise 	<ul style="list-style-type: none"> – to mentor, train and be of help at work by teaching – to manage entities 	<ul style="list-style-type: none"> – to alleviate wisdom and experience – to open new horizons and perspectives
Expectations of management	<ul style="list-style-type: none"> – to be coached – to be given mature support – to be guided and included – to be prepared to “let loose” and question 	<ul style="list-style-type: none"> – to be given authority – to be given more economic and management responsibility – to be given the opportunity to learn to lead and contribute to a partnership 	<ul style="list-style-type: none"> – to be given responsibility – to be given broader overall responsibility of even substantial matters – to be included in decision making and the inner circle of knowledge 	<ul style="list-style-type: none"> – to be appreciated – to be given attention and the responsibility for preparations – to be understood in different life situations – to set stop signs and limits 	<ul style="list-style-type: none"> – to be consulted – to be given respect – to be offered feedback – to make use of one’s connections and visions
Expectations of the work community	<ul style="list-style-type: none"> – team work – acceptance – expertise 	<ul style="list-style-type: none"> – to be given the opportunity to lead a group and to receive acceptance – to experience changing roles 	<ul style="list-style-type: none"> – creative team work – communication and brainstorming with others, team success 	<ul style="list-style-type: none"> – supportive solidarity and an atmosphere of openness – maturity and responsibility for one another 	<ul style="list-style-type: none"> – to be kept as part of the group – to be given space

3.4 Course of life among the baby-boom generation

The baby boom that occurred in 1945–1950 has been a great challenge to Finnish society and has been ever since. The exceptional size of the baby-boom generation, together with the low birth rate of the last several decades, has made our population grow older faster than in other European country (Figure 9). At the end of 2003, there were 496 769 baby boomers alive in the age group of 53–58 years (Table 11). More than two-thirds of them were working, almost 15% were retired, and almost 12% were unemployed. The generations born after the baby boomers, up to 1958, were still significantly bigger (over 80 000 births) than the generations born after 1975. After the turn of the millennium, generations have been exceptionally small—fewer than 60 000 people. This difference in the sizes of generations leads to the fact that there will be significantly more seniors than juniors in Finnish worklife in the future. This situation will continue at least until the year 2015, perhaps even longer.

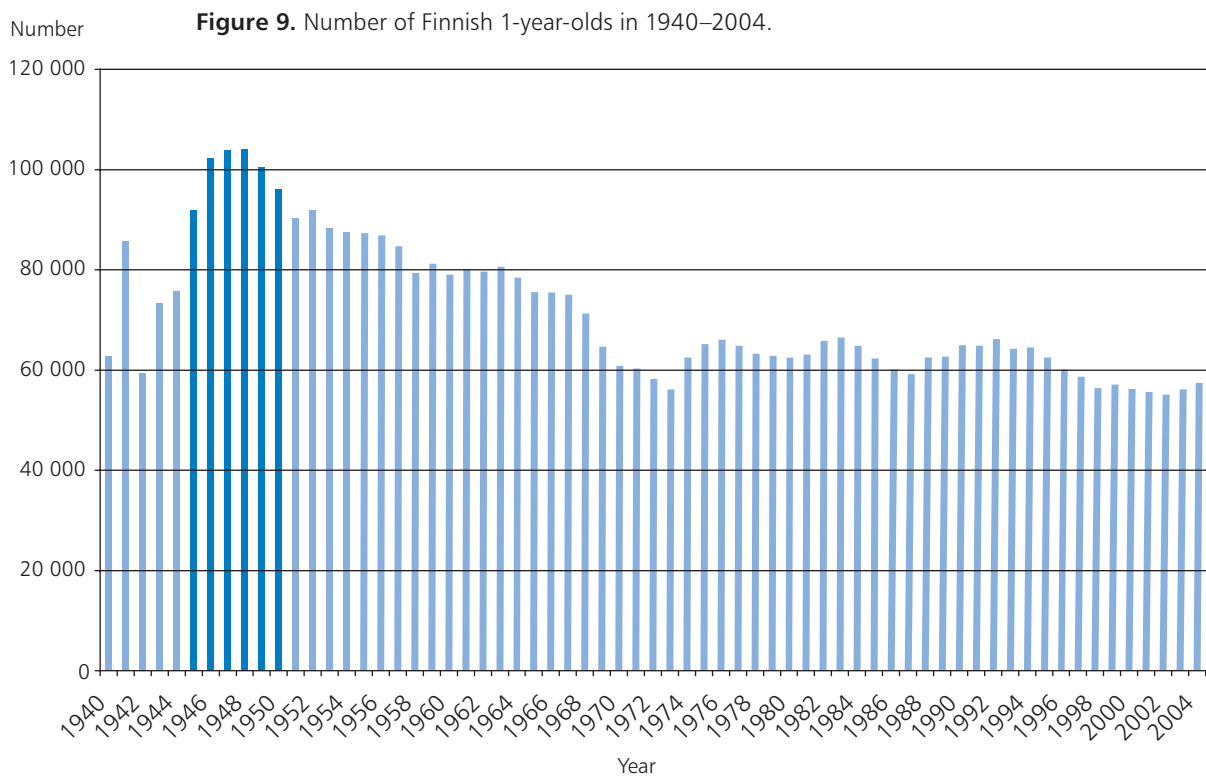


Table 11. Baby boomers (born 1945–1950) by primary activity on 31 December 2003. (Statistics Finland 2005)

Main activity	n	%
Employed	344 333	69.3
Unemployed	58 273	11.7
Retired (e.g., on. unemployment pension.)	73 899	14.9
Student	2 385	0.5
Other	17 685	3.6
Total	496 769	100

The life course and special features of baby boomers can be described with the following statements (Savioja et al. 2000):

- Birth rate increased quickly after the war and a dramatic decrease followed the peak years.
- The relative size of the baby-boom generation was about 50% bigger than before or during the war.
- The peak occurred during 1947–1948 (in 1947, 108 168 children were born).
- The baby-boom generation was still the biggest in Finland as of the year 2000.
- Baby boomers form their own generation with its own identity.
- The baby boomers do not have a successor generation in that they gave birth to few children over a long period of time.
- The big difference in the sizes of the cohorts (group of people who have experienced similar events over a certain period of time as a research group) means big differences in the need for services and financing for pensions.

The life course of the baby boomers proceeded from limitations to social rise, made possible by their long work careers. Baby boomers have lived in families with many children. Half of the families obtained their livelihood from agriculture. Altogether 90% of their parents had an elementary school education only; only 5% of their fathers and 3% of their mothers were secondary school graduates. Elementary school was also the typical educational level of the baby boomers. They started working regularly at the age of 17–18 years, one-third of them having started already at the age of 16 years. It was easy to enter the labor market.

There were so many children that clinics and elementary schools had to organize morning and evening shifts. Baby boomers were also the generation

of the “great migration”. Over three-fourths of them were born in rural areas, but most have since moved elsewhere.

Baby boomers have also been described as 60’ers. The youth culture of the 1960s (forever young), the wave of political radicalism, and a radical change in values left their mark on this generation. Baby boomers have also been described as the “wet generation”, because alcohol consumption increased and became an everyday occurrence. Because of their number, baby boomers are a very versatile group. Therefore, comments on them being radical or “wet” should be considered with skepticism.

Baby boomers will soon finish their long careers, and thoughts of retirement are incubating. Many of them have worked for at least 35 years, many in the public sector. They have usually had about three occupations. The recession in the 1990s and the resulting isolation from worklife and long-term unemployment hit them rather hard. New education, employment, or occupations or sabbaticals do not interest them much.

Their health is better than that of the preceding generation, which retired at about the age of 60 years. However, baby boomers have many retirement ideas. Among the men, the tendency to retire is explained by deteriorated health. Among the women, the number of work years is also a factor. Job insecurity increases the tendency towards retirement; the desire to exit worklife is even more significant than health.

What is the baby boomers’ role now and in the future? They have a youthful view of themselves, they feel modern and advanced. Young people, however, view them as the stagnated generation, an obstacle to reform, and an economic burden. In reality, baby boomers pay the most taxes and do not receive transferred earnings. They are the biggest net payers in Finnish society.

Baby boomers will help reform worklife, retirement, and old-age practices—because of their number. Whereas the problems of older people were solved in the 1980s by premature retirement and in the 1990s by reorganization and improvements in the labor market readiness of the unemployed, the beginning of the 21st century brought flexibility to worklife as an answer to the needs of ageing people. Pension reform will also demand new rules and practices in worklife.

In the 2010s, baby boomers will retire and experience a time of changing surroundings, hobbies, self-development, and active participation in society and decision making. The practices and need for services in their third age will change society into a service society. Baby boomers still want to fulfill their dreams (Savioja et al. 2000).

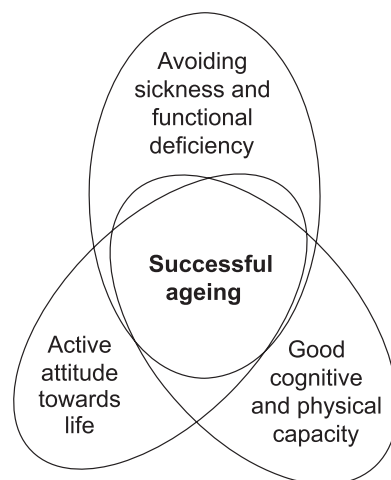
3.5 Successful ageing in worklife—utopia?

Even though the examination of successful ageing requires taking into account the entire life course, worklife has a significant influence because careers are long and a lot happens during worklife. Successful ageing can be built during worklife by ensuring that work does not increase illnesses and the probability of functional deficiency related to illnesses and that it supports good cognitive and physical capacity, as well as an active attitude towards life (Heikkinen 2003) (Figure 10).

Several research results speak for successful ageing. Heikkinen (2003) mentions the following three: (i) internal (genetic) factors do not alone define illnesses occurring with ageing, instead also external factors, such as living habits, significantly define the risks of illnesses and functional deficiencies; (ii) the relative importance of genetic factors decreases with ageing and the influence of non-genetic factors increases; and (iii) the features of regular ageing can be altered.

People are able to affect successful ageing more than has been previously assumed. For example, living habits (especially exercise, nutrition, use of stimulants, ratio of rest to work, self-care) affect health and functional capacity with age. The characteristics of the physical environment, work and work conditions, economic situation, services, social relationships, friends,

Figure 10. Most important components of successful ageing. (Rowe & Kahn 1998, cited by Heikkinen 2003)



appreciations and attitudes in society, and social equity are, according to Heikkinen (2003), connected with successful ageing.

The influence of functional capacity and health on successful ageing is essential. The actions of a human being can both maintain and develop, as well as damage, functional capacity. Work that is too hard, an unhealthy work environment, and poorly organized work can all damage both functional capacity and health and decrease work ability (Tuomi 1995). Hobbies and living habits containing health risks also damage functional capacity.

Sufficient functional capacity in order to achieve objectives describes the balance between personal resources and the environment. As ageing limits activities and reaching previous objectives becomes more difficult, a new balance can be found by modifying objectives in many ways and making activities easier (see Heikkinen 2003). The basic mode of successful ageing fits well into worklife because work ability can be understood as the balance between work and worklife demands and the employee's resources.

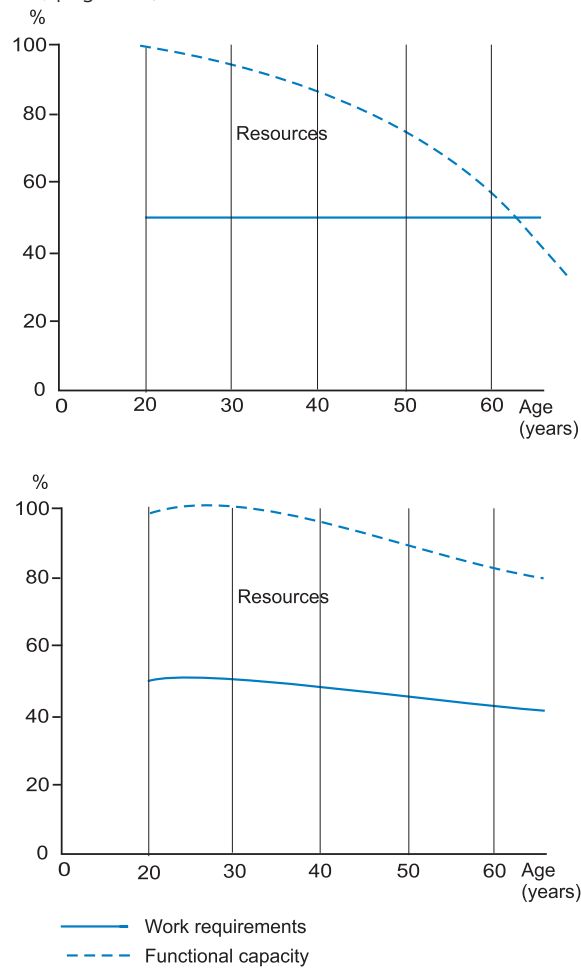
Functional capacity (physical, mental and social) forms the basis of human resources, and it should exceed the demands of worklife in order for the health and safety, as well as recovery, of an employee to be ensured (Figure 11). In different phases of worklife, functional capacity can be improved; work objectives, organization and environment changed; available resources optimized; functional deficiencies compensated for by different means; social support from the work community, occupational health care, and others can be acquired; and the like.

In order for people to be able to continue longer in worklife, objectives must be set in such a manner that they can be achieved also with decreased functional capacity or deteriorated health. According to Heikkinen (2003), health is not only a question of personal resources but also one of worker's objectives and the physical and social features of the environment, whose balance is health. Change in any of the three mentioned dimensions may disturb, maintain, or improve health.

This is also the situation in worklife, but with the difference that the objectives and environment are created by the employer, not the ageing individual. Therefore, knowing about ageing and growing old, as well as taking them into account, both when work objectives are set and the physical and social environment is built, is a crucial requirement for the successful ageing of an employee.

The more versatile the prerequisites of growing old can be made during the entire life course, the more successful ageing can be in the third (about 60–

Figure 11. Course of life with respect to functional capacity and coping at work. Upper stratification depicts the problem and the lower stratification the solution. (Ilmarinen 1999b, page 233)



80 years) and fourth (over 80 years) ages. The second age (i.e., worklife) has an important role in this chain.

What could be the criteria for successful ageing? The quality of ageing can, for example, be examined from the viewpoint of successful, regular, and pathological ageing. This theme has been studied, for example, by Uotinen et al. (2005). In their study about the importance of age identification for successful ageing, the target group was people aged 65–84 years, who were followed for a period of 8 years. These people were classified into three groups according to their self-evaluation of cognitive and physical functional capacity: positive, negative, and other.

The following criteria were used for successful ageing; if four of the five criteria were met, the person was considered to be ageing successfully:

- no illnesses or accidents that cause problems in everyday life
- no health problems that limit hobbies
- own assessment of cognitive functional capacity better than satisfactory
- own assessment of functional capacity good in comparison with that of others
- no signs of depression.

The results showed, among other things, that “positive” people felt they were younger, and they were also happier with their chronological age than those who were classified as “negative” or “other”. Age identification seems to be connected with physical and mental functional capacity. The younger the respondents felt, the better they assessed their functional capacity (Uotinen et al. 2005).

Even though these questions were asked of people already past worklife, the prerequisites of their successful ageing had been created during their careers. Therefore, the same criteria can be applied to working populations. Good worklife is an important prerequisite to successful ageing.

The view into the third age has improved significantly during the last few years. A healthy and active life expectancy is supposed to increase at least in a manner equal to total life expectancy. Hardships associated with the third age can often be won, and a satisfactory quality of life can be maintained by setting the objectives according to the preconditions. The visions into the fourth age are still unclear and hard to predict, but, because phases of life follow each other, it can be assumed that a good third age will also improve the quality of the fourth age (Heikkinen 2003).

CHAPTER 4

AGE INFORMATION
THROUGH RESEARCH

CHAPTER 4

AGE INFORMATION THROUGH RESEARCH

- 4.1 AGE MANAGEMENT IS BASED ON
KNOWLEDGE OF THE EFFECTS OF AGEING
- 4.2 THE MANY FACES OF AGEING
- 4.3 MAINTAINING WORK ABILITY
- 4.4 ECONOMIC ASPECTS OF AGEING
- 4.5 AGEING AND HEALTH
- 4.6 FUNCTIONAL CAPACITY AND AGEING
- 4.7 EDUCATION AND LEARNING

4 AGE INFORMATION THROUGH RESEARCH

In enterprises and other work organizations, the opinion often prevails that ageing causes problems: productivity and competitiveness decrease; sickness and absences increase; work communities become dysfunctional; and implementing changes becomes more difficult. The availability of younger workforce and the transfer of “silent” information (gained through experience) when senior workers retire also become issues.

Research indicates that there are many solutions to the problems caused by ageing. Everything begins with acknowledging the facts. After the strengths and weaknesses of different age groups are known, the reorganization and redistribution of work according to the strengths and special skills of ageing workers, with flexibility, individual needs, and support of work ability taken into account, turn the threats into new opportunities for the enterprise. The results speak for themselves: investing in the work ability of personnel pays off; the costs of absences and work disability decrease; and productivity increases. In addition, the image of the enterprise improves as a result of its better management and the increased job satisfaction among personnel.

Occupational safety activities, occupational health care, and other professional services must support the development of workplaces. Occupational health care should be improved, especially in small and medium-size enterprises. The actions of occupational safety and health authorities should, in turn, focus on work ability. In addition, labor market organizations and the government are expected to participate in improving the work environment.

The main responsibility for developing the work environment lies with the workplaces, where this activity is primarily a question of willingness, knowledge, and ability. Work must be constantly made more attractive, and the work environment must be good, because a good work environment promotes work ability, increases productivity, and is an important competition factor both for the enterprise and for Finland. New forms of cooperation between supervisors and employees that respect both the life course and diversity will solve the challenges brought to everyday work by ageing, and society should appropriately support these efforts. The participation of senior employees themselves and their active role in changing their worklife is essential. In order to develop the work environment, enterprises need “age management”.

4.1 Age management is based on knowledge of the effects of ageing

Managing people of different ages is called “age management”. Behind this activity lies the question of what supervisors should know about ageing. In this publication, ageing is used as a general concept that also covers the processes of ageing (see Section 4.2.1). It is necessary to check the facts because strange and faulty information still exists about ageing, even though research is readily available on the topic.

Some definitions of age management are basically similar but may stress slightly different points of view (Lähteenmäki 1999, Ilmarinen et al. 2003). A definition that emphasizes occupational health and work objectives follows:

Age management requires taking the employee’s age and age-related factors into account in daily work management, work planning and work organization; thus everyone—regardless of age—can achieve personal and organizational targets healthily and safely.

Research as a basis for age management

Age management is based on a longitudinal study of about 6500 municipal employees. The research covered a period of about 11 years, and its goal was to study the changes in the health, functional capacity, work ability, work environment, and stress of employees over 45 years of age as a result of ageing (Tuomi 1995, Tuomi et al. 1997). The study included a representative sample of all the biggest municipal employment groups. For this study, a meter, the work ability index, was designed to measure work ability. This meter has proved to be a good tool in forecasting the ability to cope at work and to sustain worklife (Tuomi 1997, Tuomi et al. 1998, Ilmarinen et al. 1997, Ilmarinen & Tuomi 2004).

The results of this longitudinal study showed that, over a period of 11 years, work ability remained good for about 60% of municipal workers, it decreased significantly for a little less than one-third of them, and it improved for about 10%. The changes in work ability were similar in physically and mentally demanding occupations and also in work that included both physical and mental demands (e.g., nursing work among women and transport work among men). The work ability of workers with mentally demanding tasks remained systematically better than that of workers in the other two groups, but, nevertheless, somewhat less than one-third of the workers with mentally demanding jobs also reported decreased work ability caused by ageing.

The aim of the study was to pinpoint the reasons behind the changes in work ability more accurately. The results indicated that work management, ergonomics, and lifestyle were significant factors with respect to changes in work ability. Work management was, however, the most significant. Work ability increased for those who reported improvements in their supervisor's actions and attitude. The probability of this group's work ability increasing was 3.6 times higher than that of those who were unhappy with their supervisor's actions (Table 12). The probability of work ability increasing was twice as high in the group with ergonomic improvements and an increase in leisure-time physical activity than it was in the group that did not report such changes.

Decreased work ability was accounted for by a deterioration of the same factors. Work ability decreased the most for workers who reported less appreciation and attention from their supervisors over the 11-year period of the study. The probability of their work ability decreasing was 2.4 times higher than that of those who had not reported any deterioration in work management. Moreover, having to worry about the work environment and tools, one-dimensional physical load (e.g., standing work), and a decrease in brisk leisure-time physical activity were also significant factors indicating a decrease in work ability (Table 13).

The significance of these findings is further emphasized by the fact that the study was longitudinal, over a period of 11 years, and the groups studied represented both mentally and physically demanding occupations. Changes in work ability were independent of the nature of the occupation and the gender of the employees.

Table 12. Model for the relationship of work and lifestyle with improvements in work ability.¹ Odds ratios (OR) and 95% confidence intervals (CI) of the logistic regression model.

Variable	OR	CI
Repetitive movements²		
– no decrease	1.0	
– decrease	2.1	1.0–3.4
Satisfaction with a supervisor's attitude²		
– no decrease	1.0	
– decrease	3.6	1.8–7.2
Brisk leisure-time physical activity²		
– no decrease	1.0	
– decrease	1.8	1.0–3.5

¹ Work ability index points improved by at least three points during the 11-year follow-up (mean age at the beginning and end of the follow-up 51 and 62 years, respectively).

² Change from the 51-year age group to the 62-year age group.

Table 13. Model for the relationship of work and lifestyle with decreased work ability (N=555). Odds ratios (OR) and 95% confidence intervals (CI) of the logistic regression model.

Variable	OR	CI
Standing at work²		
– no increase	1.0	
– increase	1.7	1.0–2.9
Satisfaction with work facilities²		
– no increase	1.0	
– increase	1.6	1.0–2.6
Opportunities to receive acknowledgement and respect at work²		
– no increase	1.0	
– increase	2.4	1.4–4.3
Brisk leisure-time physical activity²		
– no increase	1.0	
– increase	1.8	1.2–2.8

¹ Work ability index points decreased by 10 points from 1981 to 1992.

² Change from 1981 to 1992.

Good work management and supervisory skills require knowledge about ageing. The motto is *better results through better knowledge*. The necessary knowledge base is relatively large. Supervisors are not expected to be trained to become age experts—a good basic understanding about ageing is enough. (There are, however, references to additional sources of information in this publication for those interested in a deeper understanding of the issue.)

It would be useful for supervisors to read this chapter, “Age Information Through Research”, also from their personal point of view—even supervisors’ age, and the problem also applies to them. Supervisors also have superiors—and everyone can demand good management from their superiors at work. Several supervisors have also reported that the use of proper “age tools” has also made management more interesting and rewarding. Positive feedback from employees has shown that they are an important part of a supervisor’s work.

Employees’ knowledge about ageing is also very useful. Understanding one’s own ageing and that of others creates a good basis for a work community comprised of employees of different ages. It also decreases age discrimination among employees.

Table 14. What should managers and supervisors know about ageing?

<p>Theme 1. The many faces of ageing</p> <ul style="list-style-type: none"> – what does ageing mean – the many human ages 	<p>Theme 6. Functional capacity and ageing</p> <ul style="list-style-type: none"> – sensory functions – physical functional capacity – mental functional capacity – social functional capacity
<p>Theme 2. The workforce is ageing</p> <ul style="list-style-type: none"> – the age structures of the workforce now and in the future – unemployment rates and dependency ratios 	<p>Theme 7. Education and learning</p> <ul style="list-style-type: none"> – educational level of ageing people – adult education – lifelong learning – supporting learning
<p>Theme 3. Maintaining work ability</p> <ul style="list-style-type: none"> – work ability of ageing workers and the factors affecting it – effects of ageing on work ability – maintenance and promotion of work ability for ageing employees – research interventions to improve work ability – economic benefits of maintaining and promoting work ability 	<p>Theme 8. Values and attitudes</p> <ul style="list-style-type: none"> – basic Finnish values – age and values – significance of values in worklife
<p>Theme 4. Economic aspects</p> <ul style="list-style-type: none"> – additional costs of ageing to society – false conceptions about the costs of ageing employees – inexperience is expensive – ageing and productivity 	<p>Theme 9. Power of legislation</p> <ul style="list-style-type: none"> – ageing and legislation – protection of the ageing 1999 – revised Act on Occupational Health Care and Act on Occupational Safety
<p>Theme 5. Ageing and health</p> <ul style="list-style-type: none"> – perceived health – long-term illnesses – chronic symptoms 	

Table 14 describes the issues involved in age management that have proved useful over a period of 10 years' training experience, especially for the following two reasons: (i) there are several inadequate or even incorrect ideas about these issues and (ii) reliable and applicable information is readily available. In addition, these issues are closely connected to both today's and tomorrow's worklife.

4.2 The many faces of ageing

Ageing is a term with unpleasant connotations and is therefore often avoided in personal discussions. It is, however, a natural part of life and also an interesting, versatile, and surprising process. Ageing should not cause anxiety. Instead, one should first get to know its different manifestations and secrets. Understanding the different effects of ageing has become more and more important in worklife.

4.2.1 What does ageing mean?

Ageing and growing old mean somewhat different things although they are often used as synonyms in everyday speech. Ageing means chronological *ageing*, whereas growing old means the process of getting old.

Experts have long used the term *ageing employee*, which usually means employees over 45 years of age. Although this age limit is vague at best, it has both practical and theoretical bases. Concrete changes in people's health and functional capacity often start to appear somewhere around 40–50 years of age. These changes are also reflected in work ability because they affect personal resources. Another important reason for using 45 years of age as the limit has been the fact that there is still a good possibility to improve personal health and functional capacity (Ilmarinen et al. 2003).

The terms *older or aged worker* has also been used in the literature, in legislation, and in public discussions. This term was adopted during the work of the Committee on Ageing (Ministry of Labour 1996a). The term has been used to describe the workforce over 55 years of age, and its definition is as vague as that of the previous term. Justifications for this term have been, for example, that two-thirds of the employees over 55 years of age have one to two diagnosed chronic symptoms that may affect work ability. Research has shown that people 50–58 years of age experience significant changes in their work ability (Ilmarinen et al. 1997). At the same time, thoughts of retirement are strengthened. Not much time is left for activities to improve functional capacity, especially specific activities.

Growing old refers to the individual ageing process affected by both our heritage and environment. Each one of us ages individually, and the ageing process makes us more unique as we grow older. According to some studies, our living and work environments and our living habits affect the ageing process more than our heritage. Attention should, therefore, be paid espe-

cially to our environment and living habits because we can slow the ageing process with their aid (e.g., Heikkinen 2003).

The branch of science studying ageing, *gerontology* (*geron* = *old man*, *logos* = *science*), studies the process of growing old and old age. Gerontology describes the changes occurring in human beings and other species during ageing, the factors that affect their lifespans, the implications of growing old for individuals and communities, the factors that regulate the changes associated with growing old, and the way these factors can be affected (Heikkinen 2003). Gerontology is a multidisciplinary branch of science (Heikkinen & Rantanen 2003). The process of growing old can be studied in biology, physiology, anatomy, medicine, psychology, sociology, humanities, and economics (Hervonen & Pohjolainen 1991). Gerontology usually studies retirees and people over 75 years of age, the groups experiencing the biggest changes associated with the process of growing old.

From gerontology's point of view, ageing and older employees are relatively young, and the terms do not accurately describe workforce over 45 years of age. Lately, scientists dealing with worklife and gerontologists are finding that they have a more and more mutual interest, since, for example, the last decades of worklife have such a strong influence on the quality of the so-called third age, (i.e., retirement). Ageing people in worklife and older people in retirement are in different phases of the life course, and transitions between them are important targets of study. The life-course point of view has been described earlier in Chapter 3 (see also Heikkinen & Tuomi 2001).

The classical problem in studying ageing and different generations is how to separate the effects of a person's growing old, age cohorts, and age periods from each other. Age groups who were born, raised, educated, and introduced to worklife in different decades vary according to their level of education and the stimulative background of their social environments so much that the results of cross-sectional age comparisons of attitudes and, for example, factors related to talent are difficult to interpret.

Periodic effects refer to the significant changes that, for example, people face in worklife. Examples of such changes include advances in the automation of production and information technology, changes in management systems, the role of the public sector, economic trends, and changes in retirement systems and legislation. The changing values, attitudes, and expectations in worklife and in other life spheres are responsible for these changes.

Reliable measurement of periodic effects is, however, difficult, as illustrated by the fact that rather controversial research results have recently been pub-

lished about the values and work attitudes of young people. Drawing conclusions has not necessarily been any more reliable using material from the few follow-up studies that have lasted for decades. In these studies, having been selected to a research group and staying in it confuses the situation (Ilmarinen et al. 2003).

An *increase in individual differences* is one of the most typical and significant effects of growing old. Individual differences increase in physical, psychological and social ability, knowhow, attitudes, and values. The differences in work ability among a certain professional group can be significant, although the effect of selection increases with age and only a small proportion of an age group is willing or able to continue to work until old-age retirement. Individual differences cannot be overlooked; instead, we should react to them. More and more individuality is required in worklife because people age differently. Therefore, more individual solutions, for example, in work organization and task diversity are essential. On the other hand, individual differences also lead to individual work ability maintenance, support and rehabilitation measures (Ilmarinen 1999b, Ilmarinen et al. 2003).

A general conclusion of the studies that have been carried out is that differences in individual performance and everyday worktasks are greater than the differences between age groups. The implications of work experience, educational level, and profession are greater than those of age. Therefore, formal solutions to organizing the work of ageing employees are not effective.

The connections between ageing, work ability, and productivity lead to different conclusions, depending on whether we are interested in the performance of ageing employees in a single task, for example, in analyses of performance in laboratory tests, or whether the focus is on work performance and success in more generic connotations. The work performance and mistakes of employees of different ages can also be evaluated using different methods (Ahola & Huuhtanen 1995). In some studies of managers and supervisors, it has turned out that the uneven performance of young employees is more often explained by temporary environmental factors, whereas more permanent features explain the uneven performance of ageing employees. There have also been reports of research results indicating that age correlates positively with measured work performance but negatively with managers' and supervisors' performance evaluations. The latter was considered to reflect a negative attitude towards age (Ilmarinen et al. 2003).

4.2.2 The many human ages

Human beings are different ages simultaneously: chronological, biological, and psychological ages represent different manifestations of age in our society. *Chronological age* (i.e., calendar age) has been accepted as representing age because of its simplicity and acceptability, since everyone ages chronologically at the same pace, a day at a time. Therefore also “ageing” is understood as a normative event that applies similarly to everyone and provides a logical basis for defining growing old. Therefore chronological age is used to categorize and argue in favor of stereotypes, as well as to control certain possibilities to participate (Ranta 2004). Because ageing is, however, a unique event (even identical twins do not grow old similarly), chronological age can be rather misleading when used to describe ageing, for example, in worklife.

Biological age is often connected with changes in functional capacity caused by ageing. Average changes brought by ageing have been defined using different indices: the biological age index, the physical age index, the functional age index, and the vitality index. As parts of these indices, such biomarkers as variables of kidney function, bone density, skin elasticity, lung function, maximal oxygen consumption, muscle strength, and nerve velocity have been used. Over 170 different biomarkers have been used in different studies. Of these biomarkers, for example, lung function measurements, hand grip strength, systolic and diastolic blood pressure, hearing ability, and visual accuracy correlate best with chronological age. With the use of biomarkers, 52–90% of the variations in chronological age have been explained (Ranta 2004).

According to different indices, biological age increases about 1 percentage point a year starting from the age of 25–30 years. The use of these indices has been limited by the fact that a person may receive a good result in one part of an index and a poor one in another. A person’s individual index score cannot, however, be reliably interpreted in relation to calendar age. At the group level, index scores can describe the average advance of growing old (Heikkinen 2003).

Despite the interpretation difficulties, age depicting functional capacity has its relevance in worklife. The need to be physically fit, for example, in physically demanding worktasks is apparent, regardless of age. The “normal” decrease in functional capacity of 1% a year means that, for a person 60 years of age, the physical load of a worktask is an average of 20% greater than for a 40-year-old doing the same task.

When developing solutions, one faces ethical questions; for example, should the workload be decreased in correspondence to normal ageing or should the

decrease in functional capacity be prevented among all age norms? How can successful ageing be ensured in physically demanding professions? Physical ability can be maintained and developed regardless of the work age, and an active 60-year-old may well be in better shape than a physically passive 40-year-old. But can people be obligated to participate regularly in leisure-time physical activity on behalf of their worklife? These questions are addressed later in this publication (see Section 4.6 on functional capacity and ageing).

The criteria for *psychological* (i.e., subjective) age can be expressed, for example, by the following questions: how old do I feel (feel old), how old do I look (look old), how old do I act (act old), and how old would I prefer to be (prefer old) (Barnes-Farrell et al. 2002). Studies among female-dominated nursing personnel in five countries have shown that, according to all of the psychological age criteria, the respondents thought themselves younger than their chronological age (Table 15).

The results from different countries and cultures were relatively similar. The respondents perceived themselves to be about 3.6–4.8 years younger than their chronological age according to all of the criteria, except for “How old

Table 15. Mean differences between psychological and chronological age in years in five countries.¹ (Barnes-Farrell et al. 2002)

	Brazil (n = 178)	Croatia (n = 111)	Poland (n = 203)	Ukraine (n = 250)	USA (n = 127)	All (n = 867)
How old do I feel?	-6.3 ²	-3.8	-5.8	-4.5	-3.4	-4.8
How old do I look?	-4.1	-3.3	-3.8	-3.5	-3.4	-3.6
How old do I act?	-4.5	-5	-6.5	-3.2	-2.4	-4.3
How old would I prefer to be?	-11.2	-9	-14	-12.6	-5.5	-9.9

¹ Age standardized according to age.

² A negative difference indicates that the respondent feels/looks/acts/prefers to be younger than his or her chronological age.

would I prefer to be?” The preferred age at the time of this study was an average of 9.9 years younger than the chronological age. The preferred age also indicated that the greatest differences occurred between different countries. In Poland, the respondents wanted to be 14 years younger, but in Croatia the preferred age was 9 years younger.

Although the differences between psychological and chronological age are significant, it does not mean that all people think of themselves as younger than their chronological age. Whereas 85% of the respondents preferred to be younger, approximately one-third did not report that they felt that they were younger than their chronological age. Of the respondents, 13% felt they were older than their calendar age, 13% acted older than their age, and 10% thought they looked older than their age. The respondents of this study were relatively young and had worked an average of 14 years in nursing. The difference between psychological and chronological age usually grows with age (Barnes-Farrell et al. 2002).

The differences between the chronological and psychological age of Finns and Americans have also been studied (Uotinen 1998, 2005). The results indicated significant differences in subjective age. In the youngest age group (25–39 years), in which the average age of both the men and the women was 32 years, American women felt that they were (subjective age) a couple of years younger than the Finnish women and, in addition, wanted to be 26 years old on the average (ideal age).

The difference in experienced age grew with age. In the age group of 40–54 years (average age 46 years), the Americans felt that they were about 6 years younger than their chronological age, but they wanted to be 16–18 years younger than their chronological age. Among the Finnish men and women, the difference between the subjective and chronological ages in this age group was only about 2 years, and the difference from the ideal age was only 5–9 years.

An interesting finding in the results of the Finns was especially the difference in ideal age between the men and women, which was approximately 3 years lower among the men. In the oldest age group (55–64/69 years, average ages 59–61 years), the difference between the Americans and Finns was the greatest. The subjective age of the Americans was over 10 years younger than their chronological age, and that of the Finns was approximately 3 years younger. For the ideal age the difference was even greater. Whereas the American women and men wanted to be about 35 years old, Finnish women set their target at 50 years, and men wanted to be 45 years of age (Tables 16 and 17).

Table 16. Chronological, subjective¹ and ideal² age of Finnish and American men in chronological age groups. (Uotinen 1998, 2005)

Age group/subjective age	Finland	USA ³	Difference (t-test)
25–39 years	(n=178)	(n=89)	
Chronological age	32.0	31.5	ns ⁴
Subjective age	31.2	29.6	ns
Ideal age	28.1	25.0	ns
40–54 years	(n=203)	(n=93)	
Chronological age	47.4	46.8	ns
Subjective age	45.6	39.9	*** ⁵
Ideal age	38.1	30.1	***
55–64 years	(n=178)	(n=117)	
Chronological age	59.4	61.1	***
Subjective age	56.4	50.7	***
Ideal age	43.9	34.8	***

¹ Subjective age was measured by asking “How old do I feel?”

² Ideal age was measured by asking “How old would I prefer to be?”

³ Comparative data from Barak et al. 1988.

⁴ ns = not significant

⁵ *** = p < 0.001, very significant

Table 17. Chronological, subjective¹ and ideal² age of Finnish and American women in chronological age groups. (Uotinen 1998, 2005)

Age group/subjective age	Finland	USA ³	Difference (t-test)
25–39 years	(n=268)	(n=80)	
Chronological age	32.5	32.0	ns ⁴
Subjective age	31.5	29.3	*** ⁵
Ideal age	30.0	26.0	***
40–54 years	(n=279)	(n=94)	
Chronological age	46.5	46.9	ns
Subjective age	44.1	40.7	***
Ideal age	41.1	28.2	***
55–64 years	(n=249)	(n=105)	
Chronological age	59.5	61.3	***
Subjective age	56.9	50.6	***
Ideal age	50.6	34.9	***

¹ Subjective age was measured by asking “How old do I feel?”

² Ideal age was measured by asking “How old would I prefer to be?”

³ Comparative data from Barak et al. 1988.

⁴ ns = not significant

⁵ *** = p < 0.001, very significant

Subjective age has also been studied in research on Finnish values, attitudes, and world views (Puohiniemi 2002). The results indicated that the difference between chronological age and subjective age (how old one feels) steadily increased with age. Whereas the youngest age group (15–24 years) felt that they were approximately 1 year older than their calendar age, 45- to 54-year-olds felt about 5 years younger than their calendar age, and over-65-year-olds felt almost 8 years younger.

The respondents were also classified into four groups according to their subjective age. The age realists felt themselves to be their own age, the youthful felt themselves to be 1–15 years younger than their own age, the ageless felt themselves to be over 15 years younger than their own age, and the rest felt themselves to be older than their own age. The results showed the following:

- the number of age realists decreases with age almost linearly (15–24 years = 62%, over 65 years = 27%)
- the number of youthful and ageless persons increases with age almost linearly (15–24 years = 14%, over 65 years = 70%)
- those who feel themselves to be older than their own age are mostly young people (15–24 years = 24%, over 65 years = 3%).

Does subjective age or age identification have any practical implications? Naturally, it not only affects the individual age attitude of people, but it also enables them to follow their chronological age. Subjective age also has predictive value in that it may indicate general well-being and belief in the future, both of which affect health.

An interesting 13-year follow-up study was conducted to determine how subjective physical and mental age affects mortality. The follow-up group's age was 65–84 years in the beginning of the study, and it was divided to three groups according to the persons' own subjective age as follows: younger, same, and older than their own age. The feeling of being physically older than one's chronological age increased mortality by 42%, and the feeling of being mentally older increased mortality by 56% when the groups were compared with the group of people who felt younger than their chronological age. Therefore, subjective age predicts deteriorating health as measured by mortality (Uotinen et al. 2005).

4.3 Maintaining work ability

The most important asset of employees in worklife is their work ability. Because enterprise profits are made possible by the work ability of its personnel, the enterprise has a central role in supporting and promoting the work ability of its employees.

Concepts of work ability have changed and developed during the last decade in a more holistic and versatile direction. The health-based definition of work ability has been paired with integrated models in which work ability is created and promoted by many factors. The definition of work ability depends on whether it is considered from the point of view of occupational health, social insurance, or, for example, rehabilitation. The following description of work ability is based on the targets of occupational health, well-being, work ability, and coping.

4.3.1 Dimensions of work ability

Work ability is built on the balance between a person's resources and work demands. A person's resources consist of health and ability, education and competence, and values and attitudes.

Work, on the other hand, covers the work environment and community, as well as the actual contents, demands, and organization of work. Management (i.e., supervision) is also associated with work (Figure 12).

Work ability can be described as a building with several floors. Health and physical, psychological, and social functional capacity create the ground floor. The entire weight of the rest of the building rests on the ground floor. Changes in functional capacity and health are reflected in work ability—deterioration of health is a threat to work ability. Improved functional capacity also makes the development of work ability possible.

The second floor of the building represents professional knowledge and competence (skill). Knowledge and competence and their continuous development are used to meet the demands of worklife. Changes in challenges and demands mean that the continuous development of professional skills becomes an even more important prerequisite for work ability. Personal ability to develop one's work and act in different work communities can also be considered to be competence.

The third floor contains values, attitudes, and motivation. This floor is all about the balance between work and personal resources, as well as the re-

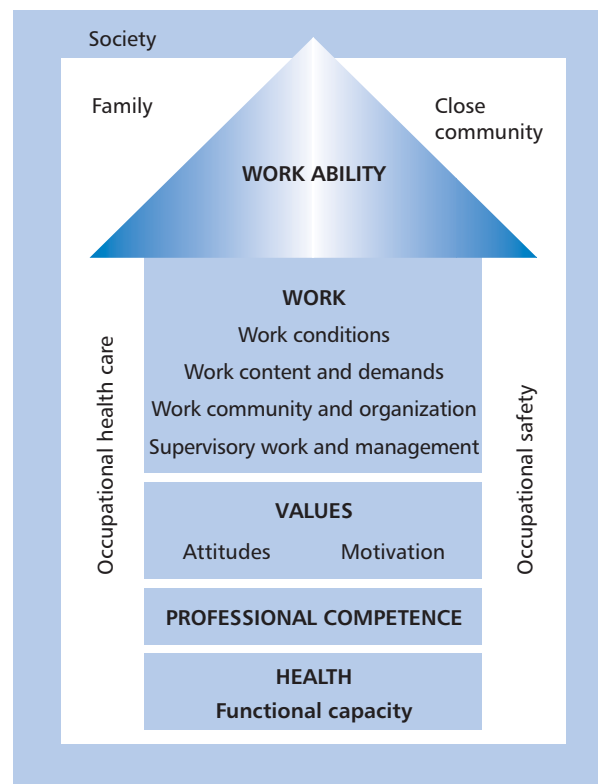


Figure 12. Work ability and related factors.

relationship between work and personal life. It is relatively open to different influences. Concepts created by the process affect and change values and attitudes. Changes in society or legislation (e.g., pension reform) are also reflected in the third floor.

The fourth floor represents work and its related factors. It is the largest and heaviest floor of the work ability building, and its weight is supported by the lower floors. The demands and organization of work, as well as the functioning and management of the work community, make the work floor an entity that is multi-dimensional, difficult to perceive, and difficult to measure. On the work floor, special attention is paid to supervision and management. Supervisors are responsible for the fourth floor, and they also have a mandate to organize and change the floor, if necessary.

Work ability is primarily a question of balance between work and personal resources. In practice, people search for the optimal balance through their entire worklife. This optimal balance may be very different in different phases of worklife. In order to find a balance, work and personal resources need to be continuously combined. Personal resources change, for example,

with age, whereas work demands change, for example, with globalization and new technology. The factors affecting work ability are therefore continuously changing.

The maintenance and promotion of work ability requires good cooperation between supervisors and employees. However, neither can ensure that work ability will not change; instead the responsibility is shared between the employer and employee. Work ability is not, however, only a matter of these two. The work community can also be a very important factor in supporting the work ability of its members.

Central roles are also played by occupational health care and the occupational safety organization. The tasks fixed by law for occupational health care include the maintenance of employees' work ability. Combining the professional knowledge and the changes occurring in occupational health care with the demands of work is a challenging task. The occupational safety organization, in turn, uses its competence to prevent and fend off the work risks that threaten work ability.

Work ability is not separated from life outside work. Family and a person's close community (relatives, friends, acquaintances) can also affect a person's work ability in many different ways throughout life. Making work and family life compatible has become more important. Society creates the infrastructure, services, and rules according to which enterprises and employees' work ability can be supported. The importance of the different dimensions of work ability has been studied using the material of the Health 2000 project. Preliminary results show that, among people of all ages, health, functional capacity, and the characteristics of one's work are the statistically significant factors behind work ability (Ilmarinen et al. 2005).

Lately, the term work well-being has replaced work ability. Without going deeper into the similarities or differences of these two terms, it can be briefly noted that work well-being describes the quality of the work ability structure. One positive attribute of the term is that it focuses special attention on the work community and the quality of worklife.

4.3.2 Effects of ageing on work ability

Follow-up studies among people over 45 years of age have shown that for about 60%, work ability remained good or excellent, it decreased for a little less than 30%, and it increased for a little under 10% over a period of 11 years. The results were similar for both the men and women. The changes in work ability in different occupations were also relatively similar. However, it seems that the work ability of the women in physically demanding jobs

improved more often than that of the men, whereas work ability improved more often among the men in mentally demanding work. A decrease in work ability seemed to be more common for the men with mixed mentally and physically demanding tasks (primarily transport) and for women in, for example, nursing work (Tuomi 1997, Ilmarinen et al. 1997) (Table 18).

A cross-section of the work ability of people of different ages in small and middle-size enterprises illustrates both the differences between age groups and the increase in individual differences with ageing (Figure 13). The work ability of most of the people was good or excellent, regardless of age. Young people were, however, more homogeneous in relation to work ability than those over 45 years of age. There were more people whose work ability was moderate or poor among the older employees. Among the senior workers of the same age, work ability varied from one extreme to the other.

It is important to note that poor work ability does not mean “poor employee”. The reason for poor work ability can be found on any floor of the work

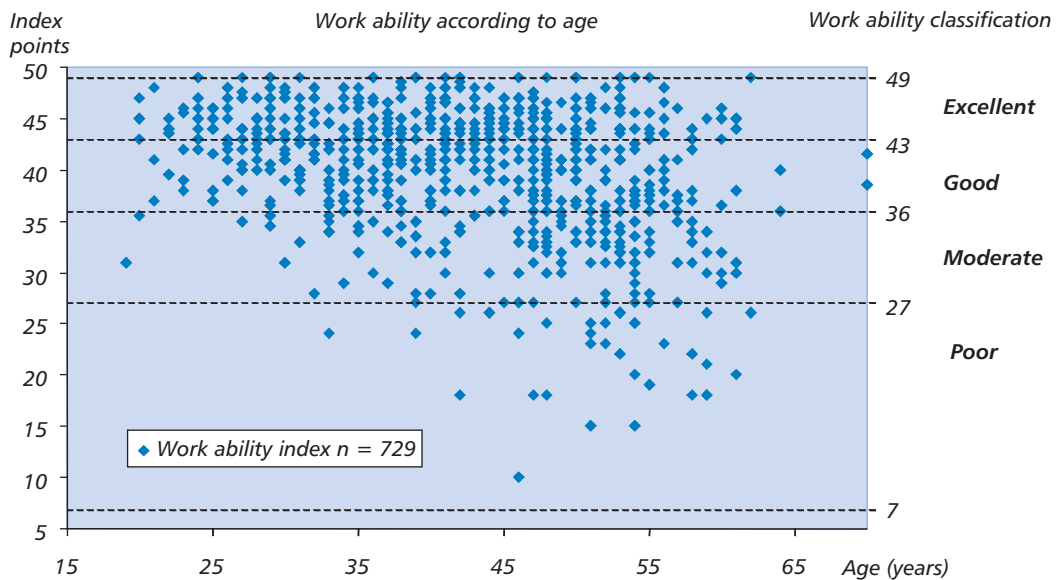
Table 18. Proportional increase and decrease in the work ability of men and women according to the basic type of work during 11 years of follow-up (the average age in the beginning of the study being 51 years).

Gender/ type of work	Improvement in work ability ¹		Decrease in work ability ²	
	n	%	n	%
Women	354	9.3	505	28.3
Physical	115	11.3	127	31.5
Physical-mental	99	9.1	140	25.7
Mental	140	7.9	238	28.2
Men	201	9.0	300	29.7
Physical	82	6.1	100	31.0
Physical-mental	36	11.1	48	33.3
Mental	83	10.8	152	27.6
Total	555	9.2	805	28.8

¹ Proportion (%) of those whose work ability index improved at least 3 points during the 11-year follow up.

² Proportion (%) of those whose work ability index decreased at least 10 points during the 11-year follow up.

Figure 13. Individual distribution of work ability by age in small and middle-size enterprises in Finland in 2000. The work ability index ranges from 7 to 49 points; the greater number of points, the better the perceived work ability.



ability building (see Figure 12)—according to some studies, the reason is often located on the fourth floor (i.e., work floor). The reason for poor work ability may be poor work organization or work demands that do not correspond to the resources of the employee. Poor work ability can also be caused by poor management or a poor work community. Therefore, it is important to determine the reasons for poor work ability and see that the necessary corrective actions are taken.

The reasons for poor work ability can also come from all floors of the work ability building. In such cases, the order of, and schedule for, the corrective actions must be planned. Work ability can be affected for a person's entire worklife, but such a result requires good planning and long-term implementation.

4.3.3 Work ability maintenance and development for ageing employees

Work ability maintenance has a long tradition in Finland. Activities to help employees maintain their work ability began in the beginning of the 1990s. It started with an agreement between labor market organizations, which unanimously promoted the necessity of work ability maintenance. The prac-

tices and methods devised for work ability maintenance have become more sophisticated and versatile ever since. Today, they cover the development of both the work environment and work community, as well as the strengthening of individual resources of employees. Occupational health care services or human resource departments have often planned and implemented activities to help workers maintain their work ability (Costa et al. 2005).

Work ability maintenance has been defined as follows (Peltomäki et al. 2002a):

Work ability maintenance means methodical and purposeful actions taken in cooperation with the employer and employees, as well as cooperative organizations in the workplace, in order to support and promote the work ability and health of everyone in worklife.

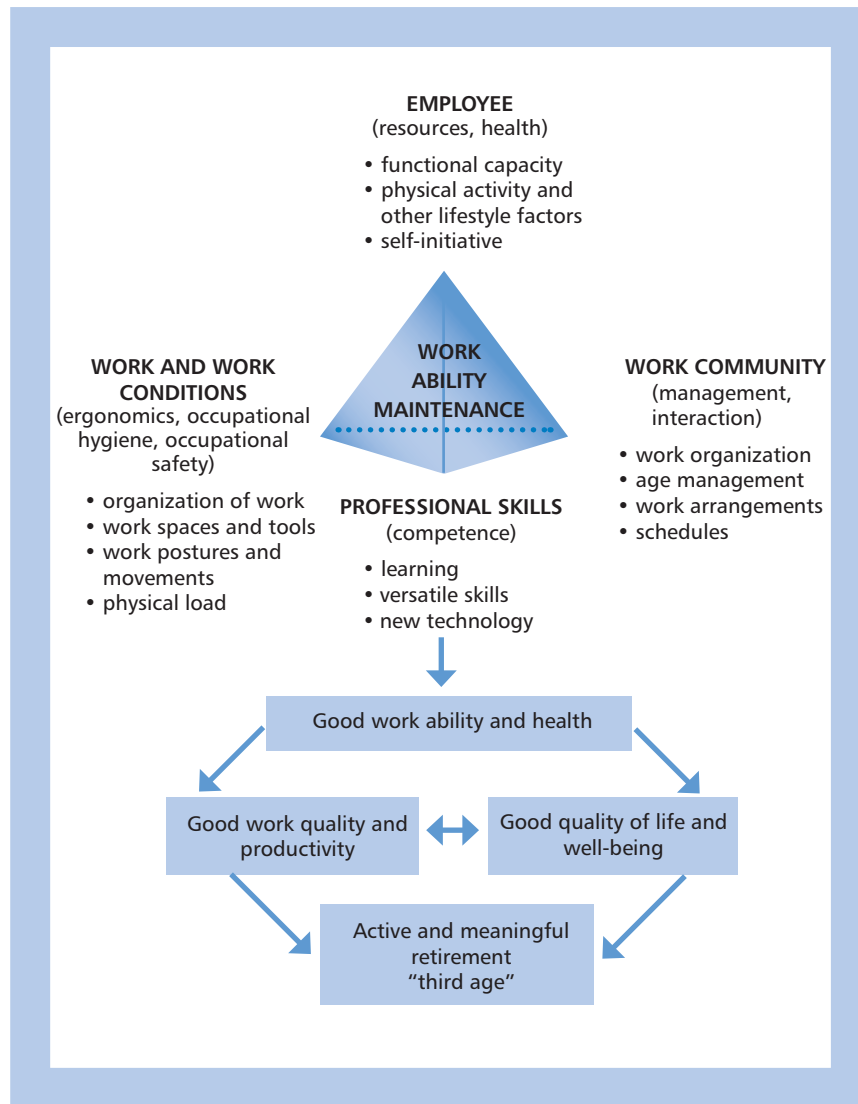
The most important practical objectives of work ability maintenance are to improve work and the work environment, develop the work community and work organizations, and promote the health and professional competence of employees.

The basis for work ability maintenance is the active commitment and participation of different parties in the work community and workplace and their possibility to affect health and safety at work and other workplace health promotion activities.

The basic model for work ability maintenance has proved to be operational (Figure 14). Any survey of the needs for work ability maintenance must cover the many different dimensions of work ability. Actions are planned according to this survey. Work ability maintenance requires good management and perseverance. The results must be evaluated so that success can be defined and methods developed. For example, the Finnish Institute of Occupational Health has developed and tested different methods for work ability maintenance in enterprises (www.ttl.fi, www.tyky.fi).

The effects of work ability maintenance are first seen as improved health and work ability among employees and the work community. There is also improvement both in the quality and productivity of work and in the quality of the life, functional capacity and well-being of personnel. The effects of work ability maintenance also last until retirement; health status, functional capacity, and quality of life remain high. Investing in work ability maintenance, therefore, improves the “third age” (60–80 years of age) (Tuomi 2000, Tuomi et al. 2001). This result is an important example of the effects that the stages of life have on each other. Good worklife ensures a good “third age”.

Figure 14. Basic model for work ability maintenance and its influence in enterprises and work organizations.



What types of activities are used then for the maintenance of work ability (MWA) in Finnish workplaces? A good overview is given by the MWA Barometer developed by the Finnish Institute of Occupational Health for the national age program (Peltomäki et al. 2002b). The barometer was used to study the scope, contents, function, and implementation of work ability maintenance in Finnish workplaces. It also provided information for developing the programs further. The barometer was applied to about 1000 workplaces, in which employers, employees, and occupational health professionals were interviewed. The total number of respondents in 2001 was

2438. Thus far, the barometer has been used to gather information in 1998, 2001, and 2004. The information from 2004 was not yet available when this publication was written.

The following four figures (Figures 15–18) illustrate the results of the MWA Barometer in 2001. The most common targets for the development of the work environment during the last year were improving work facilities, equipment and occupational safety, decreasing awkward work postures or physically demanding work phases, improving the indoor climate (air quality, heating and humidity) in work facilities, and decreasing the hazards caused by machinery and equipment. Carrying, lifting, holding, or standing has also been reduced, and protection against harmful chemicals has been improved. The targets of work ability maintenance remained essentially the same in 1998–2001. Employers reported more such activities than the personnel did (Figure 15).

The most important targets for developing a work community and work organization include improving the planning and quality of work, increasing cooperation and participation, and clarifying work objectives. Improving communication, developing management and supervisory work, and increasing the independence and responsibility of workers were reported as the next targets. The MWA Barometer indicated that several actions had been taken in most of the workplaces. The least effort had gone into increasing the flexibility of workhours or decreasing the workload or stress caused by delivery deadlines. Changes since 1998 were few. The differences between the employers' and employees' opinions about the amount of work ability

Figure 15. Work ability maintenance with respect to the work environment in 2001.

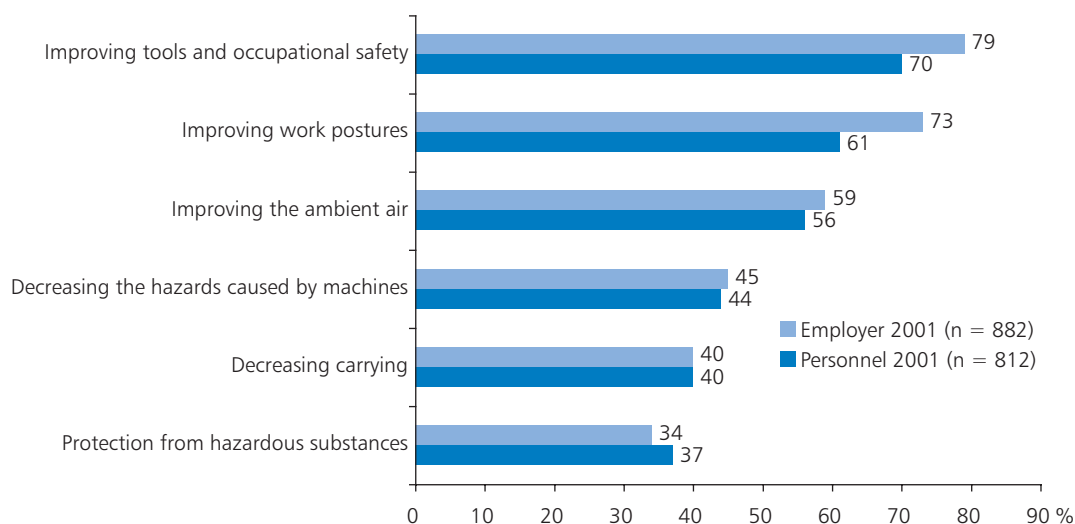


Figure 16. Work ability maintenance with respect to the work community and work organization in 2001.

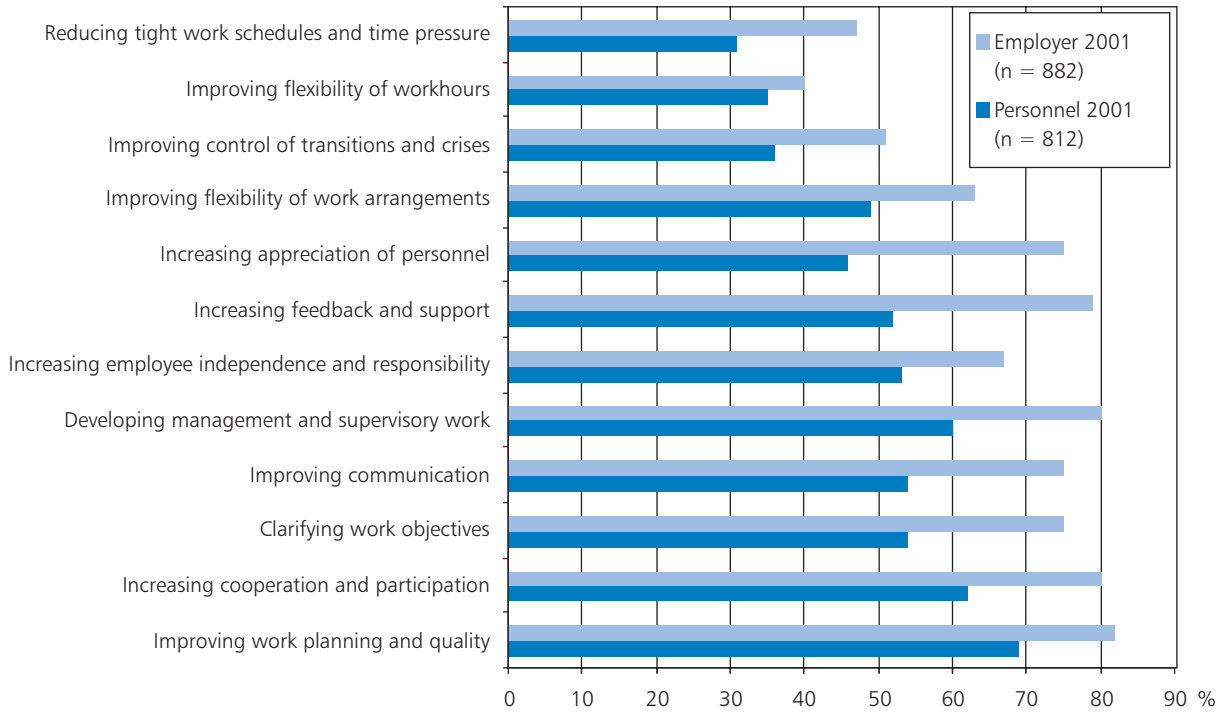
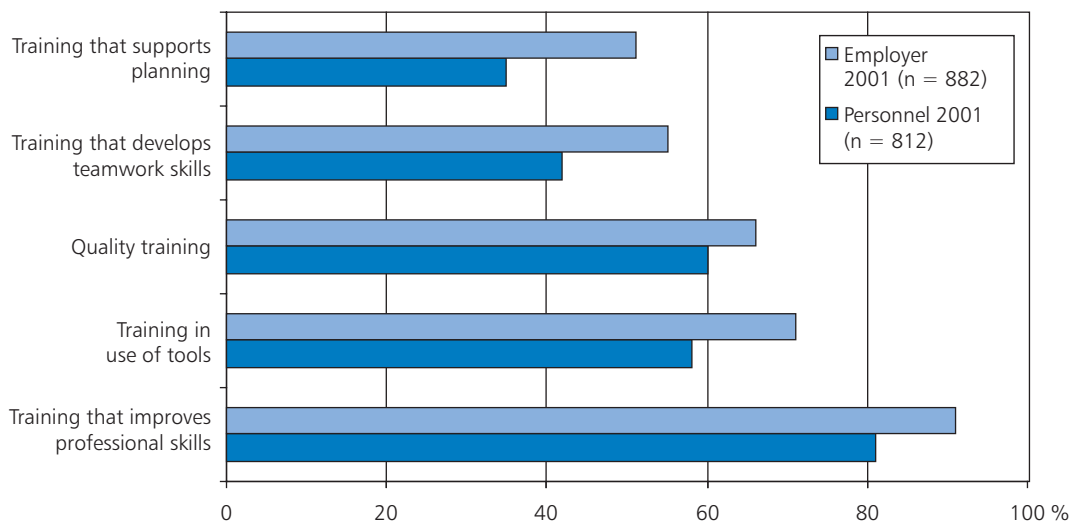


Figure 17. Work ability maintenance with respect to knowledge and skills in 2001.



maintenance carried out were significant for almost all of the target workplaces (Figure 16).

The professional competence of employees had also been improved in many ways. At the top of the list were professional training, instruction in the use of new information technology, and quality training, which had been actively organized in most of the workplaces. Training in group skills and planning were also mentioned in at least one-third of the workplaces. The situation remained virtually unchanged in 1998–2001. Employers reported more training than the personnel did (Figure 17).

The work ability and health of employees were improved especially through the organization of various forms of health-enhancing physical activity and the provision of access to other types of activities and rehabilitation. More than half of the interviewed workplaces had taken these types of actions. However, promoting healthy eating habits or smoking cessation and the reduction of drinking has only been carried out in about one-third of the workplaces. The availability of activities had slightly increased since 1998. The views of the employers and employees were similar (Figure 18).

The aforementioned types of work ability maintenance were actively used and multi-dimensional in Finnish workplaces in 2001, and the scale of the actions remained essentially the same in 1998–2001. This status quo suggests that the growth of work ability maintenance within the workplace may have ended. However, several forms of positive development had occurred in work ability maintenance in 1998–2001. The concept of work ability main-

Figure 18. Work ability maintenance with respect to functional capacity and health in 2001.

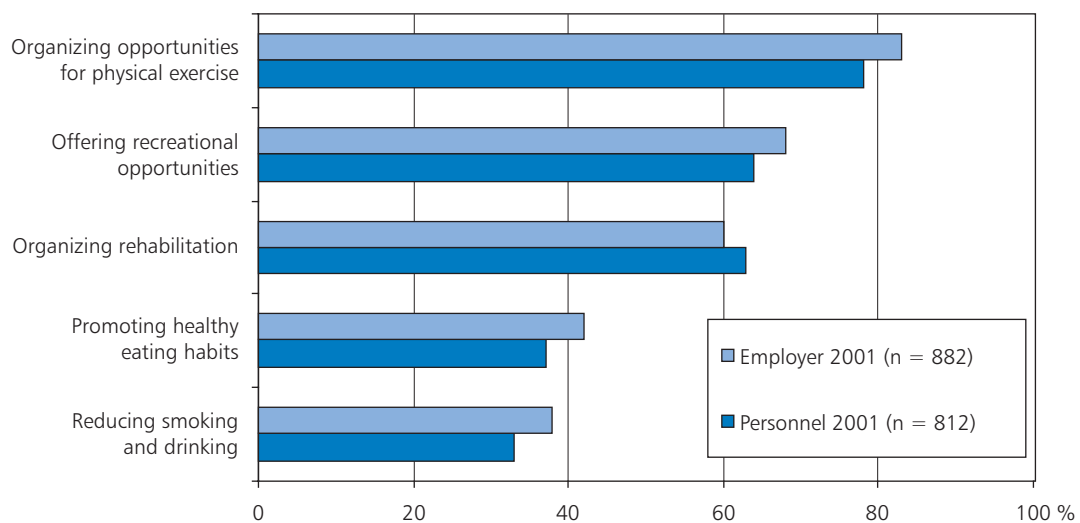


Figure 19. Management trained in age management. (Peltomäki et al. 2002b)

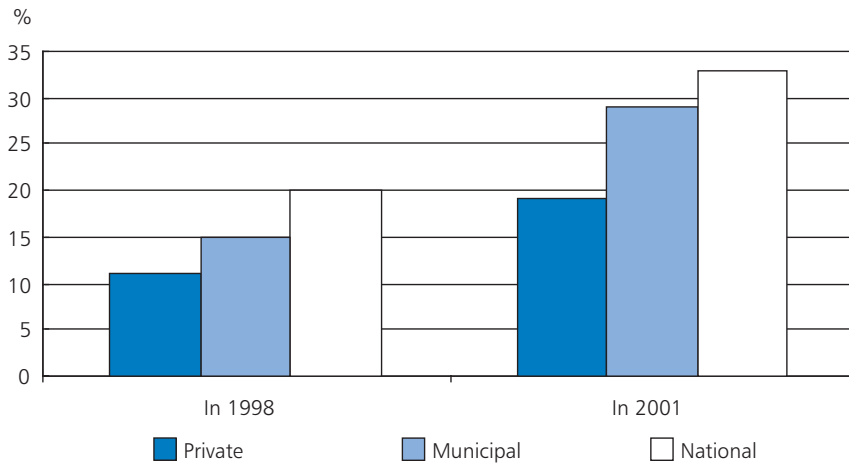
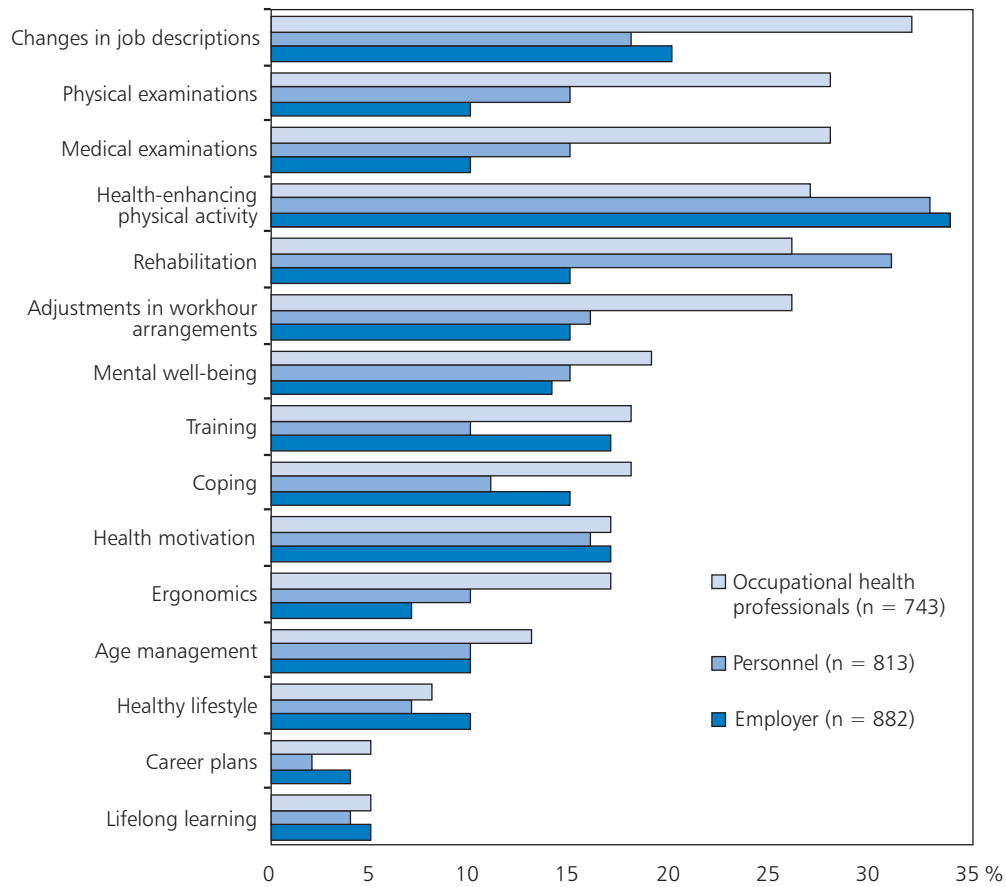


Figure 20. Actions and methods proposed for maintaining the work ability of ageing employees. (Peltomäki et al. 2001)



tenance had become familiar, and the attitudes towards it were positive in the workplaces. Almost 80% of the interviewed workplaces reported many or some activities, which extensively covered all of the target areas of work ability maintenance and development (Peltomäki et al. 2002b).

The MWA Barometer also illustrates the age issue in workplaces in 2001. According to the barometer, in somewhat fewer than half of the workplaces, the ageing of personnel was considered “somewhat a problem” or “not a problem”. In the private sector, there were fewer problems due to the ageing of personnel than in the public sector. Ageing employees were encouraged to continue in worklife in every second workplace. Age management was not well known in workplaces in 1998. However, by 2001 supervisors and executives had received much more training in this field (Figure 19).

The methods proposed to maintain the work ability of ageing employees form a list of actions whose importance depends on who is asked (Figure 20). Employers most often propose health-enhancing physical activity, changes in job descriptions, training, health motivation, rehabilitation, and adjustments in workhour arrangements. Employees propose health-enhancing physical activities, rehabilitation, changes in job descriptions, adjustment in workhour arrangements, and health motivation, but also medical examinations. Occupational health professionals, in turn, most often propose changes in job descriptions, physical and medical examinations, rehabilitation, and adjustments in workhour arrangements. The same methods were proposed by different respondents with different emphasis. The proposed methods primarily target workhour arrangements and the individual resources of ageing employees.

4.3.4 Research interventions to improve work ability

This section describes observations and experiences gathered through research interventions targeting work ability. Interventions in workplaces represent the most reliable evidence of whether work ability can be affected and with what methods. Research interventions test the action models and their effectiveness in practice.

It is easier to affect the contributory factors of work ability, such as health and functional capacity, competence, attitudes, or worklife properties, than it is to change work ability itself. Simultaneous interventions targeting several factors contributing to work ability, in which an external researcher participates in the planning, implementation, and follow-up of the enterprise's workplace health promotion, produce good results but are both complex and demanding in practice. They require a long time span and may be expen-

sive. On the other hand, a limited-scope, though intense, intervention may not initiate permanent improvement in work ability (Ilmarinen & Lehtinen 2004, Ilmarinen & Tuomi 2004).

Several research interventions in the early 1990s tested the effect of increased physical activity on work ability. Longitudinal studies had already indicated that regular physical activity and changes in it are positive work ability factors (Tuomi 1995). Increased physical activity did indeed improve the work ability of police over a period of 8 months (Soininen 1995) and that of personnel in a small metal-working enterprise in 6 months (Smolander et al. 1999a). The health and physical functional capacity of policemen improved, and their psychosomatic symptoms decreased. Improving poor health and functional capacity, which are the basis of work ability, may also be enough to increase work ability.

How much should regular physical activity be increased in order to affect work ability? In a random controlled study, the effects of versatile workplace physical activity on the work ability of women in physically semi-demanding textile work were studied. The 8-month, supervised, and versatile physical activity intervention improved the 2-year work ability prognosis for the textile workers and increased the proportion of women receiving a “good work ability” rating during the 12-month follow-up. The average work ability index did not, however, improve, nor did sick leaves decrease as anticipated. The results indicate that supervised workplace exercise (1 hour/week) has a positive, but relatively small effect on the work ability of women in physically semi-demanding work (Nurminen 2000).

The work ability of women in semi-demanding, basic service occupations has also been assessed. In a study on female cleaning workers, both their living habits and work were affected. The 11-month intervention in work methods and equipment, combined with increased physical activity, improved the work ability of cleaners by about 10% (Hopsu et al. 2003). The combined effects of ergonomic improvements and physical activity have also been studied among home help personnel.

Improvements in ergonomics were targeted towards solving problems related to a personal work analysis, work contents, and workload. A challenge in this study was the fact that the improvements had to be made partly according to the terms of the clients and in the clients’ homes. This composition managed to prevent work ability from decreasing with age when the results were compared with those of a control group whose members did not participate in the intervention and whose work ability decreased during the follow-up (Pohjonen 2001).

The home help personnel and their work ability were monitored for 5 years after the aforementioned study. The results showed that work ability decreased in all of the groups. The deterioration of work ability was lowest, however, in the groups that had participated in the interventions. The long-term effects of the research interventions were visible when the results were compared with the changes in the control group. The deterioration of work ability was not, however, prevented by previous interventions. Work ability maintenance in workplaces should therefore be continuous (Pohjonen 2001).

An example of a multi-dimensional intervention in a workplace was the so-called Mahis program, which was conducted in an enterprise manufacturing low voltage equipment (Leppänen et al. 2001). About 700 people participated in the 3-year program, which consisted of a total of 16 different activities (e.g., physical examinations, health care, seminars on the maintenance of work ability, health education, improvement of functional capacity, development of workplace ergonomics, teamwork and management, managing work-related stress, excursions, and cultural activities). The personnel participated in different parts of the program according to their job descriptions and interests, and the results were, therefore, analyzed in relation to participation. The active participants improved their work ability when compared with the baseline values 3 years earlier, whereas the work ability of the passive participants decreased (Louhevaara et al. 2003).

Similar results were obtained in an intervention in which the development of the work community and enterprise management was used to affect work well-being (Elo et al. 2004). This study was carried out in a municipal technical office, and about 1800 persons participated, 77% of whom were men. The target of this program was to change the operational culture to include more participation and to improve the psychosocial work environment. The participation of personnel in different development interventions was registered. The results showed that the psychosocial work environment improved and fatigue decreased, but work-related stress increased. Familiarity with work objectives, possibilities to affect work, communication, and management improved. Active participation in the intervention activities improved both the familiarity with work objectives and work ability.

Multi-dimensional interventions may be effective in improving work ability, but they require active, long-term commitment in several respects. In all of the aforementioned research interventions, work ability was measured using the work ability index, which is a method developed and validated by the Finnish Institute of Occupational Health to measure perceived work ability (Tuomi et al. 1992 & 1997).

4.3.5 Economic benefits of work ability maintenance

The economic importance of work ability maintenance has been studied by Hietala (1996) and Ahonen (1996). Ahonen divided the economic influence of workplace health promotion into the following three main groups: immediate economic effects, enterprise size-specific effects, and indirect economic effects. The immediate economic effects were related to immediate health effects that included decreasing sick leaves, work disabilities, accidents, and deaths, as well as increasing individual profitability.

In a small workplace program of the Finnish Institute of Occupational Health, a survey of the effects of work ability maintenance on productivity was conducted among approximately 200 entrepreneurs. The questions concerned the estimated productivity, profitability, and capacity use of the enterprise in the last, current, and next year. A total profitability number was calculated on the basis of the trends of these estimates. The entrepreneurs were also asked to submit reports on the workplace health promotion carried out in the enterprise. The results showed that, in the enterprises which had carried out programs to maintain work ability, the total productivity was about 3% higher than in the enterprises that did not have such projects. The total productivity was increased the most by accident prevention (+10%), personal protection (+7%), and risk assessment (+6%) (Ahonen 1996).

During the small workplace project, the enterprise programs that concerned the maintenance of work ability were still in their development and testing phase, and not all of the enterprises were ready to implement them holistically and effectively. The promotion programs were used to target workplace design (49% of the enterprises), work community development (37% of the enterprises), and employee health and functional capacity (only 29% of the enterprises). Therefore, the estimated economic gain was somewhat under, rather than over, the estimate when compared with the potential that was available to the enterprises.

Ahonen (1996) has also studied the total work and age-related costs of different sicknesses that can be affected by workplace health promotion. Combining different illness groups into the domain of work ability maintenance is naturally problematic, and, for example, musculoskeletal disorders may be affected by improving both the individual functional capacity of an employee and work ergonomics. National and enterprise economic calculations combined estimate that the biggest profits can be acquired by supporting the individual functional capacity and general health of employees. The second most important target of work ability maintenance is workplace design, especially ergonomics. Developing the work community, decreasing mental illnesses, and improving mental health come third.

At the time of the estimates, musculoskeletal disorders were the primary cause of work disability, and, therefore, the order of the targets of work ability maintenance was as already mentioned. In recent years, however, psychological problems have become more common than musculoskeletal disorders and are now the primary cause of work disability. This change may lead to work ability maintenance being focused on improving the work community, which may also be beneficial from an economic point of view.

One overview of the economic benefits of work ability maintenance gathered results from small workplace programs and estimated their economic effects. The investments were returned to the employer at least threefold; the best calculation even described a 20-fold profit. Approximately half of the small workplace program benefits have consisted of decreased sick leave expenses and reduced work disability, the other half was due to improved productivity.

Another example of a cost-benefit calculation comes from the Dalbo project, which was carried out in the metal industry (Näsman 2003). The personnel ($n = 829$) of Fundia Wire, an enterprise manufacturing steel wire products, carried out versatile work ability maintenance during a period of about 3 years. The enterprise invested about EUR 50 500 in promoting the program each year. The calculated profit was EUR 505 000 per year. The investments were returned 10-fold to the employer. Work disability expenses decreased by about EUR 270 000, and sick leave costs by about EUR 34 000 per year. In addition, productivity increased by about EUR 220 000 per year. The return time of the investments proved to be relatively short (Näsman & Ahonen 1999, Näsman & Ilmarinen 1999).

The results of the MWA Barometer also indicated that the trust in economic benefits of work ability maintenance is strong. Of the employers, 38% of those in the private sector, 43% in the municipal sector, and 36% in the state sector believed, in 2001, that work ability maintenance creates significant profits for the workplace. According to management, the profits gained from promoting work ability correlated with costs well (62%) or very well (28%) (Peltomäki et al. 2002b).

Health risks affect productivity

Health risks are also productivity risks. A broad ($n = 28\,375$) study conducted in the United States illustrated the effect of 12 health risks on subjective productivity in a large national financing enterprise (Burton et al. 2005). The average age of the participants in the study was 39 years, and a little more than one-fourth of them were men. The included health risks were associated with lifestyle (smoking, physical inactivity, use of seat belts in cars, alcohol consumption, use of tranquillizers), personal feelings (dissatisfaction

with life, poor physical health, job dissatisfaction, high stress level), and biological measurements (high blood pressure, high cholesterol level, body mass index over 30 kg/m²). The employees had an average of 2.16 health risks, 36.7% of them having at least 3 risks and 20.4% having no risks.

The results indicated that 10 of the 12 health risks were associated with productivity. Negative feelings decreased productivity the most. As the number of health risks increased, the work limitations increased. In the low-health-risk group (0–2 health risks), the estimated decrease in productivity was approximately 15%. Each additional risk decreased productivity by 2.4%. In the group whose members had 3–4 health risks, the decrease in productivity was 6.2%, and, for the high-risk group (>5 health risks), the decrease was 12.2% in comparison with the decrease in the low-risk group.

The calculated loss in productivity in the enterprise was USD 99–185 million each year, or USD 1392–2592 for each employee (Burton et al. 2005). The results indicate that reducing health risks has a significant positive impact on productivity. Multi-dimensional work ability maintenance also promotes productivity. The need for additional research is evident, and acknowledging the connections between work well-being and productivity may create a new paradigm for both the research and development of worklife.

4.4 Economic aspects of ageing

Ageing is expensive, but not as much as is imagined. Society must pay an additional bill for sick leaves and pensions. In enterprises, however, the perception of the expenses caused by ageing employees in comparison with those of young people is not always based on facts. Inexperience may also be expensive.

4.4.1 Additional costs to society from ageing

Ageing has an indisputable effect on the national economy and enterprise costs. According to the age structure in 1995, the national savings would be about EUR 11 billion, and enterprise savings would amount to about EUR 2.7 billion if sick leaves and work disability pensions of people over 45 years of age decreased and individual productivity increased to the level of people under 45 years of age (Ahonen 1996). These figures illustrate the theoretical maximum expense that can be decreased by adopting a policy that decreases the risks of ageing (Ministry of Labour 1996b).

As the number of ageing employees grows, the total costs increase. According to the age structure of the year 2000, the formally estimated national economic costs would rise to EUR 14.3 billion. If the proportion of the workforce over 50 years of age would increase by 1 percentage point, the harm to the national economy due to ageing would increase by more than EUR 500 million. According to this estimate, the costs of ageing would reach their peak in 2010, when the proportion of employees over 50 years of age will be approximately 33%. The additional costs caused by ageing to society would then be over EUR 18 billion.

If the average age when people retire in Finland would increase by 3 years by 2020, the earnings-related pension payments would be 5–6 percentage points lower than without an increase in retirement age (Hietala 1996). Since lowering the employer's salary-based social security payments by 1 percentage point increases employment by approximately 0.4%, the positive effect of the aforementioned lowering of earnings-related pension payments would mean improved employment of about 30 000 person-workyears. Therefore, according to this calculation, raising the pension age would probably be the most efficient employment and growth policy (Ministry of Labour 1996b).

About one-fifth of the additional costs caused by ageing is work-related and can be affected immediately by programs promoting work ability in the workplace (Ahonen 1996). The investments of enterprises in occupational health care in the middle of the 1990s were a little less than EUR 100/person a year. The total cost caused by the ageing of the workforce has been calculated to be approximately EUR 1850/person, of which about EUR 1150 come from work-related sickness benefits. Of these costs, a little less than EUR 400/person must be paid by the enterprises. Therefore, additional investments in occupational health care alone would be extremely beneficial, for both enterprises and the national economy. The cost–benefit ratio improves even more if the decrease in the deductible costs of work disability pensions that will follow is taken into account (Ministry of Labour 1996b).

The problem-solving methods of society are visible in enterprises. Enterprises have been worried about their productivity³, and thus about the increase in indirect employment costs caused by the ageing of employees. The

³ Vartia and Ylä-Anttila (2005) define concepts of productivity as follows: "Gross productivity and its growth refer to the part of production growth that cannot be explained by the increase in input (work input, capital, raw-materials, energy). Gross productivity depicts, instead, the relation of the amount of production to the sum of inputs. The increase in this total input reflects the development of technology, improvements in employee training and management skills, the development of organizations, and improvement in the quality of products and production methods in general. The customary concept of productivity—productivity of work—depicts partial productivity (product / work input); its growth can usually be explained by the growth of capital per work input (capital intensity)."

ratio of indirect employment costs to salaries continued to increase for the entire industrial workforce until the recession, after which the proportion has remained at about 70%. Together with the high marginal taxation, this change has led to a situation in which the net compensation received from work is only a part of the total work costs for the employer (Vartia & Ylä-Anttila 2005). Decreasing indirect employment costs, especially the employer's social security costs, has been included in the list of measures of both the Committee on Ageing and the National Programme on Ageing Workers 1998–2002.

4.4.2 False conceptions about the costs of ageing employees

Professor Satu Lähtenmäki has studied the false conceptions about the costs of ageing employees in the book *Kyvystä kiinni* (Ilmarinen et al. 2003). According to Lähtenmäki, ageing employees are not any more expensive than young workers.

The costs of working are affected, for example, by support systems that create certain conceptions. When it was agreed that no earnings-related pension payments would be collected from employees under 24 years of age in order to decrease the unemployment of young people, they became cheap workforce. The earnings-related pension payment is about 20% of the employee's salary, which makes it a significant cost to an enterprise. However, it skews the conception of the cost of employees of different ages, although the support system has been used to correct structural problems in the use of the workforce. The lower costs of young employees have also created social pressure on older employees to retire to make room for younger workers.

Instead of increasing personnel costs, enterprises have tried to keep the number of employees as low as possible, even though workforce is available. Because the natural reduction of personnel was too slow, lay-offs on production–economic grounds were chosen. According to regulations on employment security, a new employee cannot be hired to replace a previous one without the job being first offered to the employee who was given notice. This procedure was not beneficial with respect to the young workforce with long-term unemployment, but employees close to pension age were laid off. The image that getting rid of ageing employees was especially profitable was created.⁴

Because many ageing employees were laid off during the recession, their status was secured by what could be called the unemployment pension path.

⁴ Other action models have also been used. For example, the Swedish principle according to which the most experienced workers are the last to leave.

A 55-year-old employee steps onto this path after he or she has been unemployed for at least 500 days. The person moves on to an unemployment pension at the age of 60 years and, finally, at the age of 65 years, is granted an old age pension. This system led to the targeting of lay-offs primarily towards 53-year-old employees. When the age limit was raised to 57 years, lay-offs were targeted towards 55-year-olds. The special security system for older employees partly turned against them by promoting age discrimination because legislation supported it. The image of ageing employees was certainly not improved.

Work disability pension payments also affect conceptions and attitudes. Ageing employees are considered to be expensive, although the accrued work disability pension funds depend on the total salary sum of an enterprise and not on the employee's age or the granting of the employee a work disability pension. Because the deductible proportion of work disability pension costs is progressive according to the size of the enterprise, it has encouraged especially large organizations to decrease the risks of work disability. In enterprises employing fewer than 50 people, the costs of work disability pensions are paid from a common pool. Enterprises employing more than 800 people, on the other hand, belong to the full self-risk group, which means that they pay the costs themselves. The self-risk payments were revised at the beginning of 2002. In worst cases, pension costs may equal net profits. Therefore, the prevention of work disability, for example, through large-scale workplace health promotion programs has become economically a good alternative for enterprises.

Examples of work disability and rehabilitation costs (Table 19) and unemployment pension costs for enterprises (Table 20) illustrate the effect of enterprise size on costs. Employees can receive rehabilitation benefits if their work ability is threatened by illness. Rehabilitation benefits have been introduced as a means of encouraging enterprises to prevent work disability. Rehabilitation benefits are a small expense when compared with the costs of work disability. An example of work disability pension costs in an enterprise responsible for the full costs illustrates the changing of expenses with age (Table 21). In enterprises employing more than 50 people, the system for covering unemployment pensions is similar to that for disability pensions. As the number of employees grows, the responsibility of employers for the unemployment pensions of their personnel increases significantly (Ilmarinen Mutual Pension Insurance Company 2003).

Table 19. An example of the costs of disability pensions and rehabilitation benefits: 40-year-old retiree, pension EUR 1300/month.

Number of workers	Cost of unemployment retirement	Cost of 3 years of rehabilitation
100	11 200	1 200
200	33 600	3 700
300	56 000	6 200
400	78 500	8 700
500	100 900	11 200
600	123 300	13 700
700	145 700	16 200
800	168 100	18 700

Table 20. An example of unemployment pension costs: 60-year-old male retiree, pension started 1 July 2003.

Number of workers	Unemployment pension EUR 1000/month according to new regulations	Unemployment pension EUR 1100/month according to old regulations
100	2 900	6 000
200	8 800	18 100
300	14 600	30 200
400	20 500	30 200
500	26 300	30 200
600	32 200	30 200
700	38 000	30 200
800	43 900	30 200

4.4.3 Costs of inexperience

Young people are naturally rather inexperienced in the beginning of their worklife, despite their education. Additional training in job tasks is often necessary, and professional competence is only acquired through learning through working. Therefore the work contribution of young employees is only partly available, and the cost of an effective workhour may be high.

Table 21. An example of work disability pension costs in an enterprise responsible for full coverage: pension EUR 1200/month, awarded in 2003.

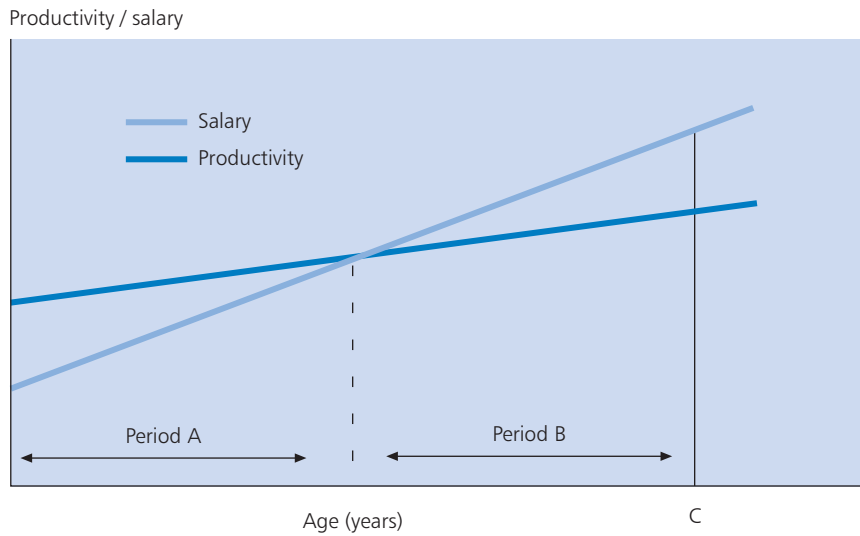
Age of worker (years)	Retired 1 January 2000 or later	Retired before 1 January 2000
30	169 300	211 600
40	155 200	194 000
50	118 800	148 500
53	102 200	127 800
55	89 500	111 900
58	67 600	84 500
60	50 800	63 500
63	22 000	27 600

The investments of an employer in training may be also lost if the young employee uses the received training to move to another enterprise. Young people switch jobs a lot more easily than seniors do. It would be important for an enterprise to be able to benefit from the training it has paid for.

Already in the late 1980s, one executive of a Finnish manufacturing corporation estimated that it takes years and an average additional cost of over EUR 43 000 before a young employee becomes a fully authorized and productive member of the work community. On the other hand, the advanced training or further education of a senior employee of an enterprise to respective new responsibilities would cost a little over EUR 8000. Because the competence of a senior employee stays in the enterprise, the investment is likely to be refunded several-fold. Young employees are understandably more committed to the development of themselves and their own competence than to the organization.

The differences between the salaries of young and senior employees with respect to competence and work contribution have been a target of continuous discussion. For example, in joint seminars of Japan and the European Union on the ageing of the workforce, salaries have been selected as one method for rectifying the situation of both junior and senior employees in the labor market. According to the so-called traditional model, productivity is supposed to increase with age and therefore salaries should also increase. According to Japanese experiences, however, the current salaries of junior employees are too low, and the salaries of senior employees are too high with respect to their productivity (see Figure 21). According to the Japanese, salaries do not follow the development of productivity fairly during worklife,

Figure 21. Salary and productivity as a function of ageing. (Higuchi 2002)



Period A = salary is too low compared with productivity
 Period B = salary is too high compared with productivity
 Period C = retirement age

Table 22. Factors affecting the price of work.

Factor	Junior	Senior
– wage	+	–
– earnings-related pension payments	+	–
– raises according to years served	+	–
– training expenses	–	+
– annual vacations	+	–
– absences because of training	–	+
– occupational accidents	–	+
– sickness absences	+	–
– short parental leaves of absence	–	+
– parental leaves	–	+
– trade union activity	+	–
– extra days off provided by trade union contracts	+	–
– other acceptable reasons	–	–

even though productivity increases with age. The current salary systems favor senior employees and make them expensive employees for the employer (Higuchi 2002).

Are older employees then more expensive than younger ones? If the issue is studied according to the price of work, there are no grounds for such a conclusion (Table 22). The price of work is affected by at least the following factors (+ lowers the price of work, – raises it):

There are seven factors affecting the price of work that favor young employees and five that favor senior employees. The euro-valued costs naturally decide which is more affordable for the employer. According to the calculations by Professor Lähteenmäki, the costs for each workhour were, for example, EUR 20.75 for a 19-year-old mechanic and EUR 21.82 for a 48-year-old mechanic. Respectively, a 30-year-old male marketing economist currently receiving management training and a 45-year-old female marketing economist (experienced production manager) cost EUR 49.00 and EUR 34.90 per workhour, respectively. In another example, of a 28-year-old female information technology (IT) clerk and a 50-year-old male IT clerk, the costs of the young female were EUR 38.67 and those of the senior male colleague were EUR 50.42 per workhour (Ilmarinen et al. 2003).

A direct comparison of workhour calculations is naturally problematic. The calculations do not take into account the quality of competence, the strategic importance of the job, commitment to the organization, efficiency, or overloading, which are difficult to evaluate in euros. The influence of practical experience on productivity or accident risk may be significant.

Accident insurance covers direct costs (salary, medical treatment, medication, rehabilitation, work disability pension, handicap benefits, family pensions), whereas the employer must pay indirect costs, which are generally estimated to be 2–4.5 times higher than the direct costs. Indirect costs include production losses; overtime; work reorganization; accident investigation; first aid; accompaniment to medical care, clearing up, repair and cleaning work; lost products; raw materials and semi-finished products; delivery delays and contractual penalties; quality effects; and increases in insurance payments caused by the accident. On the whole, ageing workers have fewer accidents, but their accidents are more serious than those of younger workers. Younger workers have more minor accidents, and their sick leave periods are shorter (Centre for Occupational Safety 2000).

The employer is entirely responsible for the costs of short sick leaves (i.e., <10 days) not caused by an accident. Indirect costs also come from hiring substitutes, overtime, and work reorganization, as well as from productivity

and economic losses. According to the Work and Health Interview Study, in 2003, accidents had occurred at work or on the way to or from work more often among younger employees than among senior workers. Men aged 25–34 years also had more sick leaves of less than 3 days (1.8%) and 3–30 days (6.1%) than men aged 55–64 years (1.3% and 2.5%, respectively). The difference between junior and senior women was also similar as regards longer sick leaves. However, accidents were more likely to cause work disability for seniors than for juniors (Pirainen et al. 2003).

Several factors related to the work environment also affect productivity. In order to improve productivity, it is important to invest in the development of both interaction and the organization of work. Fair treatment of personnel, as well as the development of management and opportunities to have an influence, is also connected to productivity. Studies carried out among home help workers, cleaning personnel, and textile workers have shown that ageing improves productivity (Reina-Knuutila 2001).

A comparison between the productivity, absences, accidents, and turnover of senior and younger employees has been made, for example, by Spirduso (1995). The general opinion before the study was, for example, that older employees are not capable of upholding the work rate that suits younger employees. Another assumption had been that the variation in productivity would be greater among senior employees than among younger ones.

The study was carried out in the textile industry, and a task requiring both speed and accuracy was selected as the target. The task requiring speed was that of a clipper, who separates articles on the assembly line by cutting the threads connecting different pieces of clothing. The task requiring accuracy was that of a marker, who draws contours on the garments for both cutting and sewing. Productivity was measured using the hourly piece-rate wages of the employees and register information describing absences, accidents, and turnover.

The results showed that age and productivity had no significant correlation in either task. If differences were found, they were in favor of the ageing employees (Table 23). Senior employees made more money, and they had fewer absences and accidents than younger employees. These results are a good example of the way in which performance differences between junior and senior employees in a laboratory environment do not reliably depict the situation under practical conditions. One explanation is that the demands set by work, for example, for psychomotor action controlled by the nervous system, do not require maximal performance, which, in turn, is often the case in laboratory tests. The work experience of senior employees ensures their performance at work. Naturally, senior workers are also “selected” employees,

but this selection does not, however, negate the fact that senior employees who continue to work also rank high in productivity comparisons.

The productivity of senior employees is usually based on the fact that, with their work experience, ageing employees are able to compensate for the deterioration of their functional capacity with developed knowledge and competence. Compensation strategies include, for example, adjustments in the work rate, the skill to anticipate, and also the planning and organizing of tasks according to personal ability.

According to these examples, it seems that cost comparisons between junior and senior workers should be based on actual costs in the workplace. The results indicate that seniors should not be considered more expensive workforce than juniors. Current assumptions and prejudices should be abandoned.

Table 23. Comparison of the productivity, absences, accidents and turnover between employees of different ages in tasks requiring speed (upper table) and accuracy (lower table). (Spirduso 1995)

Age group (years)	n	Productivity (USD/hours)	Absences (hours/3 months)	Accidents (number/year)	Accidents ¹ (number/year)
<25	22	4.06	144	1	5
25–34	22	3.75	101	3	6
35–44	24	5.01	75	0	2
45–54	44	5.30	69	0	1
55–64	92	5.30	58	1	3
>65	8	4.29	113	0	1
All	212	4.94	78	5	18

Age group (years)	n	Productivity (USD/hours)	Absences (hours/3 months)	Accidents (number/year)	Accidents (number/year)
<25	82	4.78	109	13	51
25–34	59	5.26	107	5	19
35–44	40	6.18	85	2	7
45–54	116	6.57	65	7	5
55–64	131	6.43	78	13	5
>65	27	7.10	76	0	0
All	455	6.03	84	40	87

¹ Does not apply to old-age retirees.

4.5 Ageing and health

Age indisputably deteriorates health. When the labor market value of senior employees is considered, it needs to be taken into account, however, that young people also get sick and not all illnesses decrease work ability. People are able to work despite of their illnesses, and some illnesses can also be prevented in advance.

The information about health and functional capacity introduced in this section has been collected from two primary sources: the Health 2000 Study, conducted under the supervision of the Finnish National Public Health Institute during 2000–2001, which included a representative sample ($n = 8028$) of the Finnish population over 30 years of age (Aromaa & Koskinen 2002), and the Work and Health Interview Study ($n = 3331$), which was carried out in 2003 by the Finnish Institute of Occupational Health and whose participants were representative of the Finnish working population (25–64 years of age) with respect to age, gender, and region (Piirainen et al. 2003). The information from the longitudinal study has primarily been taken from an 11-year follow-up study in which a random sample of 4500 employees over 45 years of age and representing the most common occupations in the municipal sector was studied for changes in personal health and functional capacity in 1981–1992 (Tuomi 1995, Tuomi 1997). The results are first evaluated on the basis of the population study (Health 2000 Study), second, on the basis of the Work and Health Interview Study, and, third, on the basis of the longitudinal study (municipal sector, 11-year follow-up).

4.5.1 Perceived health

In the **population study**, the proportion of people who perceived their health to be good or rather good decreased systematically with age. Whereas about 80% of the people aged 30–44 years were of the opinion that their health was good or rather good, the respective proportion of the men and women 45–54 years of age were 61.5% and 68.7%. In the next age group, 55–64 years, 48.7% of the men and 52.8% of the women felt that their health was good or rather good. In other words, in the oldest age group, about half felt that their health was good or rather good, while the other half felt that their health was fair or worse (Aromaa & Koskinen 2002).

Of the men in the **working population**, about two-thirds felt that their health was excellent or good compared with other people of the same age in the age groups 45–54 and 55–64 years. The women's evaluations were a

little better in these age groups. Among the working population, the average perceived health status did not deteriorate between these two age groups as clearly as among the entire population. The proportion of people who felt that their health was poor was small among the working population (i.e., $\leq 3\%$ in the two oldest age groups). The highest number of people who felt their health was poor was found among farmers, transport and traffic workers, and those who had received vocational training only (Pirainen et al. 2003). The results of cross-sectional studies of perceived health indicate more generally that those who continue to work begin to be selected according to their health already at the age of 45–54 years.

The **longitudinal study**, which concerned the municipal sector, in turn, showed that, during the study, perceived health improved significantly in all age groups among both the men and the women. The proportion of those who felt their health to be good doubled among both the men and women and was approximately 20% in the year 1992. Among the men aged 54–58 years, the increase was over threefold (from 6% to 21%). The proportion of those who felt that their health was poor also increased, but to a less extent. An exception was the youngest age group (i.e., people aged 44–48 years, among which poor perceived health doubled during the 11-year follow-up). The longitudinal results of the study in the municipal sector showed that the working population started to be divided into healthy and sick people (Seitsamo & Klockars 1995).

The research group was divided into four groups according to perceived health and perceived disability caused by illnesses. Approximately 22% of the research group stayed healthy during the 11 years of the study. Perceived health improved for about 22% and deteriorated for about 13%; for approximately 43%, poor health was continued. The number of illnesses diagnosed by a physician was the best indicator of deteriorating perceived health. If a person had three or more illnesses, the risk of deteriorating health was tenfold (odds ratio = 10.6) in comparison with people with no diagnosed illnesses. Smoking, physically demanding work, and diagnosed cardiovascular diseases also deteriorated perceived health. Decreasing satisfaction, especially insecurity about the life situation, was also an indicator of deteriorating perceived health.

Improved perceived health was, in turn, explained by several factors. If no illnesses occurred, perceived health improved. In addition, satisfaction with life and enthusiasm towards personal hobbies predicted improved perceived health. Physically active people felt that they were healthy.

Perceived health became more illness-centered with age. For younger people, perceived health did not depend on diagnosed illnesses, but at a later age a

lack of illness was a clear indicator of good perceived health. It is also possible that the criteria for evaluating perceived health change with age. The evaluation of one's personal situation in comparison with that of a reference group of the same age or with younger people could have improved the perceived health estimates. In such a case, the evaluation would reflect one's adaptation to the changes brought by ageing. Perceived health may also be a personal view of general functional capacity and well-being, and, if so, it would partly describe phenomena other than illnesses diagnosed by a physician (Seitsamo & Klockars 1995 & 1997).

4.5.2 Long-term illnesses

Long-term illnesses increased steeply among the **adult population** from the youngest age group to the oldest. Whereas about one-third of those aged 30–44 years had some long-term illness, as much as 80–90% of the people over 75 years had long-term illnesses. In all of the age groups, the proportion of those suffering from long-term illnesses was virtually the same among the men and women. In the age group of 45–54 years, about 45% of the men and women suffered from long-term illnesses, and among those aged 55–64 years the percentage was about 66% (Aromaa & Koskinen 2002).

Which illnesses were the most common? The following is a brief overview of the basic report of the Health 2000 Study. The most common cardiovascular disease reported by the **30- to 64-year-olds** was hypertension, which occurred in about one-quarter of the working-aged people over 30 years of age. Diabetes was found in 4.4% of the men and 3.0% of the women. Chronic bronchitis, which is primarily caused by smoking, was found in a little less than 10%. The most common musculoskeletal disorder was the back syndrome, which occurred in about 10% of the men and women (syndromes are described in more detail in the next chapter). Mild burnout was reported by about one in four people over 30 years of age, and serious depression was reported for about 4% of the men and 7% of the women. Alcohol addiction occurred primarily among the men (7.9%). Tooth decay and, especially, gum diseases were relatively common among both the men and women; gum diseases occurred in 70.8% of the men and 55.7% of the women over 30 years of age. Infectious diseases, especially respiratory infections, had occurred during the last 2 months in a little less than one-fifth of the men and almost one-fourth of the women. A little over one-third of the people who had become ill had sought medical assistance. An acute stomach illness had occurred during the last 2 weeks in about 10% of both the men and the women. About 16% of the men and 8% of the women reported a permanent disability caused by an accident (Aromaa & Koskinen 2002).

On the other hand, the results indicate that, according to several health indicators, the health of Finnish people has improved during the last 20 years. Blood pressure has decreased among the population significantly, coronary disease has become less common, and, of the people reporting coronary disease, about 40% of the men aged 45–74 years has undergone by-pass surgery. The back syndrome and women’s knee arthritis have become less common, mental health problems have not increased, oral health has improved, and about 40% of the target group had received a vaccination against respiratory infections.

There are, however, also issues to worry about. Obesity has continued to increase, and most of the adult population still has an increased risk of cardiovascular diseases and diabetes. Asthma and women’s chronic bronchitis are significantly more common than before. Mental health problems, psychological symptoms, serious depression, alcohol addiction, and burnout are common, and their symptoms, which deteriorate well-being, are even more common (Aromaa & Koskinen 2002).

An interview study among the **working population** showed that approximately 45% of the men and women aged 45–54 years had a long-term illness or a handicap diagnosed by a physician. The corresponding proportion of the men and women aged 55–64 years was approximately 50% and about 60%, respectively. More than the average number of long-term illnesses or injuries was found among farmers, but also among lower white-collar workers. According to employers, the situation was worst in the municipal sector, and in the following industries the results were lower than average: agriculture, water supply and sewage, energy distribution, finance, and social and health services. Those who had only a vocational education suffered from diseases more than others.

The hindrance to current work as a result of an employee’s illnesses is a more important question than long-term illnesses in general. Of all the working population that suffered from a long-term illness or injury, 38.3% reported that the illness or injury was a hindrance. Especially men (41.5%) and women (45.4%) aged of 35–44 years in particular, as well as women aged 45–54 years (42.8%), reported being hindered by illnesses more than the average population. On the other hand, men in the oldest age groups reported less hindrance than the average population. More than one-third of the oldest age group for both the men and the women reported that illnesses hindered their current work (Table 24).

The most hindrance caused by illnesses or injuries was experienced by farmers and workers. According to occupational groups, agricultural work, quarry and construction work, and service work were at the top of the list. Entrepre-

Table 24. Do long-term illnesses or handicaps diagnosed by a physician hinder current work? Working population with a diagnosed long-term illness or injury. (Work and Health Interview Study 2003)

Age group (years)					
Men	24–34	35–44	45–54	55–64	Total
No	69.4	57.7	69.1	62	64.7
Yes	29.2	41.5	30.9	35.4	34.4
Do not know	1.4	0.8	0.0	2.5	0.9
Total	100.0	100.0	100.0	100.0	100.0
N	72	123	162	79	436
Women					
No	58.6	54.6	56.7	62.4	57.4
Yes	39.7	45.4	42.8	36.6	41.9
Do not know	1.7	0.0	0.6	1.1	0.6
Total	100.0	100.0	100.0	100.0	100.0
N	58	141	180	93	472

neurs, farmers, and municipal employees experienced more hindrance than the average population. The most problematic industrial sectors were agriculture and forestry, construction, the hotel and food industry, and education. In small enterprises the situation was even more difficult than in larger ones. Minimal vocational education increased the generality of the hindrance, apparently via occupation and branch of industry (Pirainen et al. 2003).

The longitudinal studies in the municipal sector showed that the number of illnesses diagnosed by a physician increased during the 11-year follow-up period in all of the age groups. At the end of the follow-up, the age range of the studied group was 55–69 years. In the beginning of the follow-up (i.e., at the age of 44–58 years) there were no notable differences in the average number of illnesses between the men and women. By the end of the study musculoskeletal disorders had become more common, especially in the youngest age group (44–48 years). They had nearly doubled among both the men and the women during the 11 years. In almost all of the age groups, every second man and woman suffered from a musculoskeletal disorder after they had reached the age of 55 years (Figure 22).

Cardiovascular diseases also became more common with ageing, more among the men than among the women. A little more than one-fourth of the women and one-third of the men suffered from a cardiovascular disease diagnosed by a physician after they had reached the age of 55 years (Figure 23). The oc-

Figure 22. Musculoskeletal disorders by age group before and after the 11-year follow-up.

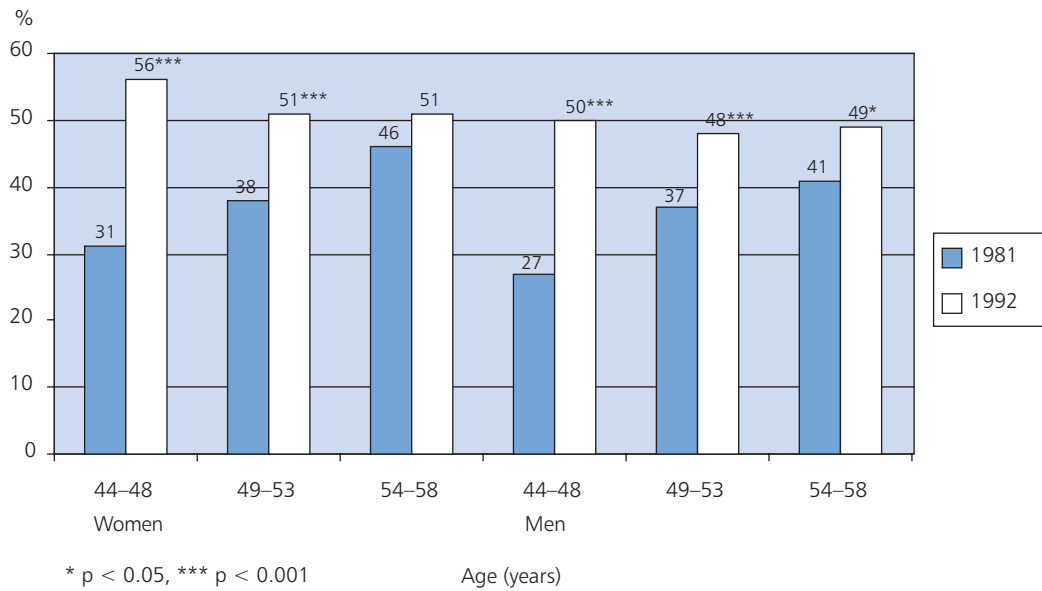
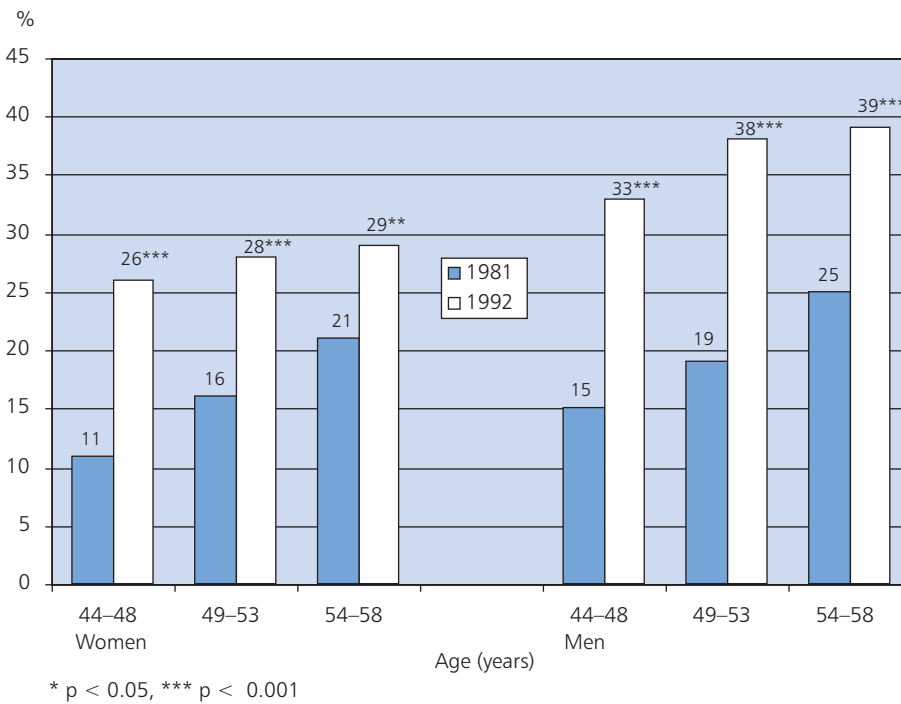


Figure 23. Cardiovascular diseases by age group before and after the 11-year follow-up.



currence of cardiovascular diseases among the youngest male and female age groups and among men aged 49–53 years nearly doubled during the 11-year follow-up. Diagnosed respiratory diseases increased significantly less, about 4 percentage points. Mental health problems increased about 3 percentage points, especially among the women.

The basic work characteristics affected the occurrence of diseases and the changes in the number of illnesses. In primarily physically demanding jobs (e.g., installation and cleaning work) and in work with both physical and mental demands (e.g., transportation work, nursing work), musculoskeletal disorders were more common than in mentally demanding work (e.g., education and office work).

The increase in the number of illnesses was, however, about the same, approximately 20 percentage points, among those who continued in the same occupation during the follow-up period, regardless of the basic characteristics of the job. Cardiovascular diseases also increased by 16 percentage points both in physically demanding work and in mentally demanding work during the 11-year follow-up. The basic work characteristics at the beginning of the follow-up were even an influence after retirement. Especially among those who retired from mentally demanding work, there was about 10% fewer musculoskeletal disorders than among those who retired from other types of work (Seitsamo & Klockars 1995 & 1997). Ageing did not seem to even out the differences between different professions.

4.5.3 Chronic symptoms

When symptoms become long-term, a person should expect health changes if the symptoms and their causes cannot be removed. On the other hand, the occurrence of symptoms and pain can be used as an indicator for musculoskeletal disorders, as was the case in the Health 2000 Study. Musculoskeletal syndromes increased with age and were more common among people aged 45–64 years than among younger age groups, and they were scarcer than among older age groups. The change between the age group of 30–44 years and the following one (i.e., 45–54 years) was clear for all of the syndromes.

In the **population study**, the occurrence of musculoskeletal syndromes according to a clinical evaluation by a physician indicated that, among men, the back syndrome was the most common in all of the age groups, and about 12% of the men aged 45–54 and 55–64 years suffered from this syndrome. The occurrence of other syndromes increased among the men, especially in the oldest age group of employed people. About 9% of the men aged 55–64

years suffered from knee arthritis, about 7% from neck syndrome, and about 5% from hip arthritis (Figure 24).

The women aged 45–54 years had twice the occurrence of neck syndrome (8%) as the men. Also in the age group of 55–64 years, back syndrome, neck syndrome, and hip arthritis were more common among the women than among the men (Figure 25). It was found that musculoskeletal syndromes more often prevent women from having a longer worklife than men. About 18% of the women aged 65–74 years suffered from back syndrome and knee

Figure 24. Musculoskeletal syndromes among men according to a clinical evaluation by a physician.

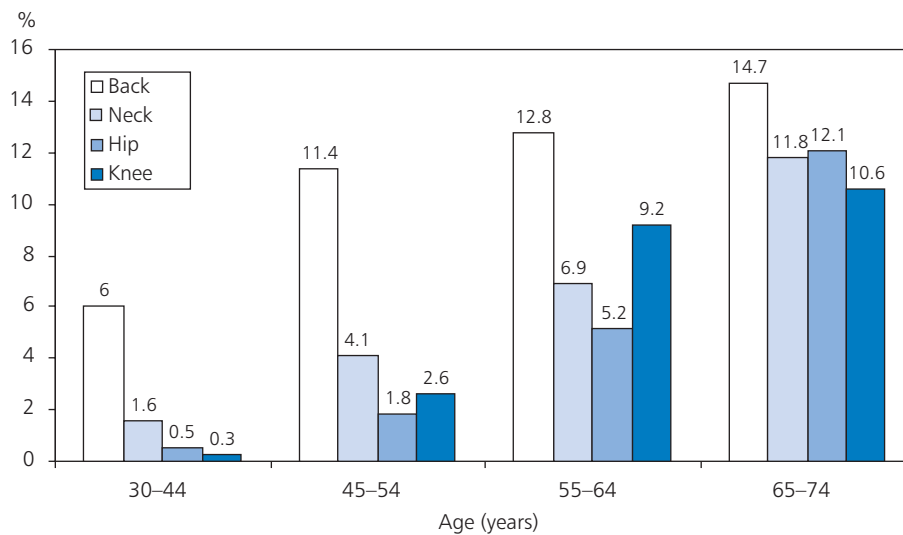
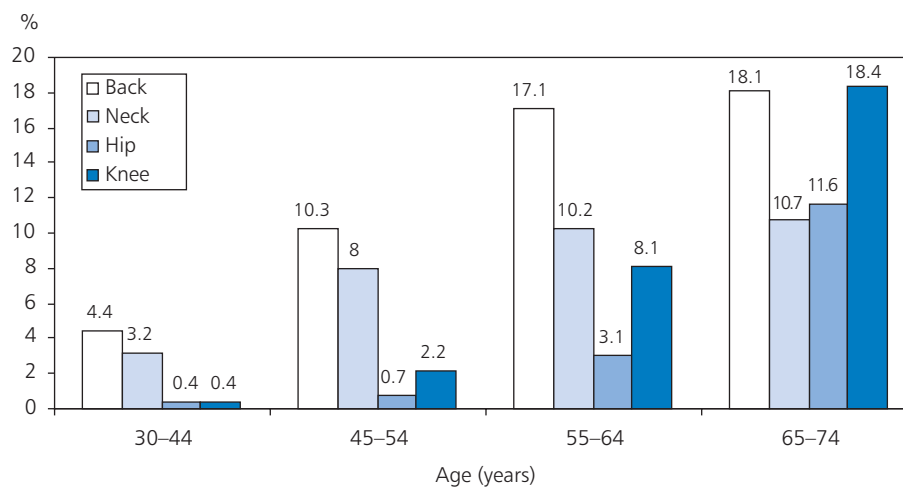


Figure 25. Musculoskeletal syndromes among women according to a clinical evaluation by a physician.



arthritis. During the last month, a knee problem or handicap caused difficulty to walk or limping for one-fifth of the women aged 55–64 years and for over one-fourth the women aged 65–74 years (Aromaa & Koskinen 2002).

Among the **working population**, also long-term and repetitive symptoms were studied among the different age groups (Pirainen et al. 2003). Some of the musculoskeletal symptoms were common in all of the age groups. Two-thirds of the men and four-fifths of the women reported long-term or repetitive neck or shoulder symptoms, pain in the shoulders or hands, pain in the wrists and fingers, pain in the hip or low-back region, hip or leg pain, or arthritis in 2003.

Long-term or repetitive symptoms were alarmingly common already in the youngest age group, among which about 56% of the men and 71% of the women reported experiencing such symptoms during the last month. There were few differences in the occurrence of these symptoms between the different age groups among the women. Young women (65%), however, suffered more often from neck and shoulder problems than senior women (56%) (Table 25). This observation is not a good prognosis for a long career.

Table 25. Long-term or repetitive musculoskeletal symptoms among men and women by age group. Finnish working population 2003. [Work and Health Interview Study 2003 (working respondents)]

Symptom	Men Age group (years)				
	24–34	35–44	45–54	55–64	All
Any musculoskeletal symptom	55.8	65.8	66.7	70.7	64.3
Neck and shoulder problems	38.1	42.2	46.5	45.2	43.0
Hip or low-back pain	25.9	27.1	28.5	33.1	28.1
N	278	339	372	157	1 146

Oire	Women Age group (years)				
	24–34	35–44	45–54	55–64	All
Any musculoskeletal symptom	71.0	78.0	78.7	78.3	77.0
Neck and shoulder problems	64.3	65.3	64.4	59.2	64.0
Hip or low-back pain	28.1	30.0	36.9	42.7	33.6
N	224	404	404	157	1 189

More than an average amount (53.7%) of neck and shoulder problems was found in certain occupational groups: agricultural, transportation and traffic work, quarry and construction work, and service work. The symptoms were more common in the municipal sector than in other sectors. When divided by industrial sectors, the top three were the hotel and food industry, education, and social and health services.

More than the average amount (30.9%) of pain in the hip or low-back region was found in the same occupational groups as the neck and shoulder problems. Basic industrial work, as well as manufacturing and installation work, was also included. When divided by industrial sectors, the top ones were agriculture and forestry, the hotel and food industry, water supply and sewage, and energy distribution. Long-term or repetitive musculoskeletal symptoms decreased by 1 percentage point between 2000 and 2003, more clearly among the men than among the women. These changes were, however, not similar in all of the age groups (Piiirainen et al. 2003).

The results of both the population study and the interview study among the working population were similar with respect to long-term musculoskeletal pain and symptoms by age group, especially with regard to back pain. The comparison of other symptoms was complicated by the fact that different neck and shoulder problems were combined in the interview but asked about separately by the type of problem in the population study.

Psychological symptoms and mental health problems were reviewed in the population study with regard to the occurrence of burnout and serious depression (Aromaa & Koskinen 2002). Minor burnout was reported by about

Figure 26. Burnout among the working population during the last 12 months.

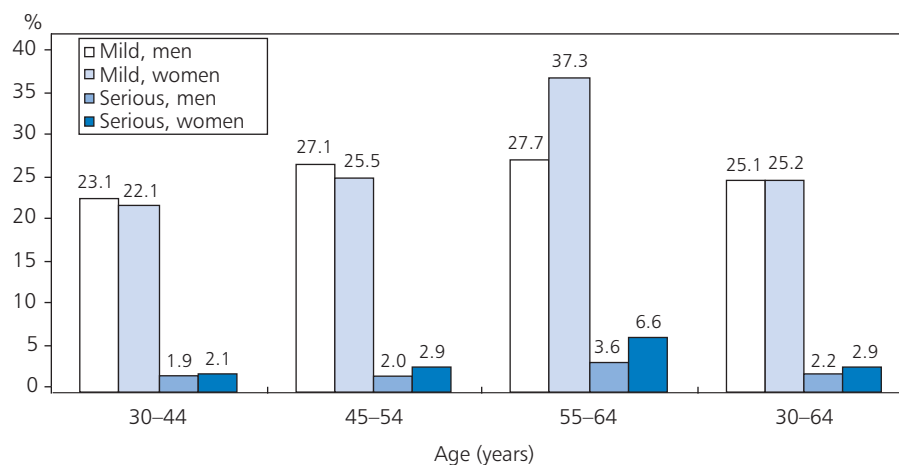
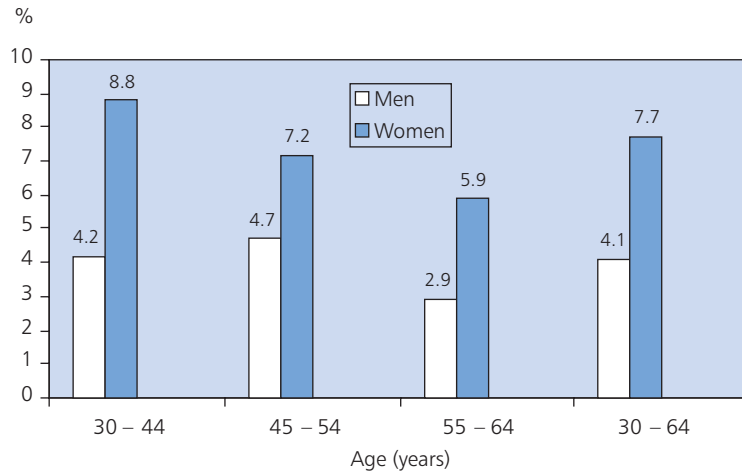


Figure 27. Subjectively experienced serious depression during the past 12 months.



one-fourth of the ageing men and women, an exception being women aged 55–64 years, more than one-third of whom suffered from minor burnout. Serious burnout was also increased in this oldest age group of women (Figure 26).

Among the people aged 30–64 years, an average of about 8% of the women and about 4% of the men suffered from serious depression during the past year. Serious depression was more common among the women in all of the age groups; women suffered from depression twice as often as men in the youngest and oldest age groups. Serious depression became less common with age, the youngest age group suffering the most from depression (Figure 27).

The Work and Health Interview Study also determined the occurrence of the following symptoms among the working population: depression or dejection, irritation, tension or nervousness, weakness or fatigue, overstressed or feelings of being powerless, insomnia or difficulties to fall asleep and deterioration of memory or lack of concentration. Of the respondents, 56% suffered from one of these symptoms, women significantly more often than men.

The young women (25–34 years of age) suffered from these symptoms virtually as often as the senior women (55–64 years of age). Differences could, nevertheless, be detected between the youngest and oldest female age groups. Junior women suffered more from depression, irritation, tension, weakness, and over-stress than senior women did. The latter, on the other hand, suffered more from insomnia and memory or concentration problems than the juniors (Table 26). These results give a rather alarming picture of the occur-

Table 26. Long-term or repetitive psychological symptoms among the men and women by age group. Finnish working population in 2003. [Work and Health Interview Study 2003 (all working respondents)]

Symptom	Men				
	Age group (years)				
	24–34	35–44	45–54	55–64	All
One of the symptoms	46.4	50.1	50.8	47.1	49.0
Depression or dejection	10.1	12.1	9.1	8.9	10.2
Irritation	18.0	20.4	16.4	15.9	17.9
Tension or nervousness	22.3	21.2	22.8	14.0	21.0
Weakness or fatigue	31.7	35.1	28.0	29.3	31.2
Stress	14.4	19.2	16.9	13.4	16.5
Insomnia or difficulties to fall asleep	20.5	21.5	23.1	21.0	21.7
Deterioration of memory or lack of concentration	9.0	14.7	16.1	21.7	14.7
N	278	339	372	157	1 146

Symptom	Women				
	Age group (years)				
	24–34	35–44	45–54	55–64	All
One of the symptoms	62.5	61.1	61.6	66.9	62.3
Depression or dejection	17.0	19.6	16.8	17.8	17.9
Irritation	26.3	25.2	23.5	21.7	24.4
Tension or nervousness	28.6	24.5	27.5	24.2	26.2
Weakness or fatigue	47.3	47.0	42.6	43.3	45.1
Stress	24.1	26.0	29.0	24.2	26.4
Insomnia or difficulties to fall asleep	22.8	24.0	27.0	35.2	25.9
Deterioration of memory or lack of concentration	14.3	21.5	20.5	20.4	19.7
N	224	404	404	157	1 189

rence of psychological long-term symptoms, especially among the youngest group of the working population.

Among the young men (25–34 years of age), psychological symptoms remained practically the same in 2000 and 2003. Insomnia increased somewhat, but weakness and fatigue decreased by a couple of percentage points. Among the senior men (55–64 years of age), on the other hand, both weakness and insomnia increased by over 5 percentage points in 3 years. Among the young women, depression and insomnia increased somewhat, but tension decreased. Among the senior women the changes were small; only weakness or fatigue seemed to have increased, by about 5 percentage points.

Depression or dejection occurred in 2003 more than the average (16.9%) among both entrepreneurs and employees. In the occupational groups, basic industrial work, service work, agricultural work, and also scientific and artistic work were at the top of the list. Weakness and fatigue were the most common in basic industrial work and service work, as well as in agricultural work. Insomnia was, in turn, the most common in basic industrial work and service work (Piiirainen et al. 2003).

In the **longitudinal study**, the symptoms of strain among ageing employees increased significantly with age during the 11-year follow-up among those aged 44–51 years who continued in the same occupation (Huuhtanen et al. 1997). Lower- and upper-limb pain and respiratory and circulatory symptoms increased the most. Of the stress reactions, avoidance reactions (i.e., general apathy and especially unwillingness to go to work) increased the most. These symptoms increased more among the women than among the men.

Symptoms of stress were connected both to ageing and to perceived changes at work. Symptoms increased relatively more (increase 18–26%) than the number of strain indicators (increase 0–17%); this finding suggests that ageing increases the number of symptoms more than work does. With age, functional capacity may deteriorate, which in turn increases strain even though the work requirements stay the same. This result indicates that the deterioration of functional capacity may be reflected by stress and symptoms earlier than previously estimated, already under 45 years of age. In the next section (4.6), the changes in functional capacity caused by ageing are discussed.

In the longitudinal study it was also discovered that, by improving the contents of work, work positions, possibilities to influence work, and social support, continuing in worklife closer to retirement age can be encouraged. Reducing symptoms is important especially in physically demanding work and several human interaction occupations. The importance of this result is

further emphasized by the fact that the people in question were those who continued in the same occupation and whose work ability lasted for the duration of the study. The results would probably have been significantly worse with regard to symptoms if the follow-up would have included those who were forced to change jobs (Huuhtanen et al. 1997).

In conclusion, with regard to long-term symptoms, different types of research indicate that the working population suffers a great deal from symptoms at all ages. These symptoms can be considered an indication that there is imbalance between worklife and personal resources with regard to both physical and psychological well-being. The symptoms can, however, be affected before they worsen and become diseases. Therefore it is necessary, from the management point of view, to influence symptoms and especially their causes immediately. In age management the need for continuous monitoring of symptoms and health is emphasized.

4.6 Functional capacity and ageing

Employees can remain in worklife for a long time if their tasks change according to their abilities and the changes caused by ageing are taken into account. Even in the same occupation, young and older employees can be given different tasks and eye glasses can be helpful. Ageing not only deteriorates work ability; on the contrary, it increases, for example, cognitive capacity. Life experience and tools keep senior employees in good shape.

Functional capacity usually refers to the preconditions and possibilities of a human being to complete different tasks, challenges, and hobbies that are connected to one's life course. Functional capacity is a general term, which, alone, does not describe its contents or complex dimensions (Helin 2000). Functional capacity illustrates the possibility for an active life that combines environmental demands and personal targets.

Functional capacity is based on health. At its best, it should reinforce a holistic view of humanity in which all of the factors of functional capacity, from life functions to participation in different activities, create the prerequisites of functional capacity. This concept, in turn, helps to make the holistic view of ageing clearer. Good or adequate functional capacity is also a precondition of successful ageing (Ranta 2004).

Different phases of life require a different functional capacity. The education and preparation of a young person for worklife are, simply put, based on the

ability to learn important issues and skills. Among the working population, competence and the ability to work are its focus, and, among retirees, the capacity to cope independently with everyday chores and tasks is needed.

In this book, functional capacity is studied as a part of a human being's health resources, which are the basis of work ability (see Section 4.3). Physical, psychological, and social functional capacities and their changes are interconnected in many ways. Different changes caused by ageing do not, however, proceed at a similar pace, at least not among people over 75 years of age (Ranta 2004).

From the point of view of worklife, functional capacity should be adequate in relation to the demands of work. The basic problem stems from the fact that the changes in functional capacity and work demands with ageing are not parallel (Figure 28, see also Figure 11). If the functional capacity of an employee deteriorates but the demands of work stay the same, workload increases. In such cases, work demands an increasing proportion of a person's functional capacity and its reserves and results in an increase in personal strain and fatigue and slows down recovery.

If the demands of work (quantitative, qualitative, temporal) increase, which seems to be common according to research results, it decreases the resource reserve between functional capacity and work demands. Recovery and revival from work become more and more important with age because senior employees are often closer to their maximal performance than younger employees are. Recovery cannot be moved forward in time; instead it should take place during the same day as the work. Therefore, increasing workload without sufficient recovery has to be considered critically from the viewpoint of ageing.

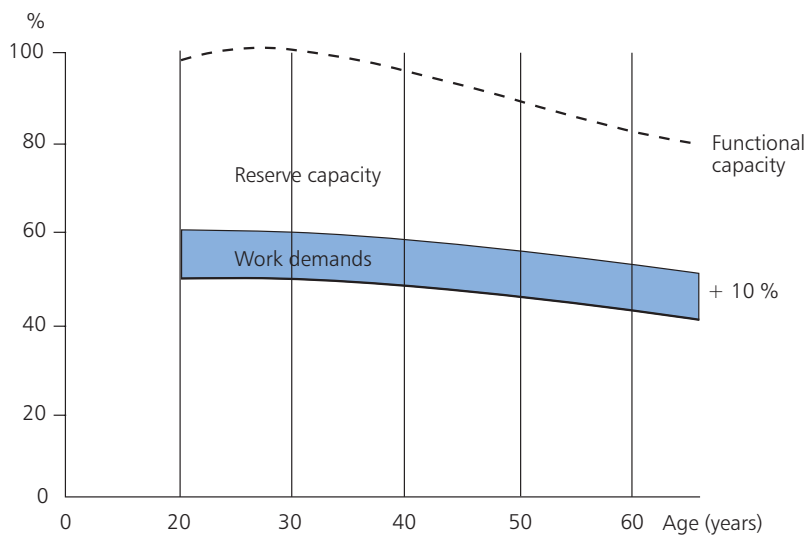
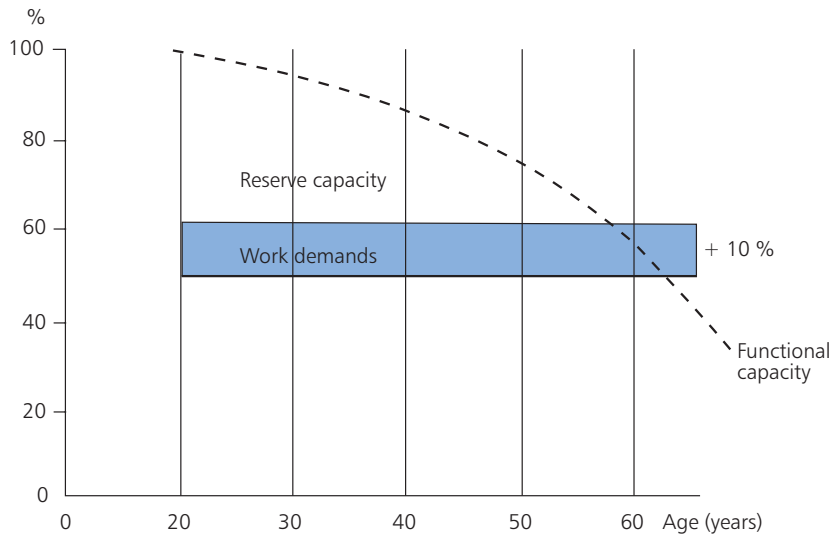
There are two possible solutions to this problem, either the premature deterioration of functional capacity should be prevented or workload should be lightened. The principle should be that the natural or "normal" ageing of functional capacity is accepted. Defining normal is, however, problematic. According to this principle, when physical capacity has deteriorated by about 20% at the age of 40–60 years, the person's physical workload should be decreased by the same 20%. In practice, this could mean exemption from the hardest work phases, moving to different tasks, dropping one workday a week, or a decrease in daily worktime.

Functional capacity is not reinforced in order to increase workload. Instead, it is done in order to prevent overloading and to improve recovery. Therefore, it is important to understand that people in physically demanding work do not improve their physical fitness in order to be able to do more work, but

in order to recover better. Recovery ensures that workers can continue in worklife and can maintain of their health and well-being.

Adjusting workload by age makes a longer worklife possible. On the other hand, if the workload is increased, worklife is shortened. It would be wrong to presume that the functional capacity of the general population has improved during the last few decades so much that people are therefore able the work

Figure 28. Adjustment between decreased functional capacity with age and increased work demands.



more and for a longer time. The unused auxiliary resources between functional capacity and work demands, reserve capacity, are deciding factors for work ability and the worker's continuation in worklife. If functional capacity is improved but work demands are tightened, the reserve capacity is not increased and worklife is not extended. The extension of worklife is finally affected by the body's untouchable physiology and adjustment mechanisms, whose reactions everyone must listen to (Ilmarinen & Tempel 2002).

Promoting health and functional capacity is one of the strategic policies of the Finnish Ministry of Social Affairs and Health. Strengthening the functional capacity of the general population is considered an essential national target whose importance is further emphasized by the ageing of the population (see the section "Government Policies on Changes in the Age Structure of Finland").

4.6.1 Sensory functions

Sight

The sense of sight changes in many ways with ageing. The first changes are related to the deterioration of light refraction (i.e., close adaptation ability of the eye) (Era 1994). Focusing sight at a short distance (e.g., while reading) becomes more difficult. In order to solve this problem, people acquire reading glasses, often around the age of 40 years. This change is probably caused by the stiffening of the lens and also by the beginning atrophy of the muscles adjusting the thickness of the lens. The deterioration of the close adaptation ability slows down significantly or stops completely around the age of 60 years.

The transport of light inside the eye becomes more difficult with ageing because the lens becomes stiffer, different degrees of cloudiness occur in the eye, and the iris becomes smaller. Only one-third of the amount of light transported to the retina of a 20-year-old is transferred to the retina of a 60-year-old under similar conditions. When compared with a 20-year-old, a 40-year-old person requires twice as much light in exact, close-range work, whereas a 60-year-old requires 10-fold more light.

The changes in the sensitivity of the eye to light can be studied by measuring the ability of the eye to adapt to dim lighting. The adaptation ability of people aged 51–55 years has been found to be worse than that of those aged 31–35 years, and the difference for those aged 71–75 was even greater. It appears that the adaptation ability deteriorates at an accelerating pace after the age of 55 years.

Era (1994) also lists other changes in the sense of sight as a result of ageing. These changes, listed below, can, however, be rectified and balanced (e.g., by lighting arrangements):

- deterioration of contrast resolution
- contraction of view area and reduction of its light sensitivity
- increase in glaring tendency
- deterioration of color resolution
- changes in depth vision
- deterioration of distance estimation and dynamic vision.

Serious sight problems of ageing people are related to eye diseases, not directly to ageing. Common eye diseases include cataract, glaucoma, and degeneration of the fundus of the eye.

The Health 2000 Study investigated the appearance of normal and reduced near and far vision in different age groups (Aromaa & Koskinen 2002). The tests were conducted with the person wearing eye glasses if he or she

Table 27. Normal and deteriorated far vision among men and women (%). (Aromaa & Koskinen 2003)

Far vision	Men								
	Age group (years)								
	30–44	45–54	55–64	65–74	75–84	85+	30–64 ¹	65+ ¹	30+ ¹
Normal	97.8	96.5	94.6	88.8	70.9	26	96.7	77.3	92.5
Deteriorated	1.9	3.2	4.8	10.1	22.4	51.7	2.9	17.9	6.0
Weak-sighted	0.3	0.1	0.6	0.8	4.8	6	0.3	2.7	0.9
Severely weak-sighted or blind	0.0	0.2	0.0	0.3	2.0	16.4	0.1	2.1	0.5

Far vision	Women								
	Age group (years)								
	30–44	45–54	55–64	65–74	75–84	85+	30–64 ¹	65+ ¹	30+ ¹
Normal	98.8	97.4	95.7	87	63.6	29.5	97.6	75.1	92.4
Deteriorated	1.2	2.4	3.9	9.7	28.9	38.2	2.2	18.0	5.8
Weak-sighted	0.0	0.1	0.2	2.6	5.2	22.3	0.1	5.0	1.2
Severely weak-sighted or blind	0.0	0.1	0.3	0.6	2.3	10.0	0.1	1.9	0.5
p ²							0.117	0.154	0.508*

¹ Adjusted for age.

² Difference between genders.

* Statistically significant ($p < 0,05$) age-gender interaction.

generally used them. In the near-vision test, the person held an illuminated near-vision chart at the distance at which he or she saw best. The near-vision accuracy was classified according to the size of the characters. Over 98% of the working population (30–64 years) had normal near vision, and only after the age of 75 years did problems with near vision become more common. Among the men aged 45–64 years, a little less than 3% has reduced near vision, whereas among the women the percentage was less than one.

In the far-vision test, the distance of the person from the chart was 4 meters. Far vision had deteriorated for only a few percent of the working population, but after the age of 65 years, up to one-fourth had problems with vision. Among the men aged 55–64 years, a little less than 5% had deteriorated vision. Among the women, the respective percentage was a little less than 4% (Table 27).

Hearing

The deterioration of especially high-frequency differentiation with age has been considered a typical change related to ageing. It has been estimated that about one-third of those over the age of 65 years have hearing reduction that is socially disadvantageous (Era 1994). Changes in hearing may begin rather early. Among people aged 51–55 years, it was discovered that air-conduction auditory thresholds began to deteriorate after 2000 Hz, as opposed to people aged 31–35 years; the seniors' hearing was weaker than the juniors' already after the age of 50 years.

Hearing reduction caused by ageing may be sensory, mechanical, metabolic, or neural in nature. Sensory hearing reduction is caused by damage to receptors in the organ of Corti located in the inner ear, which results especially in deteriorated differentiation of high-frequency sounds. Mechanical hearing reduction is caused by stiffening of the basal membrane, which leads to deterioration of hearing at all frequencies. Metabolic reduction in hearing, in turn, is caused by metabolic disturbances in the operation of the inner ear, and hearing deteriorates at all frequencies. Neural reduction in hearing is caused by changes in the nuclei of the auditory nerve and auditory meatus, which especially leads to deterioration of speech recognition and understanding. In practice, age-related changes in hearing are usually combinations of different causes (Era 1994).

Poor listening conditions further emphasize the deterioration of hearing. Reverberation, competing speech signals, or other disturbing sound sources or accelerated speech may prevent ageing people from understanding most of the intended message, whereas young people aged 20–30 years are able to understand everything. Difficulties in understanding speech may start to

increase already after the age of 40 years. Direction hearing may deteriorate with age also if the developing hearing defect proceeds quicker in one ear. Good listening conditions are important also for ageing students. A learning environment that is free of disturbances improves the learning results of senior students (see Section 4.7.7).

Air-conduction auditory thresholds were also studied in the Health 2000 Study using a screening audiometer for both ears at three frequencies in a quiet room. The smallest stimulus was 5 dB. The average auditory threshold of the better ear in the measured frequencies was classified according to WHO recommendations (WHO 1991).

Hearing was normal for 97% of the working population (30–64 years), but deteriorated quickly already among the 65- to 74-year age group. Among the men and women aged 55–64 years about 10% and a little less than 7%, respectively, had reduced hearing ability, but the deterioration was usually slight (Table 28). The men's hearing was poorer in the working age group

Table 28. Normal and deteriorated hearing among men and women (%). Average result of the better ear (0.5, 1 and 2 kHz frequencies). (Aromaa & Koskinen 2003)

Hearing	Men						
	Age group (years)						
	30–44	45–54	55–64	65–74	30-64 ¹	65+ ¹	30+ ¹
Normal	98.8	97.0	90.2	71.4	96.3	56.7	87.5
Somewhat deteriorated	0.7	2.0	7.5	19.3	2.7	25.3	7.8
Moderately deteriorated	0.4	0.8	2.1	7.1	0.9	14.2	3.7
Severely deteriorated	0.1	0.1	0.2	1.7	0.1	2.7	0.7
Deaf or nearly deaf	0.1	0.1	0.0	0.6	0.1	1.1	0.3

Hearing	Women						
	Age group (years)						
	30–44	45–54	55–64	65–74	30-64 ¹	65+ ¹	30+ ¹
Normal	99.0	98.8	93.5	74.3	97.7	58.6	89.0
Somewhat deteriorated	0.5	1.1	4.9	21.0	1.7	26.2	7.1
Moderately deteriorated	0.5	0.1	1.2	4.3	0.5	12.3	3.2
Severely deteriorated	0.0	0.0	0.2	0.2	0.0	1.6	0.4
Deaf or nearly deaf	0.0	0.0	0.2	1.1	0.0	1.3	0.3
p ²					0.053	0.403	0.101*

¹ Adjusted for age.

² Difference between genders.

* Statistically significant ($p < 0,05$) age-gender interaction.

than the women's, but the difference was reduced at retirement age. A larger proportion of men than women reported difficulties in hearing a discussion. The difference started already at the age of 45 years but stabilized only after the age of 84 years. It may be that minor noise injuries, which cause difficulties in recognizing speech in noisy or echoing environments, are more common among men than among women (Aromaa & Koskinen 2002).

Balance

Changes in balance and body control as a result of ageing are often significant. Balance feels unstable, and the person feels dizzy. This reaction is common particularly among older people (Era 1994). Changes in balance can be visible already among people of working age. Among the men aged 51–55 years, there was much more body sway than among those aged 31–35 years (Era & Heikkinen 1985).

Maintaining an upright position is a complex series of physiological events, in which the nervous system reacts to the body position and its changes through several sensory channels. The information necessary for adjusting body position is received from the balance sense located in the inner ear, through sight, from the proprioceptors of the muscles and tendons, and from the receptors for mechanical feeling in subcutaneous tissue, which are, for example, located in the bottom of the feet and lower-limb joints. Ageing affects the operation of all of these sensory channels, whose priority with regard to balance may change with ageing.

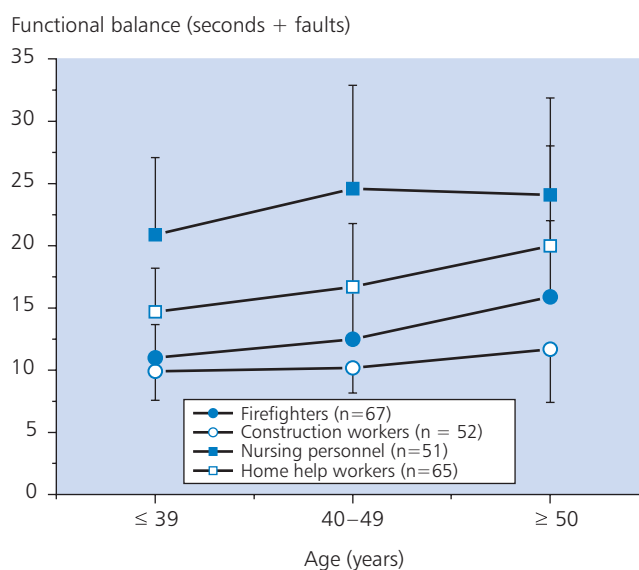
In correcting body position, the condition of the neuromuscular system and the timing of correction reflexes are emphasized. The ageing of the neuromuscular system may make correctly timed motor adjustments more difficult, for example, because the energy supply speed has decreased. Maintaining the functional capacity of muscles and balance exercises may prevent changes that occur in body control with ageing.

Balance can be viewed as an interaction between the individual, the work-task, and the environment. Among firefighting and rescue personnel working on roofs, using smoke diving equipment, and lifting and carrying people to be rescued and heavy equipment demand good balance in order to make work safe and easy. Difficult work conditions and heavy equipment increase the demands on the neuromuscular system. Of the occupational accidents among firefighters, slipping, tripping, and falling cause 30%. The respective percentage among construction workers is 22%, and for nurses and social workers it is 25%.

In a study conducted by Punakallio (2004), the balance of firefighters, construction workers, nurses, and home help workers was examined in different age groups. Standing balance (body sway) was measured using a dynamometer in a normal standing position, as well as in a tandem position (feet one behind the other) with the person's eyes open and closed. Functional dynamic balance was measured using a test in which the person walked forwards and backwards on a wooden beam; firefighters were tested with and without smoke diving equipment. Falling from the beam was considered a fault. A slipping test with firefighters wearing smoke diving equipment was conducted on a straight track on which water and detergent or glycerol was applied to one section. The length of all slips was measured in the walking direction.

The results of Punakallio (2004) showed that the balance of firefighters over the age of 49 years was notably worse than the balance of those aged 40–49 years or under 40 years. The differences between the age groups were not as significant among construction workers, home help workers, and nurses (Figure 29). Using the smoke diving equipment hindered balance control regardless of age, but its use in the balance test, especially with no sight feedback about the environment, made the balance control of those aged 43–56 years much more difficult than that of the firefighters aged 33–38 years. The slips of the firefighters in the older age group were also longer than those of the younger firefighters. The studies also showed that a poor

Figure 29. Functional balance (seconds + number of faults, 1 fault = 1 second) in physically demanding occupations by age group.



performance in the balance test was a good indicator of poorer work ability after the 3-year follow-up.

On the basis of these results, it was recommended that balance be taken into account when work ability is monitored, work is organized, and characteristics of smoke diving equipment are developed for firefighters. Firefighters should also be offered adequate possibilities to train their balance with and without firefighting equipment (Punakallio 2004).

As an overview of sensory functions, it can be noted that, although their deterioration with age is common, the handicap caused among the working population is scarcely significant enough that it could not be alleviated by reorganizing the work and re-arranging the environment. Different sensory functions are primarily independent, but they have a diverse and solid connection to the sensorimotor speed and cognitive performance of a person. Sensory functions affect the completion of demanding worktasks significantly. For example, the importance of body control has been largely forgotten in occupational safety and health (Era 1994).

4.6.2 Physical functional capacity

Physical functional capacity has been described in detail also from the viewpoint of ageing in several books (e.g. Era 1994, Spirduso 1995, Ilmarinen 1999b, McArdle et al. 2001, Keskinen et al. 2004). The basic components of physical functional capacity are analyzed in this chapter as follows:

1. Body structure
 - anthropometrics
 - body composition
2. Energy production
 - aerobic processes
 - anaerobic processes
3. Function of the neuromuscular system
 - force production
 - performance technique
4. Psychological factors
 - motivation
 - tactics.

Anthropometrics is usually measured according to height, weight and body mass index; fat and its location; waist girth; and waist-hip ratio. The body is made up of fat, protein, water, glycogen (i.e., stored carbohydrate) and minerals (in bones and elsewhere). Body composition cannot be directly meas-

ured for humans, but several methods are available for its evaluation (underwater weighing, skinfold measurements, bioelectrical impedance, infrared light). With the use of these methods, body composition can be calculated mathematically (Fogelholm 2004).

Aerobic and anaerobic processes describe the capability of a person to produce energy during long-term exercise. Aerobic endurance can be defined as basic endurance, pace endurance, and maximum endurance. Anaerobic endurance, in turn, illustrates energy production in short-term exercises that last under 5 minutes, called speed endurance.

The performance of the cardiorespiratory system is central for aerobic energy production. Aerobic processes include the structure and neural regulation of the heart, heart rate, beat volume, heart work, difference in the oxygen levels of arterial and venous blood, systolic and diastolic blood pressure, peripheral circulation, blood volume and blood composition. Respiratory performance, in turn, is described by lung capacity, gas exchange and ventilation. These cardiorespiratory functions together determine what is called maximal oxygen consumption. Changes in maximal oxygen consumption brought about by ageing are examined later in this section (see “Aerobic Performance”).

Neuromuscular function is measured from the force production properties of the muscles. They can be divided into maximum force, speed force, and endurance force. Muscle force is produced differently depending on muscle’s method of contraction.

The methods of muscle contraction can, in turn, be divided into isometric (muscle length does not change), dynamic (muscle extends and contracts), and a combination of isometric and dynamic. The combinations can be further classified as exocentric (muscle must extend to contract) and concentric (contractions in which the muscle contracts intensely) according to the extension-contraction cycle of the muscle. In addition to muscle force production, other neuromuscular functions (e.g., dexterity, balance; see the section “Balance”), coordination, and speed of movement are also included as physical functions. The regulatory factors of the neuromuscular system have been described in more detail elsewhere (e.g., by Ahtiainen & Häkkinen (2004).

The autonomic nervous system can also be considered a part of physical functional capacity. Its importance is significant, for example, for revival and recovery from physical activity. Good circulatory regulation protects a person from harmful changes in the functioning of the heart and metabolism, whereas poor capacity accelerates the development of overload symptoms and the occurrence of stress.

Changes in physical functional capacity during ageing are illustrated in the following discussion primarily with regard to the functions that influence work ability and the working population's ability to continue in worklife. More detailed information about the effects of ageing on physical functional capacity can be found elsewhere (e.g., Era 1994, Spirduso 1995, Ilmarinen 1999b, Shiraki et al. 2001, Savinainen 2004, Ranta 2004).

Body structure

The body becomes shorter with age. The shortening is presumed to begin at about the age of 40 years and to accelerate after the age of 60 years. The average differences in height among people of different ages are estimated to be caused by the following factors (Era 1994):

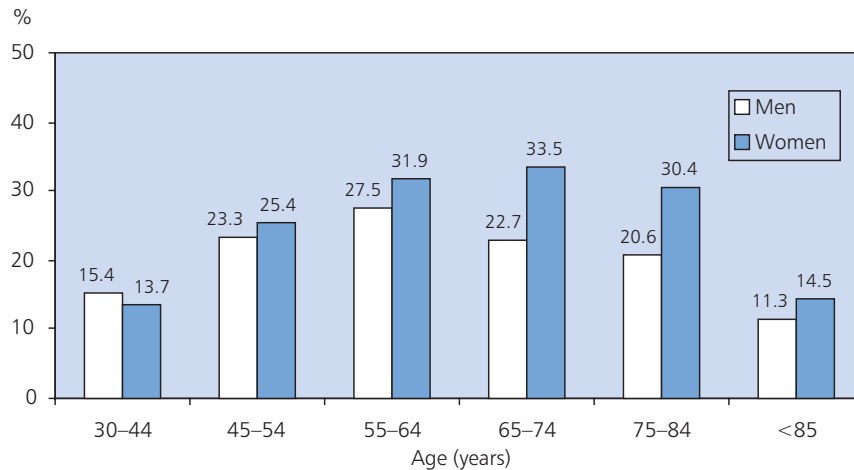
- larger size of younger generations
- skeletal changes during ageing, especially the decrease of calcium content
- changes in posture and bearing during ageing
- contraction of spinal vertebrae
- changes in the neck angle of the thigh bone
- possible selective mortality among tall people.

Usually the shortening rate is about 0.1% per year, which means about 4 cm between the ages of 20 and 75 years and about 7 cm for people over 85 years of age. Women usually shorten more than men because women's osteoporosis becomes greater with age. The shortening of the working population with age is not a problem as such, unless other symptoms or functional restrictions occur as a result.

Body mass (i.e., weight) increases with age. Weight usually starts to increase at about 25 years of age and continues until the age of about 55 years. The increase in weight is generally caused by an increase in the amount of fat. After the age of about 60 years weight does not increase at the same rate because, for example, a simultaneous decrease in muscle mass and bone tissue compensate for the increase in fat.

Obesity is usually illustrated using the body mass index (BMI), which is calculated as weight divided by height squared (kg/m^2). The obesity of the working population ($\text{BMI} \geq 30 \text{ kg}/\text{m}^2$) seems to increase almost linearly with age, more among women than among men. It has been found, for example, that 14% of women aged 30–44 years were obese, whereas the respective proportion for those aged 45–54 years was one-fourth, and for those aged 55–64 years it was already nearly one-third (Figure 30). Among the oldest age group of working men, about 28% were obese. The obesity of women

Figure 30. Obesity (BMI ≥ 30 kg/m²) among men and women in different age groups. (Aromaa & Koskinen 2002)



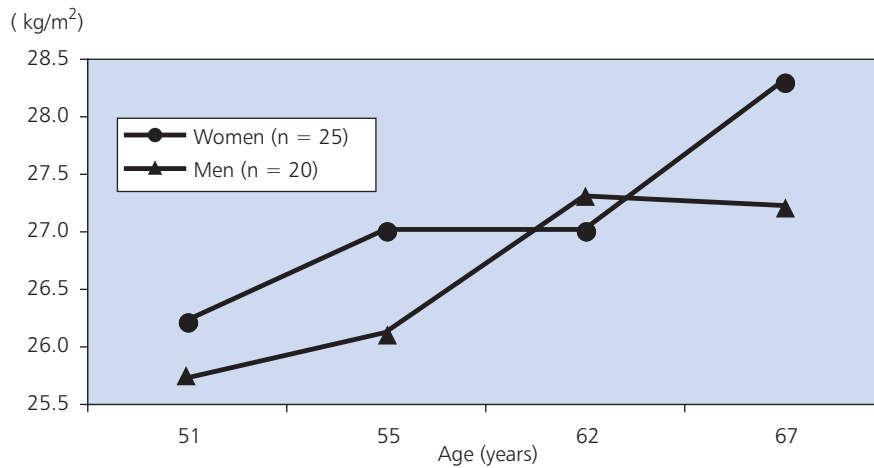
still increased a little after worklife, whereas, among the men, there was a clear decrease in the age group of 65–74 years.

About one-third of the men and about 40% of the women of the working population had a large waist girth, and this finding indicates excessive fat collection in the abdominal area. Abdominal fat in this area increases the risk of metabolic complications caused by obesity (Aromaa & Koskinen 2002). Another important illness indicator in addition to BMI is obesity in the middle body section, which is reliably measured as the abdominal girth.

Obesity seems to have increased among the working population from 2000 to 2003, especially among men. In 2000, about 11% of men of work age were obese, whereas, in 2003, the percentage was about 14%. Obesity increased among women only 1 percentage point, and about 13% of women were obese in 2003. Among men aged 55–64 years, obesity increased the most during the 3 years, as much as 7 percentage points, and reached 22% of the age group. Since, at the same time, 49% of the men in this age group were overweight (< 30 BMI > 25), it can be said that 70% of the men suffered from weight problems during the last 10 work years. About two-thirds of the women also struggled with their weight. Most obesity occurs in transportation and traffic work, agricultural work, and basic industrial work. A low level of vocational education has also been found to be connected with obesity (Pirainen et al. 2003).

Most research is based on cross-sectional findings and illustrates differences between age groups but does not describe the effect of ageing on the characteristic in question. Follow-up studies lasting for an adequate period of time among the same group of people, on the other hand, give a more reliable

Figure 31. Change in the average body mass index (BMI, kg/m²) in a 16-year follow-up study. (Savinainen 2004)



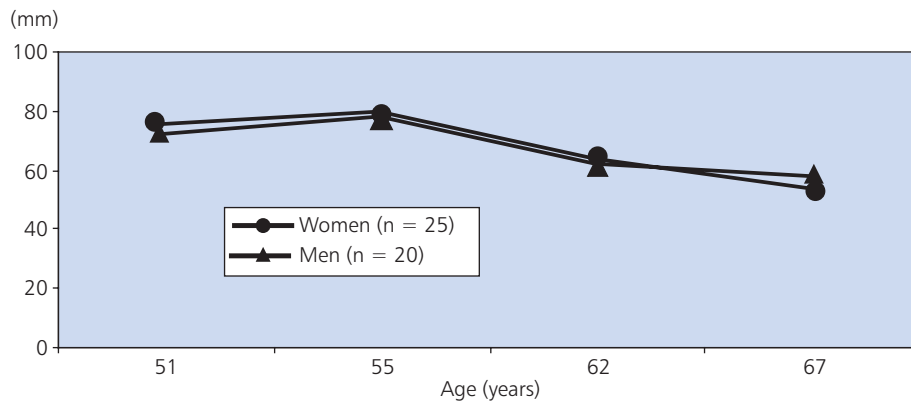
picture of the effects of the actual ageing process. Even this description of the effects of ageing may be incomplete since some of the participants in the study dropped out, for example, for medical reasons. The remaining group may well give a better picture of the situation than it actually is.

In a 16-year follow-up study among a group of municipal workers, BMI was also defined. The results showed that the BMI increased 7.8% among the women and 6.0% among the men between the ages of 51–67 years. The annual increase was 0.4% for the women and 0.3% for the men. The increase was not, however, completely linear (Figure 31). The average BMI of the men increased until the age of 62 years and stabilized thereafter. For the women, on the other hand, a steady period occurred between the ages of 55 and 62 years, but thereafter the BMI continued to increase.

Obesity and the fact that it is becoming more common can be considered a major problem with respect to national health. Obesity increases the risk of several cardiovascular diseases, diabetes, and musculoskeletal symptoms and diseases. On the other hand, a weight loss of only 5% already creates positive health implications. Healthy nutrition in a workplace canteen helps weight control.

Changes in the functioning of joints, such as stiffening, reduced mobility, and degenerative arthritis, affect the performance of the musculoskeletal system, especially in physically demanding situations. Spinal mobility was discovered to have decreased linearly after the age of 55 years among both men and women (Figure 32). Spinal mobility was decreased for about 27% of the women and 18% of the men during the 16-year follow-up. Mobility decreased each year by 1.7% among the women and 1.1% among the men.

Figure 32. Change in the average mobility (mm) of the spine among men and women in a 16-year follow-up. (Savinainen 2004)



Aerobic performance

Aerobic performance is illustrated by maximal oxygen consumption, for which energy is produced in long-term work by increasing the maximal oxygen consumption. Aerobic performance depends, for example, on the capability of the cardiorespiratory system to provide energy to the contracting muscles, as well as on the ability of muscles to use oxygen in energy production and to remove the end products of energy metabolism. In addition, the amount of active muscle mass also affects performance.

Internationally approved norms are available concerning the changes in cardiorespiratory performance with age (Figure 33). The tables have been compiled according to the results of direct measurements of maximal oxygen consumption ($\dot{V}O_2\text{max}$) among a large international material (Shwartz & Reibold 1990, McArdle et al. 2001). Norms have been created for both men and women according to both the absolute maximal oxygen consumption ($\dot{V}O_2\text{max}$, $l \text{ min}^{-1}$) and the maximal oxygen consumption in relation to body weight ($\dot{V}O_2\text{max}$, $\text{ml kg}^{-1} \text{ min}^{-1}$). Maximal oxygen consumption has been classified into seven categories according to these norms. The threshold values of each “performance level” decrease almost linearly during the adult life of a person.

According to these norms, among men in average physical condition, the maximal oxygen consumption in relation to body weight ($l \text{ min}^{-1}$) decreases between the ages of 20 and 60 years from 40 to 25 $l \text{ min}^{-1}$. Physical condition decreases according to the norms almost 40% in 40 years. The norms depict the normal decrease for those in the healthy population who do not especially exercise in order to maintain or improve cardiovascular performance.

Figure 33. Effect of age on maximal oxygen consumption among men.

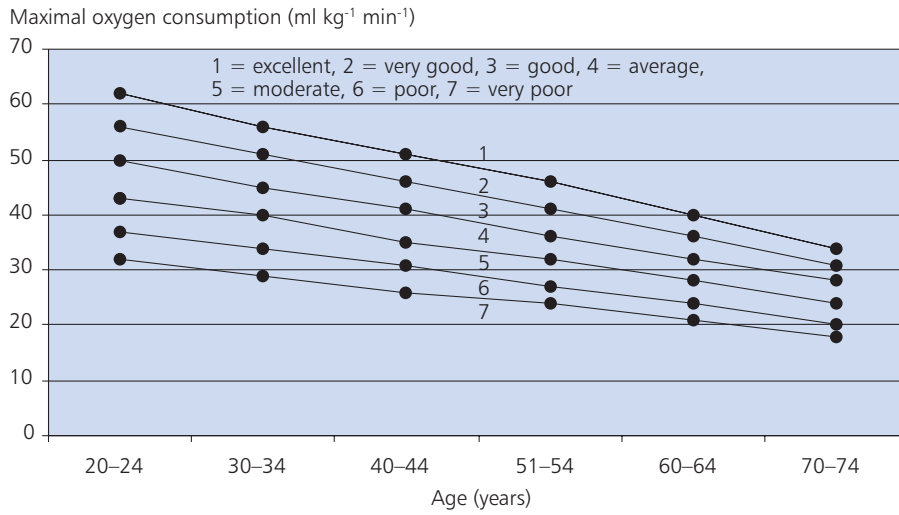
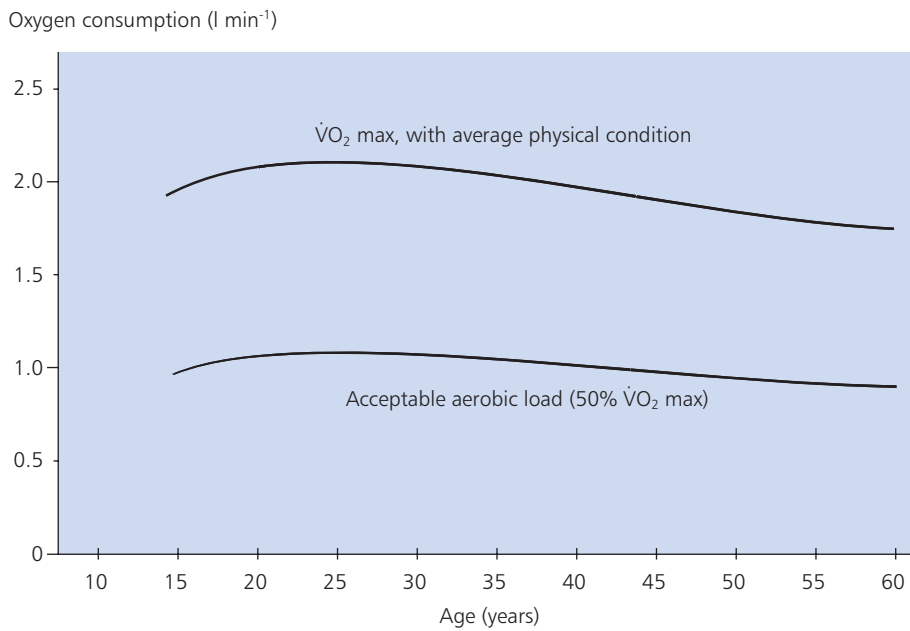


Figure 34. Maximal oxygen consumption (l min⁻¹) and the upper limit of oxygen consumption required by the work of a woman in average physical condition. (Ilmarinen 1999b, page 89)



The decrease in maximal oxygen consumption significantly affects individual performance in physical work. The situation can be examined, for example, from the viewpoint of women who are in average physical condition. According to the norms, the maximal oxygen consumption of such a 50-year-old woman is 1.85 l min^{-1} (Figure 34).

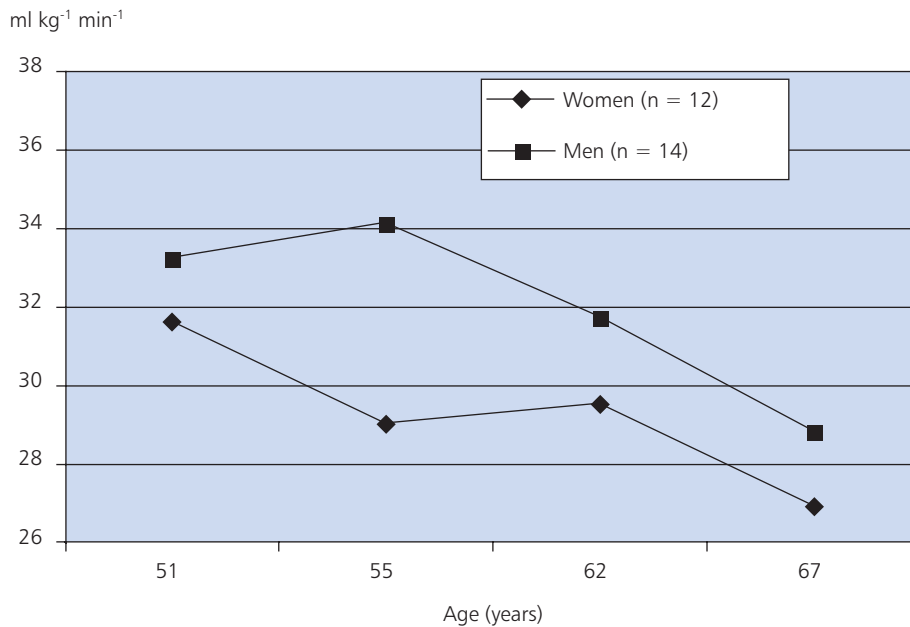
According to international recommendations, physically demanding work may require about 50% of the maximal performance of the employee, when the work contains normal pauses. In practice, this recommendation means that the maximal oxygen consumption required of a 50-year-old woman who is in average physical condition must not exceed 1.0 l min^{-1} . If the maximal oxygen consumption required by work exceeds 50% of the person's maximal oxygen consumption, it results an overload and lactic acid build-up in the muscles. Overload leads to exhaustion, sore muscles, and poor work performance.

The maximal oxygen consumption of a 50-year-old woman who is in poor physical condition is about 1.5 l min^{-1} . Her work can require 0.75 liters of oxygen per minute without causing overload. In practice, this limit corresponds to sedentary work or light standing work at the most. Moving from one place to another or, for example, lifting and carrying loads easily increases oxygen consumption to over 1.0 l min^{-1} . In practice, then, even most ageing women with normal cardiovascular function, not to mention those in poor condition, are not physically fit enough for the requirements of physically demanding work.

A longitudinal study in the municipal sector examined the changes in maximal oxygen consumption among men and women over a period of 16 years (Savinainen 2004). The participants continued working until the third measuring date and then retired. In the beginning, they were men and women in average physical condition who worked with physical, mental or a combination of physical and mental demands. In the beginning, each participant's physical condition was at the same level, regardless of his or her type of work.

Measured in absolute values, the maximal oxygen consumption of both the men and the women decreased between the ages of 51 and 62 years by about 4–5%, the relation to body weight being about 7–9%. The physical condition of the women deteriorated at the age of 51–54 years and remained virtually the same until the age of 62 years, and then again decreased during the last follow-up period. At the age of 67 years, the physical condition of the women had decreased by 11.5% when compared with the situation at the age of 51 years. Their physical condition decreased by 0.7% each year (Figure 35).

Figure 35. Change in average aerobic performance ($\text{ml kg}^{-1} \text{min}^{-1}$) among men and women in a 16-year follow-up.



The physical condition of the men, on the other hand, increased slightly at first at the age of 51–54 years but deteriorated quickly thereafter linearly until the age of 67 years. During the 16 years, the men's physical condition deteriorated at the same pace as that of the women, by 11.6% (or 0.7% each year). During worklife (51–62 years), physical condition deteriorated virtually similarly regardless of the type of work, but the absolute maximal oxygen consumption of the mental workers increased 8% among the women and 10.5% among the men at the age of 55–62 years (Ilmarinen 1999b).

The results indicate that physical work in the municipal sector does not contain a level of strain that would improve maximal oxygen consumption. Improvements in physical condition with age are therefore based on physical activity also among workers in physically demanding jobs. After retirement, the condition of the cardiorespiratory system continues to deteriorate, which may be caused by an additional decrease in physical activity even though people would have more time for physical activity. It may also be that illnesses prevent people from increasing their physical activity.

The examples of people aged 51–62 years in the municipal sector describe people who represented two different types of changes in physical condition during 11 years. The women's example illustrated a deterioration of

physical performance during the first 4 years and improvement during the next 6 years. The results showed that even drastic performance deterioration among the women was followed by notable improvement in their physical condition. The physical condition of none of the women deteriorated evenly, according to the norms, between the ages of 51 and 62 years.

Another type of change was represented by the sample of men. Among them, the significant improvement in physical condition during 4 years ended and turned into a nearly equal deterioration during the next 6 years. None of the men in the sample “aged”, according to their maximal oxygen consumption, in the manner depicted by the norms for the ages between 51 and 62 years.

The aforementioned samples represent individual changes in the physical fitness of ageing employees during their lifespan. They emphasize the delicacy and dependency of changes in maximal oxygen consumption on, for example, living habits and health, as well as on the ageing process. The *individual variation* of the changes brought by ageing may be significant, which in turn may be largely caused by hobbies affecting physical fitness. The causes of the changes in aerobic performance from the viewpoint of the ageing process itself have been described in more detail elsewhere (Era 1994).

A positive message connected to the individual variety in physical fitness is, however, that cardiorespiratory performance can be significantly affected at the age of 51–62 years, and even thereafter, regardless of whether the person has previously been physically active or not. However, continuous alternations (i.e., improvement and deterioration) are not advisable. A safe model is daily health-enhancing physical activity, as well as the avoidance of a major decrease in physical fitness during the last working decade. Being physically fit is advantageous also during retirement (Ilmarinen 1999b). Physical activity also reinforces the functioning of the autonomic nervous system.

Production of force by the neuromuscular system

In this section, the changes in the performance of the neuromuscular system are illustrated through the changes that occur in gripping force and isometric changes in the maximal force of body muscles (Savinainen 2004).

The decrease in maximal muscle force with ageing or differences between age groups are often based on static muscle strength measurements. Usually, the isometric gripping force is tested. A 16-year follow-up study showed that, especially among men, gripping force decreased during the entire follow-up period. A significant difference between the gripping force of the men and women, which was visible at the age of 51 years, had disappeared by the age of 67 years (Figure 36). The gripping force of the men decreased as much as

Figure 36. Change in isometric gripping force (kPa) among men and women in a 16-year follow-up.

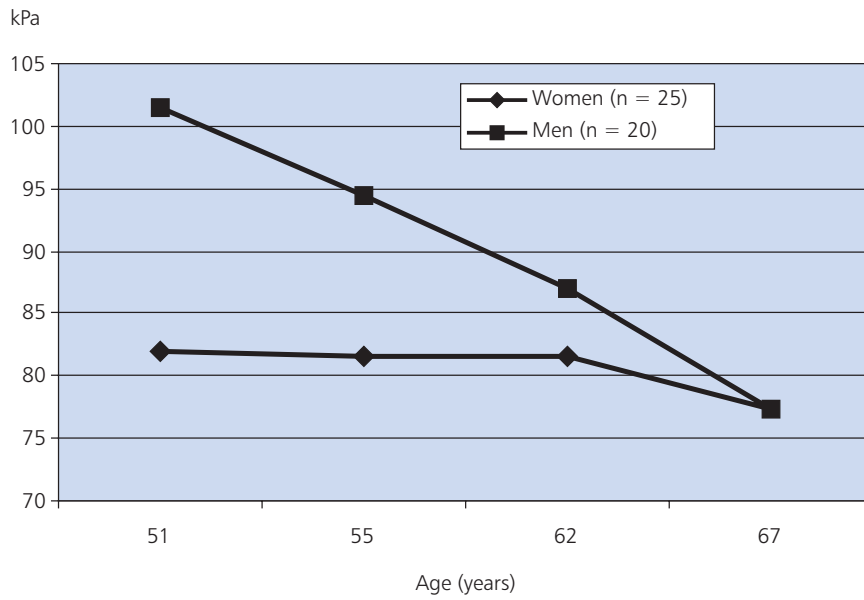
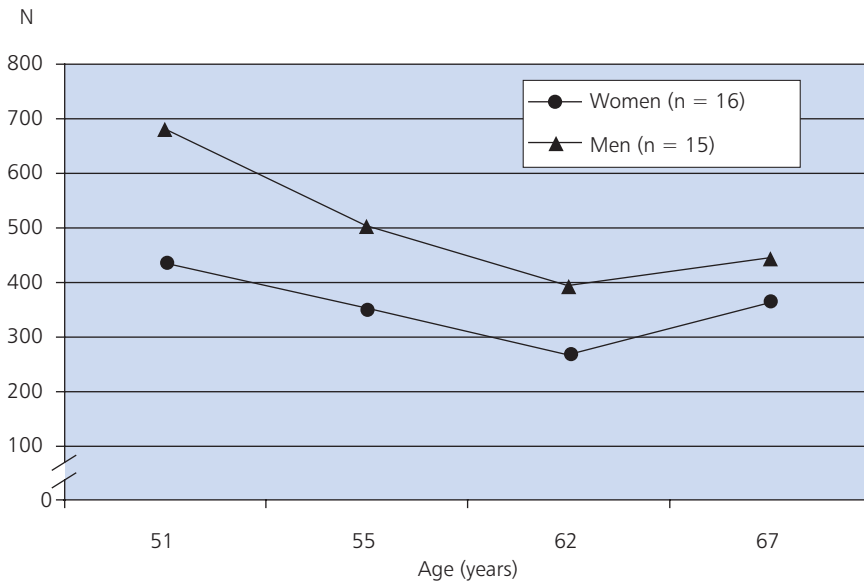


Figure 37. Change in maximal flexion (N) among men and women in a 16-year follow-up.



21%, and that of the women declined by only 3% during the 16 years. The gripping force of the men decreased 1.3% per year. The result differed from that of the Health 2000 Study, which was a cross-sectional survey in which the gripping force of the women was 56–60% of the gripping force of the men in different age groups and the gripping force also decreased proportionally in the same manner in each age group. Different results may indicate that the material of the follow-up study was affected by selection.

The flexion and extension force of the large muscle groups of the body decreased the most clearly with ageing, especially among the men. Both the flexion (abdominal muscles) and extension (back muscles) force decreased among the men as much as 33% by the age of 67 years from the baseline level measured at the age of 51 years. Among the women, the force of the abdominal muscles decreased by about 13%, and that of the back muscles declined by about 22% in 16 years. Among the men, the yearly decrease was 2%. An example of the changes in flexion force shows that, in this material, muscle force improved slightly after retirement (Figure 37).

In earlier reports based on the same follow-up material, it was stated that the changes in musculoskeletal performance were similar in all of the basic work type groups (Nygård et al. 1999, Ilmarinen 1999b). Only among the men (e.g., transportation work) and women (nursing work) doing jobs with combined physical and mental demands did body flexion force decrease less than in the two other groups. Among the women, also gripping force decreased less in physical–mental work than in the other groups. A noteworthy issue about the results was that the isometric body force decreased among the men as much as 40–50% between the ages of 51 and 62 years, and the deterioration was similar in both physical and mental occupations. Such deterioration was 4–5 times greater than that indicated by cross-sectional studies.

Another noteworthy aspect was that musculoskeletal performance was at the same level regardless of whether the work was physically or mentally demanding. Cross-sectional studies have earlier shown that the musculoskeletal performance of men aged 30–35 years in physically demanding jobs was better than that of men of the same age in mental occupations. The situation was the opposite among the men aged 50–55 years (Era 1994). The results of the follow-up study in the municipal sector point, however, to the fact that changes in musculoskeletal performance may occur already before the age of 50 years. Thereafter, the type of work affected performance less than ageing.

The average musculoskeletal performance decreased with age rather significantly in conjunction with most functions, but the differences between the tests, especially between individual people, were large, as they occurred also for cardiovascular performance. Among people doing physically demanding

work, dramatic deterioration of the musculoskeletal system must be prevented by regular exercise. In addition, their workload must be decreased according to the natural deterioration of functional capacity brought by ageing.

Motor ability

In the Health 2000 Study, the motor ability of people of different ages was examined in a home interview (Aromaa & Koskinen 2002). Climbing stairs (1 flight of stairs), walking 0.5 kilometers, or carrying a shopping bag (5 kg) was easy for 96% of the working population. However, in the age group of 55–64 years, about 10% reported difficulties in climbing stairs and a little over 20% of the women had difficulties carrying shopping bags. The women experienced more difficulties with heavy cleaning than the men, and, in the age group of 45–54 years, as many as 15% of the women reported difficulties with cleaning. Among people aged 55–64 years, difficulties were reported by over one-fourth of the women and 15% of the men.

In the Health 2000 Study, a walking test was conducted for people over 55 years of age. Maximal walking speed was calculated over a distance of 6.1 meters. Walking speeds of 1.2 m/s and 0.8 m/s, which are the bases for timing traffic lights, were used as measurement criteria. At the speed of 1.2 m/s, a person can cross the street before a traffic light changes, even if the person started as the pedestrians' green light starts to flash (so-called pedestrian safety period). If a person starts crossing the street when the pedestrian light turns green, the speed of 0.8 m/s is enough.

The results showed that walking speed decreased with age, but the decrease was small among the working population. Among the age group of 55–64 years, about 6% of the men and 11% of the women walked slower than 1.2 m/s. In the next age group, 65–74 years of age, the number of slow walkers was threefold. A walking speed of 0.8 m/s was reached by virtually all but a very small percentage of the people aged 55–64 years (Aromaa & Koskinen 2002).

The deterioration of musculoskeletal performance with age is affected by several factors. One of the most important causes is related to muscle atrophy. Muscle mass decreases with age. The muscle mass may start to decrease already after the age of 25 years, and the decrease apparently accelerates after 50 years of age. Fast fiber cells usually decrease more than slow cells. Causes of muscle atrophy include lack of exercise, changes in the muscle nerves, hormonal factors, and nutrition, especially at an older age.

Physical work does not seem to maintain or develop the functional capacity of the musculoskeletal system. Therefore, it is extremely important that

people in physical occupations take care of the functional capacity of their musculoskeletal system. Muscle atrophy can be effectively prevented with suitable exercise, muscle force can be improved, and muscle mass can be increased, even at a relatively old age (Era 1994). When exercise is combined with the reduction of physical workload, also the prerequisites for a longer worklife remain reasonable for workers in physically demanding jobs.

Physical activity

To maintain and develop physical functional capacity, regular physical activity is the most effective method for people of all ages. Physical activity can be examined from both the health-enhancing physical activity and fitness training points of view. The criteria of health-enhancing physical activity and fitness training differ primarily in that health-enhancing physical activity emphasizes regularity and fitness training emphasizes intensity. In the Health 2000 Study, the health-enhancing physical activity of people of different ages was studied. Health-enhancing physical activity was considered adequate if it was done at least four times a week, a least half an hour at a time, and the exercise caused slight shortness of breath and sweating.

The results showed that about 22% of the men and 26% of the women of the working population had enough health-enhancing physical activity. Health-enhancing physical activity increased by age group, a little more among the men than among the women. In the age group of 55–64 years, more than one-third of the men and a little less than one-third of the women had enough health-enhancing physical activity. Regular physical activity increased during retirement (Figure 38).

In the Work and Health Interview Study, a question about fitness training was also included. The question was “How often can your regular physical activity be considered to be fitness training, which means physical activity that lasts for at least half an hour and causes shortness of breath and sweating? The activity can be, for example, running, skiing, aerobics, swimming, or team sports.”

The results showed that about every fifth man and woman of the working population did fitness training on 4 or more days a week. Among the women, fitness training decreased with age, and, in the age group of 55–64 years, only 10% did fitness training when, in the previous age group, there were twice as many. Among the men the number of people doing fitness training decreased in the age group of 45–54 years, but increased again to 23% in the age group of retired people (Figure 39).

Figure 38. Adequate amounts of health-enhancing physical activity among women and men by age group.

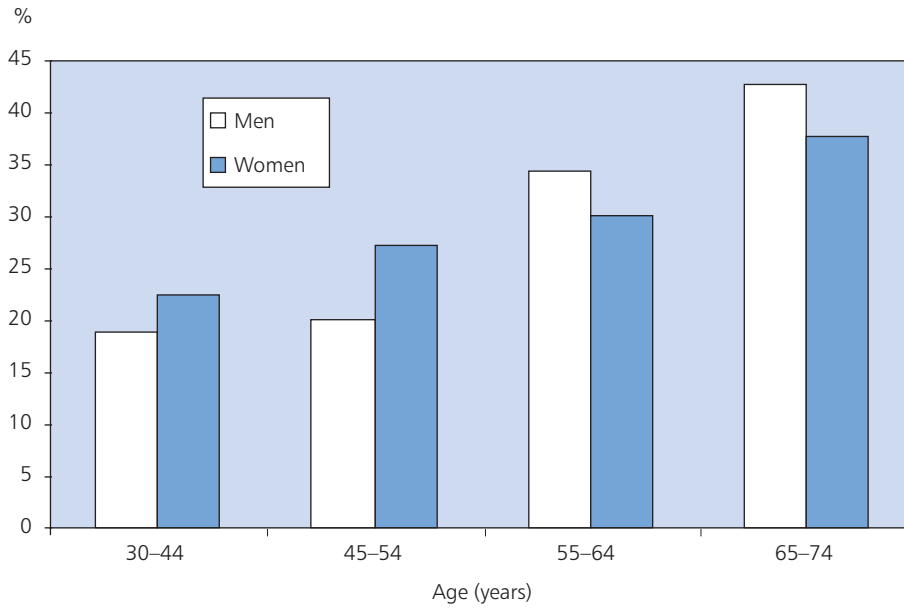
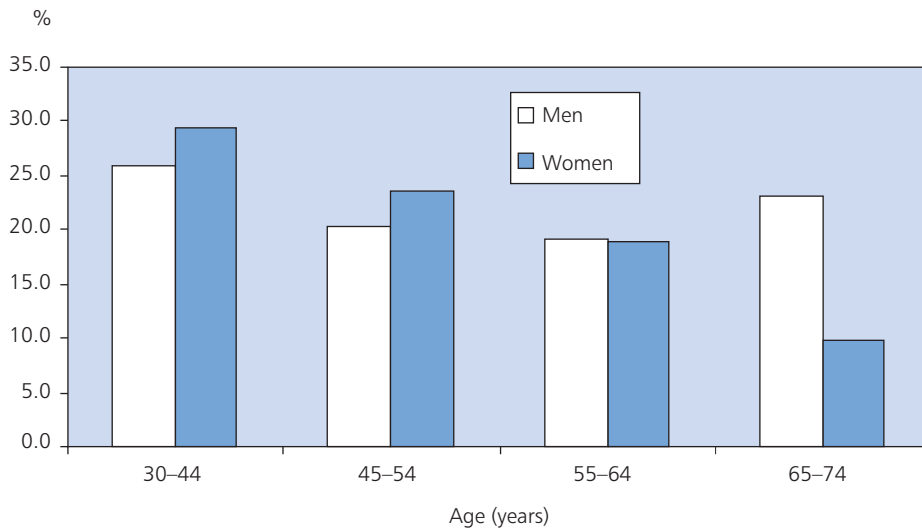


Figure 39. Fitness training among the working population by age group. The proportions of men and women doing fitness training at least four times a week by age group in 2003.



people in physical occupations take care of the functional capacity of their musculoskeletal system. Muscle atrophy can be effectively prevented with suitable exercise, muscle force can be improved, and muscle mass can be increased, even at a relatively old age (Era 1994). When exercise is combined with the reduction of physical workload, also the prerequisites for a longer worklife remain reasonable for workers in physically to 23% in the age group of retired people (Figure 39).

The occurrence of regular physical activity indicated that health-enhancing physical activity became more common and fitness training decreased with age, with the exception of older men in worklife who exercised to maintain their physical fitness. The numbers can be considered to be reasonably good in relation to health-enhancing physical activity especially in the older age groups, although still not all seniors participate in health-enhancing physical activity. Fitness training shifts to health-enhancing physical activity with age, especially among women. In these two studies, the definitions of health-enhancing physical activity and fitness training partly overlap, and it can be assumed that there are more people doing health-enhancing physical activity in the group of fitness training people than vice versa. Therefore the proportions of people doing fitness training may be overestimations, especially among the men in the oldest age group.

Regular physical activity is beneficial in all lines of work, but especially in physically demanding occupations. Active fitness training seems, however, to be rare especially in occupations in which it is most needed in order to improve functional capacity. There are, on the average, fewer people who fitness train and work in quarry and construction occupations, transport and traffic occupations, and basic industrial occupations. Fitness training is rarer among employees with less vocational education (Pirainen et al. 2003). The benefits of health-enhancing physical activity and fitness training remain small for the people who would need them the most.

Physical functional capacity, combined with psychological and social functional capacity, creates the functional basis of work ability. According to some studies, regular physical activity could be used to prevent the premature deterioration of physical functional capacity and work ability among ageing home help personnel, whose work includes a high physical workload (Pohjonen 2001). In particular, tests measuring the functional capacity of the musculoskeletal system predicted deteriorating work ability during a 5-year follow-up period. Poor results for body flexion and upper-limb muscle endurance, lower-limb endurance, strength tests, and balance tests were associated with the deterioration of work ability. Decreased back mobility and overweight also predicted poor work ability.

A randomized intervention study among female textile workers doing physically semi-demanding work examined the effects of weekly supervised physical activity on physical functional capacity and work ability (Nurminen 2000). Supervised physical activity for an hour each week increased the muscle strength and endurance of ageing women. Although the physical activity varied, was minor, and did not improve the aerobic performance of the participants, it increased the number of women with good work ability, as well as their 2-year work ability prognosis.

4.6.3 Mental functional capacity

Changes in mental functional capacity by ageing have been examined, for example, by Ruoppila & Suutama (1994). (See also Ilmarinen 1999b.) Ruoppila & Suutama illustrate psychomotor factors, memory, learning, and thinking processes, concepts associated with self, motivation, functioning, and self-concept. There is also a multifaceted article available on mental functional capacity and learning (Ruoppila 1996). This section summarizes the central concepts and widens the perspective on cognitive ageing through a new review. In addition, this section illustrates the connections between cognitive ageing and work ability.

Mental functional capacity is often defined as the ability to perform different tasks that require intellectual and other kinds of mental effort. There is no such biological connection, as in the case of physical functional capacity. The cognitive functions of mental functional capacity have been studied the most, such as perception, memory, learning, thinking, and language skills.

Another central area of mental capacity is the relationship between a person and the outside world, for example, self-concept, self-value, perceived competency, and control of life. The third and newest component is that of metacognition, which involves the evaluation of a person's own cognitive (intellectual) functioning. Psychomotor factors have also been included in mental functional capacity. Mental health, physical well-being, and attitudes towards one's own ageing are closely related to mental functional capacity (Ruoppila & Suutama 1994).

From the viewpoint of worklife the most important changes in mental functional capacity with ageing are related to the decrease in precision and the speed of perception. The changes concern the entire human system of processing information, namely, the *sensoriperceptive system*, which is responsible for receiving information through the senses, the cognitive system, which processes data from the senses and memory systems, and the *motor system*, which is responsible for the realization of decided functions. Appar-

ently the functioning of all three systems slows with age. These changes can be effectively compensated by ergonomic arrangements at the workplace, better organization of the work, and personal aids, for example, eye glasses.

The actual information-processing functions change very little in the course of one's career. Moreover, some cognitive functions, such as control of language skills or the ability to process complex problems in insecure situations, improve with age. In most worktasks, speed and precision can be substituted by the high motivation of ageing employees and the experience and wisdom they have assembled throughout their worklife. Even though the speed of learning may slow with age, the actual learning process is not dependent on a person's age. Strong motivation to learn can also compensate for a slower learning speed.

The motivation to learn is high among baby boomers and their predecessors because their educational opportunities were much fewer than those of the people who went to school in the 1970s and 1980s.

Mental growth

According to the literature, some mental characteristics can also strengthen with age (Ruoppila & Suutama 1994, Ruoppila 1996, Baltes & Smith 1990). The summary of the factors associated with changes in mental functional capacity with ageing can be called the delineator of ageing and mental growth (Table 29).

On the list of mental growth factors, the best known and most accepted in different cultures may be wisdom, although research on this trait has only begun. Wisdom, or everyday intelligence, has been defined as an expert's system of processing information in the practices of life (Baltes & Smith 1990). The processing of complex problems, the creative use of information

Table 29. Ageing and mental growth. (Baltes & Smith 1990, Ruoppila & Suutama 1994, Ruoppila 1996)

– strategic thinking	– holistic perception
– quick-wittedness	– control of language skills
– considerateness	– high learning motivation
– wisdom	– commitment to work
– ability to deliberate	– loyalty towards employer
– ability to rationalize	– less absenteeism
– control of life	– work expertise

systems, and the energy to remain whole despite the weakening of physical and mental functions have been considered distinctive of wisdom. Baltes & Smith (1990) have defined five criteria for wisdom as follows (see also Ruoppila 1996):

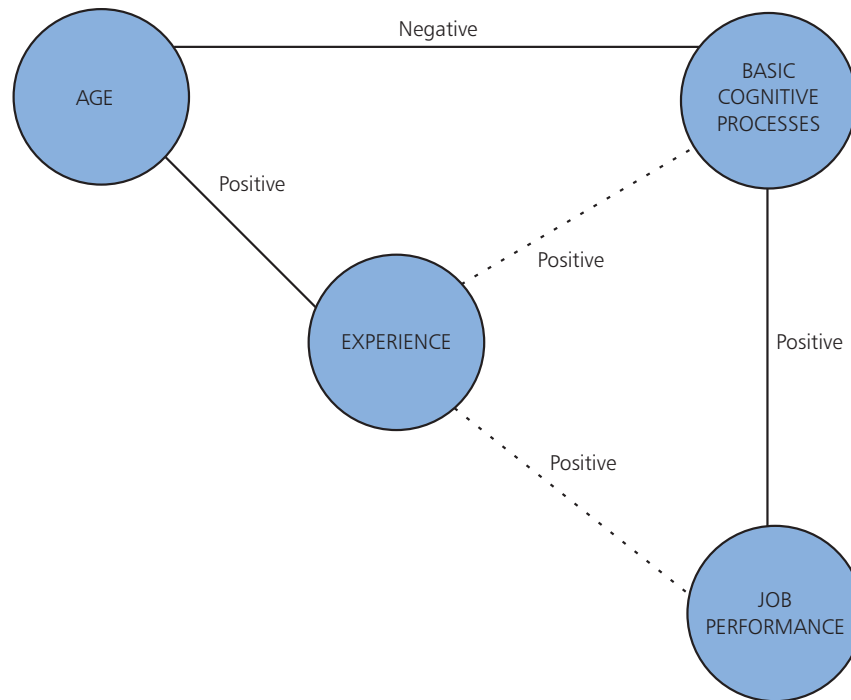
- ample factual knowledge of the course of life and life situations
- ample procedural knowledge of strategies for solving the questions of life
- understanding of the contextuality of the life course: knowledge of life environments and their temporal, situational, and developmental features
- understanding and acceptance of relativity: knowledge of the differences between individual values and priorities
- perception and tolerance of uncertainty: knowledge of the relative insecurity and unpredictability of life and the ability to cope with this uncertainty.

In practice, wisdom is the ability to perceive and grasp the significant aspects of problems, evaluate them, and offer good advice on how to solve them. The data system that has developed throughout life is used creatively to solve new problems, even in insecure conditions (Ruoppila & Suutama 1994).

It should be self-evident that wisdom would be needed and demanded in worklife. Problem solving is required in many jobs that have also become more complex. The alienation of masses of ageing employees from worklife, mainly as a result of the catalytic effect of economic conditions, casts the value of wisdom in an odd light. There no longer seems to be any use for wisdom in worklife. Or is the case rather that only a few people gain wisdom during their career? What kind of wisdom is needed in worklife, and would not ageing people be in a position in which they could develop their wisdom according to demand? It is naturally also possible that a lack of wisdom in worklife has led to the strong discrimination of ageing employees in recruitment, training, career development, and respect. There is much to be determined in regard to the relation between wisdom and worklife.

Another interesting question from the viewpoint of ageing and work performance is the significance of experience. Salthouse (1997) has examined the effects of ageing on cognition and its consequences on work performance. Salthouse first acknowledges that nearly all cognitive laboratory tests indicate a decrease in results with age even though the differences between individuals are great. According to laboratory tests, it would seem that ageing is related to weaker performances in some cognitive tasks. Weaker performances in cognitive tasks are related to poorer job performance or occupations with fewer cognitive demands instead of age (Figure 40).

Figure 40. Relationship between age, experience, basic cognitive processes and job performance. (Salthouse 1997)



Many studies and meta-analyses have proved that there is no distinct connection between age and work performance. Numerous studies have shown that older employees are as productive and skilled as young employees. Salthouse (1997) contemplates the reasons for this contradiction between expectations (test results) and reality (performance in the workplace). The first explanations are associated with the rough measurement of job performance. Supervisors are not, for example, interested in maximal performance, only in whether the skills fulfill minimum expectations. In addition, there is often no consistent concept of how job performance should be measured and how optimal or maximal performance should be defined.

Another group of possible explanations stems from the fact that the cognitive traits that weaken with age are not necessarily essential or useful in modern worklife. It is possible that, for example, achievement motivation, goal-directedness, social intelligence, and different personality traits help explain productivity. These traits are difficult to measure. However, they can improve with age or work experience, and they could be more important to job performance than traditional cognitive qualities.

It is also possible that researchers may have investigated the wrong cognitive traits from the viewpoint of worklife. In many jobs, the tasks are routine in nature and demand crystallized abilities rather than fluid abilities. Crystallized abilities include the capacity to use accumulated knowledge and memory in problem solving. Fluid abilities are needed, however, in such tasks as solving new and unknown problems.

The third possible explanation for the contradiction between the results of cognition measurements and job performance is connected with job experience. Job experience increases with ageing and can change ways of doing things. It is possible that job experience either maintains basic cognitive skills or the level of job performance without affecting cognitive skills. Salthouse illustrates these means of influencing job experience with a figure (see Figure 40).

The positive effects of job experience can be directed towards the basic cognitive processes or job performance. If job experience primarily improves or maintains cognitive skills, the positive connection between job experience and performance remains weaker. If, instead, job experience directly improves or maintains job performance, the link between job experience and cognitive skills remains modest. Both of these mechanisms of job experience are possible and can explain why job performance does not deteriorate with age.

The different mechanisms, however, have different effects in practice. If job experience affects performance directly, transferring older employees to jobs with which they have no experience can weaken their performance. If, however, job experience has strengthened the employees' cognitive traits, transferring them to different jobs can have positive effects, and their performance may continue to be good. Salthouse's research (1997) among, for example, architects and musicians indicated that the cognitive skills of these professionals also deteriorate linearly with age, even though their level of performance remains higher than that of younger architects and musicians. In other words, experience and continuous practice do not prevent the weakening of cognitive traits.

This result emphasizes the more direct importance of job experience for job performance, which can, according to Salthouse (1997), take place through two mechanisms, adaptation and compensation. In adaptation a person exchanges tasks for ones in which cognitive qualities are not important, for example, when a competitive athlete shifts to coaching. Apparently many employees experience this kind of accommodation or adaptation at the end of their careers, although no specific or generalizable data are available.

Compensation can be used to by-pass cognitive changes with age. Experienced employees have found suitable and efficient ways to cope with their tasks and have, therefore, compensated for changes with ageing. In other words, through compensation the same object or goal is achieved with means and actions that may change during the course of life.

According to Salthouse (1997), it can be concluded that a more creative use of job experience can significantly improve the coping of ageing employees in worklife. All employees should be able to use accommodation or adaptation and compensation in their own work with the support of their supervisors.

A recent and widespread review of cognitive ageing examines the processing of information in detail from the viewpoint of ageing. In the review, the manifestations and changes of wisdom, experience, and creativity among people aged 45–75 years are illustrated. The review also introduces theories about the deterioration of cognitive performance and illustrates in more detail the models of selective optimization with compensation (Ruoppila et al., unpublished manuscript, quoted with permission).

Cognitive capacity and work ability

Changes in cognitive capacity with ageing and anticipated changes in the demands of worklife illustrate the threats and opportunities connected with ageing and coping with worktasks. Threats and opportunities from the viewpoint of cognitive capacity include, for example, the following (Ruoppila et al., unpublished manuscript, quoted with permission):

- versatility and complexity of work demands and methods
- learning new things and increasing personal skills
- increased importance of cognitive thinking, reasoning and decision making
- learning new languages and technology
- learning new work methods and skills
- tightened schedules and increased work-related stress
- diversity of work agreements, threat of lay-offs and unemployment
- increased importance of cognitive work demands regardless of occupation.

All of the aforementioned factors seem like threats from the viewpoint of an ageing employee (over 45 years of age, especially over 55 years of age). However, new worklife skills can be learned and adopted also by older employees if they are given sufficient possibilities to do so.

There are also strengths in the fields of capacity and competence related to cognitive capacity that ageing employees, according to research, possess (see also Table 29 under “Mental Growth”):

- Workhours and workplaces can be chosen more freely than before. From the employer’s point of view, ageing employees have qualities that fit different arrangements, such as reliability, commitment, and compliance with agreements.
- Responsibility for the profitability of work and services becomes more personal. According to some studies, ageing employees are more quality-conscious and quality-oriented than younger ones; this finding favors seniority.
- Social skills and reliability are seniors’ assets and these qualities are needed more than ever in worklife.

An important finding of research is that the game is not over for old people. Deterioration brought to cognitive qualities by ageing, such as slower information processing or psychomotor function, can be compensated for with work experience and the ability to anticipate future events (Ruoppila et al., unpublished manuscript, quoted with permission, Ilmarinen & Tuomi 2004). Individual differences in both cognitive functions and work ability are greater than the differences between age groups. Follow-up studies among people aged 51–62 years who had continued in the same occupations showed that work ability remained unchanged for about 60%, decreased for 30%, and improved for 10% (Tuomi et al. 1997).

According to research, changes in work ability, deterioration in particular, can be anticipated at the age of 51–58 years. The risk of deteriorating work ability is present primarily in physically demanding occupations, but it also appears in mentally demanding jobs and jobs with combined a physical and mental workload. Individual differences in work ability grow with age in all types of work (Ilmarinen et al. 1997).

Changes in work ability seem to begin earlier than the changes brought to cognitive capacity by age. Demands for speed and perceptive ability are difficult for ageing employees in physically demanding occupations. Demands brought by tight schedules have affected white-collar employees, in that more work has to be completed by fewer employees than 10 years before. Faster work speed and tightening schedules increase stress reactions, burnout, and depression, as well as sickness absences and the risk of work disability. From the viewpoint of ageing employees, it is essential that work be planned according to their prerequisites. Ageing employees have developed a model of selection, optimization, and compensation (so-called SOC model), which can be of great help if the employees are allowed to use it.

Connections between cognitive capacity and work ability and changes in them have been rarely studied among ageing employees. In the follow-up study in the municipal sector, the cognitive capacity of employees was examined through laboratory tests and interviews, and their work ability was defined using the work ability index (Suvanto et al. 1991, Ruoppila et al. unpublished manuscript, quoted with permission). The average age of the employees who participated in the laboratory tests in 1985, 1992, and 1997 was, at the time of testing, approximately 55, 62, and 67 years, respectively. Only 20% of them were still working in 1997; others were retired on different types of pensions.

Measured cognitive capacity consisted of five tests from the Wechsler Adult Intelligence Scale test battery. In addition, also the speed and accuracy of visual perception was defined (Bourdon-type Letter cancellation test, NJEVD). The results of all of the tests were standardized, and a test value for cognitive capacity was derived as a sum variable of the results.

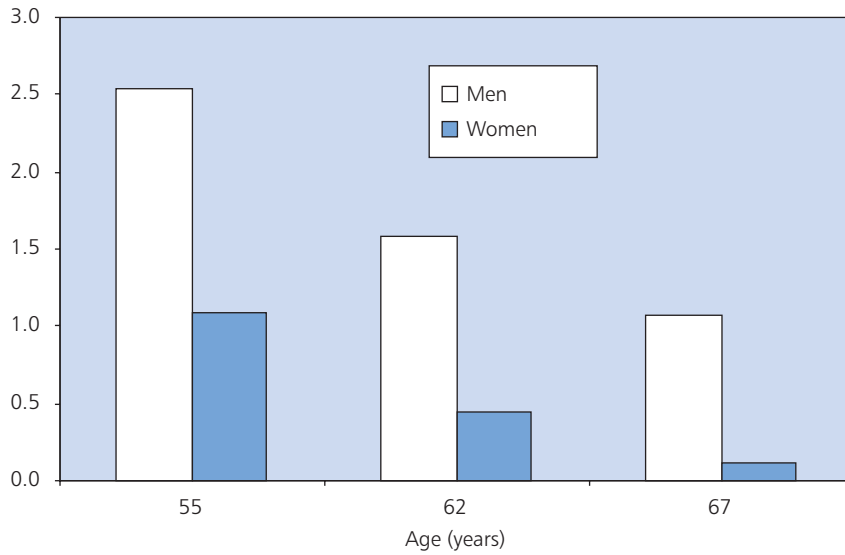
Subjective cognitive capacity was created according to three questions of the interview study, which measured reaction capacity, memory, and feeling of understanding and control. From these questions, a sum variable of perceived cognitive capacity was formed.

The objective of this study was to determine the changes in both measured and subjective cognitive capacity with ageing and their associations with work ability. Two groups were formed of the participants. Cognitive capacity was measured for the 68 persons (35 men, 33 women) who participated in all of the laboratory tests in 1985, 1992, and 1997 and were actively working at least in 1981–1985. Subjective cognitive capacity was, in turn, determined for the people who responded to all of the interviews (1981, 1985, 1992, and 1997) and who were working at least until 1992.

The results showed that measured cognitive capacity deteriorated significantly among both the men and women in all except one short-term memory test at the age of 55–67 years (Figure 41). The results were similar in the groups of workers in jobs with physical, mental, and combined physical and mental demands. The test results were, however, systematically best for the workers with mental demands, and the deterioration of the results was strongest for physically demanding occupations.

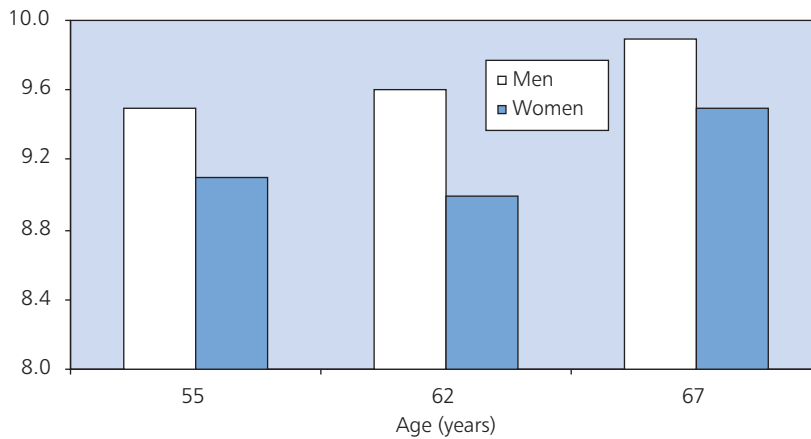
The results of subjective cognitive capacity, on the other hand, showed that it did not deteriorate with age. On the contrary, among both the men and the women, the best evaluations were given by people of the average age of 67 years, who were no longer in worklife (Figure 42). The results improved with age also in different types of work. The evaluations were systematically

Figure 41. Changes in measured cognitive capacity among men and women during a 12-year follow-up.



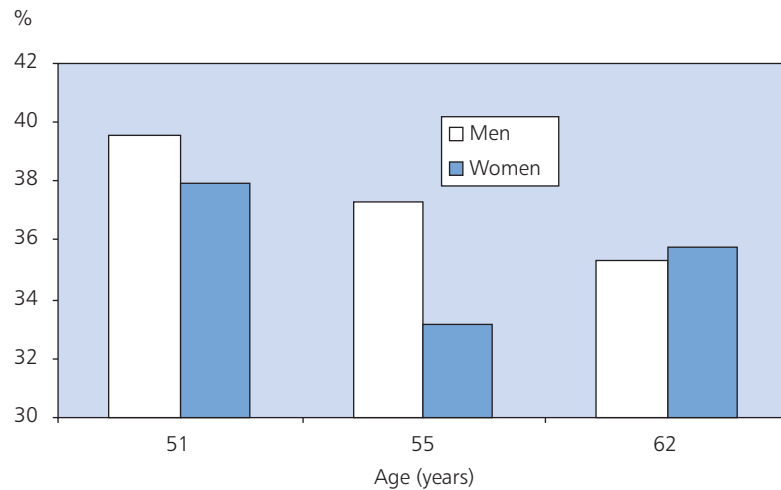
Measured cognitive capacity represents the standardized sum variable (scale -14 – + 10) according to six tests [similarities, number repetition, digit symbol, picture completion, block design, Bourdon-type letter cancellation test (NJEVD), see the text] (men, n = 35; women, n = 33).

Figure 42. Change in subjective cognitive capacity among men and women during a 12-year follow-up.



Perceived cognitive capacity represents the sum variable (scale 1–15) comprised of questions that measure reactivity, memory, and feelings of understanding and control. (men, n = 35; women, n = 33).

Figure 43. Change in the work ability index among men and women during a follow-up study (men, $n = 35$; women, $n = 33$). Same group who participated in the cognitive capacity tests.



best among the workers with mental demands, but their results improved less than in the other groups.

For the same group of people, the work ability index indicated a rather steady decrease among the men aged 51–62 years. Among the women, on the other hand, work ability decreased dramatically between the ages of 51 and 55 years. The situation improved among the women by the age of 62 years (Figure 43).

The deterioration of measured cognitive capacity among the men aged 55–67 years was similar to that of those aged 51–62 years, when the participants were still working. Among the women, the changes in work ability and cognitive capacity were not as significant as among the men. A more-detailed analysis showed, however, that there was a positive correlation between cognitive capacity and work ability. This correlation varied significantly according to both test time and gender.

For example, the work ability of the women at the age of 51 years correlated (0.54) with the measured cognitive capacity at the age of 67 years, but among the men the correlation was virtually nonexistent (0.05). An additional analysis showed that work ability and subjective cognitive capacity had a clear association at the age of 55 years, and work ability was a relatively good indicator of subjective cognitive capacity at the age of 62 years (Ruopila et al., unpublished manuscript, quoted with permission).

In this study, measured and subjective cognitive capacity changed differently at the ages of 55–67 years. The deterioration of measured cognitive capacity was similar to the results of many previous studies. On the other hand, subjective cognitive capacity, which can also be described as metacognition, improved with age.

This result can be explained by the fact that the aforementioned SOC model has worked among these people in their worklife. They have been able to plan and adjust their worklife well enough according to their own prerequisites and life situations. In this study, the applied cognitive tests did not favor older people; instead they primarily measured the so-called fluid abilities rather than the crystallized abilities. Because of the test used in this study, the deterioration of measured cognitive capacity apparently provided too biased a view of the effects of ageing on cognitive capacity.

In the Health 2000 Study, cognitive capacity was also examined. In the tests measuring linguistic fluency, the number of learned words and delayed recollection, no statistically relevant deterioration with age could be detected among the working population (30–64 years). However, there was one significant difference between the two genders. Among the women, the results were better than among the men (Aromaa & Koskinen 2002).

The perceived evaluation of personal work ability on a three-level scale among the working population showed, in turn, that the proportion of people with full work ability decreased only slightly with age, and among the group of 55- to 64-year-olds as many as 80% considered themselves to be with full work ability. The slight deterioration of cognitive capacity and work ability proceeded in a virtually similar manner with age in this population study (Aromaa & Koskinen 2002). Additional research information about the changes in the cognitive capacity of people aged 75–85 years and the synchronization between different functions is also available (Ranta 2004).

4.6.4 Social functional capacity and ageing

Social functional capacity and the changes it goes through during a person's worklife have not been studied nearly as much as the change in physical or mental functional capacity. Even though the terminology and content of social functional capacity is still being formed, the following two human dimensions can be included: a person in his or her interactive relationship and a person as an active social operator in different communities (Heikkinen 1994b).

Operating as a part of, for example, a family and a work community or a social group presupposes different social skills. Different job tasks, such as

in nursing or sales work, also demand different social abilities. One common factor for many new demands of worklife is that the work takes place within groups or teams, which, in turn, emphasizes the need for social skills among workers of all ages. The ability to work with different kinds of people is one of the most important contributory factors to work ability in modern work-life in both industrial and service occupations.

Meters for measuring social functional capacity have been used in the broad Evergreen project of the Finnish Centre for Interdisciplinary Gerontology at the University of Jyväskylä. In this project the health and functional capacity of 75- and 80-year-old residents of Jyväskylä were followed for a period of 5 years (Heikkinen et al. 1997). The same meters were tested in studies of ageing municipal workers in 1992 and 1997. The following meters of social functional capacity were used in the follow-up study of ageing employees [A method publication is available on their applicability, changes, and permanence (Törmäkangas et al. 2003)]:

1. Togetherness and social support

- possibility to obtain advice, guidance, and information (guidance)
- existence of a trusted friend and an ally to whom to turn (alliance)
- feeling of respect from others (reassurance of worth)
- possibility to nurture someone or the feeling of being needed (nurturance)
- need for closeness, attachment, and love (attachment)
- social integration or belonging to a group, community, or society (integration).

In the follow-up study among ageing municipal employees, two variables were formed from this meter. These variables were social togetherness depicting emotional and social isolation and social network, which described relatives and friendship.

2. Isolation

- 20 factors presented in the form of statements that measure isolation evolving from interactive relationships and their success.

3. Self-evaluated problems with interaction

- aggressiveness
- closeness
- independence
- sociality
- submission to others.

4. Social flexibility

- measuring socially desired and undesired qualities on the basis of self-evaluation. The objective is to examine a person's ability to adjust his or her behavior according to the demands of different situations.

5. Recreational activeness

- measured from the responses to many questions; a summed variable was created to depict the intensity of recreational activity.

The results concerning the social functional capacity of ageing municipal employees, when the participants were approximately 62 years old, indicated that, for example, men were more isolated than women. Age was not, however, connected to isolation, but instead to occupational status. Nursing personnel were less isolated than workers in other occupations. The level of social togetherness was similar among the men and women, although they differed with respect to the existence of a trusted friend and ally. The social networks seemed to be somewhat wider and more functional among the women than the men. The men and women similarly evaluated their personal social or functional flexibility, and no differences existed between their experiences with interaction problems either.

Social functional capacity changes with age because ageing people become familiar with their own limitations and possibilities and adjust their behavior accordingly. The changes are related to the increase in one's self-knowledge.

In her article, Riitta-Liisa Heikkinen (1994b) described the changes in social functional capacity as being significant also from the viewpoint of worklife. The ageing population has proved to be, for example, better able to adjust their behavior according to the situation than younger people. Apparently ageing does not reduce skills related to the tolerance of others, self-knowledge, and knowledge of human nature. Ageing people are known to reject incorrect behavioral patterns and to adopt methods that are useful in day-to-day activities, both inside and outside of worklife.

Ageing also offers people possibilities to develop their social skills. The ability to adjust "my will" into "our will" can improve with age. Active social interaction is not, however, easy, because it contains many problems of adjustment among people who think, know, feel, believe, and function differently. Therefore, social activity and its success are always partly dependent on others.

Social participation and activity are believed, however, to be significant for maintaining health, functional capacity, and mental well-being. Working relationships and togetherness increase and maintain the fluency with which

a person's work proceeds, as well as job satisfaction. When a person encounters difficulties, whether at work or at home, social support has a significant positive effect. Control of work, working social relations, and feelings of coherence are strongly related to the coping and health of employees (Vahtera 1993).

Even though interactive skills are at the core of social functional capacity, little research exists on their changes with age. It can be assumed that they could develop and improve during worklife, but individual differences are great and fast workplace may ruin interaction.

More information is available on people as social operators than on their interaction. For example, recreational activity and its changes during worklife also shed light on a person's social participation and its differences between different occupations and genders. Some examples of the participation of ageing employees in, for example, clubs and associations have been presented in an 11-year follow-up study in the municipal sector (Seitsamo & Ilmarinen 1995).

Active participation in clubs and associations among women 1–2 times a week increased between the ages of 51–62 years, from 18% to 24%. The largest change, however, took place in the oldest age group that retired dur-

Table 30. Participation in clubs or associations 1–2 times a week by age group in 1981 and 1992 (%). (Seitsamo & Ilmarinen 1995)

Gender/ age group (years) in 1981	Club or association activity 1–2 times per week	
	1981	1992
Women		
44–48	18	19
49–53	18	25
54–58	19	30
Total	18	24
Men		
44–48	23	15
49–53	22	16
54–58	19	20
Total	21	17

Table 31. Participation in clubs or associations according to the basic nature of the work (1981) and continuity in worklife (1992) (%). (Seitsamo & Ilmarinen 1995)

Continuing to work in 1992/ basic nature of work in 1981	Club or association activity 1–2 times per week	
	1981	1992
Continued in same occupation		
Physical work	18	12
Combined physical and mental work	19	12
Mental work	26	21
Total	22	16
Retired on old-age pension		
Physical work	17	27
Combined physical and mental work	19	27
Mental work	28	30
Total	19	25
Retired on work disability pension		
Physical work	22	23
Combined physical and mental work	18	20
Mental work	26	26
Total	19	20

ing the follow-up (19–30%). There was no change in the activity of the younger women (44–48 years of age at the beginning of the study). The participation of the men in clubs and associations decreased during the 11-year follow-up from 21% to 17%. The youngest men became less active, whereas no changes were observed for the oldest age group (Table 30). Thus the change among men and women differed in direction and was also focused in different age groups.

Activity in clubs and associations according to the basic nature of work and the continuation of employees in the same occupation, on the other hand, showed that people who continued in the same occupation became less active (from 22% to 16%) regardless of whether their work was physical, mental, or a combination of physical and mental work. Those who retired on an old age pension increased their club and association activities, especially those in physically demanding and combined physically and mentally demanding work. Those who retired on a disability pension did not change the nature of their activities (Table 31).

The results primarily confirm that only approximately one in five older employees is active in clubs or associations on a weekly basis. Men and women participated similarly between the ages of 44–58 years. Over the next 11 years, however, the situation changed, especially for those who continued to work. Those who continued to work reduced their activity, those who were retired on a work disability pension maintained their activity, and those who moved on to an old-age pension increased their activity.

These results illustrate that maintaining and increasing social activity becomes more difficult for people who continue to work. This difficulty could result, for example, from the tight schedules and work-related stress or from people not having the energy or will to continue their activity. From the point of view of social functional capacity it is unfortunate if participation in social life and interactive skills are limited to worklife.

4.7 Education and learning

Even old people can learn. Although young people have a better educational background than older ones, ageing people are able to learn the new skills required in worklife as long as their special needs and experience are taken into account in training. The accumulation of training among the educated young and their being favored in this respect is a challenge to employers.

4.7.1 Educational level of the ageing

According to the Work and Health Interview Study, in 2003, a little more than half of the working men aged 45–64 years had either a vocational or college education (Table 32). Approximately one-third of them, however, had no vocational education or had attended only vocational training courses. Only a little more than 10% had a university degree.

The working women aged 45–64 years had a somewhat similar educational background as the men, although college education was a little more common than vocational education. Approximately one-third of the women aged 45–54 years had received a college education. Among the women, the differences between the vocational education levels of the two oldest age groups were larger than among the men; this finding indicates that women aged 45–54 years had improved their educational level more than the men of the same age. Of the ageing women, however, many were in worklife without having had a vocational education or having attended vocational courses—nearly 45% of the women aged 55–64 years. The educational level of the oldest age group had polarized more among the women than among the men.

The educational level of the youngest age group was significantly higher than that of others, especially among the women. Of the young women, about 40% had a college-level or vocational education, and about one-fifth had university degrees in 2003. Among the young men, vocational education was still the most common form of education, although college-level or university degrees had been achieved already by approximately one-third of the 25- to 34-year-old men (Pirainen et al. 2003).

The educational level of all of the age groups seems to continue to increase, and, in the future, ageing employees will have high educational levels when compared with the current situation. Therefore, it is no wonder that employers have already become worried about an overeducated workforce. Accord-

Table 32. Vocational education of working men and women by age group in 2003.
[Work and Health Interview Study 2003 (working respondents)]

Vocational training	Men		Women		All
	Age group (years)		Age group (years)		
	25–34	55–64	25–34	55–64	
No vocational training	8.6	19.7	8.0	21.7	11.8
Vocational course	2.9	14.6	2.2	22.9	10.2
Vocational degree	43.5	30.6	29.0	22.3	32.6
Institute or polytechnic degree	33.1	23.6	39.7	22.9	30.9
Academic degree	11.5	11.5	21.0	10.2	14.3
Cannot say	0.4	0.0	0.0	0.0	0.1
Total	100.0	100.0	99.9	100.0	88.1
N	278	157	224	157	2 335

ing to a proposition of the Finnish Ministry of Education, about 70% of each age group should be offered places in polytechnics or universities, even though the baby boomers are primarily freeing up positions in practical jobs, such as the metal industry, transport, and cleaning work.

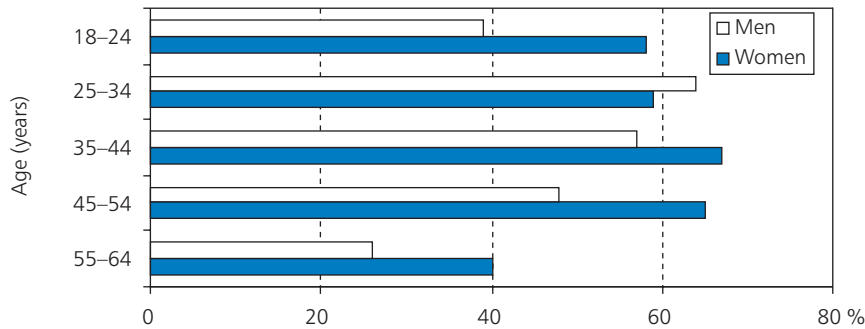
4.7.2 Participation in adult education

The most common forms of adult education are vocational training organized by the employer at the workplace, adult training by vocational schools, and education offered by adult community colleges.

According to a study in the field of adult education (Blomqvist et al. 2002), approximately half of the men aged 45–54 years and one-fourth of those aged 55–64 years participated in adult education. Women participated much more often than men; about two-thirds of those aged 45–54 years and 40% of the oldest age groups (Figure 44) attended adult education. Adult education seemed to decrease significantly in the oldest age group of working people. Office workers usually participated in training nearly twice as often as laborers and employed people more often than those unemployed or those outside the workforce.

Most adult education consists of training connected to work or occupation. Both the vocational training of the working population in workplaces and government-sponsored adult education for the unemployed are included. A

Figure 44. Participation in adult education by age and gender in 2000.
(Blomqvist et al. 2002)



total of 55% of the working population and one in four unemployed persons attended this kind of education. The probability of attending training connected with work or occupation decreased significantly among the group aged 55–59 years (60% probability compared with those aged 40–44 years) and was the lowest among those aged 60–64 years (40% probability). For the unemployed people aged 55–59 years, the probability was only 10%.

Most work-related adult education for the working population is paid for or otherwise supported by the employer (e.g., compensating for the time spent on education with money or free time), so-called personnel training. The proportions of employees attending personnel training increased throughout the 1990s. In 2000, already up to 56% of employees aged 18–64 years attended personnel training, which showed a 10 percentage point increase since 1990 and a 4 percentage point increase since 1995.

Among the oldest employees, participation, however, slightly decreased after 1995. Attendance decreased especially in the oldest age group (Figure 45). In addition to age, participation in personnel training also depends on the basic education of the employee. Of those with a comprehensive educational level in the age group of 55–59 years, the probability to participate in personnel training is only 60% of that of those aged 40–44 years (Blomqvist et al. 2002, Ministry of Social Affairs and Health 2002b).

The number of personnel training days has increased the most proportionally among the employees aged 55–64 years. Whereas there were about two training days for each senior employee in 1990, the number was about four in 2000. Most of the training days were, however, provided for the youngest age groups. In addition to age, the number of personnel training days also depended on the basic educational level of the employee. The lower the basic educational level, the fewer training days were received in all of the age groups.

Figure 45. Participation in personnel training by age group in 1990, 1995 and 2000 (% of employees). (Blomqvist et al. 2002)

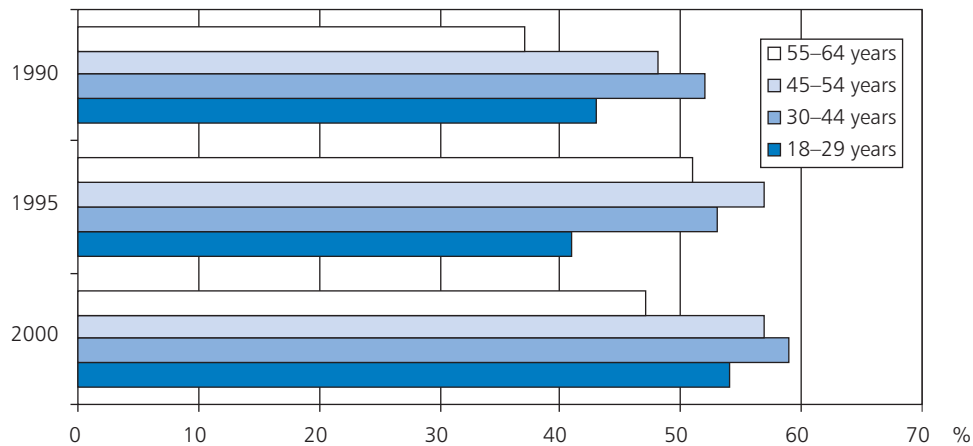


Table 33. Personnel training days received by each employee by age group, according to basic educational level in 2000. (Statistics Finland 2000)

Educational level	18–29	34–44	45–54	55–64
	years of age	years of age	years of age	years of age
	%	%	%	%
Elementary	1.6	2.7	3.4	1.5
Secondary	8.2	5.4	4.6	3.7
Higher	8.3	10.7	9.5	8.0
Total	7.4	7.2	6.0	4.2

There was also a clear difference between secondary- and university-level basic education, with the exception of the youngest age group. In the age group of 45–54 years, employees with a university education received almost three times as many training days as those with a comprehensive school education. Among those aged 55–64 years, the respective difference was up to fivefold (Table 33).

Tight schedules at the workplace were the most common obstacle to personnel training—this obstacle was reported by almost two-thirds of the employees in 2000. The second most common obstacle was the unavailability of

Table 34. Obstacles to attending personnel training in 2000: proportion of the respondents reporting that the obstacle makes difficult or prevents “a lot” or “somewhat”. (Statistics Finland 2000)

Obstacle	18–44	45–54	55–64	Total
	years of age %	years of age %	years of age %	%
Tight schedules at work	65	59	56	63
Suitable training not available	41	35	28	38
Difficult to enter interesting training programs	42	32	27	38
Not arranged by employer	38	33	25	35
Not appreciated by employer	22	18	14	20
Lack of information on possibilities	23	13	7	19
Lack of interest	15	13	23	15
Poor quality of training or teaching	18	11	7	15
No use for training	14	12	19	14
Fear of failure	2	4	6	3

suitable training, and the third most common was the difficulty to get into suitable training (Table 34).

The lower attendance of the oldest age group in personnel training may have been due to employer-related reasons or to the lack of motivation of the employees. Lack of interest was reported as the reason for not attending training by 23% and the uselessness of training was stated by 19% of the senior employees. Employer-related obstacles were reported more seldom by senior employees than by those in other age groups. There had been no significant changes in the obstacles to training between 1995 and 2000 (Ministry of Social Affairs and Health & Ministry of Labour 2001).

4.7.3 Contents of adult education

In conjunction with the National Programme on Ageing Workers 1998–2002, age management training was organized for worklife instructors. A training folder called “Ageing and Work—Training Material about Ageing for Worklife Instructors” (Mäkitalo 1999) was compiled for them. One part of the folder covered the reinforcement of the education and competence of ageing employees. New demands of worklife are targeted evenly towards the entire workforce regardless of age.

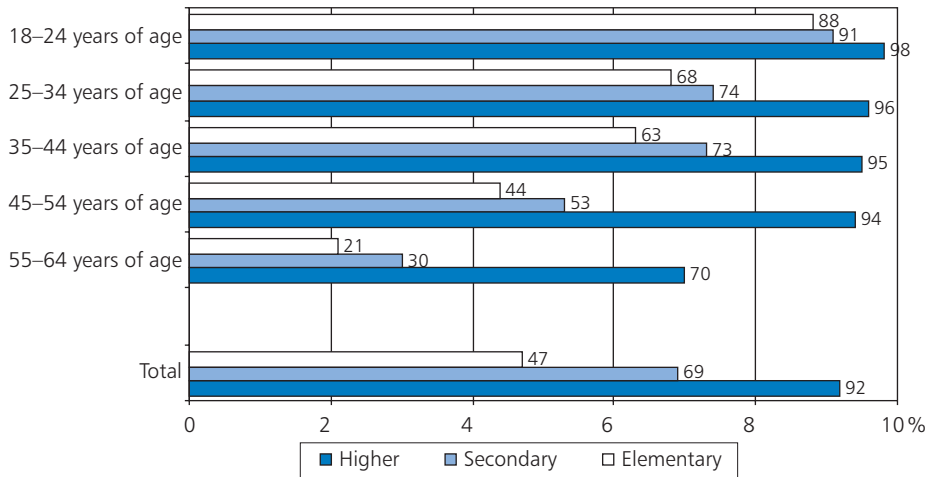
Some of the new demands are bigger challenges and also threats to ageing employees than to younger ones. Therefore, the training of ageing employees and their learning new things requires special investments. Ageing employees need learning experiences and belief in their own capability to learn. The following skills were emphasized for the reinforcement of ageing employees’ competence:

- computer-related skills
- information management and processing skills
- language skills
- capability to learn and absorb new things
- tolerance to change
- teamwork skills
- international skills.

Ageing people need computer education through personnel training. Computers have become essential and concrete tools that ageing employees did not have earlier. The Adult Education Study 2000 showed that, for example, computer use was dependent on age and education. Almost all of the employees aged 45–54 years who had university degrees used computers, but only half of those with a secondary education and a little more than 40% of those with a comprehensive school education. In the oldest age group, 70% of those with university degrees used computers, but only 30% of those with a secondary education and 21% of those with a comprehensive school education in 2000 (Figure 46).

The frequency of computer use depended on the age group. When people were asked when they had last used a computer, 27% of the oldest age group and 51% of those aged 45–54 years said they had used a computer “less than a week ago”. The respective percentage among the people aged 18–44 years was 67%. People over 45 years of age used computers the most for writing text, e-mail communication, searching for information or services from networks, and paying bills. Playing games, using graphics programs, and reading electronic magazines were rare (Blomqvist et al. 2002, Finnish Ministry of Social Affairs 2002b).

Figure 46. Use of computers by age and educational level in 2000.
(Blomqvist et al. 2002)

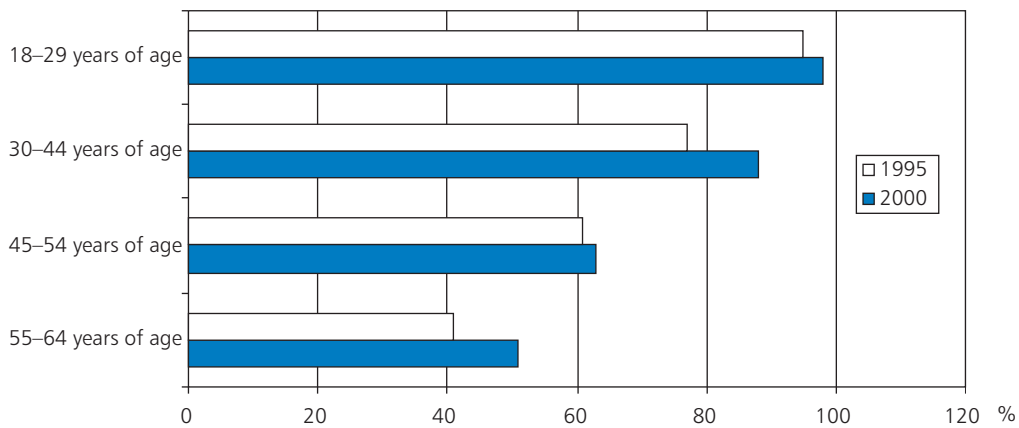


Internationalization and the global marketplace demand language skills. The language skills of ageing employees often date from their school years in the 1960s and 1970s. Therefore, restoring and improving language skills have become relevant for many seniors. Language skills, indeed, improved in all of the age groups in 1995–2000, and the improvement has been greatest in both the oldest age group of people 55–64 years of age and that of people aged 30–44 years (Figure 47).

Of the oldest age group, 51% reported that they knew at least one foreign language, and this result improved 10 percentage points in 5 years. Respectively, of the people aged 45–54 years, 63% reported that they knew one foreign language, but the change was small. The language skills of people aged 45–54 years in 2000 were primarily related to English (55%), Swedish (45%), and German (25%). In the oldest age group, the order was the same, but the difference between English (40%) and Swedish (36%) was smaller. One in five in this group knew German (Blomqvist et al. 2002, Finnish Ministry of Social Affairs 2002b).

In an inter-European research project “Personnel Training Provided by Enterprises”, the contents, but also the costs, of training were examined. The three most important areas were information technology and computer use, personal worklife skills, and production and technology. Training in these areas covered nearly half of all of the training course hours. In the service sector, sales and marketing, in addition to computer technology, were the two most common topics. In industry, the most common topics were design, production and technology, and personal worklife skills.

Figure 47. Adults who know at least one foreign language by age group in 1995 and 2000 (% of population). (Statistics Finland 2000)



In 1999, an average of 3 days (18 hours) of training was provided by employers for each employee. Women attended training a little more often than men. Training costs were about EUR 760 a year for each employee, of which the salary expenses of employees participating in training were the largest part (i.e., 47%). On the whole, training costs were about 2.4% of an enterprise's personnel costs.

Finnish enterprises trained their personnel relatively actively when compared with those in other European countries. The proportion of Finnish companies organizing training courses was the fourth largest in Europe. With regard to the proportion of employees participating in training and the number of training hours, Finland was among the top three countries, preceded only by Sweden and Denmark (Statistics Finland 2000).

Is the image of the high Finnish level of education correct? In international comparisons, the young generations in Finland have been shown to have a high level of education. Nowadays already over half of each generation is comprised of secondary school graduates. The reading ability, as well as mathematical and natural science skills, is on the highest international level according to the Pisa research project. During the last few years, public spending on education has increased faster than the gross national product and is among the top of all of the OECD countries. The economic profit from educational investments usually exceeds the profit from real capital. According to these factors, Finland does invest in education and has received good results among young generations.

The education of young people naturally increases the Finnish educational level over time. Whereas in 2000, about 60% of the people aged 50–54 years had completed at least secondary school, the percentage is predicted to be about 80% in 2028. The educational level of people aged 60–64 years is also predicted to increase 20 percentage points during the next generation. As a result of the quick development of the Finnish educational system, differences in educational levels between young and older generations are currently among the biggest in all of the industrialized countries (Vartia & Ylä-Anttila 2005).

Education should also be a profitable investment for the individual. Education usually increases personal income and decreases the risk of unemployment. The benefits a person receives from education have, however, decreased during the last couple of decades. Women receive less economic benefit from education than men, and this trend, in turn, guides their educational choices. Girls are directed towards different educational areas than boys. In this respect the resources of society are not targeted appropriately. The increasing educational level means, however, that people who have received a good formal education are a real asset in Finland.

Instead, the earlier method of receiving education—learning by doing—has decreased. The workplace has been the primary forum of education for senior employees. A challenge of the future is to combine a high level of formal education with learning by doing (i.e., working). Life-long learning—alternating training and working—is the trend of the future (Vartia & Ylä-Anttila 2005).

4.7.4 Educational level of the working population in the European Union in 2003

Statistics from the year 2003 show that the educational level of the working population (15–64 years of age) is divided so that, in the EU15 countries, 36.9% of the working population has received a lower secondary education (ISCED 0-2), which is comparable to the comprehensive education received in Finland; 43.2% has received an upper secondary education (ISCED 3–4), comparable to the Finnish secondary education; and 19.8% has received a university education (ISCED 5–6: tertiary), referred to earlier as “higher education” in the sections on education in Finland. The educational level of the EU25 countries is 34.8%, 46.7%, and 18.5%, respectively. Upper secondary education is becoming more common with the expansion of the European Union, and the results are similar for both genders.

In Finland, there is significantly less workforce with a lower educational level and more with a high educational level than in the EU15 and EU25 countries. The proportion of Finnish people who have university degrees is 27.2%, which, in fact, is the top result among the EU15 and EU25 countries. The same educational level is only reached by Denmark and England. There are, however, differences in university education between the genders. Finnish women have the highest proportion of university degrees in the EU15 and EU25 countries: 30.7%. Estonia is in second place (30.1%) and Denmark is third (29.0%). Among men, Finland (23.8%) is preceded by England, Cyprus, and Denmark (European Commission 2004a). Unfortunately, comparative information by age group is not available.

Educational level has a significant impact on the employment rate. In 2003, the average employment rate in the EU25 countries was 82.5% for people with a university education, 68.4% for people with a secondary education, and only 46.6% for people with a comprehensive school education. The differences between countries in employment rates were over 50 percentage points, especially for people with a comprehensive school education. In Slovakia, the employment rate was 15% and in Portugal 66% for those with a low level of education.

The relation between university level education and employment does not differ notably between countries. Education seems, therefore, to be the most reliable method of increasing the employment rate in the European Union. A low educational level often means unemployment. In the EU25 countries, the unemployment of those with a low level of education is roughly double that of people with a high education. The extreme example is Slovakia, where those with a low education have an unemployment rate of 47% and those with a high education have an unemployment rate of only 4% (European Commission 2004a).

In the European Union, life-long learning is seen as an integral part of the social well-being of Europe. Learning is not only viewed as a critical factor of education, but also as a critical factor of employment, social security, economic performance, and competence. The objective is that all employees be able to participate continually in training, especially those who need it the most, such as women and ageing employees. Member states are also encouraged to create strategies for life-long learning in worklife organizations.

4.7.5 Predictions of the educational level of ageing employees

A forecast by the OECD about the increase in the educational level of ageing employees in the EU25 countries shows that in the year 2015, most countries will have significantly fewer ageing employees with the lowest educational level and respectively more with an upper secondary level of education. The proportions of ageing employees with non-university tertiary and university education will increase significantly (Table 35). In 2015, countries with high educational levels will include Austria, Germany, the United Kingdom, Finland, Sweden, and the Netherlands. A more than average proportion of ageing employees with a low educational level will be found, for example, in Portugal, Luxembourg, Spain, Italy, and Greece in 2015.

Table 35. Estimates of the educational level of employees aged 45–64 years in the European Union in 2015 (%). (OECD 1998)

Country	Elementary	Lower secondary	Higher secondary	Tertiary
Austria	33.0	58.7	1.5	6.8
Belgium	46.2	27.0	13.3	13.5
Denmark	35.5	42.4	6.1	15.9
Finland	43.4	36.0	8.6	12.0
France	38.4	44.0	6.5	11.1
Germany	15.4	58.1	11.7	14.8
Greece	71.4	14.4	3.6	10.6
Ireland	61.3	18.9	9.1	11.3
Italy	67.2	21.9	(...)	10.9
Luxembourg	62.0	20.1	(...)	17.9
Netherlands	36.9	38.1	(...)	25.0
Portugal	84.0	5.2	3.8	7.0
Spain	78.8	7.1	2.7	11.5
Sweden	35.8	37.4	11.5	15.3
United Kingdom	27.6	51.3	9.9	11.2
OECD weighted mean	44.1	35.2	9.1	13.4

Higher secondary education not in use (...)

4.7.6 Ageing employees and life-long learning

In his dissertation, Tikkanen (1998) states that the situation between adult education and worklife is contradictory. At the same time that the importance of experience-based knowledge has increased, the appreciation of the most experienced group of employees has decreased. Therefore attitudes are extremely important with respect to the learning and training of ageing employees. Age discrimination is visible in the participation in training and applies to people already at the age of 40 years and older. Participation in adult education is, however, not dependent on age alone, but also on basic education and gender. In addition, there are significant differences between all of the age groups when it comes to participation in training.

The ageing workforce presents new challenges to personnel development. Work organizations should be the primary learning environment during a person's lifespan. The development of personnel competence, also that of the ageing, should be seen as an asset rather than as merely another expense. It may be more economical and efficient to develop the competence of existing personnel than it is to replace the entire workforce with younger and more-educated people. One does not become a full member of a work community overnight. This phenomenon is familiar especially in specialist organizations, but apparently also in industry (see Section 4.4 "Economic Aspects of Ageing").

In her conclusions, Tikkanen (1998) notes that maturity seems to have lost its meaning in modern worklife. The contradictory attitudes towards maturity brought by experience can be seen, for example, in the fact that only people who have reached a mature age are usually eligible for decision-making positions in both the business world and government. Even though the process of selection is at work, age and the experience brought with it create a good prognosis for advancement to important positions in the future. Is maturity not needed anywhere else than in decision making?

Life-long learning and training have not yet been realized in practice for all. Ageing employees are the last group of people to be included in the discussion about life-long learning, even though there are several positive experiences with the education of retired people and universities for the third age. Ageing employees are often made to feel guilty when they are told that they should, above all, learn new things in order to accommodate themselves better in modern worklife. It could as well be asked how younger employees could learn to recognize and utilize ageing employees' professional competence, which is based on experience and knowledge about worklife (Tikkanen 1998).

Current practices and principles of adult education in worklife do not encourage and support ageing adults to participate in training. Training has usually been directed towards young adults and those with a good basic education. Therefore, the ageing workforce is a major challenge to adult education instructors. Both the development of methods supporting the learning of ageing people and changes in the attitudes of adult education instructors are required.

The prosperity of a nation is more and more based on competence. Tikkanen further asks: “What is high competence in worklife, and what kind of an employee is efficient in different tasks and sectors?” Because suitable tools are not available with which to make the needed evaluations, it can not be said that the competence of ageing employees is poorer and work performances weaker than those of younger employees. In modern worklife, the area of competence desired and respected seems to be narrow, as does the viewpoints of professional and productive employees. Employers are not able to utilize versatile competence in worklife. The differences in competence between young and older employees are often viewed as a result of age as such, even though they primarily stem from experience.

The life-long training of ageing employees is also dependent on the attitudes of employers and supervisors. Of all of the labor market parties, the employers seem most commonly to think that the competence of ageing employees is poor. All age groups have needs for development in worklife, and apparently the needs of ageing employees have not been taken into account because employers have thought that experienced employees should not have any development needs. Attitudes have affected competence development. The competence accumulated through experience differs from that of young people, but both are needed. The status of ageing employees in the labor market can also be improved by viewing them as instructors. Turning experience into knowledge and competence, however, requires more information about the processes through which experience creates additional value rather than negative facilitation (Tikkanen 1998).

4.7.7 Supporting learning

Ageing and learning have been described widely in the book *Ikääntyminen ja työ* [Ageing and Work].⁵ From the viewpoint of ageing, it is essential to know that the ability to learn remains good for one’s entire career, and even after it, if expectations guide learning. The views of supervisors, colleagues, and instructors are extremely important, and employees are easily guided either by

⁵ Kuusinen et al. 1994, see also Ilmarinen 1999b.

positive or negative views. It is the instructors' duty to emphasize positive results. The ability to learn deteriorates if it is not practiced. After an extended pause, one may no longer feel able to learn. Therefore, life-long learning and continual learning experience maintain and improve the ability to learn.

Adults have different cognitive functions than young people. Mechanical memory deteriorates, but it is compensated by connective memory. New and unknown things are connected with familiar ones. This connection makes the learning process of old people differ from that of young people. The only caution is that old information must not become an obstacle to learning. Unlearning is a part of learning new things.

In the training of ageing employees, also the conceptions of learning must be adjusted. The traditional view is instructor-centered, and the pupil is an external object. Learning is, however, at its core, understanding, realization, and finding the connections between old and new information. Familiar things get new dimensions. Learning is thus not the passive reception of information, but rather the active processing of information.

Learning cannot be given; it must be taken. An instructor's tasks are primarily to pay attention to important issues and make remembering easier by attaching new things to previous knowledge. The role of the instructor naturally varies according to the type of things to be learned. With familiar things, the pupil's role is more independent, and with new issues (e.g., information technology), the instructor's role is more of a tutor. Some people are self-controlling, while others have to be controlled, and these differences also affect the role of the instructor.

When learning for ageing employees is being organized, the importance of experience should be emphasized. The instructor should teach less, and pupils should learn more. In worklife, the new is always connected to the old. What is new is the deepening of knowledge and the improved ability to interpret information. Older employees are self-controlled, and, therefore, they know what they want to learn and how they want to learn it. The cooperation between an instructor and pupils can also be based on a "learning agreement"—in which objectives and tasks are agreed upon in advance.

To pupils, concentration means that there is less teaching and more discussion. This situation is enabled by the distribution of material in advance and group work. Cooperative learning means that each student must teach the things he or she has learned to others. Learning can also be organized in a form of a practical problem and its solution. In such cases, the instructor is primarily an advisor. Learning solutions that concentrate on pupils are beneficial for seniors.

A natural method through which ageing employees learn new things is learning by doing. It emphasizes the active and practical view of learning. Learning can be trying new information and skills in one's own work (e.g., information technology). Management has a great responsibility to utilize training in practice. Supervisors should, therefore, support and encourage employees to try new ideas. The responsibilities and job tasks of an employee may change through training. The role of management is emphasized because only management has the power and possibilities to change work methods, tasks, and environments. Practical training and its utilization is therefore the responsibility of the supervisor.

One can learn new things also without training. Learning from experience offers another possibility for personal development. An employee goes through his or her previous experiences of a certain problem or challenge alone or in a group. Reasons or explanations are actively sought, and then generalizations are made and applied to broader experiences. The task of the instructor is to help and support the testing of new action models in practice. Itemization and the analysis of personal work are useful methods for learning by doing. It distances oneself from one's own work, its appearance, and history. An answer to the question "What is this work all about?" is sought. Current work methods are analyzed, and more advanced alternatives are tested. This kind of learning presupposes strong commitment to one's own work role and its development.

Teaching and learning must be evaluated because evaluation is the only way to improve methods, procedures, and results. The progress of ageing employees' learning should be monitored, for example, using intermediate assignments or workshops during a training course and also by asking and discussing their progress. The quality and profundity of learning are important. Remembering is not as important as the ability to process an issue. The best results are achieved by combining new and old information. Both the student's and the instructor's input is required in the evaluation of teaching and learning.

Learning is not dependent on age but, instead, on the organization of learning. Therefore, special attention should be paid to the selection of learning strategies and environments suitable for ageing employees. Ageing people learn in their individual way and at their own speed, both of which differ from those that are often natural for younger people. The instructors of ageing employees are required to have special competence related to ageing and learning. Training younger and ageing people together may, in some situations, be appropriate and beneficial, provided that training is not organized on the young people's terms. Good learning results among ageing employees,

however, presuppose a suitable learning speed and a relaxed atmosphere. A tight schedule and stress may ruin the learning experience. Therefore, ageing employees need methods, environments, and learning schedules that work for them.

When the learning of ageing employees is being organized and supported, attention must be paid to the following issues:

- learning strategies
- learning conditions
- use of images
- relaxation
- learning schedule.

The *learning strategy* is based on building a new layer of information on top of previous and secure layer of competence. Additional layers of knowledge are always based on existing knowledge and its management. This is a safe basis on which to increase competence. In this process, new information is combined with existing information, which is completed, deepened or expanded. When new competence is built on existing competence, both the security of the old and the understanding of the new is maintained.

Learning conditions need to take the senses of ageing workers into consideration in the acquisition and management of information. Sensory functions change with age (see Section 4.6.1). The eye needs, for example, more light with age. Light makes acquiring information easier and also decreases visual strain and fatigue. Hearing becomes sensitive to other sources of disturbance with age. A peaceful learning environment improves the process of learning.

When new information is learned, its applicability and relevance must be explained. By using *images*, new knowledge and competence are attached to work, and the benefits are made concrete. It is, therefore, not enough to justify learning new things with the fact that it is good to know and good to be able to do something. It is more important to show and explain why this knowledge improves one's work and coping with work. The motivation to learn is created when the benefits are concrete.

In addition to learning anxiety, also the fear of errors is attached to ageing and may disturb the learning process. It must be emphasized to seniors that the ability to learn new things is not dependent on age but that personal negative attitudes and fears may decrease it. Everyone learns individually. Errors are also allowed. Seniors learn from their mistakes just as juniors do. For example, when new information technology is being learned, it is important to dare to try even though success is uncertain. *A relaxed and peaceful atmosphere that respects individuals* is important to seniors.

Ageing slows down psychomotor functions and weakens the ability to memorize and remember things. Therefore, seniors require more repetition of learning material and processes than juniors. “Learning by doing” describes the seniors’ way of learning. The necessary number of repetitions demands time, which slows down the learning process. Because more time is required, the total costs of training senior employees may become a little higher than that of juniors. It is important that seniors are able to vary their learning pace depending on the learning material and process in question.

From the viewpoint of life-long learning, learning skills and also their continuous updating and use are necessary. Learning skills include the following areas (Mäkitalo 1999):

- attitudes towards learning
- planning of learning
- learning technique
- knowing one’s personal style of learning.

Attitudes towards learning, the planning of learning, and learning techniques have already been discussed from the viewpoint of ageing, but knowing one’s personal style of learning still deserves attention. The secret of successful learning is knowing one’s personal style and the possibilities of learning. If people are allowed to learn and develop their personal style and to search for suitable skills and environments for their actions, there are no limits to achievement. Satisfaction increases and stress is reduced. Everyone should be allowed to learn by their own style throughout their lives.

Because physical, mental, and social differences between people grow significantly with age, individualism also emphasizes an individual way of learning. Learning styles illustrate the natural urge of a person to adopt certain methods and activities. Those with the best prerequisites for learning are able to use all learning styles appropriately, if necessary. The following different learning styles can be detected according to learning from experience (Mäkitalo 1999):

- *Active participants*: Are always ready to throw themselves into a situation. Participation and concrete activity are important, and they love spontaneous action. Active participants are humane and react according to their feelings.
- *Deliberative observers*: Sit rather a little away from the center and concentrate on making observations. Although they are often introverts, they are more familiar with the events in a group and its internal relationships than active participants are.
- *Logical thinkers*: Strive to understand the causes and effects of different phenomena profoundly. Logical thinkers test different

interpretations and search for a theory and model that is in harmony with observations. Their strength is in thinking.

- *Experimental implementers*: Create ideas and take risks. They draw conclusions based on experiences and try new methods of operation. Experimental implementers are extrovert and tolerate insecurity.

The following conclusions can be drawn about learning and ageing:

- Learning is not dependent on age, but the processes of learning change significantly with age.
- Learning must be organized according to the needs and prerequisites of seniors.
- Learning ability must be maintained.
- Work must offer learning experiences.
- The foreman's attitude must support learning.
- A personal urge and need to learn must be maintained with age.

The old adage of a dog's learning should, therefore, be written in a new form (although it must also be remembered that people are not dogs):

"Even old dogs can learn new tricks, as long as they are taught in an appropriate way with regard to their knowledge and experience."

Additional information about organizing training for ageing people and self-reflection is available in the book by Mäkitalo (1999). Ageing and learning, as well as the phases of professional growth, have also been described in the book *Kyvyistä kiinni—ikäjohtaminen yritysstrategiana* [Use Their Abilities—Age Management as Enterprise Strategy] (Ilmarinen et al. 2003). The book *Oppiminen ja ikääntyminen* [Learning and Ageing] (Sallila 2000) discusses, for example, the "ecological sustainability" of lifelong learning and the training of ageing employees in small and medium-size enterprises, as well as in large-scale industry.

The future growth of a national economy depends increasingly on the level of education and competence of the population. In addition to adult education, occupational training will become important. Occupational training can also be utilized rather quickly in comparison, for example, with academic education, whose increase affects productivity only after about 20 years.

In Finland, as well as in other developed countries, the structure of production is changing more and more in the direction of immaterial production. After a few decades, only about one-third of the industrial work effort will go into the production of goods. Industrial companies will also turn into service providers with the help of highly educated personnel. Part of the services will be internal (design, research, personnel, and financial services), whereas some will be sold in combination with industrial products (training, main-

tenance, project management). This situation already prevailed in leading machinery and electronics companies in 2005 (Vartia & Ylä-Anttila 2005).

Vartia & Ylä-Anttila do not see a lack of technical competence or engineering skills as the weak spot in Finnish production; instead it is the ability to turn these skills into commercially successful products. Finland, with its 30% proportion of technical and scientific universities (of all universities) finishes third after Korea and Germany. Most educational costs are spent on technical education, and the proportion of technical and scientific degrees in relation to the working population in Finland is double that, for example, of Sweden.

Because production in developed countries is based on competence, about one-third of each generation should receive a university education. This level has already been achieved in Finland. The challenge for the future is presented by lifelong education and learning, in which workplaces have a vital role. Practical qualifications should be considered as important as formal qualifications. Worklife is continuously evolving ever more quickly, and specific job descriptions are disappearing. Learning by doing provides a good solution to this challenge.

CHAPTER 5

AGE MANAGEMENT AS
EVERYDAY PRACTICE

CHAPTER 5

AGE MANAGEMENT AS EVERYDAY PRACTICE

- 5.1 EFFECTIVENESS OF AGE MANAGEMENT
- 5.2 AGE MANAGEMENT AS A PART OF
STRATEGIC MANAGEMENT
- 5.3 VISIONS OF AGE MANAGEMENT
- 5.4 PRACTICAL MODEL FOR DEVELOPING
AGE MANAGEMENT
- 5.5 PRACTICAL TOOLBOX FOR THE
IMMEDIATE SUPERVISOR
- 5.6 EXAMPLES OF AGE MANAGEMENT

5 AGE MANAGEMENT AS EVERYDAY PRACTICE

Age management means managing the work ability of personnel and the success of the enterprise. It is the everyday management and organization of work from the viewpoint of the life course and resources of people whether the changes are caused by the ageing process or by other age-related factors.⁶ Young people need management that supports and improves their situation, whereas seniors need other solutions to maintain their work ability and motivation. In addition, work needs and objectives change with age. Combining them with the objectives of an organization requires continuous development of everyday methods and practices.

In age management, the importance of cooperation and trust between the supervisor and the employees is emphasized. Work can be changed using common rules. Therefore, successful age management is a result of applying correct information in order to achieve common objectives. Correct information means sufficient understanding of the processes of human ageing and growing old. Although this management method emphasizes individuality, the importance of the work community must not be underestimated. Age management is successful when the members of the work community also understand and accept the importance of diversity. Therefore, the principles of age management must also be selected for the members of the work community when applicable.

The following chapter examines age management as a part of other management, its influence, and vision. Thereafter, the creation of an age strategy and some of the age management tools are described. Finally, some good and bad age management practices are illustrated. Age management is also discussed in Section 2.4.

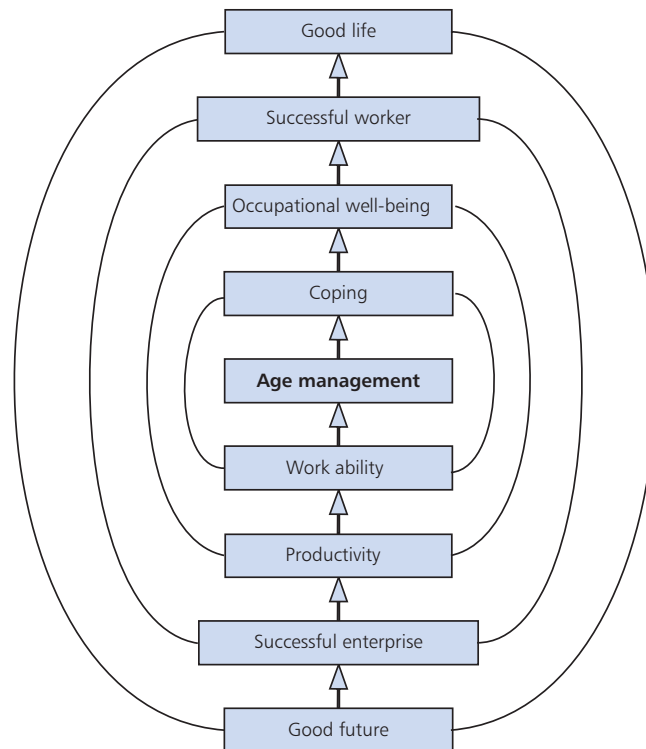
⁶ A training program to promote age management was commissioned by the National Programme on Ageing Workers 1998–2002, and it was carried out in 2000–2002. The team responsible for planning and carrying out the project included HAUS Kehittämiskeskus Inc. (offers training and consultation services for the public sector and focuses on the development of public management, service activities and personnel both in Finland and abroad), the JTO School of Management, the Local Government Training Ltd., and POHTO—The Institute for Management and Technological Training. The project was coordinated by the Finnish Institute of Occupational Health. In addition to training sessions, the team produced a manual to support the development of age management (Finnish Institute of Occupational Health 2003, which is used as reference for this section).

5.1 Effectiveness of age management

Age management affects employees' work ability and the will to continue to work (see Chapter 3 & Section 4.3). As a result, both the productivity of the enterprise and the work well-being of personnel are improved. Successful employees and a successful enterprise create a combination that leads to a good life and a good future (Figure 48).

Work ability and the will to continue to work belong to the beginning of this chain of effects. Work planning and organization are essential from the viewpoint of the strengths of ageing. With good age management, work is planned and organized according to the resources of the personnel. Age management also supports the development of employees' resources. It is not, however, rational or even possible to make all age groups similar. Age management emphasizes and utilizes strength in diversity and makes it a success factor both for the individual and the enterprise. The most noble and precious objective of age management is to ensure that employees have the prerequisites for a good life and that the enterprise has a good future.

Figure 48. Effect of age management.

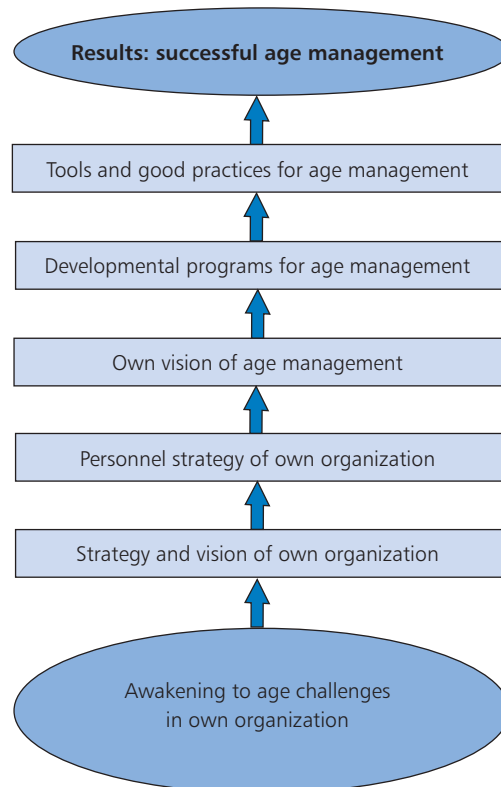


5.2 Age management as a part of strategic management

Age management is good personnel management that supports the organization in achieving its visions. A vision means a state that an enterprise tries to achieve. Visions are reached through strategic objectives and their operationalization. The basis for age management is formed from the strategy of the organization and the related personnel strategy. Age management completes and enforces personnel strategy with the added value brought by the strengths and challenges of the personnel's varying age.

A need for age management is also created when an organization and its management come to realize the threats and opportunities involved with the ageing of personnel. Without the realization that the age structures of the workforce are changing rather permanently and that this change applies to almost all organizations, age management cannot become reality. Age

Figure 49. Age management as a part of strategic management.



management thus requires the realization and expressed will to seize the challenge on the part of management.

Age management objectives (i.e., visions) must be drawn up that are in harmony with other personnel visions. In order to achieve these objectives, a development plan for age management is necessary with which to create, test, and develop the tools to be used for age management in practice. From good practices grow a good age management culture that becomes integrated with good human resources management (Figure 49).

5.3 Visions of age management

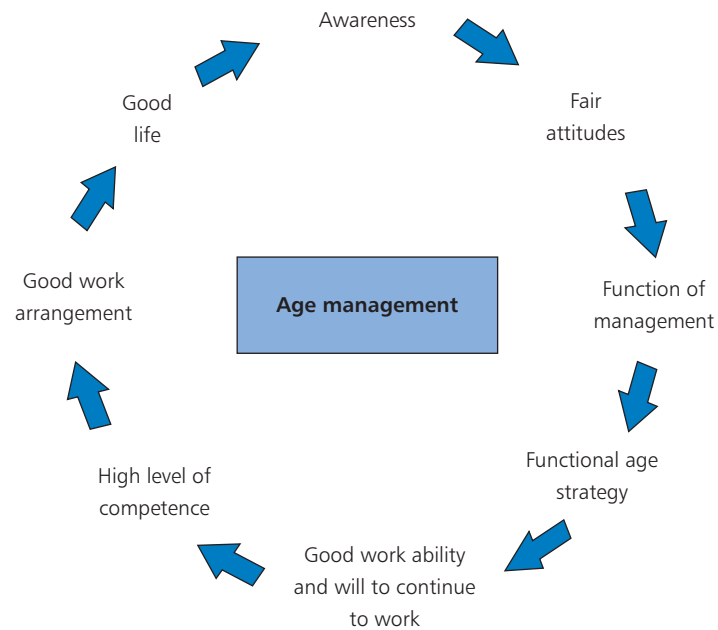
The purpose of age management visions is to show the direction and objectives for the development of age management. Visions create discussion about the need for age management in one's own organization and help the organization recognize tools, methods, and good practices for achieving these objectives. Each organization defines their objectives according to their own starting points, visions, and strategies. The methods and good practices of age management should also be selected to fit the current enterprise culture.

A group of experts (Finnish Institute of Occupational Health 2003) defined the following eight general visions of age management that logically affect each other (Figure 50):

- good knowledge about age structures
- fair attitudes towards age
- good management that understands individuality and diversity
- good and operational age strategy
- good work ability, motivation, and the will to continue to work
- high level of competence
- good work organization and environment
- good life.

In the following sections, each of the eight visions is described in more detail; questions are asked in order to help the enterprise get to the core of the visions and to help it identify the current situation in an organization. Possible tools and practices that can be used to achieve the objectives are also mentioned. The contents and emphasis of the visions have been developed during the last few years as a result of the large-scale age management training that has been offered in different enterprises and organizations both in Finland and abroad.

Figure 50. Visions of age management.



Vision 1. Good knowledge about age structures

The people making decisions in our organization are well aware of the age challenges connected with the future workforce and our own organization as a result of the ageing workforce, early retirement, and the shortage of a young workforce.

Questions to support the assessment of the situation:

- What is the current age structure in our organization and its different units?
- What are the personnel attrition and the need for recruiting new personnel going to be during the next 5–10 years?
- How is the pension reform going to affect attrition in our case?
- What kind of personnel are we going to need during the next 5–10 years?
- What is the age structure in our organization and its different units going to be during the next 5–10 years?
- What would be the optimal age structure for our organization?
- How does the age structure affect our competence resources and productivity?
- Are we able to recruit young people?

Suggestions for tools and good practices:

- assessment of the situation in our organization with respect to the effects of changing age structures
- familiarization with workforce predictions
- introduction of age challenges to the executive team agenda
- review of the personnel strategy from the viewpoint of ageing
- creation of a plan to raise the age awareness of supervisors
- creation of a plan to raise the age awareness of the entire personnel of the organization
- addition of age questions to the personnel statements or personnel report
- age management training for management and supervisors.

Vision 2. Fair attitudes towards age

The management and supervisors of our organization have positive attitudes towards ageing employees and their strengths, and these strengths are utilized.

Questions to support the assessment of the situation:

- How do management and supervisors approach our ageing employees?
- Do the attitudes towards age differ in the different units of our organization?
- How are the positive and negative attitudes of supervisors reflected in practice?
- How do the personnel approach our young and ageing employees?
- Should our attitudes towards age be changed and to what direction?
- How can our attitudes towards age be changed?
- How familiar are management and supervisors with the strengths of our ageing employees?
- Are we able to utilize these strengths?
- Is there any age discrimination in our organization?
- How can we prevent illegal age discrimination?

Suggestions for tools and good practices:

- survey of the attitudes towards age among management and supervisors
- survey of the attitudes towards age and age discrimination among personnel
- training of management and supervisors in the strengths and weaknesses of ageing employees

- common dismantling of the “historical burden” (i.e., old negative experiences about ageing)
- introduction of good examples and stories
- management’s setting of a good example through its own positive attitudes towards age
- positive communication about age issues.

Vision 3. Good management that understands individuality and diversity

The management of our organization sees the individual treatment of people of all ages in all phases of their worklife as an important challenge for which they are responsible.

Questions to support the assessment of the situation:

- How does our management take people into account as individuals?
- How does our management take into account different generations?
- Are we able to manage diversity and people of different ages?
- How does our management support people in different phases of their worklife?
- Are we able to get young and older people to work well together?
- Does personnel accept individual treatment and flexibility?
- Can we build individual career paths for employees?

Suggestions for tools and good practices:

- survey of the individual needs of personnel
- survey of the individual needs connected with the employee’s life situation, work ability, the will to continue to work, motivation, and career plans during development discussions
- training of management and supervisors in managing diversity and people of different ages
- strong support of the diverse strengths of people of different ages and their cooperation
- development of personal relationships, interaction, and group work skills
- clear will on the part of management to raise diversity as an asset and to communicate it
- management’s setting of a good example for other supervisors
- support of career paths and work circulation.

Vision 4. Good and operational age strategy

In our organization, the appreciation of people of different ages and equality, cooperation between people of different ages, life-long learning, and the will of seniors to continue working have become more important. We have an age strategy as part of our planned personnel policy and a group of good practices based on it.

Questions to support the age strategy:

- Are our supervisors aware of the meaning of age strategy?
- What are the objectives and measures of the age strategy?
- Do we have an age strategy that is part of personnel policy?
- How do we ensure the realization of the age strategy throughout the organization?
- Does our salary and incentive system support the age strategy?
- Are people of different ages treated equally in our organization?
- Does the age strategy support our business strategy?

Suggestions for tools and good practices:

- personnel and age strategy as part of the overall strategy of our organization
- supervisor training in age strategy and its measures
- drawing up of an age strategy as a part of personnel strategy
- distribution of the age strategy throughout the organization and the monitoring of its success
- application of the age strategy and naming people responsible for its application
- determined support of age strategy from top management
- organization's own vision of age management and its communication to personnel
- creation of fair salary and incentive systems for people of different ages.

Vision 5. Good work ability, motivation, and the will to continue to work

The work ability, motivation, and the will to continue to work have improved among ageing employees in our organization so that they want to carry on working in our organization until they retire on an old-age pension.

Questions to support the assessment of the situation:

- Do we know what work ability consists of?
- What is the work ability of our personnel in different age groups?
- Do we have versatile activities that maintain work ability?
- Do we have an action plan for occupational safety and occupational health care?
- What is the attitude and motivation towards working among our senior employees?
- Do seniors continue working for us until old-age retirement?
- What would make them continue longer in worklife?
- Have they told about their desires to continue working after the age of 63 years?
- What are the work ability and the will to continue to work of our managers and supervisors?
- Are management and supervisors a good example for the entire organization?
- Do we need, or are we able, to organize lighter or part-time work for senior employees?

Suggestions for tools and good practices:

- training of supervisors and personnel to detect the structure of work ability and its changes with ageing
- training of occupational health personnel to define and interpret work ability
- regular reviews of the work ability of the entire personnel
- creation of a plan for continuous activities maintaining work ability
- top management monitoring of the realization and results of the plan on a yearly basis
- inclusion of workplace health promotion in the action plans for occupational safety and health
- issues related to work ability and continuing to work also included in development discussions
- assessment of the conditions needed for senior employees to continue to work longer
- change and development of work according to the prerequisites and needs of senior employees
- care of the work ability and the will to continue to work for management and supervisors.

Vision 6. High level of competence

The management of our organization has fully realized the concept of shared competence and learning by doing as central management targets and has also ensured the transfer of the wisdom of experience (i.e., silent information) from ageing employees to younger ones.

Questions to support the assessment of competence:

- Do we know the meaning of life-long learning?
- Do we apply the model of life-long learning?
- How do employees of different ages participate in personnel training?
- Have the needs of ageing employees been taken into account in personnel training?
- Has training been beneficial for the organization and individuals?
- How do we promote and support the learning-by-doing principle among senior employees?
- Does our work offer learning possibilities and experiences?
- What is silent information in our organization?
- Is there a clear plan and program for transferring silent information from senior employees to younger ones?
- Is the transfer of silent information monitored?

Suggestions for tools and good practices:

- training in the needs and applications of life-long learning
- training in the changes in learning with age
- survey of future competence requirements
- survey of the competence of personnel and the planning of further actions
- tailored training for senior employees
- developing learning by doing
- transfer plans for silent information
- seniors' training of younger employees and vice versa
- introduction of a master-apprentice system
- mentoring plan
- work guidance
- utilization of diverse competence
- regular evaluation of our common competence resources
- strong support from management and supervisors for the learning of senior employees.

Vision 7. Good work organization and environment

The work organization, workhours, and the physical and mental work environment of our organization correspond to the prerequisites and needs of employees of different ages.

Questions to support better organization of work:

- Have the prerequisites and needs of employees of different ages been taken into account in the work organization?
- How can we improve the possibilities for senior employees to affect and regulate their own work?
- How do we take into account the changes in health and functional capacity when the work of ageing employees is organized?
- Is our work planned correctly from the viewpoint of individual differences between employees?
- Does the personnel accept individual solutions in work organization?
- How do we prevent overloading at work?
- Are we aware that supervisors are responsible for the incorrect workload of an employee?
- Do our tasks or job descriptions change with age?
- How can we be flexible with workhours?

Suggestions for tools and good practices:

- survey of the suitability of the work organization and the creation of a plan for people of different ages
- survey of workloads
- training of supervisors in their responsibility for workloads
- inclusion of work arrangements in development discussions
- assessment of the needs and possibilities for flexibility
- assessment of job descriptions, including work experience
- review of good practices applied in other organizations.

Vision 8. Good life

The appreciation, work well-being, and quality of life among ageing employees have improved significantly in our organization. Employees retire with dignity..

Questions to support the improvements in the quality of life of senior employees:

- Do we have a program supporting seniors during the last years of their careers?
- Do we have occupations in which an employee can continue until the age of 68 years?
- Do senior employees receive retirement training that prepares them for a safe transition from work to retirement?
- Do our lay-off practices withstand critical assessment?
- How are we using early retirement pensions and the unemployment pension path?
- Are senior employees receiving good and versatile occupational health care?
- How can we ensure dignified retirement for senior employees?
- How do we keep in touch with our retired employees?
- How can we utilize our retired employees, if the need develops?

Suggestions for tools and good practices:

- creation and implementation of senior plans
- introduction of senior clubs
- unrestricted management support of senior programs
- testing of the job descriptions of a mentor, an ambassador, and a storyteller
- training of supervisors and personnel with respect to the course of life and the importance of its transitions
- reinforcement of the role of occupational health care in educating and supporting senior employees
- creation and implementation of plans for retirement training
- monitoring and “alarms” for age discrimination
- celebration of retirement
- creation of plans for the utilization of retired employees as a potential and valuable reserve.

5.4 Practical model for developing age management

The model for developing age management follows a method of operation applicable to all development work. At its best, development proceeds as follows (Finnish Institute of Occupational Health 2003):

- Identify development needs and targets.
- Survey the current situation of development targets.
- Create objectives for development targets.
- Introduce measures to evaluate success.
- Define the priority of development targets.
- Create action plans for each development target.
- Set schedules.
- Agree on responsible personnel.
- Decide on the implementation, follow-up, and monitoring of development work.
- Decide necessary corrective actions during the program.
- Evaluate the process and functionality of the development.
- Report the results and decide on further actions.

In the book *Kyvyyistä kiinni—ikäjohtaminen yritysstrategiana* [Use Their Abilities—Age Management as Enterprise Strategy] (Ilmarinen et al. 2003), the development of age management is described using the creation of an age strategy for an enterprise as an example. The basis of the age strategy is examined from the viewpoints of values, competence, work ability, recruiting policy, and retirement policy. Based on these themes, questions are asked whose answers as such help to make the age strategy of the organization more concrete. The building of the age strategy is divided into the following four phases: assessing the situation, selecting development themes, implementing the strategy, and evaluating the results.

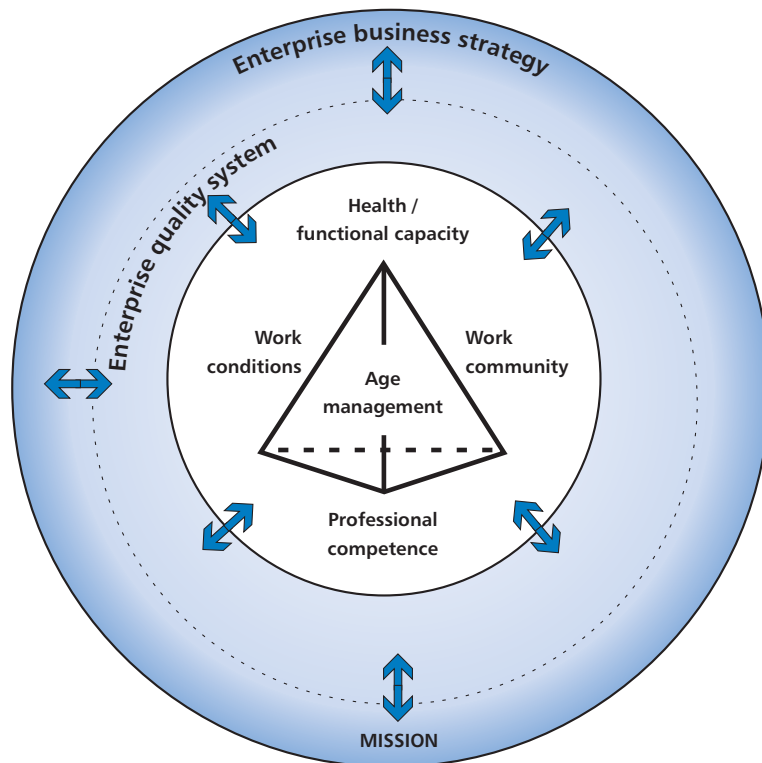
The development of age management and the creation of an age strategy for an enterprise are basically similar with respect to targets and actions. In the development model for age management, which has been described earlier in this book, creating an age strategy has been set as one target. In the development model used for the age strategy illustrated in *Kyvyyistä kiinni*, channels are opened through which an age strategy can be set up for an entire organization, and it naturally also binds managers and supervisors to this task. Each of these two approaches can be utilized with good results. In the book, three enterprise cases are described, ABB Oy Low Voltage Products,

Osuuspankkikeskus (OKO-bank group), and ORAS Oy, all of which had sought solutions for the challenges of ageing employees.

The widespread and multi-dimensional development project for maintaining work ability, ABB-Mahis, that was carried out in 1994–1998 helped to bring about a new understanding of the connection of work ability and the maintenance of work ability with age management and, in turn, the connections between age management and the quality system, business strategy, and mission of an enterprise (Figure 51). According to the visions of the CEO of the enterprise division, Mr. Ruotsalainen, age management was located at the core of all activities.

Age management was implemented by affecting the work ability of personnel in many ways. In the objectives, attention was paid to the quality system, according to which age management was also used to affect the quality and productivity of work. Age management also interacts with the business strategy and the mission of the enterprise. The CEO's idea that age management,

Figure 51. Action plan created during the ABB-Mahis program in order to combine age management, the maintenance of work ability, the enterprise quality system and the enterprise business strategy. (Ruotsalainen [ABB] & Ilmarinen [FIOH] 1988)



the quality system, and business strategy form an interactive chain and support each other was crucial. These kinds of ideas from top management are required if age management is to be utilized in worklife.

5.5 Practical toolbox for immediate supervisors

The follow-up studies behind age management have shown that good supervisory work was the most significant factor explaining improved work ability at the age of 51–62 years. The role of supervisory work was extremely important regardless of occupation. Good supervisory work improves work ability with age, whereas poor supervisory work decreases it. Therefore, the characteristics of good supervisory work should be illustrated also from the viewpoint of ageing. These characteristics are as follows:

- correct attitude towards ageing employees and an appreciation of them
- participation in supporting and promoting employees' work and work conditions, which requires cooperation skills
- ability to take individual needs into account in work arrangements
- ability to communicate with ageing employees.

Good supervisory work and age management are based on the supervisor's own *age attitude*. If this attitude is negative, the supervisors see only negative changes in the ageing people around them. A positive attitude towards ageing, on the other hand, begins with the understanding that also positive changes occur with age. One can find new personal resources and an ability to control things better than before, or, for example, one may be able to solve more complicated problems than before. Experience is a real asset.

On the other hand, everyone has noticed that not all things proceed as they did before. Limitations occur, but one may have found ways to cope with problems. Personal positive feelings and experiences help a person see positive changes and opportunities also in colleagues. A realistic attitude towards a person's own ageing thus means the identification, understanding, and acceptance of positive and negative changes. The many changes resulting in mental growth also make ageing people stronger (see Section 4.6.3).

Another age management skill is connected with *cooperation*. Senior employees appreciate it if supervisors cooperate by supporting others, by being a part of a team or a group. Supervisors also put themselves "on the line" in front of others and reinforce the cooperative method of working. Supervisors

do not have to emphasize the hierarchical method of management; instead they are in charge of the diverse competence in their teams. Good teamwork utilizes the diverse competence of personnel and supports everyone's work ability, whereas hierarchy tends to weaken motivation and work ability. Age management demands good social skills on the part of supervisors and also encourages them among the other team members.

The most demanding characteristic of good age management is the ability to plan work and to implement this plan *individually*. The need for individuality is based on the fact that, with age, we, whether we like it or not, become physically, mentally, and socially different, and, therefore, our work ability also becomes more individual (see, for example, Section 4.2.2). An age manager has the ability to change work and its organization according to the needs of personnel. This task also requires the acceptance of other employees. When individual solutions are searched for, the cooperation between the supervisor, employee, and work community is emphasized.

Changes in worklife, new work organizations, and new work demands are among the biggest loading factors in worklife. Older employees often need more time to adjust and prepare for changes and reforms than younger ones do. Supervisors know about and prepare the changes, and are therefore also responsible for *communicating and discussing* the changes. Experienced employees can be persuaded to support the changes if supervisors discuss the changes with them and listen to and appreciate their opinions. Good age supervisors are able to discuss even difficult issues and find arguments and solutions that satisfy also ageing employees. The openness of communication is often dependent on the supervisors and their abilities.

Because supervisory work by means of age management is the most important factor improving the work ability of ageing employees, it must receive major investments. Supervisors need knowledge about age management and its preconditions and also authorization to work in a positive way towards age. The toolbox for immediate supervisors has been described in somewhat more detail in the book *Kyvyyistä kiinni—ikäjohtaminen yritysstrategiana* [Use Their Abilities—Age Management as Enterprise Strategy] (Ilmarinen et al. 2003).

Successful supervisory work supports work ability

Municipal home help service: A good example of the importance of supervisory work with respect to the work ability of personnel is, for example, a study carried out among the home help service personnel of the city of Helsinki (Pohjonen & Pukari 1999). The home help personnel (n = 869) averaged 42 years of age, and

the proportion of ageing employees was 50.2%. Their average work ability index was 38, the range being 40 for the youngest age group (19–34 years) to 34 for the oldest age group (56–62 years). When the researchers combined the two top and two bottom work ability classes in order to determine the characteristics of a good supervisor, the result was clear for both those with good and those with a poor work ability.

Workers with good work ability were of the opinion that a good supervisor supports, encourages, rewards, is inspiring, discusses issues, is open, takes care of job satisfaction, trusts, encourages, trains, and knows the worktasks. The difference between those with good work ability and those with poor work ability was statistically significant. The workers with good and poor work ability evaluated their supervisors differently. Good work ability was connected with the aforementioned supervisory characteristics, which are basically similar to the methods used in age management.

Metal industry and retail store: The associations between human resource management and the success at different worksites were examined in the metal industry and retail stores (Jurvansuu, Tuomi, Seitsamo et. al 2000). The success of a worksite was examined on the basis of the evaluation by management according to the following three criteria: competitiveness, marketing and product development, and the ability to get employees to commit themselves to the enterprise.

The results showed that different areas of human resource management (teamwork, training, flexible workhours, internal recruitment, bonus systems, tailored products, formality of operations) affected the success of a worksite regardless of the line of business or size of the worksite. Good management, including, for example, fast adoption of new methods, reasonability and clarity of work objectives, good organization of the work, businesslike manner of making decisions, support of personnel resources, and improved possibilities to affect and develop one's work, had a significant positive effect on work ability and psychological well-being (Jurvansuu Vanhala, Nykyri et al. 2000).

Municipal technical office: The effects of a development program directed towards the work community and management of a municipal technical office have also been studied (Elo et al. 2004). In this study, work conferences and psychodynamic and traditional management training were used. The results of versatile development interventions improved the psychosocial work environment and decreased fatigue, even though work-related stress increased. Familiarity with the objectives, possibilities to have an effect, communication, and management improved. Active participation in the development events also improved work ability. After the effects of the starting level, age, gender, basic education, and nature of the work were standardized, the work ability of the employees who participated in these events actively or once in a while was significantly better than that of the employees who did not participate.

5.6 Examples of age management

Additional research is required on the effects of the primary age management characteristics on work ability, work well-being, enterprise functionality, and profitability. Some experiences with good age management practices already exist for us to learn from.

5.6.1 Epitest Ltd Oy

More attraction and age management to worklife

Epitest Ltd Oy is a small family-owned manufacturing company with about 10 employees. Most of the personnel have a long history with us, and they are naturally then also over 45 years of age. Epitest manufactures medical devices, the main product line being Finn Chamber test devices for the diagnosis of contact dermatitis.

Production not only includes tasks requiring precision and care, but also the use of individual production machinery and checking and packing the products. Every one knows his or her work well, but starting new things has not always been easy. Although the changes have not been sudden, they have been very notable over the years. The biggest changes have been the introduction of new production methods and machinery, as well as an increase in collaboration. Earlier each worker had his or her piece of the whole, but, as the tasks became more varied, the effect on others increased at the same time. A change of attitude was also required when a new quality control system, with additional forms and a reporting process, was started. The workers did not feel comfortable with writing what they knew on paper, and the preparatory work required more time than anticipated and caused friction and feelings of distrust.

The aim was to widen the workers' knowledge about what is done and why, to improve collaboration and motivation, and to find common ways to work together. Without these changes, there was a danger that old ways of working would not change, and, in situations involving conflict, the workers would repeatedly return to old ways instead of looking for solutions for the future.

The personnel had several years of worklife in front of them, and those years should be as good as possible from the point of view of both the whole organization and the individual.

Company-specific training program

During 1998-1999 we participated in the Fokus 2000 project, which was led by the Helsinki Chamber of Commerce. The project included tailored training for all our personnel. The main topics covered production planning, quality, and teamwork. Additional topics were the use of computers, physical activity, and an evaluation of work postures.

After the Fokus project ended, there was a natural move to join the “Let’s Build Work Ability Together” project run by the Finnish Institute of Occupational Health. After some discussion, the main topics were chosen together on the basis of what each one thought was important. Training was again the first topic. In addition to common interests, we especially looked for suitable training at the individual level. Some of us easily found courses that were both related to our work and were of personal interest; for some it was not so easy.

Ergonetti, an Internet-based approbatur course in ergonomics arranged by the University of Kuopio, was my first choice, since I could apply all of the exercises to my daily work and, in this way, evaluate the work conditions of the entire workplace. For me, the most important part of the course concerned sources of motivation. First, everyone filled out a questionnaire related to work motivation, and then we discussed the results from many points of view. The discussions revealed new subjects for mutual development and provided ideas on how to proceed.

Maintaining work ability and work well-being

What we do for supporting and improving work ability is mainly included in our daily work, but the measures can also be placed in the various areas of the tetraedric model developed by the Finnish Institute of Occupation Health.

In order to improve **individual health and functional capacities**, we support fitness training such as swimming and workouts at health clubs, as well as regular participation in walk tests. We expanded the occupational health services for those over 50 years of age and added fitness tests administered by a physiotherapist. We also encourage any worker to apply for rehabilitation when needed.

The workers can choose their worktime in a flexible way according to their personal or family needs. Therefore, taking care of personal matters during workdays is easy to arrange. Those over 50 years of age or with a long work history with us have extra free days.

The **physical work environment** is followed continuously, and we have purchased ergonomic furniture, such as saddle chairs, to improve work postures. The workers can time and switch their different tasks and use breaks in order to shorten periods of repetitive movements. A physiotherapist has evaluated the work environment and workers' postures, but each worker has the main responsibility to find the individually best ways to work and use breaks.

We have especially emphasized the improvement of **professional competence**, as was mentioned earlier. Internal training and learning by doing have been important, especially in production, as it is difficult to find suitable external courses. Consultants have supported our internal training during projects, and external courses have been attended if possible. Work counseling in management proved to be especially helpful.

The **psychosocial work environment** and interaction are important parts of well-being. All of us have morning coffee together, and it is easy to continue with production planning or other meetings or discussions thereafter. During the discussions, we have, for example, covered new topics, such as the aims and policies of the company, as well as ways to work together. We have annual employee–manager discussions, but, more important, is the daily communication, both between the supervisor and the workers and between the workers themselves.

Interaction is furthered by joint excursions, cultural trips, picnics, and outdoor activities now and then, usually during workhours and chosen so that, hopefully, everyone who wants to take part can.

Follow-up and results

Our workplace is small, and everyone is aware when changes take place in the work climate without measurements being made. The “Let’s Build Work Ability Together” project included, however, a questionnaire evaluating factors of work ability, the work environment, and the work climate. The results at the end of the project were clearly better than in the beginning, which also corresponded to our own feelings. Collaboration had improved and communication had increased. The development of the quality control system is also easier, as the whole picture and aims are better known. We have had only a small number of sick leaves, but some long sickness absences make it difficult to use averages as a measurement for work ability in general.

Our activities for improving work ability and well being are based on and included in our daily work. Specific activities are not needed if we remember also this aspect as we develop our operations. We will continue to encourage everyone to look for suitable and interesting training. Management and

the role of the supervisor is important in creating possibilities; essential is, however, what each and every one of us do daily, including collaboration with others and bringing new ideas forward. The “Let’s Build Work Ability Together” is a good motto for us also in the future.

Laila Malinen, CEO

Epitest Ltd Oy

5.6.2 Länsilinjat Oy

Review of the “Let’s Build Work Ability Together” project

The Länsilinjat corporation has 155 employees in different bus traffic occupations. Most of our employees work as bus drivers ($n = 125$). Länsilinjat has its office in Tampere, and also bus garages and driver accommodations in over 10 other locations. The operations are mainly self-supporting public transport paid for by ticket fares and without community subvention.

The drivers leave for work independently, according to their personal driving schedules and from their own designated locations. This situation creates great demands for independent responsibility and supervisory work. Drivers visit garages irregularly, some almost daily, some weekly or even more scarcely. It is only natural that communication and supervisory work are especially challenging in such a work environment.

During the last few years, Länsilinjat has gone through a shift from one generation to another in several responsibility areas. Most of the supervisors are young in both age and length of employment. The length of employment has traditionally been long. Therefore, there are also many baby boomers among the employees. In the traffic business, workshift arrangements are extremely beneficial for work well-being.

As a result of this background, it seemed important to develop the future of the corporation from the viewpoint of ageing employees. Developing new operating methods and models to conform better to the different challenges of the young generation of supervisors and the long-term personnel was also an important starting point for the development work, as finding a joint line of action was no longer easy. In addition, for several reasons, there was a need to recruit quite a few new drivers in a short period of time, and this was seen as a challenge demanding a well thoughtout solution.

The objective of this project was to increase the knowledge of different issues related to ageing in the organization, especially with relation to workshift

arrangements. In addition it was important to motivate the personnel who had been employed by the same company for an extended period of time to meet the ever-changing challenges of today.

The most important development targets were as follows:

- updating the induction system
- writing an induction manual
- creating a framework for an induction plan
- creating and establishing a system of mentor drivers
- supporting the professional development of the personnel both through vocational training courses and through training targeted towards special issues in traffic questions
- targeting vocational degrees for bus drivers
- targeting vocational degrees for heavy machinery mechanics
- targeting vocational degrees for automotive electricians
- offering tailored safety training
- offering driving training
- enabling part-time retirement arrangements
- establishing individual workhour arrangements
- making different well-being issues part of everyday work.

The objective of the human resources strategy at Länsilinjat is for all employees to feel they are successful in their work, even after a challenging workday. Recovering from the workload should not take most of the drivers' leisure time. Instead, a balance should be found between workload factors and the resources of the drivers to cope with them.

Thoughts and attitudes were remodeled: from the start, essential factors in the development work were the thoughts with which enterprise activities are developed and the attitudes that decide success in the tasks. The work conditions of a traffic enterprise are probably not “fun” in a traditional sense. Employees must wake up early in the morning, workshifts continue until late at night, workdays are long, the work is lonely, and there are several forms of irregularity, a need for definite substitute arrangements, the need to be on call 24 hours a day... Under these conditions, success is only possible when the all of the personnel are able to commit themselves to common thoughts and attitudes.

The **mentor driver system** initiated by Länsilinjat has been a big success. Mentors themselves have been highly motivated, which has been crucial for their success. The importance of the mentor is also essential for novice drivers at the beginning their careers. The mentor follows the progress of the novice driver intensely for a couple of months, and thereafter more rarely, ac-

ording to individual needs. The mentor becomes a trusted person, one who can be turned to later also for answers to questions. According to mentors, the drivers they have inducted have sometimes contacted them even several years later with problematic situations or when they need to discuss work-related matters. When the mentor is a colleague rather than a supervisor, communication has proved to be much easier.

As mentors have become trusted persons, they have gradually added their contribution also to the development of other human resource issues. They participate in planning educational activities and, for example, writing the personnel bulletin. Mentor drivers have become a new, bi-directional channel of communication for supervisors and even top management. A nice detail is the fact that one of the mentors is on part-time retirement!

Training for a vocational degree has been targeted for drivers and garage employees. The first group to get vocational degrees was the mentor drivers and the supervisors. Since then, about 40 drivers have attained a vocational degree or participated in preparatory training. The first groups who left to receive their vocational degrees were novice drivers who had just started working for the enterprise. Later, this possibility has also been offered to drivers who have been employed for some time. Almost 20 of them have already participated, and there are others who are interested. The longest work history of an employee getting his or her vocational degree has been over 40 years! Therefore, training has to really offer new visions to familiar work.

Part-time retirement arrangements have proved to be very good from the viewpoint of the drivers. Because of the nature of the work, workhour arrangements can be adjusted well to meet the needs of part-time employees. All of the employees who have shifted to part-time retirement have found the decision agreeable at the personal level also. Currently, it seems that the enterprise will be able to allow part-time retirement also in the future.

Possibilities for workshift arrangements vary from one location to another. If there are only one bus and two drivers in a specific location, the possibilities for arrangements are fewer than in bigger locations. The default rotation system of workshifts designed during this project has been gradually implemented. The objective is to create a workshift model with which drivers are able to know the contents of their future work periods in advance. The system has been received positively, and its use is continuously being expanded to new locations.

According to our survey, we have succeeded well with workshift planning, and the system is flexible. According to one questionnaire, 95% of the drivers reported that requests for days off made well in advance were almost

always granted. This is an indication of the thoughts and attitudes of supervisors towards drivers' requests.

Most of the development work carried out during this project targeted professional competence and training, as well as the work community. In the future, work well-being will be developed in the areas of individual resources (in the so-called "Health-enhancing Physical Activity" project) and in a project concentrating on the combination of work and family life. In all of the development projects, it has been essential that the issues to be developed be included in everyday activities in the enterprise. As development activities are combined with everyday work, they become regular and form an inseparable part of enterprise operations. This is an absolute prerequisite for the development activities in order for the supervisors to be able to commit themselves to these issues and to promote them in practice.

Terhi Penttilä

Administrative Manager

Länsilinjat Oy

5.6.3 Abloy Oy

Age Master

Abloy – the whole world as home ground!

Abloy Oy is a part of the world's leading lock-making corporation ASSA ABLOY. Abloy Oy offers its customers an overall security package from serializable devices and building locks to door closers, door automation, electrical locking and architectural hardware. The turnover of Abloy Oy is EUR 142 million, the number of employees is 1200, and the company has manufacturing plants in Joensuu, Tampere, and Björkboda. Additional information about Abloy Oy can be found on the Internet at www.abloy.fi.

In Abloy, the awakening to age management took place in 2000 when it became apparent that the age structure of its personnel was like a camel with two humps. On one hand, it was centered around employees aged 25–35 years, and, on the other, the highest peak was among employees 50–60 years of age. At that time, a need for managing the age structure and the challenges of continuing to work and transferring experience arose. It was noted that, behind the unique brand and market share of Abloy Oy, was unique competence, a large portion of which was going to leave the company during the next 10 years. During the next 5 years, the number of employees over the

age of 55 years was going to double, and the average retirement age in the company was 59 years.

At this point, the management team of Abloy analyzed the risks and opportunities of the situation. The retirement boom, lost experience and competence, clashes between cultures of different age groups, and stagnation of development were seen as risks. On the other hand, increased turnover, sharing competence, questioning established procedures, and development opportunities were seen as possibilities.

Kick-off of the Age Master project in 2001

Investing in age management was considered important by the management of Abloy Oy, and the initially 2-year Age Master project was started in 2001. In the Abloy management team, it was noted at the time that it would also be economically sensible to get people to commit themselves to worklife for a longer period, transfer experience and competence to younger employees, and also develop human resources management through these actions.

The target group of the Age Master project was our employees over 55 years of age, who are working full-time on indefinite contracts. The objectives of the project were (2001):

- to extend the worklife of personnel by 2 years
- to decrease sickness absences by 1% a year
- to increase the appreciation of age masters and the transfer of “silent” information.

The project was started with several supervisory training sessions, which dealt with ageing and work ability, competence, experience, and affecting the contents and demands of work. Several groups were also formed from the age masters to formulate practical methods with which to achieve the objectives. A steering group was also formed for the project to develop and monitor the implementation of the program and to report its results to the Abloy management team.

The activities of the Age Master project involved the following:

- supervisory work
- work conditions and work contents
- functional capacity
- age master holidays
- functional events
- communication.

Supervisory work

In the development discussions that take place with the age masters, more attention is paid to the combination of work objectives, work ability, and competence from the viewpoint of an ageing employee. In this work, Abloy's occupational health professionals can also help.

Work conditions and work contents

- investments in ergonomics, worktasks, workshifts and competence development.

Functional capacity

- massages, 50% of the cost being paid for
- free use of the senior gym
- yearly fitness improvements
- fitness evaluations and individual plans and follow-up once a year for those who want to use age master holidays.

Age master holidays

Age master holidays are extra paid time off for age masters over the age of 58 years. A person is entitled to age master holidays after he or she has undergone a fitness evaluation and received his or her personal fitness report and follow-up plan. Age master holidays must always be agreed upon in advance with one's own supervisor, and they cannot be combined with annual leave or sick leave, equalization holidays, or extended shift leaves. An age master can take these holidays anytime during the year following his or her birthday. Age master holidays are accumulated as follows:

- 58 years 6 days
- 59 years 8 days
- 60 years 10 days
- 61 years 12 days
- 62 years 14 days
- 63 years 17 days
- 64 years > 20 days

Functional events

Each year, there are 1–4 functional events in which the age master can participate. At the Abloy Joensuu plant, there is also an age master club that makes yearly suggestions for age master events to the Age Master Steering Group. The events include lectures, fitness tests, exercise, art exhibitions, and other invigorating activities. Especially popular events have been those

that combine a factual lecture on issues that interest age masters and different invigorating activities or exercise. Lecture topics have included “When a Man Reaches a Certain Age”, “When a Woman Reaches a Certain Age”, “Heart-friendly Nutrition”, “Exercise Developing the Musculoskeletal System”, and the like. About 30–40 age masters have participated in these events each year.

Communication

There is active communication about the Age Master project in the Abloy Oy personnel bulletin and different informative events. In the spring of 2005, the age master club announced a design contest for an age master logo. This logo is to be used to profile “age masters” communication more clearly.

Promising results

After the first phase of the Age Master project, in 2001–2002, was over, the average retirement age had risen by 2 years, the appreciation of age masters had increased significantly, and the importance of the issue had been realized. Sick leaves had not decreased according to the objective, but a positive trend was ongoing, especially with respect to musculoskeletal diseases. In 2002 the Abloy management team decided that the Age Master project was to be continued on a yearly basis according to the situation and demand. The Abloy management team makes the decision as to whether the project is continued. A positive decision was made for 2005, and the results from 2004 are encouraging (compared with 2001):

- Average retirement age has risen by more than 3 years (in 2004 it was 63 years).
- Sick leaves have decreased evenly, especially those caused by musculoskeletal diseases.
- The appreciation of the age masters has increased even more.
- The company has received positive publicity.

Future of the Age Master project

The decision as to whether the Age Master project will be continued is made yearly by the Abloy management team. Issues affecting this decision are primarily the results of the age master activities and the psychological demand for continuing. A survey is to be made about the age master project in 2005, in which the effectiveness of the project is to be examined from the viewpoint of age masters, their supervisors and colleagues, as well as the company. The results of this study, in turn, will affect the future emphasis

areas of age management. In the future, we will invest more in “stimulating retirement” already at work. This approach will enable age masters to think in concrete terms, with the guidance of an expert, about the situation and everyday life they will have when they retire. This program includes analyzing economic factors and also making social reality visible: who belong to my social network; what am I going to do when retired; how will I feel when retired when compared with worklife?

Pia Viklund

Human Resources Development Chief (until 3 August 2005)

Abloy Oy

5.6.4 Age management in small and medium-size enterprises

Small and medium-size enterprises are a significant challenge to age management. The purpose of the “Let’s Build Work Ability Together” project carried out during the Finnish National Programme on Ageing Workers 1998–2002, see Chapter 2) was to find new solutions for promoting work ability and continuing to work among the ageing workforce. In this project, 20 small and medium-size organizations participated, and, with funding from the European Social Fund, they carried out different development activities based on organizational analyses, together with the Finnish Institute of Occupational Health (Tuominen, unpublished manuscript, cited with permission).

Even though most of these activities were, in practice, aimed at the entire personnel, the activities had been planned in nearly all of the organizations with only ageing and older employees in mind. The realized development activities included, for example, the following:

- unbiased recruitment of the ageing workforce
- making work arrangements easier (e.g., less traveling, lightened worktasks)
- work rotation
- increased flexibility in workhours
- adopting technology suitable for ageing employees
- creating an atmosphere of appreciation towards ageing employees (acceptance of ageing, discussions of the issue)
- training aimed especially at ageing employees (e.g., information technology and language training)
- efficient health examinations
- preventive actions to maintain work ability (diet groups, physiotherapy, lectures on ageing)
- making part-time retirement easier

- rehabilitation
- job alternation leave periods.

Case examples

During the project, Urheiluhallit Oy invested strongly in employee training. Cashier and customer service training was extended also to cover older customer service workers. A computer skill survey was also conducted among the ageing employees, according to which basic and advanced computer training was organized especially for ageing employees. The employer also committed to paying for employees' eye glasses once every 2 years.

In the municipal theater of Hämeenlinna, theater veteran Seela Sella became a mentor for actors. She increased the appreciation for experience and accumulated professional competence among theater workers. Ageing actors were also entitled to special rehearsal leave.

A teacher retiring from the Hämeenlinna conservatory (today the Sibelius Institute) received work counseling along with the other employees, even though this person would be retiring soon. This process made retiring easier, and the teacher appreciated this attention from the employer.

(Additional time-offs for ageing employees by Epitest and the workhour and route arrangements, as well as mentor driver system, by Länsilinjat were introduced earlier in Sections 5.6.1 and 5.6.2.)

5.6.5 A cautionary example of the lack of age management

The following example is based on an actual event reported by the employee involved. The supervisor of the employee did not want to provide information about the case.

The employee in question was a 54-year-old home help worker, whose recently operated knee was still sore. The home help worker had difficulties in moving, carrying customers' shopping bags, and transporting customers. There was an apparent need for lightening and re-arranging the workload until the employee's knee was fully recovered. The employee had been trained as a practical nurse, and one alternative was that the person be temporarily switched to the job of a practical nurse if it was not possible to lighten the home help work. How was this situation addressed when the employee brought it up with different parties?

The occupational safety and health representative asked the employee to contact the occupational health service. The occupational health service sug-

gested that the employee shift to completely different work, with which the employee had no previous experience whatsoever. The occupational safety and health administration did nothing.

The supervisor's reaction was as follows:

- Work should continue as before even though it includes moving with the sore knee, carrying shopping bags, and weekend on-call duty.
- The supervisor's argument for this was that it would be unfair to healthy employees if the work of a convalescent was made easier.
- The supervisor suggested that the employee apply for sick leave, for example, for a year, after which the employee could be given notice and granted a work disability pension.
- The supervisor did not offer the possibility of working as a practical nurse.

The home help worker deduced that the supervisor wanted to get rid of the employee, no matter how. The sick leave continued. A young, pregnant woman was selected to work as a substitute with all forms of lightened work because of her pregnancy. The supervisor also harassed the home help worker in other ways.

This example is not a rarity. People who are willing to work are dropped from worklife because of poor supervision, although no reliable numbers are available. Because many seniors accumulate problems or limitations related to health and functional capacity as a result of natural ageing, it is contradictory to good age management to use this situation against people who are still willing to work. There is usually a lot more work ability left than is temporarily or permanently lost because of, for example, an illness. Changing health is always a challenge to management—a good supervisor searches for suitable solutions.

5.6.6 Age policy at different worksites

The age policy of different worksites has been examined from the viewpoint of people over 45 years of age, for example, by Forss (2001). The research material was part of the Työolotutkimus 1997 [Work Conditions Study 1997], and the participants worked at worksites with at least 10 employees, totaling 2159. Employees or lower clerical workers accounted for one-third of participants, and upper clerical workers made up one-fourth. Of the participants, a little more than one-third was over 45 years of age, and one-fifth was over 50 years of age, but only about 5% was over 55 years of age. The areas of age policy were defined as follows:

1. Termination of employment among ageing people
 - use of the unemployment pension path
2. Support of ageing people and their need for support
 - promotion of workers' continuing in worklife
 - use of training opportunities and need for training
 - activities involving work ability maintenance
3. Age discrimination and the appreciation of work performance
 - age discrimination experiences
 - work appreciation.

In this study, the age policy of different business sectors was defined so that average values for each sector were calculated from both variables (using the unemployment pension path, promoting workers' continuing in worklife), and the business sectors were classified in a 2×2 table using the total group averages of the variables as cut points. The definition "a lot" means that the average of the variable in the business sector exceeds the total average of the groups and the definition "a little", respectively, that the average of the variable is smaller than the total average of the groups. The types of implemented age policies were as follows:

1. Business sectors with strong support (little use of the unemployment pension path, a lot of promotion)
 - public administration, social services, health care
2. Business sectors with discrimination (much use of the unemployment pension path, little promotion)
 - finance and insurance, construction
3. Business sectors with rational thinking (much use of the unemployment pension path, a lot of promotion)
 - paper and food industries, post, telecommunication, metal industry
4. Business sectors with no age problems (little use of the unemployment pension path, little promotion)
 - retail stores, transport and hotel sectors, education.

The continuing of ageing employees in worklife was evaluated from the point of view of the enterprises' age policies and job satisfaction among the employees. Whether job satisfaction is a result of age policy, however, remains unclear. In the study, job satisfaction was examined according to the following three aspects: satisfaction with own work, satisfaction with the employer, and desire to change employer.

The factors decreasing and increasing job satisfaction were as follows:

Decreasing factors	Increasing factors
■ tight schedules	■ work independence
■ poor salary	■ interesting content and diversity of the work
■ lack of appreciation	■ feeling of achievement and usefulness
■ forced pace of work	■ workplace “spirit”
■ insecurity of employment	

The relationships illustrated in Table 36 were detected between the areas of age policy and job satisfaction and employees’ continuing in worklife.

The results indicated that especially training and the use of the unemployment pension path had a strong association with job satisfaction. Job satisfaction was often connected to good training possibilities, whereas the use of the unemployment pension path decreased job satisfaction. Lack of support and discrimination against ageing employees decreased personal job satisfaction (Forss 2001).

Not much research is available about the age policy of enterprises. The criteria for good age policy could be based, for example, on the eight visions of age management, and their occurrence and implementation obstacles in Finnish worklife could be studied.

Table 36. Relationships of workplace age policy with job satisfaction and work well-being. (Forss 2004)

	Job satisfaction	Work well-being
Use of unemployment pension path	**	***
Reductions in workforce	**	ns
Promotion of continuing to work	**	*
Opportunities for training that develop competence	***	***
Age discrimination at work	***	ns

ns = not significant
 ** = significant
 *** = very significant

CHAPTER 6

AGEING WORKERS' HEALTH
AND QUALITY OF LIFE

CHAPTER 6

AGEING WORKERS' HEALTH AND QUALITY OF LIFE

- 6.1 QUALITY OF AGEING WORKERS' WORKLIFE
- 6.2 WILL THE HEALTH OF AGEING WORKERS
ENDURE IN THE EUROPEAN UNION?
- 6.3 RECREATION AND HOBBIES OF THE
AGEING POPULATION
- 6.4 IS IT POSSIBLE TO CONTINUE TO WORK
IN THE SAME JOB AT 60 YEARS OF AGE?
- 6.5 CRITERIA FOR A GOOD WORKLIFE IN
THE EU REGIONS

6 AGEING WORKERS' HEALTH AND QUALITY OF LIFE

6.1 Quality of ageing workers' worklife

In this section, the worklife of employees over 45 years of age in 2000 is examined, along with the changes in 1995–2000 and the situation for both those under and over 45 years of age in 2000. The data are taken from the results of a European study of work environment conditions in 1995 and 2000. The European Foundation for the Improvement of Living and Working Conditions (Dublin, Ireland; www.eurofound.eu.int) was in charge of planning and implementing the studies, together with cooperative organizations within the member states. A representative sample of employees over 15 years of age in every EU15 country was selected for interviews that were carried out by trained personnel. In 1995, 15 986 persons participated in the study, and in 2000 the corresponding number was 15 489. Approximately 1000 people were interviewed per member state, and the results were weighted according to the size of the national populations (Paoli et al. 2001).

The results of the 1995 study have been documented earlier both in Finnish and in English (Ilmarinen 1999 a&b). In this publication the intent is to establish whether worklife, from the point of view of the ageing workforce, took a turn for the better in 1995–2000 and what worklife characteristics caused the most concern and problems in the EU15 countries in 2000. The differences between the worklife of younger and older workers in the EU15 countries in 2000 are addressed.

For the purpose of this study, the data have been divided into two age groups, over and under 45 years of age. The broad-based material is also described as one entity to create an image of worklife and its changes and challenges in all of the EU15 countries. The results are descriptive, containing diverse information on the work environment, physical and mental workloads, control of one's work, managerial or supervisory work, workhours, and age discrimination. Finally, the manner in which the criteria for the quality of worklife have been fulfilled is examined with respect to the ageing workforce in European worklife.

Other researchers have also used the same material to examine the relations between age and the work environment, but their approach has been more statistically analytic (e.g., Molinie 2003). Molinie concentrated on the relation of age with physical workload, workhours, workplace, the use of new technologies, health, and work at the age of 60 years. Multiple correspondence analyses, logistic regression models, and relative risks were used to examine the material. In this section, some of Molinie's results are used as examples when results concerning the handling of heavy loads, tight work schedules, and workhours are addressed.

Table 37. Exposure to noise (unable to hear normal speaking voice) for at least half of the worktime among over-45-year-old men in the EU15 countries in 1996 and 2000, changes in 1996–2000 and the difference between over- and under-45-year-old male workers in 2000, countries listed in the order of the prevalence of exposure in 2000 from the lowest to the highest.

	2000 (>45 years), %	Change in 2000–1996 (% points)	Difference between age groups (>45–<45 years) (% points)
EU15 countries	23.1	4.0	–2.3
Italy	15.2	0.1	–4.1
Denmark	16.1	1.1	–6.3
Belgium	17.2	7.7	–5.8
Austria	19.6	–1.9	–0.9
Netherlands	20.6	3.0	4.4
Sweden	21.1	2.0	–5.3
Germany	22.1	3.4	–2.6
Ireland	23.4	2.6	–6.3
France	24.9	4.9	–3.2
Spain	26.5	2.0	–0.3
Portugal	27.1	7.5	–1.5
Finland	27.4	0.9	–4.9
Greece	29.1	3.5	2.4
United Kingdom	29.4	9.3	–1.2
Luxembourg	31.8	15.1	9.9

6.1.1 Physical work environment

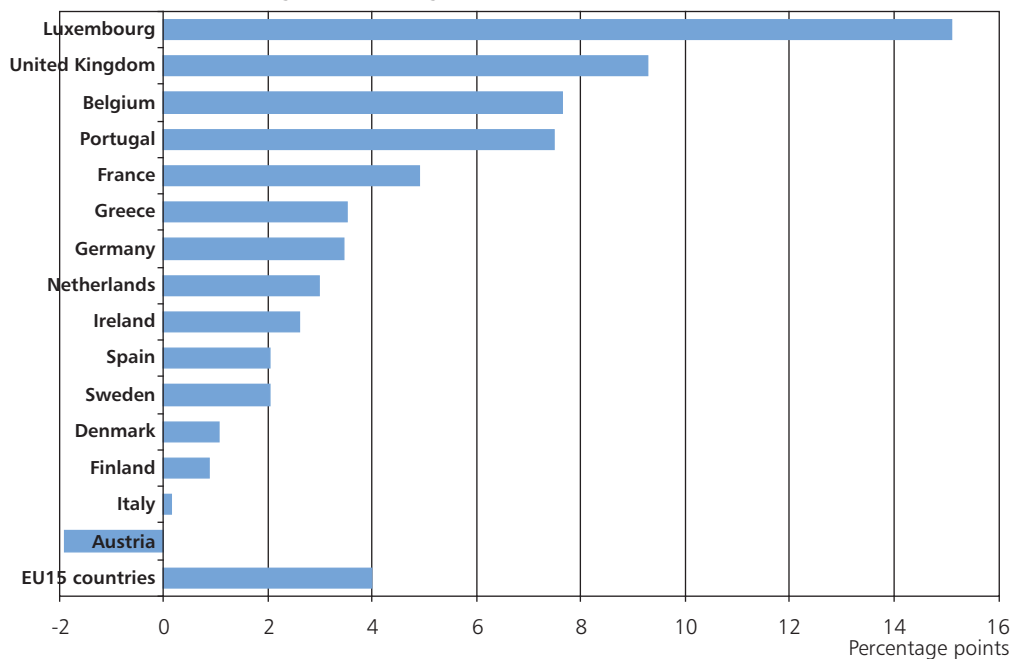
Noise

The aspect of occupational noise was addressed with the question: “Are you exposed at work to noise that is so loud that you must raise your voice to talk to people?” The proportion of over-45-year-old **men** exposed to noise more than half of their worktime was 23.1% in 2000. This was nearly 4 percentage points greater than in 1996 among ageing men in the EU15 countries (Table 37).

The most exposure to noise in 2000 was reported by men in Luxembourg, the United Kingdom, and Greece (>29%), and the least occurred in Italy, Denmark, Belgium, and Austria (<20%). Exposure to noise had increased since 1996 especially in Luxembourg (>14 percentage points), but also in the United Kingdom, Belgium, and Portugal (Figure 52).

Older men were more exposed to noise than younger men (by approximately 10 percentage points), especially in Luxembourg. In most countries, the situation was reversed, younger workers being more exposed than older ones. The biggest differences existed in Ireland and Denmark (approximately 6 percentage points) (Appendix 1).

Figure 52. Change in exposure to noise (unable to hear normal speaking voice) from 1996 to 2000 among over-45-year-old men in the EU15 countries, listed in the order of the change from the highest to the lowest.



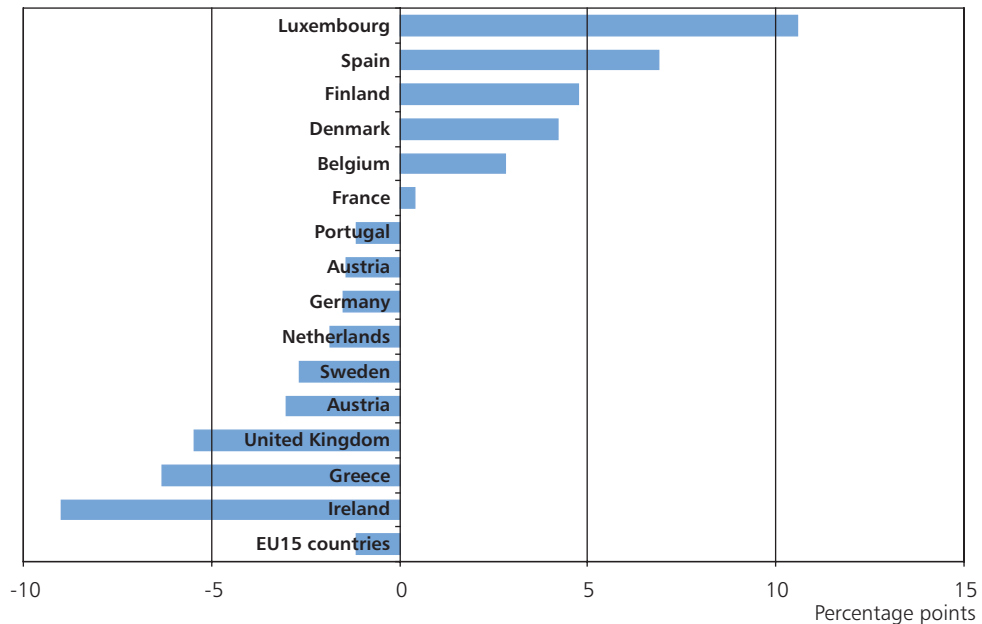
Exposure to noise among ageing **women** was much less common than among men. In 2000 this figure was 10.3%, which was slightly more than 1 percentage point less than in 1996. The most exposure to noise was reported in Luxembourg, Finland, and Denmark (>15%) and the least in Austria, Germany, and the Netherlands (<10%) (Table 38). The exposure to noise had increased the most among women in Ireland, Greece, and the United Kingdom (Figure 53).

The difference between older and younger women was not notable. In Luxembourg, ageing women were clearly more exposed to noise than younger women (by approximately 15 percentage points), whereas the situation was reversed in Ireland (Appendix 2).

Table 38. Exposure to noise (unable to hear normal speaking voice) for at least half of the worktime among over-45-year-old women in the EU15 countries in 1996 and 2000, changes in 1996–2000 and the difference between over- and under-45-year-old female workers in 2000, countries listed in the order of the prevalence of exposure in 2000 from the lowest to the highest.

	2000 (>45 years) (%)	Change in 2000–1996 (% points)	Difference between age groups (>45– <45 years) (% points)
EU15 countries	10.3	–1.1	–0.8
Austria	4.6	–3.0	–2.7
Germany	5.3	–1.5	–3.1
Netherlands	7.5	–1.9	–1.4
Ireland	10.5	–9.0	–7.4
Sweden	11.5	–2.7	–3.0
Italy	11.7	–1.4	2.0
Portugal	12.1	–1.2	–2.4
United Kingdom	12.5	–5.5	2.1
Belgium	12.7	2.8	2.0
France	12.8	0.4	–3.2
Greece	13.7	–6.3	–2.4
Spain	13.9	6.9	4.3
Denmark	15.1	4.2	–0.7
Finland	15.8	4.8	–1.9
Luxembourg	18.0	10.6	14.7

Figure 53. Change in exposure to noise (unable to hear normal speaking voice) from 1996 to 2000 among over-45-year-old women in the EU15 countries, listed in the order of the change from the highest to the lowest.



Vibration

Of the **men** over 45 years of age, 20.8% were exposed to vibration caused by handheld tools or machines for a duration of over half of their worktime in 2000. This amount of exposure had remained almost the same since 1996 in the EU15 countries. The exposure to vibration was the most common among Greek, Spanish, and Finnish men (>25%) and the least common among Danish, Swedish, Dutch, and Belgian men (<15%) in 2000 (Table 39).

There were, however, notable differences between the member states concerning the extent and nature of the change (Figure 54). In 1996 the highest exposure to vibration was documented in Greece (34.5%) and Spain (28.5%), but the level of exposure to vibration was higher than the average also in Austria, Ireland, and France. Of these countries, the situation in Austria, Ireland, and Greece had improved the most by 2000. No visible change for the better had taken place in France and Spain, on the other hand. In spite of the positive trend in Greece, the country still had the largest number of men over 45 years of age who had been exposed to vibration (31.1%) in 2000.

The proportion of men exposed to vibration seemed to have increased in Finland and Luxembourg by approximately 6 percentage points. There had been a negative change also in Portugal, Belgium, the Netherlands and Sweden, but, except for Portugal, the level of vibration had been notably under the average when compared with the levels in other EU15 countries in 2000. In summary, positive changes had taken place in three countries where the level of vibration had earlier been high (Greece, Austria, and Ireland); no changes occurred in this respect in two countries (Spain and France); and in Finland the exposure of male workers to vibration had increased significantly during the follow-up.

There was a 2 percentage-point difference between the younger and older men concerning the level of exposure to vibration in 2000 (older men, higher exposure). The difference was the largest in Greece, where older men's

Table 39. Exposure to vibration (from handheld tools, machines, etc.) for at least half of the worktime among over-45-year-old men in the EU15 countries in 1996 and 2000, changes in 1996–2000 and the difference between over- and under-45-year-old male workers in 2000, countries listed in the order of the prevalence of exposure in 2000 from the lowest to the highest.

	2000 (>45 years) (%)	Change in 2000–1996 (% points)	Difference between age groups (>45–<45 years) (% points)
EU15 countries	20.8	–0.1	–1.7
Denmark	8.4	–0.9	–2.9
Sweden	11.4	2.6	–2.7
Netherlands	14.1	2.7	1.9
Belgium	14.9	3.1	–4.2
Italy	16.1	1.5	–2.2
Austria	19.2	–6.1	–4.7
Luxembourg	19.7	5.8	–0.9
United Kingdom	20.7	–1.8	–3.6
Ireland	20.9	–3.4	–1.1
Germany	22.1	–0.3	–1.7
France	22.8	–0.8	–0.7
Portugal	23.3	3.6	–5.6
Finland	25.6	6.8	–0.1
Spain	27.9	–0.6	1.1
Greece	31.1	–3.4	5.1

Figure 54. Change in exposure to vibration (from handheld tools, machines, etc., for at least half of the worktime) from 1996 to 2000 among over-45-year-old men in the EU15 countries, listed in the order of the change from the highest to the lowest.

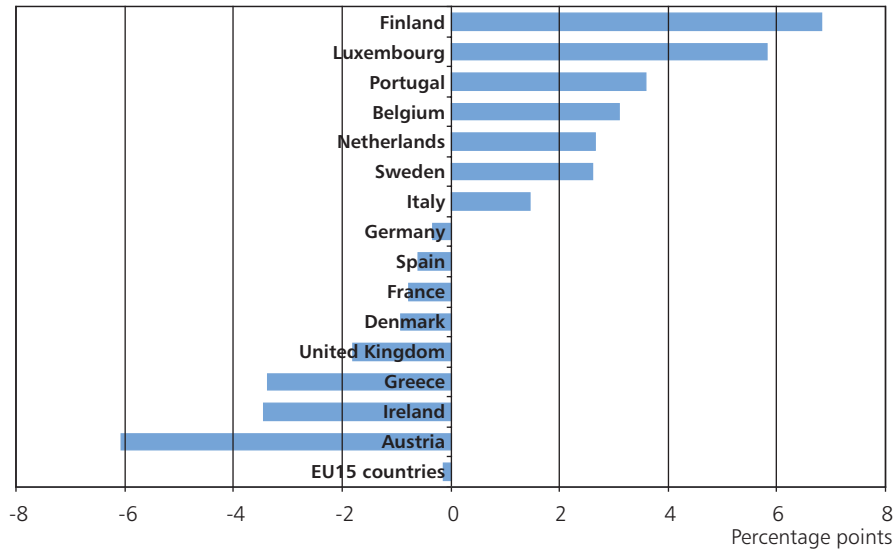


Figure 55. Change in exposure to vibration (from handheld tools, machines, etc.) for at least half of the worktime from 1996 to 2000 among over-45-year-old women in the EU15 countries, listed in the order of the change from the highest to the lowest.

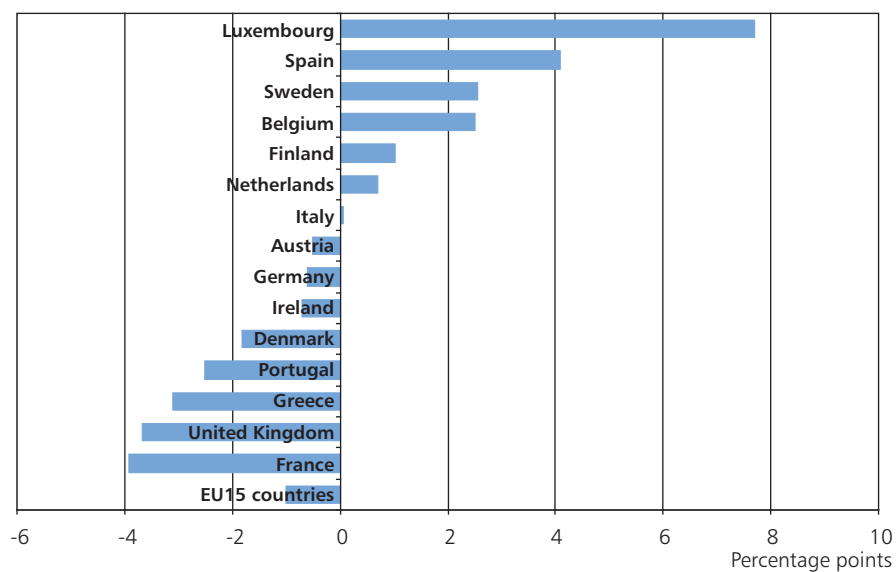


Table 40. Exposure to vibration (from handheld tools, machines, etc.) for at least half of the worktime among over- 45-year-old women in the EU15 countries in 1996 and 2000, changes in 1996–2000 and the difference between over- and under-45-year-old female workers in 2000, listed in the order of the prevalence of exposure in 2000 from the lowest to the highest.

	2000 (>45 years) (%)	Change in 2000–1996 (% points)	Difference between age groups (>45– <45 years) (% points)
EU15 countries	6.2	–1.0	–0.3
Netherlands	3.5	0.7	0.7
Denmark	3.9	–1.8	–1.0
Germany	4.5	–0.6	–2.2
Belgium	4.7	2.5	0.2
Sweden	5.0	2.6	1.4
France	5.1	–3.9	–3.8
United Kingdom	5.3	–3.7	1.6
Austria	5.6	–0.5	–0.6
Ireland	6.6	–0.7	–0.2
Luxembourg	7.7	7.7	3.3
Finland	8.8	1.0	1.1
Spain	9.1	4.1	1.7
Portugal	9.6	–2.5	–4.9
Italy	9.9	0.1	3.6
Greece	14.4	–3.1	4.1

exposure to vibration was 5 percentage points greater than younger men's. On the other hand, younger workers in Portugal, Austria, and Belgium had been more exposed to vibration (>4 percentage points) (Appendix 3).

Exposure to vibration was much less common among over-45-year-old women than among men in the European Union. Nonetheless, a slight decrease of 1 percentage point had taken place in the EU15 countries in general (from 7.3% in 1996 to 6.3% in 2000). Exposure to vibration was the most common among Greek women (14%), but almost 10% of the women in Italy, Portugal, and Spain had also been exposed (Table 40).

In 1996, women exposed to vibration were especially found in the over-45-year age range in Greece and Portugal, as well as in Italy, France, and the United Kingdom in that, in these countries, this group of women had more than the average amount of exposure. The situation had improved in all of

these countries except Italy (Figure 55). The fact that the situation had worsened in Spain made the country fourth with respect to the prevalence of exposure to vibration among female workers in the EU15 countries in 2000.

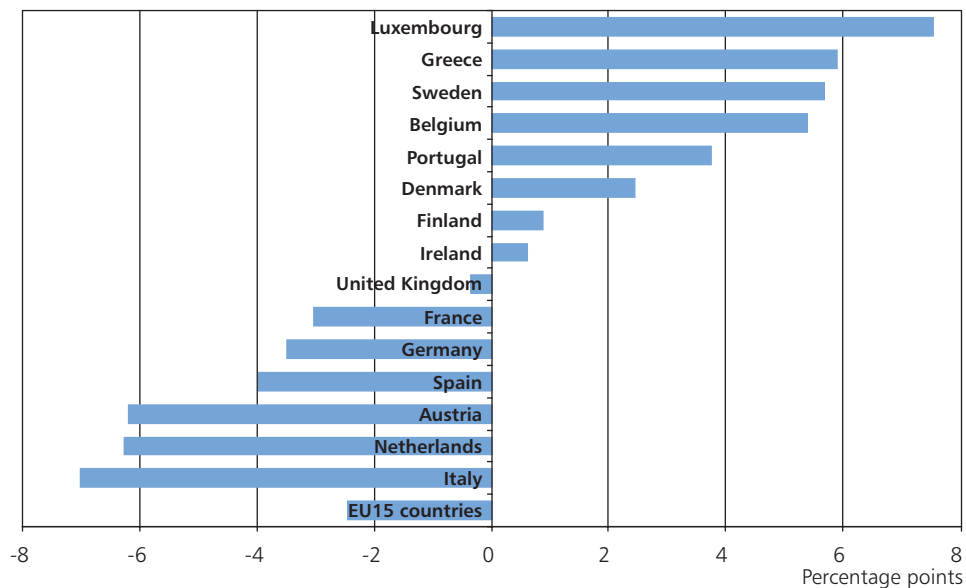
No pertinent differences in the exposure to vibration were evident among the younger and older female workers in 2000. The differences were the greatest in Greece and Italy, where older women were more exposed to vibration than younger ones. On the other hand, older women in Portugal and France were less exposed than younger women by approximately 4 percentage points (Appendix 4).

Impurities in the ambient air

The following question was asked concerning impurities in ambient air: *“How often are you exposed at work to gases, smoke, dust, or dangerous substances such as chemicals, infectious materials, and the like in the ambient air?”* Only the results concerning the **men** are included in this presentation since such exposure was so rare for women in the EU15 countries.

In 2000, 18.2% of ageing men were exposed to impurities in the ambient air. The exposure had decreased by over 2 percentage points since 1996. The exposure was the most common in Greece (45.9%), but every fourth man

Figure 56. Change in exposure to impurities in the ambient air (for at least half of the worktime) from 1996 to 2000 among over-45-year-old men in the EU15 countries, listed in the order of the change from the highest to the lowest.



in Finland, Portugal, Luxembourg, France, and Spain was also exposed in 2000. The least exposure was reported in the Netherlands and Denmark (<10%) (Table 41). What is more notable, however, is the great differences between countries in the amount of exposure.

There were also differences in the direction and amount of change from 1996 to 2000. The exposure had increased among ageing men in Luxembourg, Greece, Sweden, and Belgium (>5 percentage points). On the other hand, it had decreased in Italy, the Netherlands, and Austria (>5 percentage points) since 1996 (Figure 56).

None of the EU15 countries showed any significant differences between the exposure of older and younger men to impurities in the ambient air in 2000. There were two countries, however, in which older men seemed to be exposed more frequently than younger men, namely, Greece (11.4 percentage-

Table 41. Exposure to impurities in the ambient air for at least half of the work-time among over-45-year-old men in the EU15 countries in 1996 and 2000, changes in 1996–2000 and the difference between over- and under-45-year-old male workers in 2000, listed in order of the prevalence of exposure in 2000 from the lowest to the highest.

	2000 (>45 years) (%)	Change in 2000–1996 (% points)	Difference between age groups (>45– <45 years) (% points)
EU15 countries	18.2	–2.5	–0.9
Netherlands	8.5	–6.3	–4.9
Denmark	9.7	2.5	–1.9
Germany	12.6	–3.5	–0.4
Belgium	12.7	5.4	–1.9
Italy	13.9	–7.0	–0.7
Austria	16.4	–6.2	–0.2
Sweden	19.1	5.7	–0.4
Ireland	19.2	0.6	–3.7
United Kingdom	21.4	–0.3	–3.8
Spain	24.0	–4.0	1.2
France	24.1	–3.0	–1.1
Luxembourg	24.2	7.5	7.8
Portugal	24.8	3.8	0.1
Finland	25.2	0.9	2.1
Greece	45.9	5.9	11.4

point difference) and Luxembourg (7.8 percentage-point difference). The situation was reversed in the Netherlands, the United Kingdom, and Ireland, where older men were exposed more rarely to such impurities than younger ones, by approximately 4 percentage points.

6.1.2 Physical load

Poor work postures

The prevalence of poor work postures was determined from the responses to the following question: “How often does your work involve painful or tiring postures?” In the following section, the results for the workers who were exposed to such postures for over half of their workhours are presented.

Approximately one-third of the over-45-year-old **men** was forced to use poor work postures. This finding indicated an increase of over 3 percentage points from the results in 1996. Poor postures were the most prevailing in Greece (71.0%) but also in Portugal and France (>40%). On the other hand, poor work postures were much less common in Denmark and the Netherlands (<15%) (Table 42).

Poor work postures have become more prevailing in over half of the EU15 countries since 1996. The increase was the greatest among men in the United

Figure 57. Change in poor work postures (for at least half of the worktime) from 1996 to 2000 among over-45-year-old men in the EU15 countries, listed in the order of the change from the highest to the lowest.

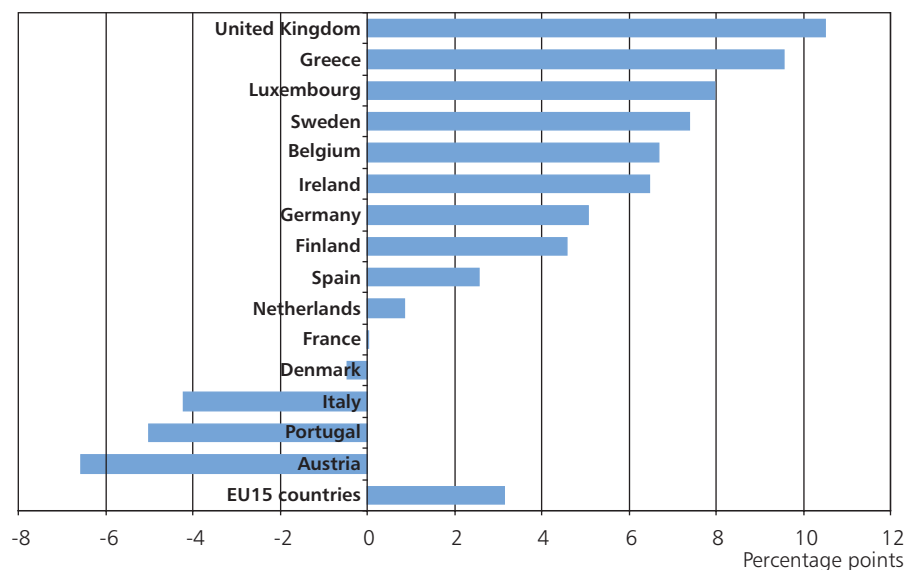


Table 42. Poor work postures for at least half of the worktime among over-45-year-old men in the EU15 countries in 1996 and 2000, changes in 1996–2000 and the difference between over- and under-45-year-old male workers in 2000, listed in the order of the prevalence of poor work postures in 2000 from the lowest to the highest.

	2000 (>45 years) (%)	Change in 2000–1996 (% points)	Difference between age groups (>45– <45 years) (% points)
EU15 countries	32.4	3.1	0.5
Denmark	12.5	–0.4	–3.1
Netherlands	13.7	0.8	–4.3
Sweden	23.8	7.4	–5.7
Austria	25.7	–6.6	–0.7
Belgium	26.9	6.7	–0.6
Germany	27.2	5.1	3.6
Ireland	28.7	6.5	–4.9
Luxemburg	28.8	8.0	–2.7
Italy	29.4	–4.2	–3.3
Finland	31.1	4.6	3.8
United Kingdom	33.0	10.5	1.1
Spain	39.0	2.6	–0.9
France	43.2	0.0	–1.3
Portugal	45.7	–5.0	6.4
Greece	71.0	9.6	13.1

Kingdom and Greece (>9 percentage points) and also Luxembourg, Sweden, Belgium, and Ireland (>6 percentage points) during the 4 years of follow-up. The situation had improved, however, among ageing men in especially Austria, but also in Portugal and Italy (Figure 57).

A difference between older and younger men was not apparent when poor work postures were examined for all of the EU15 countries. There were differences between countries, however. In Greece, older men used poor work postures far more often than younger men (13.1 percentage-point difference). The situation was reversed in Sweden and Ireland (approximately 5 percentage points in favor of older men) (Appendix 6).

As for the men, approximately one-third of ageing **women** used poor work positions. The situation had worsened since 1996, but only by slightly more than 1 percentage point. About two-thirds of the Greek women reported

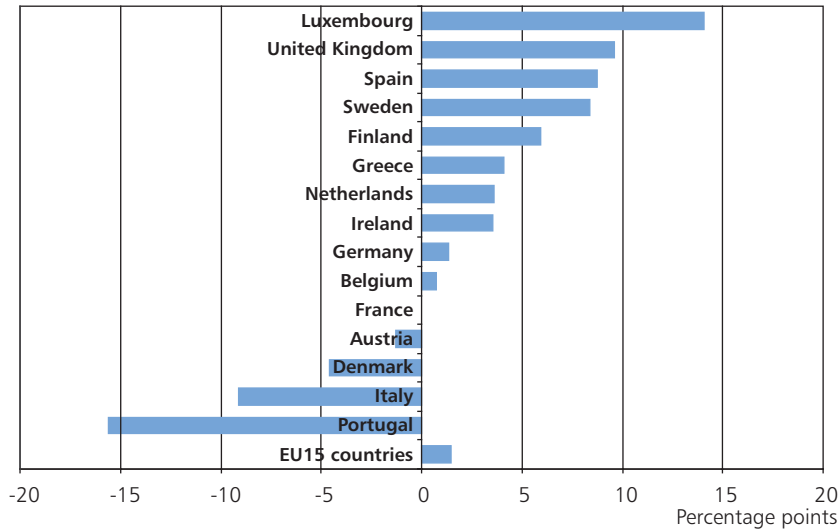
the use of poor work postures. Consequently Greece was in its own league when the situation of women was compared between countries. Spanish and French women also used poor work positions frequently (>40%). In Denmark and the Netherlands, approximately every fifth woman over 45 years of age used poor work positions. It is thus evident that there were great differences in the prevalence of poor work postures among both women and men (Table 43).

The change from 1996 to 2000 proved that the use of poor work positions had become more prevailing among ageing women. The transition was the most notable in the United Kingdom and Greece (>9 percentage points). The respective change was over 6 percentage points for Luxembourg, Sweden, Belgium, and Ireland. On the other hand, the situation had improved in Austria, Portugal, and Italy (Figure 58).

Table 43. Poor work postures for at least half of the worktime among over-45-year-old women in the EU15 countries in 1996 and 2000, changes in 1996–2000 and the difference between the over- and under 45-year-old female workers in 2000, countries listed in the order of the prevalence of exposure in 2000 from the lowest to the highest.

	2000 (>45 years) (%)	Change in 2000–1996 (% points)	Difference between age groups (>45– <45 years) (% points)
EU15 countries	34.6	1.5	3.3
Portugal	19.0	–4.6	–3.7
Italy	20.4	3.6	–0.1
Denmark	21.8	–1.3	–3.4
Austria	28.1	–9.1	–1.1
France	29.3	0.7	–1.0
Belgium	31.2	1.4	4.7
Germany	31.6	3.6	–0.2
Ireland	33.3	5.9	4.0
Netherlands	33.3	14.1	2.9
Greece	35.7	8.4	–2.8
Finland	37.0	9.6	6.7
Sweden	37.4	–15.6	–2.5
Spain	41.8	0.0	–0.8
United Kingdom	46.1	8.7	13.5
Luxembourg	64.1	4.1	20.1

Figure 58. Change in poor work postures (for at least half of the worktime) from 1996 to 2000 among over-45-year-old women in the EU15 countries, listed in the order of the change from the highest to the lowest.



Older women used poor postures approximately 3 percentage points more frequently than younger women. Greece was an exception to the rule in that older women used poor positions approximately 20 percentage points more often than younger women. The difference was also notable in Spain and clear in the United Kingdom, where older women used poor work postures more frequently than younger women (Appendix 7).

Handling of heavy loads

The question for handling heavy loads was “*How often does your work involve carrying or moving heavy loads?*” In the following section, the proportions of those over-45-year-old workers who had to handle heavy loads for more than half of their workhours are presented.

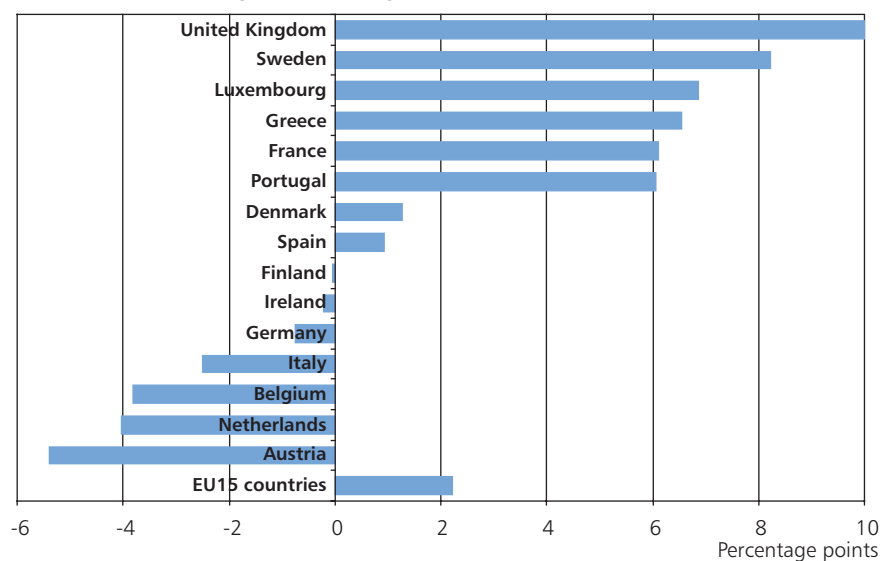
In 2000, 24.3% of working **men** handled heavy loads, which represented an over 2 percentage-point increase from 1996. This problem was the most prevalent in Greece (44.1%), but, likewise, one-third of French and British men handled heavy loads. The least of heavy loads were handled in the Netherlands and Denmark (approximately 10%). The differences between the EU15 countries were considerable (Table 44).

The situation of ageing men handling heavy loads in the EU15 countries did not improve during the follow-up. Quite the contrary, the handling of heavy loads had increased in the United Kingdom by approximately 10 percentage

Table 44. Handling of heavy loads for at least half of the worktime among over-45-year-old men in the EU15 countries in 1996 and 2000, changes in 1996–2000 and the difference between over- and under-45-year-old male workers in 2000, countries listed in the order of the prevalence of heavy load handling in 2000 from the lowest to the highest.

	2000 (>45 years) (%)	Change in 2000–1996 (% points)	Difference between age groups (>45–<45 years) (% points)
EU15 countries	24.3	2.2	–4.1
Netherlands	9.7	–4.0	–4.5
Denmark	10.6	1.3	–5.8
Luxembourg	15.2	6.9	–6.0
Belgium	15.3	–3.8	–7.0
Italy	15.5	–2.5	–3.9
Finland	19.3	0.0	1.3
Austria	19.6	–5.4	–6.0
Germany	19.7	–0.8	–6.8
Sweden	20.1	8.2	–4.6
Portugal	25.2	6.1	–2.4
Ireland	25.9	–0.2	–3.5
Spain	27.1	0.9	–5.2
United Kingdom	32.6	10.0	–6.1
France	36.1	6.1	1.4
Greece	44.1	6.6	11.9

Figure 59. Change in the handling of heavy loads for at least half of the worktime from 1996 to 2000 among over-45-year-old men in the EU15 countries, listed in the order of the change from the highest to the lowest.



points and also in Sweden (by approximately 8 percentage points). It had also increased in four other countries by over 6 percentage points. The trend was reversed only in Austria, where the handling of heavy loads had lessened by over 5 percentage points (Figure 59).

In general, older men handled heavy loads clearly more seldom than younger men. In several countries older men had to do so 5 percentage points more seldom than younger men. The situation was decidedly reversed exclusively in Greece, where older men handled heavy loads almost 12 percentage points more often than younger men (Appendix 8).

The handling of heavy loads was obviously far less frequent among ageing **women** than among the men. Nonetheless, the work of 16.9% of the women involved heavy physical labor in 2000. There had been an almost 3 percentage-point increase since 1996. In five countries, heavy loads were handled by every fifth ageing woman. These countries included Greece, Sweden, France, the United Kingdom, and Spain. On the other end of the scale were, among others, Italy, Denmark, and the Netherlands, where fewer than 11% of the ageing women had to manage heavy physical labor (Table 45).

As with the men, the situation of ageing women had declined on the average since 1996. There were, however, notable differences between countries. The greatest increase in physical load among ageing women occurred in Sweden (approximately 10 percentage points). The increase was 6 percentage points

Figure 60. Change in the handling of heavy loads for at least half of the worktime from 1996 to 2000 among over-45-year-old women in the EU15 countries, listed in the order of the change from the highest to the lowest.

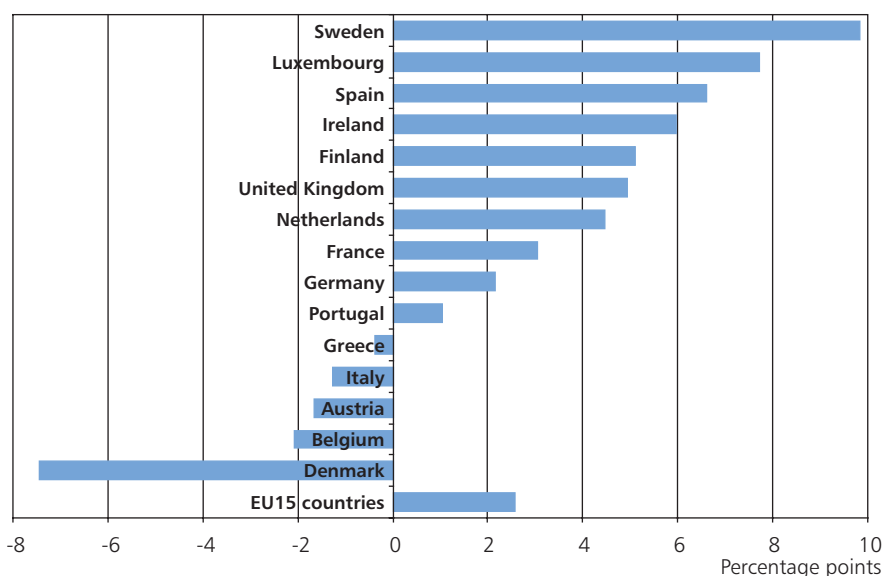


Table 45. Handling of heavy loads for at least half of the worktime among over-45-year-old women in the EU15 countries in 1996 and 2000, changes in 1996–2000 and the difference between over- and under-45-year-old female workers in 2000, countries listed in the order of the prevalence of heavy load handling in 2000 from the lowest to the highest.

	2000 (>45 years) (%)	Change in 2000–1996 (% points)	Difference between age groups (>45– <45 years) (% points)
EU15 countries	16.9	2.6	0.6
Italy	7.0	–1.3	–1.0
Denmark	10.5	–7.5	–3.4
Netherlands	11.0	4.5	–2.4
Austria	12.2	–1.7	–2.7
Portugal	12.5	1.1	–2.4
Belgium	13.3	–2.1	–5.7
Ireland	14.5	6.0	0.3
Luxembourg	15.4	7.7	2.4
Germany	16.2	2.2	3.4
Finland	18.9	5.1	1.6
Spain	20.6	6.6	3.4
United Kingdom	21.6	4.9	–0.3
France	21.9	3.1	–1.5
Sweden	23.0	9.8	–2.4
Greece	24.2	–0.4	12.0

or more also in Luxembourg, Spain, and Ireland. Only in Denmark did ageing women have to handle heavy loads less often than in 1996 (>7 percentage points less). This finding indicates that there has been a significant change in different directions in two Scandinavian countries (Figure 60). It remains to be seen whether the change was caused by, for example, the increase in nursing occupations in Sweden and the decrease in agricultural work among ageing women in Denmark.

As older men had to handle heavy loads more seldom than younger men, there was no difference among the older and younger women. In some countries, such as Greece, older women had to handle distinctly more heavy loads than younger women (12 percentage-point difference). On the other hand, the situation was reversed in Belgium by 6 percentage points. In Greece the work older women do in agriculture may explain the differences between the age groups (Appendix 9).

Factors explaining the handling of heavy loads

The prevalence of heavy load handling in the same data has also been examined with a logistic regression model and odds ratios (OR) (Molinie 2003). Odds ratios were adjusted for gender, age, country, size of enterprise, status, and sector. The results from 2000 with respect to the handling of heavy loads were as follows:

- more prevalent among men (OR 1.00) than among women (OR 0.85)
- more prevalent among young people (15 to 24 years of age, OR 1.00) than among older people, the prevalence decreasing from the youngest age group to the oldest (over-55-year-olds, OR 0.72)
- somewhat as prevalent in France (OR 1.00), Greece, Spain, Luxembourg, the United Kingdom, and Sweden and—compared with these countries—significantly less prevalent in the other countries, such as the Netherlands (OR 0.42)
- more prevalent in small enterprises (of 1–9 employees) than in larger ones
- more prevalent among employees (a fourfold prevalence) than among management and supervisors
- significantly more prevalent in agriculture (OR 1.00) than in industry or the service sector (OR 0.55).

Of the employees that had to handle heavy loads for more than half of their workhours, approximately as many reported having occupational back pain. About half of the younger age group reported occupational back pain, but the pain tended to increase with age until the workers reached an age of 45–54 years and then began to decrease. Back pain may be one factor that prevents over-55-year-old men from handling heavy loads. Women, on the other hand, lift heavy loads despite back pain. Nearly 80% of the women over 55 years of age who had to handle heavy loads daily experienced back pain and pain in the neck and upper extremities (Molinie 2003).

Repetitive work

The prevalence of repetitive work was determined with the question “*How often does your work involve repetitive hand or arm movements?*” This section describes the results concerning repetitive work that consists of at least half of a person’s workhours.

Repetitive hand or arm movements were common among over-45-year-old **men**. An average of 44.2% of men did repetitive movements in the EU15 countries in 2000. This figure was somewhat the same as in 1996. Over half

of the ageing men did repetitive work in Spain, Greece, Portugal, France, and Finland. The least repetitive work occurred in Denmark and Germany, but even there the respective figure was nearly one-third of ageing men (Table 46).

Even though there was no indication of a change among men on the average, the extent of the change and the direction of change varied between countries. According to the data collected in 1996 in countries in which there was a lot of repetitive work (Greece, France, the United Kingdom, Spain, and Finland), there was improvement among over-45-year-old men mainly in the United Kingdom and Greece. On the other hand, the situation in Spain had deteriorated by nearly 10 percentage points, and, in 2000, as many workers as 63.5% described their work as repetitive. The most notable negative change took place in Sweden, however. While in 1996 only 17.2% of the

Table 46. Repetitive work (with hand or arm) for at least half of the worktime among over-45-year-old men in the EU15 countries in 1996 and 2000, changes in 1996–2000 and the difference between over- and under-45-year-old male workers in 2000, countries listed in the order of the prevalence of repetitive work in 2000 from the lowest to the highest.

	2000 (>45 years) (%)	Change in 2000–1996 (% points)	Difference between age groups (>45–<45 years) (% points)
EU15 countries	44.2	–1.3	–2.9
Denmark	29.9	1.4	–6.1
Germany	32.3	–5.9	–1.6
Belgium	34.0	–2.0	–9.7
Austria	35.1	–9.8	–2.4
Italy	37.1	–2.8	–4.1
Ireland	42.6	4.7	–8.8
Sweden	43.8	26.6	–6.0
Luxembourg	43.9	18.9	3.5
United Kingdom	47.5	–6.9	–8.4
Netherlands	48.8	–0.0	–5.1
Finland	55.2	2.7	–7.7
France	56.9	1.2	0.2
Portugal	57.0	8.4	5.8
Greece	58.9	–4.1	0.7
Spain	63.5	9.9	2.0

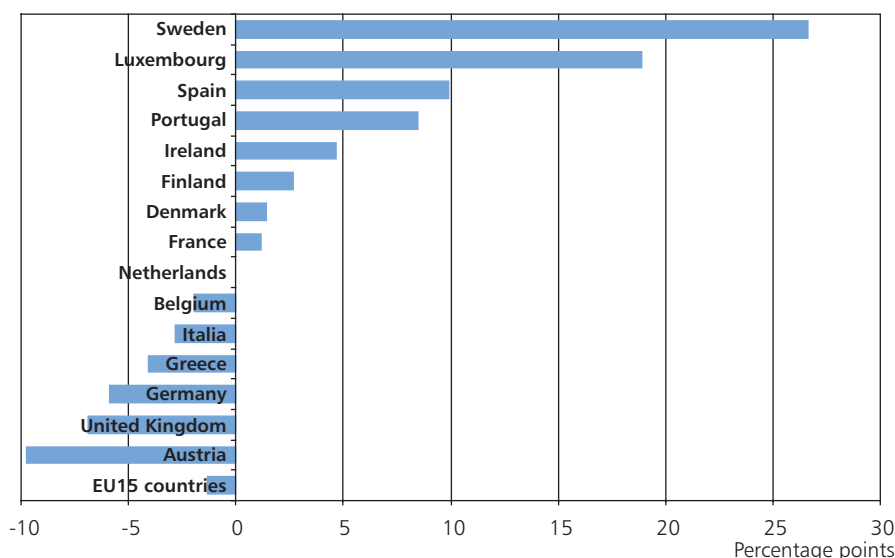
men reported repetitive work, in 2000 the respective figure was 43.8%, a figure indicating an increase of 26.6%. There was a large increase among the men in Luxembourg as well. Only in Austria had there been a 10 percentage-point decrease in repetitive work (Figure 61).

Repetitive work seemed to be less common among older men than among younger men, the difference being approximately 3 percentage points to the benefit of ageing men. Especially in Belgium, Ireland, and the United Kingdom, older men did less repetitive work than younger ones (>8 percentage-point difference). The phenomenon was reversed only in Portugal, where the difference was to the benefit of younger men by about 6 percentage points (Appendix 10).

Nearly one-half of the **women** over 45 years of age did repetitive work in the EU15 countries as well. The largest proportions in this group were in Spain and Finland, where approximately two-thirds of the women did repetitive work. Luxembourg, Germany, and Austria had the smallest proportions, but the proportions there were high as well, consisting of about one-third of working women. (Table 47).

As with the men, the average proportion of repetitive work had not decreased among ageing women in the EU15 countries. On the other hand, the differences between certain countries were great. It is notable that the proportion of repetitive work had decreased in Greece and Portugal, countries that orig-

Figure 61. Change in repetitive work (with hand or arm) for at least half of the worktime from 1996 to 2000 among over-45-year-old men in the EU15 countries, listed in the order of the change from the highest to the lowest.



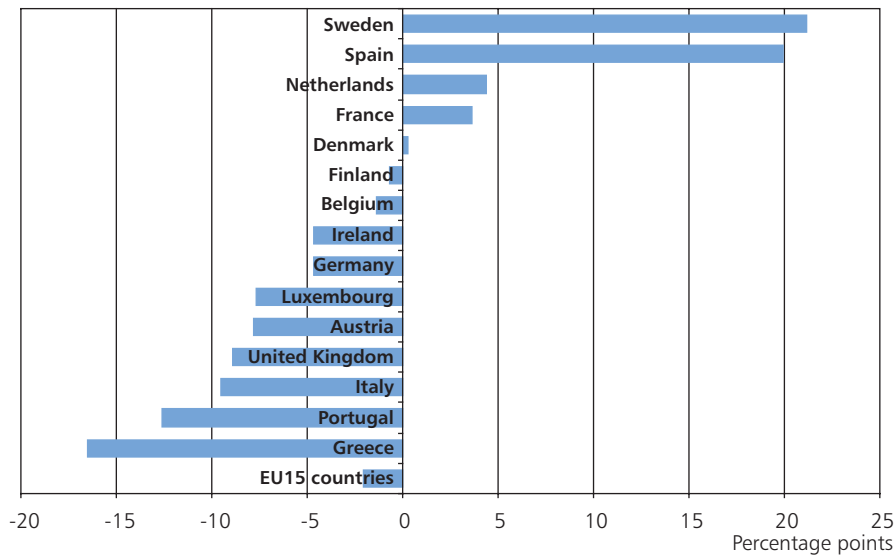
inally belonged to the three nations with the largest proportions of repetitive work. In Spain, however, women reported doing 19.9 percentage points more repetitive work than 4 years earlier, and the proportion of over-45-year-old women in this class was the largest (64.9%) in the EU15 countries in 2000. The country with the most drastic change in the amount of repetitive work among women was Sweden, where a 21.2 percentage-point increase occurred from 1996 to 2000 along with an increase of 52.2% among over-45-year-old women (Figure 62).

This increase among both Swedish men and women doing repetitive work was notable. At the same time there was no pertinent change in the figures for men and women in Finland and Denmark from 1996 to 2000. The amount of repetitive work remained the same as before, and in Denmark the proportion was smaller than in the other EU15 countries. Because the wording of the question was the same in 1996 and 2000, it is not likely that

Table 47. Repetitive work (with hand or arm) for at least half of the worktime among over-45-year-old women in the EU15 countries in 1996 and 2000, changes in 1996–2000 and the difference between over- and under-45-year-old female workers in 2000, countries listed in the order of the prevalence of repetitive work in 2000 from the lowest to the highest.

	2000 (>45 years) (%)	Change in 2000–1996 (% points)	Difference between age groups (>45–<45 years) (% points)
EU15 countries	45.3	–2.1	0.3
Luxembourg	30.8	–7.7	–8.3
Germany	33.2	–4.7	–2.8
Austria	34.5	–7.8	–5.1
Ireland	36.8	–4.7	–9.2
Denmark	37.2	0.3	–3.8
Belgium	39.3	–1.4	–3.4
Italy	40.9	–9.5	–0.2
United Kingdom	43.8	–8.9	–1.4
Portugal	50.2	–12.6	–5.1
Sweden	52.2	21.2	2.6
Greece	54.3	–16.5	3.4
Netherlands	57.2	4.4	–2.3
France	58.2	3.7	6.3
Finland	63.0	–0.7	–0.2
Spain	64.9	19.9	11.0

Figure 62. Change in repetitive work (with hand or arm) for at least half of the worktime from 1996 to 2000 among over-45-year-old women in the EU15 countries, listed in the order of the change from the highest to the lowest.



the interpretation of the question would have affected the results. The use of a computer can be interpreted as repetitive movements of the hand and arm, but there was almost no change in the proportion of computer work in Sweden during the follow-up.

There was no notable difference in the proportions of repetitive work among women under and over 45 years of age in the EU15 countries. Older women reported less repetitive work than younger women, especially in Ireland and Luxembourg. On the other hand, in Spain repetitive work was over 10 percentage points more common among older women than among younger ones. In France this difference was approximately 6 percentage points to the benefit of the younger women (Appendix 11).

6.1.3 Mental demands

Computer use

Approximately one-fourth of the over-45-year-old **men** used a computer at least over half of their worktime. Computer use had increased since 1996 by nearly 4 percentage points among the men. There were, however, great differences between the EU15 countries. While almost half of the men in the Netherlands and Luxembourg used a computer, only 6% of Greek men and 12% of Portuguese men did the same (Table 48).

Table 48. Computer use for at least half of the worktime among over 45-year-old men in the EU15 countries in 1996 and 2000, changes in 1996–2000 and the difference between over- and under-45-year-old male workers in 2000, countries listed in the order of the prevalence of computer use in 2000 from the lowest to the highest.

	2000 (>45 years) (%)	Change in 2000–1996 (% points)	Difference between age groups (>45– <45 years) (% points)
EU15 countries	25.2	3.7	–4.6
Greece	6.3	2.5	–10.0
Portugal	12.4	1.3	–7.1
Spain	19.3	3.7	–5.0
Germany	20.8	–0.2	–4.2
Ireland	22.0	9.6	–2.6
Italy	23.6	5.2	–8.5
Finland	23.7	0.5	–7.5
Denmark	26.0	3.2	–8.9
France	27.8	9.8	0.9
United Kingdom	30.4	0.6	–7.0
Austria	30.4	8.9	–2.5
Sweden	31.1	2.9	0.5
Belgium	34.0	5.9	–4.0
Luxembourg	43.9	9.6	5.5
Netherlands	47.2	12.6	–4.0

Computer use had increased in nearly all of the EU15 countries during 1996 and 2000. The change was the greatest in the Netherlands (>12 percentage points). The increase was over 8 percentage points in France, Luxembourg, Ireland, and Austria among ageing men. Minimal changes had occurred in Germany, Finland, the United Kingdom, and Portugal (Figure 63).

Younger men used a computer more than older men in nearly all of the countries. The difference was over 4 percentage points. The greatest differences occurred in Greece, Denmark, and Italy, where older men used a computer over 8 percentage points less than younger men. In Luxembourg, the difference was reversed in that younger men used computers 5 percentage points less than older men (Appendix 12).

As among the men, also one-fourth of the ageing **women** used a computer for more than half of their worktime. Computer use had become more common among women than men by more than 5 percentage points from 1996

Figure 63. Change in computer use for at least half of the worktime from 1996 to 2000 among over-45-year-old men in the EU15 countries, listed in the order of the change from the highest to the lowest.

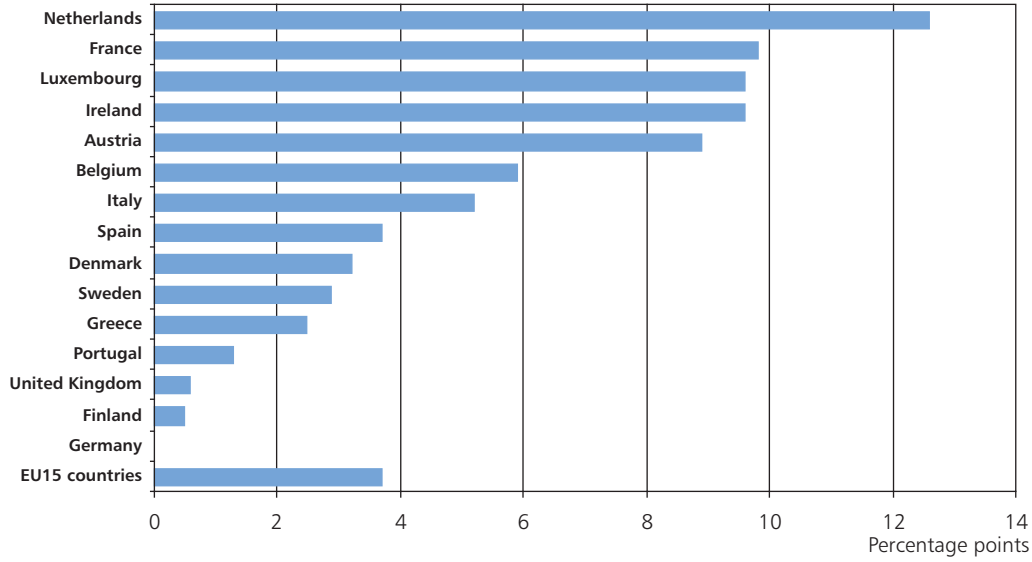


Figure 64. Change in computer use for at least half of the worktime from 1996 to 2000 among over-45-year-old women in the EU15 countries, listed in the order of the change from the highest to the lowest.

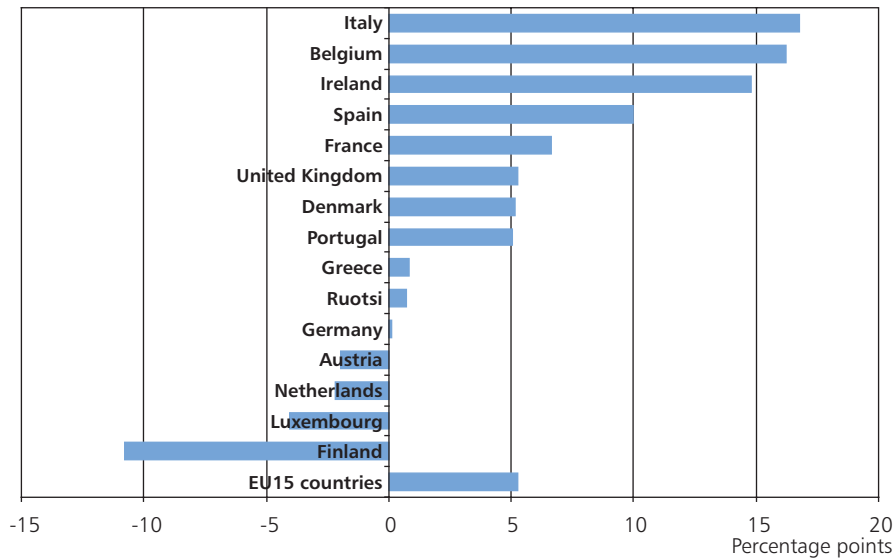


Table 49. Computer use for at least half of the worktime among over-45-year-old women in the EU15 countries in 1996 and 2000, changes in 1996–2000 and the difference between over- and under-45-year-old female workers in 2000, countries listed in the order of the prevalence of computer use in 2000 from the lowest to the highest.

	2000 (>45 years) (%)	Change in 2000–1996 (% points)	Difference between age groups (>45– <45 years) (% points)
EU15 countries	26.4	5.3	–7.4
Greece	5.9	0.8	–17.3
Portugal	12.9	5.1	–8.9
Spain	17.0	10.0	–14.3
Italy	23.4	16.8	–12.1
Austria	24.4	–2.0	–6.2
Finland	24.6	–10.8	–7.8
Germany	25.1	0.1	–5.1
Luxemburg	25.6	–4.0	–15.7
Denmark	29.5	5.1	–7.3
France	29.6	6.7	–2.9
Ireland	29.6	14.8	–9.6
United Kingdom	32.2	5.3	–11.4
Sweden	33.9	0.7	7.2
Belgium	36.0	16.2	4.2
Netherlands	39.3	–2.2	–6.8

to 2000. There were great differences between some countries. Computers were the most frequently used by ageing women in the Netherlands, Belgium, Sweden, and the United Kingdom, where one-third or more spent more than half of their time before a computer. However, the use of computers was fairly rare among ageing women in Greece (5.9%) and Portugal (12.9%) (Table 49).

The use of computers increased the most in Italy, Belgium, and Ireland, where there was more than a 15% increment among older computer users. The most important reason for this increase was the initial situation in 1996, when computer use was not common in these countries. At the same time, the Netherlands, Finland, and Sweden had the most computer users in 1996, and, with the exception of Finland, the changes in these countries were small. In Finland, on the other hand, there was a greater reduction (>10 percentage points) in the number of ageing women using computers than in other countries (Figure 64).

As with the men, older women used a computer less than younger women. There was an approximately 7.4 percentage-point difference between the age groups in 2000. The trend was similar in almost all of the countries. The greatest differences were found in Greece and Luxembourg (>15 percentage points), but the difference was over 10 percentage points also in Spain, Italy, and the United Kingdom. Only in Sweden and Belgium did older women use a computer more often than younger women (Appendix 13).

Tight schedules

The question “*Does your work involve tight schedules?*” was used to clarify workers’ relation to pressing timetables. These results are examined for the people whose work involved haste at least half of their worktime.

Time pressure at work was prevalent among ageing **men**. Approximately 48.2% of them reported having to work with tight schedules in 2000. This finding indicated a 2 percentage-point increase from 1996. There were considerable differences, however, between different countries. The United Kingdom was in its own league with regard to time pressure at work (69.6%), but more than half of the ageing men in Austria, Germany, and Finland reported tight schedules as well. Portuguese and Spanish men were the least rushed at work (<30%) (Table 50).

The prevalence of tight schedules did not decrease between 1996 and 2000. On the contrary, busy nations remained busy also in 2000 with the exception of Austria. There the time pressure of ageing men was reduced significantly, by nearly 18 percentage points. The United Kingdom, where there were the most tight work schedules reported already in 1996, increased its lead with regard to ageing men by 8 percentage points, the increase adding to the difference between this country and the other EU15 countries. A more unhurried worklife prevailed among Portuguese and Spanish men (Figure 65).

Tight work schedules were clearly more of a problem for younger men than for older ones. Older men were approximately 6.7% less busy at work than younger men in the EU15 countries in 2000. The difference was over 10 percentage points for Denmark, Italy, Sweden, and Belgium to the benefit of older men. Only in Luxembourg was the situation reversed (Appendix 14).

Time pressure at work was not as prevalent among **women** as among men. Over one-third of all of the women did, however, report tight schedules—over 2 percentage points more than in 1996, as among the men. More than half of all of the ageing women in Sweden and Finland reported tight work schedules. Haste at work was far less common in, especially, Portugal, but

Table 50. Tight work schedules (rigid deadlines) for at least half of the worktime among over-45-year-old men in the EU15 countries in 1996 and 2000, changes in 1996–2000 and the difference between over- and under-45-year-old male workers in 2000, countries listed according to the prevalence of tight work schedules in 2000 from the lowest to the highest.

	2000 (>45 years) (%)	Change in 2000–1996 (% points)	Difference between age groups (>45– <45 years) (% points)
EU15 countries	48.2	2.3	–6.7
Portugal	21.7	–1.7	–8.7
Spain	29.8	–2.8	–8.9
Italy	31.9	7.6	–11.8
Belgium	34.3	2.5	–10.7
Denmark	38.3	2.9	–13.0
Netherlands	42.3	8.8	–6.9
Greece	45.9	9.4	–3.5
France	46.9	–1.3	–6.6
Luxemburg	48.5	8.8	10.8
Sweden	49.2	1.5	–10.9
Ireland	49.8	2.0	–5.8
Finland	51.1	–4.8	–5.8
Germany	54.1	0.9	–7.2
Austria	57.9	–17.9	–6.7
United Kingdom	69.6	8.0	1.1

also in Spain, when compared with female workers in the Scandinavian countries (Table 51).

The prevalence of tight work schedules varied between countries, as it did with regard to the men. Haste had increased among the women in the countries in which it had been less common in 1996, for example, in the Netherlands, Belgium, and Italy. A significant increase in time pressure at work in Sweden placed it first on the list of the EU15 countries in 2000. In the countries in which female workers had been the busiest in 1996, tight schedules had decreased, especially in Austria but also in Denmark, the United Kingdom, and Finland. Portuguese women reported less rush in spite the fact that tight work schedules had been uncommon already in 1996 (Figure 66).

Tight work schedules were less common among older women than among younger women, as among the men. The difference was approximately 5 per-

Figure 65. Change in tight work schedules (rigid deadlines) for at least half of the worktime from 1996 to 2000 among over-45-year-old men in the EU15 countries, listed according to the change from the highest to the lowest.

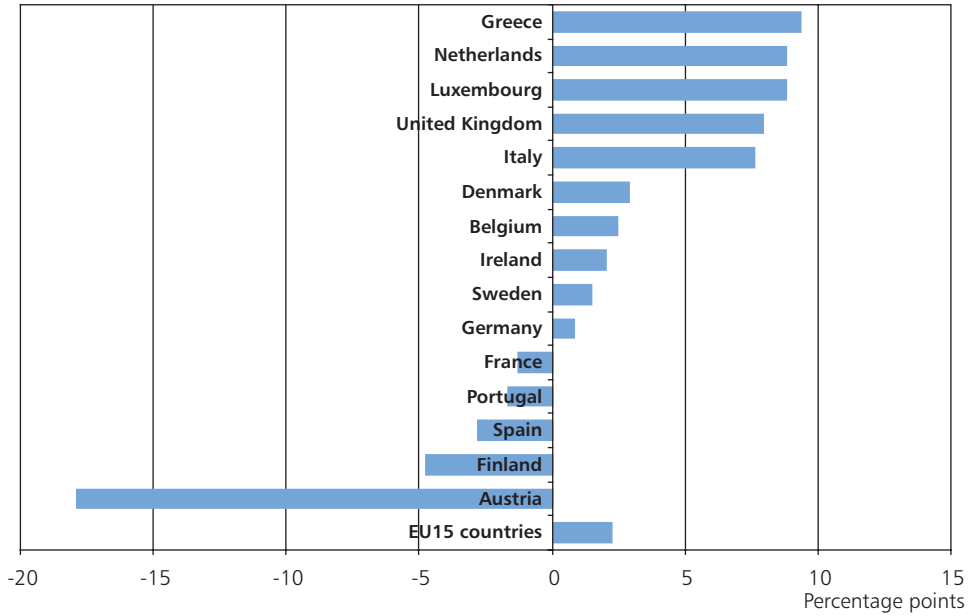


Figure 66. Change in tight work schedules (rigid deadlines) for at least half of the worktime from 1996 to 2000 among over 45-year-old women in the EU15 countries, ranked according to the change from the highest to the lowest.

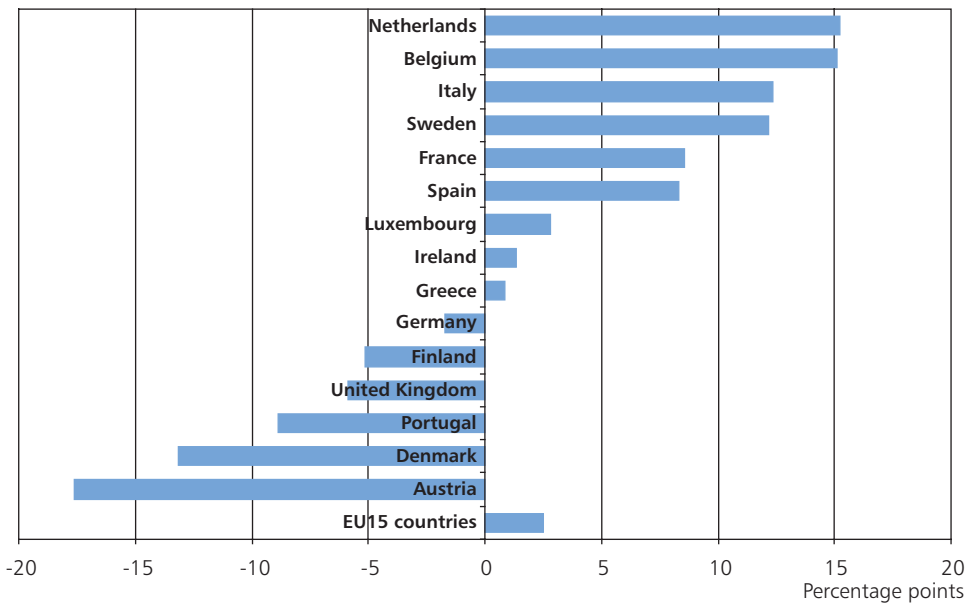


Table 51. Tight work schedules (rigid deadlines) for at least half of the worktime among over-45-year-old women in the EU15 countries in 1996 and 2000, changes in 1996–2000 and the difference between over- and under-45-year-old female workers in 2000, countries ranked according to the prevalence of tight work schedules in 2000 from the lowest to the highest.

	2000 (>45 years) (%)	Change in 2000–1996 (% points)	Difference between age groups (>45– <45 years) (% points)
EU15 countries	37.8	2.5	–4.9
Portugal	12.5	–8.9	–12.1
Spain	27.3	8.3	0.8
Luxemburg	30.8	2.8	–7.2
France	34.2	8.6	–9.9
Netherlands	34.3	15.3	–3.8
Italy	36.3	12.3	–2.6
Ireland	36.8	1.4	–16.2
Denmark	37.2	–13.1	–4.9
Germany	37.3	–1.7	–7.5
Belgium	37.6	15.1	3.1
Austria	40.1	–17.6	0.7
Greece	42.5	0.8	0.2
United Kingdom	48.6	–5.9	–2.9
Finland	51.2	–5.2	–2.9
Sweden	51.9	12.2	–2.7

centage points to the benefit of older women. The difference was greatest in Ireland (>15 percentage points), but it was at least 10 percentage points also for Portugal and France (Appendix 15).

Sources of tight schedules

Logistic regression models and risk ratios for factors that explain busy work schedules show that industrial constraints were more prevalent sources of haste among men than among women. The most prevalent sources among the women were commercial constraints. A combination of the two causes (dual constraints) was more common among men than among women.

The results indicated that there was no difference in tight schedules as a result of industrial constraints. In other words, production demands had not been lightened or eased for older workers; instead the workplace was the same

for everyone. Commercial constraints created tighter schedules systematically up to the age of 45–54 years; thereafter they started to decrease. Young workers were subjected to the combination of industrial and commercial constraints more often than the other age groups.

The reasons for tight work schedules varied in the different countries. In France, Greece, and Spain, industrial constraints were more prevalent as a reason for time pressure than in the other countries. Commercial constraints were the most prevalent, however, in Denmark, the Netherlands, and Austria. Dual constraints were the most common in Finland, but also more prevalent in Greece, Sweden, the United Kingdom, and Spain than in the other countries. Employees were subjected primarily to industrial constraints, while the reasons for supervisors and managers experiencing time pressure were commercial in origin or a combination of the two constraints. The industrial sector had industrial constraints, as well as dual constraints, and the service sector was subjected to tight schedules related to commercial constraints (Molinie 2003).

The most common reason for young workers experiencing tight schedules was pressure brought about by co-workers or supervisors, whose influence lessened among older age groups. Workpace was the most explicitly related to the demands of the work in the 25- to 45-year age group, after which the significance of workpace lessened steadily with age. Dual constraints for tight work schedules seemed to diminish significantly with age. This is apparently a consequence of a strong selection process among senior age groups.

Complex tasks

The existence of complex tasks was investigated by asking “*Does your main job involve complex tasks?*” The response alternatives were “yes” or “no”. The proportions of positive answers among the ageing workers are presented in the following section.

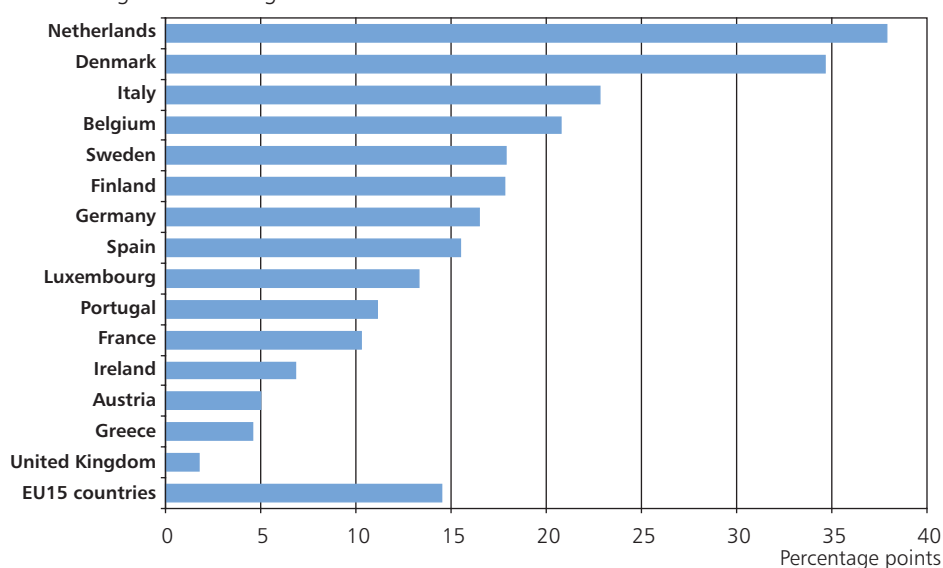
In 2000, 60.5% of ageing **men** reported complex tasks in their jobs. This finding indicated a considerable, 14 percentage-point increase from 1996. These tasks were the most prevalent in Austria, but ageing men also in Finland, the Netherlands, and Denmark reported that they had complex tasks to do at work. The least number of complex tasks was done in the Mediterranean countries, especially in Portugal (Table 52).

The proportion of complex tasks increased among ageing men in all of the EU15 countries in 1996–2000. The change was the most drastic among men in the Netherlands and Denmark, where over a third more men had to deal

Table 52. Complex tasks performed at least half of the worktime among over-45-year-old men in the EU15 countries in 1996 and 2000, changes in 1996–2000 and the difference between over- and under-45-year-old male workers in 2000, countries listed in the order of the prevalence of complex tasks in 2000 from the lowest to the highest.

	2000 (>45 years) (%)	Change in 2000–1996 (% points)	Difference between age groups (>45– <45 years) (% points)
EU15 countries	60.5	14.5	–0.3
Portugal	34.5	11.1	–11.7
Greece	41.1	4.6	–5.4
Italy	47.1	22.8	–1.3
Spain	48.1	15.5	0.7
Belgium	52.6	20.8	–0.5
Luxembourg	53.0	13.3	–5.2
Ireland	54.6	6.8	0.3
France	58.5	10.3	1.8
Iso-Britaniia	63.4	1.8	–3.5
Sweden	65.6	17.9	8.4
Germany	69.7	16.5	0.6
Denmark	70.1	34.7	0.1
Netherlands	71.4	37.9	0.5
Finland	73.7	17.8	–0.8
Austria	80.8	5.0	5.1

Figure 67. Change in complex tasks for at least half of the worktime from 1996 to 2000 among over-45-year-old men in the EU15 countries, listed in the order of the change from the highest to the lowest.



with complex tasks than 4 years earlier (Figure 67). The trend was similar, however, also in the countries in which the proportion of complex tasks was already high in 1996—especially in Finland and Sweden.

The prevalence of complex tasks did not differ among the older and younger men, on the average. Some differences in certain countries were, however, found. In Sweden and Austria, older men had more complex tasks than younger men, whereas the situation was reversed in Portugal, Greece, and Luxembourg, for example (Appendix 16).

Ageing **women**, on the other hand, dealt with complex tasks more seldom than their male counterparts. Nevertheless, nearly half of the women reported such tasks in 2000, and their proportion had grown since 1996 in the same manner as among the men (>14 percentage points). The differences between countries were considerable also among the women. At least two-thirds of the ageing women considered complex tasks to be part of their work in Austria, Germany, and Denmark. In Spain and Portugal, the respective figure was approximately one-fourth of the women (Table 53).

The increase in complex tasks among the women concerned all of the EU15 countries except the United Kingdom and Greece; the change was minimal also in Finland. The increase was strongest in the Netherlands and Germany (>25%). In the countries in which more than the average number of women did complex tasks, for example, Sweden and Austria, complex tasks had increased by over 15% (Figure 68).

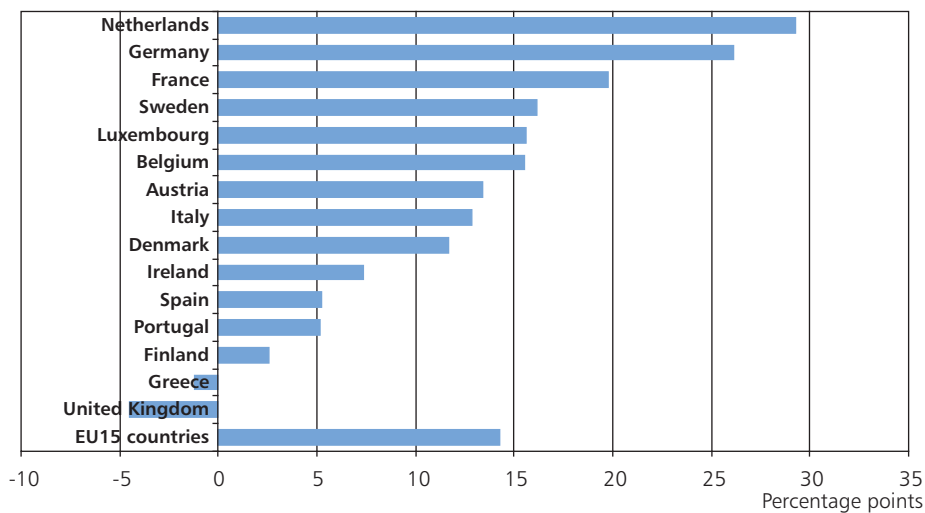
The older women in the EU15 countries had more complex tasks than the younger women by nearly 2 percentage points. The most explicit difference between the age groups occurred in Sweden (approximately 10 percentage points) and in Germany (approximately 8 percentage points), where the work of older women involved more complex tasks than that of younger women in 2000. In Sweden, the difference between the age groups had grown from 1996 to 2000. In Germany, on the other hand, the size of the proportions of complex tasks had changed between the older and younger women. Whereas older women reported complex tasks 3.7 percentage points less than younger women in 1996, in 2000, they reported these types of tasks more than younger women by 7.9 percentage points.

In Austria, Finland, Spain, Portugal, and Denmark, the work of older women involved fewer complex tasks than that of younger women by 4–6 percentage points (Appendix 17).

Table 53. Complex tasks performed for at least half of the worktime among over-45-year-old women in the EU15 countries in 1996 and 2000, changes in 1996–2000 and the difference between over and under-45-year-old female workers in 2000, countries listed in the order of the prevalence of complex tasks in 2000 from the lowest to the highest.

	2000 (>45 years) (%)	Change in 2000–1996 (% points)	Difference between age groups (>45– <45 years) (% points)
EU15 countries	49.5	14.2	1.7
Spain	24.2	5.2	–5.2
Portugal	26.5	5.1	–5.0
Italy	36.8	12.8	–0.7
Belgium	38.0	15.5	1.0
Greece	40.5	–1.2	1.4
Ireland	42.8	7.4	0.5
Luxembourg	43.6	15.6	1.2
France	45.4	19.8	2.6
Netherlands	48.3	29.3	–0.2
United Kingdom	50.0	–4.5	–1.5
Sweden	55.9	16.2	10.1
Finland	58.9	2.6	–5.6
Denmark	62.0	11.7	–4.0
Germany	65.2	26.2	7.9
Austria	71.1	13.4	–6.2

Figure 68. Change in complex tasks for at least half of the worktime from 1996 to 2000 among over-45-year-old women in the EU15 countries, listed in the order of the change from the highest to the lowest.



Learning new things at work

Learning new things at work can be seen both as an indicator of the continuing changes in the demands of worklife and as a potential for workers to develop their skills. Thus acquiring new skills can be a motivating factor or a factor creating more stress, depending on how it relates to the person's earlier skills and his or her ability to learn new things. The results gathered in 1996 indicated that learning new things was common at work and that an average of 7 ageing workers out of 10 did so in their work (Ilmarinen 1999b).

The phenomenon was investigated with the question "*Does your main job involve learning new things?*" The response alternatives were "yes" or "no". The following section presents the proportions of respondents that answered "yes" to the question.

Approximately two-thirds of the ageing **men** reported learning of new things at work in 2000. The result indicated a decrease of over 6 percentage points in comparison with the results of 1996, however. Learning was the most prevalent among over-45-year-old men in Finland, Denmark, Sweden, and the Netherlands, where over 80% of the ageing men responded positively to the question. Learning was less common especially in Greece (over one-third of the men responded "yes") but also in Portugal (nearly half of the men answered "yes") (Table 54).

The prevalence of learning new things seems to have dropped among ageing men from 1996 to 2000. The reduction was the strongest in Portugal and Luxembourg, but there was nearly a 10 percentage-point decrease also in Germany, the United Kingdom, and Austria. Learning new things at work was less common in countries in which much is learned outside of work, such as Finland and Sweden, where learning new things at work seldom occurred. The Scandinavian countries, together with the Netherlands, were where learning new things at work remained common (Figure 69).

Younger men learned new things in their work more often than older men in nearly all of the EU15 countries, the difference being approximately 6 percentage points. The difference was the largest, in favor of younger workers, in Portugal and Greece (>15 percentage-point difference). The difference between the age groups was smaller in the Netherlands and Sweden (Appendix 18).

Ageing **women** learn new things at work approximately as often as men. Less than two-thirds of the women reported learning new things at work in the EU15 countries in 2000. As among the men, the differences between countries were considerable among the women. In the Scandinavian countries,

Table 54. Learning new things at work among over-45-year-old men in the EU15 countries in 1996 and 2000, changes in 1996–2000 and the difference between over- and under-45-year-old male workers in 2000, countries listed in the order of the prevalence of learning new things in 2000 from the lowest to the highest.

	2000 (>45 years) (%)	Change in 2000–1996 (% points)	Difference between age groups (>45– <45 years) (% points)
EU15 countries	67.1	–6.5	–6.3
Greece	37.5	–4.5	–15.4
Portugal	48.5	–16.3	–17.7
Ireland	63.5	–0.8	–4.0
Germany	63.6	–9.6	–5.3
Spain	65.5	2.5	–3.3
Italy	65.7	–7.5	–9.7
Austria	66.4	–9.1	–6.1
Luxembourg	66.7	–13.6	–9.3
United Kingdom	68.8	–9.6	–7.9
France	72.2	–5.5	–4.3
Belgium	72.8	3.9	–4.4
Netherlands	80.2	5.8	–1.4
Sweden	80.6	–6.3	1.0
Denmark	82.0	1.7	–4.9
Finland	82.6	–5.7	–8.2

over 80% of ageing women learned new things at work in 2000, whereas, in Greece and Portugal, a maximum of one-third of the ageing women were able to learn something new (Table 55).

Learning new things was reduced by approximately 5 percentage points among the ageing women, as among the men, from 1996. The reduction was about 10 percentage points, especially in Germany, Portugal, and Greece. Such nations as the Scandinavian countries, where worktasks commonly involve learning, remained at the top of the EU15 countries also in 2000 (Figure 70).

Learning new things was approximately 7 percentage points more prevalent among the younger women than among the older ones in all of the EU15 countries except Sweden, where older women learned approximately 5 percentage points more than younger women. The differences among the women were the greatest in favor of younger women in Greece (about 25 percentage points), Portugal, and Spain (>15 percentage points) (Appendix 19).

Figure 69. Change in learning new things at work from 1996 to 2000 among over-45-year-old men in the EU15 countries, listed in the order of the change from the highest to the lowest.

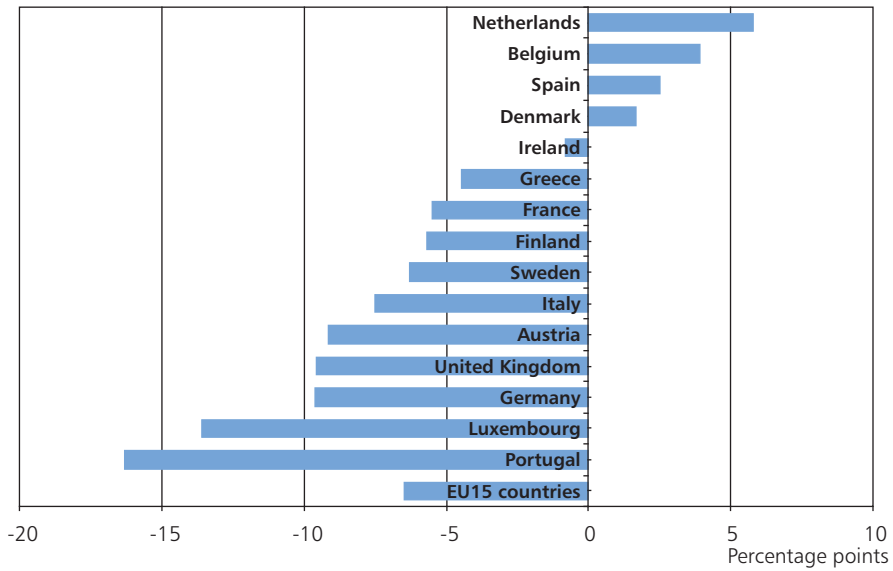
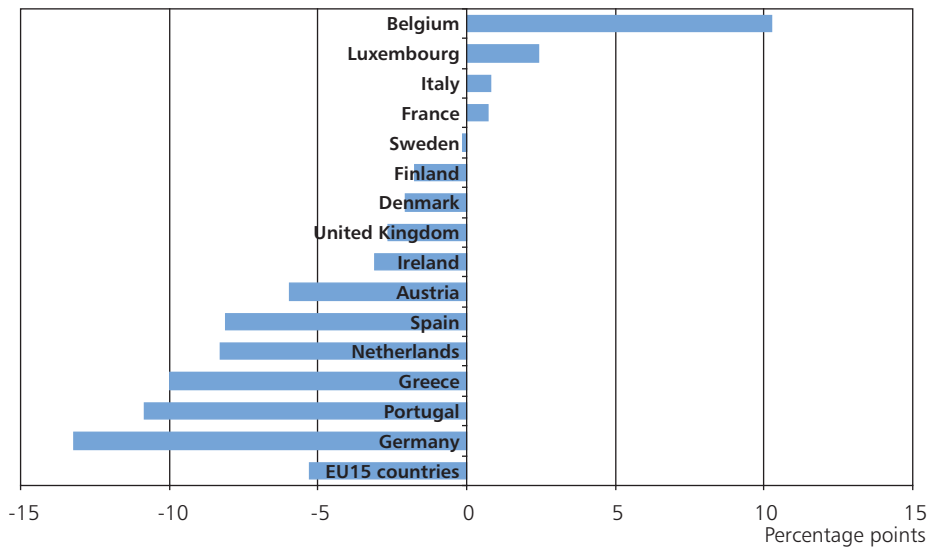


Figure 70. Change in learning new things at work from 1996 to 2000 among over-45-year-old women in the EU15 countries, listed in the order of the change from the highest to the lowest.



Work thus seems to be a common and important place for learning for everyone, even for ageing workers. This being the case, it is possible to meet the needs of adult education at the workplace. (The training and learning of ageing workers was examined earlier in Section 4.7.)

Table 55. Learning new things at work among over-45-year-old women in the EU15 countries in 1996 and 2000, changes in 1996–2000 and the difference between over- and under-45-year-old female workers in 2000, countries listed in the order of the prevalence of learning new things in 2000 from the lowest to the highest.

	2000 (>45 years) (%)	Change in 2000–1996 (% points)	Difference between age groups (>45– <45 years) (% points)
EU15 countries	62.5	–5.3	–7.4
Greece	28.8	–10.0	–25
Portugal	34.9	–10.8	–19.5
Spain	44.9	–8.1	–16.4
Germany	59.1	–13.2	–8.0
Austria	59.9	–6.0	–9.0
Ireland	59.9	–3.1	–7.5
Italy	64.9	0.8	–4.7
France	66.3	0.7	–6.9
Belgium	68.7	10.3	–1.8
United Kingdom	68.8	–2.6	–5.2
Netherlands	70.2	–8.3	–6.2
Luxemburg	74.4	2.4	0.5
Denmark	85.7	–2.0	–2.1
Finland	87.2	–1.8	–2.2
Sweden	87.6	–0.2	6.1

6.1.4 Regulating one's work

The right to regulate one's own work is important for everyone, but especially for ageing workers. This need is generated by the increase in personal differences with age. Work experience refines the work methods and conventions of people, who adjust to working in ways that suit them best. This change comes close to the so-called SOC model, in which selecting, optimizing and compensating offer the best premise for coping with the demands of work and worklife (see Section 4.6.3 concerning mental functional capacity).

If workers are able to make their own choices and adjust to their work according to their own resources, aptitudes, and routines, they will cope well in their work. On the other hand, carefully planned work processes with a set pace and minimal possibility for individual variation will lead to an unsatisfactory result as ageing takes place. The following sections shed light on

four aspects of work which workers need to be able to regulate their work, namely, taking breaks at work, managing the order of worktasks, choosing work methods and practices, and controlling the workplace. Finally, all of these aspects of control are examined together, and the situation in the EU15 countries in 2000 is summarized.

Taking breaks

The question “*Can you take a break whenever you want?*” was used to examine taking breaks at work. The response alternatives were “yes” and “no”. Approximately 68.0% of the ageing **men** were able to take breaks at will. This situation had not changed since 1996. There were, however, differences between countries. In 2000, at least three-fourths of the Italian, Danish, Swedish, and French men were able to have breaks while working. In Germany, the Netherlands, and Spain, however, a similar opportunity was available for less than two-thirds of the men. On the other hand, the differences within countries also indicate that most ageing men hold positions in which they are able to take their breaks at will (Table 56).

Even though the prevalence of taking breaks had not changed in the EU15 countries as a whole between 1996 and 2000, there were changes within countries. In Austria, taking breaks at will had increased among the men by more than 10 percentage points. In Luxembourg and Portugal, however, the possibilities to have breaks had decreased considerably (>15 percentage points) (Figure 71).

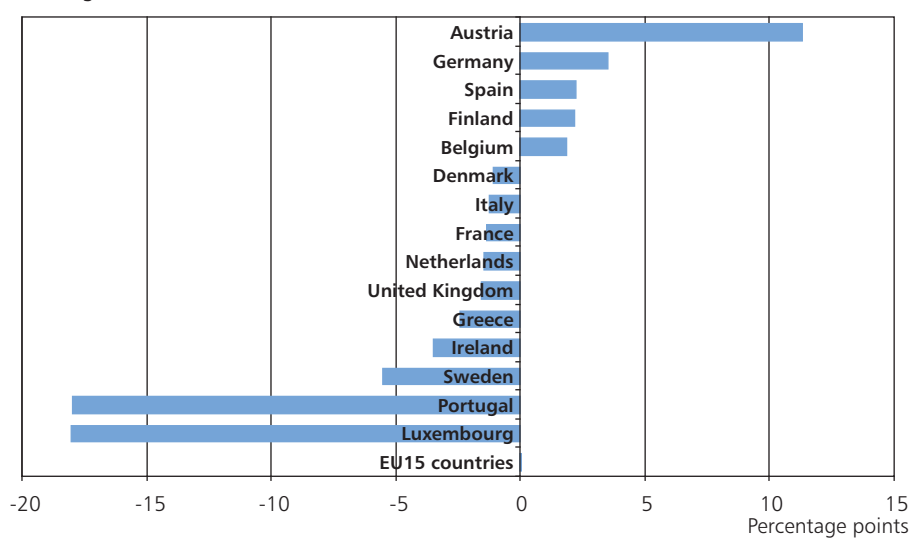
Taking breaks was more common among the older men than among the younger ones by an average of about 8 percentage points in the EU15 countries in 2000. The situation was parallel in all of the countries. The difference between the older and younger men was the greatest in Sweden (about 14 percentage points), Greece, the United Kingdom, and Ireland (>10 percentage points), whereas the smallest differences between the age groups existed in Luxembourg and Portugal (<2 percentage points). Taking breaks seemed to be well in-hand concerning ageing in all of the EU15 countries, even though improvements were still needed in many nations. Despite the positive trend, the situation had not improved since 1996, and approximately one-third of the ageing male workers was still not able to take breaks at will (Appendix 20).

Ageing **women** took fewer breaks than the ageing men in 2000. More than half of the women were able to have a break at will, but there had been a more than 2 percentage-point decline in the figure since 1996 in the EU15 countries. As among the men, there were also great differences between the women in different countries. In Portugal, France, and Italy, two-thirds of

Table 56. Ability to take breaks at will among over-45-year-old men in the EU15 countries in 1996 and 2000, changes in 1996–2000 and the difference between over- and under-45-year-old male workers in 2000, countries listed in the order of the prevalence of the ability to take breaks at will in 2000 from the lowest to the highest.

	2000 (>45 years) (%)	Change in 2000–1996 (% points)	Difference between age groups (>45– <45 years) (% points)
EU15 countries	68.1	0.0	8.0
Germany	55.4	3.5	7.3
Netherlands	63.3	–1.5	3.6
Spain	63.5	2.2	8.7
Austria	65.9	11.3	9.3
Luxembourg	66.7	–18.0	0.9
Belgium	67.2	1.9	5.4
Greece	69.5	–2.4	11.3
Portugal	70.9	–18.0	2.1
United Kingdom	71.0	–1.6	11.0
Ireland	71.6	–3.5	10.9
Finland	73.3	2.2	3.4
France	75.1	–1.3	8.1
Sweden	77.6	–5.5	13.9
Denmark	79.1	–1.1	8.2
Italy	82.3	–1.2	6.4

Figure 71. Change in the ability to take breaks at will from 1996 to 2000 among over-45-year-old men in the EU15 countries, listed in the order of the change from the highest to the lowest.



the women could have a break at will, whereas, in the Netherlands, Belgium, and Germany, less than half of the women had the same right (Table 57).

Compared with the situation in 1996, the opportunity to have a break at will had decreased in many countries. The worst situation was found in Luxembourg (>20 percentage points) and Portugal (>10 percentage points). In seven other countries, the ability to take a break at will had also decreased (>5 percentage points). The situation had improved only in Austria, as among the men (Figure 72).

The difference between the older and younger women in having breaks was not as noticeable as among the men. In most of the countries, older women were able to control their break time better than younger women, especially in Austria, Greece, Luxembourg, and Ireland, the difference being over 10 percentage points in favor of the older women. In some countries, such as Italy, however, older women had fewer opportunities to have breaks at will than younger women (Appendix 21).

Thus the trend for ageing women taking breaks at will was not as good in direction or prevalence as among the men. This difference can naturally be explained by the different worktasks among the different genders, as well as by the prevalence of part-time work, which differed considerably in the different countries.

Figure 72. Change in the ability to take breaks at will from 1996 to 2000 among over-45-year-old women in the EU15 countries, listed in the order of the change from the highest to the lowest.

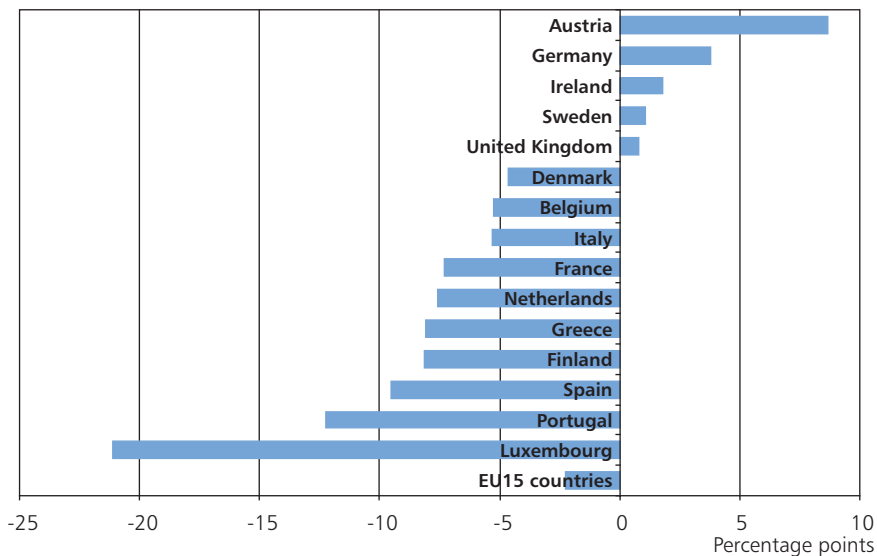


Table 57. Ability to take breaks at will among over-45-year-old women in the EU15 countries in 1996 and 2000, changes in 1996–2000 and the difference between over- and under-45-year-old female workers in 2000, countries listed in the order of the prevalence of the ability to take breaks at will in 2000 from the lowest to the highest.

	2000 (>45 years) (%)	Change in 2000–1996 (% points)	Difference between age groups (>45– <45 years) (% points)
EU15 countries	56.0	–2.3	3.4
Netherlands	43.8	–7.6	2.1
Belgium	45.3	–5.3	–2.8
Germany	47.8	3.8	6.3
Finland	50.2	–8.1	–2.8
United Kingdom	51.4	0.8	2.1
Sweden	52.8	1.1	8.0
Spain	55.8	–9.5	0.9
Denmark	57.8	–4.6	–0.5
Ireland	58.6	1.8	10.8
Greece	61.4	–8.1	12.5
Luxembourg	64.1	–21.1	11.9
Austria	64.5	8.7	14.1
Italy	65.5	–5.3	–5.6
France	67.9	–7.3	5.0
Portugal	75.1	–12.3	9.0

Order of worktasks

The question “*Are you able to choose the order of your worktasks or change their order?*” was used to clarify the ability of workers to regulate the order in which they choose to do their work. The response alternatives were “yes”, “no”, or “I do not know”. The following section examines the proportions of the affirmative responses.

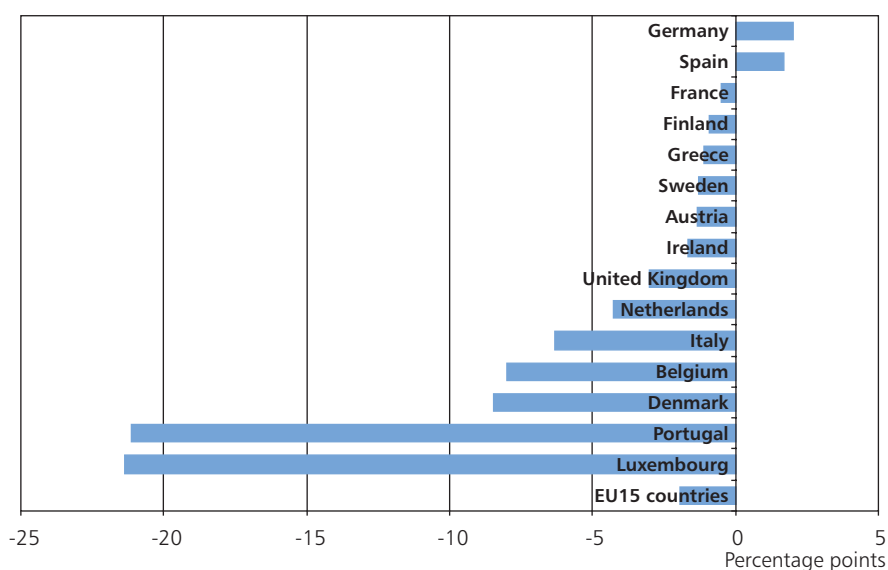
Of the ageing **men** in the EU15 countries, approximately two-thirds could choose the order in which they worked or change that order in 2000. This opportunity had lessened by an average of approximately 2 percentage points since 1996. In Sweden and Denmark over 80% of the ageing men and in the Netherlands, Finland, Ireland, and Belgium over 70% of the ageing men were able to make these choices. In Portugal, Luxembourg, and Italy such choices were possible for more than half of the men (Table 58).

The development from 1996 to 2000 indicates that the right to manage work order has decreased. The greatest decline took place in Luxembourg

Table 58. Ability to choose or change the order of worktasks among over-45-year-old men in the EU15 countries in 1996 and 2000, changes in 1996–2000 and the difference between over- and under-45-year-old male workers in 2000, countries listed in the order of the prevalence of the ability to choose or change the order of work tasks in 2000 from the lowest to the highest.

	2000 (>45 years) (%)	Change in 2000–1996 (% points)	Difference between age groups (>45– <45 years) (% points)
EU15 countries	65.9	–2.0	4.5
Portugal	52.3	–21.1	–2.6
Luxemburg	56.1	–21.4	–3.5
Italy	58.5	–6.3	1.5
Austria	62.6	–1.3	2.4
Germany	62.6	2.0	8.6
Spain	65.2	1.7	10.1
Greece	66.5	–1.1	9.8
United Kingdom	67.4	–3.0	3.1
France	69.3	–0.5	0.8
Belgium	70.2	–8.0	4.5
Ireland	70.9	–1.7	13.1
Finland	76.3	–0.9	0.7
Netherlands	79.0	–4.3	–1.8
Denmark	81.7	–8.5	2.1
Sweden	85.3	–1.3	7.2

Figure 73. Change in the ability to choose or change the order of worktasks from 1996 to 2000 among over-45-year-old men in the EU15 countries, listed in the order of the change from the highest to the lowest.



and Portugal (>20 percentage points). In Denmark, Belgium, and Italy, the decrease was over 5 percentage points (Figure 73).

Older men were able to regulate the order of their worktasks more often than younger men by 4.5 percentage points. The difference was the greatest in Ireland (>12 percentage points), Spain, and Greece (approximately 10 percentage points). The difference was to the benefit of younger men in three countries, but the difference was small (Table 58, Appendix 22).

Ageing **women** were able to regulate the order of their worktasks as often as the men, the average being 67.1% for the women in 2000. The situation among the women had not deteriorated as it had among the men; instead it had slightly improved since 1996. Among the EU15 countries the possibilities for ageing women to decide on their work order were the best in the Scandinavian countries. The difference between the Scandinavian countries and Ireland, Portugal, and Italy was over 20 percentage points (Table 59).

The changes since 1996 depended on the country. In Luxembourg, Italy, Germany, and Greece, the situation among the ageing women had improved (>5 percentage points), whereas in Spain and Portugal it had deteriorated (Figure 74).

In nearly every country the older women had better opportunities to regulate their work order than younger women. The difference between age groups was greatest in Greece (>15 percentage points). In seven other countries it was also over 5 percentage points to the benefit of older women. Only in Spain was the situation reversed (Table 59, Appendix 23).

Work methods

It was possible for many workers to regulate the work methods they used. Of the ageing **men**, 72.4% was of this opinion. When compared with the situation in 1996, there had been a 2 percentage-point decline. There was little difference between ageing men in different countries. In Sweden, Denmark, and the Netherlands, over 80% of the men were able to regulate their work methods. In Portugal and Spain, the same situation existed for less than two-thirds of the men (Table 60).

In most of the countries, the situation had deteriorated since 1996, in Portugal by as much as 24 percentage points and even in Luxembourg by nearly 18 percentage points and in Belgium and Spain by more than 10 percentage points. Germany and Austria were the only countries in which the situation had improved (Figure 75). A decreasing trend was, therefore, noticeable with respect to the possibility for men to regulate their work methods.

Table 59. Ability to choose or change the order of worktasks among over-45-year-old women in the EU15 countries in 1996 and 2000, changes in 1996–2000 and the difference between over- and under-45-year-old female workers in 2000, countries listed in the order of the prevalence of the ability to choose or change the order of worktasks in 2000 from the lowest to the highest.

	2000 (>45 years) (%)	Change in 2000–1996 (% points)	Difference between age groups (>45– <45 years) (% points)
EU15 countries	67.1	1.6	4.2
Ireland	59.9	3.1	6.7
Portugal	60.2	–10.9	6.7
Italy	61.4	8.5	5.7
Austria	63.5	–0.8	–0.3
Germany	64.4	7.9	7.3
Spain	66.1	–16.6	–2.6
United Kingdom	66.8	–1.1	0.3
Greece	68.0	6.1	15.9
Belgium	70.7	–3.7	3.4
France	70.9	0.7	3.2
Netherlands	76.6	–3.8	3.2
Luxemburg	76.9	13.9	9.5
Finland	78.8	3.2	0.2
Sweden	82.3	–0.4	6.5
Denmark	83.7	–0.3	5.7

Figure 74. Change in the ability to choose or change the order of worktasks from 1996 to 2000 among over-45-year-old women in the EU15 countries, listed in the order of the change from the highest to the lowest.

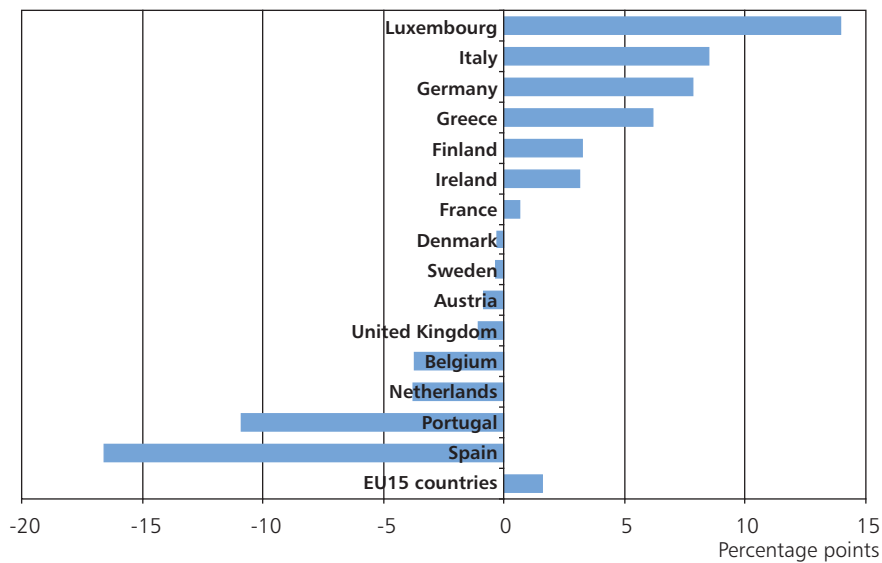
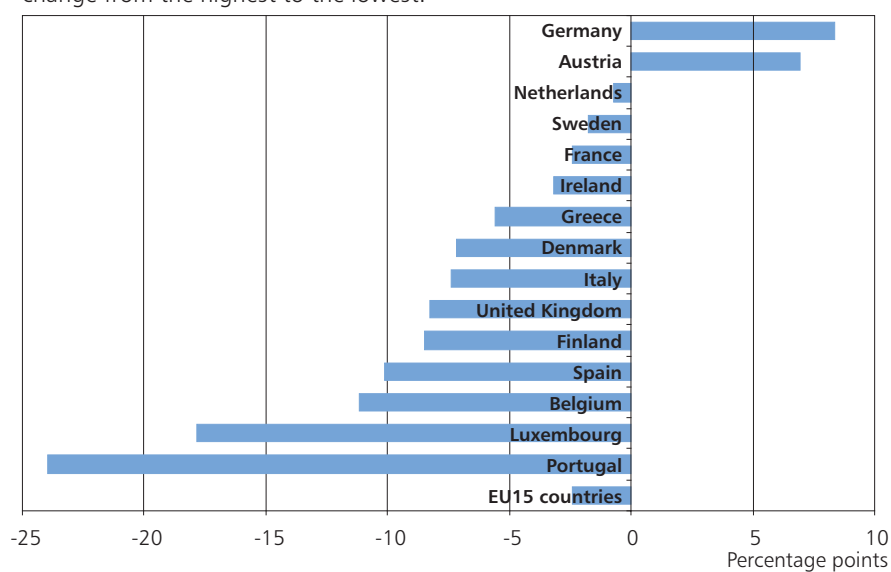


Table 60. Ability to choose or change work methods among over-45-year-old men in the EU15 countries in 1996 and 2000, changes in 1996–2000 and the difference between over- and under-45-year-old male workers in 2000, listed in the order of the prevalence of the ability to choose or change work methods in 2000 from the lowest to the highest.

	2000 (>45 years) (%)	Change in 2000–1996 (% points)	Difference between age groups (>45– <45 years) (% points)
EU15 countries	72.4	–2.4	4.0
Portugal	58.1	–23.9	–1.1
Spain	61.9	–10.1	4.3
Luxemburg	63.6	–17.8	–0.8
Greece	66.2	–5.6	6.9
United Kingdom	67.0	–8.2	3.1
France	68.1	–2.4	1.8
Finland	68.2	–8.5	0.1
Belgium	72.0	–11.2	7.3
Austria	72.0	7.0	7.4
Italy	73.7	–7.4	1.6
Ireland	73.8	–3.2	15.6
Germany	78.2	8.4	7.0
Netherlands	83.1	–0.7	–2.3
Denmark	84.0	–7.2	6.7
Sweden	88.3	–1.8	5.0

Figure 75. Change in the ability to choose or change work methods from 1996 to 2000 among over-45-year-old men in the EU15 countries, listed in the order of the change from the highest to the lowest.



Older men were able to choose or change their work methods 4 percentage points more often than the younger men. Older Irish men were clearly in their own class, since the difference was nearly 16 percentage points in comparison with younger men. The difference between older and younger men was over 6 percentage points in five other countries as well in 2000. In the Netherlands the situation was reversed, but there the difference between the age groups was small (Table 60, Appendix 24).

Ageing **women** were approximately in as good a position to manage their work methods as the men in 2000. About 73.3% of over-45-year-old women stated that they did have a say in the use of their work methods in 2000; there was over a 2 percentage-point improvement in the 1996 results. The respective figure for the men had declined as much in 4 years. The differences between countries were small in comparison with those of the other forms of regulation, as among the men. Over 80% of women had control over their work methods in Sweden, Denmark, the Netherlands, and Germany. Over 60% of the ageing women in six countries reported similar control. The least control over work methods was reported in Portugal (Table 61).

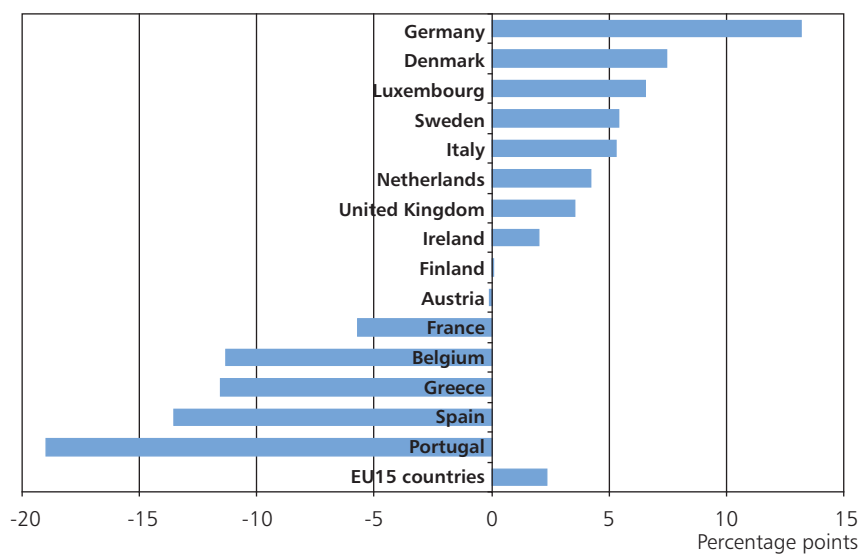
When the differences in 1996 and 2000 were examined, two groups emerged—depending roughly on the quality of the change. The status of women had improved especially in Germany (>13 percentage points), but also in Denmark, Luxembourg, Sweden, and Italy (>5 percentage points). On the other hand, reverse development had occurred in the other group (proportionally more so than in the group in which the situation had improved). In Portugal the opportunity for ageing women to regulate their work methods had decreased by as much as 19 percentage points; in Spain, Greece, and also Belgium the respective figure was over 10 percentage points (Figure 76).

The older women were able to choose their work methods more often than the younger women. The difference between the age groups was less than 4 percentage points to the benefit of the older women. In almost every country except Austria, the older women were in a better situation than the younger women. The greatest differences between age groups existed in Ireland, Luxembourg, and Greece (>8 percentage points), to the benefit of the older women. But Ireland was in its own league also when the age groups of men were compared. The difference was over 4 percentage points in four other countries in favor of older women as well. It could thus be concluded that the possibility to regulate one's work methods seems to support the needs of ageing in worklife in the EU15 countries (Table 61, Appendix 25).

Table 61. Ability to choose or change work methods among over-45-year-old women in the EU15 countries in 1996 and 2000, changes in 1996–2000 and the difference between over- and under 45-year-old female workers in 2000, countries listed in the order of the prevalence of the ability to choose or change work methods in 2000 from the lowest to the highest.

	2000 (>45 years) (%)	Change in 2000–1996 (% points)	Difference between age groups (>45– <45 years) (% points)
EU15 countries	73.3	2.4	3.8
Portugal	61.5	–19.0	4.9
Austria	63.5	–0.1	–1.7
Greece	64.1	–11.5	8.3
Ireland	64.5	2.0	9.0
France	64.8	–5.7	0.2
United Kingdom	66.8	3.6	3.6
Spain	70.3	–13.5	0.0
Belgium	72.0	–11.3	3.2
Finland	74.4	0.1	2.0
Luxembourg	76.9	6.5	8.4
Italy	77.2	5.3	6.1
Germany	80.2	13.2	5.7
Netherlands	81.6	4.2	5.2
Denmark	84.2	7.4	6.8
Sweden	87.9	5.4	2.4

Figure 76. Change in the ability to choose or change work methods from 1996 to 2000 among over-45-year-old women in the EU15 countries, listed in the order of the change from the highest to the lowest.



Workpace and amount of work

The possibility for workers to regulate their workpace was controlled by the following question “*Are you able to choose or change your speed or amount of work?*” The response alternatives were “yes”, “no”, or “I do not know”. In the next section the results are examined in relation to the affirmative responses.

Of the ageing **men**, an average of 72.7% stated that they were allowed to regulate their workpace or amount of work in 2000. This was an approximately 2 percentage-point decline from 1996. The situation in the different countries varied by a maximum of 20 percentage points. Danish and Dutch workers had this power in 80% of the cases, whereas, for Portugal and Luxembourg, the respective figure was close to 60% (Table 62).

In comparison with the situation in 1996, some countries stood out. The situation had improved in Austria and four other countries, the improvement being approximately 5 percentage points in size. On the other hand, in altogether seven countries, the situation of ageing men had deteriorated by at least 5 percentage points. The greatest decline had taken place in Portugal (24 percentage points since 1996). The situation had become worse also in the United Kingdom and Luxembourg, where regulating one’s workpace had decreased by over 10 percentage points among the men (Figure 77).

Older men were able to regulate their workpace or amount of work more often than younger men in 2000. The difference was approximately 4 percentage points to the benefit of the older men. The difference between the age groups was the greatest in Sweden (>12 percentage points) and Ireland (>10 percentage points), as well as in Spain (>8 percentage points). The situation was reversed in five countries, but the differences were small (Table 62, Appendix 26).

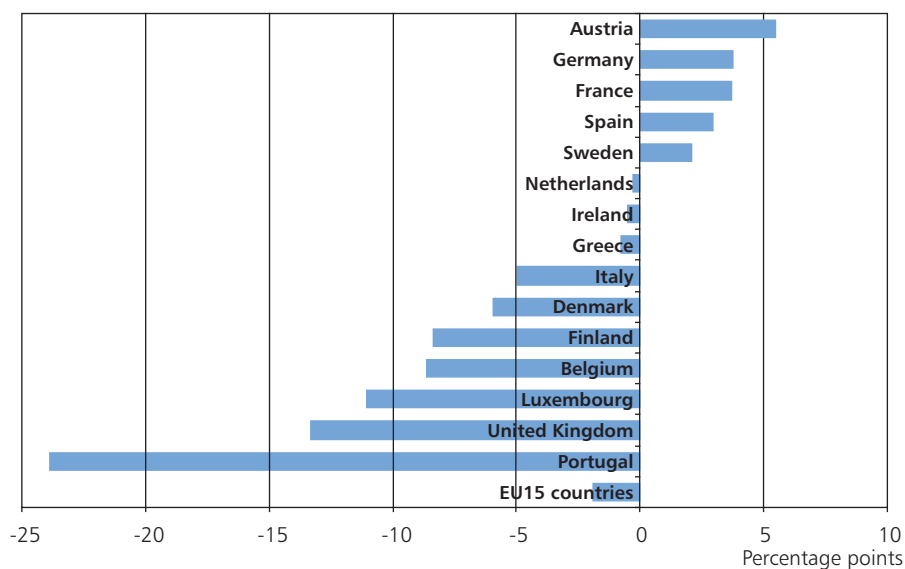
Ageing **women** were about as able to regulate their workpace and amount of work as the men in 2000. An average of 70.8% of the women over 45 years of age stated that the possibility to regulate their workpace was part of their job in 2000. This was a slight decline from 1996. All of the countries were within the 60–80% range. The best situation existed for Dutch and Danish women, and the worst was found, surprisingly, in Sweden, but expectedly in Portugal (Table 63).

The situation had improved only in a few countries since 1996, and Denmark and Germany, which were not included in the top list of EU15 countries in 1996, showed the most improvement. A significant change had taken place in Portugal, where the chance to regulate workpace and amount of

Table 62. Ability to choose or change workplace or amount of work among over-45-year-old men in the EU15 countries in 1996 and 2000, changes in 1996–2000 and the difference between over- and under-45-year-old male workers in 2000, countries listed in the order of the prevalence of the ability to choose or change workplace or amount of work in 2000 from the lowest to the highest.

	2000 (>45 years) (%)	Change in 2000–1996 (% points)	Difference between age groups (>45– <45 years) (% points)
EU15 countries	72.7	–1.9	4.0
Portugal	60.5	–23.9	–1.5
Luxemburg	63.6	–11.0	–2.8
United Kingdom	69.2	–13.3	–2.8
Spain	69.9	3.0	9.1
Finland	70.4	–8.4	–1.9
Germany	71.4	3.7	5.5
Greece	72.2	–0.8	4.8
Belgium	72.4	–8.6	5.2
France	73.0	3.7	5.7
Austria	75.2	5.5	6.7
Ireland	77.3	–0.5	10.5
Sweden	77.3	2.1	12.1
Italy	78.1	–5.0	4.2
Netherlands	80.2	–0.3	–1.6
Denmark	83.6	–5.9	5.4

Figure 77. Change in the ability to choose or change workplace or amount of work from 1996 to 2000 among over-45-year-old men in the EU15 countries, listed in the order of the change from the highest to the lowest.



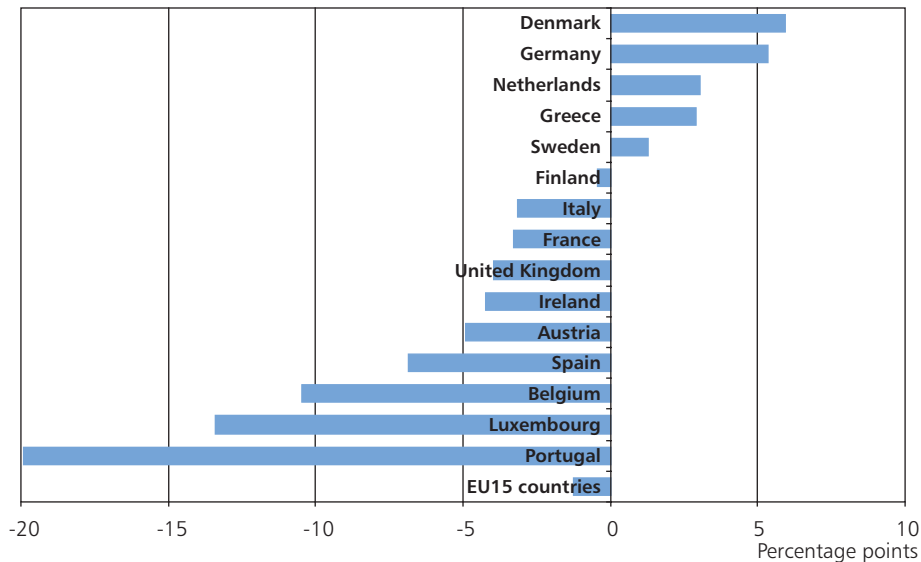
work had deteriorated by 20% since 1996. Portugal, perhaps surprisingly, was among the best, together with Spain, in 1996, but by 2000 the situation had deteriorated drastically. Spain's ranking had also dropped, but not as much as that of Portugal. Sweden was last in the 1996 ranking and remained there over the next 4 years (Figure 78).

Older women were better able to regulate their workplace and amount of work than younger women—the difference being 4 percentage points in favor of the older women in 2000. Two countries stood out from the others. Both in Greece and in Germany the difference was approximately 10 percentage points to the benefit of the older women. In three countries, the difference favored the older women, but, in these cases, the difference was only a few percent (Table 63, Appendix 27).

Table 63. Ability to choose or change workplace or amount of work among over-45-year-old women in the EU15 countries in 1996 and 2000, changes in 1996–2000 and the difference between over- and under-45-year-old female workers in 2000, countries listed in the order of the prevalence of the ability to choose or change workplace or amount of work in 2000 from the lowest to the highest.

	2000 (>45 years) (%)	Change in 2000–1996 (% points)	Difference between age groups (>45– <45 years) (% points)
EU15 countries	70.8	–1.3	3.7
Sweden	60.6	1.3	5.8
Portugal	62.3	–19.9	4.9
Ireland	64.5	–4.3	2.2
United Kingdom	64.9	–4.0	–2.4
Finland	67.0	–0.4	5.0
Belgium	67.3	–10.5	1.3
France	68.4	–3.3	3.6
Austria	69.5	–4.9	–2.3
Luxemburg	71.8	–13.4	4.4
Italy	72.5	–3.1	–2.0
Germany	73.7	5.3	9.9
Spain	75.8	–6.9	3.1
Greece	75.8	2.9	10.5
Denmark	79.5	6.0	2.1
Netherlands	80.6	3.0	4.6

Figure 78. Ability to choose or change workplace or amount of work from 1996 to 2000 among over-45-year-old women in the EU15 countries, listed in the order of the change from the highest to the lowest.



Summary of the possibilities to regulate one's work

The summary of the possibilities of ageing workers to regulate their work is based on the following analyses:

The countries were ranked according to the prevalence in which workers were able to regulate their work (the four factors being the regulation of workbreaks, the order of tasks, the choice of methods, and pace and amount of work). The country in which regulating ability was the most prevalent was ranked first (ranking number 1), and the country in which the ability to regulate one's work was the least common was ranked last (ranking number 15) (see Appendix 28).

The scores were added up for each country and both genders. The total sum indicated the "order of superiority" for the countries on the basis of how well workers were able to regulate their work in 2000 (Table 64). The same methods were used in an earlier survey (see Ilmarinen 1999b).

The change in possibilities to regulate one's work from 1996 to 2000 was examined according to its direction and extent. The extent of the change was divided into three classes that indicated whether the situation had improved, declined, or remained the same. The categories were defined according to

the following bases: improved/declined by 5–9 percentage points (+/-), improved/declined by more than 10 percentage points (++/- -), remained the same by -4 to +4 percentage points (0) in comparison with the results of 1996 (see Appendix 29).

The summary of the changes in the ability to regulate work was finalized by adding the plusses and minuses of each country and gender (Table 64).

The differences between the older and younger workers in the ability to regulate their work were calculated in the same way. The extent of the differences were classified as an over 10-percentage-point difference to the benefit of the older or younger age group (++/- -), a 5–9 percentage-point difference to the benefit of the older or younger age group (+/-), or no distinction (<5 percentage-point difference) between the younger and older workers (Appendix 30).

The differences between the age groups were calculated by adding the plusses and minuses according to country and gender (Table 65).

Situation in 2000

The summary of the way workers were able to regulate their workbreaks, order of tasks, choice of methods, and pace and amount of work indicated that these possibilities were the best in Denmark and second best in Sweden in 2000 (Table 64). Denmark came first among both the men and the women in regulating task order, work methods, and workplace. Sweden was more inconsistent, and ageing women had poorer ratings than men in controlling workbreaks and, especially, the workplace and amount of work, for which they were last among the EU15 countries (see Appendix 28). The workers had the least possibility to regulate work in Portugal, the United Kingdom, and Spain. Portugal came last in every category except workbreaks among both the men and the women.

Some countries stood out because of differences between the genders. In Sweden, the possibilities of women to regulate work were considerably worse than those of the men. This difference was created especially by the worse possibilities of women to regulate breaks and, even more so, workplace and amount of work. The situation of women in Ireland was worse than that of men as well. The differences between the men and women were caused by the lack of ability to regulate the order of tasks, the workplace and amount of work, and also the methods.

In Luxembourg and Spain the situation was reversed. In Luxembourg the poorer ability of ageing men to regulate their work was related to all of the

Table 64. Summary of the ability of over-45-year-old workers to regulate their workbreaks, order of tasks, choice of methods, workplace and amount of work in 2000 in the EU15 countries, listed in the order of the total scores in 2000 from the lowest to the highest.

Country	Men ¹	Women ¹	Total ¹	Number of 1st rankings	Number of 1st–2nd rankings	Number of 15th rankings	Number of 14th–15th rankings
Denmark	7	13	20	2	7	–	–
Sweden	9	28	37	3	4	1	1
Netherlands	22	24	46	1	2	1	2
Italy	23	27	50	1	1	–	–
France	28	28	56	–	1	–	–
Finland	29	33	62	–	–	–	–
Ireland	21	47	68	–	–	1	1
Greece	39	30	69	–	–	–	–
Belgium	32	39	71	–	–	–	1
Germany	40	33	73	–	–	1	1
Luxembourg	52	22	74	–	–	–	2
Austria	37	38	75	–	–	–	1
Spain	49	32	81	–	–	–	1
United Kingdom	39	42	81	–	–	–	–
Portugal	53	44	97	1	1	4	6

¹ Sums of the rankings according to gender and countries (lowest sum = best ability to regulate, highest sum = weakest ability to regulate). The number of highest (1st and 1st–2nd) rankings and lowest (15th, 14th–15th) rankings for each country. Summary according to Appendix 28.

four factors to be regulated. In Spain, the difference between the genders was created by the regulation of workplace and the amount of work, but also methods and workbreaks, to the benefit of the women (Table 64, Appendix 28).

Changes during 1996–2000

The summary of the changes in regulating one's work proved that work regulation had not changed in the EU15 countries from 1996 to 2000. The situation had remained somewhat the same in nine countries, in four countries it had deteriorated, and only in two countries had it improved (Table 65). The situation had improved especially in Germany, but also in Austria. The improvement in Germany consisted of the better situation among the ageing

women, and the change in Austria involved improvement among ageing men. These countries were ranked lowest in 1996, but the situation had become upgraded in comparison with that of other countries in 2000. The ability to choose and change work methods made the difference in Germany, while regulating workbreaks was significant in Austria.

The possibilities for workers to regulate their own work had deteriorated especially in Portugal, Luxembourg, Belgium, and Spain. In Portugal and Belgium the development occurred for both genders, whereas in Luxembourg it especially concerned ageing men, and in Spain ageing women. In Portugal the situation had declined in all of the categories of regulation by over 10 percentage points. In Belgium, the possibilities to choose and change one's work methods and regulate workpace and the amount of work deteriorated the most. In Spain, the possibility to choose and change work methods seemed to have worsened among both genders. In Luxembourg, the regulating possibilities had deteriorated since 1996 among the men in all of the categories by over 10 percentage points except with respect to workers' control of their own workpace and amount of work (see Appendix 29).

The ability for workers to regulate their own work was interpreted as having remained the same in nine countries. There were some changes in these countries, but the shifts were both positive and negative in nature. For example, in Denmark and Italy, there were many changes, both positive and negative, in almost all of the categories of regulation.

The conclusion could be drawn that the situation in Finland, the United Kingdom, and France had remained somewhat the same since the changes had generally stayed under 5 percentage points in comparison with the results of 1996. The situation in France and the United Kingdom had remained the same, except for the ability of ageing French women to take breaks at will and choose their work methods and for the possibilities for British men to regulate their work methods and especially the workpace and amount of work. The latter changes were over 10 percentage points, which can also support the interpretation that the situation in the United Kingdom had deteriorated.

In Finland, on the other hand, the situation had deteriorated slightly in three categories, namely, in the ability for women to regulate their breaks and men to choose their work methods and regulate their workpace and amount of work. All of the changes were less than 5 percentage points in extent, but this finding could also justify classifying Finland as having a deteriorated situation (Table 65, Appendix 29).

Table 65. Summary of the changes in the ability of over-45-year-old workers to regulate their work in the EU15 countries in 1996–2000, countries divided into three categories according to the direction and extent of the change among both genders (according to Appendix 29) (see Ilmarinen 1999b).

Country	Change												Direction 1996–2000
	Men				Women				Total			D ⁴	
	W ¹	U ²	I ³	D ⁴	W ¹	U ²	I ³	D ⁴	W ¹	U ²	I ³		
Denmark	3	1	–	W	–	2	2	I	3	3	2	unchanged	
Portugal	4	–	–	W	4	–	–	W	8	–	–	weakened	
Sweden	1	3	–	U	–	3	1	U	1	6	1	unchanged	
Luxembourg	4	–	–	W	2	–	2	U	6	–	2	weakened	
Belgium	3	1	–	W	3	1	–	W	6	2	–	weakened	
Netherlands	–	4	–	U	1	3	–	U	1	7	–	unchanged	
Italy	3	1	–	W	1	1	2	U	4	2	2	unchanged	
Spain	1	3	–	U	4	–	–	W	5	3	–	weakened	
Finland	2	2	–	W	1	3	–	U	3	5	–	unchanged	
France	–	4	–	U	2	2	–	W	2	6	–	unchanged	
Greece	1	3	–	U	1	2	1	U	2	5	1	unchanged	
United Kingdom	2	2	–	W	–	4	–	U	2	6	–	unchanged	
Ireland	–	4	–	U	–	4	–	U	–	8	–	unchanged	
Austria	–	1	3	I	1	2	1	U	1	3	4	improved	
Germany	–	3	1	I	–	1	3	I	–	4	4	improved	

¹ W = weakened, ² U = unchanged, ³ I = improved, ⁴ D = Direction

Comparing older and younger workers in 2000

The difference between the ability of older and younger workers to regulate their work was the greatest in Ireland and Greece. In Ireland the difference was based on the ability of the men, and in Greece the women, to regulate their work in almost all of the categories when compared with that of the younger workers (Table 66, Appendix 30). The differences between the age groups were also evident among the Swedish men and among both genders in Germany to the benefit of the older workers. In these countries the better situation of the older workers in comparison with that of the younger ones consisted of differences in nearly all of the categories of regulation.

However, in the Netherlands and Finland, the differences between older and younger workers were less evident than in the other countries. In these countries older women had a better ability than younger women (by 5–9 percentage points) to regulate their work in one category, in the Netherlands in choosing the work methods and in Finland in controlling workpace and amount of work.

The most prevalent category of regulating one's work among both the men and the women was the ability to take breaks at will. There was no clear distinction between the prevalence of the other categories, although the strong-

Table 66. Summary of the ability to regulate work among the over- and under-45-year-old workers in 2000 in the EU15 countries, listed in the order of the total scores from the highest to the lowest (see Appendix 30).

Country	Men O > Y ^{1,2}	Women O > Y ^{1,2}	Total O > Y ^{1,2}
Ireland	8	4	12
Greece	4	7	11
Sweden	6	3	9
Germany	4	4	8
Denmark	3	2	5
Austria	3	2	5
Portugal	–	4	4
Spain	4	–	4
Luxembourg	–	4	4
Belgium	3	–	3
France	2	1	3
Italy	1	2	3
United Kingdom	2	–	2
Finland	–	1	1
Netherlands	–	1	1
Sum	40	34	74

¹ O = older workers, Y = younger workers.

² Older workers were able to regulate their work better than younger workers (the sum of plus signs have been taken from Appendix 30).

est difference in the prevalence between the two genders in 2000 was in controlling one's workplace and amount of work. The ability of the ageing men to control this factor was better than that of the ageing women. The general impression in 2000 was that ageing men had better possibilities to control their work than women when compared with the different genders of younger working populations. Gender differences also existed in countries other than those ranked at the top. In Portugal and Luxembourg, the age difference was important among the women, and, in Spain, it was important among the men.

In comparison with the results of 1996, the differences between the age groups had grown, but the gender differences had diminished (compare with Ilmarinen, 1999b). These results are not entirely comparable, however, because, in 2000, the quantity of the differences was taken into consideration in addition to the direction. As the ability to control one's work is a central criterion for good worklife, it is essential to give these factors ample attention.

On the whole, the situation had not improved significantly since 1996. Approximately one-third of the ageing workers still had no control over their work in 2000. The situation of the ageing women was worse than that of the men. The results of the best ranking countries prove that it is possible to give far more workers control over their work. Thus these good practices should be spread swiftly and efficiently among workers in the countries with poorer conditions.

6.1.5 Job requirements in relation to skills

Whether job requirements met the occupational skills of the workers was explored by asking *"How well do you think that your skills match the demands imposed on you by your job?"* The options were "the demands are too high", "the demands match the skills", and "the demands are too low". In 1996, the results indicated that more than 7% of those over the age of 45 years regarded the job demands imposed on them as too high or too low. Most of the workers (i.e., 8 out of 10) thought that the job requirements met their skills (Ilmarinen 1999b).

In 2000, almost 85% of the ageing **men** thought that their job requirements met their skills. There were few differences between the countries. The congruity was best in Finland and Denmark (>93%) and worst in Luxembourg (<80.0%) (Table 67).

The situation had remained somewhat the same in the EU15 countries in 1996–2000, with a decline of less than 2 percentage points. The correspond-

Table 67. Match between job requirements and skills among over-45-year-old men in the EU15 countries in 1996 and 2000, changes in 1996–2000 and the difference between over- and under-45-year-old male workers in 2000, countries listed in the order of the prevalence of matched requirements and skills in 2000 from the lowest to the highest.

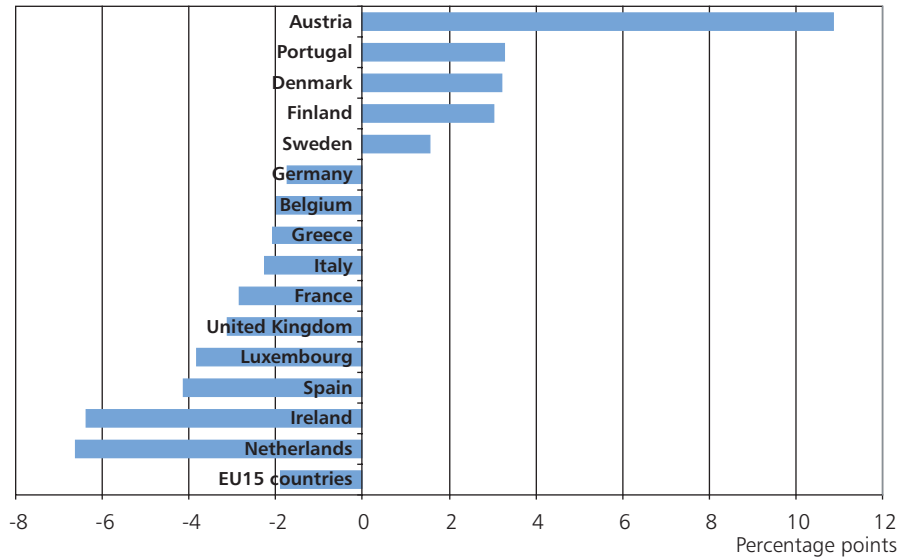
	2000 (>45 years) (%)	Change in 2000–1996 (% points)	Difference between age groups (>45–<45 years) (% points)
EU15 countries	84.9	–1.9	3.5
Luxembourg	78.8	–3.8	4.1
United Kingdom	80.4	–3.1	4.3
Greece	81.0	–2.1	–4.8
Italy	82.8	–2.2	4.6
France	84.2	–2.8	2.5
Netherlands	84.3	–6.6	–0.9
Ireland	84.4	–6.4	6.4
Belgium	86.6	–2.0	–0.3
Spain	86.7	–4.1	8.5
Germany	86.7	–1.7	3.0
Sweden	87.6	1.6	5.1
Austria	87.9	10.9	8.9
Portugal	88.8	3.3	1.0
Denmark	93.3	3.2	2.4
Finland	94.1	3.0	1.8

ence between job requirements and skills had increased the most among the Austrian men (>10 percentage points) and the least in the Netherlands and Ireland (>6 percentage points) (Figure 79).

The skills of older men matched the job requirements imposed on them better than those of younger men, the difference being less than 4 percentage points to the benefit of older men. The largest differences between age groups existed in Austria and Spain (>8 percentage points) and Ireland (>6 percentage points). Greece was the only country in which the situation was reversed: over 4 percentage points to the benefit of younger men (Table 67, Appendix 31).

The congruence between skills and demands was good also among the ageing **women**. Over 82% of the women regarded their workskills as adequate

Figure 79. Change in the match between job requirements and skills among over-45-year-old men from 1996 to 2000 in the EU15 countries, listed in the order of the change from the highest to the lowest.



in 2000. The best match was found in Denmark and Finland, as among the men (i.e., over 90%). In Greece and the United Kingdom the respective figure was under 80%, but the differences between the countries were small (Table 68).

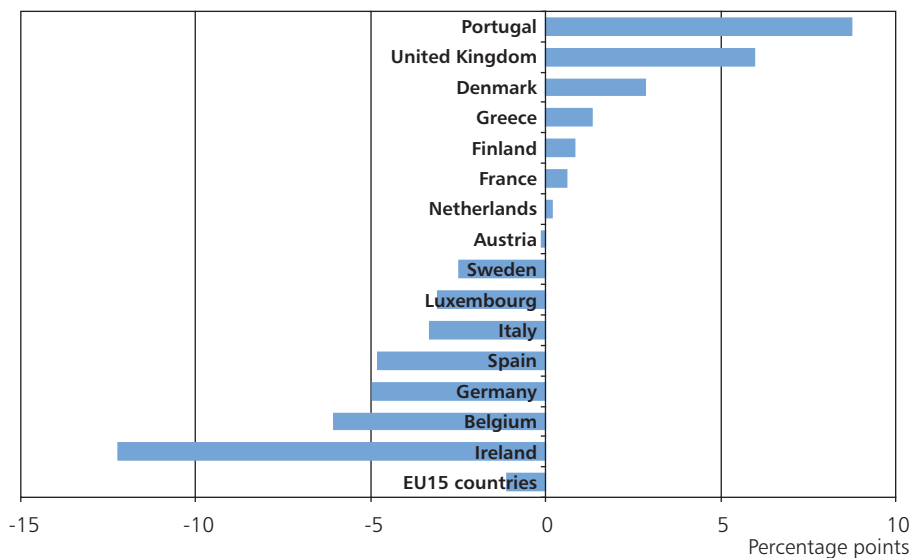
In general, the demands and skills of the women corresponded in 1996 and 2000. There were, however, differences in certain countries. In Ireland the correspondence diminished by over 12 percentage points, and in Belgium, Germany, and Spain the decrease was about 5 percentage points (Figure 80). In Portugal, on the other hand, the results improved by over 8 percentage points, and, in the United Kingdom, the improvement was more than 5 percentage points. Denmark and Finland remained at the top with respect to skills versus demands in the EU15 countries throughout the follow-up.

The skills of the older women were more sufficient than those of the younger ones in several countries, but the difference was not so clear among the women as among the men in the EU15 countries in 2000. In Sweden, Luxembourg, and Portugal, the difference between the age groups was over 8 percentage points to the benefit of older workers. However, in Greece and the United Kingdom, the younger workers had the upper hand (Table 68, Appendix 32).

Table 68. Match between job requirements and skills among over-45-year-old women in the EU15 countries in 1996 and 2000, changes in 1996–2000 and the difference between over- and under-45-year-old female workers in 2000, countries listed in the order of the prevalence of the match between job requirements and skills in 2000 from the lowest to the highest.

	2000 (>45 years) (%)	Change in 2000–1996 (% points)	Difference between age groups (>45– <45 years) (% points)
EU15 countries	82.5	–1.1	1.2
Greece	77.8	1.3	–6.8
United Kingdom	79.3	6.0	–4.1
France	80.6	0.6	1.1
Ireland	81.6	–12.2	0.2
Spain	81.8	–4.8	–0.7
Italy	81.9	–3.3	7.0
Luxembourg	82.1	–3.1	9.3
Austria	82.2	–0.1	–0.6
Germany	83.0	–5.0	0.4
Netherlands	85.1	0.2	4.4
Belgium	86.0	–6.1	1.4
Sweden	89.1	–2.5	10.3
Portugal	90.4	8.8	8.6
Finland	91.9	0.8	5.8
Denmark	92.6	2.9	2.6

Figure 80. Change in the match between job requirements and skills among over-45-year-old women from 1996 to 2000 in the EU15 countries, listed in the order of the change from the highest to the lowest.



Thus the skills of older workers matched the demands set by their jobs well. Parties other than the ageing workers themselves seem to be concerned about the matter. It would be necessary to carry out a more in-depth study in which the views of the employer and management would be examined with regard to the adequacy of personnel's skills. The present result is, nevertheless, good in that ageing workers themselves have confidence in their skills in the EU15 countries.

The earlier presentation of the results concerning the ability to learn new things at work supports the congruence between skills and demands. The same countries ranked well with regard to both aspects, one example being the Scandinavian countries.

6.1.6 Supervisory work

There were very few questions concerning managerial work available. There was one two-phase question concerning the social work environment, in which the workers were first asked whether they were able to bring up questions on the work environment or arrangements at work when changes arise. If the answer to either of the topics was affirmative, the question continued by asking whether this discussion had taken place with their supervisor. Other alternatives were colleagues, representatives of personnel, and outside experts. The following section is a report concerning those who could discuss work-related issues with their supervisors.

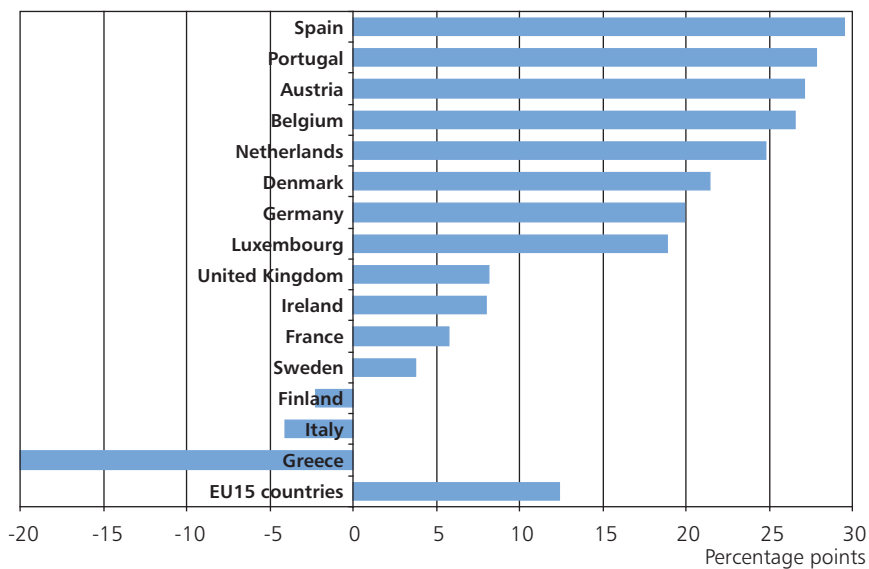
In 2000, 78.6% of the ageing **men** reported that they could discuss matters with their supervisors. This was an over 12 percentage-point increase from 1996. There were, however, large differences between countries—which was also the case in 1996. The opportunity to discuss was the most prevalent in the Scandinavian countries and the Netherlands. In Greece, on the other hand, it was much less common (approximately 42%) in 2000 (Table 69).

As already mentioned, the situation of the ageing men had improved in a pleasing manner since 1996 in the EU15 countries. An over 20 percentage-point improvement was reported in as many as seven countries, the top country being Spain (a nearly 30 percentage-point improvement since 1996). Supervisory discussions had been the least common in Spain in the EU15 countries in 1996. Therefore, there was much room for improvement. Despite the improved results among ageing Spanish men, they were still ranked next to last (68%) among the EU15 countries in 2000. In Greece, on the other hand, the possibility for one to discuss matters with management had decreased by as much as 20% since 1996, and the country did not reach the average even then.

Table 69. Possibility to discuss problems related to work with supervisors among over-45-year-old men in the EU15 countries in 1996 and 2000, changes in 1996–2000 and the difference between over- and under-45-year-old male workers in 2000, countries listed in the order of the prevalence of the possibility to discuss work problems with supervisors in 2000 from the lowest to the highest.

	2000 (>45 years) (%)	Change in 2000–1996 (% points)	Difference between age groups (>45– <45 years) (% points)
EU15 countries	78.6	12.4	–4.8
Greece	41.9	–20.0	–19.7
Spain	68.0	29.5	–2.6
Portugal	70.2	27.9	–4.6
Italy	71.3	–4.0	–4.0
Ireland	73.4	8.0	–4.3
Luxembourg	75.5	18.9	–8.9
France	78.4	5.8	–7.0
Germany	82.4	19.9	–5.1
Belgium	82.5	26.5	0.8
Austria	83.2	27.1	–6.1
United Kingdom	83.5	8.2	–4.5
Finland	83.9	–2.3	0.0
Sweden	85.9	3.8	0.0
Netherlands	89.6	24.8	–2.3
Denmark	90.5	21.4	0.3

Figure 81. Change in the possibility to discuss problems related to work with supervisors among over-45-year-old men from 1996 to 2000 in the EU15 countries, listed in the order of the change from the highest to the lowest.



Research is still needed to explain the described changes. One reason may be that the question used was two-phase, which could have resulted in false interpretations in some countries. The fact remains that the Mediterranean countries exceptionally differed from other countries concerning the changes that had taken place (Figure 81).

The possibilities for younger men to discuss work-related issues seemed to be better than among the older men in most of the EU15 countries in 2000. Greece was a distinct exception. There the difference between the younger and older men was nearly 20 percentage points to the benefit of younger workers. In the other countries the differences between the age groups were small. An over 5 percentage-point difference to the benefit of the younger men occurred in France, Finland, Austria, and Germany, among others. The change in Greece seems to be a result of the weakening of the position of older men. Earlier there had not been a difference in the way older and younger men could discuss work-related problems with supervisors (see Ilmarinen 1999b) (Table 69, Appendix 33).

The possibility for older **women** to discuss work-related issues was more common than among the men in 2000 in the EU15 countries. As much as 84.2% of all of the women could do so according to their own report. This was an almost 20 percentage-point improvement from 1996. As among the men, the differences between the countries were great. While over 90% of women in the United Kingdom, Austria, and Denmark could discuss work-related matters, the same opportunity was available for only a little more than one-third of Greek women in 2000 (Table 70).

The changes in comparison with 1996 were great, and, especially in some countries, the degree of change was somewhat questionable. In Belgium, among others, which came last among the EU15 countries in 1996, the improvement was over 50 percentage points. The situation had improved also in Austria and Spain by over 30%, and in Portugal by nearly 30 percentage points, in 1996–2000 (Figure 82). Spain and Portugal had ranked under the average of the EU15 countries in 1996 and, therefore, had room for significant improvement.

The fact that nearly 20% improvement had taken place also in Denmark and Sweden, where an atmosphere of discussion had been prevalent also earlier, indicates a change in the form of the question presented to the respondents. In 2000 the question referred to possibilities to discuss organizational issues concerning work when a change takes place. In this case, it is possible that the need for discussion had increased significantly because it can be assumed that changes had taken place in virtually everyone's work. Changes can rarely be introduced without them being discussed with workers. There-

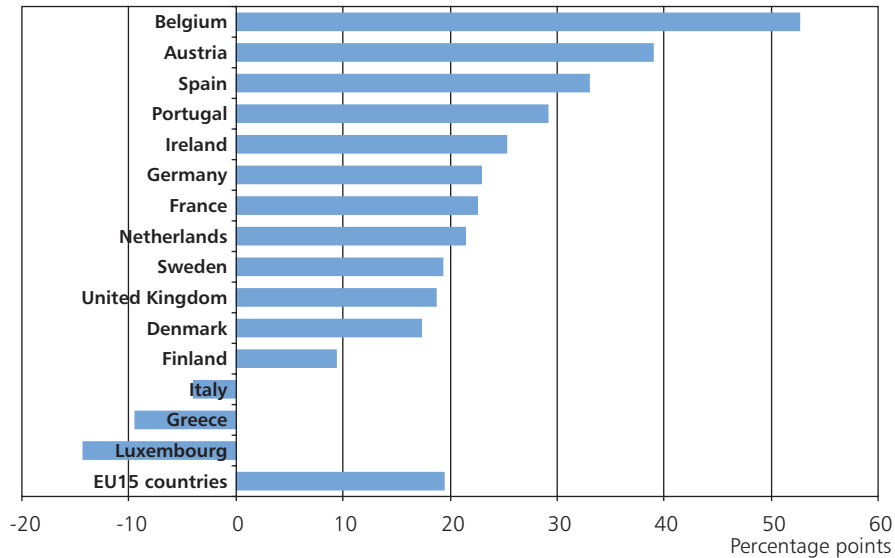
Table 70. Possibility to discuss problems related to work with supervisors among over-45-year-old women in the EU15 countries in 1996 and 2000, changes in 1996–2000 and the difference between over- and under-45-year-old female workers in 2000, countries listed in the order of the prevalence of the possibility to discuss work-related problems with supervisors in 2000 from the lowest to the highest.

	2000 (>45 years) (%)	Change in 2000–1996 (% points)	Difference between age groups (>45– <45 years) (% points)
EU15 countries	84.2	19.5	–1.5
Greece	39.3	–9.4	–21.9
Luxembourg	65.7	–14.3	–19.3
Portugal	69.4	29.2	–11.8
Spain	71.4	32.9	–1.9
Italy	73.2	–3.9	–7.3
Ireland	79.8	25.3	–6.9
Belgium	88.0	52.7	4.9
France	88.4	22.5	0.9
Germany	88.7	23.0	0.5
Finland	88.9	9.4	–1.0
Netherlands	89.3	21.5	0.3
Sweden	89.8	19.3	0.3
Denmark	92.1	17.3	–1.9
Austria	92.2	39.0	3.3
United Kingdom	92.5	18.7	0.3

fore, the better results primarily reflect the prevalence of changes in worklife rather than better opportunities for workers to discuss matters with their supervisors. Indeed, it is true that the changes in worklife have also affected the actions of supervisors and made discussions an imperative part of supervisory work.

The differences between the older and younger women with respect to the amount of discussion with supervisors were, on the average, smaller than among the men—the situation being similar already in 1996. Again, some countries stand out because the differences between the age groups are distinct. In Greece, younger women participated in supervisory discussions clearly more often than older women, the difference being over 20 percentage points in 2000. This finding corresponds with the results concerning ageing Greek men.

Figure 82. Change in the possibility to discuss problems related to work with supervisors among over-45-year-old women from 1996 to 2000 in the EU15 countries, listed in the order of the change from the highest to the lowest.



There was a nearly similar difference between age groups in Luxembourg, which showed a prevalent atmosphere of discussion in 1996. Therefore, the change dropped Luxembourg to a position clearly under the average in the EU15 countries. It must be added, however, that the participation of over-45-year-old women in worklife in Luxembourg is still less common than in many other countries, and this situation clearly creates problems concerning the representativeness of the data. Therefore, some cause for question exists with regard to Luxembourg's results, especially those of the women.

On the other hand, the situation in Portugal had improved considerably since 1996, when there was a small difference between the age groups to the benefit of the older workers. In 2000 the situation was the reverse, to the benefit of the younger workers, and, therefore, indicated a change in the atmosphere concerning supervisory discussion among the under-45-year-olds. This situation can also be a result of the fact that work had changed more among the younger than the older workers with regard to, for example, taking advantage of new technologies (Table 70, Appendix 34).

Did employee–supervisor discussion lead to improvements at the workplace?

Another aspect of supervisory work was examined by asking if the discussions with one’s supervisor led to improvements at work. The response alternatives were “yes”, “no”, and “I do not know”. The affirmative answers that reported improvements are presented in the following section. This question was not part of the 1996 study; thus comparisons between the two data could not be made.

An average of 73.5% of the **men** over 45 years of age responded that discussions with supervisors had led to improvements at work. The discussions had been the most advantageous in Sweden, Finland, and Greece, and the least so in France and Luxembourg (Table 71).

The older men benefited more from the discussions and the resulting improvements than did the younger workers in Spain and Sweden. However,

Table 71. Employee–supervisor discussions leading to workplace improvement among over-45-year-old men and the difference between over- and under-45-year-old male workers in 2000 in the EU15 countries, listed in the order of the prevalence of employee–supervisor discussions in 2000 from the lowest to the highest.

	2000 (>45 years) (%)	Difference between age groups (>45–<45 years) (% points)
EU15 countries	73.5	–1.5
France	61.1	–3.0
Luxembourg	64.2	4.8
Netherlands	70.6	–4.4
Portugal	71.8	–3.9
Belgium	71.9	–2.6
Italy	72.1	–0.3
Spain	72.9	6.5
United Kingdom	74.8	0.2
Germany	77.8	–5.2
Austria	77.9	–2.0
Ireland	78.4	0.5
Denmark	78.4	–0.8
Greece	80.0	0.5
Finland	83.0	4.5
Sweden	83.7	5.2

Table 72. Employee–supervisor discussions leading to workplace improvement among over-45-year-old women and the difference between over- and under-45-year-old female workers in 2000 in the EU15 countries, listed in the order of the prevalence of the employee–supervisor discussions in 2000 from the lowest to the highest.

	2000 (>45 years) (%)	Difference between age groups (>45–<45 years) (% points)
EU15 countries	73.8	–1.3
Luxembourg	54.3	–17.0
France	59.9	–7.7
Netherlands	66.7	–4.3
Portugal	68.4	–9.0
Belgium	69.2	–1.7
Italy	70.9	0.8
Finland	72.7	–2.9
Austria	76.6	–1.9
Denmark	76.7	–2.1
Greece	77.6	–0.3
Germany	78.0	–2.2
Spain	79.1	7.4
United Kingdom	79.9	0.7
Sweden	80.0	8.4
Ireland	80.6	–0.5

in Germany and the Netherlands, younger men benefited more from the discussions.

Supervisory discussions followed by improvements at the workplace were as prevalent among the over-45-year-old **women** as among the men. They were the most common in Ireland, Sweden, and the United Kingdom and the least common in Luxembourg and France. The differences between countries were greater among the women over 45 years of age than among the men (Table 72).

Swedish and Spanish women also reported improvements resulting from discussions more often than their younger colleagues did. The situation was reversed in Luxembourg, Portugal, and France.

6.1.7 Workhours

The questions concerning workhours had changed somewhat since 1996, which was unfortunate. The situation and the changes can be compared from the responses to questions on the following three aspects of workhours: (i) the prevalence of over-40-hour workweeks (among both genders), (ii) the prevalence of irregular day rhythms (among women), and (iii) the prevalence of shift work (among men).

Over-40-hour workweeks

In 2000, 34.8% of the ageing **men** worked over-40-hour weeks in their main occupation in the EU15 countries. Long workhours were the most prevalent among the Irish (46.6%) and French (40.3%) men. However, only 16.1% of the Dutch men worked such long hours, and in Sweden, Denmark, and Belgium less than one-fourth of the ageing men did so (Table 73).

Apart from Germany and Finland, long workhours for ageing men had become less common since 1996. The workhours had shortened the most among the Greek, Belgian, and Portuguese men (>15 percentage points). Workhours in the United Kingdom and Italy had also shortened by over 10 percentage points (Figure 83).

Older men worked longer hours per week than their younger colleagues in 2000. The difference between the age groups was the greatest in Luxembourg and Germany (>15 percentage points) and in France (>10 percentage points). The respective difference had grown in Germany, but the situation was reversed in the United Kingdom and the Netherlands, where younger men worked longer hours than older men by approximately 5 percentage points. The situation had changed especially in the United Kingdom since 1996, where long workhours were more common among the older men than among the younger men by approximately 5 percentage points (Table 73, Appendix 35).

It was approximately half less common (16%) for older **women** to work long hours than their male counterparts in 2000. There were, however, great differences between the figures in certain countries. Longer workweeks were the most common among ageing women in the Mediterranean countries, Spain being number one (30.3%) in 2000. Finland wedged its way into this group, being an exception from the other Scandinavian countries. Longer workweeks were fairly rare among ageing women in the Netherlands and Denmark, but also in Germany and Sweden. This situation could be a result of the prevalence of part-time work in these countries (Table 74).

Table 73. Over-40-hour workweeks among over-45-year-old men in the EU15 countries in 1996 and 2000, changes in 1996–2000 and the difference between over- and under-45-year-old male workers in 2000, countries listed in the order of the prevalence of over-40-hour workweeks in 2000 from the highest to the lowest.

	2000 (>45 years) (%)	Change in 2000–1996 (% points)	Difference between age groups (>45– <45 years) (% points)
EU15 countries	34.8	–4.4	5.4
Netherlands	16.1	–7.0	–5.8
Sweden	23.1	–2.9	–1.2
Denmark	24.4	–2.5	2.0
Belgium	24.6	–19.2	2.5
Luxembourg	31.8	–5.7	16.7
United Kingdom	32.3	–13.6	–7.7
Finland	33.0	3.4	5.1
Austria	33.6	–6.2	5.7
Italy	34.6	–10.1	0.0
Spain	36.2	–8.1	–0.5
Greece	36.9	–20.4	1.0
Germany	38.1	7.1	16.1
Portugal	39.5	–16.5	5.5
France	40.3	–1.1	13.7
Ireland	46.6	–5.6	4.4

Figure 83. Change in over-40-hour workweeks among over-45-year-old men from 1996 to 2000 in the EU15 countries, listed in the order of the change from the highest to the lowest.

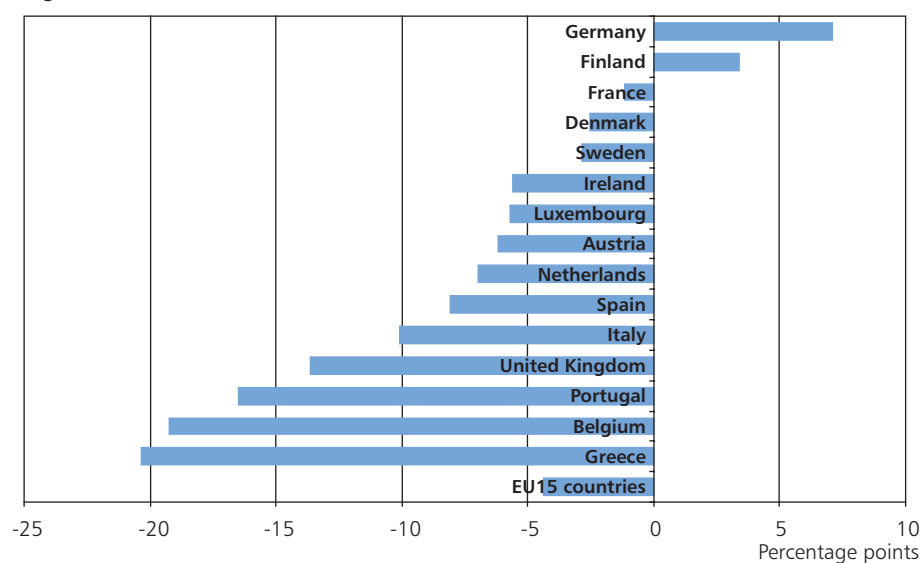
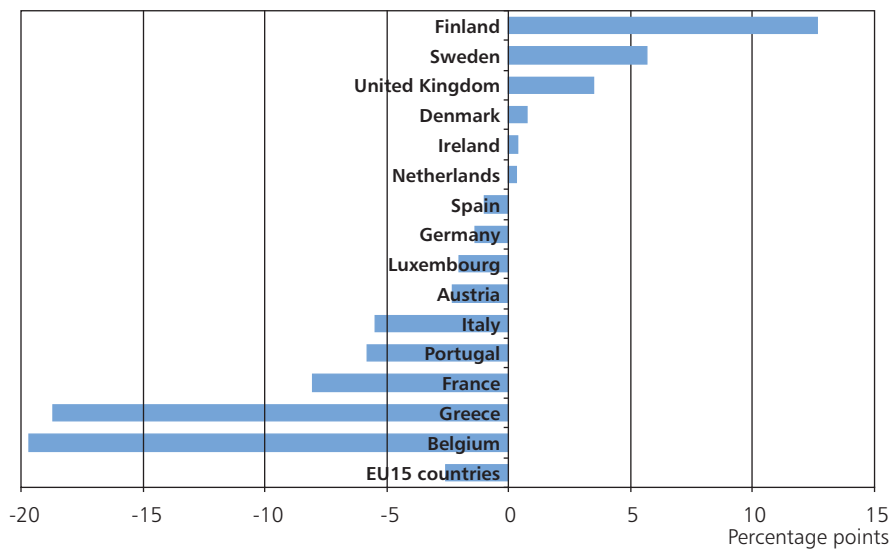


Table 74. Over-40-hour workweeks among over-45-year-old women in the EU15 countries in 1996 and 2000, changes in 1996–2000 and the difference between over- and under 45-year-old female workers in 2000, countries listed in the order of the prevalence of over-40-hour workweeks in 2000 from the highest to the lowest.

	2000 (>45 years) (%)	Change in 2000–1996 (% points)	Difference between age groups (>45– <45 years) (% points)
EU15 countries	16.0	–2.6	3.7
Netherlands	5.0	0.3	1.3
Denmark	9.7	0.7	0.1
Germany	10.5	–1.4	3.3
Sweden	11.5	5.7	4.1
Luxembourg	12.8	–2.0	5.2
United Kingdom	13.0	3.5	3.6
Belgium	13.3	–19.7	2.6
Ireland	13.8	0.4	2.0
Austria	18.3	–2.3	4.8
France	18.4	–8.1	3.6
Italy	19.3	–5.5	1.0
Finland	22.2	12.7	7.8
Greece	28.8	–18.7	6.5
Portugal	28.9	–5.8	3.2
Spain	30.3	–1.0	9.6

Figure 84. Change in over-40-hour workweeks among over-45-year-old women from 1996 to 2000 in the EU15 countries, listed in the order of the change from the highest to the lowest.



The number of longer workweeks decreased slightly among the ageing women and men in the EU15 countries in 1996–2000. This reduction was notable in Belgium and Greece (>18 percentage points), countries in which women worked the longest hours in 1996 when compared with those worked in the other EU15 countries. In Finland, on the other hand, long workhours increased notably (12.7 percentage points), in Sweden they increased somewhat, and in Denmark they did not increase at all among women. According to the latest results, Finnish female workers were ranked at the top of the list of EU15 countries with regard to long workhours (Figure 84).

Older women worked long hours more commonly than younger women in all of the EU15 countries, the difference being slightly less than 4 percentage points in 2000. The difference between the age groups was the greatest in Spain (>9 percentage points), Finland, and Greece (>6 percentage points), where older women worked over-40-hour weeks. The results of the Nordic countries differed from each other (Table 74, Appendix 36).

Irregular day work

This section examines the occurrence of irregular day work involving work on weekends (1–5 Saturdays or Sundays in 1 month) among over-45-year-old women.

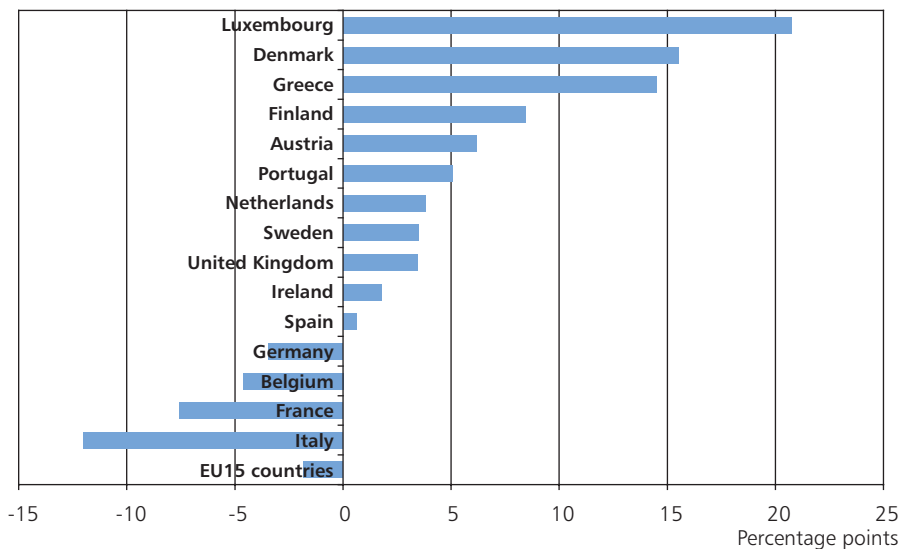
Nearly half of the ageing **women** (47.3%) in the EU15 countries stated that their work corresponded with the given description in 2000. The differences between countries were, however, as great as they were in 1996. Irregular day work was the most prevalent among the Greek women (72.5%), but women in Italy, Luxembourg, and Spain also had such jobs. Work on weekends was the least common among Dutch women (29.3%). Other Scandinavian countries, among others, had less irregular work than Finland in 2000 (Table 75).

The situation had remained somewhat the same since 1996 in the EU15 countries. Nevertheless, there were great differences between the countries. The change indicated an over 20-percentage-point increase in Luxembourg (but the restrictions of the data must be taken into consideration, however). The increase in irregular day work was approximately 15 percentage points for Denmark and Greece and over 8 percentage points even for Finland. Irregular work was common already in 1996 in Greece, but, in Denmark, it was the least common at that time. However, irregular day work seemed to have decreased somewhat among Italian women (>12 percentage points) and also in France (approximately 8 percentage points). Both of these countries belonged to the top four in 1996 (Figure 85).

Table 75. Irregular day work involving work on weekends (1–5 times per month) among over-45-year-old women in 1996 and 2000 in the EU15 countries, changes in 1996–2000 and the difference between over- and under-45-year-old female workers in 2000, countries listed in the order of the prevalence of irregular day work in 2000 from the highest to the lowest.

	2000 (>45 years) (%)	Change in 2000–1996 (% points)	Difference between age groups (>45– <45 years) (% points)
EU15 countries	47.3	–1.8	–5.9
Netherlands	29.3	3.8	–13.6
Sweden	38.8	3.5	–15.6
Germany	39.7	–3.5	–9.6
Denmark	39.9	15.5	–3.7
Ireland	40.8	1.8	–5.2
Portugal	43.5	5.1	–1.3
United Kingdom	43.8	3.4	–11.8
Finland	45.7	8.5	–5.4
Belgium	48.7	–4.6	–5.3
France	49.0	–7.6	–9.1
Austria	49.7	6.2	–6.0
Spain	58.2	0.6	2.5
Luxembourg	61.5	20.8	11.5
Italy	63.2	–12.0	8.0
Greece	72.5	14.5	8.2

Figure 85. Change in irregular day work (also work on weekends 1–5 times per month) among over-45-year-old women from 1996 to 2000 in the EU15 countries, listed in the order of the change from the highest to the lowest.



Younger women worked more irregularly than older women by about 5 percentage points in 2000. In Sweden, the Netherlands, and the United Kingdom, the difference between the age groups was over 10 percentage points, and, in Germany and France, it was a little less than 10 percentage points. The situation was reversed in Italy and Greece, where older women worked irregular hours approximately 8 percentage points more often than younger women. The trend was similar for these countries already in 1996 (Table 75, Appendix 37).

Shift work

In 2000, 12.3% of the over-45-year-old **men** did shift work with five or more night shifts per month in the EU15 countries. Shift work was the most common among Greek men (21.8%), but also among men in Luxembourg, the United Kingdom, and Finland, where over 15% of the ageing men had jobs that involved shift work with night shifts. This line of work was the least common in Italy and Denmark, where less than 10% of the men were exposed to such work (Table 76).

Shift work did not decrease notably among the men from 1996 to 2000, but the direction of the changes differed within the EU15 countries. The amount of shift work decreased by over 5 percentage points in Ireland, Portugal, and Austria, while it increased in the Netherlands and Sweden by approximately as much (Figure 86).

Older men were exposed to shift work with night shifts slightly less than younger ones, the difference being more than 3 percentage points in 1999. The difference was the greatest in France, Ireland, and Belgium (>5 percentage points to the benefit of older men). On the other hand, in Luxembourg and the Netherlands, older men seemed to be exposed to shift work somewhat more often than younger men (Table 76, Appendix 39).

Ageing and shift work

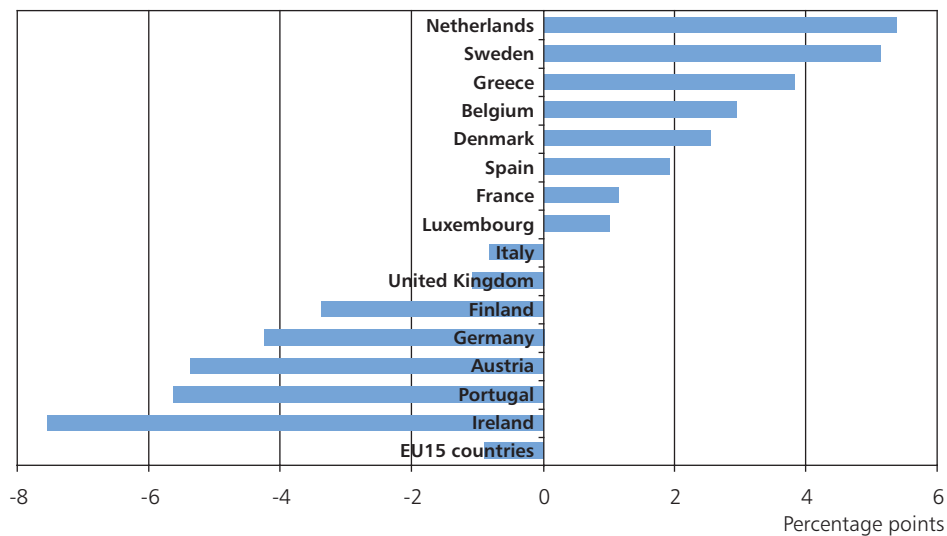
According to the current data, only the younger age groups thought that work did not affect their health (Molinie 2003). With age, this view changed, and more workers perceived work as having an effect on health. Nearly one-third of the 45- to 54-year-old shift and night workers suffered from sleeping disorders, even though selection had already taken place within the studied group of workers.

Shift work is related to many health hazards. It increases the risk of coronary heart disease (a 1.4 risk compared with that of people with regular

Table 76. Shift work with five or more night shifts per month among over-45-year-old men from 1996 to 2000 in the EU15 countries, changes in 1996–2000 and the difference between over- and under-45-year-old male workers in 2000, countries listed in the order of the prevalence of such shift work in 2000 from the highest to the lowest.

	2000 (>45 years) (%)	Change in 2000–1996 (% points)	Difference between age groups (>45– <45 years) (% points)
EU15 countries	12.3	–0.9	–3.3
Italy	6.7	–0.8	–4.3
Denmark	9.3	2.5	–1.8
Germany	11.2	–4.3	–2.3
Sweden	12.0	5.1	–4.5
France	12.0	1.1	–5.6
Ireland	12.8	–7.6	–5.6
Austria	13.1	–5.4	–2.0
Spain	13.3	1.9	–4.8
Belgium	13.4	2.9	–5.0
Portugal	13.6	–5.6	0.4
Netherlands	14.1	5.4	2.2
Finland	15.6	–3.4	–2.2
United Kingdom	16.3	–1.1	–4.1
Luxembourg	16.7	1.0	4.4
Greece	21.8	3.8	0.7

Figure 86. Change in shift work with five or more night shifts per month among over-45-year-old men from 1996 to 2000 in the EU15 countries, listed in the order of the change from the highest to the lowest.



workhours), duodenal ulcer (0.3–2.0 risk), occupational accidents that lead to death (1.6 risk), metabolic syndrome and diabetes (1.6–1.7 risk), and reproductive disorders (1.2–2.0 risk). Shift work can also increase the risk of breast cancer (1.3–1.6 risk), but the evidence is not as convincing as in the case of the other disorders mentioned (Härmä 2004).

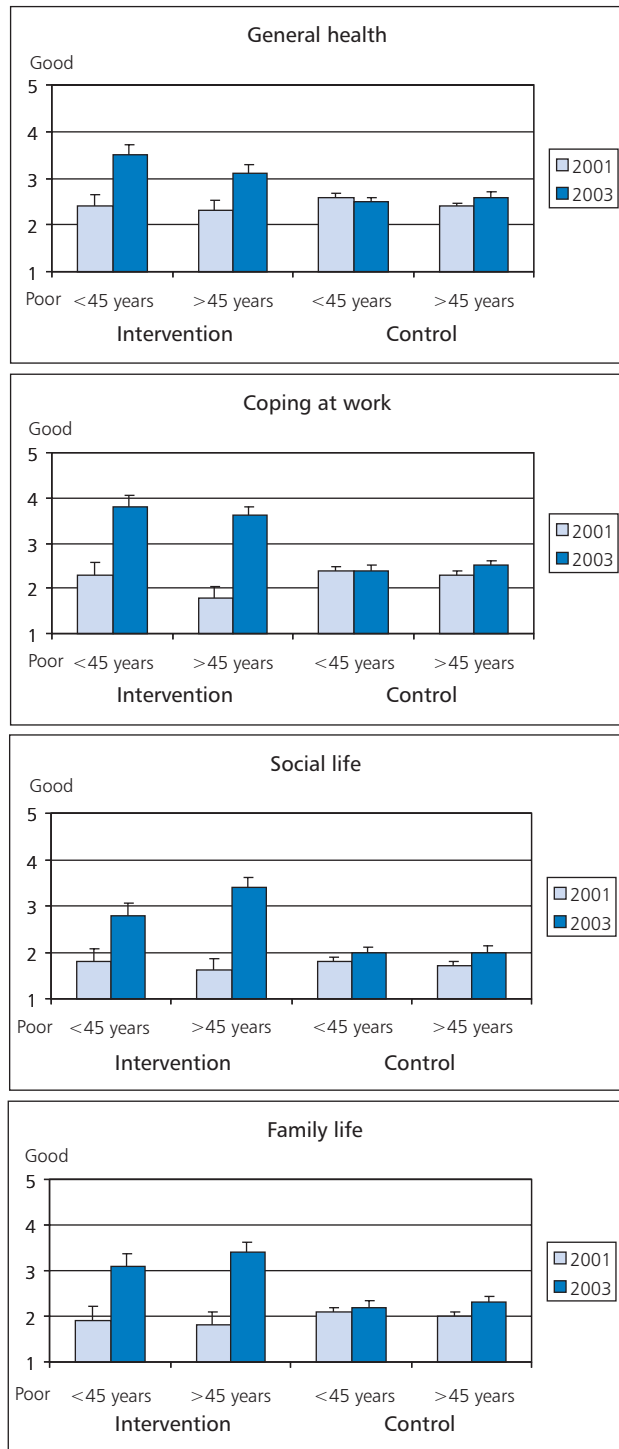
The ability of a person to adjust to successive night shifts declines with age, and the amount of sleep lessens on the day after a night shift. The quality of sleep changes already at 40–50 years of age. Sleep becomes lighter and shorter, and there are more awakenings than at a younger age. The circadian rhythm changes also with age. Ageing workers are more often early risers than their younger counterparts. The ability of workers to synchronize circadian rhythm with successive night shifts declines. More insomnia and different diseases occur with age. Along with such changes, the value of leisure time increases.

The effect of rapidly rotating shifts on ageing workers has recently been a popular subject of research. Such a system of rotation was found to lessen sleepiness during night shifts and promote health in general, coping at work, and social and family life. These results are valid both for under- and over-45-year-old persons (Figure 87) (Härmä et al. 2006).

As a summary of how to help ageing workers to cope with shift work, the following has been proposed (see also Härmä & Ilmarinen 1999):

- *Rapid forward-rotating shifts.* It is more difficult for middle-aged workers and older workers to adjust to successive night shifts than it is for younger workers. On the other hand, older workers are less sensitive to immediate sleep deprivation. Rapid forward-rotating shifts are the best solution with regard to health, coping with work, and social life.
- *Sufficient time for recovery.* The shift intervals should be sufficiently long to enable recovery. If diurnal rest is too short, compensating rest periods should be arranged at the earliest possible time to prevent cumulative sleep deprivation and fatigue at work.
- *Development of opportunities for workers to affect worktime.* The ability of workers to affect their own daily, weekly, and annual worktime increases well-being and compensates for the disadvantages caused by abnormal workhours.
- *Promotion of individual coping mechanisms through health education and lifestyle changes.* Controlling the sleep–wake rhythm, understanding the meaning of sleep, health nutrition, regular and well-timed physical activity, and other means of coping reduce the disadvantages of abnormal worktimes.

Figure 87. Effect of rapidly rotating shifts on health, coping at work and social life. (Härmä et al. 2006)



- *More effective occupational health care.* More efficient health examinations for the ageing, support of health education and promotion of individual solutions, and, ultimately, transferal to day work, if necessary, should be introduced.

The European Union has proposed a change in the directive on workhours concerning the implementation strategies of diurnal rest. The European Commission has suggested a 72-hour time limit within which a worker must have time for diurnal rest. This proposal would promote recovery from work and would result in the prolongation of shift intervals in shift work. It would also promote rapidly forward-rotating shift systems in which the shift intervals are adequate for sufficient recovery in theory. Insufficient recovery on days off can predict and increase the risk of coronary heart disease, among other things. Transferring diurnal rest forward by months is not in balance with the essential need people have for immediate recovery and with the biological boundaries that support health.

Factors explaining workhours in the European Union

Long workweeks (at least 45 hours per week or at least 10 hours per day) were more prevalent among men than among women, and regular workhours (hours per day, days per week, fixed starting and ending times per day) were more prevalent among women than among men (Molinie 2003).

Logistic regression models and odds ratios have shown that long workweeks become more prevalent with age. When the risk of the youngest age group is designated as 1.00, the respective figure for over-55-year-old workers was 1.60, that is, there was a 60% risk for older workers to do over-45-hour workweeks when compared with younger workers. The risk of doing over-10-hour workdays was found to be at its peak among the 35- to 44-year-old workers.

Long workweeks were significantly longer in Portugal and the United Kingdom than in the other EU15 countries, but they were also long in Spain and Italy in addition to France. However, over-10-hour workdays were the most prevalent in Greece and the United Kingdom.

When compared with France (OR 1.00), long workweeks were significantly more prevalent in Portugal and the United Kingdom (OR >1.90). The difference in the odds ratios was not significant between France and the Scandinavian countries. Long workdays and weeks seemed to be more common in small enterprises with 1–9 workers when such enterprises were compared with organizations that employed 50–99 workers.

Entrepreneurs had the highest risk with respect to long workhours. When the prevalence of over-10-hour workdays was determined for workers in a 50–99 employee organization (OR 1.0) and for entrepreneurs (OR 3.99), the difference was nearly fourfold. Especially persons in supervisory positions worked long workdays and weeks. Long workweeks were also more prevalent among workers in small and middle-size enterprises in agriculture—however, the service sector did not differ significantly from agriculture in 2000. On the other hand, regular workhours were the most prevalent in the industrial sector.

Men worked shifts, nights (at least 5 night shifts per month), and evenings (at least 10 shifts per month between the hours of 1800 and 2200) more often than women. Abnormal workhours were more prevalent in the youngest age group and, according to the analysis, became less common after the age of 45 years and were the least common among over-55-year-old workers. Night shifts were the most prevalent in Greece, Finland, Austria, Portugal, and France. There were also significant differences between the countries in the prevalence of shift work. Evening shifts were the most common in Greece and Spain.

In comparison with the situation in France (OR 1.00), night shifts were more common in Greece (OR 2.13) and Finland (OR 1.53), among others. In general, shift work was more common in many countries, such as Spain (OR 1.54) and Greece (OR 1.51), than in France. When the Scandinavian countries were compared with France, shift work and night shifts were more common only in Finland, while there were no differences between the prevalence of evening shifts in 2000.

Shift work and night work were typical for large enterprises with over 100 workers, while evening shifts were common also in small businesses with fewer than 10 workers. Lower white-collar workers and blue-collar workers were more often exposed to these forms of workhours than supervisors and managers—while supervisors do more work in the evenings. The service sector required more shift and night work than the other sectors.

6.1.8 Age discrimination

Age discrimination was controlled as one part of a long list of forms of discrimination and violence as follows: “*Have you personally encountered age discrimination at work during the last 12 months?*” The following section examines the proportion of positive responses among the ageing workers.

Age discrimination seemed to be rare among **men** on an average in the EU15 countries in 2000. Altogether 3.1% of the men reported having en-

countered it personally. There were, however, some differences between countries. Age discrimination was the most prevalent in the Netherlands and Austria (>6%) and the least prevalent among ageing men in Portugal, France, and Italy, where experiences of age discrimination were encountered by less than 1% of the over-45-year-old men (Table 77).

Experiences with age discrimination had slightly decreased since 1996. There were, however, sometimes even great differences between countries. Age discrimination had increased the most in Belgium, by nearly 4 percentage points since 1996. An over 2-percentage-point increase in age discrimination had taken place also in the Netherlands and Spain. In 1996, France was ranked first in having the most situations related to age discrimination (9.4%), but there had been a clear decline, over 8 percentage points, in the results for men in the 2000 follow-up. A more than 2-percentage-point de-

Table 77. Age discrimination during the last 12 months among over-45-year-old men from 1996 to 2000 in the EU15 countries, changes in 1996–2000 and the difference between over-and under-45-year-old male workers in 2000, countries listed in the order of the prevalence of age discrimination in 2000 from the highest to the lowest.

	2000 (>45 years) (%)	Change in 2000–1996 (% points)	Difference between age groups (>45– <45 years) (% points)
EU15 countries	3.1	–0.7	0.6
Portugal	0.4	–3.0	–0.9
France	0.8	–8.6	–3.4
Italy	0.8	–0.5	–0.6
Greece	1.2	–1.1	–1.4
Luxembourg	1.5	–2.9	0.8
Denmark	1.6	–2.0	0.0
Ireland	2.1	–1.0	0.4
Spain	2.5	2.5	1.0
Sweden	3.0	0.7	0.3
Finland	3.0	0.8	–0.1
Germany	4.4	1.7	2.4
Belgium	4.5	3.9	2.3
United Kingdom	4.7	–0.1	0.6
Austria	6.5	–2.2	3.8
Netherlands	6.9	2.6	4.9

cline was found for four other countries in relation to age discrimination among older men (Figure 88).

It was more common for older workers than for the younger workers to be the victim of age discrimination in the EU15 countries in 2000, albeit the difference was less than 1 percentage point. There were, however, greater differences between some countries. In the Netherlands, age discrimination focused on older male workers more often than on younger ones (a nearly 5-percentage-point difference). The situation was similar also in Austria, where there was a 4-percentage-point difference in the same direction. In France, the situation was reversed. Younger workers had encountered more age discrimination than older ones during the last 12 months, the difference being over 3 percentage points (Table 77, Appendix 39).

Ageing **women** had experienced age discrimination slightly less often on the average than the men; 2.7% of women reported age discrimination in 2000. The differences between countries were slightly greater than for the men in different countries. It seemed that older Finnish women had encountered age discrimination more often than older women in other countries (7.4%) in 2000. The respective figure was also twofold in Austria in comparison with the average of the EU15 countries. There was no age discrimination, on the other hand, in Denmark or Italy in 2000, and there was very little in Portugal and Spain (Table 78).

Figure 88. Change in age discrimination during the last 12 months among over-45-year-old men from 1996 to 2000 in the EU15 countries, listed in the order of the change from the highest to the lowest.

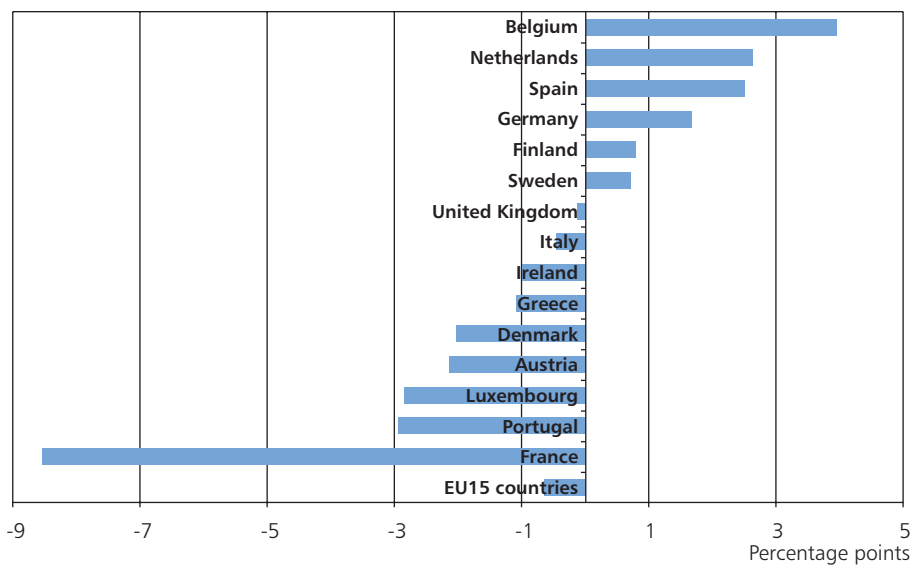
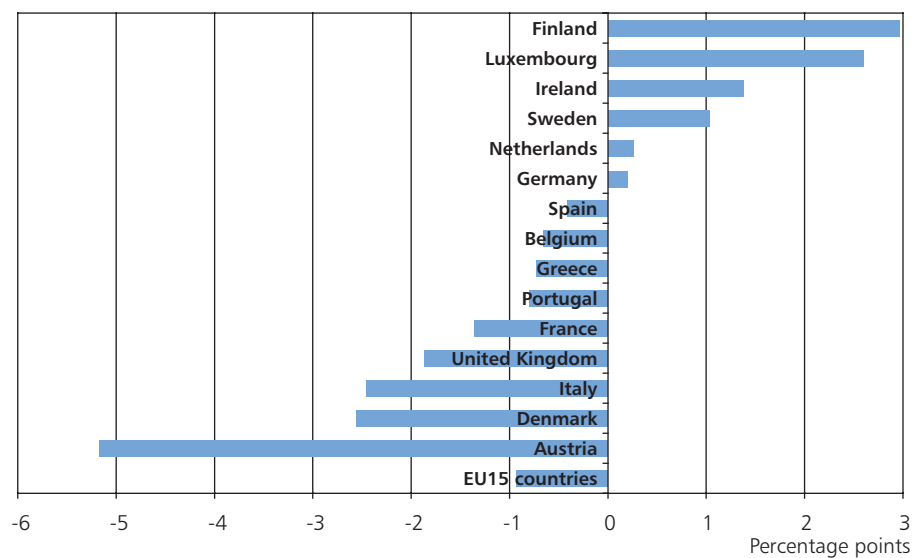


Table 78. Age discrimination during the last 12 months among over-45-year-old women in 2000 in the EU15 countries, changes in 1996–2000 and the difference between over- and under-45-year-old female workers in 2000, countries listed in the order of the prevalence of age discrimination in 2000 from the highest to the lowest.

	2000 (>45 years) (%)	Change in 2000–1996 (% points)	Difference between age groups (>45– <45 years) (% points)
EU15 countries	2.7	–0.9	–0.1
Denmark	0.0	–2.6	–2.6
Italy	0.0	–2.5	–3.2
Portugal	0.4	–0.8	–0.9
Spain	0.6	–0.4	–0.2
Greece	2.6	–0.7	–0.6
Ireland	2.6	1.4	–0.9
Luxembourg	2.6	2.6	–0.7
Belgium	2.7	–0.7	0.8
United Kingdom	2.9	–1.9	0.9
France	3.6	–1.4	0.0
Germany	3.6	0.2	0.3
Netherlands	4.0	0.3	1.4
Sweden	4.0	1.0	–1.3
Austria	5.6	–5.2	3.1
Finland	7.4	3.0	4.3

Figure 89. Change in age discrimination during the last 12 months among over-45-year-old women from 1996 to 2000 in the EU15 countries, listed in the order of the change from the highest to the lowest.



Even though the average change in older women's experienced age discrimination was less than 1%, as it was among the men, there were great differences between some countries. For example, in Finland, the situation had deteriorated by nearly 3 percentage points since 1996. On the other hand, age discrimination had decreased among older Austrian women by no less than 5 percentage points. However, in 1996 the greatest amount of discrimination occurred in Austria, namely, 10.8%, and there was, therefore, room for improvement. Age discrimination showed signs of reduction also in Denmark and Italy from 1996 to 2000 (Figure 89).

On an average, there were no differences between the experiences of older and younger women concerning age discrimination in the EU15 countries in 2000. There were, however, great differences between some countries, as there had also been among the men. In Finland, older women encountered over 4 percentage points more age discrimination than in 1996; for Austria, the corresponding value was over 3 percentage points more. A reversed difference between the age groups was evident in Italy and Denmark, where younger women had personally encountered age discrimination 2–3 percentage points more than older women in 2000 (Table 78, Appendix 40).

Even though age discrimination was not very prevalent, it cannot be accepted. In 1996, age discrimination was the most prevalent form of discrimination in the European Union and remained so in 2000. In addition, personally experienced age discrimination is a more important barometer than experiences of age discrimination towards others at the workplace, which usually has a much greater prevalence.

The experiences of Finnish men and women, which indicate an increase in age discrimination, appears particularly strange, because a project called the National Programme on Ageing Workers 1998–2002 took place in Finland at the time of this study. The program in question was especially designed to reduce age discrimination. Furthermore, in the 2002 follow-up study of the project, it was stated that age discrimination towards older and younger workers had significantly decreased in Finland (Ministry of Social Affairs and Health and Ministry of Labour 2002). It may be that the presence of the program in the media and at workplaces made the population more aware of age discrimination and its prevention. Therefore, age discrimination may have been more carefully followed, and people may have been more conscious of it if they encountered it themselves.

In a Finnish interview on work conditions, health, and occupational health care that was conducted in 2003, the following question was asked “*How equally are people of different ages treated at your workplace?*” The question describes the general treatment of people of different ages rather than personally

experienced age discrimination, which makes the results incomparable with respect to those of the EU15 countries. In 2000 (the same year as the EU15 study) 7.6% of the over-45-year-old **men** reported unequal treatment at their workplace (the figure combines the “rather unequal” and “very unequal” answers). Altogether 3.8% of the men reported very unequal treatment. In the study in the EU15 countries, 3.0% of Finnish men reported age discrimination that same year; this finding indicates that the results concerning ageing men were similar in 2000.

The respective figure, according to the Work Conditions, Health and Occupational Health Care study, for unequal treatment among over-45-year-old **women** was 7.8% for “rather unequal” treatment and 2.0% for “very unequal” treatment. According to the study in the EU15 countries, 7.4% of Finnish women had experienced age discrimination in 2000. The experiences of ageing women with unequal treatment (“rather unequal” + “very unequal” responses) were thus on the same level as those in the data on the EU15 countries. There were not, however, as many experiences of very unequal age discrimination as among the men.

The follow up of the National Programme on Ageing Workers 1998-2002 proved that, according to the Worklife Barometer, age discrimination had decreased in Finland in 2002. When the figures of 2003 are examined, this concept still holds at least for men in that unequal treatment was reduced from 7.6% in 2000 to 3.8% in 2003. With respect to the women the situation had not improved, however. Instead, unequal treatment had increased since 2000 (7.8%) to 8.7% in 2003. The different results of the barometer may well be explained by the different ways in which age discrimination was inquired about. Therefore attention should be paid to the standardization of questionnaires.

6.1.9 Summary of the situation of over-45-year-old workers in the European Union in 2000

Earlier in this chapter, worklife in the EU15 countries in 2000 was examined as a physical, mental, and social environment with respect to approximately 15 different factors that affect workers. In an effort to create a more holistic image of the situation, a summary of the combined results follows.

The summary reports the proportions of the persons for whom the factors applied from the point of view of all 15 factors combined. The countries were ranked according to the proportion of exposed workers. The country that had the least number of workers exposed to a certain factor (e.g., noise, poor work postures, tight schedules, age discrimination, etc.) was ranked 1st, and

the country with the greatest number of exposed workers was ranked 15th. The rankings for each factor were then added up for each country into a total sum, and the average was calculated, which indicates the average listing of one country in comparison with the other EU15 countries in 2000 (see, for example, men, Appendix 41).

The results give an idea of the relative rank of these countries, but do not, however, represent an unambiguous indication of superiority or inferiority. Nor does the scale depict the distances between countries with respect to a certain exposure or indicate an acceptable or desirable level of exposure. The summary does, however, depict certain strengths of different countries and their weaknesses; and addressing these could help improve the situation of ageing workers.

Thus how the countries are ranked is not essential. Rather, it is more important to recognize the aspects of worklife that are in need of a country-specific age strategy aimed at improving worklife. The data will also be analyzed quantitatively and qualitatively later with the objective of more carefully considering the need to develop worklife with respect to the degree of exposure to certain factors.

The summary of the results of the comparison between countries regarding ageing men showed that, in certain countries, exposure was often minor, while, in others, it was major. On the other hand, almost every country showed some strong areas for which it received top ranking (1st–2nd place). The countries could be divided roughly into the following three groups: low exposure, average exposure, and high exposure (Table 79, Appendices 41 and 42).

Denmark and the Netherlands proved to be countries in which over-45-year-old men were the least exposed to physical, mental, and social strain when compared with the other countries. Denmark was ranked into the low-exposure group for 10 factors, and the Netherlands had low exposure for 8 of the 15 factors. At the other end of the spectrum were Greece and the United Kingdom. Greece had the greatest number of workers exposed to 8 factors. In many countries the amount of exposure changed from factor to factor, and there were both high and low rankings depending on the exposure (see, for example, Appendices 41 and 42).

When the worklife of ageing women was examined, different levels of criteria had to be used for some factors than those used for men because the distribution of the exposed women and men differed, for example, for the physical work environment, mental load, and work schedules. Therefore, the analysis of countries in need of intervention concerning men and women is

Table 79. Summary of the relative ranking of the EU15 countries according to the exposure of over-45-year-old male workers at work in 2000. The total sum of the rankings, the mean values, the range of the rankings and the number of countries listed 1st and 2nd (countries in which there were the least exposed workers) and 14th and 15th (countries in which there were the most exposed workers). See also Appendices 41 and 42.

Country	Sum	Mean	Range	Rankings 1st–2nd	Rankings 14th–15th
Denmark	41	2.7	1–8	10	–
Netherlands	63	4.2	1–15	8	1
Belgium	75	5.0	2–12	1	–
Sweden	83	5.5	2–10	3	–
Italy	97	6.5	1–12	1	–
Austria	115	7.7	4–14	–	2
Germany	130	8.7	2–13	1	–
Finland	130	8.7	1–14	1	1
Ireland	133	8.9	3–15	1	3
Luxembourg	136	9.1	2–15	–	1
France	145	9.7	2–14	1	2
Spain	151	10.1	2–15	1	3
Portugal	158	10.5	1–15	2	4
United Kingdom	160	10.7	5–15	–	5
Greece	182	10.1	4–15	–	8

not based on the same criteria for all of the objects of development in work-life (Appendices 43 and 44, Table 80).

Denmark and the Netherlands proved to be the best countries with regard to women over 45 years of age (as with the men) when the criteria were based on the comparison of countries according to the prevalence of the 15 exposure factors. Denmark was ranked as having the least number of workers exposed to 7 factors, and, in the Netherlands, 5 factors had the least number of exposed workers. In addition, the two countries were not ranked into the worst class according to any of the other factors when compared with the other EU15 countries. On the other hand, Greece stood out, being ranked in the high-exposure group for 8 factors.

Table 80. Summary of the relative ranking of the EU15 countries according to the exposure of over-45-year-old female workers at work in 2000. The total sum of the rankings, the mean values, the range of the rankings and the number of countries ranked 1st and 2nd (countries in which there were the least exposed workers) and 14th and 15th (countries in which there were the most exposed workers). See also Appendices 43 and 44.

Country	Sum	Mean	Range	Rankings 1st–2nd	Rankings 14th–15th
Denmark	56	3.7	1–13	7	–
Netherlands	67	4.5	1–12	5	–
Germany	93	6.2	2–12	3	–
Sweden	99	6.6	1–15	2	2
Austria	108	7.2	1–14	3	1
Belgium	111	7.4	2–12	1	–
Luxembourg	115	7.7	1–15	2	1
Ireland	118	7.9	4–15	–	–
Italy	123	8.2	1–14	2	2
United Kingdom	125	8.3	1–14	1	1
France	137	9.1	4–13	–	–
Finland	139	9.3	2–15	2	4
Portugal	142	9.5	1–14	1	5
Spain	155	10.3	2–15	1	5
Greece	176	11.7	5–15	–	8

Has the situation of over-45-year-old workers in the European Union improved during 1996–2000?

In section 6.1, an attempt was made to determine whether the worklife of ageing men and women has improved in the EU15 countries in 1996–2000. After the situation in the different countries was examined, the developmental trends of worklife within these countries were evaluated (Table 81). When the results were interpreted, the fact that they were based on data that represented 15 countries and that they depicted the experiences of over-45-year-old men and women in 1996 and 2000 had to be taken into consideration. The results were weighted by country according to the size of the population. Naturally, the available data on worklife could not cover all of the different aspects of worklife but, despite their selective nature, they cover important areas, especially from the point of view of ageing workers. Some

Table 81. Summary of the situation in worklife in 2000 and changes (improved, remained the same, deteriorated) according to the 15 factors of exposure among over-45-year-old men and women in the EU15 countries in 1996–2000.

Focus	Men			Women			All Direction ¹
	2000	Change from 1996 to 2000	Direction ¹	2000	Change from 1996 to 2000	Direction ¹	
Regulating one's work ¹							
Workbreaks	68.1	0.0	U	56.0	-2.3	U	U
Order of tasks	66.0	-2.0	U	67.1	1.6	U	U
Work methods	72.4	-2.4	U	73.3	2.4	U	U
Workpace	72.7	-1.9	U	70.8	-1.3	U	U
Occupational skills ²	84.9	-1.9	U	82.5	-1.1	U	U
Supervisory work ³	78.6	12.4	I++	84.2	19.5	I++	I++
Workhours							
Long workweeks	34.8	-4.4	I	16.0	-2.6	U	IU
Irregular day work	–	–	–	47.3	-1.8	U	(U)
Age discrimination	3.1	-0.7	U	2.7	-0.9	U	U
Physical work environment							
Noise	23.1	4.0	W	10.3	-1.2	U	WU
Vibration	20.8	-0.1	U	6.3	-1.0	U	U
Ambient air impurities	18.2	-2.5	U	–	–	–	(U)
Physical load							
Work postures	32.4	3.2	W	34.6	1.5	U	WU
Heavy loads	24.3	2.2	U	16.9	2.6	U	U
Repetitive work	44.2	-1.3	U	45.3	-2.1	U	U
Mental load							
Use of computer	25.2	3.7	I	26.4	5.3	I+	I
Complex tasks	60.5	14.5	I++	49.5	14.2	I++	I++
Learning new things	67.2	-6.5	W-	62.5	-5.3	W	W
Tight schedules	48.2	2.3	U	37.8	2.5	U	U

¹ Direction: Change \pm 2 % points = unchanged (U) ; U = 12, WU = 2, IU = 1, W = 1, I++ = 2, I = 1

Change \pm 3–5 % points = improved (I) or weakened (W)

Change \pm 6–9 % points = improved (I+) or weakened (W-)

Change \pm 10 % points = improved (I++) or weakened (W--)

² Correspondence of occupational skills with demands at work.

³ Opportunity to discuss matters with supervisor.

improvements, possibly even significant improvements, may have taken place in many countries since 2000. In such cases, it would be useful to examine the results in light of the conclusions drawn in this study.

The **physical work environment** had remained more or less the same between 1996 and 2000 when the results of the exposure to noise, vibration, and ambient air impurities were examined. According to the results regarding the men, however, the exposure to noise had increased.

Physical load had also remained more or less the same among both the men and the women. However, the exposure of men to poor work postures seemed to have increased. Because physical load is one of the most significant problems that ageing workers encounter, there is still much to be done in the areas of ergonomics, work organization, and workhours. It is evident that older ageing workers, whose training is not as good as that of younger workers, are still exposed to physically straining tasks, in which the restrictions of health, functional capacity, and work ability are encountered much earlier than the restrictions of other human faculties.

Since it seems that physically straining worktasks will not disappear from worklife in the future, the problem must be given ample attention. It is also unreasonable and unrealistic to assume that ageing workers can continue to hold jobs in which tight schedules and reductions of staff make the physical load even greater for several years longer than they do today. In such cases, the options are to reduce their physical load significantly or to change their jobs.

Many changes are apparent concerning the **mental work environment**, even though not everything seems to be progressing in a favorable direction. One can also interpret the direction of the changes in many ways. In this study, the increased use of computers among both men and women was interpreted to be a positive change. According to this view, ageing workers had better means of using the new information technology. Complex tasks had also increased significantly among both the men and the women, and this increase was interpreted positively in that ageing workers were given new challenges and tasks that enabled them to use their skills in diverse ways.

The research results on the mental growth of ageing workers encourages employers to utilize the strengths brought about by ageing in worklife (see Section 4.6.3). These changes (positive by definition) can also bring with them increases in physical load and occupational stress. Thus change can mean both increased potential and increased threat.

Tight work schedules seemed to have remained a prevalent problem especially among ageing men but also among ageing women. They can eat away

at the meaning and effect of changes that are otherwise considered positive. To fight tight schedules, work methods and the amount of work, as well as the work culture, should be changed to fit the individual worker.

The learning of new things seemed to have decreased among both ageing men and ageing women. It may be that earlier, in the middle of the 1990s, after the recession, the need to learn had been stronger, and there had been greater pressure to learn new things. The need and pressure to learn may have then eased as the year 2000 approached. It could also be that the new things learned earlier carried workers through the 5-year period in question.

On the other hand, the decrease in the learning of new things may have been due to the fact that ageing workers are not given new challenges to learn in the same manner as younger age groups. One must also consider that it is more stressing for a senior worker to learn new things than it is for a younger worker, especially if he or she has to learn things that are totally new (information technology, foreign languages, etc.). Learning new things can thus be related to need (necessity) and to opportunity, depending on which is more dominating. Changes can be perceived in different ways from the point of view of ageing.

The **possibilities for workers to regulate their own work** did not, unfortunately, increase during the follow-up. They did, however, remain on a good level if the criterion is that the majority of ageing workers are able to regulate their work at least in relation to the four factors studied. The situation was not, however, satisfactory for the approximately one-third of the workers that had no means with which to regulate their work. Evidently their work has a set pace, and the processes are carefully planned and agreed upon ahead of time. The situation can also be explained by various standards that aim at developing and optimizing productivity and the quality of work processes. A standard for good quality may have diminished the margins between which people are able to maneuver. The resources of ageing workers fit poorly into tightly set standards, because, as a result of natural ageing, they form a heterogeneous workforce.

Occupational skills corresponded with the demands set by work, as in earlier studies. The way the question on occupational skills was worded for the study was extremely simple and enabled a simplified summation of many factors. The answers indicated, however, that worklife, along with the changes in it, had not, in any way, escaped the reach of ageing workers. Older workers saw themselves as able to work with regard to the demands set for them. In an actual study on work ability among the general population, approximately 20% of the 45- to 54-year-old workers were fairly able to work, and the work ability of only a few of them was poor. This estimate

comes close to the results of this study on the match between occupational skills and job requirements.

The assessment of the changes in supervisory work was also examined by only one question. According to the responses, the situation had improved significantly among both ageing men and ageing women. As stated earlier, the trend that was interpreted as positive could be the result of the accelerating tide of changes in worklife, which creates a necessity for supervisors to discuss changes with workers.

Naturally, the increase in opportunities to discuss matters does not directly indicate whether the discussions were satisfying or effective. It may also be that discussions take place in threatening situations in which the owners or top management has already decided on the necessity for change, and the nature of the discussions is more informative and integrating than listening and mutual planning. Thus it is difficult to interpret the change in results as being unambiguously positive without more specific knowledge on the causes of the increased discussions.

The changes in **workhours** was evaluated by only two questions, of which the question on irregular day work that took place also on weekends was related only to ageing women. The workhours of women had remained nearly the same, but the number of long workweeks had decreased among the men.

Irregular day work among over-45-year-old women, which also involved work on weekends (1–5 days per month), was common. This may be a result of women wanting to work such flexible hours because of their particular life situations. Whether the workhours are the choice of the employer or the employee was not clear from the studied data. Irregular day work may also be related to part-time work, which is common among ageing women in many countries. The results on workhours in different countries are difficult to compare for the EU15 countries combined because the prevalence of part-time employment varies greatly from country to country.

The prevalence of personally encountered **age discrimination** during the previous year did not decrease among ageing men or women in the EU15 countries in 1996–2000. The baseline for personally experienced age discrimination was low; therefore, there was not much room for a continuing decrease. The positive aspect was that age discrimination had not increased as workforces decreased in many countries during the follow-up. However, because zero tolerance is the only acceptable limit, age discrimination should be fought against also in the future.

As a generalization it can be stated that worklife remained about the same in the EU15 countries between 1996 and 2000. Out of the studied 19 factors

of change, 12 had remained fairly the same (changes ± 2 percentage points) during the follow-up period. A notable change had taken place in the following two factors: complex worktasks and supervisory discussions (>10 -percentage-point change). On the other hand, the learning of new things had decreased, which was interpreted as a negative trend.

The trends of change were similar for the men and women, with the exception of three factors (noise, work postures, and long workweeks), which changed only among men. On the whole, it must be stated that it is an urgent and imperative task of mega magnitude to promote changes in the worklife of ageing workers towards better and longer careers. The development strategies for worklife at the national level must concentrate on the needs and possibilities of ageing workers. Strong support is also needed at the EU level to create human and effective improvements.

6.2 Will the health of ageing workers endure in the European Union?

A vital question related to the work ability of ageing workers is how their health will endure the changing pressures and demands of worklife. The following section examines the perceptions and experiences of over-45-year-old men and women in the EU15 countries in 2000 with respect to their health and symptoms. Health-related factors were first integrated into the study in 2000. It is therefore impossible to know whether the health of ageing workers has improved since 1996. Another important shortcoming of the study was the lack of a definition for work ability. Thus it is difficult to make a deeper analysis of whether resources of ageing workers will be sufficient in relation to the demands of worklife.

The question on health was as follows: “Does your work affect your health or not? If the answer is yes, how does it affect your health?” The workers were then given a list of 23 items, of which they could choose as many as they liked (e.g., hearing-related problems, back pain, anxiety, sleeping disorders, etc.). For the purpose of the analysis, the items were then combined into group variables on, for instance, musculoskeletal symptoms, psychosomatic symptoms, and stress-related symptoms. The list also included the item “my work promotes my health”, but only a few percent of the respondents chose this item spontaneously, and it was, therefore, not analyzed.

6.2.1 Hearing-related problems

Approximately 9.8% of the **men** over 45 years of age concluded that their work affected their hearing in 2000. Three countries stood out. The prevalence of ageing male workers with hearing-related problems was over 25% in Finland, over 20% in Sweden, and over 15% even in the Netherlands. The respective figure was notably less than the EU15 average in Ireland (Figure 90).

Were the problems with hearing related to exposure to noise at work? One of the highest proportions of ageing men exposed to noise in the EU15 countries was found in Finland (27.4%, see Section 6.1.1). On the other hand, the exposure to noise was slightly lower than the EU15 average in Sweden and the Netherlands, although it was over 20% even there. Exposure to noise was greater than the average in Ireland. Thus it is difficult to justify a direct relation between occupational exposure to noise and the prevalence of hearing problems according to these data.

It was apparent that there were no notable differences between the work-related hearing problems of older and younger men. There were, however, greater differences between countries. The Netherlands stood out in that its older men reported work-related hearing problems 7.8% more often than its younger men. A similar trend was notable also in Luxembourg, Austria, and Portugal (>2 percentage points). In Spain, the situation was reversed.

The prevalence of hearing problems among over-45-year-old **women** was less frequent than among the men, but, surprisingly, the Scandinavian countries were again at the top of the list of the EU15 countries. Over 12% of Finnish women, 9% of Swedish women, and 7% of Danish women reported hearing problems, whereas the average for the EU15 countries as a whole was 2.7%. As with the men, ageing Irish women had the fewest work-related hearing problems, but they were also rare in the Netherlands, the United Kingdom, and Germany (Figure 91).

The level of exposure of ageing women to noise was more prevalent in Finland and Denmark (>15%, see Section 6.1.1) than in nearly any other EU15 country. However, the situation in Sweden was better than the average. In the other countries, in which only few workers had hearing problems, there was also little exposure to noise among ageing female workers.

There were no differences in the prevalence of hearing problems of older and younger women on the average. The largest differences between the age groups existed in Finland and Belgium (>2 percentage points), to the benefit of the younger women.

Figure 90. Work-related hearing problems among over-45-year-old men in 2000 in the EU15 countries, listed in the order of the prevalence of work-related hearing problems from the highest to the lowest.

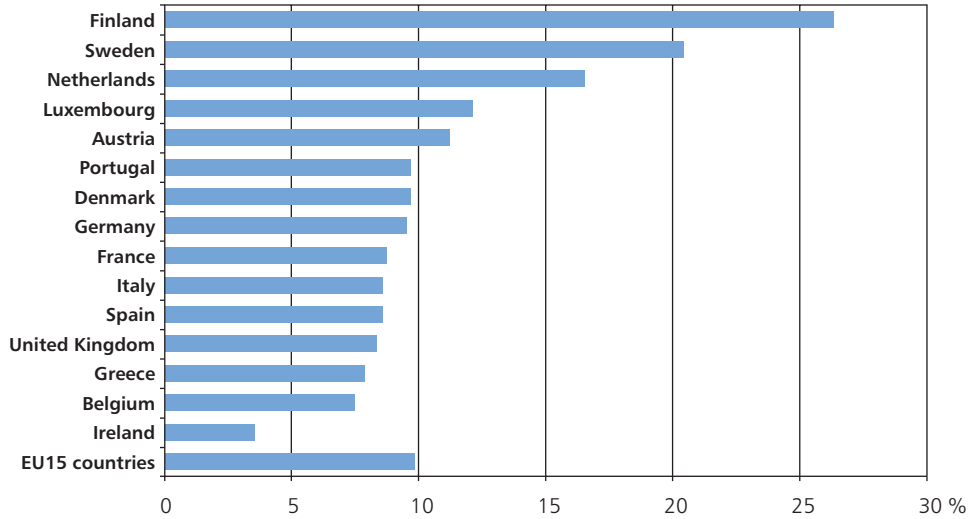
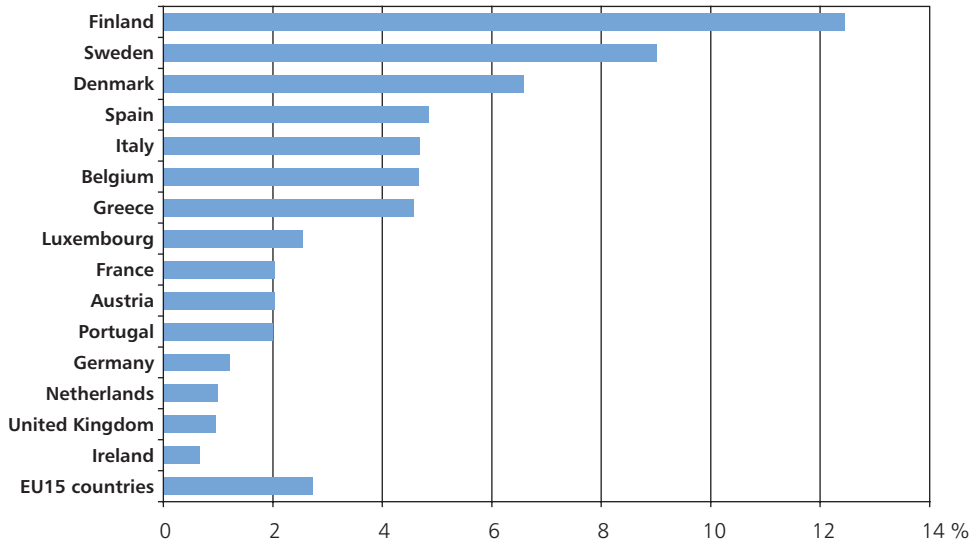


Figure 91. Work-related hearing problems among over-45-year-old women in 2000 in the EU15 countries, listed in the order of the prevalence of work-related hearing problems from the highest to the lowest.



The thing that could be considered surprising in relation to the effect of work on hearing problems is the rather large differences between countries and, especially, the way the Scandinavian countries were situated at the top of the list concerning hearing problems. No clear connection with the prevalence of noise exposure was found in any other country but Finland.

A comparison of the age groups revealed that, according to this particular comparison and the age groups in question, the prevalence of hearing problems was not clearly connected to age. The increase in hearing problems with age has, on the other hand, been proved earlier according to other data (See section 4.6.1). The fact that hearing problems were more prevalent in the Scandinavian countries than in other countries may be a result of the way people in these countries are generally not only aware of such problems but also are aware of how they are recognized. This topic, especially whether hearing problems are occupational in origin in the Scandinavian countries, should be studied further in the future.

6.2.2 Vision-related problems

Approximately 8.9% of over-45-year-old **men** reported that their work had an effect on problems related to vision in 2000. There were considerable differences between countries. Over 15% of the workers had such problems in France and over 12% in Spain, Belgium, Finland, and Italy. However, in Denmark, Germany, and Ireland, among others, men had problems related to vision fairly seldom. In this case, the Scandinavian countries did not form a consistent entity with regard to hearing (Figure 92).

Older men were nearly 2 percentage points more troubled with problems of vision than younger men. The differences between the age groups were the most notable in Spain and the Netherlands (>4 percentage points), to the benefit of the younger workers.

Approximately 9.3% of over-45-year-old **women** stated that they had problems with vision that were related to work. Three countries were in their own league, France (>18%), Belgium (>17), and Italy (14%). Ireland and Denmark, on the other hand, stood out because the prevalence was so low. The Scandinavian countries also had a better than average ranking for women in the EU15 countries (Figure 93).

As with the men, older women were more troubled by problems of vision, by 1.5 percentage points, than younger women were. The differences between the age groups were the highest in France and Belgium (>5 percentage points to the benefit of younger women), where the prevalence was the highest also in general.

Figure 92. Work-related vision problems among over-45-year-old men in 2000 in the EU15 countries, listed in the order of the prevalence of work-related vision problems from the highest to the lowest.

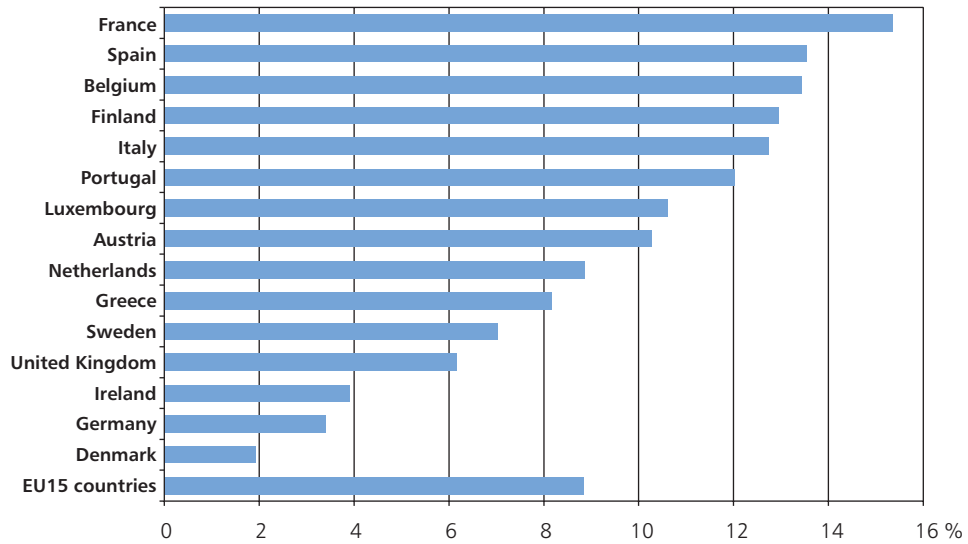
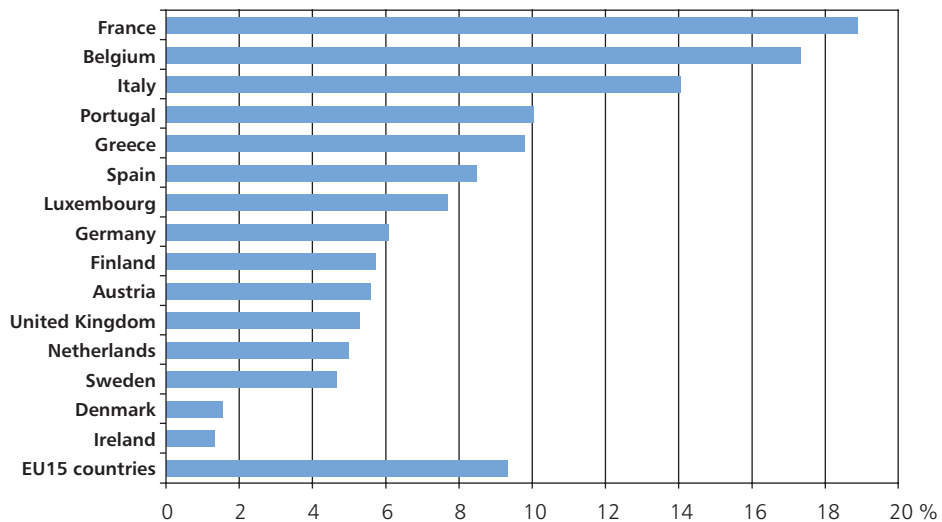


Figure 93. Work-related vision problems among over-45-year-old women in 2000 in the EU15 countries, listed in the order of the prevalence of work-related vision problems from the highest to the lowest.



6.2.3 Musculoskeletal problems

Whether or not work had an effect on musculoskeletal problems was inquired about by asking about back pain, muscular pain in the shoulder and neck, and muscular pain in the upper and lower extremities. The responses were then compiled to depict one syndrome, that of the musculoskeletal region. An affirmative response to any of the aforementioned items was sufficient to register the musculoskeletal syndrome.

An average of 40.4% of the over-45-year-old **men** reported that work was related to the musculoskeletal syndrome. There was an over 50% prevalence among Greek and Finnish men, but nearly 50% of Spanish, Portuguese, and French men felt that work caused musculoskeletal pain as well. Ireland was an exception. There the musculoskeletal syndrome was rare among ageing men (Figure 94).

There was no notable difference in the occurrence of the musculoskeletal syndrome among over- and under-45-year-old men in the EU15 countries in 2000. The differences between countries were notable, however. The syndrome was more prevalent among older men, especially in Portugal, but also in Greece (>6 percentage points), than among younger men. The difference was reversed in Luxembourg and Denmark (<6 percentage points).

It was stated earlier that the prevalence of the musculoskeletal syndrome was clearly greater among 45- to 64-year-old workers than among younger workers. Approximately two-thirds of the men had one of the related symptoms (see Section 4.7.3). Consequently, the 50% prevalence of the syndrome in Finland in the EU15 data is not a surprise, and the two results only reinforce each other. When the age groups are divided into over- and under-45-year-olds, the results are not as notable, and the differences between the older and younger workers fade.

Of the over-45-year-old **women**, approximately 42.9% estimated that work had an effect on the musculoskeletal syndrome in 2000. As with the men, ageing Finnish and Greek women reported occupationally originating musculoskeletal symptoms. Over half of the women in Sweden and Spain also felt that work was related to their musculoskeletal problems. The Scandinavian countries belonged in the top five countries among the EU15 countries with respect to the musculoskeletal syndrome. To the country's benefit, Ireland was the exception in the data for women (Figure 95).

There was a more distinct difference between over- and under-45-year-old women than among the men (>3 percentage points) to the benefit of the younger women. The difference was especially notable for Greece (>19 percentage points) and Spain (>11 percentage points).

Figure 94. Work-related musculoskeletal symptoms (back pain, muscular pain in the shoulders and neck, and upper and lower extremities) among over-45-year-old men in 2000 in the EU15 countries, listed in the order of the prevalence of work-related musculoskeletal problems from the highest to the lowest.

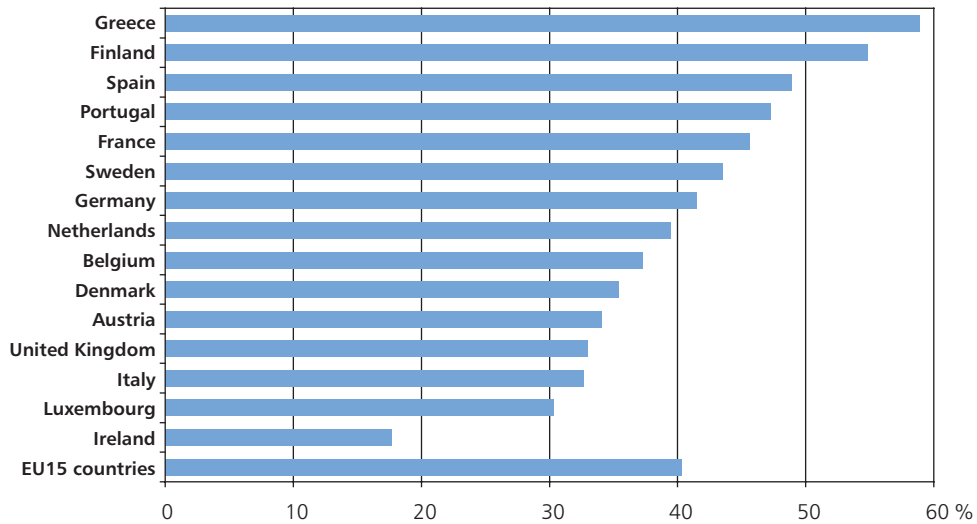
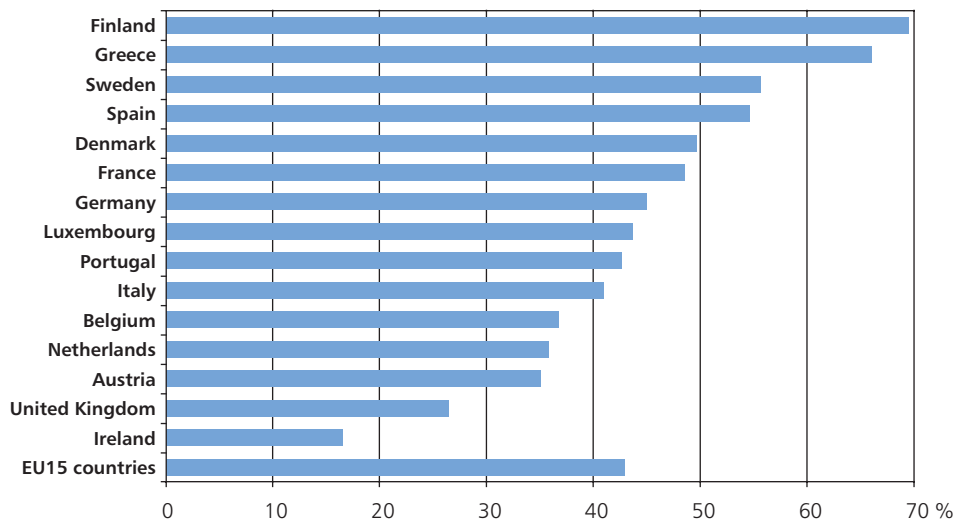


Figure 95. Work-related musculoskeletal symptoms (back pain, muscular pain in the shoulders and neck, and upper and lower extremities) among over-45-year-old women in 2000 in the EU15 countries, listed in the order of the prevalence of work-related musculoskeletal symptoms from the highest to the lowest.



It was stated earlier that approximately four-fifths of Finnish women suffered from some musculoskeletal symptom and that the musculoskeletal problems were more prevalent among the women than among the men in general (see Section 4.5.3). The results of the EU15 countries were similar, but, nevertheless, not as notable among the men and women as in the studies that were conducted in Finland. The comparison is slightly problematic in that the structure of the syndrome differed somewhat between the Finnish studies (Health 2000 and Working Conditions, Health and Occupational Health Care 2000–2003) and the examination of the EU15 countries. In addition the EU-15 study concentrated especially on work that caused muscular pain.

The level of occupational physical load has an obvious association with the prevalence of the musculoskeletal syndrome. According to the data, physical load was still generally a part of the jobs of both ageing men and women in the European Union in 2000, and the situation had not improved significantly since 1996 (see Section 6.1.4). The prevalence of the musculoskeletal syndrome and physically heavy jobs seemed to be connected in some countries. In Greece, the prevalence of the syndrome and the prevalence of physically heavy jobs were common among both genders. In Finland, for example, both repetitive work and the musculoskeletal syndrome were prevalent among women.

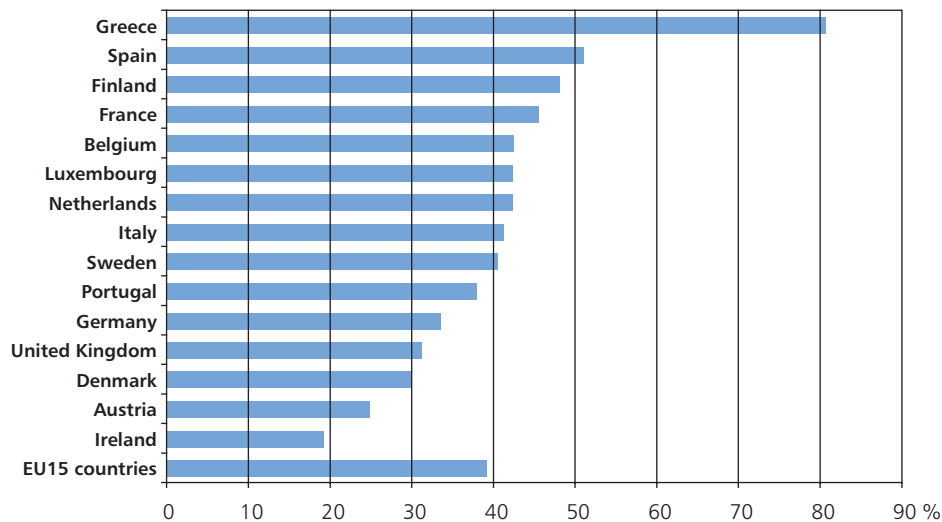
6.2.4 Psychosomatic symptoms

Psychosomatic symptoms were studied by examining the prevalence of stress and tension, general fatigue, sleeping disorders, anxiety, irritability, and mental trauma. These symptoms were combined to form the psychosomatic syndrome. An affirmative response with respect to any of the aforementioned items meant that the psychosomatic syndrome was registered.

Approximately 39.2% of over-45-year-old **men** in the EU15 countries stated in 2000 that work caused them to have psychosomatic symptoms. In Greece the respective figure was as high as 80.7%, and in Spain and Finland it was close to 50%. In Ireland, however, ageing men experienced psychosomatic symptoms with an occupational origin the least (Figure 96).

There was no significant difference between men under and over 45 years of age, on the average, with respect to the prevalence of psychosomatic symptoms. In Greece and Belgium, older men experienced such symptoms more frequently than younger men by a more than 6-percentage-point difference, while the situation was reversed in Denmark by a more than 6-percentage-point difference to the benefit of older men.

Figure 96. Work-related psychosomatic symptoms (stress and tension, general fatigue, sleeping disorders, anxiety, irritability, and mental trauma) among over-45-year-old men in 2000 in the EU15 countries, listed in the order of the prevalence of work-related psychosocial symptoms from the highest to the lowest.



Other studies that were conducted at the same time in Finland (Working Conditions, Health and Occupational Health Care, 2000, 2003) reported similar symptoms for approximately 58% of the respondents, more commonly by women than by the men (see Section 4.6.3). The prevalence of the symptoms was thus fairly parallel, confirming one another and creating an image of strong psychosomatic problems among the working populations.

Approximately 38.9% of the over-45-year-old **women** stated that they experienced psychosomatic symptoms. As for the men, the ageing women in Greece suffered from such symptoms the most (75.2%) in 2000. More than 50% of the Finnish and Italian women also had these symptoms. The other end of the spectrum was represented by women in Ireland and Austria, where only approximately 20% of the women had such symptoms. The prevalence of psychosomatic symptoms of ageing women differed a great deal, for example, in the Scandinavian countries (Figure 97).

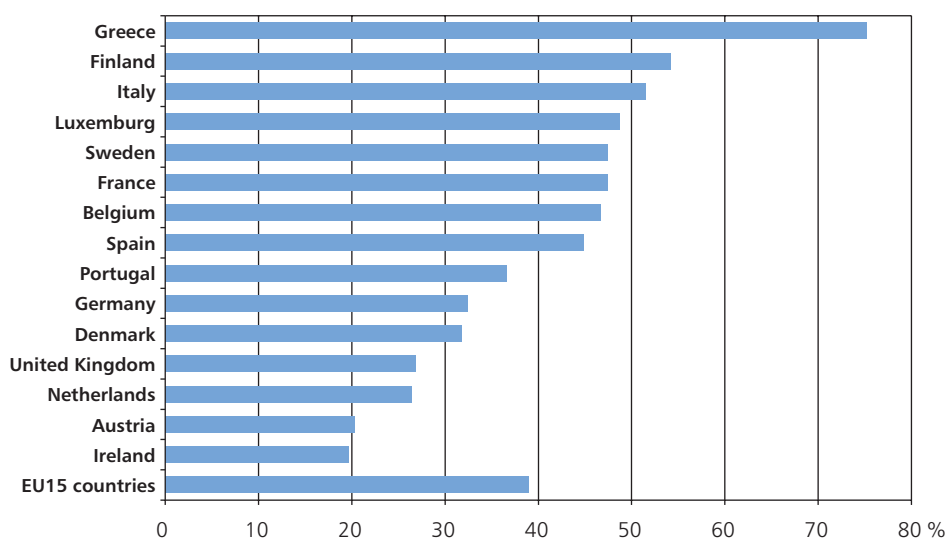
On the average, there was no significant difference between the symptoms of older and younger women in the EU15 countries in 2000. The difference was the greatest in Luxembourg (15 percentage points), but that result was not very reliable because of the small proportion of women in worklife

there. Older Italian, French, and Belgian women reported experiencing more symptoms than their younger colleagues (>5-percentage-point difference). On the other hand, the situation was reversed in the Netherlands, where younger women had more symptoms than older women (>7-percentage-point difference).

In the Finnish study younger women had approximately the same number of symptoms as senior women although there were differences between the prevalence of different symptoms (see Section 4.5.3). The result was similar for the EU data, which showed that the number of symptoms of the over- and under-45-year-olds was somewhat the same, as it was among the men as well. The mental load that a worker was exposed to on the job clearly had an effect on psychosomatic symptoms. Even though women suffered slightly less often from mental load than men (see Section 6.1.8), there were sometimes considerable differences between the countries. The mental work environment was in need of development in regard to all of the studied aspects in Greece. Apparently this situation had an effect on workers having psychosomatic symptoms far more often than in other countries.

The psychosomatic work environment differed between the Scandinavian countries. Psychosomatic symptoms were far more common in Finland than in Sweden and especially in Denmark. It was stated earlier that tight work schedules had to be changed both in Finland and in Sweden. Apparently

Figure 97. Work-related psychosomatic symptoms (stress and tension, general fatigue, sleeping disorders, anxiety, irritability, and mental trauma) among over-45-year-old women in 2000 in the EU15 countries, listed in the order of the prevalence of work-related psychosomatic symptoms from the highest to the lowest.



haste at work had affected the prevalence of psychosomatic symptoms in the Scandinavian countries, even though the symptoms of both the men and women were less common in Sweden than in Finland by almost 10 percentage points. On the other hand, the situation among ageing women in Denmark differed in that psychosomatic symptoms were scarce. Differences in culture and infrastructure hardly explain these differences.

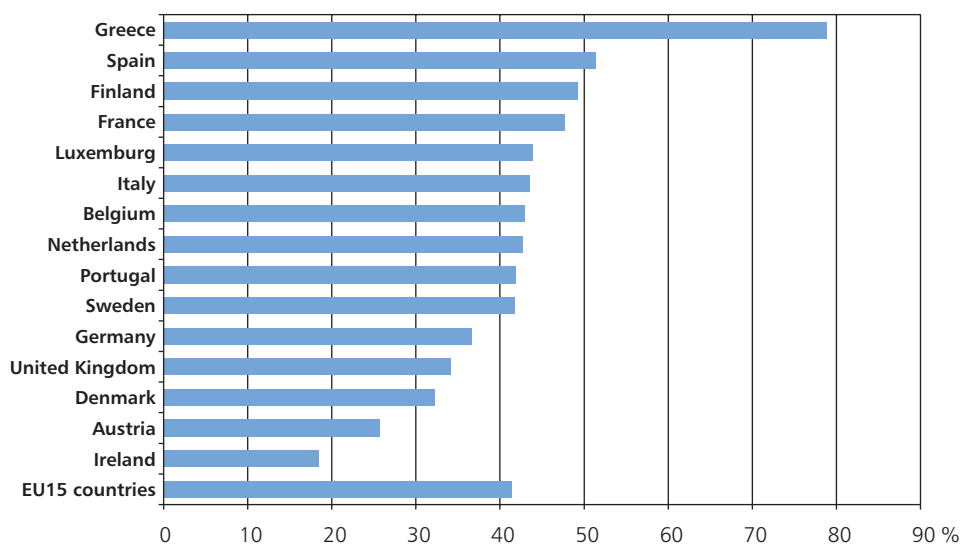
6.2.5 Stress symptoms

Stress symptoms were studied by examining head and stomach ache, stress, general fatigue, and tension, all of which were combined into the stress syndrome.

Approximately 41.4% of the ageing **men** reported stress symptoms in 2000. Greek men experienced clearly more stress (78.9%) than men in the other countries. Approximately half of the Spanish and Finnish men had stress symptoms. Such symptoms were especially scarce in Ireland and Austria. The situation in the Scandinavian countries differed, however (Figure 98).

There was no significant difference between the results of over- and under-45-year-old men, even though younger men experienced stress slightly more often than older men. This was especially the situation in Denmark and Sweden, where older men experienced fewer stress symptoms, by over 6

Figure 98. Work-related stress among over-45-year-old men in 2000 in the EU15 countries, listed in the order of the prevalence of work-related stress from the highest to the lowest.



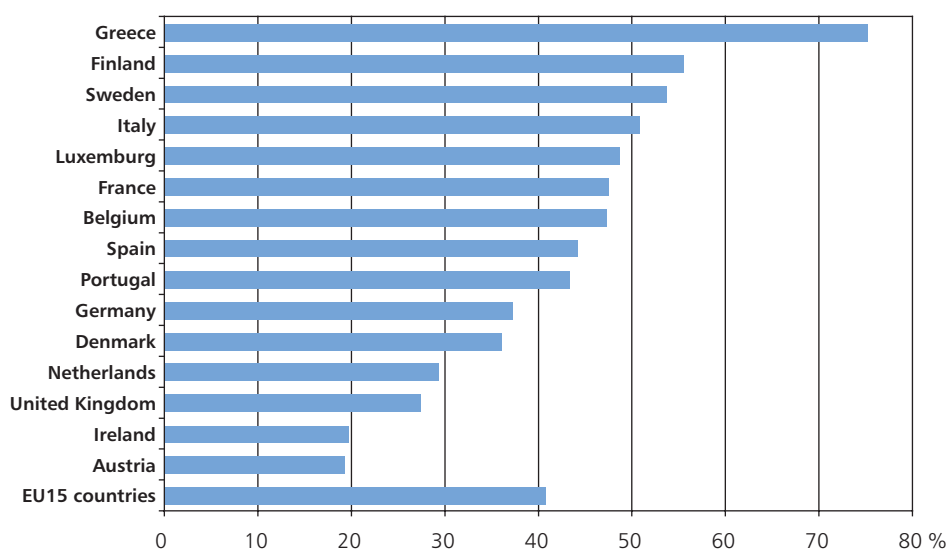
percentage points, than younger men. There was no such difference between age groups in Finland. In Belgium and Greece the situation was to the benefit of younger workers by over 4 percentage points.

Over-45-year-old **women** experienced about as many occupational stress symptoms as men in 2000. As with the men, Greek women experienced the most stress (75.2%) in the EU countries. Over 50% of the women in Finland, Sweden, and Italy also reported that work creates stress. On the other hand, only one-fifth of the ageing women in Austria and Ireland had the same experience (Figure 99).

There were no differences between the prevalence of stress systems between those under and over 45 years of age in the EU15 countries in 2000. There were, however, notable differences between the older and younger women in some countries. In Portugal and Italy, older women experienced stress more frequently than younger women by over 5 percentage points. (Stress symptoms were also more common among the older women in Luxembourg, but this finding is not reliable because of the small proportion of working women there.) The situation was reversed in the Netherlands (>7-percentage-point difference) and also in Denmark, where younger women experienced more stress symptoms than older women.

The same principle that was explained in relation to the effect of the mental work environment on psychosomatic symptoms is relevant here for stress

Figure 99. Work-related stress among over-45-year-old women in 2000 in the EU15 countries, listed in the order of the prevalence of work-related stress from the highest to the lowest.



symptoms. The results of the Finnish studies on stress symptoms were parallel with the results of the EU-15 study. Stress symptoms were as prevalent among the ageing women in Finland and Sweden, but not among ageing men, and much less so in Denmark. In fact there are differences in the prevalence of psychosomatic and stress-related symptoms within the Scandinavian countries, and these symptoms and their causes should be promptly investigated in further studies.

6.2.6 Absenteeism

Absenteeism was examined by asking “How many days of absence have you had from your main job during the last 12 months in relation to a) occupational accidents, b) occupational health hazards and c) other health problems?” Very few responses concerned absenteeism due to occupational accidents and other health problems; therefore, only the prevalence of absenteeism because of occupational health hazards was examined. The distribution of days of absence was biased, and absences of a few days were the most prevalent. Therefore, 3 days of absence or more was determined as the criterion for absenteeism.

Approximately 32.8% of over-45-year-old **men** had been absent from work for at least 3 days during the last 12 months. The greatest number of days of absence existed among Austrian and Finnish men (>45%), and the least among German, Dutch, and Greek men (<18%) (Figure 100). There were clearly fewer days of absence in Sweden, and especially Denmark, than in Finland among ageing men in 2000.

Figure 100. Work-related sickness absence (3 or more days) among under- and over-45-year-old men in 2000 in the EU15 countries, countries listed in the order of the prevalence of sickness absence from the highest to the lowest.

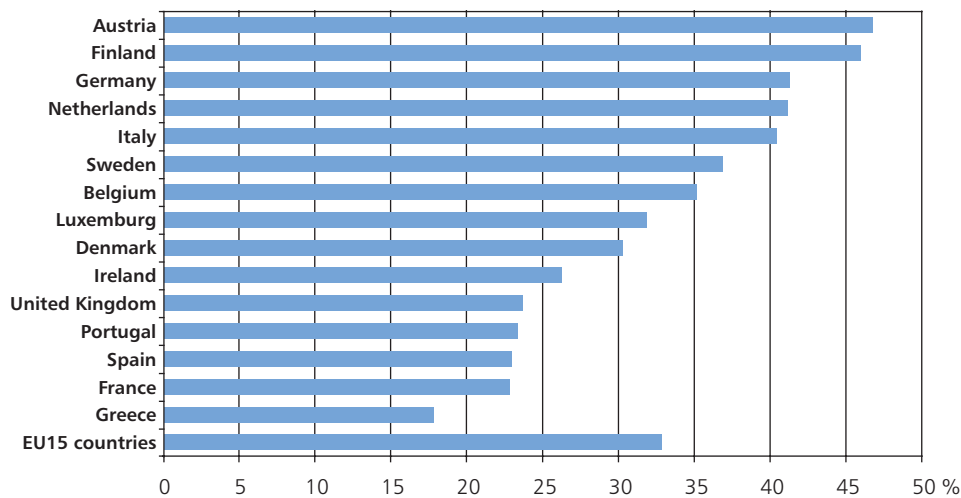


Figure 101. Difference in the prevalence work-related sickness absence (3 or more days) between over- and under-45-year-old men in 2000 in the EU15 countries, listed in the order of the percentage difference in of work-related sickness absence among over-45-year-old men from the highest to the lowest.

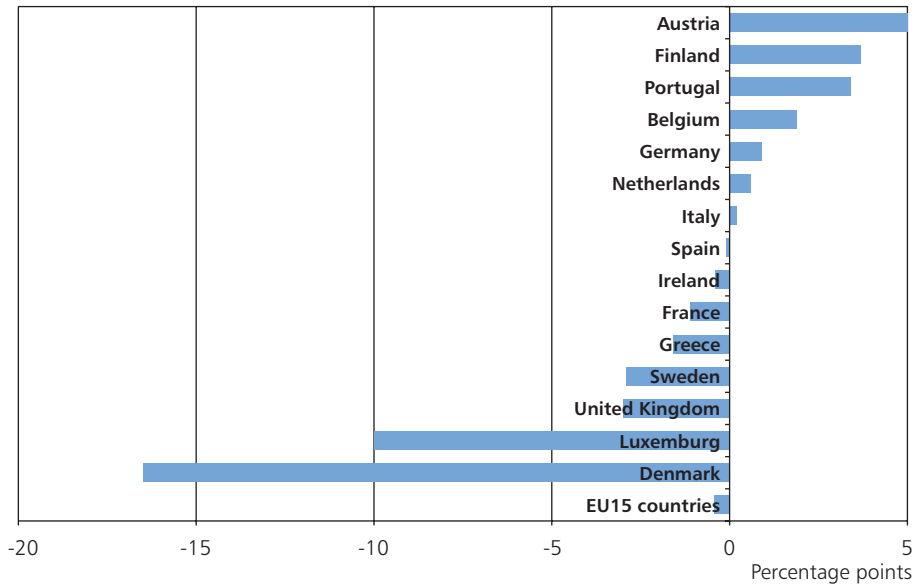
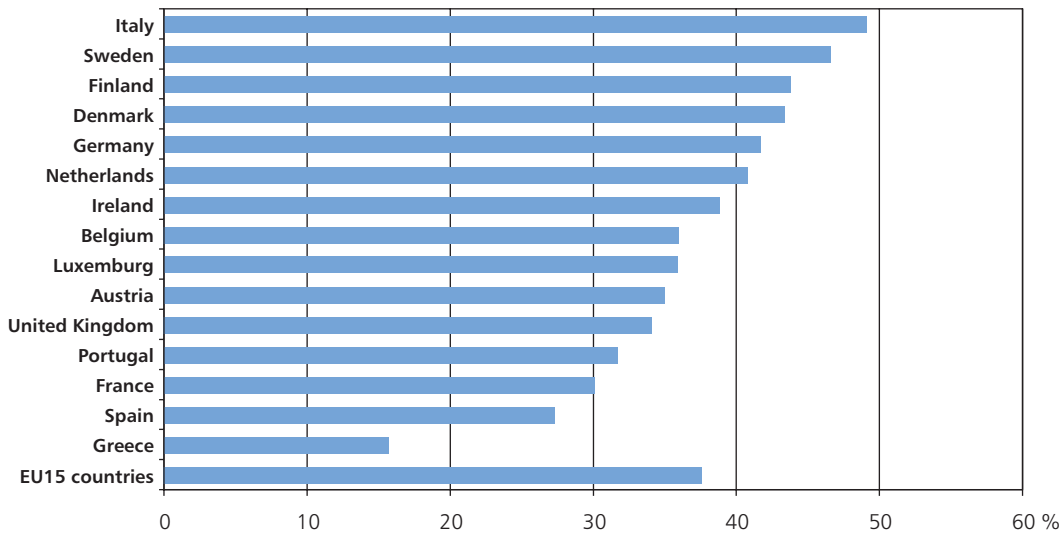


Figure 102. Work-related sickness absence (3 or more days) among over-45-year-old women in 2000 in the EU15 countries, listed in the order of the percentage difference in work-related sickness absence from the highest to the lowest.

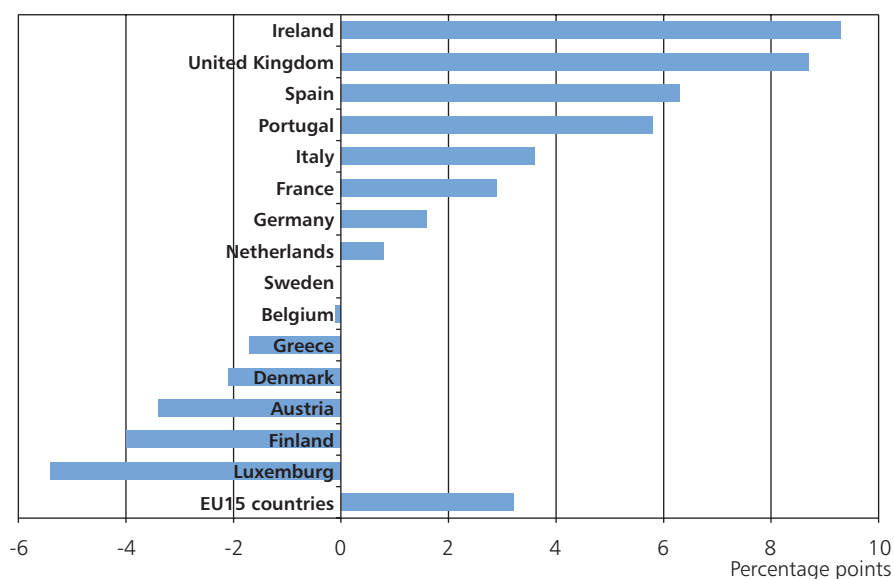


In general, there were no differences between the number of days of absence between the older and younger men in the EU15 countries in 2000. In Austria and Finland, older men were more frequently absent from work than younger men, while younger Danish men were more frequently absent for 3 or more days than older men by over 15 percentage points (Figure 101).

Over-45-year-old **women** were absent from work slightly more often than men of the same age on the average. Altogether 37.6% of the women had been absent for 3 days or more during the previous 12 months. The greatest number of absent days were reported in Italy and Sweden (>46%), but also the other Scandinavian countries and Germany and the Netherlands were in the top category of the EU15 countries in 2000 (Figure 102). The least absenteeism of both ageing men and women existed in Greece. The prevalence of absenteeism differed a great deal between the EU15 countries regardless of gender.

There was a clear difference in the amount of absenteeism of older and younger women. Older women were over 3 percentage points more frequently absent for work-related reasons than younger women. The difference between the age groups was the greatest in Ireland and the United Kingdom (>8 percentage points). Younger women were more often absent than older women in Luxembourg, Finland, and Austria (Figure 103).

Figure 103. Difference in the prevalence of work-related sickness absence (3 or more days) between over- and under-45-year-old women in 2000 in the EU15 countries, listed in the order of the percentage difference in sickness absence among over-45-year-old women from the highest to the lowest.



6.2.7 Occupational diseases in the European Union in 2001

The Statistical Office of the European Communities (Eurostat) produces data for the European Union. It gathered data on recognized occupational diseases in the EU member states for the first time in 2001. The recognition of occupational diseases and the related compensation systems differ greatly in the member states. Therefore, the data presented consist of the 68 occupational diseases accepted for compensation in 12 member states in 2001 (Belgium, Denmark, Spain, Ireland, Italy, Luxembourg, the Netherlands, Austria, Portugal, Finland, Sweden, and the United Kingdom). Altogether 31 945 new cases of occupational diseases occurred in these countries in 2001. If this figure were to be extrapolated to the EU15 countries according to the ratio of the workforce, the number of new incidents of occupational diseases would be 52 884 in 2001 (Karjalainen & Niederlaender 2004).

The number of new cases was approximately 37 per 10 000 workers in 2001. The average was higher among the men (48) than among the women (22); this finding could be explained by men working in trades in which the risk of occupational diseases is common (e.g., exposure to asbestosis or noise). The incidence rate of new cases of occupational diseases increased along with age (Table 82). There were 39 new cases among the 45- to 54-year-olds and 69 cases among the 55- to 64-year-olds per 100 000 workers in 2001.

The incidence rate for new cases of occupational disease was approximately 40 times higher among craft workers and related trades than for legislators and senior officials and supervisors. The largest number of occupational diseases occurred in mining, manufacturing, and construction. Most of the cases of occupational disease were caused by physical agents (20 937 cases), inhalation of substances (5535 cases), and skin diseases (4357 cases).

The most prevalent occupational diseases in the 12 EU countries included in the evaluation in 2001 were as follows:

- tenosynovitis (5379 cases)
- epicondylitis of the elbow (4585 cases)
- contact dermatitis (4457 cases)
- noise-induced hearing loss (4068 cases)
- Raynaud's syndrome or vibration white-finger (3120 cases)
- carpal tunnel syndrome (2483 cases)
- mesothelioma (1168 cases)
- asthma (1075 cases)
- asbestosis (783 cases)
- coal worker's pneumoconiosis (547 cases).

Table 82. Number and incidence rate for new cases of occupational disease, defined by Eurostat in 2001 by gender and age group, and extrapolation to the EU15 countries in 2001. (Karjalainen & Niederlaender 2004)

Age group (years)	Number of workers 1 000	EU12 countries Number of occupational diseases	Incidence ¹	EU15 countries Number of occupational diseases ²
15–17	1 447	120	8.3	199
18–24	9 730	2 212	22.7	3 662
25–34	23 812	5 323	22.4	8 812
35–44	23 771	7 387	31.1	12 229
45–54	18 759	7 354	39.2	12 174
55–64	7 969	5 511	69.2	9 123
>64	:	3 506	:	5 804
Men	49 649	23 743	47.8	39 306
Women	36 694	8 061	22.0	13 345
All	86 342	31 945	37.0	52 884

¹ Number of new incidences per 100 000 workers in 2001.

² Prognosis (extrapolated on the basis of the results of the EU12 countries).

6.2.8 Disability in the European Union in 2002

Some initial information on the participation of disabled 16- to 64-year-old persons in worklife were collected in 2002 in the EU25 countries. In a study on the working-aged population, altogether 44.6 million people (15.7%) reported that they had a long-standing health problem or disability (LSHPD). A long-standing health problem was defined as a health problem that had lasted or was expected to last at least 6 months. The restrictions posed by health issues for working people were evaluated with respect to the nature of the work, the amount of work, and commuting to and from work. The options for responding with respect to the severity of the disabilities were “very severe disability”, “severe disability”, and “no disability”. The persons were grouped into four classes according to the reason and severity of their disability (Dupré & Karjalainen 2003).

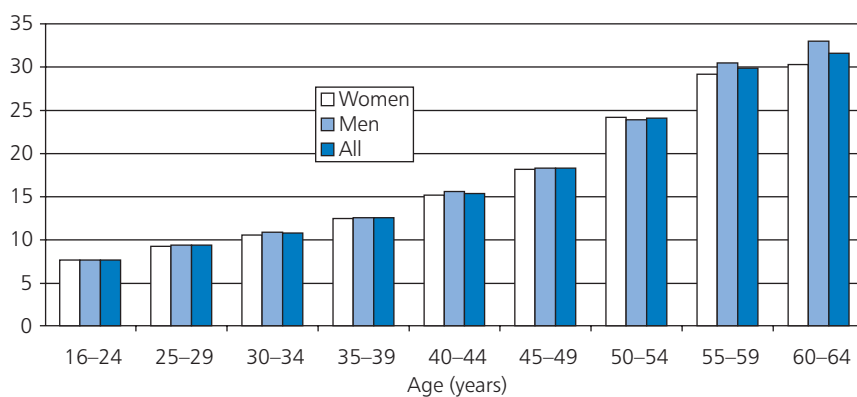
Of the people that were excluded from worklife, 78% had very severe LSHPD, while 27% did not have a LSHPD. When the people included in

the workforce were examined, two times as many people with LSHPD were unemployed than people with no disability. As few as 16% of those who were disabled because of their health had access to means that facilitated their being able to work (Dupré & Karjalainen 2003).

There was no pertinent difference in the prevalence of disability between the men and women. However, the rates of LSHPD increased rapidly with age (Figure 104). At least every fourth of the over-50-year-old people and over 30% of the over-60-year-old people reported a chronic health problem or disability. The respective figure was less than 10% for the youngest age group.

Occupational disability was also more prevalent among those with a lower level of education and those widowed, divorced, and inactive (not working but not unemployed) people. The differences varied greatly between the countries with respect to LSHPD in the working-aged population. The largest number of occupationally disabled persons was found in Finland (32.2%), and the fewest were located in Romania (5.8%). Naturally the way respondents understood and interpreted the questions, as well as national differences in the structures of health care and the practices and culture, can have affected the results.

Figure 104. Long-standing health problems or disabilities (LSHPD) in the EU15 countries according to gender and age group in 2002. (Dupré & Karjalainen 2003)



6.3 Recreation and hobbies of the ageing population

The question “*How often do you participate in one of the following activities outside workhours?*” was used to shed light on the ways workers used their leisure time. The respondents were given a list of 10 recreational activities, and the options for frequency were “daily for 1 or more”, “daily or every other day for less than an hour”, “once or twice a week”, “once or twice a month”, “once or twice a year”, “never”, and “not applicable to the respondent”.

6.3.1 Physical activity

“Once or twice a week” was defined as the criterion for leisure-time physical activity, since it can be considered regular activity, albeit not health-enhancing physical activity, the requisite for which would be daily activity. There were no data specifically on the types of physical activity or on the intensity or duration of the activity available.

Approximately 24.2% of the over-45-year-old **men** were regularly physically active in the EU15 countries in 2000. As expected, there were notable differences between the countries. Finland was an exception from the other countries in that 78.1% of Finnish men were physically active. The other Scandinavian countries, Denmark and Sweden, were listed next, but the activity level of Danish and Swedish men was under 50%. Ageing men were rarely physically active in Portugal and Greece, where only a few percent were active (Figure 105).

There was an approximately 12-percentage-point difference between the activity of over- and under-45-year-old men. Younger men were slightly more active than older men. The difference was the greatest in Italy (>20 percentage points), but the situation was similar also in Germany, Spain, Austria, and the United Kingdom, where younger men were more active by over 10 percentage points. In Finland, the situation was reversed by more than 4% to the benefit of the older men.

Approximately 27.1% of the over-45-year-old **women** were regularly physically active in 2000. The differences between the countries were just as notable as among the men. Ageing women were the most active in Finland, where 61.9% were physically active at least twice a week. Women in Luxembourg, the Netherlands, and Sweden surpassed the 40% level. The ageing women in Greece and Portugal were, however, as inactive as the men in those coun-

Figure 105. Regular physical activity (1–2 times a week) among over-45-year-old men in 2000 in the EU15 countries, listed in the order of the prevalence of physical activity from the highest to the lowest.

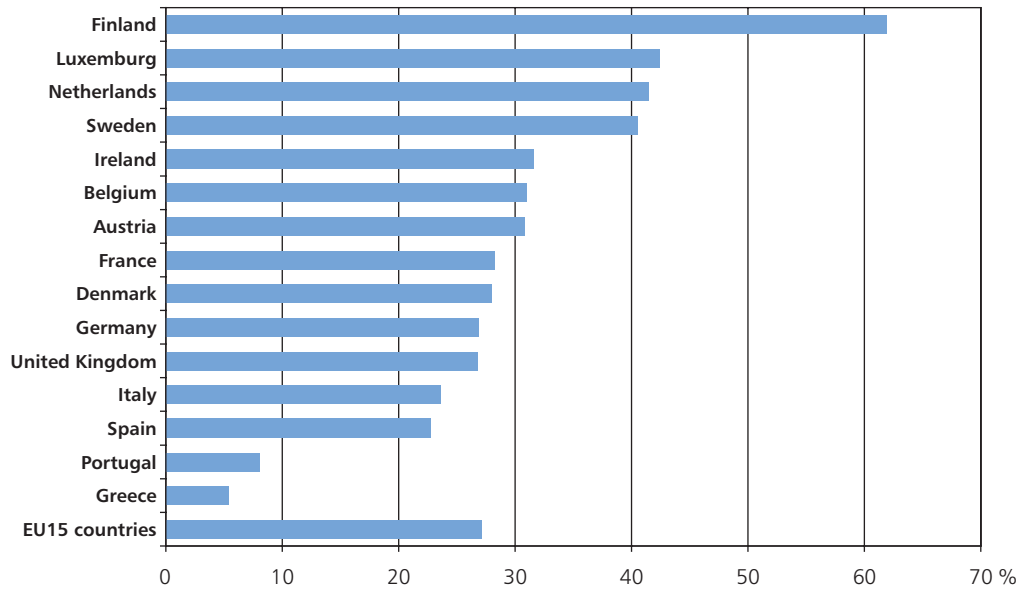
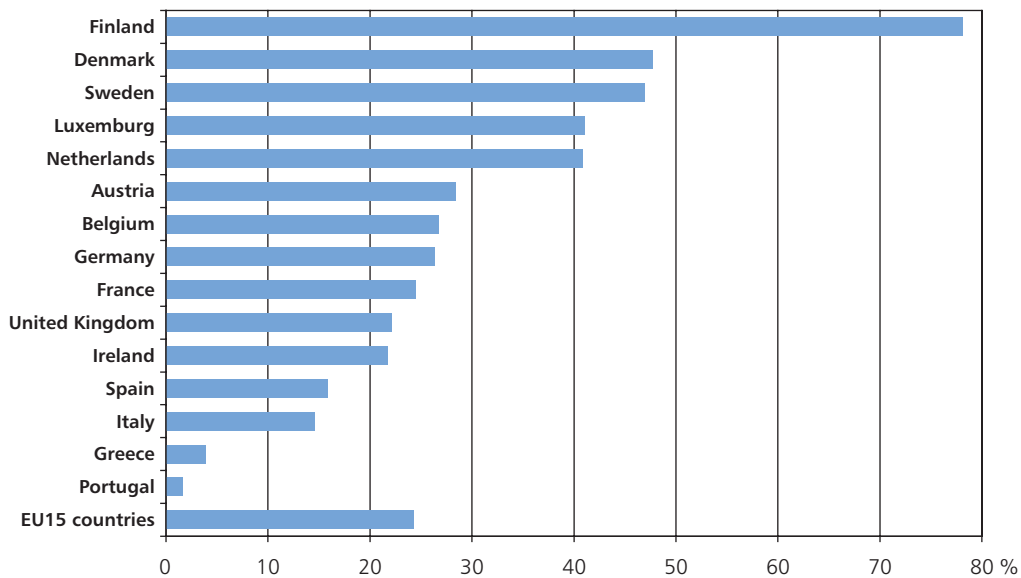


Figure 106. Regular physical activity (1–2 times a week) among over-45-year-old women in 2000 in the EU15 countries, listed in the order of the prevalence of regular physical activity from the highest to the lowest.



tries. On the other hand, ageing women were more active than men in Spain and Italy (Figure 106).

Younger women were more physically active than older women in all of the countries, the difference being an average of 19 percentage points on an average to the benefit of younger women. The difference was the greatest in Denmark, the United Kingdom, Italy, Germany, and Greece, and it was the lowest in the Netherlands and Finland.

Being physically active is linked to cultural differences, as the big variation in activity indicated. Earlier studies confirm this finding. Both the male and female populations in Finland were the most physically active in the pan-European study in 1999 (European Commission 1999, Ilmarinen 1999b). What was interesting was the difference between Finland and the other Scandinavian countries. In addition, the difference was greater among Scandinavian women than among Scandinavian men. Ageing women in Denmark are at about the EU15 average.

The difference between the countries may partly be explained by the varying ways in which people perceive physical activity. The series of questions on hobbies included inquiries about household work and other leisure-time activities. Everyday activities such as walking to and from work were not mentioned separately, and thus whether or not it was included as physical activity was left up to the respondent.

Being physically active strengthens health, functional capacity, and individual resources without doubt. Lately the regularity of physical activity has been given more importance than its intensity and duration. The definition of health-enhancing physical activity that was developed in Finland emphasizes the value of routine activities and daily physical activity. The health-enhancing qualities of physical activity evolve from its regularity. For physical activity to promote fitness, its intensity and duration must exceed a certain level. From the viewpoint of the workforce, physical activity strengthens functional capacity and thus also work ability. It is also generally accepted that physical activity forms an important means with which to prevent premature atrophy. From the point of view of the ageing population, maintaining physical functional capacity is an effective means with which to secure a life without restrictions and a better quality of living (Heikkinen & Ilmarinen 2001).

6.3.2 Course participation and other learning activities

Approximately 6.4% of over-45-year-old **men** had participated in courses or had other learning activities in 2000. Such activity was the most common in Sweden, but also 10% of the Belgian and Finnish men studied. Learning outside of work was the least common in Greece and Portugal (Figure 107).

Older men participated in voluntary studies less than younger men in all of the countries. The difference was 4.8 percentage points to the benefit of the younger men. The difference between the age groups was the greatest in the Netherlands and Finland (>10 percentage points) and the smallest in Luxembourg, Germany, and Italy (<2.4 percentage points).

Women who were over 45 years of age participated slightly more often (about 7.8%) in courses or other learning activities outside work than men of the same age. This activity was the most common in Luxembourg, Sweden, and Denmark, where nearly every fifth woman attended courses. However, only a little less than 3% of the Portuguese, Greek, and French women reported having participated in learning activities outside work (Figure 108).

As among the men, younger women participated more actively in learning activities than older ones. There was an approximately 6.6-percentage-point difference between the age groups to the benefit of younger women. The

Figure 107. Participation in courses or other learning activities (1–2 times per month) among over-45-year-old men in 2000 in the EU15 countries, listed in the order of prevalence of the learning activities from the highest to the lowest.

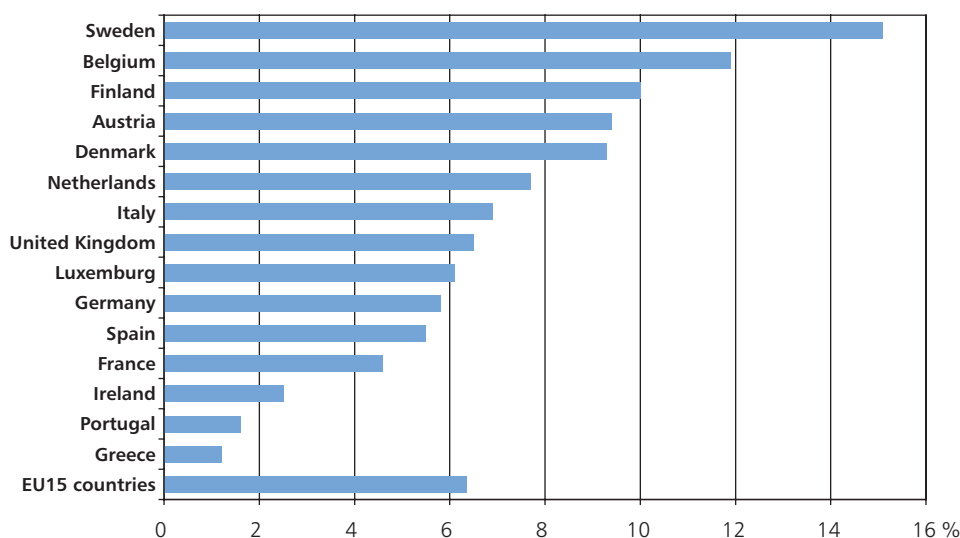
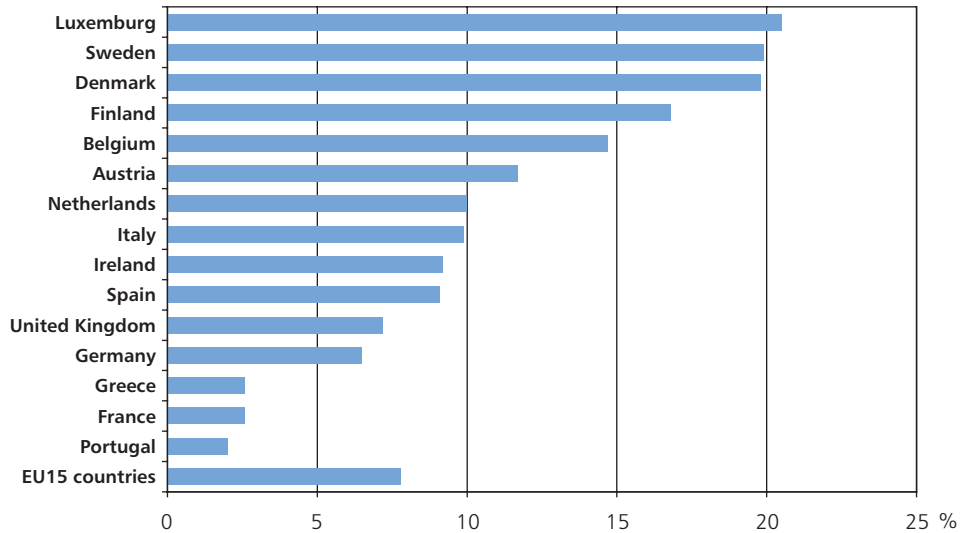


Figure 108. Participation in courses or other learning activities (1–2 times per month) among over-45-year-old women in 2000 in the EU15 countries, listed in the order of the prevalence of the learning activities from the highest to the lowest.



greatest difference between the older and younger women occurred in the Netherlands, the United Kingdom, and Sweden (>10 percentage points), and the smallest differences were found in Italy, Belgium, and Denmark (<3 percentage points). Luxembourg was the only country in which older women studied more often than younger women, by 4.2 percentage points.

6.3.3 Cultural activities

Ageing **men** were more interested in cultural hobbies than in learning activities. Approximately every third man reported doing something related to culture once or twice a month. The question did not, however, shed light on the type of activities. Over-45-year-old Austrian and Swedish men were the most active (over 40%) in cultural hobbies, while men in Portugal and the United Kingdom were the least active (20%) according to their own statements (Figure 109).

There was an approximately 3.4-percentage-point difference between the activity of older and younger men in cultural matters to the benefit of younger men. Especially older men in Austria, but also in Ireland and Sweden, were more active than younger men. Younger men in Portugal and Spain were more active than older men by 10 percentage points, however.

Over-45-year-old **women** were slightly more active in cultural activities than their male counterparts. Over one-third of the women reported that they

Figure 109. Participation in cultural activities (1–2 times a month) among over-45-year-old men in 2000 in the EU15 countries, listed in the order of the prevalence of cultural activities from the highest to the lowest.

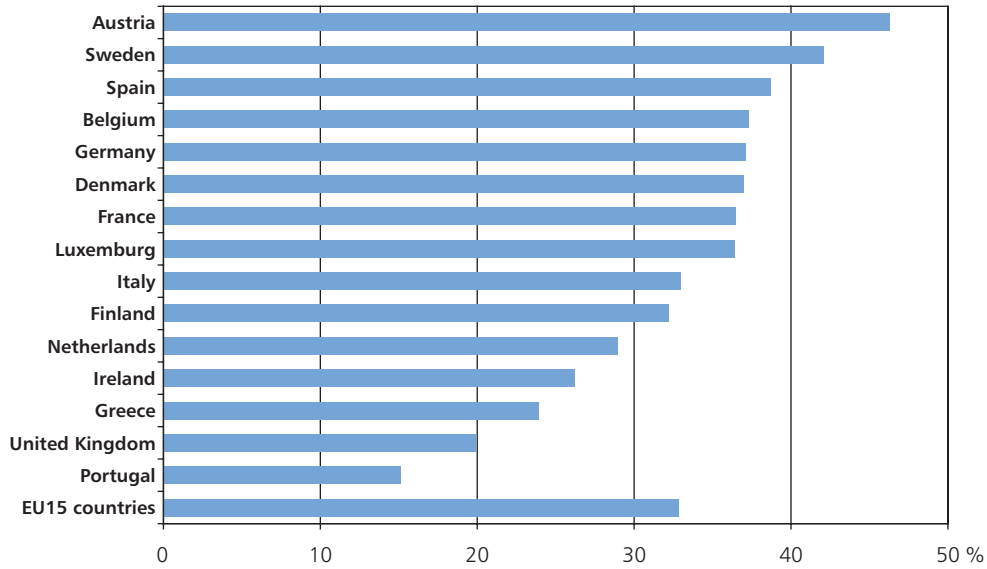
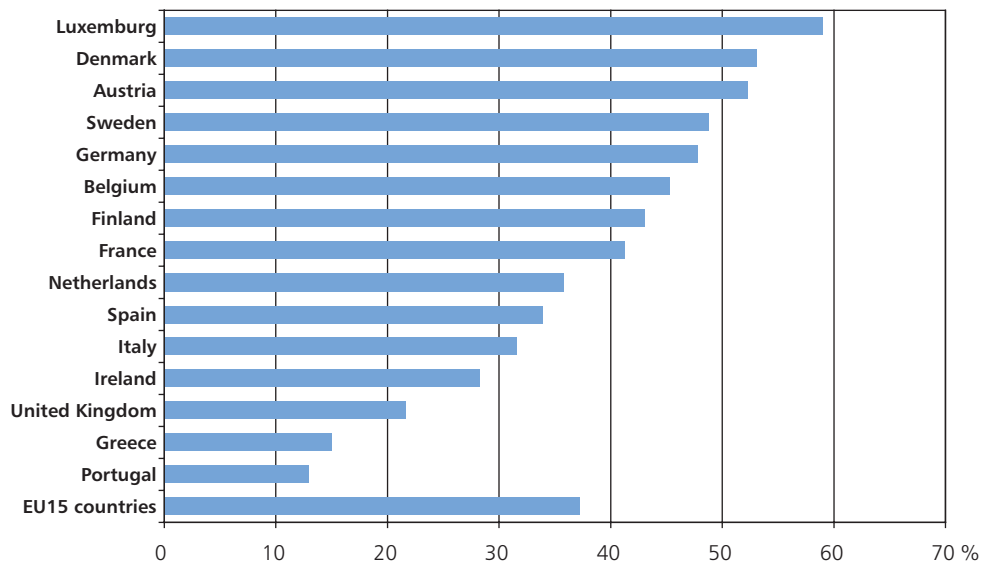


Figure 110. Participation in cultural activities (1–2 times a month) among over-45-year-old women in 2000 in the EU15 countries, listed in the order of the prevalence of cultural activities from the highest to the lowest.



took part in cultural activities once or twice a month. Such activity was the most common among women in Luxembourg, Denmark, and Austria, where over half of the women mentioned participating in cultural activities. Portuguese and Greek women were the least culturally active (<15%) (Figure 110).

The differences between the age groups among the women were smaller than among the men. The older women in Belgium and Austria were more active at the cultural level than younger women, but the situation was reversed in Spain and Greece.

6.4 Is it possible to continue to work in the same job at 60 years of age?

The respondents that were under 60 years of age were asked to answer the question “*Do you believe that you could do the same work you do today when you are 60 years of age?*” The alternatives were “yes, I believe so”, “no, I do not believe so”, “I would not want to (spontaneous)”, and “I could not say”. This section is a report on those that believed they could continue to work in the same job that they currently do when they are 60 years of age.

Over two-thirds of ageing **men** (45–59 years of age) believed they could continue to do the same job at 60 years of age. This was most strongly the case in Denmark (83.3% of respondents), but the percentage of affirmative responses was over 70% also in six other countries. However, in Portugal, France, and Luxembourg only approximately half of the men thought that their work would suit a 60-year-old worker (Figure 111).

Over-45-year-old men were far more apt to report that they could continue to do their job at 60 years of age than the younger men, the difference being approximately 20 percentage points. Especially older men in Denmark, as well as in Sweden, were of this opinion by nearly 30 percentage points.

Slightly fewer ageing **women** (45–59 years of age) believed they could continue in their present job at 60 years of age than their male counterparts. Over 70% of the women in the United Kingdom and Denmark were of this opinion, but also the answers of women in the Netherlands and Austria came close to this level. However, less than half of the ageing women in Portugal, Belgium, and France believed that they could work in the same job at 60 years of age (Figure 112).

Figure 111. Belief in ability to continue to work in the same job at 60 years of age among over-45-year-old men in 2000 in the EU15 countries, listed in the order of the prevalence of the belief from the highest to the lowest.

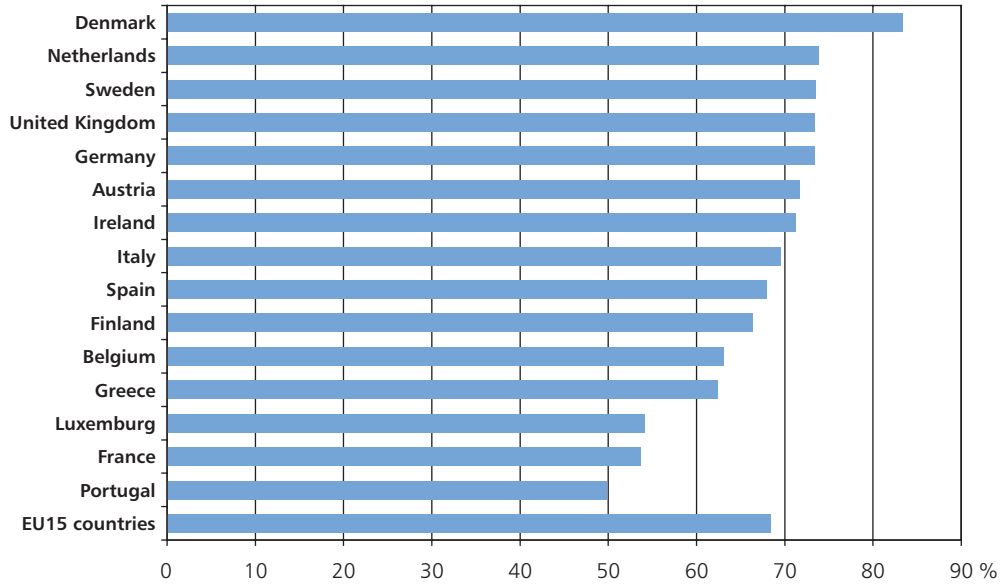
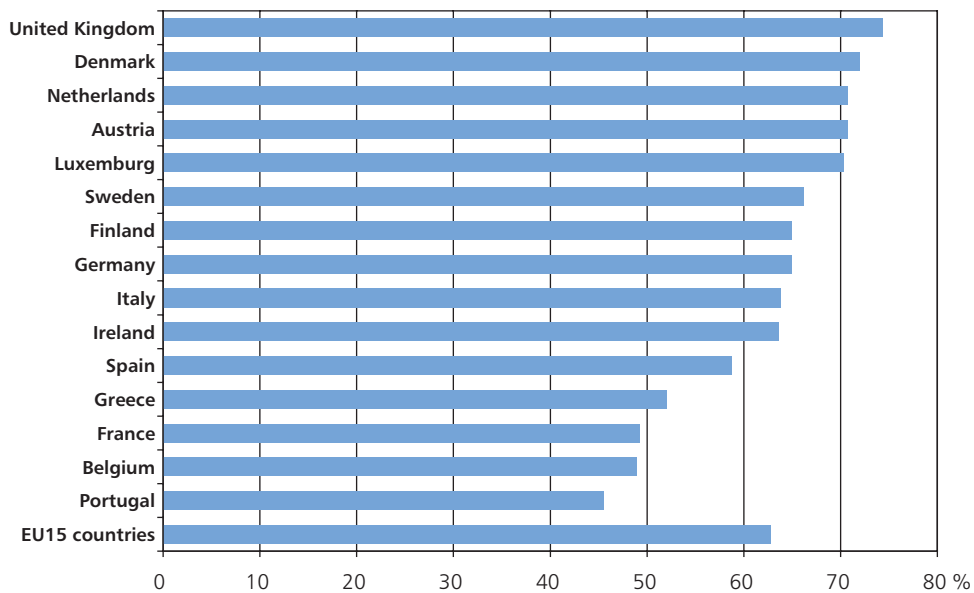


Figure 112. Belief in ability to work in the same job at 60 years of age among over-45-year-old women in 2000 in the EU15 countries, listed in the order of prevalence of the belief from the highest to the lowest.



As with the men, the belief was stronger among the older than the younger women by approximately 15 percentage points. The difference between the age groups was over 20 percentage points for Sweden, Ireland, and Luxembourg, while it was under 10 percentage points for Belgium, Portugal, and Spain.

These results reveal, first, that most (two-thirds) of the 45- to 59-year-old workers in the EU15 countries in 2000 believed that they would be capable of continuing to work at their present job at 60 years of age, while one-third of the workers did not concur. Evidently most of the workers' tasks were such that the 60-year age limit would not pose restrictions to work. The differences between the age groups confirmed this notion. It was more difficult for the younger workers to evaluate the matter than their older colleagues. In addition, the earlier results on, for example, the match between workskills and job requirements proved that the vast majority of workers believed that their skills would suffice.

Provided that this notion would be realized, the objective of a 50% employment rate among 55- to 64-year-old people in the European Union in 2010 could easily be met. Apparently personal beliefs are not good predictors of what ageing will bring with it, however. The fact is that workers have left worklife under 60 years of age in nearly all of the countries. The positive aspect is that people believe in their potential, as well as in the current content and quality of their work. An entirely other matter is the large minority (one-third of the respondents) for whom continuing to work after the age of 60 years will evidently mean changes in their present job or new, more suitable tasks for seniors.

6.4.1 Working at 60 years of age: the significance of health and work in the European Union

The relation of age, health, and work to continuing to work at the age of 60 years was analyzed more carefully in the EU data (Molinie 2003). There were many restrictions, however, that made it difficult to examine continuing to work at an older age. First, health had primarily been examined from the point of view of whether work affects one's health. It seems that work has not been the "operator" of healthy people. It was also not possible to analyze the meaning of work with respect to health if, for example, a respondent did not have a work history.

On the other hand, age and gender did affect the relations between work and health. Women who reported a greater number of health problems also had a weaker link to work than men, and the effect of work on health with age weakened more than among the men. This may be the case because ageing

is perceived as having a greater effect on health than work. Therefore, the comparison between the health of people exposed to occupational hazards and the health of those who are not exposed, as reported in the European data, does not present an unambiguous and clear picture.

The results showed that the proportion of those who believe they will be capable to do their current job at 60 years of age grows linearly among the men and the women. This finding was primarily explained by the lacking ability of younger workers to evaluate their situation at the age of 60 years of age. The closer the respondent was to the age of 60, the more concrete the evaluation became. When this result was compared, however, with the proportion of workers that did not think that their work had an effect on their health or that work was not a health risk, there were no clear differences between the age groups. In other words, work that did not threaten one's health was not related to the evaluations of the ability to continue to work at an older age.

On the other hand, the proportion of workers that did not believe that they would be able or willing to maintain their current job at the age of 60 years decreased almost linearly with age. This was an interesting finding, particularly because continuing to work seemed to be more connected to willingness than to ability in all of the age groups, the difference narrowing with age. When the responses of those who thought work had an effect on health and those who thought it did not were compared, the decline remained somewhat linear among the men and changed slightly more within the age groups of the women.

In other words, only 10% of the 55- to 64-year old men and women who felt that work had an effect on their health thought that they would not be able or willing to continue in their current job at the age of 60 years. In addition, of the oldest age group of the men and women who thought work did not have an effect on their health, approximately 25% felt that they would not be able or willing to continue working. For those that thought that work does not have an effect on health, the willingness to continue working declined more than for those who thought that work affects health. Whether people involved in trades with health risks are, perhaps, more closely connected with worklife than those whose work does not involve risks will remain for future research to determine. Additional investigations are also necessary with respect to health risks that are new or have not been identified earlier, such as fine particles and different sources of radiation. It is possible that ageing weakens one's protection mechanisms against exposures that are difficult for people to identify.

A logistic regression analysis in which the explaining factor was the ability or willingness to continue to work in one's current position at the age of 60

years slightly explains the situation. First of all, the likelihood of the men continuing to work in their jobs was greater than that of the women. When the likelihood of the 15- to 24-year age group had an odds ratio (OR) of 1.00, the likelihood of 25- to 54-year-old workers was 2.5 times greater (OR 2.51), and that of the over-55-year-old age group was nearly 5.5 times greater (OR 5.46). On the other hand, seniority (i.e., the years one had been part of worklife) did not seem to explain the ability and willingness to continue to work. The likelihood of people with both a short (less than a year) and a long (over 20 years) worklife was smaller than that of people with 4–9 years of experience in worklife.

The most likely occupational sector to continue to work was the administrative sector. When the likelihood of people in that sector continuing to work at the age of 60 years was classified as OR 1.00, it was half as likely for uneducated workers (OR 0.50) and machine operators (OR 0.52) to continue to work than for workers in administration. The respective figure for workers in the service and trade sector was only slightly greater than that of the other sectors (OR 0.60), and even people with supervisory posts in the administrative sector had a smaller likelihood to continue to work (OR 0.82).

An analysis of work conditions gave some interesting results as well. Shift workers and workers that had been exposed to physical loads and tight work schedules for at least half of their worktime were less likely to continue in the same job at the age of 60 years. These exposure factors were emphasized also as perceived health hazards. Little use of a computer at work, which was not perceived to be a health hazard per se, led people to believe that it would be difficult to continue to work at an older age. It seemed, indeed, that the use of new technologies indicated a willingness to continue in worklife, which may be explained by selection into certain occupations.

Workers who had stated that they had sufficient time to do their work seemed to be more able and willing to continue to work. On the other hand, participation in training or receiving help and support from colleagues during recent years did not seem to be connected to continuing to work at an older age. Of the rest of the factors studied, the effect of work on a person's health proved to be the most significant obstacle to that person continuing to work in the same job at the age of 60 years. There were no significant differences between the ability of under- and over-45-year-old workers to continue to work in relation to the studied risk factors (Molinie 2003). The perceived effects of work on health are an important message of the direction in which European worklife should be developed in so far as the idea of working at the age of 60 years is a goal worth promoting.

6.5 Criteria for a good worklife in the EU regions

Chapter 6 examines the characteristics of worklife and the health of workers in the European Union in 2000. The areas of worklife in need of development are also evaluated for the separate countries with respect to the different factors of exposure. The following analysis concerns the 12 factors that were used to define the criteria for a good worklife. It was conducted for the different EU regions so that the Scandinavian countries (Sweden, Finland, Denmark) formed their own group, as did the middle-European countries (the Netherlands, Belgium, Luxembourg, Germany, France, Ireland, Austria and the United Kingdom), and the countries of southern Europe (Greece, Italy, Spain, and Portugal).

The criteria for a good worklife are considered to be the following:

1. Physical work environment: exposure to vibration, noise, heat, cold, impurities in the ambient air, handling of or contact with dangerous chemicals, or exposure to harmful radiation *hardly ever or never*.
2. Physical workload: exposure to poor work postures, the handling of heavy loads or repetitive work *hardly ever or never*.
3. Tight work schedules: working at a very fast pace or according to tight schedules *hardly ever or never*.
4. Ability to regulate one's work: ability to have a break at will and to choose or change the order of worktasks, work methods, workspace and amount of work.
5. Workskills: workskills that meet job requirements.
6. Supervisory work: opportunity to discuss work-related issues with supervisor.
7. Supervisory work: discussion leads to improvement at the workplace.
8. Age discrimination: no personal encounters with age discrimination.
9. Health and safety: health and safety not in danger because of work.
10. Work promotes health.
11. Continuing to work in the same job at 60 years of age: belief in ability to work in one's current job at 60 years of age.
12. Job satisfaction: satisfied that, on the whole, work conditions are very good or rather good.

The fulfillment of the criteria for a good worklife and their averages are presented in Table 82. The criteria were the most often met on the basis that there was no age discrimination, job satisfaction was high, workers' skills met the job requirements, workers had opportunities to discuss matters with their supervisors and these discussions led to improvements, and the work was not a threat to health or safety. The more rarely met criteria included those concerning tight work schedules, physical workload, and the physical work environment. The health-promoting effect of work remained at approximately the 1% level and thus did not support the presence of a good worklife (Table 83).

The regional analysis of the averages (minimum: 0 criteria met – maximum: all 12 criteria met) showed that the Scandinavian and middle-European countries were close with respect to the prevalence of a good worklife. How-

Table 83. Prevalence (%) of factors fulfilling the criteria for a good worklife and the mean rating of workplaces according to the European region.

Factor	Scandinavian countries (n = 4 526)	Middle Europe (n = 10 796)	Southern Europe (n = 6 130)
Physical environment	42.9	49.7	50.6
Physical workload	23.8	29.8	25.4
Tight work schedules	18.6	27.1	34.9
Ability to regulate	42.4	37.9	40.0
Work skills	88.6	82.2	82.7
Social environment	81.8	71.7	49.9
Discussions lead to improvements	75.2	66.8	54.0
Age discrimination	96.7	96.6	98.3
Health, safety	80.3	72.1	60.7
Work promotes health	1.3	1.1	0.6
Working in the same job at 60 years of age	54.2	52.7	46.8
Job satisfaction	90.6	87.3	76.0
Mean (min 0, max 12)	6.96 (SD ¹ 1.85)	6.75 (SD ¹ 2.09)	6.20 (SD ¹ 2.16)

¹SD = standard deviation.

ever, the southern European countries lagged behind primarily because of the social environment of the work, supervisory work, health and safety risks at work, and job satisfaction. The lack of tight work schedules was more prevalent, however, in southern Europe, especially in comparison with the Scandinavian countries.

CHAPTER 7

TOWARDS A BETTER WORKLIFE

CHAPTER 7

TOWARDS A BETTER WORKLIFE

- 7.1 MANY CONCEPTIONS AND PROCEDURES
MUST BE CHANGED
- 7.2 THE GAP BETWEEN KNOWLEDGE
AND ACTION
- 7.3 RECOMMENDATIONS

7 TOWARDS A BETTER WORKLIFE

Working after 60 years of age has become an important objective worldwide. The question has been actively discussed in the European Union, and the focus of age policy is starting to shift to the workforce over 60 years of age. The book *Working Beyond 60—Key Policies and Practice in Europe* (Reday-Mulvey 2005) discusses this issue along broad and concrete lines. The approaches evolving from the key observations are discussed in this chapter.

Where can funding be found for a longer life?

Because of the ageing of the population and the funding of pensions, it is essential to find solutions to support ageing employees in continuing their worklife. The significant increase in life expectancy is one of the greatest achievements of our time, and it is highlighted by the fact that the increased period of life is also healthier and without functional limitations. In developed countries, the concept of a third age has been adopted. The concept depicts a phase in life when people have done their duty and can choose the kind of life they want to live in terms of rest, hobbies, and other activities—a golden age.

Retirement thus takes place before old age, and old age does not start at the beginning of retirement. Therefore, it is important to re-define retirement since it does not mean the end of an active life. A big challenge is how to find funding for the average retirement periods of 20 years for men and 25 years for women in the European Union.

During the last 20 years, early retirement pensions have strongly characterized the final years of employees' careers and have led to a premature and complete departure from worklife. Gradually leaving worklife has been rare, and, therefore, "silent knowledge" and experience are vanishing from enterprises. It is also a sign of less appreciation of experience. A social paradox lies in the fact that people often leave worklife for early retirement even though their health and life expectancy are continually improving. Employees over 60 years of age have become scarce in worklife, especially in large corporations. Early retirement became a "social right" in many EU countries.

The effects of the ageing population on national economies encouraged, for example, the OECD to examine the sustainability of social security systems,

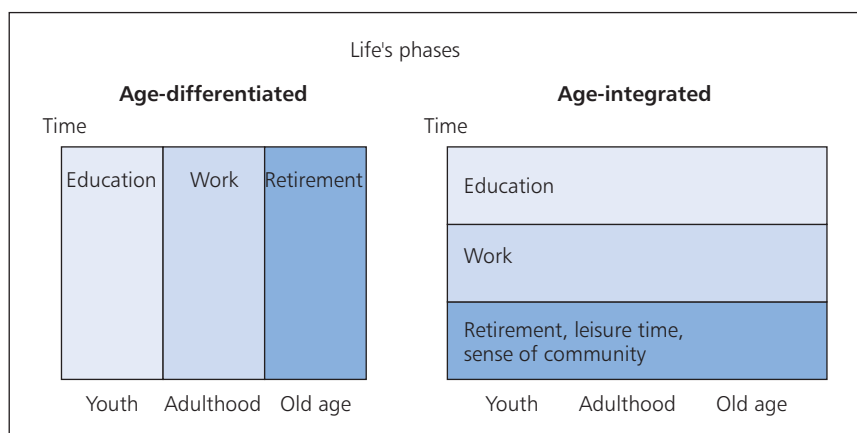
especially the management of future retirement costs. Pension reforms have increased the retirement age in many countries. The increased retirement age also applies to women, whose retirement age was previously a lot lower than that of men.

The importance of an employment pension to women's pension security was emphasized, as was taking into account other services (e.g., family leave) in the calculations of pension security. In the Scandinavian countries, women had, however, been at least as active in worklife as men already for a long time. Therefore, the increased employment rate of women, extended worklife, and the resulting better pension security primarily applies to the countries in southern Europe.

In many EU countries, pension reforms have pursued a longer worklife. Countries can be divided into those in which these reforms were holistic and included both incentives and limitations (e.g., Finland, Denmark, the Netherlands, and the United Kingdom) and those who strived especially to decrease the popularity of early retirement (e.g., Germany, France, Italy, and Hungary).

The **parallelism of life's phases requires a change in worklife**. The previous categorization of life's phases into separate periods of training, work, and retirement can today be illustrated rather as parallel periods of life (Figure 113). We simultaneously train ourselves, build families, spend leisure time, and gradually retire. Training has become life-long learning, and different forms of flexibility in worklife, from part-time work to other flexible workhour schemes, enable a new type of leisure time. A suitable process must be found for retirement that does not function as the previous "guillotine models" did—cut off in one stroke.

Figure 113. Parallelism of life's phases. (Reday-Mulvey 2005)



The **future demands mental and social work ability**. Worklife is constantly changing to the direction of providing services. In the United States, almost 80% of work is in the service sector, and the development is similar in the European Union. More and more research and development, planning, marketing, maintenance, storage, quality control, and distribution are included also in more traditional lines of business. Computers are becoming tools regardless of the occupation.

New features of work primarily emphasize the need for mental and social functional capacity and work ability, regardless of age. These areas of functional capacity do not deteriorate with age, preferably vice versa. Therefore, changes in worklife enable extended careers if personal resources and work demands are compatible.

This situation also makes it possible for older women to continue to work even though their physical prerequisites for heavy work limit their possibilities more than men's do. In many countries, older women are already working part-time in the service sector, and, if part-time employment is voluntary, it offers good possibilities for an extended worklife. However, pension security must be improved, and in several countries, including Finland, economic issues prevent employees from working part-time. Part-time work does not enable a decent living. Thus enabling part-time work is not only dependent on changes in worklife, but also on solutions to the financial basis of living.

It should also be emphasized that worklife has not been completely free from physical stress. The results of EU member states (see Section 6.1.2) has shown that most men and women over the age of 45 years still experience physical load in their work, and new technology has not yet been able to eliminate poor work postures, the handling of heavy loads, or repetitive work. Many senior employees work in such occupations, which need less education. Therefore, they must be given the opportunity for shorter careers if changing work is not possible.

Workhours should be shortened and age management promoted. Because only a few people over 60 years of age work full-time, it can be concluded that shorter workhours may be a solution for many seniors (Reday-Mulvey 2005). It must be kept in mind, however, that, for example, entrepreneurs work full-time significantly longer than employees. Their work ability also seems to remain good, a little better than that of employees but significantly better than that of farmers (Peltoniemi 2005).

Part-time work and gradual retirement may also be beneficial for employers. It decreases costs, increases productivity, and decreases sick leaves, as illustrated by the case examples given in Chapter 5. Part-time work is also

beneficial for the employee in that stress is reduced, health improves, job satisfaction increases, and physical workload decreases to a level between that of full-time work and retirement. Work years and pension security accumulate, and active participation supports the maintenance of functional capacity. This model may also be beneficial for society in that the employment rate increases, the number of grey workforce decreases, and voluntary work receives new resources. The best models for part-time work include part-time retirement, in which income level and pension security are both ensured (e.g., Finland, France, and Germany).

In the European Union, the development and ever more common age management practices have significantly affected the extension of work careers in enterprises with access to pertinent information on the subject. Key measures of age management have, according to Reday-Mulvey (2005), included the following:

- decreasing workhours, part-time work, and gradual retirement
- career planning
- life-long learning and continuous training of seniors
- improving work ergonomics
- increasing mobility according to suitable work
- alleviation of senior employment effects and decreasing the cost of the workforce
- increasing employment years that entitle a retirement pension
- preventing age discrimination, which is to be promoted in all of the EU countries by the year 2006
- distributing and implementing good age management practices in enterprises.

Retirement should be awarded on just grounds. People enter worklife at different ages, from different backgrounds, and after different forms of education. Their life expectancy may also differ. The deviation may be almost 10 years between different occupational groups, as has been noted, for example, in France.

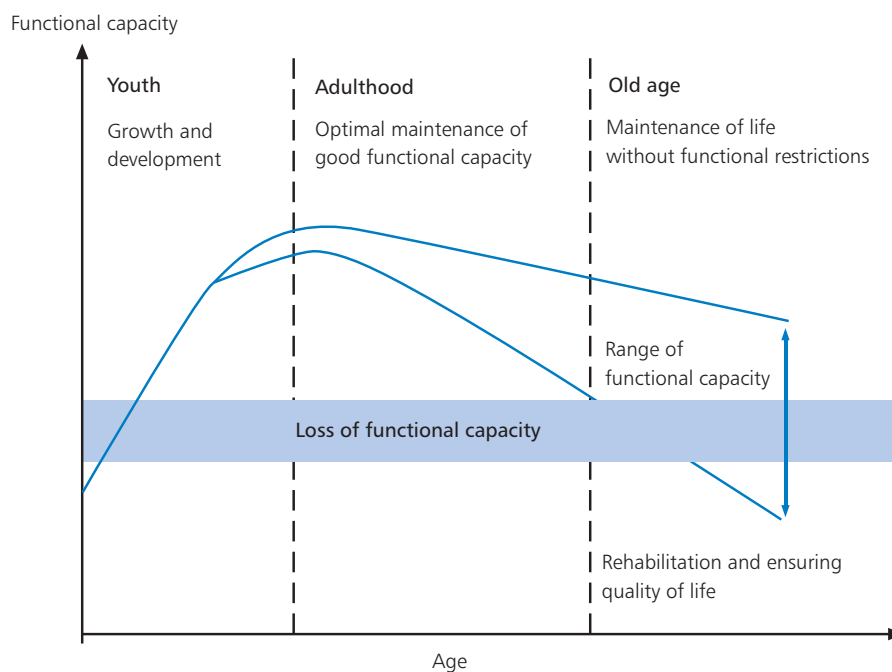
Only part of the workforce moves straight to old-age retirement. Most people are granted work disability pensions or other forms of retirement first. In Germany, only 30–40% of the people in physically demanding occupations move straight to old-age retirement. The heavier the work, the scarcer old-age retirement becomes. For example, in quarry work, only 3% of the workforce is awarded old-age retirement, whereas 80–90% of white-collar workers and up to 92% of university teachers are able to work until old-age retirement (Ilmarinen & Tempel 2002).

Therefore, the demands, risks, and total load of worklife must be taken into account when retirement ages are defined. If work cannot be lightened, part of the workforce must have the opportunity to retire earlier. This situation applies especially to physical occupations, but also to other demanding jobs in which load is caused either by demands close to the limits of functional capacity (such as demanding environmental conditions, heat or cold) or by a workload that is unnatural to the biological rhythm of human beings (such as heavy three-shift work).

Individual differences naturally demand flexibility in shifting to retirement. The significant increase in individual differences makes a good retirement age hard to estimate and generalize. In Figure 114, the increase in individual differences has been illustrated according to a WHO model. Finding an optimal and justified period of retirement along the course of life is, however, rather difficult. One thing is, however, crystal clear—having age as the only criterion is the most unjust solution for retirement.

It seems astounding that, for over five decades, the age of 65 years has been accepted as the general retirement age. The least that pension reforms might achieve is to change the criteria so that the retirement age is flexible. When

Figure 114. Increase in individual differences in functional capacity during a person's life course. (WHO 2002)



retirement should start and when it should end have been partly detached from the problems of worklife, and other policies intervene with this issue. It is, however, evident that big differences in life expectancy and total workload have to be taken better into account than before. Therefore, a flexibility period of 5 years is too short to cover individual differences—10 years would be closer to reality. Keeping work disability pensions as one alternative is, in this sense, justified, although it would be better for a person's dignity to enable retirement before functional capacity is lost.

According to Reday-Mulvey (2005), working after 60 years of age demands the following actions:

- a holistic approach supporting an extended career, including supporting both healthy and active ageing in all areas of life, as well as suitable support of the final years of one's career according to the principle of age management
- cooperation and coordination of social and financial policies: pension reforms, supporting employability, and worklife reforms must be integrated and added to the everyday operations of enterprises
- active discussion based on facts and listening to different parties: open discussion between employee and employer organizations, citizens, and political decision makers is essential, and the role of the media as a mediator is central
- an effective and quickly realizable plan is necessary: reforms usually take a long time since acquired benefits also have to be changed.

7.1 Many concepts and procedures must be changed

The following sections list some issues that affect the practical implementation of extended worklife:

1. *The concept of age has to change:* Instead of emphasizing the ageing of the population, a more correct expression would be the lengthening of middle age. Whereas, previously, middle age, including early and late middle age, was positioned between the ages of 40–60 years, the definition of middle age could, in the future, cover life until 65 years, or even 70 years. Naturally, people 40 and 65 years of age belonging to the “same age period” represent the great variation of middle age. The new definition of age also contains the

need for describing age more accurately and fairly. The terms “aged” or “older” and “old” have negative connotations in our contemporary language.

2. Retirement is not just a point in human life; instead it is a process, during which people *retire gradually and in a controlled way*. It is the opposite of the general “all or nothing” model, in which working stops suddenly. The sudden stopping of work has been compared with falling off a cliff (cliff retirement) or having an accident (guillotine retirement).

3. *Planning the shift to retirement*, implementing it, and managing it belong within the sphere of worklife. Senior training should include preparation for retirement. Good preparation for seniority lengthens worklife.

4. In most occupations, an extended career is based on *decreasing workhours or workload*. Part-time work and flexible workhour arrangements are the most potential methods of adjusting workload. Full-time work is not an option for extending worklife for most employees. Part-time work should be voluntary, and it must enable a decent living and pension security. Achieving these conditions requires, for example, legislative action, at least in Finland.

5. *Life-long learning* must become everyone’s right. The right for education, improving one’s expertise, and vocational training should be a part of work, and it should also extend to retirement. Appropriate methods that support the learning of seniors must be used in training systems.

6. *Building and finding a suitable job* may require re-education or moving to obtain a suitable job. Teleworking may offer one opportunity. Defining the job and developing methods and procedures is important. Developing one’s own work and related training should be associated with the abilities of seniors.

7. It must be possible to retire from heavy and consuming occupations *with good functional capacity*. Therefore, work must be lightened, the person must switch to another job, or an opportunity to retire must be made available earlier without the label of work disability being applied. The implementation of this principle requires legislative action. The fair criteria for retirement age must be partly adjusted according to the total load of different occupations and life expectancy. Making a so-called second career a part of career planning is a good alternative for people in heavy and loading occupations.

8. The enterprise *costs of seniors must be decreased*. Accomplishing this requirement may mean setting salaries more clearly according to productivity. The indirect workforce costs of senior employees must be decreased. It would decrease age discrimination and enable senior employment.

9. *Economic factors form the greatest challenge* to extending and improving worklife. Increasing demands on productivity, tight schedules, and changes

in worklife caused by economic decline alienate people of all ages from worklife, especially seniors. Everyone is entitled to be treated with human dignity in his or her work. Globalization, the “Chinese phenomenon”, and moving production somewhere where it benefits faceless owners will not lengthen, for example, the careers of baby boomers, quite the opposite. Perhaps the situation will be rectified with the younger generations. Bad practices and human mistreatment, however, will remain a burden for the image of the enterprise for a long time. This silent negative information is easily transferred from one generation to another.

7.2 The gap between knowledge and action

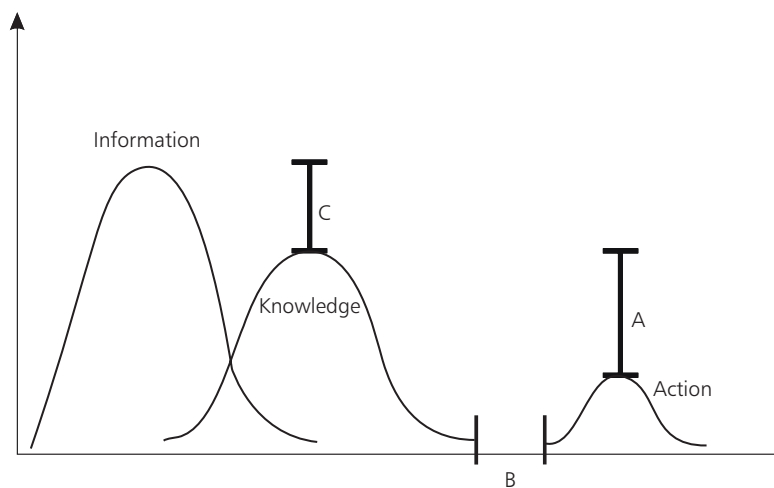
In this book, research information about ageing and work is combined in accordance to the needs of different user groups. Combining information and its adaptation into an understandable and clear format are, however, merely early stages in a process that aims to change the practices of worklife. There is an abundance of information available on ageing, and it increases yearly at such a pace that following, understanding, and handling it all would require a great deal of time. Information is not automatically cultivated into meaningful knowledge. And knowledge is not automatically transferred into practice. This paradox is illustrated by the “Knowing-doing gap” (i.e., the gap between knowledge and action) (Pfeffer & Sutton 2000).

The inconsistency between knowledge and action is manifested in three ways (Figure 115). The first is created when information is cultivated into useful knowledge. The second, which can be described as a gap, is between knowledge and practice. The third is related to the amount of time it takes to transfer and implement knowledge.

The core of the problem in enterprises and organizations is that all of the gaps between knowledge and action seem to expand rapidly if the processes of transferring and utilizing knowledge cannot be developed and improved. Especially alarming is the time gap between knowledge and its practical application. Knowledge remains uncultivated and unimplemented as a format suitable or acceptable as everyday practice. This process requires many kinds of expertise and different doers who work together to change and develop behavior, procedures, or everyday practices. Crossing these gaps requires new innovations.

Increasing the attraction of worklife (i.e., developing worklife to suit and encourage ageing employees) is a concrete challenge for knowledge trans-

Figure 115. The gap between knowledge and action in the transfer of age information to new practices in worklife.



A = gap between knowledge and action

B = delay between knowledge and action

C = gap between an increase in information and the emergence of knowledge

fer and the cultivation to new everyday practices. For this task, individuals, enterprises, worklife services and support systems, labor market parties, and society's decision makers are required. Changes in worklife can only be achieved together, and the basic precondition of success is that this objective be supported by the will of everyone.

7.3 Recommendations

This section lists recommendations based on the results (reported in sections 6.1 and 6.2) of the study on European work conditions from 1996 and 2000. The recommendations have been formulated so that the first group is connected with workplaces, the second with personal resources, and the third with society. Along with the recommendations connected with workplaces and personal resources, also holistic development through a new type of cooperation between different parties is emphasized.

Because significant differences exist between the EU15 countries with respect to the worklife risk factors of ageing employees, country-specific development targets for people over 45 years of age are illustrated separately at the end of this section.

Some recommendation-like conclusions can also be found in the previous sections of this book, and they are not repeated here. They include, for example:

- recommendations connected with shift work and ageing, Section 6.1.7
- recommendations for public policy programs, Section 2.1.4
- recommendations for actions of new management at workplaces, Section 2.1
- viewpoints for a better worklife, especially for employees over 60 years of age, Section 7.1.1

When recommendations are presented for ageing employees, it is often asked whether they would fit employees of all ages. It is only natural that most of the recommendations for people over 45 years of age would also be suitable for younger people, and the purpose is not to diminish, for example, development needs of worklife in general. The basis for the recommendations in this book has, however, been that they are founded on the proved generality and severity of the risks to health, work ability, or well-being.

Risks change dramatically according to the period of life, which is indirectly illustrated by age. For example, the deterioration of health with respect to several illnesses is connected with age, even though the environment may also have its own effects. Many risks of worklife are visible with ageing: for example, during decades of exposure, health problems accumulate and turn into illnesses at a certain age. Developing worklife to suit people over 55 years of age or people with one or two chronic symptoms, for example, means, in practice, that a solution must be found to help them to cope with their illnesses and to continue to work.

Finding this solution does not exclude the fact that the best way to decrease risks is to prevent them in advance. The earlier it can be started, the better. Preventive actions, however, are too late for most of the workforce, and this portion must also be taken into account. What is comforting is that a lot can still be done to benefit seniors.

Many recommendations may be the same for everyone, but differ in their contents, emphases, and actions for different age groups. General recommendations applicable to everyone are also often too generic and widespread to lead to concrete improvements for people of any age.

7.3.1 Recommendations for workplaces

The recommendations for workplaces concern the work environment, work demands, worktasks, supervisory work, workhours, and age discrimination.

Recommendation 1. Exposures in the physical work environment (for example, vibration, noise, air impurities, heat, cold) must still be decreased, especially for ageing employees.

Argument

Exposure factors of employees over 45 years of age in the physical work environment remained relatively the same between 1996 and 2000, except men's exposure to noise. Over 20% of men are exposed to noise or vibration or both at least half of their workhours, and a little less than 20% is exposed to air impurities. The noise exposure of ageing men has increased by about 4 percentage points.

The exposure and stress factors in the work environment are virtually the same for employees of all ages. Similar exposure may, however, be a bigger risk for the work ability of an ageing employee, because the exposure may have continued for several decades (see Section 6.1.1). Exposure to physical work factors is more common among ageing men than among ageing women.

Recommendation 2. Physical work demands (e.g., poor work postures, handling of heavy workloads, repetitive work and repetitive movements, static muscle work, peak loads) should be reduced for ageing employees, especially women.

Argument

Physical work demands increased among ageing employees, except for repetitive work, during 1996–2000. Approximately one-third of ageing men and women are exposed to poor work postures for at least half of their workhours, and almost 45% are exposed to repetitive work. Exposure to poor work postures has increased about 3 percentage points among men and 2 percentage points among women. About 24% of men and 17% of women handle heavy loads.

Ageing employees work more often in physically demanding occupations than younger ones do, for example, because they have less education. Physi-

cal workload and the resulting musculoskeletal disorders are still a significant cause of work disability among ageing employees. About 40% of ageing men and women report that their work affects their musculoskeletal syndrome (see Section 6.2.3 “Musculoskeletal Problems”).

Because physical functional capacity normally decreases with age, the physical workload of ageing employees must be decreased respectively. The need to decrease the workload of a 60-year-old should be about 20% from what the same worker performed at the age of 40 years. The overload threshold for physical work is reached with age earlier among women than among men. An extended career in physically demanding occupations is neither reasonable nor possible without significant lightening of the workload (see Section 6.1.2).

Recommendation 3. The psychological work environment of ageing employees should be developed in order to support and utilize workers’ strengths. Ageing employees also need inspiring and challenging work in which new things can be learned.

Argument

The use of computers increased among ageing employees by about 5 percentage points, and complex tasks increased almost 15 percentage points in 1996–2000. These changes can be considered positive, and they illustrate the prerequisites and potential of ageing employees to change in worklife. More challenging tasks are also suitable for the mental growth of ageing employees.

In 2000, about one-fourth of ageing employees used computers for at least half of their workhours, and more than half of them had to perform complex tasks. Among employees under 45 years of age, the use of computers was more than 5 percentage points more common than among older workers. Increasing demands may, however, become stress factors and problems for ageing employees, depending on their educational level and competence. About 40% of ageing men and women reported that their work has caused psychosomatic symptoms and stress (see Section 6.2.4 “Psychosomatic Symptoms” and Section 6.2.5 “Stress Symptoms”).

Tight schedules have remained a principal problem among ageing employees, and learning new things through work has decreased significantly among them. The continuous change of worklife and the related tight schedules have slowed the learning of new things among ageing employees. Realistic possibilities must be created for life-long learning and especially learning by

doing, among ageing employees (see Section 6.1.3 “Mental Demands”, see also Recommendation 5 concerning the resources of ageing employees).

Recommendation 4. The possibilities of ageing employees to plan and regulate their own work should be improved.

Argument

Ageing employees’ regulation of their own work did not improve in 1996–2000. About two-thirds of them were able to choose the time of their work-breaks, the order of their tasks, procedures and methods, and their workplace, but one-third could not. Forced work and tight standards decrease individuality at work independent of age. Regulation of one’s own work helps balance the workload. Ageing women were less able to regulate their own work than men. All employees should be entitled to regulate their own work, and they should also be responsible for developing their work to better suit themselves and the objectives of the organization (see Section 6.1.4).

Recommendation 5. Ageing employees need good individual supervision and age management.

Argument

Supervisory work improved during 1996–2000, as measured by the increased possibilities to discuss work-related issues between personnel and supervisors. About 78% of men and 84% of women reported having possibilities to discuss work-related issues with their supervisors. About 73% of both men and women also reported that their discussions with their supervisors had resulted in improvements at their workplaces. The need for discussion has apparently increased because continuous changes occur also in the work of ageing employees, and it is the task of supervisors to implement these changes. Changes probably cannot be realized in a constructive manner without discussion, and the “improvement” of supervisory work may depict the universality of changes in worklife rather than improved supervision (see Section 6.1.6).

Attitudes and recommendations concerning age management have been described separately, for example, in the sections “Visions of Age Management” and “Management Reform from the Point of View of Ageing Workers (see Chapter 5 and Section 2.4).

Recommendation 6. Ageing employees need flexible, individual, and ergonomic workhours.

Argument

About 35% of ageing men and 16% of ageing women worked long weeks (>40 hours/week) during the year 2000, even though the number of long workweeks decreased in 1996–2000. Of the ageing women, about half worked in irregular daytime jobs (including weekend shifts), and the situation remained virtually the same from 1996 to 2000. Shift work, including at least 5 night shifts per month, was done by about 12% of the men, and it did not decrease in 1996–2000.

The results do not indicate whether workhours have been selected from the viewpoint of the employer or the employee. Irregular daytime work is common among women and may be a result of the prevalence of part-time work in Europe. As for shift work, it is not known whether shift systems adhere to recommendations from the viewpoint of workhour ergonomics. Several health risks are associated with shift work. Recommendations connected with the shift work of ageing employees have been illustrated in more detail in Section 6.1.7.

Ageing employees need flexible workhours for the health, educational, or other needs associated with their life course (e.g., nursing and care work). Flexible workhours are also a good means with which to equalize the workload. Part-time work is the most common and most popular model used to regulate workload with age. Its promotion, taking into account the need for it to be voluntary and its economic realities, is essential (see also Section 1.3.2 “Part-time Employment” and Chapter 7 “Towards a Better Worklife”).

Recommendation 7. Zero tolerance is needed in age discrimination.

Argument

Personally experienced age discrimination did not decrease among ageing employees in 1996–2000. Age discrimination had been personally experienced by only about 3% of men and women and, therefore, age discrimination seems to be a minor problem. The objective is, however, to achieve so-called zero tolerance. Therefore, continuous efforts must be made to prevent age discrimination in workplaces. Challenges also increase because of the ageing of workforce and because not many supervisors and work communities have much experience with employees over 60 years of age (see Sections 2.5 and 6.1.8).

7.3.2 Recommendations concerning the personal resources of ageing employees

The recommendations concerning the personal resources of ageing workers describe health, functional capacity, education, competence, values and attitudes, which, according to the work ability theory, make up the portion of work ability representing personal resources (see Section 4.3).

Recommendation 1. The health promotion of ageing employees should be intensified—the employees’ own responsibility for their living habits is significant.

Argument

About half of the people aged 55–64 years feel that their health is good or rather good, and two-thirds of the working population feel the same. The deterioration of perceived health was explained by the number of medically diagnosed illnesses, smoking, physical work, decreased satisfaction with one’s life situation, and increased insecurity. Improved perceived health was, in turn, explained by a lack of illness, satisfaction with one’s life situation, enthusiasm for one’s hobbies, and brisk regular physical activity. Subjective health became more illness-centered with age.

It is the worker’s own responsibility to maintain healthy living habits. Health-enhancing physical activity was practiced sufficiently by about one-fifth of the men and one-fourth of the women of working age. Physical activity increases with age, and, in the age group of 55–64 years, approximately one-third were physically active regularly in order to improve their health. About 10% of the women and 20% of the men in the oldest age group train to stay fit. With age, fitness training becomes less common and health-enhancing physical activity becomes more common.

Weight increases with age. Among 55- to 64-year-olds, about one-third are obese (BMI >30 kg/m²). In addition, weight problems are experienced by two-thirds (< 30 BMI > 25). Overweight and obesity are significant health risks.

Increasing health-enhancing physical activity, control of one’s own weight, and quitting smoking are necessary behavioral changes that can be promoted even among ageing employees in many ways. The earlier such behavioral changes are made, the greater the health benefits (see Section 4.5.1 “Perceived Health” and Section 4.6.2 “Physical Functional Capacity”).

Recommendation 2. The prevention of illness among ageing employees should be intensified—occupational health care needs more investment.

Argument

In the age group of 55–64 years, about 66% had long-term illnesses, half of the working men and 60% of the working women. The musculoskeletal syndrome became more common with age. Some long-term or repetitive musculoskeletal symptoms were experienced by about two-thirds of the men and four-fifths of the women. Psychological symptoms and mental disorders were experienced by about one-fourth. An exception was women aged 55–64 years, of whom more than one-third suffered from mild burnout. Serious burnout was also increased in the oldest age group of women.

It was notable that chronic symptoms were also considerably prevalent in the young age groups. All ages of the working population experienced many symptoms. These symptoms indicate that there is an imbalance between worklife and personal resources from the viewpoint of both physical and mental well-being. More attention must be paid to the prevention and treatment of work-related illnesses. Occupational health care should more effectively work to decrease these symptoms and their causes (see Sections 4.5.2 and 4.5.3).

Recommendation 3. The affect of illnesses on work should be reduced.

Argument

Of all of the working people with long-term illnesses, about 40% reported that their illnesses interfered with their work. More than one-third of the oldest age group of men and women reported that their illnesses interfere with their current job. Previously it was observed that Finnish men (>45 years of age), along with German and Austrian men, were in the group of people who experienced the most interference with their work as a result of illnesses (Ilmarinen 1999b). In Sweden and Denmark, only 10% of ageing men had illnesses that interfered with work, whereas the proportion in Finland was over 30%.

The significant increase of illnesses during the last 15 years of a person's career means at least two things. First, the role of occupational health care becomes more important as a service system preventing and treating illnesses. Second, work, work habits, and work methods need to be better adjusted to

a person's health status to reduce the affect of illnesses on work and prevent such affects from deteriorating.

The control of work-related illnesses is an important means of ensuring that participation in worklife continues despite illness. The role of occupational safety and health care in adjusting work to illness will increase in the future since there must be sufficient information about the resources, worktasks, and work conditions of ageing employees if work conditions and work ability are to be adjusted successfully. Management will need support from occupational safety and health care to help solve this difficult problem.

Recommendation 4. People with reduced work ability are also an important part of the workforce—their remaining work ability needs to be utilized better in worklife.

Argument

An average of 15% of the workforce is comprised of people with reduced work ability (i.e., people with a long-term illness or a functional deficiency). This percentage represents 44.6 million people in the expanding European Union. In addition, 78% of people with a significantly reduced work ability are outside worklife. Only 16% of people with reduced work ability have had arrangements made to make their work easier.

Reduced work ability becomes considerably more common with age. Of people over 50 years of age, at least one-fourth, and over 30% of people over 60 years of age, belong to this group (see Section 6.2.8 “The Disabled in the European Union in 2002”). Their contribution to worklife should be increased. Such an increase will require new knowhow on the part of supervisors and new work arrangements. The support of the work community also demands improved attitudes towards people with reduced work ability.

Recommendation 5. The risk of occupational diseases among ageing employees should be significantly reduced and prevented.

Argument

The number of new cases of occupational disease for every 100 000 employees was about 37 in the European Union in 2001, higher among men than among women. The number of new cases of occupational disease increases significantly with age. Whereas there were 39 new cases of occupational dis-

ease among people aged 45–54 years, the respective number among people aged 55–64 years was 69 for every 100 000 employees. Most occupational diseases were caused by physical factors in the workplace.

The diagnosis of occupational diseases and the operation of the occupational health care system should be improved. Preventive measures should be intensified (see Section 6.2.7).

Recommendation 6. Functional capacity should be supported and developed multidimensionally—physical, mental, and social functional capacity creates the basic prerequisites for good, high-quality worklife and successful ageing.

Argument

Functional capacity is an asset of personal well-being with a strong connection to one's health throughout life. Physical, mental, and social functional capacity change with age. Of these, only physical functional capacity decreases clearly for biological reasons, but this deterioration can be significantly slowed by regular and versatile physical activity (see Recommendation 1 for ageing employees).

Certain properties of mental functional capacity deteriorate while others improve (see Section 4.6.3 “Mental Functional Capacity”) among the working population, whereas social functional capacity (see Section 4.6.4 “Social Functional Capacity and Ageing”) improves with age. Significant and individual differences in functional capacity exist already among the working population. Individuality and its increase with age are concretely reflected by a person's functional capacity.

All properties of functional capacity can be improved, but activity seems to decrease with age. The activity theory indicates that active, versatile activities maintain functional capacity, while passivity decreases it, regardless of a person's age. Adjusting activity to one's life situation, searching and accepting choices and alternative forms of activity are ingredients of successful ageing (see Section 4.6 “Functional Capacity and Ageing”).

Recommendation 7. Ageing employees should be offered the possibility for life-long learning, and their professional competence should be developed through the use of appropriate learning processes.

Argument

Learning is not dependent on age. People of all ages are able to learn, but ageing people learn things differently than younger people. The educational level of ageing people is significantly lower than that of younger generations. Educational level affects the employment rate in that the lower the educational level, the lower also the employment rate and greater the risk of isolation from worklife. Ageing employees voluntarily participate in adult education and vocational training less often than younger employees. The participation of ageing employees in education depends on the attitudes of both the employees and the employer. The support of the work community is also required for the learning of ageing employees. In addition to personnel training, learning by doing is important also for ageing employees.

The continuous reforms and new requirements of worklife require continuous development of personal competence on the part of everyone. The quantitative and qualitative demands on ageing employees to learn new things should be adjusted according to other resources, such as experience and health. The disadvantageous effects of overemphasizing learning must be prevented (see Section 4.7 “Education and Learning” and Section 4.7.7 “Supporting Learning”).

Recommendation 8. The basic values of ageing employees should be taken into account better in the changes and management of worklife.

Argument

The status of values in the human cognitive system is more important and profound than, for example, that of attitudes. Values are personal beliefs that lie deep inside the human mind. They guide life and affect personal objectives and choices. Benevolence is the most important value of Finns, regardless of their age. Safety and universality are in second and third places. Values change with age. Hedonism and personal pleasure give way to solidarity and responsibility.

Values form an important part of personal resources and work ability. The values and slogans of enterprises and organizations have not sufficiently taken personal values into account. Conflict between values decreases personal

work ability and the profits of the enterprise. There is abundant pressure to change values. The overemphasis on economic values, demands for continuous reform, and emphasis on responsibility also create conflicts with values. The importance of work as a factor guiding and molding human values is changing.

Recommendation 9. The work ability, work well-being, and employability of ageing employees should be supported by holistic, continuous measures whose effectiveness is monitored.

Argument

The work ability of ageing employees and their employability decide their coping and continuation in worklife. Work ability and work well-being combine several of the aforementioned recommendations related to the workplace and personal resources. The development of the work environment, work community, and management must be combined with the development of personal health, functional capacity, and competence of employees. Together these measures are strong enough to affect both the improvement in worklife and the sufficiency of personal resources with age. Maintaining and promoting work ability with age has proved to be efficient as long as the measures adopted at the workplace are versatile and long-term. The effectiveness of different measures must be monitored if the desired results are to be achieved (see Section 5.3).

Recommendation 10. Cooperation between different parties should be improved so that workplaces can be developed and personal resources can be improved.

Argument

A versatile and holistic promotion of work ability and work well-being requires seamless cooperation between the employee, the employer, and the support and service organizations (especially occupational safety and health care) in the workplace. Important parties may also include the authorities, labor market organizations, occupational safety representatives, entrepreneur organizations, rehabilitation facilities, and training and consultation organizations. Unrestricted support from labor market parties and political guidance by society are also required for the promotion of work ability, work well-being, and productivity. The promotion of work ability and work

well-being must be closely connected with the promotion of employability. The integration of these measures improves the employment rate of ageing employees and also their coping and continuation in worklife.

Ageing employees will become wanted and desired workforce for several reasons. They have assets that other age groups do not have, and they are needed to transfer both knowledge and experience to younger generations as the workforce decreases. In addition, their continuation in worklife significantly affects the employment rate, dependency ratio, and the funding of pensions, as well as the service system of the welfare state (see Sections 4.3 and Chapter 1 “Challenges Created by Changes in Age Structures”).

7.3.3 General recommendations and recommendations associated with society

The following recommendations are based on different sections of this book and create a kind of conclusion about important issues in order to solve the challenge of ageing.

Recommendation 1. Attitudes towards ageing should be altered to reflect reality.

Argument

Positive changes have been achieved in attitudes towards age, and age discrimination has decreased. Both show that the prerequisites exist for changing attitudes. However, the poor treatment of ageing employees in everyday work shows that fair attitudes towards age have not yet reached worklife parties sufficiently. Therefore, the changing of attitudes should be a planned and continuous action that should flow through the entire society.

The changing of attitudes towards age begins at the individual level. The increased life expectancy and the increase in the number of healthy and functional years offer a good foundation for changing the concepts about age. Instead of emphasizing the ageing of the population, attention could be paid to improving functional capacity and vitality. The average age increases and activity extends further along the path of life. The competence, life experience, and wisdom of older people should be appreciated.

The shift to retirement is not the beginning of old age; instead it starts a new phase of life, the so-called third age. In worklife, the attitude of supervisors towards age is crucial. Supervisors provide models representing the attitudes

towards age and seniority (see Sections 4.2 “The Many Faces of Ageing” and Section 2.5 “Remodeling Attitudes Towards Age”).

Recommendation 2. Management needs reform—the poor treatment of ageing people should be stopped.

Argument

Management and supervisory work have a significant effect on people’s work ability, coping, and continuation in worklife. The authorization and responsibility of supervisors extend to all levels of worklife organization. The several necessary changes in worklife from the point of view of ageing cannot be realized in practice without their support and contribution. Therefore, management needs new viewpoints and methods that better take into account the strengths of personnel of different ages.

The treatment of ageing employees is visible both in the enterprise and in society, and it communicates the values, culture, procedures, and work environment of the enterprise. Poor treatment has long-term effects on the image of the enterprise and its capability to recruit competent employees. Age management offers supervisors new opportunities with respect to human resource policies and also improves their own coping with the demanding task (see Section 6.4 “Management Reform from the Point of View of Ageing Workers”).

Recommendation 3. The costs of ageing in worklife should be reduced.

Argument

Ageing affects both national and business economies. The costs of the changes in the age structure with respect to the national economy were approximately EUR 14 billion in 2000. If the proportion of people over 50 years of age in the working population increases by 1 percentage point, the costs to the national economy increase by over EUR 500 million. In 2010, these additional costs to society would be about EUR 18 billion. An increase in the average retirement age by 3 years would decrease employment pension payments about 5–6 percentage points, which would, in time, create 30 000 person work years.

Extended worklife is economically efficient in two ways. On one hand, it increases the income and tax base, and, on the other, it simultaneously de-

creases retirement costs. Therefore, extended worklife is the most efficient employment and growth policy in the long run.

An estimated one-fifth of the additional costs caused by ageing are work-related. They can be affected in workplaces through widespread work ability maintenance actions. Additional investments in occupational health care are also very beneficial.

The increase in indirect employment costs of enterprises should be alleviated. For example, lowering employer's social security payments has been on the list of actions. Seniority and its costs must also be taken into account. Models for justified salaries will, in the future, be based more on the productivity, profitability, and work quality of the employee. The Finnish government has recently made a decision concerning so-called low-salary work, which is targeted towards young and aged employees (see Section 4.4. "Economic Aspects of Ageing").

Recommendation 4. New, justified methods are needed to shorten workhours and reduce the workload of ageing employees.

Argument

In countries with high employment rates, shorter workhours and part-time employment are common among ageing employees. Aging employees continue in worklife if their workhours and workload can be adjusted according to their life situation and personal resources. Shortened workhours are a good solution for the employee if adequate income is ensured. In this regard, the EU member states differ. The Finnish model has favored full-time employment, but the opposite is true in Sweden and Denmark.

Part-time employment and gradual retirement have, in many countries, proved to be beneficial for both the employer and the employee. A good model for part-time employment is part-time retirement, because it ensures both the income level and pension security of the employee. The organization of worklife so that part-time retirement becomes available for more employees and is targeted especially towards those who need it is essential. It is also a new challenge to management and the functioning of work communities. From the viewpoint of society, shortening workhours is not entirely a good solution because increasing costs can only be handled by increasing work (see Section 1.3.2 "Part-time Employment" and Chapter 7 "Towards a Better Worklife").

Recommendation 5. Retirement should be a process for which workers prepare during their last few work years.

Argument

People enter worklife at different ages, from different backgrounds, and with different educational levels. They leave worklife even more differently than they enter it. Worklife treats workers differently, and, therefore, adequate individual flexibility is needed as they leave worklife. In this respect, a flexible retirement age, which can be individually selected, seems like a justifiable solution. Retirement is not a point at the end of worklife. Instead, it should be viewed as a process that includes planning and implementing the transition to retirement, one that is supported by management.

Flexible retirement age should also be adjusted in relation to life expectancy and workload. In heavy occupations, life expectancy is significantly lower than in light occupations. It should be possible for employees in heavy occupations to retire earlier on just causes without compromising their pension security. The successful transition of employees in heavy occupations to retirement requires a process similar to that of other occupations (see Chapter 7.1. Many concepts and procedures must be changed).

Recommendation 6. Service systems for ageing employees should be improved.

Argument

The ageing of the population significantly increases the need for various services, for example, health and social services. The health care system and occupational health services must be efficient and of high quality. The changing age structure makes health care the largest business in society. This situation requires good organization and a sound funding base. The occupational groups involved in health care face increasing challenges. Ensuring their work ability and organizing and regulating their work so that it remains within acceptable limits are urgent tasks.

Recommendation 7. Everyone should have the right to life-long learning.**Argument**

Continuous changes in worklife, as well as the development of new work demands and methods, require continuous updating of professional competence and worklife prerequisites. The training system should offer adequate possibilities to achieve this in all phases of the life course. Training is no longer preparation for worklife and a single phase in human life. Instead, training accompanies the human course of life and supports coping with worktasks during a person's entire career.

In order to achieve this goal, procedural, temporal, and economic prerequisites must be created. The focus of educational policy should be shifted to the working population and the promotion of worklife prerequisites. This transition may also quicken the integration of young people into worklife and the development of prerequisites for learning by doing (see Section 4.7 "Education and Learning" and Chapter 7.1. Many concepts and procedures must be changed).

Recommendation 8. Developing worklife in an age-positive direction should be a common goal for people of all ages.**Argument**

Pension reform needs to be accompanied by worklife reform. The conscious development of worklife in an age-positive direction requires support from every party involved in worklife. The responsible parties include enterprises and work organizations, individuals in workplaces, worklife support and service systems, labor market organizations, and the decision-makers of society. Joint responsibility, common planning, and networking have proved that significant results can be achieved on a national level.

Age-positive worklife serves everyone, regardless of age, and it creates an equal basis with which to achieve both personal and enterprise objectives. The cooperation between different generations should be developed, and solutions must be found for the crises that occur for people of all ages over the course of their life. Attachment to worklife, lay-offs, unemployment, burnout, sickness, extended sick leaves, and ending one's career are everyday occurrences for an increasing number of employees.

The objective of providing a better and longer worklife is essential for sustainable growth, and it also ensures a good worklife for future generations. Good examples of age-positive solutions and good worklife should be brought to the fore where they can speak for themselves. Transferring information on and experience with good solutions to the everyday needs of worklife requires support in the form of new social innovations.

In an age-positive worklife and society, age is accepted as a normal factor of the life process that affects all functions, both in worklife and outside it. The objective is a situation in which age is not detached from other forms of humanity.

7.3.4 Recommendations for developing the worklife of employees over 45 years of age in the EU member states

The recommendations for developing worklife in the European Union are based on analyses of how many people over 45 years of age are exposed to work factors that decrease their work ability or form a risk to their coping and continuing in worklife from the viewpoint of ageing (see Section 2.1.4). The criteria for demanding action, whether they are based on an exceptionally large proportion of employees exposed to risks or on an exceptionally small proportion of employees exposed to positive factors, vary according to the type of exposure (physiological, physical, mental, etc.). A singular, generic percentage limit can not, however, be set for all risk factors on the basis of available data. Therefore, the criteria for inclusion in the list of countries in need of action vary from exceeding the limit by 4% for age discrimination to being under the limit by 81% for competence adequacy.

The worklife in different countries has naturally been formed by different cultures, traditions, and conditions. The definition of a good worklife, for example, in Greece or the Netherlands, Sweden or Spain is partially based on different infrastructures of society and the economy, as well as on different employment, social, health, and educational policies. Certain worklife factors are, however, risks with respect to work ability and coping in worklife regardless of culture.

The following recommendations aim at emphasizing the risk factors that, according to research, endanger a worker's ability to cope with and continue in worklife. The recommendations do not mean, however, that worklife should be homogeneous in the EU countries. Instead, the objective is for the necessary actions to be tailored to meet the prerequisites, measures, and possibilities of each individual country after the problem areas have been identified. The most important issue is to see that risks are efficiently reduced in the

worklife of ageing employees. It should also be emphasized that actions taken to develop the worklife of seniors apply to employees of other ages as well. That which is a risk for seniors may also be a hazard for younger workers.

Development targets for men over 45 years of age in worklife in the EU15 countries

The following sections describe a recommendation for the worklife of men over 45 years of age in the EU15 member states. The recommendations are based on eight development targets. The summary table concerning these recommendations (Table 84) provides an overview of the development targets that apply to specific countries according to available data. The material and results have been described in detail in Section 6.1. After the summary table, the development targets are described, and the reasons why the risks in different countries should be reduced among ageing employees are explained.

From the viewpoint of the **physical work environment**, noise, vibration, and air impurities present approximately equal challenges to development. In Greece, Portugal, and Finland, improvements are needed for all of the risks. Especially exposure to vibration in Greece differed from that of other countries. In Luxembourg, noise and air impurities were emphasized as physical development targets in the work environment; in France the emphasis was on vibration and air impurities. An exception in this group of problematic countries with regard to the physical work environment is Finland, where all three of these environmental factors required improvement.

Physical workload appears to be rather common among ageing men in several countries. For example, in 2000, most men did repetitive tasks for at least half of their workhours. Decreasing physical workload seemed necessary in Greece, Spain, and France, where all of the workload factors were commonplace. In the United Kingdom and Portugal, physical workload was more of a risk of ageing men than in other countries. In Greece, the exposure of ageing men to poor work postures and heavy loads was significantly more serious than in the other countries in which such exposure was common.

When **mental stress** was evaluated, the selection of the development target was based on the fact that ageing men do not have “adequate” possibilities to use new technology (computers), and there were not “enough” complex tasks or the learning of new things in association with their work in comparison with the situation in other countries. Behind these arguments was the concern that the work of ageing employees had not been developed and that ageing workers are not offered possibilities to use their skills and strengths

Table 84. Worklife development targets for men over 45 years of age in the EU15 countries according to the situation in 2000. (Taylor 2002)

Physical work environment	Incidence	Countries especially in need of action
Noise	(> 27 %)	Luxembourg, United Kingdom, Greece, Finland, Portugal,
Vibration	(> 23 %)	Greece (46%), Spain, Finland, Portugal, France
Impurities in ambient air	(> 24 %)	Greece, Finland, Portugal, Luxembourg, France
Physical load		
Work postures	(> 33 %)	Greece (71%), Portugal, France, Spain, United Kingdom
Heavy loads	(> 26 %)	Greece (44%), France, United Kingdom, Spain, Ireland
Repetitive work	(> 55 %)	Spain, Greece, Portugal, France, Finland
Mental load		
Computer use	(< 22 %)	Greece (6%), Portugal (12%), Spain, Germany, Ireland
Tight work schedules	(> 50 %)	United Kingdom (70%), Austria, Germany, Finland, Ireland
Complex tasks	(< 53 %)	Portugal, Greece, Italia, Spain, Belgium
Learning new things	(< 50 %)	Greece (38%), Portugal
Regulating one's work		
Taking breaks	(< 67 %)	Germany, Netherlands, Spain, Austria, Luxembourg
Work order	(< 63 %)	Portugal, Luxembourg, Italy, Austria, Germany
Work methods	(< 67 %)	Portugal, Spain, Luxembourg, Greece, United Kingdom
Workpace and speed	(< 70 %)	Portugal, Luxembourg, United Kingdom, Spain
All objects of regulation		Portugal, Luxembourg, Spain, Germany
Occupational skills		
	(< 81 %)	Luxembourg, United Kingdom, Greece
Supervisory work		
	(< 74 %)	Greece (42%), Spain, Portugal, Italy, Ireland
Long workweeks (> 40 h/week)		
	(> 37 %)	Ireland (47%), France, Portugal, Germany, Greece
Age discrimination		
	(> 4 %)	Netherlands, Austria, United Kingdom, Belgium, Germany

in a versatile manner or to develop themselves professionally. In Greece and Portugal, the possibilities for development among ageing employees were the poorest. Especially the use of computers in these countries seemed rather scarce when compared with the situation in other countries, and, in Greece, there were few possibilities to learn new things.

Of the mental loading factors, tight schedules were apparent in new countries in which efficient action would be needed to reduce the problem. The United Kingdom surpassed the other countries with tight schedules, including Austria, Germany, Finland, and Ireland.

Regulating one's own work was examined in Section 7.3.1. "Recommendations for Workplaces". Because it is such an important development target, it is examined in Table 84 in a little more detail by country. The focus is on the approximately one-third of ageing men whose possibilities to regulate their own work could be improved. There are no great differences with regard to which regulation targets need the most development. Luxembourg was included in all the development targets, Portugal and Spain in three targets, and Austria and the United Kingdom in two targets. From the viewpoint of ageing men, possibilities to regulate one's own work should be increased especially in Portugal, Luxembourg, Spain, and Germany.

According to ageing men, **professional skills** corresponded rather well with their work demands. However, even though professional skills met the work demands relatively well, improvement was recommended. Because there were differences between countries, improvement was recommended for ageing men in Luxembourg, the United Kingdom, and Greece.

The only available question concerned with evaluating the development of **supervisory work** dealt with the possibility of employees to discuss work issues and related changes with their supervisors. As was noted earlier, these descriptions may have reflected changes in worklife and the need for discussion. This need may arise on the part of the employer or the employee. The possibility or need for discussion appeared to be rather general, and it applied to approximately three-fourths of the ageing men. Greece was a clear exception, which may have stemmed from the fact that, in Greece, there had been no changes in the work of ageing men or that discussions with supervisors were not common or they were not considered necessary. Improving the possibilities for discussion can also be recommended in Spain, Portugal, Italy, and Ireland.

With regard to **workhours**, the available question primarily concerned extended workweeks. Unlike the situation in other countries with long workweeks, ageing men in Ireland often worked extended weeks. Workhours

should also be reduced in France, Portugal, Germany, and Greece. The discussions in, for example, France were first about shortening workhours, but, in the last few years, concerned extending them, indicating that there is no general, commonly acceptable model available for workhours.

Age discrimination was relatively scarce in the EU15 countries, but, because it is prohibited by law and also inhumane, the zero level can be set as the objective. None of the countries met this goal with regard to ageing men in 2000. There were, however, four- to fivefold differences in the perceived level of age discrimination, and, therefore, a level exceeding 4% can be considered high. According to this criterion, age discrimination should be reduced, especially among men, in the Netherlands, Austria, the United Kingdom, Belgium, and Germany.

Worklife development targets for women over 45 years of age in worklife in the EU15 countries

For some of the risk factors considered in the recommendations for the worklife of ageing women, different criteria had to be used than for the men, since the distribution of the proportions of exposed men and women differed with regard to, for example, the physical work environment, mental workload and workhours. Therefore, with respect to the worklife development targets, the comparison between the countries in need of improvement for men and women is not based on the same risk factor percentage criteria of the number of exposed women and men (Appendices 43 and 44, Table 85).

The **physical work environment** of women seems to be good. There were relatively few women who were exposed to noise and vibration more than half of their workhours, but noise appeared to be a little more common problem than vibration. Finland, Greece, and Spain were among the countries in which exposure to both of these factors could be decreased. In Greece, Portugal, and Finland, all of these factors needed improvement. The exposure of women to vibration exceeded the levels of other countries clearly in Greece. Although Denmark was seldom listed among the countries in need of development, exposure to noise was one of the few targets for which it was listed.

Physical workload appeared to have been rather common among women in the EU15 countries in 2000. Almost the same criteria could be applied for men and women; this finding indicates a relatively similar exposure situation for both genders. Greece, Spain, and France were countries in which exposure to all three of the workload factors demanded action. In Greece, the exposure to poor work postures was emphasized. The United Kingdom was included because of poor work postures and the handling of heavy loads.

Table 85. Worklife development targets for women over 45 years of age in the EU15 countries according to the situation in 2000.

Physical work environment	Incidence	Countries especially in need of action
Noise	(> 14 %)	Luxembourg, Finland, Denmark, Spain, Greece
Vibration	(> 9 %)	Greece (14%), Italy, Portugal, Spain, Finland
Physical load		
Work postures	(> 37 %)	Greece (64%), Spain, France, Portugal, United Kingdom
Heavy loads	(> 20 %)	Greece, Sweden, France, United Kingdom, Spain
Repetitive work	(> 54 %)	Spain, Finland, France, Netherlands, Greece
Mental load¹		
Computer use ¹	(< 24%)	Greece, Portugal, Spain, Italy, Austria
Tight work schedules	(> 40 %)	Sweden, Finland, United Kingdom, Greece, Austria
Complex tasks ¹	(< 41 %)	Spain, Portugal, Italy, Belgium, Greece
Learning new things ¹	(< 45 %)	Greece (28%), Portugal (35%), Spain
Regulating one's work¹		
Taking breaks	(< 51 %)	Netherlands, Belgium, Germany, Finland, United Kingdom
Work order	(< 65 %)	Iceland, Portugal, Italy, Austria, Germany
Work methods	(< 67 %)	Portugal, Austria, Greece, Ireland, France
Workpace and speed	(< 65 %)	Sweden, Portugal, Ireland, United Kingdom
All objects of regulation		Ireland, Portugal, United Kingdom, Belgium, Austria
Occupational skills ²	(< 81 %)	Greece, United Kingdom, France
Supervisory work ³	(< 74 %)	Greece (39%), Luxembourg, Portugal, Spain, Italy
Workhours		
Long workweeks (> 40 h/week)	(> 22 %)	Spain, Portugal, Greece, Finland
Irregular day job (weekends)	(> 50 %)	Greece (73%), Italy, Luxembourg, Spain, Austria
Age discrimination	(> 4 %)	Finland (7%), Austria, Sweden, Netherlands

¹ Low incidence interpreted as an object of development.² Skill corresponding to work demands.³ Opportunities to discuss matters with supervisor.

There was also room for improvement in the Scandinavian countries, in Sweden because of the handling of heavy loads and in Finland because of repetitive work. In the Netherlands, repetitive work should be decreased among ageing women, too.

The three criteria used for evaluating **mental stress** were reversed, as was noted already when the results among ageing men were examined. Significantly lower marks in computer use, complex worktasks, and the learning of new things were considered development targets from the viewpoint of ageing. The evaluation criteria for these targets were a little lower for the women than for the men because there was slightly less mental stress among the women and there were differences between the countries in the distribution of exposure among men and women. The countries that were recommended to take action in order to improve the work conditions of ageing women were, therefore, selected according to slightly lower criteria than those recommended to take action in order to improve the work conditions of ageing men.

Greece, Portugal, and Spain were included among the countries in which all of the aforementioned psychological work environment targets required development. For Italy, development was recommended both to increase the use of computers and to decrease demanding worktasks among ageing women. Also in Austria, the use of computers among ageing women required improvement.

Tight schedules were also found to be a problem in the Scandinavian countries. Sweden and Finland, which appeared surprisingly seldom together in relation to the development of work conditions of ageing women, indicated that tight schedules were a common problem. Actions in order to reduce tight schedules are also necessary in the United Kingdom, Greece, and Austria.

Regulating one's own work needs improvement especially in the United Kingdom and Ireland. In these countries, the three factors to be regulated were clearly below the levels in other countries. In Germany, more flexibility was recommended with respect to taking work breaks and work organization, in Portugal the recommendations concerned the possibilities to regulate the work organization and work speed, whereas, in Austria, improving the work organization and work methods was of importance. In these countries, a common recommendation was made to increase the flexibility of the order of worktasks.

A predefined order for the performance of worktasks is probably an indication of rigid work organization, which poorly fits with the increasing individual differences brought by ageing. Of the Scandinavian countries, Sweden was listed among the countries in need of development with respect to work speed and workload regulation. Finland, on the other hand, needed to improve the ability to take work breaks. If the same criterion had been used for work breaks among women as among men (i.e., 67% instead of 51%), nearly all of the countries, excluding France and Portugal, would have been included in the countries who should improve the ability to take breaks among ageing women. This finding indicates that ageing women are not able to take breaks as often as men during their work. This difference may, in turn, be a due to most women working in different occupations than men. The top countries in need of improvement with respect to the possibilities of ageing women to regulate their work were Ireland, Portugal, the United Kingdom, Belgium, and Austria

Workhours were currently not the best among ageing women in southern Europe and Finland. Extended workweeks and irregular daytime work including weekends could be examined for the women. In Spain and Greece, improvements are needed for both of these targets. Among the Scandinavian countries, only the extended workweeks of Finnish women were listed as development targets. In Greece, irregular daytime work including weekends was significantly more common than in other countries with irregular work. Italy and Austria were also included among countries in need of improvement.

In relation to workhours, it must be emphasized that culture and living habits probably have a more significant influence on their formation than on several other worklife features, whose role from the viewpoint of improvement has not been taken into account in this report.

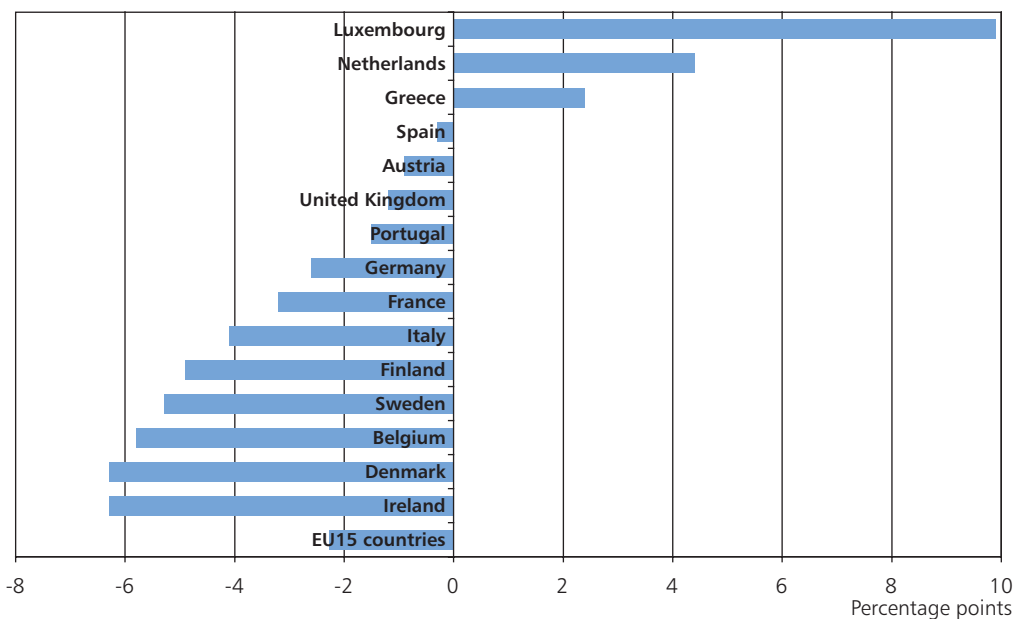
Professional skill corresponded rather well with work demands among both the men and the women. The criterion for the recommendations was thus the same. Room for improvement in the professional competence of ageing women was noted especially in Greece, the United Kingdom, and France. Greece and the United Kingdom were also encouraged to improve the professional competence of men.

In relation to **age discrimination**, the same criterion as could be used for the men and women (i.e., 4%). Among the women, the prevention of age discrimination was boosted by the fact that Denmark and Italy achieved the zero level in 2000. What is surprising about age discrimination among women is that, of the Scandinavian countries, both Finland and Sweden were included in the countries that should reduce age discrimination to-

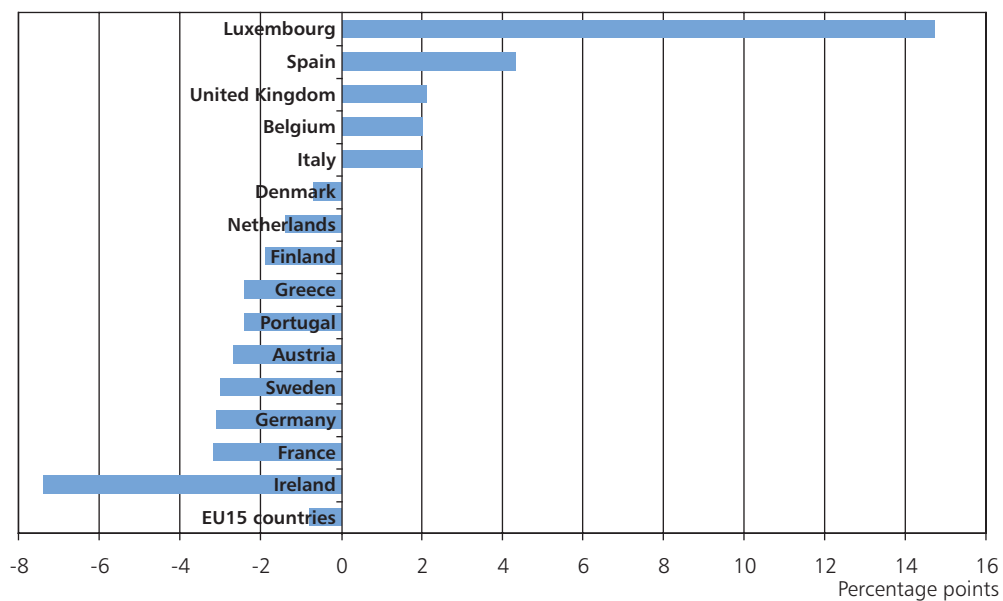
wards women. Finland was at the top when it came to age discrimination among women in 2000 (7%). The difference from Denmark's zero level is considerable and requires a more-detailed examination of the causes and manifestations of age discrimination. As was mentioned in the section on age discrimination, the situation improved in Finland after 2000, but mainly among men. The available research results depict a rather controversial picture of the changes, however.

Appendices

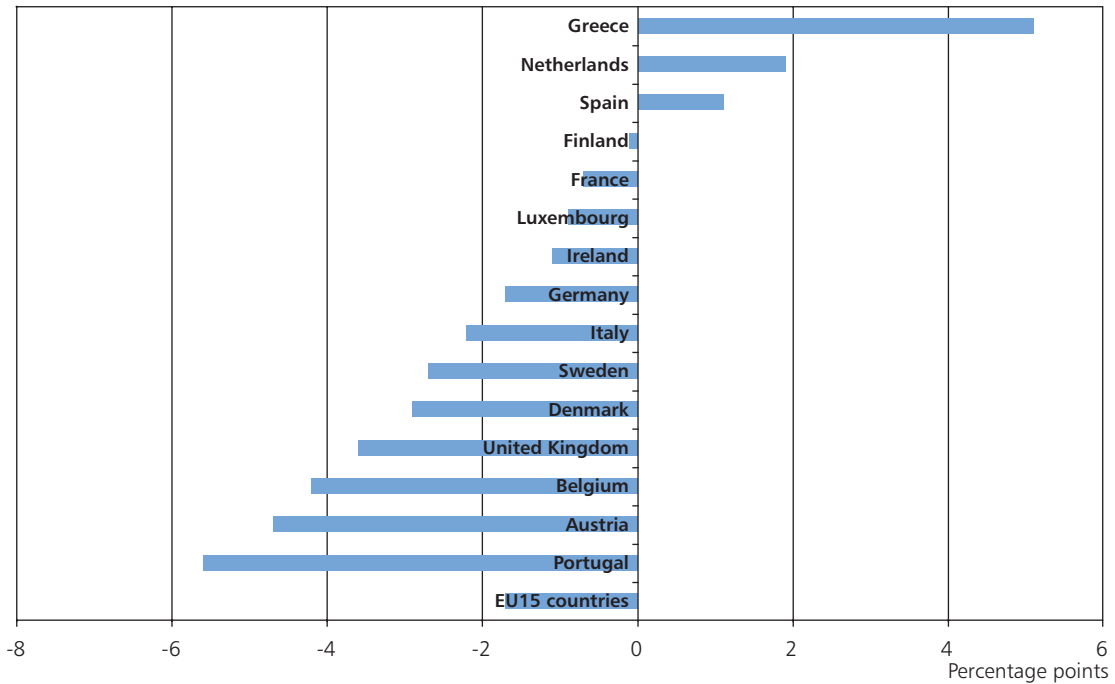
Appendix 1. Difference in the prevalence of noise exposure (unable to hear normal speaking voice) among over- and under-45-year-old men in 2000 in the EU15 countries, listed in the order of the percentage difference for the over-45-year-old men from the highest to the lowest.



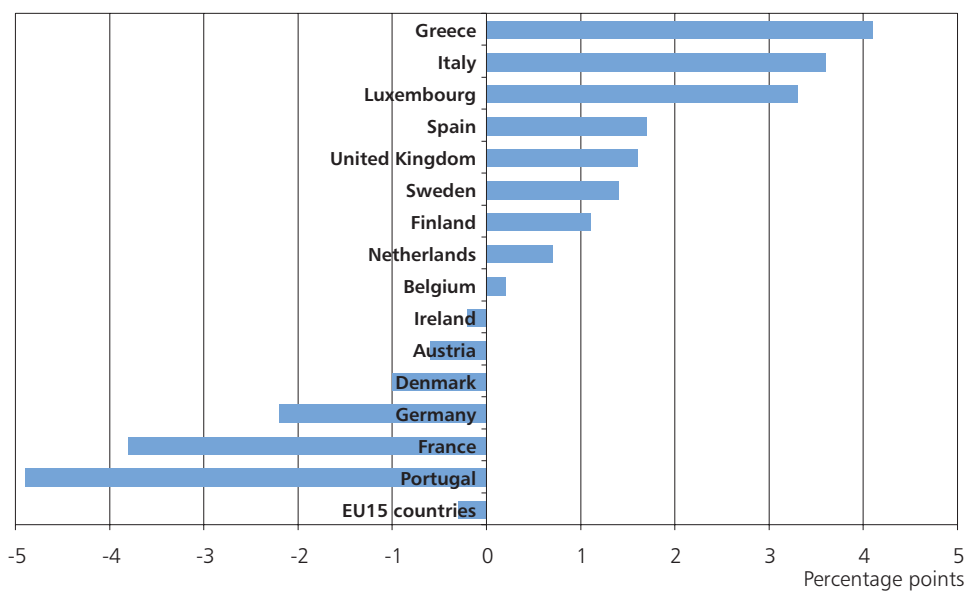
Appendix 2. Difference in the prevalence of exposure to noise (unable to hear normal speaking voice) among over- and under-45-year-old women in 2000 in the EU15 countries, listed in the order of the percentage difference for the over-45-year-old women from the highest to the lowest.



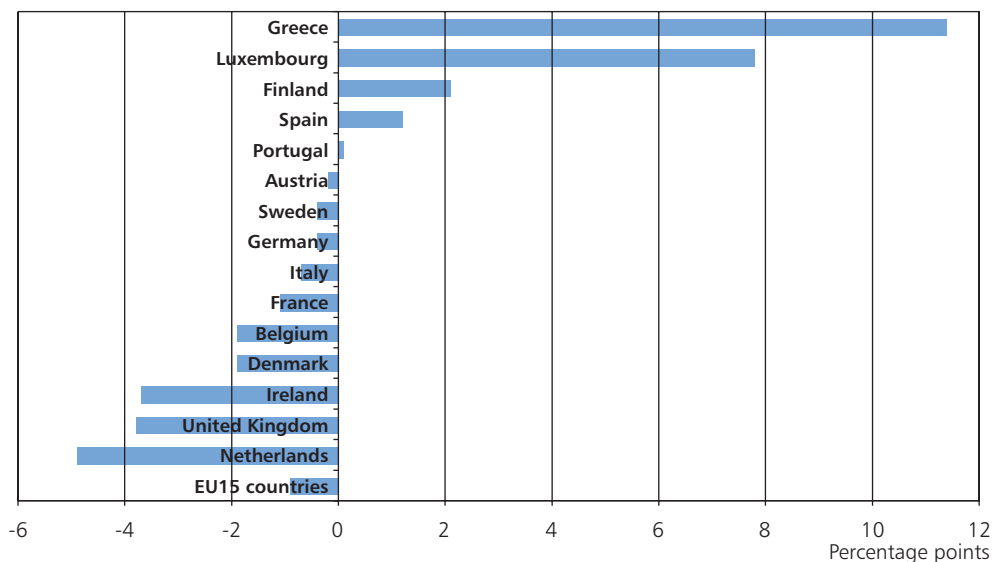
Appendix 3. Difference in the prevalence of exposure to vibration (from handheld tools, machines, etc., for at least half of the worktime) among over- and under-45-year-old men in 2000 in the EU15 countries, listed in the order of the percentage difference for the over-45-year-old men from the highest to the lowest.



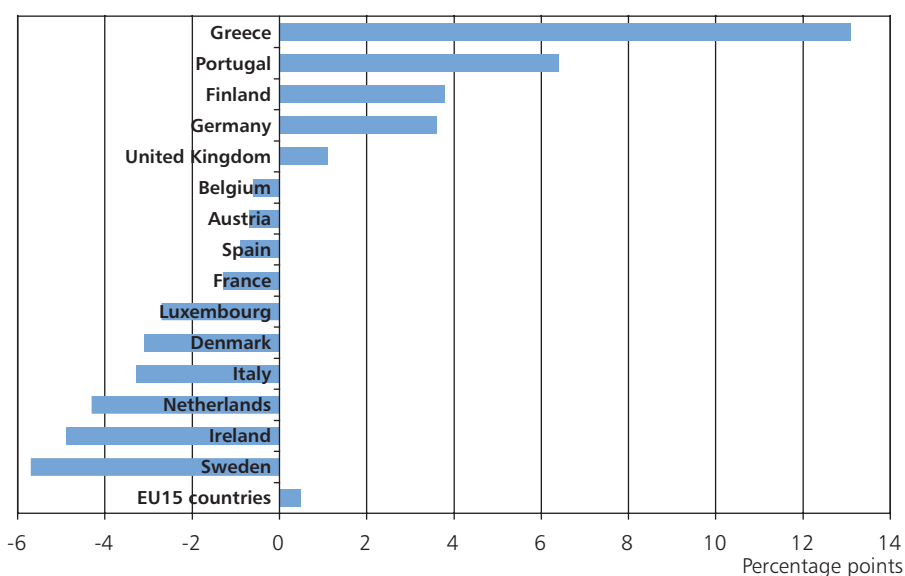
Appendix 4. Difference in the prevalence of exposure to vibration (from handheld tools, machines, etc., for at least half of the worktime) among over- and under-45-year-old women in 2000 in the EU15 countries, listed in the order of the percentage difference for the over-45-year-old women from the highest to the lowest.



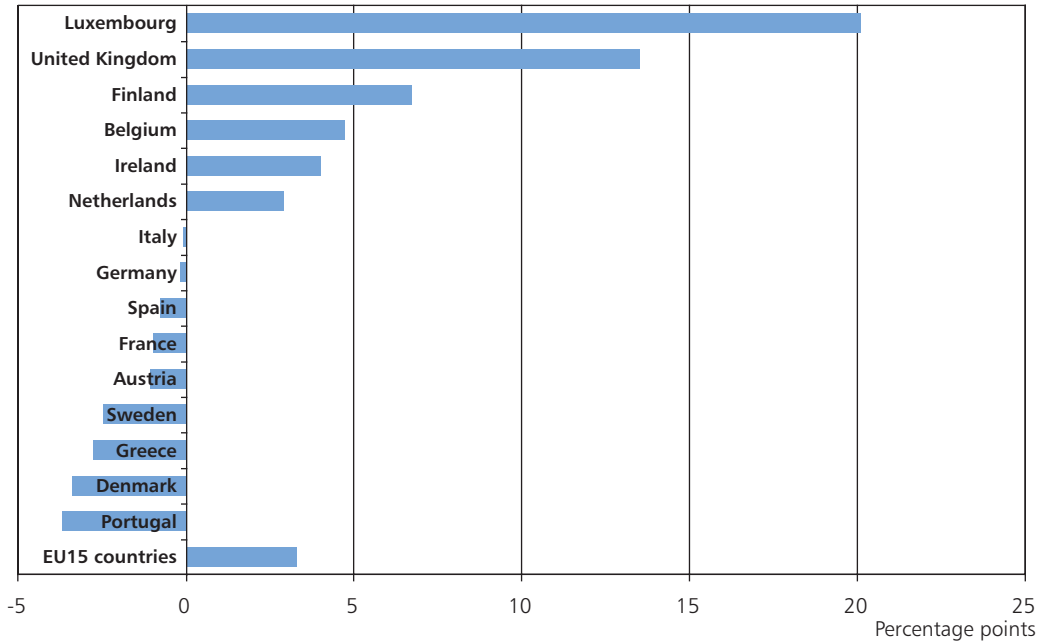
Appendix 5. Difference in the prevalence of exposure to impurities of ambient air (more than half of worktime minimum) among over- and under-45-year-old men in 2000 in the EU15 countries, listed in the order of the percentage difference for the over-45-year-old men from the highest to the lowest.



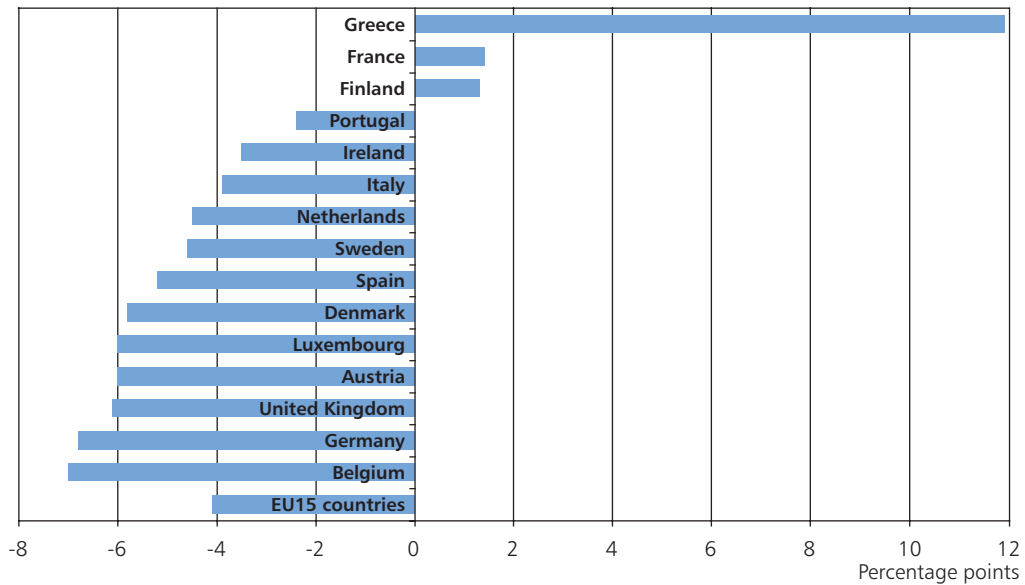
Appendix 6. Difference in the prevalence of exposure to poor work postures (for at least half of the worktime) among over- and under-45-year-old men in 2000 in the EU15 countries, listed in the order of the percentage difference for the over-45-year-old men from the highest to the lowest.



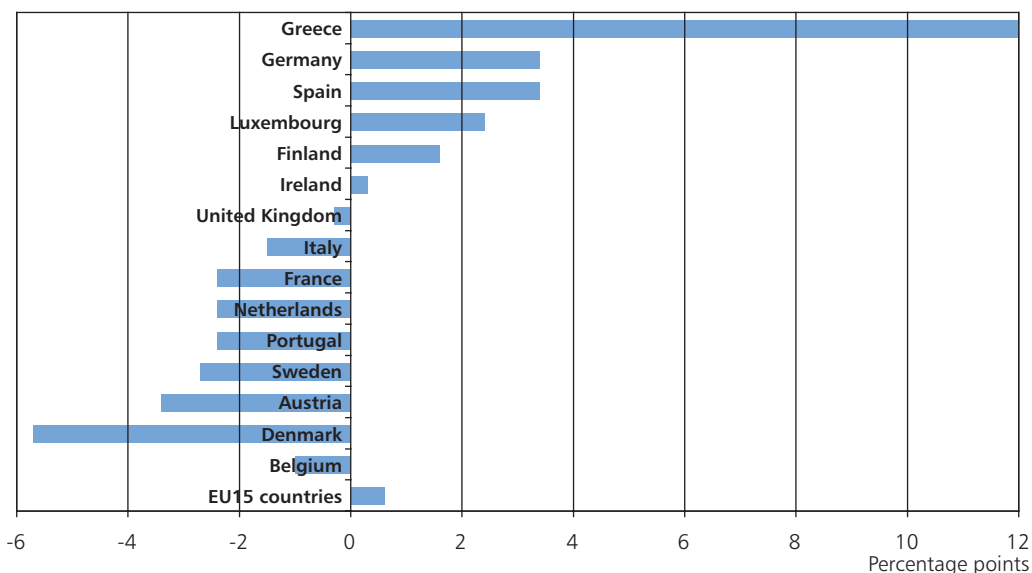
Appendix 7. Difference in the prevalence of exposure to poor work postures (for at least half of the worktime) among over- and under-45-year-old women in 2000 in the EU15 countries, listed in the order of the percentage difference for the over-45-year-old women from the highest to the lowest.



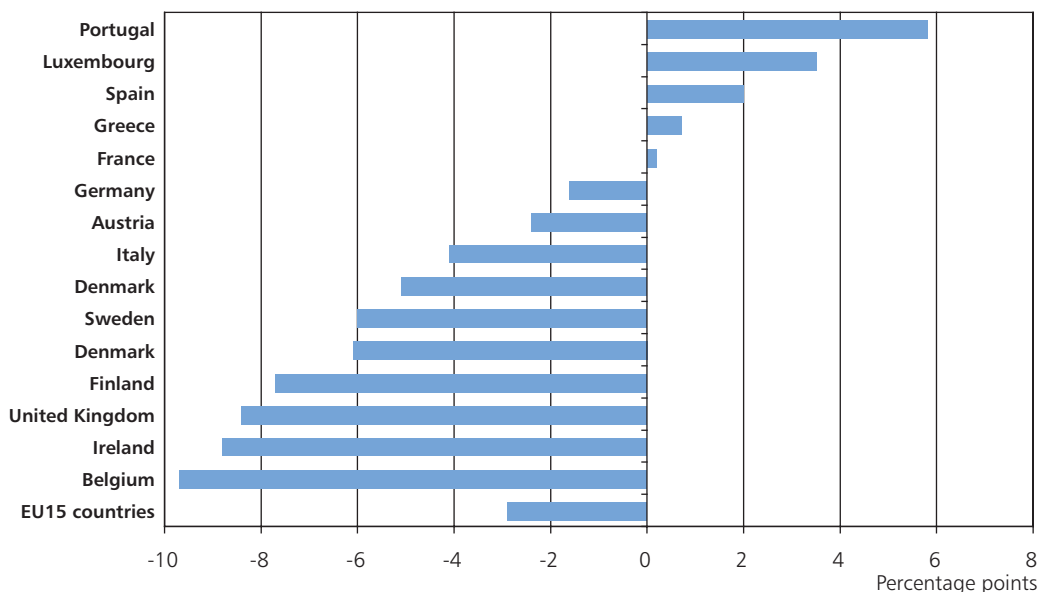
Appendix 8. Difference in the prevalence of exposure to handling heavy loads (for at least half of the worktime) among over- and under-45-year-old men in 2000 in the EU15 countries, listed in the order the percentage difference for the over-45-year-old men from the highest to the lowest.



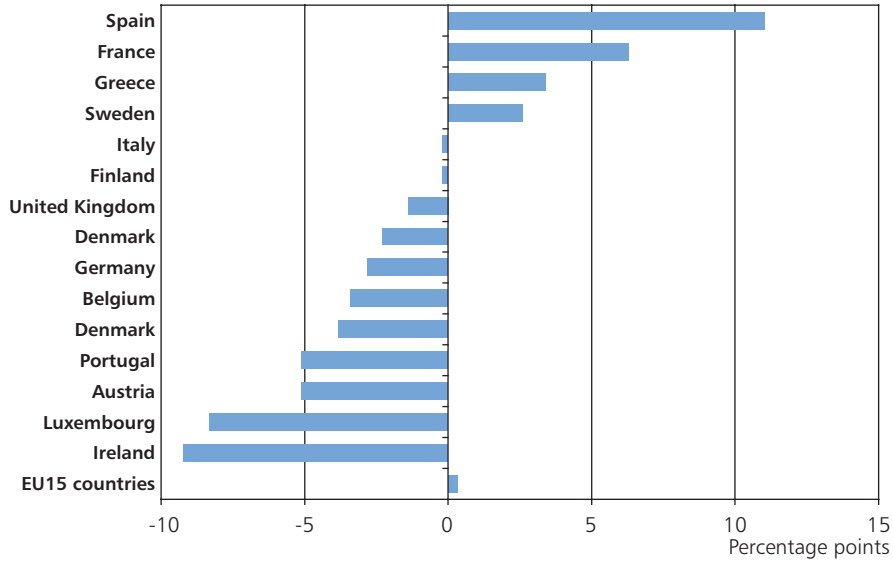
Appendix 9. Difference in the prevalence of exposure to handling heavy loads (for at least half of the worktime) among over- and under-45-year-old women in 2000 in the EU15 countries, listed in the order the percentage difference for the over-45-year-old women from the highest to the lowest.



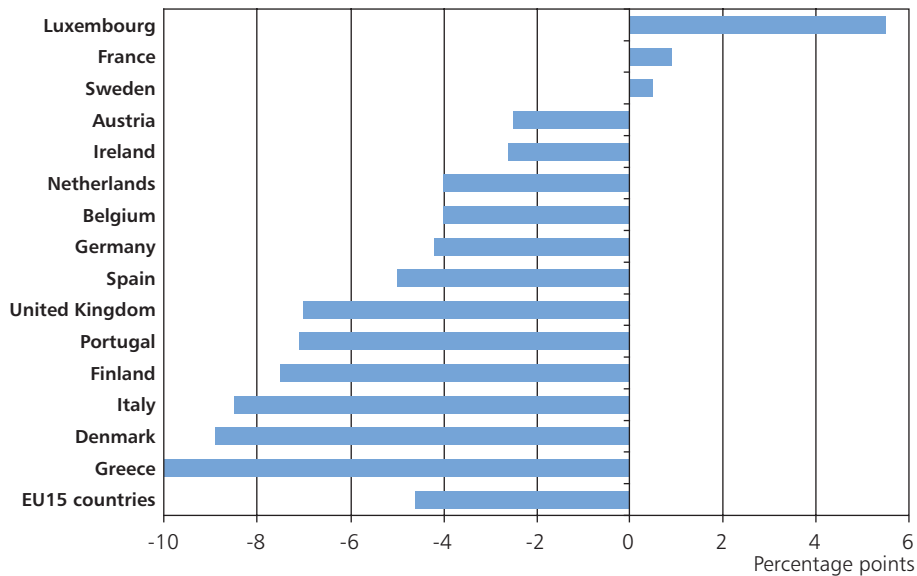
Appendix 10. Difference in the prevalence of exposure to repetitive work (with hand or arm for at least half of the worktime) among over- and under-45-year-old men in 2000 in the EU15 countries, listed in the order the percentage difference for the over-45-year-old women from the highest to the lowest.



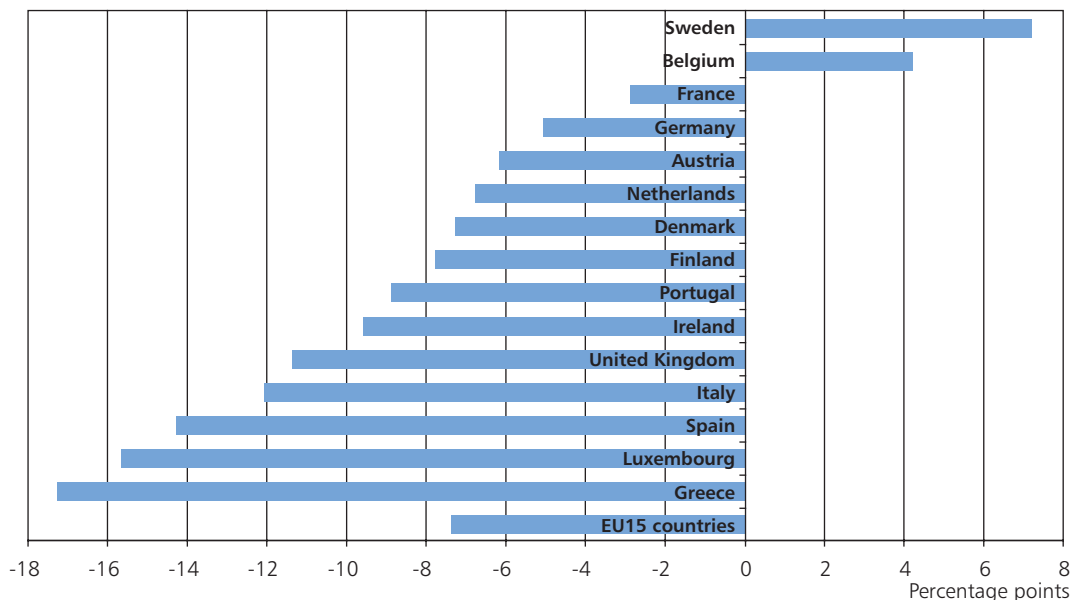
Appendix 11. Difference in the prevalence of exposure to repetitive work (with hand or arm for at least half of the worktime) among over- and under-45-year-old women in 2000 in the EU15 countries, listed in the order of the percentage difference for the over-45-year-old women from the highest to the lowest.



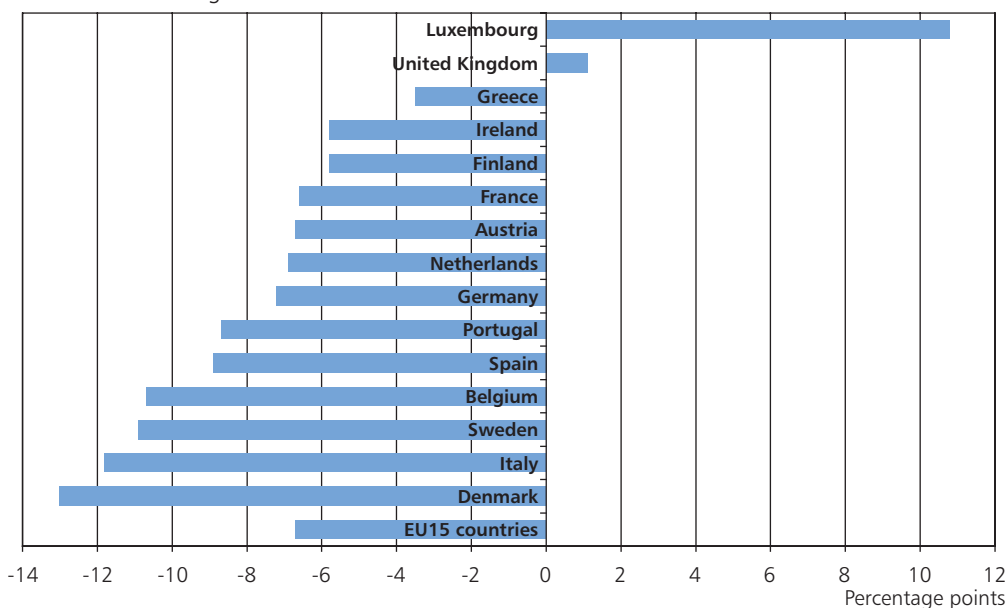
Appendix 12. Difference in the prevalence of computer use (for at least half of the worktime) among over- and under-45-year-old men in 2000 in the EU15 countries, listed in the order of the percentage difference for the over-45-year-old men from the highest to the lowest.



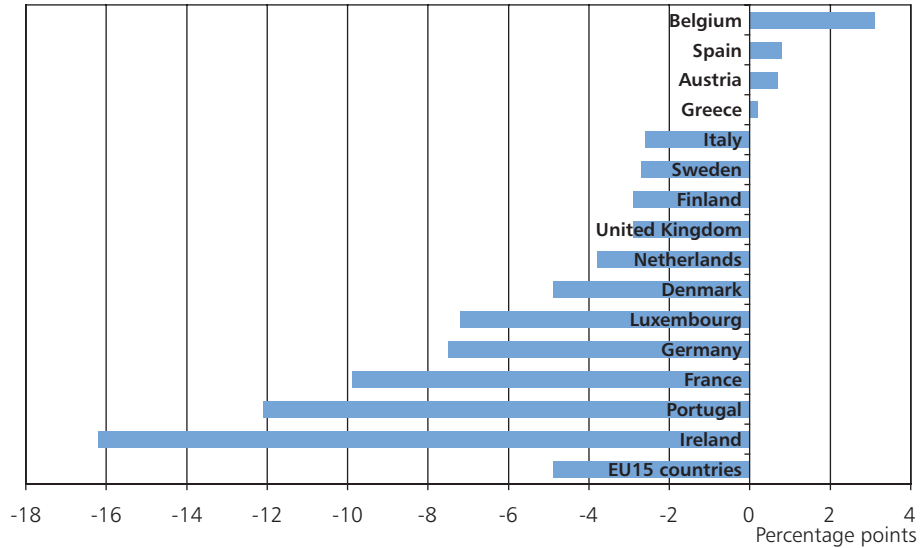
Appendix 13. Difference in the prevalence of computer use (for at least half of the worktime) among over- and under-45-year-old women in 2000 in the EU15 countries, listed in the order of the percentage difference for the over 45-year-old women from the highest to the lowest.



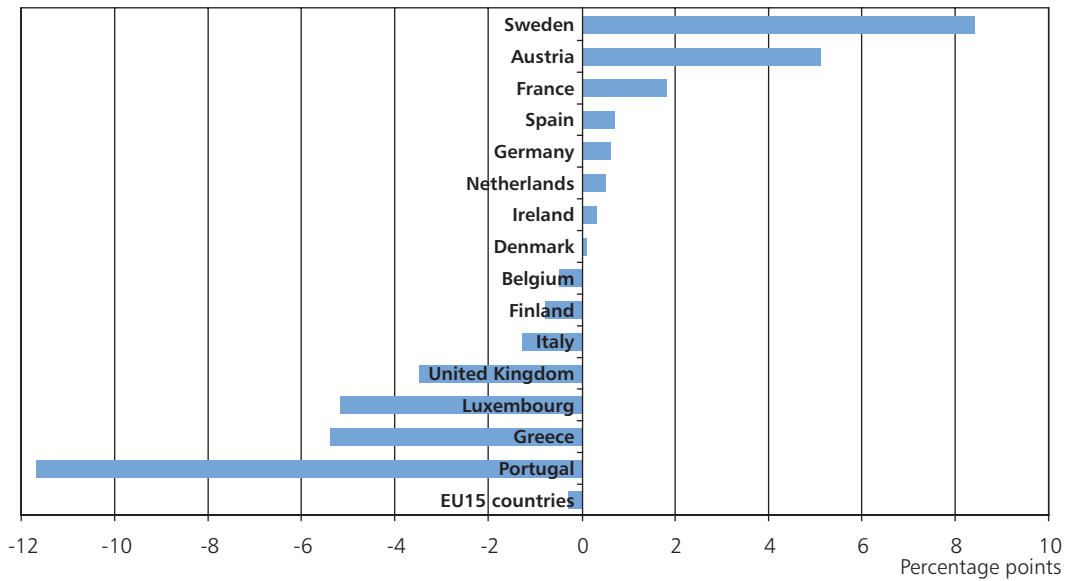
Appendix 14. Difference in the prevalence of tight work schedules (for at least half of the worktime) among over- and under-45-year-old men in 2000 in the EU15 countries, listed in the order of the percentage difference for the over-45-year-old men from the highest to the lowest.



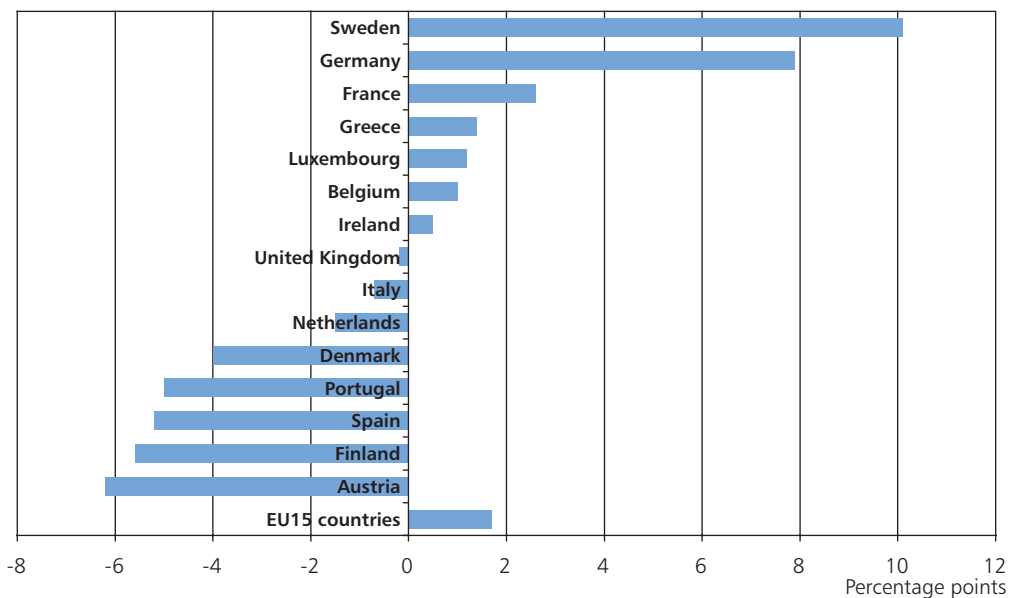
Appendix 15. Difference in the prevalence of tight work schedules (for at least half of the worktime) among over- and under-45-year-old women in 2000 in the EU15 countries, listed in the order of the percentage difference for the over-45-year-old women from the highest to the lowest.



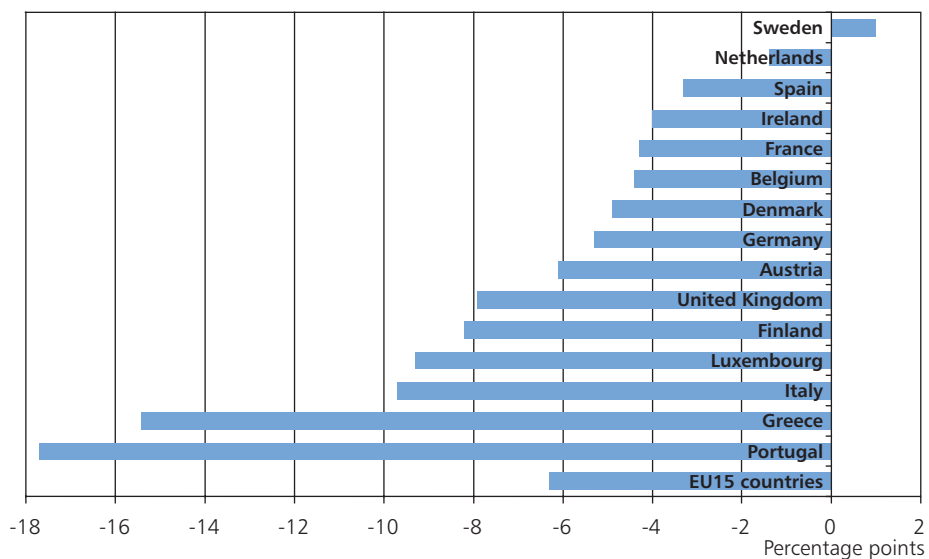
Appendix 16. Difference in the prevalence of complex tasks among over- and under-45-year-old men in 2000 in the EU15 countries, listed in the order of the percentage difference for the over-45-year-old men from the highest to the lowest.



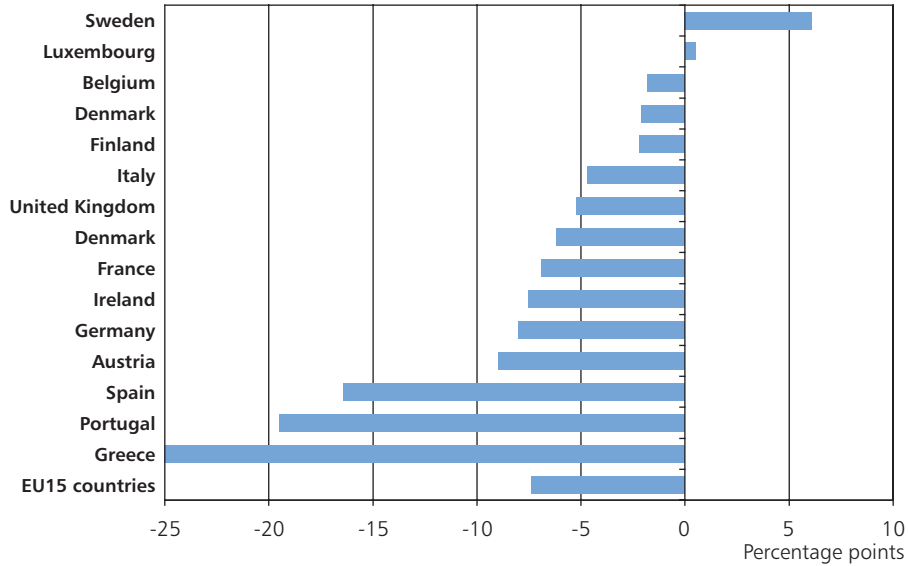
Appendix 17. Difference in the prevalence of complex tasks among over- and under-45-year-old women in 2000 in the EU15 countries, listed in the order of the percentage difference for the over-45-year-old women from the highest to the lowest.



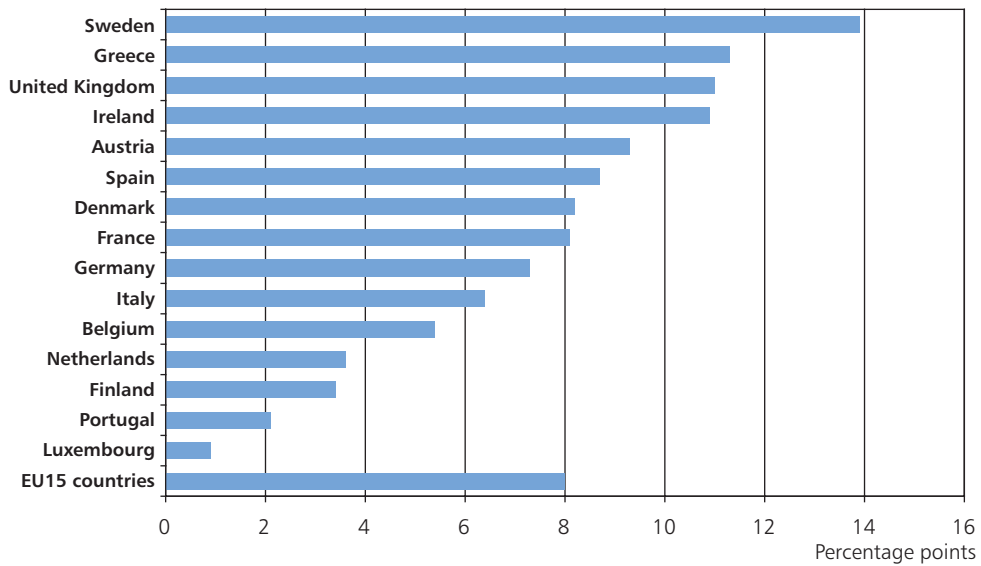
Appendix 18. Difference in the prevalence of learning new things at work among over- and under-45-year-old men in 2000 in the EU15 countries, listed in the order of the percentage difference for the over-45-year-old men from the highest to the lowest.



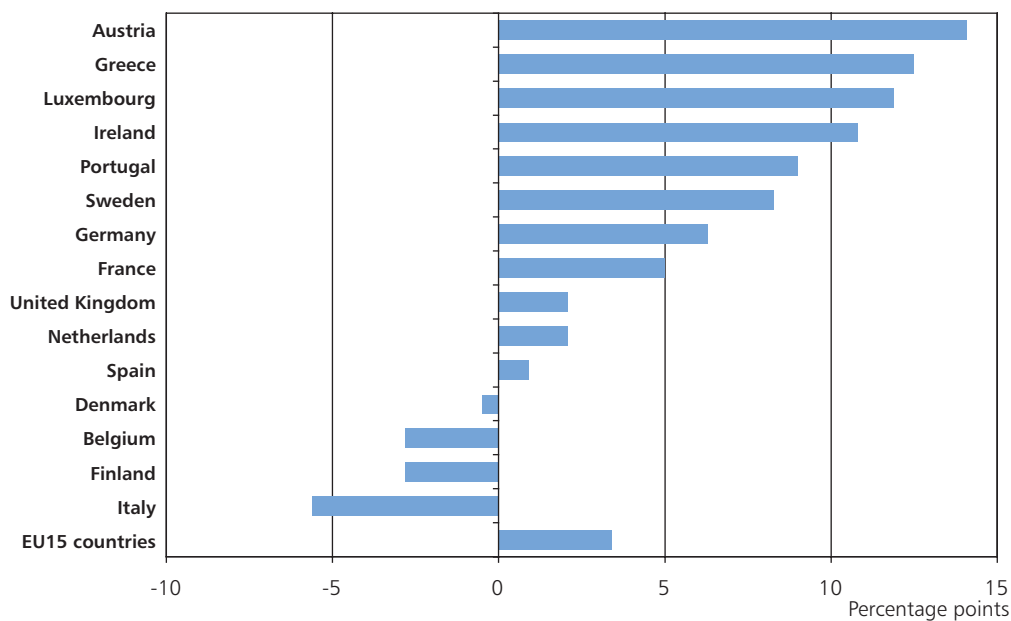
Appendix 19. Difference in the prevalence of learning new things at work among over- and under-45-year-old women in 2000 in the EU15 countries, countries listed in the order of the percentage difference for the over-45-year-old women from the highest to the lowest.



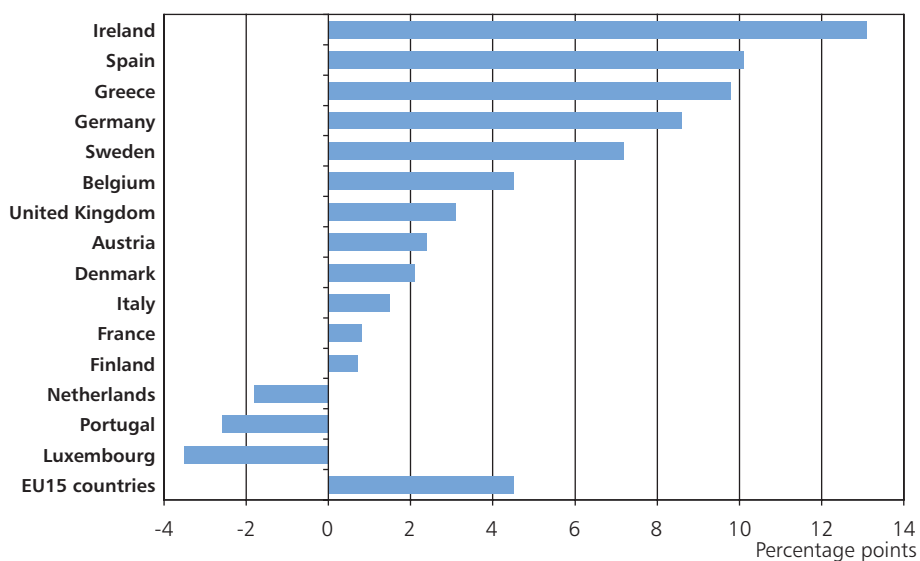
Appendix 20. Difference in the prevalence of the ability to take breaks at will among over- and under-45-year-old men in 2000 in the EU15 countries, listed in the order of the percentage difference for the over-45-year-old men from the highest to the lowest.



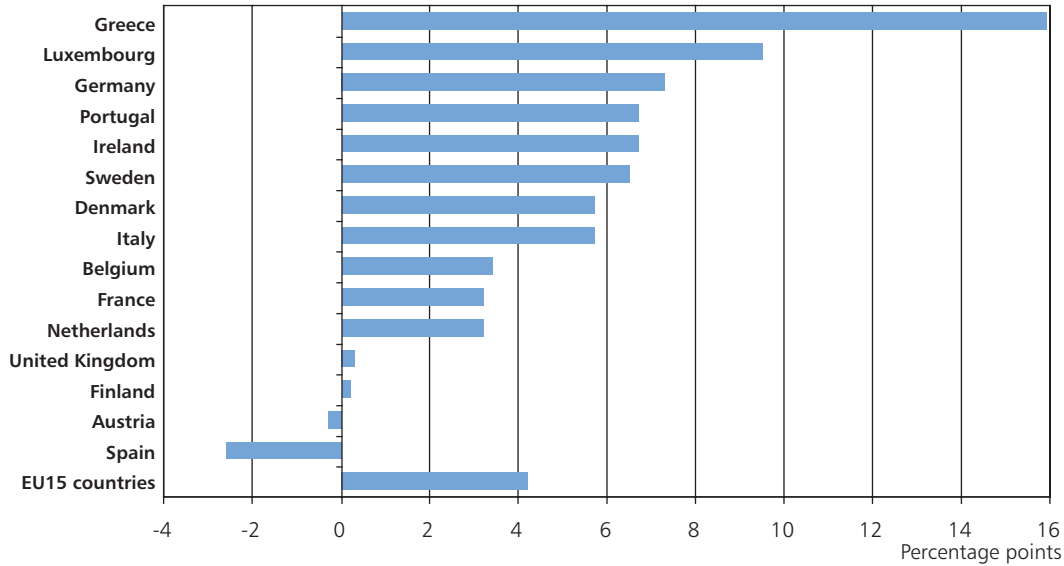
Appendix 21. Difference in the prevalence of the ability to take breaks at will among over- and under-45-year-old women in 2000 in the EU15 countries, listed in the order of the percentage difference for the over-45-year-old women from the highest to the lowest.



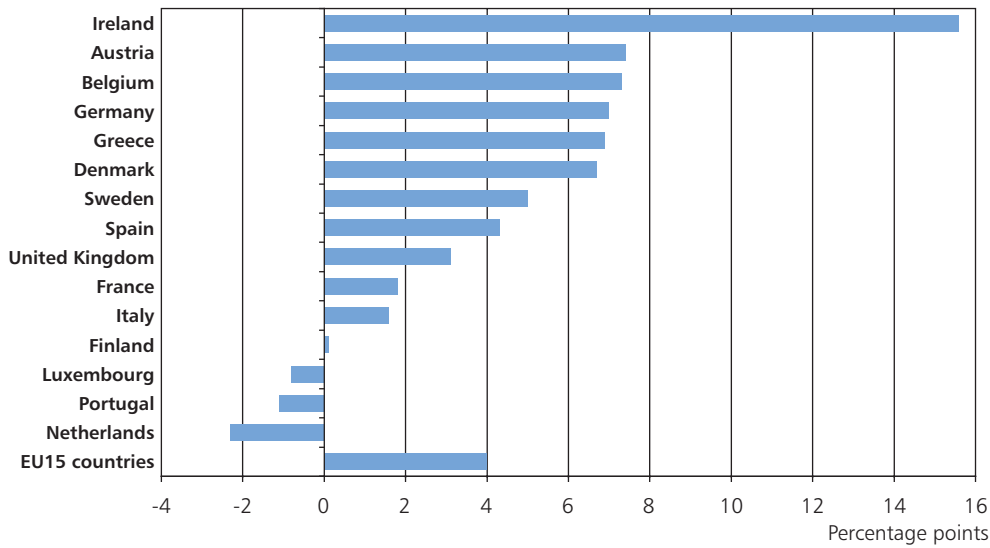
Appendix 22. Difference in the prevalence of the ability to choose or change the order of one's worktasks among over- and under-45-year-old men in 2000 in the EU15 countries, listed in the order of the percentage difference for the over-45-year-old men from the highest to the lowest.



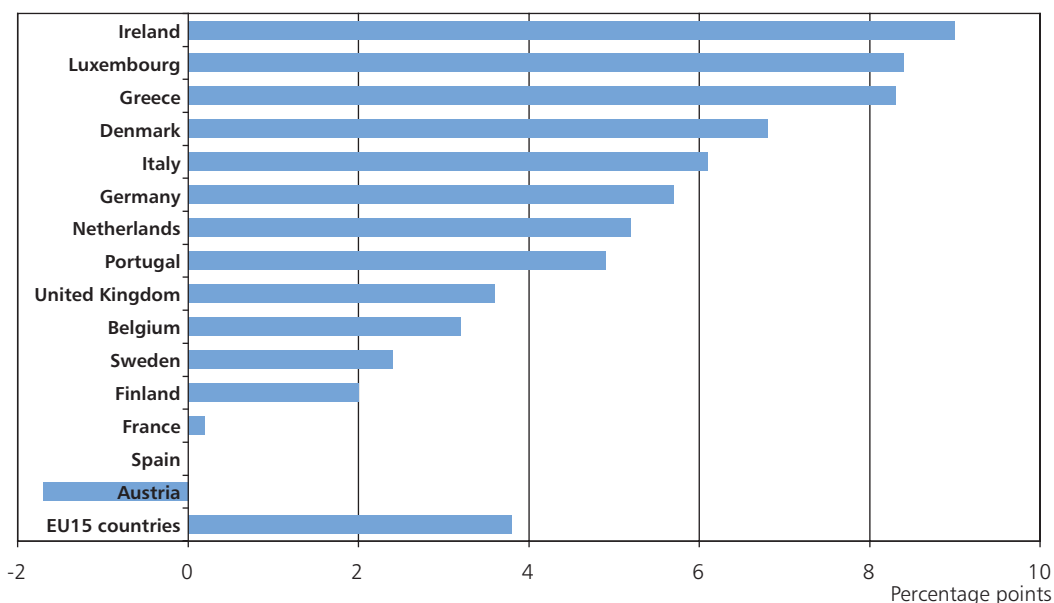
Appendix 23. Difference in the prevalence of the ability to choose or change the order of one's worktasks among over- and under-45-year-old women in 2000 in the EU15 countries, listed in the order of the percentage difference for the over-45-year-old women from the highest to the lowest.



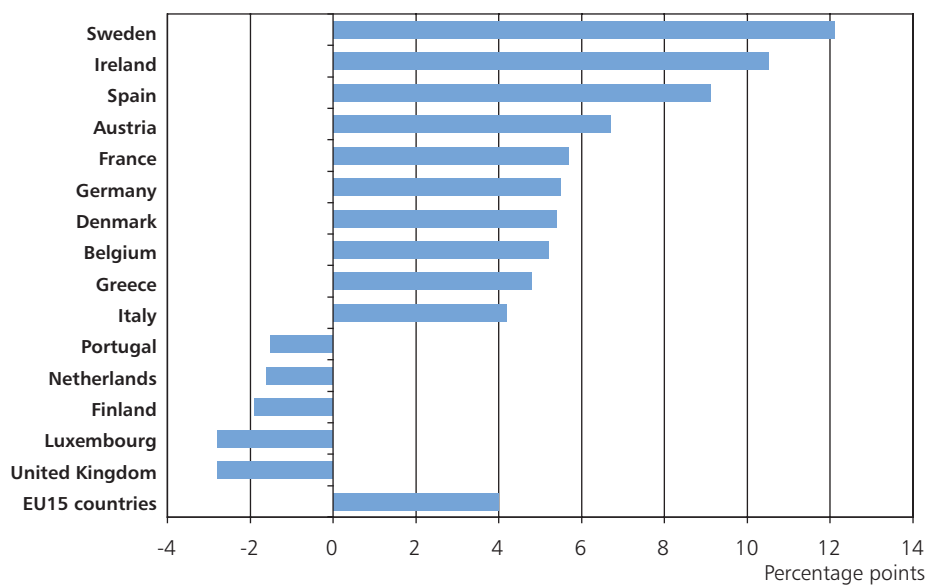
Appendix 24. Difference in the prevalence of the ability to choose or change work methods among over- and under-45-year-old men in 2000 in the EU15 countries, listed in the order of the percentage difference for the over-45-year-old men from the highest to the lowest.



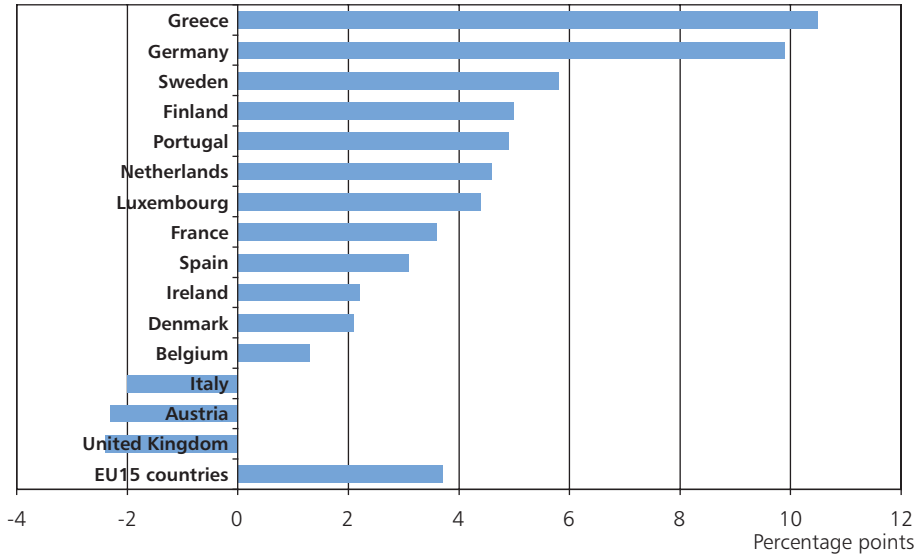
Appendix 25. Difference in the prevalence of the ability to choose or change work methods among over- and under-45-year-old women in 2000 in the EU15 countries, listed in the order of the percentage difference for the over-45-year-old women from the highest to the lowest.



Appendix 26. Difference in the prevalence of the ability to choose or change workplace or amount of work among over- and under-45-year-old men in 2000 in the EU15 countries, listed in the order of the percentage difference for the over-45-year-old men from the highest to the lowest.



Appendix 27. Difference in the prevalence of the ability to choose or change work-pace or amount of work among over- and under-45-year-old women in 2000 in the EU15 countries, listed in the order of the percentage difference for the over-45-year-old women from the highest to the lowest.



Appendix 28. Ability of over-45-year-old workers to regulate their workbreaks, order of tasks, choice of methods, workspace and amount of work in the EU15 countries in 2000, countries listed according to gender and nation (lowest total sum = best ability to regulate work, highest total sum = least ability to regulate work).

Country*	Workbreaks		Order of tasks		Work methods		Work pace	
	Men	Women	Men	Women	Men	Women	Men	Women
Denmark	2.	8.	2.	1.	2.	2.	1.	2.
Portugal	8.	1.	15.	14.	15.	15.	15.	14.
Sweden	3.	10.	1.	2.	1.	1.	4.	15.
Luxembourg	11.	5.	14.	4.	13.	6.	14.	7.
Belgium	10.	14.	6.	7.	8.	8.	8.	10.
Netherlands	14.	15.	3.	5.	3.	3.	2.	1.
Italy	1.	3.	13.	13.	6.	5.	3.	6.
Spain	13.	9.	10.	10.	14.	9.	12.	4.
Finland	5.	12.	4.	3.	9.	7.	11.	11.
France	4.	2.	7.	6.	10.	11.	7.	9.
Greece	9.	6.	9.	8.	12.	13.	9.	3.
United Kingdom	7.	11.	8.	9.	11.	10.	13.	12.
Ireland	6.	7.	5.	15.	5.	12.	5.	13.
Austria	12.	4.	12.	12.	7.	14.	6.	8.
Germany	15.	13.	11.	11.	4.	4.	10.	5.

*Listed in the order of the ranking in 1996 (see Ilmarinen 1999b)

Appendix 29. Change in the possibilities to regulate one's work in 1996–2000 among over-45-year-old workers in the EU15 countries. Countries are divided into three groups (possibilities to regulate work remained the same, improved or decreased) according to the total sum of the direction and extent of the change of both genders.

Country*	Change**							
	Workbreaks		Order of tasks		Work methods		Workpace	
	Men	Women	Men	Women	Men	Women	Men	Women
Denmark	0	0	–	0	–	+	–	+
Portugal	–	–		–	–	–	–	–
Sweden	–	0	0	0	0	+	0	0
Luxembourg	–	–	–	++	–	+	–	–
Belgium	0	–	–	0	–	–	–	–
Netherlands	0	–	0	0	0	0	0	0
Italy	0	–	–	+	–	+	–	0
Spain	0	–	0	–	–	–	0	–
Finland	0	–	0	0	–	0	–	0
France	0	–	0	0	0	–	0	0
Greece	0	–	0	+	–	–	0	0
United Kingdom	0	0	0	0	–	0	–	0
Ireland	0	0	0	0	0	0	0	0
Austria	++	+	0	0	+	0	+	–
Germany	0	0	0	+	+	++	0	+

* Listed in the order of superiority in 1996 (see Ilmarinen 1999)

** Direction of change compared to 1996:

- + improved by 5–10 percentage points
- ++ improved by > 10 percentage points
- 0 change \pm 4 percentage points
- decreased by 5–10 percentage points
- decreased by > 10 percentage points

Appendix 30. Ability of over- and under-45-year-old men and women to regulate their work in the EU15 countries in 2000.

(> 45 years versus < 45 years / 2000)

Country*	Workbreaks		Order of tasks		Work methods		Workspace		Sum of plus signs		Total sum
	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women	
Greece	++	++	+	++	+	+	0	++	4	7	11
Portugal	0	+	0	+	0	+	0	+	-	4	4
Spain	+	0	++	0	0	0	+	0	4	-	4
Sweden	++	+	+	+	0	0	++	+	6	3	9
Austria	+	++	0	0	+	0	+	0	3	2	5
Luxembourg	0	++	0	+	0	+	0	0	-	4	4
Belgium	+	0	0	0	+	0	+	0	3	-	3
Denmark	+	0	0	+	+	+	+	0	3	2	5
Finland	0	0	0	0	0	0	0	+	-	1	1
France	+	+	0	0	0	0	+	0	2	1	3
Germany	+	+	+	+	+	+	+	+	4	4	8
Ireland	++	++	++	+	++	+	++	0	8	4	12
Netherlands	0	0	0	0	0	+	0	0	-	1	1
Italy	+	-	0	+	0	+	0	0	1	2	3
United Kingdom	++	0	0	0	0	0	0	0	2	-	2
Plus-merkkien summa	15	12	7	9	8	8	10	6	39	35	74

* Listed in the order of the ranking in 1996 from highest to lowest (see Ilmarinen 1999b)

+ > 5-10 percentage points to the benefit of older workers

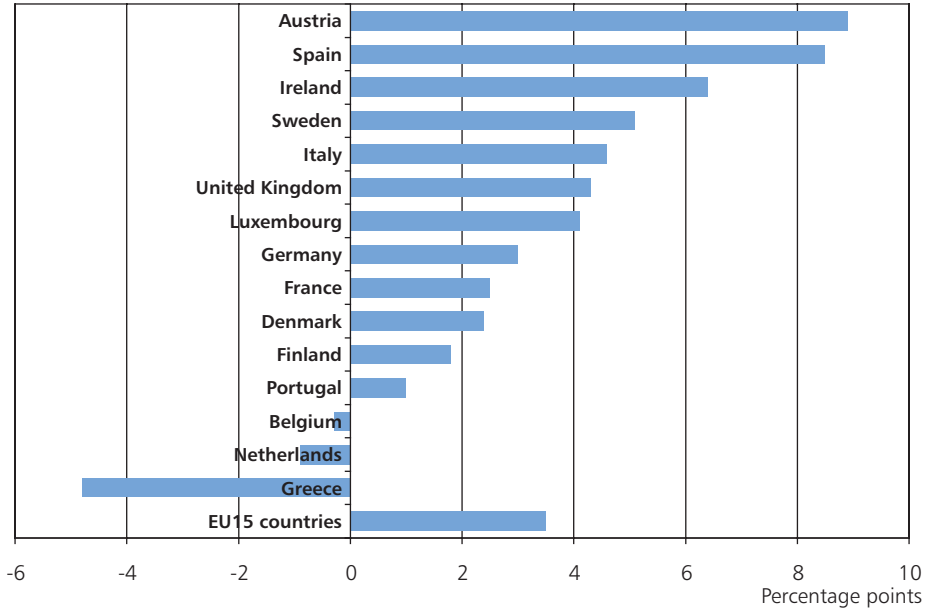
++ > 10 percentage points to the benefit of older workers

0 < 5 percentage points to the benefit of older or younger workers

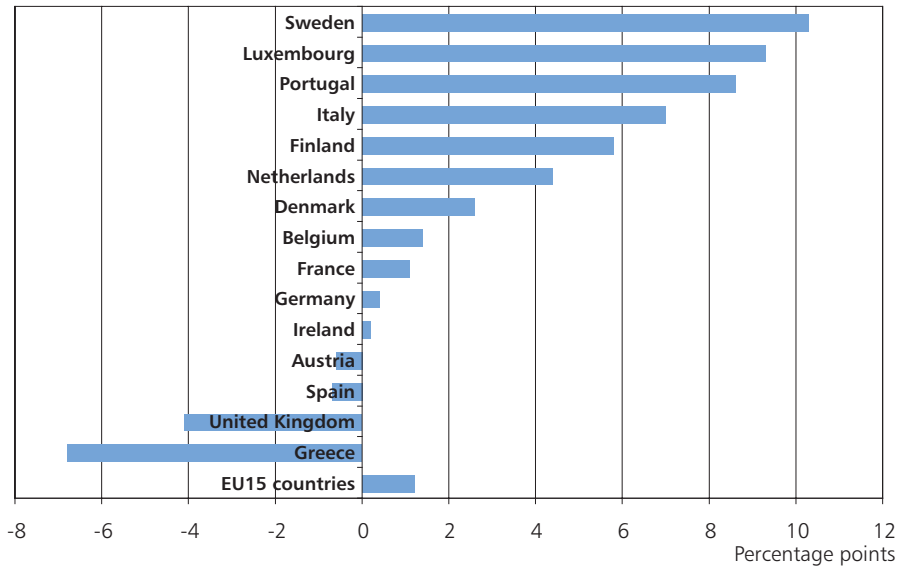
- 5-10 percentage points to the benefit of younger workers

-- > 10 percentage points to the benefit of younger workers

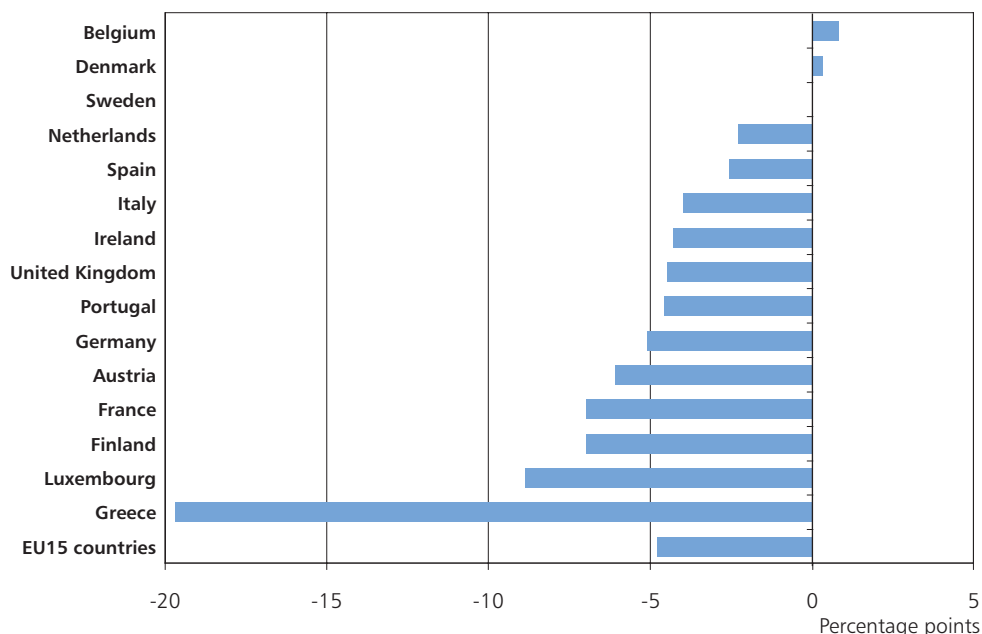
Appendix 31. Difference of the prevalence of a match between job requirements and skills among over- and under-45-year-old men in 2000 in the EU15 countries, listed according to the percentage difference for the over-45-year-old men from the highest to the lowest.



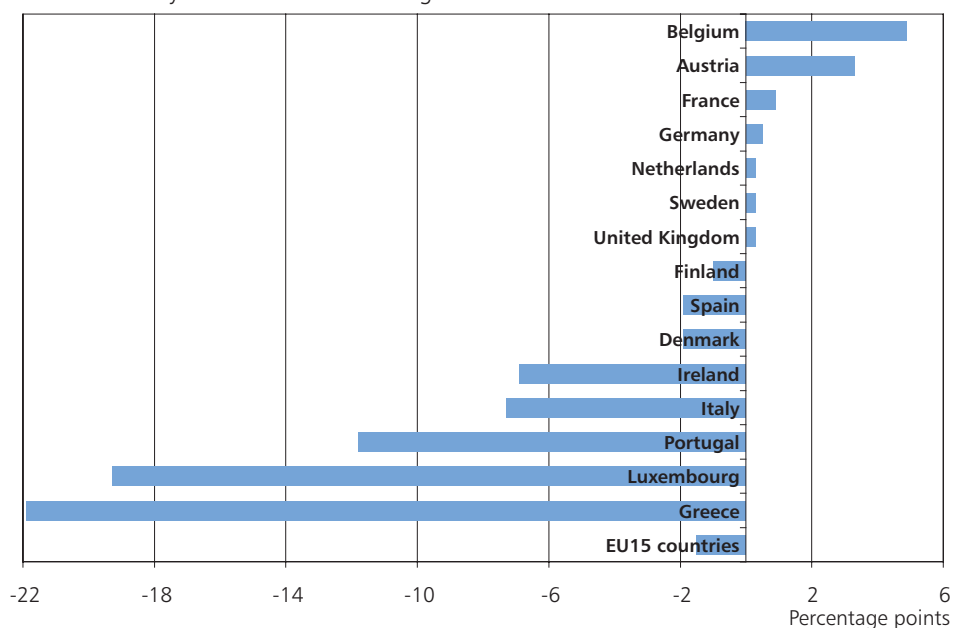
Appendix 32. Difference of the prevalence of a match between job requirements and skills among over- and under-45-year-old women in 2000 in the EU15 countries, listed according to the percentage difference for the over-45-year-old women from the highest to the lowest.



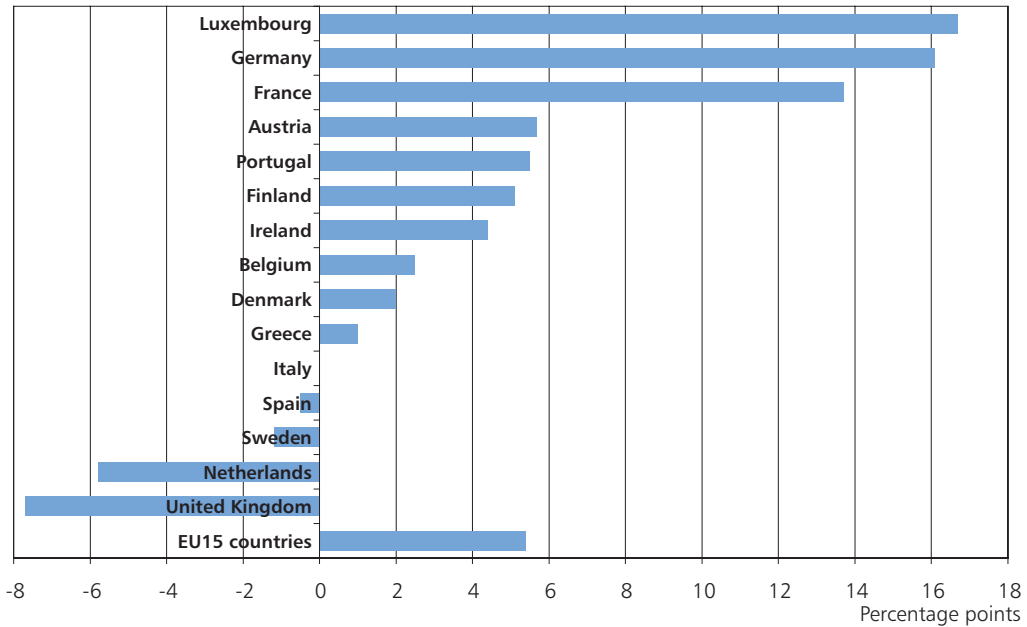
Appendix 33. Difference in the prevalence of the possibility to discuss work-related problems with supervisor among over- and under-45-year-old men in 2000 in the EU15 countries, listed in the order of the percentage difference for the over-45-year-old men from highest to lowest.



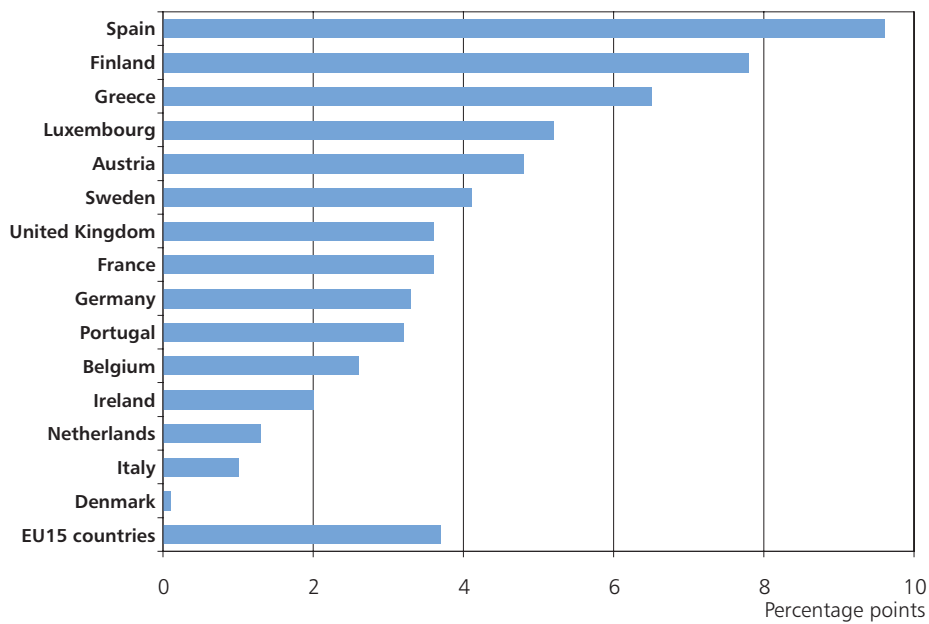
Appendix 34. Difference in the prevalence of the possibility to discuss work-related problems with supervisor among over- and under-45-year-old women in 2000 in the EU15 countries, listed in the order of the percentage difference for the over-45-year-old women from highest to lowest.



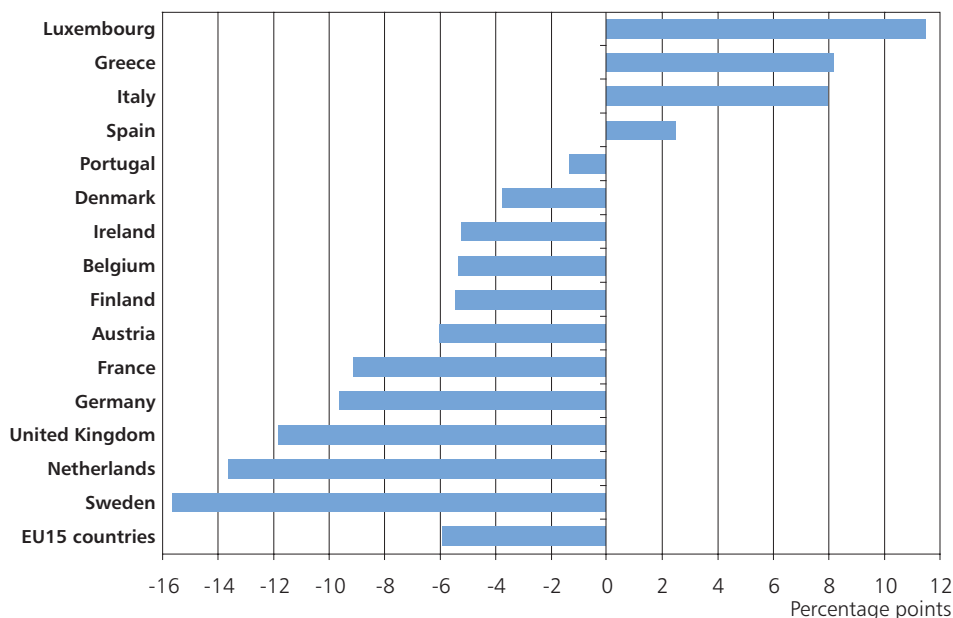
Appendix 35. Difference in the prevalence of long workweeks (>40 hours per week) among over- and under-45-year-old men in 2000 in the EU15 countries, listed in the order of the percentage difference for the over-45-year-old men from highest to the lowest.



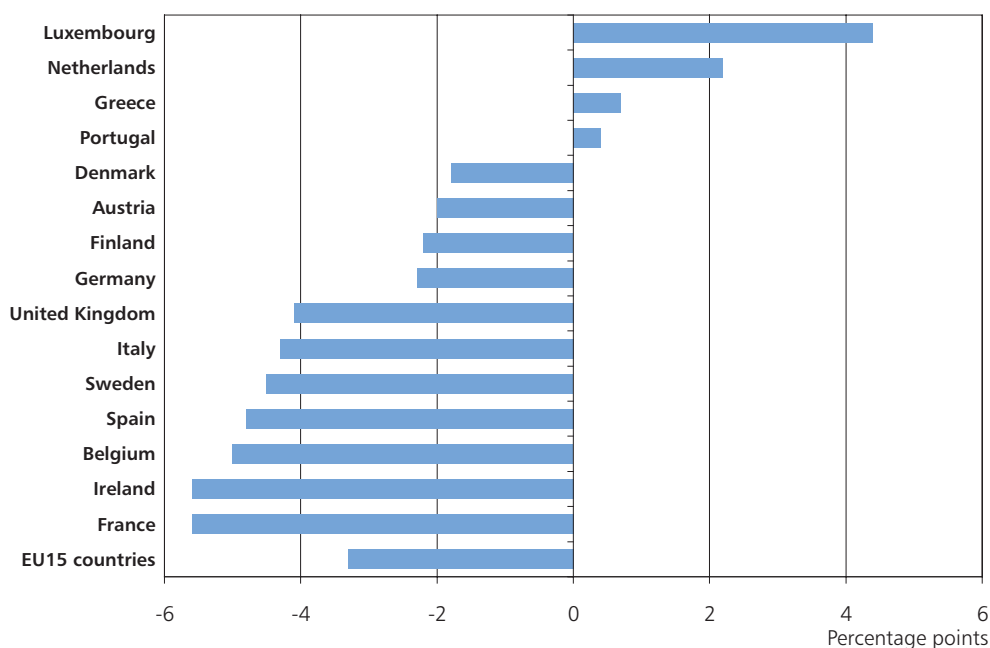
Appendix 36. Difference in the prevalence of long workweeks (>40 hours per week) among over- and under-45-year-old women in 2000 in the EU15 countries, listed in the order of the percentage difference for the over-45-year-old women from highest to the lowest.



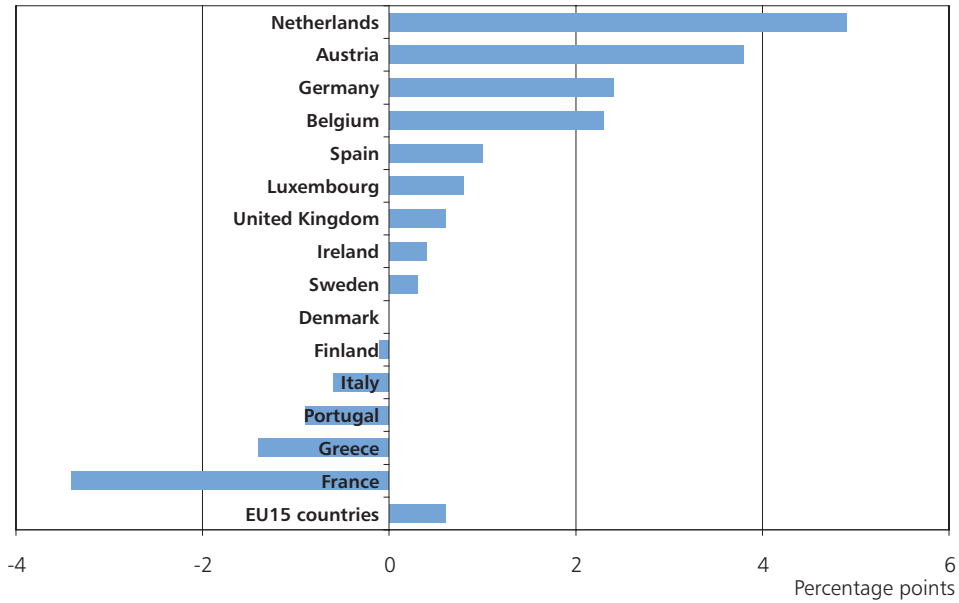
Appendix 37. Difference in the prevalence of irregular day work involving work on weekends (1–5 times a month) among over- and under-45-year-old women in 2000 in the EU15 countries, listed in the order of the percentage difference for the over-45-year-old women from the highest to the lowest.



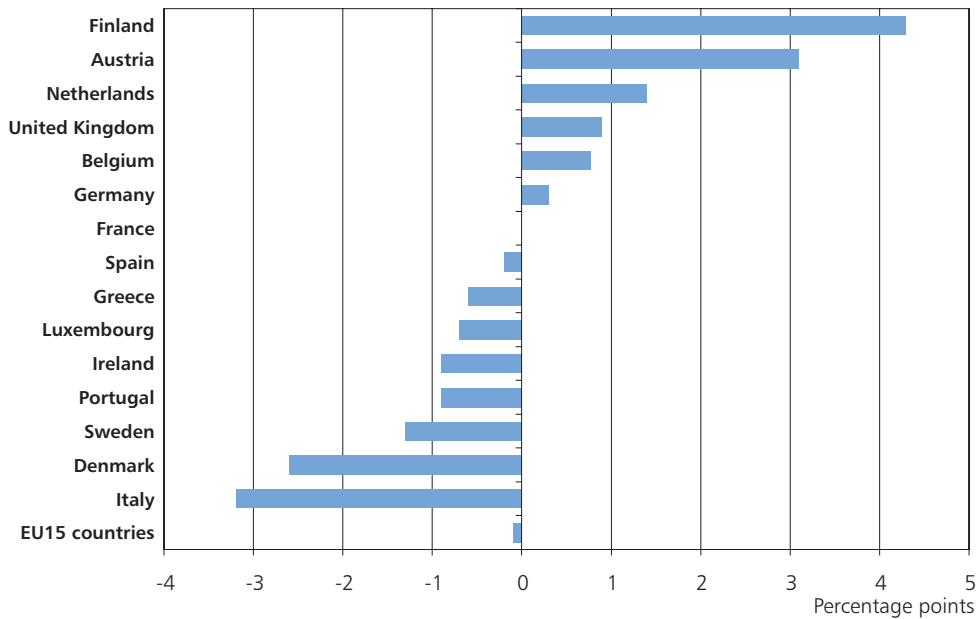
Appendix 38. Difference of the prevalence of shift work with five or more night shifts a month among over- and under-45-year-old men in 2000 in the EU15 countries, listed in the order of the percentage difference for the over-45-year-old men from the highest to the lowest.



Appendix 39. Difference of the prevalence of age discrimination among over- and under-45-year-old men in 2000 the EU15 countries, listed in the order of the percentage difference for the over-45-year-old men from the highest to the lowest.



Appendix 40. Difference in the prevalence of age discrimination among over- and under-45-year-old women in 2000 in the EU15 countries, listed in the order of the percentage difference for the over-45-year-old women from the highest to the lowest.



Appendix 41. Rankings of the EU15 countries (1st = fewest exposed persons, 15th = most exposed persons), sums of the rankings, and the mean values and ranges of the rankings according to the exposures of over-45-year-old men in 2000.

	Italy	Denmark	Belgium	Austria	Netherlands	Sweden	Germany	Ireland	France	Spain	Portugal	Finland	Greece	United Kingdom	Luxembourg
Noise	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.
Vibration	5.	1.	4.	6.	3.	2.	10.	9.	11.	14.	12.	13.	15.	8.	7.
Impurities in ambient air	5.	2.	4.	6.	1.	7.	3.	8.	11.	10.	13.	14.	15.	9.	12.
Work postures	9.	1.	5.	4.	2.	3.	6.	7.	13.	12.	14.	10.	15.	11.	8.
Heavy loads	5.	2.	4.	7.	1.	9.	8.	11.	14.	12.	10.	6.	15.	13.	3.
Repetitive work	5.	1.	3.	4.	10.	7.	2.	6.	12.	15.	13.	11.	14.	9.	8.
Computer use	10.	8.	3.	5.	1.	4.	12.	11.	7.	13.	14.	9.	15.	6.	2.
Tight work schedules	3.	5.	4.	14.	6.	10.	13.	11.	8.	2.	1.	12.	7.	15.	9.
Complex worktasks	3.	2.	4.	13.	1.	5.	7.	12.	11.	8.	10.	6.	14.	15.	9.
Learning new things	10.	4.	2.	11.	1.	9.	13.	5.	7.	3.	15.	8.	6.	12.	14.
Regulating one's work	5.	1.	8.	9.	4.	2.	12.	3.	6.	13.	15.	7.	10.	10.	14.
Work skills	12.	2.	8.	4.	10.	5.	6.	9.	11.	7.	3.	1.	13.	14.	15.
Supervisory work	12.	1.	7.	6.	2.	3.	8.	11.	9.	14.	13.	4.	15.	5.	10.
Long workweeks	9.	3.	4.	8.	1.	2.	12.	15.	14.	10.	13.	7.	11.	6.	5.
Age discrimination	3.	6.	12.	14.	15.	9.	11.	7.	2.	8.	1.	10.	4.	13.	5.
Sum	97	41	75	115	63	83	130	133	145	151	158	130	182	160	136
Mean	6.47	2.73	5.0	7.67	4.2	5.53	8.67	8.87	9.67	10.07	10.53	8.67	12.13	10.67	9.07
Range	1-12	1-8	2-12	4-14	1-15	2-10	2-13	3-15	2-14	2-15	1-15	1-14	4-15	5-15	2-15
Ranking	5.	1.	3.	6.	2.	4.	7.	9.	11.	12.	13.	7.	15.	14.	10.

Appendix 43. Ranking of the EU15 countries (1st = fewest exposed persons, 15th = most exposed persons), total sums of the rankings, and the mean values according and ranges of the rankings to the exposures of over-45-year-old women in 2000.

	Austria	Germany	Netherlands	Ireland	Sweden	Italy	Portugal	Iso-Britannia	Belgium	France	Greece	Spain	Denmark	Finland	Luxembourg
Noise	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.
Vibration	8.	3.	1.	9.	5.	14.	13.	7.	4.	6.	15.	12.	2.	11.	10.
Work postures	3.	6.	2.	7.	10.	4.	12.	11.	5.	13.	15.	14.	1.	8.	9.
Heavy loads	4.	9.	3.	7.	14.	1.	5.	12.	6.	13.	15.	11.	2.	10.	8.
Repetitive work	3.	2.	12.	4.	10.	7.	9.	8.	6.	13.	11.	15.	5.	14.	1.
Computer use	11.	9.	1.	5.	3.	12.	14.	4.	2.	6.	15.	13.	7.	10.	8.
Tight work schedules	11.	9.	5.	7.	15.	6.	1.	13.	10.	4.	12.	2.	8.	14.	3.
Complex worktasks	1.	2.	7.	10.	5.	13.	14.	6.	12.	8.	11.	15.	3.	4.	9.
Learning new things	11.	12.	5.	10.	1.	9.	14.	6.	7.	8.	15.	13.	3.	2.	4.
Regulating one's work	11.	9.	3.	15.	5.	4.	14.	13.	12.	5.	7.	8.	1.	9.	2.
Work skills	8.	7.	6.	12.	4.	10.	3.	14.	5.	13.	15.	11.	1.	2.	9.
Supervisory work	2.	7.	5.	10.	4.	11.	13.	1.	9.	8.	15.	12.	3.	6.	14.
Long workweek	9.	3.	1.	8.	4.	11.	14.	6.	7.	10.	13.	15.	2.	12.	5.
Irregular daytime work	11.	3.	1.	5.	2.	14.	6.	7.	9.	10.	15.	12.	4.	8.	13.
Age discrimination	14.	10.	12.	5.	12.	1.	3.	9.	8.	10.	5.	4.	1.	15.	5.
Sum	108	93	67	118	99	123	142	125	111	137	176	155	56	139	115
Mean	7.2	6.2	4.5	7.9	6.6	8.2	9.5	8.3	7.4	9.1	11.7	10.3	3.7	9.3	7.7
Range	1-14	2-12	1-12	4-15	1-15	1-14	1-14	1-14	2-12	4-13	5-15	2-15	1-13	2-15	1-15
Ranking	5.	3.	2.	8.	4.	9.	13.	10.	6.	11.	15.	14.	1.	12.	7.

Appendix 44. Rankings of the EU15 countries according to the exposures of over-45-year-old women in 2000 (1st = fewest exposed persons, 15th = most exposed persons).

Ranking	1.	AT	NL	DK	IT	NL	AT	SE	DK	DK	UK	NL	DK
Noise	2.	DE	DK	NL	DK	BE	DE	FI	LU	FI	AT	DK	IT
Vibration	3.	NL	DE	AT	NL	SE	DK	DK	NL	PT	DK	DE	PT
Work postures	4.	IE	BE	IT	AT	UK	FI	LU	IT	SE	SE	SE	ES
Heavy loads	5.	SE	SE	BE	PT	IE	NL	SE	NL	FR	NL	LU	IE
Repetitive work	6.	IT	FR	DE	BE	FR	IT	UK	SE	NL	FI	UK	PT
Computer use (R)	7.	PT	UK	IE	IE	DK	IE	NL	BE	EL	DE	BE	LU
Tight work schedules	8.	UK	AT	FI	LU	LU	DK	FR	FR	ES	FR	IE	BE
Complex tasks (R)	9.	BE	IE	LU	DE	DE	DE	LU	IT	FI	LU	BE	UK
Learning new things (R)	10.	FR	LU	SE	FI	SE	IE	IE	DE	IE	FR	FR	FR
Regulating one's work (S)	11.	EL	FI	UK	ES	EL	AT	AT	AT	ES	IT	IT	DE
Work skills (R)	12.	ES	ES	PT	UK	NL	IT	IT	BE	IE	ES	FI	NL
Discussions with supervisor	13.	DK	PT	FR	FR	FR	FR	ES	UK	FR	PT	EL	SE
Long workweeks	14.	FI	IT	ES	SE	FI	PT	PT	PT	UK	LU	PT	IT
Irregular daytime work	15.	LU	EL	EL	EL	ES	ES	EL	IE	EL	EL	ES	FI
Age discrimination													

(R) = Reversed scale: 1st = many exposed persons, 15th = few exposed persons.

(S) = Summary: taking breaks, order of worktasks, variation of work methods, workplace.

BE Belgium; CZ Czech Republic; DK Denmark; DE Germany; EE Estonia; EL Greece; ES Spain; FR France; IE Ireland; IT Italy; CY Cyprus; LV Latvia; LT Lithuania; LU Luxembourg; HU Hungary; MT Malta; NL Netherlands; AT Austria; PL Poland; PT Portugal; SI Slovenia; SK Slovakia; FI Finland; SE Sweden; UK United Kingdom

References

- Ahola K, Huuhtanen P: Ikäasenteet ja oikeudenmukaisuus työssä: tutkimus kolmella suomalaisella työpaikalla. Ikääntyvä arvoonsa. Työterveyden, työkyvyn ja hyvinvoinnin edistämishjelman julkaisuja 21. Finnish Institute of Occupational Health and Finnish Work Environment Fund, Helsinki 1995.
- Ahonen G: Ikääntymisen haittojen lieventämisen liiketaloudelliset kustannus-hyötyvaikutukset. In: Ikääntyvät työelämässä. Ikääntyvien työllistymisedellytysten parantamista selvittäneen komitean mietintö, liiteosa 1996:14. Ministry of Labour, Helsinki 1996, 33–59.
- Ahonen K: Vapaaehtoisen lisäturvan merkitys palkansaajien eläkkeelle siirtymisessä. In: Eläkeuudistus ja ikääntyvien työssä jatkamisaikheet. Edited by E Tuominen. Eläketurvakeskuksen raportteja 37. Finnish Centre for Pensions, Helsinki 2004, 159–195.
- Ahtiainen J, Häkkinen K: Hermo-lihasjärjestelmän toiminnan mittaaminen. In: Kuntotestauksen käsikirja. Edited by K Keskinen, K Häkkinen, M Kallinen. Liikuntatieteellisen Seuran julkaisu nro 156. Finnish Society for Research in Sport and Physical Education, Tampere 2004, 125–149.
- Aromaa A, Koskinen S (editors): Terveys ja toimintakyky Suomessa. Terveys 2000 -tutkimuksen perustulokset. National Public Health Institute, Helsinki 2002.
- Auer P, Fortuny M: Ageing in the labour force in OECD countries: economic and social consequences. Employment paper 2000/2. International Labour Office, Geneva 2000.
- Baltes PB, Smith J: Toward a psychology of wisdom. In: Wisdom: Its nature, origins, and development. Edited by RJ Sternberg. Cambridge University Press, New York 1990, 87–120.
- Barak B, Stern B, Gould S: Ideal age concepts: an exploration. In: Advances in consumer research, 15. Edited by M Houston. Association for Consumer Research, Ann Arbor (MI) 1998, 146–152.
- Barnes-Farrell J, Rumery S, Swody C: How do concepts of age relate to work and off-the-job stresses and strains? A field study of health care workers in five nations. *Experimental Aging Research* 28 (2002): 1, 87–98.
- Blomqvist I, Ruuskanen T, Niemi H, Nyssönen E: Osallistuminen aikuiskoulutukseen. Aikuiskoulutustutkimus 2000. Tilastokeskus, Koulutus 2002:5. Statistics Finland, Helsinki 2002.

Burton W, Chen C-Y, Conti D, et al.: The association of health risks with on-the-job productivity. *Journal of Occupational and Environmental Medicine* 47 (2005): 8, 769–777.

Center for Occupational Safety: Seniorit työssä. Ikääntyvän henkilöstön työkyky ja sen taloudellinen merkitys. Center for Occupational Safety, Helsinki 2000.

Costa G, Goedhard WJA, Ilmarinen J (editors): Assessment and promotion of work ability, health and well-being of ageing workers. *International Congress Series 1280*. Elsevier, Amsterdam The Netherlands 2005.

Dupré D, Karjalainen A: Employment of disabled people in Europe in 2002. *Statistics in focus*. Theme 3–26/2003. Catalogue number: KS-NK-03-026-EN-N. Luxembourg, European Communities, 2005.

Elo A-L, Mattila P, Kylä-Setälä E, et al.: Työyhteisön ja johtamisen kehittämisohjelman vaikutus työhyvinvointiin. *Evaluatiotutkimus kunta-alan teknisessä virastossa. Työ ja ihminen, tutkimusraportti 26*. Finnish Institute of Occupational Health, Helsinki 2004.

Era P, Heikkinen E: Postural sway during standing and unexpected disturbance of balance in random samples of men of different ages. *Journal of Gerontology* 40 (1985) 288–295.

Era P: Fyysisen toimintakyvyn muutokset vanhetessa. In: *Ikääntyminen ja työ*. Edited by J Kuusinen, E Heikkinen, P Huuhtanen, et al. WSOY and Finnish Institute of Occupational Health, Juva 1994, 43–57.

European Commission: *A Pan-EU survey 1999*. European Commission, Brussels 1999.

European Communities: *Employment in Europe 2004. Recent trends and prospects*. Employment and European Social Fund. European Commission, Brussels 2004a.

European Commission: European Commission Communication “Increasing the employment of older workers and delaying the exit from the labour market” from the Commission, to the Council, The European Parliament, The European Economic and Social Committee and the Committee of the Regions. COM (2004) 146 Final. European Commission, Brussels 2004b.

European Commission: *Communication to the spring European Council. Working together for growth and jobs. A new start for the Lisbon Strategy*. COM (2005) 24. European Commission, Brussels 2005.

- European Communities: Eurostat yearbook 2004. The statistical guide to Europe. Data 1992–2002. Eurostat, Theme 1 General statistics. European Communities, France 2004.
- European Communities: European Union labour force survey, 2nd quarter 2004. Statistics in focus. Population and social conditions 1/2005. Catalogue number: KS-NK-05-001-EN-N. Eurostat, Luxembourg 2005.
- Fingerhut M, van Dijk F, Dybing E, et al.: Toward a better working life. International evaluation of the Finnish Institute of Occupational Health (1997–2003). Ministry of Social Affairs and Health, Helsinki 2004.
- Finland Central Chamber of Commerce: Yrityskulttuuri 2004. Keskuskauppakamari, Helsinki 2004.
- Finnish Institute of Occupational Health: Ikäjohtamista kehittämään. Työkirja, Hyvinkää 2003.
- Fogelholm M: Antropometriset ja kehon koostumusta kuvaavat mittaukset. In: Kuntotestauksen käsikirja. Edited by K Keskinen, K Häkkinen, M Kallinen. Liikuntatieteellisen Seuran julkaisu nro 156. Finnish Society for Research in Sport and Physical Education, Tampere 2004, 45–50.
- Forma P, Tuominen E, Väänänen-Tomppo I: Työssä jatkamisen haasteet yksityisellä ja julkisella sektorilla. In: Eläkeuudistus ja ikääntyvien työssä jatkamisaikheet. Edited by E Tuominen. Eläketurvakeskuksen raportteja 37. Eläketurvakeskus, Helsinki 2004, 23–82.
- Forss S: Toimipaikkojen ikäpolitiikka ja henkilöstön työssä viihtyminen. In: Jaksaa ja joutaa. Edited by A-M Lehto, N Järnefelt. Tilastokeskuksen tutkimuksia 230. Statistics Finland, Helsinki 2001, 199–219.
- Forss S: Kansalliset kehitysohjelmat, työhyvinvointi ja ikääntyvien työssä pysyminen. Eläketurvakeskuksen monisteita 52. Finnish Centre for Pensions, Helsinki 2004.
- Goedhard WJA (editor): Aging and work. Pasmans, The Hague 1992.
- Goedhard WJA (editor): Aging and work 3. Pasmans, The Hague 1996.
- Hakanen J: Työuupumuksesta työn imuun: työhyvinvointitutkimuksen ytimessä ja reuna-alueilla. Työ ja ihminen, tutkimusraportti 27. Finnish Institute of Occupational Health, Helsinki 2004.
- Härmä M, Ilmarinen J: Towards the 24-hour society—new approaches for aging shift workers? *Scandinavian Journal of Work, Environment & Health* 25 (1999):6, 610–615.

Härmä M: Yötyö ja terveys. *Erikoislääkäri* 2004:1, 27–31.

Härmä M, Hakola T, Kandolin I, et al.: A controller intervention study of a very rapidly forward rotating shift system among young and elderly workers. *International Journal of Psychophysiology* 2006:59; 70-.

Heikkinen E, Heikkinen R-L, Ruoppila I (editors): Functional capacity and health of elderly people—the Evergreen project. *Scandinavian Journal of Social Medicine Supplementum* 53. Scandinavian University Press, Huddersfield (UK) 1997.

Heikkinen E, Ilmarinen J: Liikunta säilyttää työkykyä ja ikääntyneiden toimintakykyä. *Duodecim* 117 (2001) 653–660.

Heikkinen E, Tuomi J (editors): *Suomalainen elämäntyyli*. Kustannusosakeyhtiö Tammi, Vantaa 2001.

Heikkinen E: Vanhenemisen ulottuvuudet ja onnistuvan vanhenemisen edellytykset. In: *Gerontologia*. Edited by E Heikkinen, T Rantanen. *Duodecim*, Tampere 2003, 330–335.

Heikkinen E, Rantanen T (editors): *Gerontologia*. *Duodecim*, Tampere 2003.

Heikkinen R-L: Sosiaalinen toimintakyky ja ikä. In: *Ikääntyminen ja työ*. Edited by J Kuusinen E Heikkinen, P HUUHTANEN, et al. WSOY and Finnish Institute of Occupational Health, Helsinki 1994, 95–101.

Helin S: *Iäkkäiden henkilöiden toimintakyvyn heikkeneminen ja sen kompensatioprosessi* [dissertation]. *Studies in Sport, Physical Education and Health* 71. University of Jyväskylä, Jyväskylä 2000.

Hervonen A, Pohjolainen P: *Gerontologian ja geriatrian perusteet*. Lääketieteellinen oppimateriaalikustantamo, Tampere 1991.

Hietala K: Ikääntymisen haittojen lieventämisen kansantaloudelliset kustannus-hyötyvaikutukset. In: *Ikääntyvät työelämässä. Ikääntyvien työllistymisedellytysten parantamista selvittäneen komitean mietintö, liiteosa* 1996:14. Ministry of Labour, Helsinki 1996, 5–32.

Higuchi Y: Employment of older workers in Japan: analysis on the effectiveness of employment management, employment policies, and pension systems. In: *Improving employment opportunities for older workers. Final report. Ninth EU-Japan Symposium, Thursday 21 and Friday 22, March 2002*. European Commission, Japanese Ministry of Health, Labour and Welfare, The Japan Institute of Labour 2002, 14–17.

- Hopsu L, Louhevaara V, Korhonen O: Effects of ergonomic and exercise intervention on stress and strain in professional cleaning. In: FinnAge—Respect for the aging. Edited by J Ilmarinen, V Louhevaara. People and Work, Research Reports 26. Finnish Institute of Occupational Health, Helsinki 1999, 138–146.
- Hopsu L, Leppänen A, Klemola S: A program to support and maintain the work ability and well-being of kitchen workers. In: Aging and work. Edited by M Kumashiro. Taylor & Francis, London and New York 2003, 117–184.
- Huhtaniemi P: Varhaiseläkejatukset, työn kuormittavuus ja koettu elämänhallinta eläkkeelle siirtymisen ennustajina. Työ ja ihminen 13 (1999): 3, 220–229.
- Huuhtanen P, Nygård C-H, Tuomi K, et al.: Changes in stress symptoms and their relationship to changes at work in 1981–1992 among elderly workers in municipal occupations. Scandinavian Journal of Work, Environment & Health 23 (1997): Suppl 1, 36–48.
- Huuhtanen P, Piispa M: Eläkeasenteet 1990-luvun ensi puoliskon Suomessa. Ikääntyvä arvoonsa – ikääntyvien työntekijöiden terveyden, työkyvyn ja hyvinvoinnin edistämishjelma 1990–1995. In: Työ ja ihminen, tutkimusraportti 17. Edited by J Ilmarinen, V Louhevaara. Finnish Institute of Occupational Health, Helsinki 2001, 17–28.
- Hyrkkänen R: Yrittäjät ja joustavan eläkeiän mahdollisuudet. In: Eläkeuudistus ja ikääntyvien työssä jatkamisaikheet. Edited by E Tuominen. Eläketurvakeskuksen raportteja 37. Finnish Centre for Pensions, Helsinki 2004, 131–157.
- Hytti H, Nio I: Työllisyysohjelman seuranta ja työssäolon pituus. Työpoliittinen aikakauskirja , Työministeriö, Helsinki 1/2004.
- Ilmakunnas S, Rantala J: Oikeat asenteet vai onnistunut politiikka ikääntyneiden paremman työllisyyden taustalla? In: Työpoliittinen aikakauskirja 2/2005, vsk. 48. Edited by P Tiainen. Ministry of Labour, Helsinki 2005, 74–81.
- Ilmarinen J (editor): Aging and work. International Scientific Symposium on Aging and Work, May 1992, Haikko, Finland. Proceedings 4. Finnish Institute of Occupational Health, Helsinki 1993.
- Ilmarinen J, Tuomi K, Klockars M: Changes in the work ability of active employees over an 11-year period. Scandinavian Journal Work, Environment & Health 23 (1997): Suppl 1, 49–57.

Ilmarinen J: Ikääntyvä työntekijä Suomessa ja Euroopan unionissa. Tilannekatsaus sekä työkyvyn, työllistyvyyden ja työllisyyden parantaminen. Finnish Institute of Occupational Health, Ministry of Social Affairs and Health and Ministry of Labour, Helsinki 1999a.

Ilmarinen J: Ageing workers in the EU—status and promotion of work ability, employability and employment. Finnish Institute of Occupational Health, Ministry of Social Affairs and Health, Ministry of Labour, Helsinki 1999b.

Ilmarinen J, Louhevaara V (editors.): FinnAge—respect for the aging: action programme to promote health, work ability and well-being of ageing workers in 1990–96. People and Work, Research reports 26. Finnish Institute of Occupational Health, Helsinki 1999.

Ilmarinen J, Tempel J: Arbeitsfähigkeit 2010. Was können wir tun, damit Sie gesund bleiben? VSA-Verlag, Hamburg 2002.

Ilmarinen J, Lähteenmäki S, Huuhtanen P (editors): Kyvyistä kiinni. Ikäjohtaminen yritysstrategiana. Talentum, Jyväskylä 2003.

Ilmarinen J, Lehtinen S (editors): Past, present and future of work ability. Proceedings of the 1st International Symposium on Work Ability, 5–6 September 2001, Tampere, Finland. People and Work, Research Reports 65. Finnish Institute of Occupational Health, Helsinki 2004.

Ilmarinen J, Tuomi K: Past, present and future of work ability. In: Past, present and future of work ability. Edited by J Ilmarinen, S Lehtinen. People and Work, Research Reports 65. Finnish Institute of Occupational Health, Helsinki 2004, 1–25.

Ilmarinen J, Tuomi K, Seitsamo J: New dimension of work ability. In: Assessment and promotion of work ability, health and well-being of ageing workers. Edited by G Costa, WJA Goedhard, J Ilmarinen. International Congress Series 1280. Elsevier, Amsterdam 2005, 3–7.

Ilmarinen Mutual Insurance Company: Suurtyönantajan TEL-maksu. Työeläke 2003. Edita, Helsinki 2003.

ILO (International Labour Office): Older workers, recommendation no. 162. ILO, Geneva 1980.

ILO (International Labour Office): Ageing societies: problems and prospects for older workers. In: World Labour Report, Chapter 2. ILO, Geneva 1995, 31–54.

- Järvisalo J, Andersson B, Boedeker W, et al. (editors): Mental disorders as a major challenge in prevention of work disability. Experiences in Finland, Germany, the Netherlands and Sweden. Social Security and Health Reports 66. Social Insurance Institution of Finland, Helsinki 2005.
- Jurvansuu S, Tuomi K, Seitsamo J, et al.: Työn vaatimukset, organisaation toiminta ja henkilöstön hyvinvointi. In: Yrityksen menestyminen ja henkilöstön hyvinvointi. Edited by K Tuomi. Työ ja ihminen, tutkimusraportti 15. Finnish Institute of Occupational Health, Helsinki 2000a, 21–39.
- Jurvansuu S, Vanhala S, Nykyri E, et al.: Henkilöstöjohtamisen yhteydet toimipaikkojen menestymiseen. In: Yrityksen menestyminen ja henkilöstön hyvinvointi. Edited by K Tuomi. Työ ja ihminen, tutkimusraportti 15. Finnish Institute of Occupational Health, Helsinki 2000b, 74–91.
- Juuti P: Ikäjohtaminen. JTO-tutkimuksia nro 13. Ikäohjelma 1998–2002. Ministry of Labour, Helsinki 2001.
- Karjalainen A, Niederlaender E: Occupational diseases in Europe in 2001. Statistics in focus 15/2004. Catalogue number: KS-NK-04-015-EN-N. Eurostat, European Communities, Luxembourg 2004.
- Keskinen K, Häkkinen K, Kallinen M (editors): Kuntotestauksen käsikirja. Liikuntatieteellisen Seuran julkaisu nro 156. Finnish Society for Research in Sport and Physical Education, Tampere 2004.
- Kilbom Å, Westerholm P, Hallsten L, Furåker B. (editors.): Work after 45? Proceedings from a scientific conference held in Stockholm 22–25 September 1996. Volumes I and II. Arbete och hälsa 29. Arbetslivsinstitutet, Solna 1997.
- Koivusilta L, Rimpelä A: Nuoruusiässä luodaan terveyden perusta. In: Suomalainen elämäntilanne. Edited by E Heikkinen, J Tuomi. Kustannusosakeyhtiö Tammi, Vantaa 2000, 155–172.
- Kumashiro M (editor): The paths to productive aging. Taylor and Francis, London and Bristol 1995.
- Kumashiro M (editor): Aging and work. Taylor and Francis, London and New York 2003.
- Kuusinen J, Heikkinen E, Huuhtanen P, et al. (editors): Ikääntyminen ja työ. WSOY and Finnish Institute of Occupational Health, Juva 1994.
- Lehtinen S (editor): Ikääntyminen ja työkyky. WHO:n asiantuntijaryhmän johtopäätökset ja suositukset. Finnish Institute of Occupational Health, Helsinki 1995.

Leppänen A, Elo A-L, Ilmarinen J, et al.: Parempaa työkykyä tavoittelemassa. Kolmivuotisen työkykyohjelman evaluointi. Työ ja ihminen, tutkimusraportti 19. Finnish Institute of Occupational Health, Helsinki 2001.

Linkola P: Työikäiset innovaatiojärjestelmään. Työhallinnon julkaisu nro 306. Ministry of Labour, Helsinki 2002.

Louhevaara V, Leppänen A, Klemola S: Changes in the work ability index of aging workers related to participation in activities for promoting health and work ability: a 3-year program. In: Aging and work. Edited by M Kumashiro. Taylor & Francis, London and New York 2003, 185–192.

Mäkitalo M (editor): Harjoitukset. Ikääntyminen ja työ. Opetusaineisto ikääntymisestä työelämän kouluttajille. Finnish Institute of Occupational Health, Helsinki 1999.

Martelin T, Koskinen S, Sihvonen A-P: Elinaika ja kuolemansyyt. In: Gerontologia. Edited by E Heikkinen, T Rantanen. Duodecim, Tampere 2003, 33–47.

McArdle WD, Katch FI, Katch VL: Exercise physiology: energy, nutrition, and human performance, 5th ed. Lippincott Williams & Williams, Philadelphia (PA) 2001.

Ministry of Labour: Ikääntyvät työelämässä. Ikääntyvien työllistymisedellytysten parantamista selvittäneen komitean mietintö 1996:14. Ministry of Labour, Helsinki 1996a.

Ministry of Labour: Ikääntyvät työelämässä. Ikääntyvien työllistymisedellytysten parantamista selvittäneen komitean mietintö, liiteosa 1996:14. Ministry of Labour, Helsinki 1996b.

Ministry of Labour: Työpolitiikan strategia 2003–2007–2010. Työhallinnon julkaisu nro 334. Ministry of Labour, Helsinki 2003a.

Ministry of Labour: Työssä jaksamisen tutkimus- ja toimenpideohjelma 2000–2003. Päätös- ja arviointiraportti. Ministry of Labour, Vantaa 2003b.

Ministry of Social Affairs and Health: Elämänkulku ja terveys. Yhteenvedo ja päätelmät. Raportti I. In: Elämänkulku ja terveys. Sosiaali- ja terveystieteiden ministeriön julkaisuja 1999:22. Edita, Helsinki 1999a, 3–30.

Ministry of Social Affairs and Health: Policy on ageing. Brochures of the Ministry of Social Affairs and Health 1999:4 eng. Ministry of Social Affairs and Health, Helsinki 1999b.

Ministry of Social Affairs and Health: Ikääntymisen huomioon ottaminen työsuojelupiirien työssä. Sosiaali- ja terveysministeriön julkaisuja 2000:3, Ministry of Social Affairs and Health, Helsinki 2000.

Ministry of Social Affairs and Health, Ministry of Labour: Kansallisen ikäohjelman seurantaraportti 2001. Ministry of Social Affairs and Health, Ministry of Labour, Helsinki 2001.

Ministry of Social Affairs and Health, Ministry of Labour: Kansallisen ikäohjelman seurantaraportti 2002. Sosiaali- ja terveysministeriön työryhmämuistioita 2002:15. Ministry of Social Affairs, Health, Ministry of Labour, Helsinki 2002.

Ministry of Social Affairs and Health: The many faces of the Finnish National Programme of Ageing Workers. Ministry of Social Affairs and Health, Helsinki 2002.

Ministry of Social Affairs and Health: Tulevaisuuden hyvinvointistrategiat. Hyvä Suomi 2020 -ohjelma. Ryhmätyöt 2004. Ministry of Social Affairs and Health, Helsinki 2004.

Molinie A-F: Age and working conditions in the EU. European Foundation for the Improvement of Living and Working Conditions, Ireland 2003. Available at: <http://www.eurofound.eu.int/publications/files/EF02107EN.pdf> [cited 15.11.2005].

Näsman O, Ahonen G: The DalBo-project: the economics of maintenance of work ability. In: Aging and work 4. Healthy and productive aging of older employees. Edited by WJA Goedhard. Pasmans Offsetdrukkerij, The Hague 1999.

Näsman O, Ilmarinen J: Metal-age: a process for improving well-being and total productivity. In: Experimental Aging Research 25 (1999): 4, 379–384.

Näsman O: Company-level strategies for promotion of well-being, work ability and total productivity. In: Aging and work. Edited by M Kumashiro. Taylor & Francis, London and New York 2003, 117–184.

Nieminen M: Suomen väestönkehitys eurooppalaisessa kontekstissa. Onko syytä huoleen? Luentomoniste 15 s. Presented at the Väestöliiton väestöpoliittinen seminaari “Väestöpolitiikan lähiajan haasteet”, Helsinki 12 September 2003.

Nurminen E: Työpaikkaliikunnan vaikuttavuus liikunnanharrastukseen, fyysiseen toimintakykyyn, tuki- ja liikuntaelinoireisiin, koettuun työkykyyn sekä kustannus-hyötyyn ruumiillisesti keskiraskasta työtä tekevillä naisilla. Systemoitu kirjallisuuskatsaus ja satunnaistettu vertailututkimus. Työ ja ihminen, tutkimusraportti 18. Finnish Institute of Occupational Health, Helsinki 2000.

Nurminen M, Heathcote C, Davis B: Ikääntyvien suomalaisten työajan-odotteet kunta-alalla. Työ ja ihminen 18 (2004a):2, 226–240.

Nurminen M, Heathcote C, Davies B, Puza B: Työajanodotteet Suomessa 1980–2006. Työ ja ihminen 18 (2004b):2, 209–225.

Nurminen M, Nurminen T: Multistate worklife expectancies. Scandinavian Journal of Work, Environment & Health 2005; 31 (3):169–178.

Nygård C-H, Kilbom Å (editors.): Age and learning in working life. Arbete och hälsa 16. Arbetslivsinstitutet, Solna 1996.

Nygård C-H, Pohjonen T, Ilmarinen J: Ikääntyvien työntekijöiden lihasvoimien muutokset 10 vuoden aikana. Kirjassa: Ikääntyvä arvoonsa—terveyden, työkyvyn ja hyvinvoinnin edistämishjelma 1990–1996. Edited by J Ilmarinen, V Louhevaara. Työ ja ihminen, tutkimusraportti 17. Finnish Institute of Occupational Health, Helsinki 1999, 260–269.

OECD (Organization for Economic Co-operation and Development): Employment outlook: OECD education database: work-force ageing in OECD countries. Chapter 4, adapted from Table 4.3. OECD, Paris 1998.

OECD (Organization for Economic Co-operation and Development): Ageing and employment policies: Finland. OECD, Paris 2004.

OECD (Organization for Economic Co-operation and Development): Thematic review of policies to improve labour market outcomes for older workers: synthesis report, OECD, Paris 2005.

Paoli P, Merllie D: Third European working conditions survey 2000. European Foundation for the Improvement of Living and Working Conditions, Office for Official Publications of the European Communities, Luxembourg 2001. Available at: <http://www.eurofound.eu.int/publications/EF0121.htm> [cited 15.11.2005].

Parjanne M-L: Väestön ikärakenteen muutoksen vaikutukset ja niihin varautuminen eri hallinnonaloilla. Sosiaali- ja terveysministeriön selvityksiä 2004:18. Ministry of Social Affairs and Health, Helsinki 2004.

Pelkonen J: Vanhimpien palkansaajien työssä jatkaminen työeläkeuudistuksen jälkeisessä valintatilanteessa. Eläketurvakeskuksen raportteja 2005:1. Finnish Centre for Pensions, Helsinki 2005.

Peltomäki P, Husman K, Vertio H, et al.: The process and maintenance of work ability in Finnish workplaces. What do we know about the prerequisites of a successful MWA. Working group 1. In: Maintenance of work ability and assessment: summaries, report 7. Edited by P Peltomäki, T Hussi, et al. Ministry of Social Affairs and Health, Finnish Institute of Occupational Health and Social Insurance Institution of Finland, Helsinki 2002a, 17–21.

Peltomäki P, Viluksela M, Hiltunen M-L ym.: Työkykybarometri. Työkykyä ylläpitävä ja edistävä toiminta suomalaisilla työpaikoilla vuonna 2001. Finnish Institute of Occupational Health and Ministry of Social Affairs and Health, Helsinki 2002b.

Peltoniemi A: Työllisten työkyky vuonna 2004. Työpoliittinen tutkimus 273. Pellervon taloudellisen tutkimuslaitoksen raportteja n:o 193. Ministry of Labour, Helsinki 2005.

Pfeffer J, Sutton R I: The knowing-doing gap: How smart companies turn knowledge into action. Harvard Business School Press, Boston (MA) 2000.

Piirainen H, Hirvonen M, Elo A-L, et al.: Työ ja terveys -haastattelututkimus 2003. Taulukkoraportti. Finnish Institute of Occupational Health, Vammala 2003.

Pohjonen T, Pukari A-R: Työkyky, työ ja henkilöstön hyvinvointi vanhusten kotipalvelussa. Finnish Institute of Occupational Health, Helsinki 1999.

Pohjonen T, Punakallio A, Louhevaara V, et al.: Effects of ergonomic and physical exercise intervention on ageing home care workers. In: FinnAge—respect for the aging. Edited by J Ilmarinen, V Louhevaara. People and work research reports 26. Finnish Institute of Occupational Health, Helsinki 1999, 173–184.

Pohjonen T: Perceived work ability and physical capacity of home care workers. Effects of the physical exercise and ergonomic intervention on factors related to work ability [dissertation]. Kuopio University publications D: medical sciences 260. University of Kuopio, Kuopio 2001.

Prime Minister's Office: Osaava, avautuva ja uudistuva Suomi. Valtioneuvoston kanslian julkaisusarja 19/2004. Prime Minister's Office, Helsinki, 2004.

Prime Minister's Office. Finland for people of all ages—government report on the future: demographic trends, population policy, and preparation for changes in the age structure. Publications 34/2004. Edita Prima Oy, Helsinki 2005.

Punakallio A: Balance abilities of workers in physically demanding jobs, with special reference to firefighters of different ages [dissertation]. Kuopio University publications D: medical sciences 341. University of Kuopio, Kuopio 2004.

Puohiniemi M: Arvot, asenteet ja ajankuva. Limor kustannus, Vantaa 2002.
Ranta S: Vanhenemismuutosten eteneminen. 75-vuotiaiden henkilöiden antropometrinen ominaisuuksien, fyysisen toimintakyvyn ja kognitiivisen kyvykkyyden muutokset viiden ja kymmenen vuoden seuranta-aikana [dissertation]. Studies in sport, physical, education and health 100. University of Jyväskylä, Jyväskylä 2004.

Reday-Mulvey G, Giarini O: The green document, summary of the Four Pillars Research Programme. Geneva Association, Geneva 1995.

Reday-Mulvey G: Working beyond 60. Key policies and practices in Europe. Palgrave Macmillan, Great Britain, Antony Rowe Ltd, Chippenham, Wiltshire 2005.

Reina-Knuutila U: Ikä, työkyky ja tuottavuus. Sosiaali- ja terveystieteiden tutkimuskeskuksen selvityksiä 2001:2. Ministry of Social Affairs and Health, Helsinki 2001.

Rowe J, Kahn R: Successful aging. A Dell Trade Paperback, New York 1998.

Ruoppila I, Suutama T: Psykkisen toimintakyvyn muutokset vanhetessa. In: Ikääntyminen ja työ. Edited by J Kuusinen, E Heikkinen, P Huuhtanen, et al. WSOY and Finnish Institute of Occupational Health, Juva 1994, 58–75.

Ruoppila I: Elämänkaaren kehityspsykologia. In: Promootiokutsu 17.5.1996. Edited by E Kiuru. University of Jyväskylä, Jyväskylä 1996, 9–48.

Sallila P (editor): Oppiminen ja ikääntyminen. Aikuiskasvatuksen 41. vuosikirja. Kansanvalistusseura ja Aikuiskasvatuksen Tutkimusseura. Gummerus, Saarijärvi 2000.

Salo O, Tuunainen K: Da Capo—alusta uudelleen. Salutonova Oy, Helsinki 1996.

- Salthouse T A: Implications of adult age differences in cognition for work performance. In: *Work after 45? Volume I*. Edited by Å Kilbom, P Westerholm, L Hallsten, B Furåker. *Arbete och hälsa* 29. Arbetslivsinstitutet, Solna 1997, 15–28.
- Savinainen M: Physical capacity and workload among ageing workers [dissertation]. *Acta Univeritatis Tamperensis* 1025. University of Tampere, Tampere 2004.
- Savioja H, Karisto A, Rahkonen O, et al.: Suurten ikäluokkien elämäntilanne. In: *Suomalainen elämäntilanne*. Edited by E Heikkinen, J Tuomi. Kustannusosakeyhtiö Tammi, Vantaa 2000, 58–73.
- Seitsamo J, Ilmarinen J: Elämäntilanteen muutokset ja ikääntyminen. In: *Ikääntyvä työntekijä v. 1981–92*. Edited by K Tuomi. *Työ ja ihminen, tutkimusraportti 2*. Finnish Institute of Occupational Health, Helsinki 1995, 39–57.
- Seitsamo J, Klockars M: Terveystilanteen muutokset ja ikääntyminen. In: *Ikääntyvä työntekijä v. 1981–92*. Edited by K. Tuomi. *Työ ja ihminen, tutkimusraportti 2*. Finnish Institute of Occupational Health, Helsinki 1995, 58–76.
- Seitsamo J, Klockars M: Aging and changes in health. *Scandinavian Journal of Work, Environment & Health* 23 (1997): Suppl 1, 27–35.
- Shiraki K, Sagawa S, Yousef M (editors): *Physical fitness and health promotion in active aging*. Backhuys Publishers, Leiden 2001.
- Shwartz E, Reibold RC: Aerobic fitness norms for males and females aged 6 to 75 years: a review. *Aviation, Space, and Environmental Medicine* 61 (1990) 3–11.
- Sihto M: Uuden ikäpolitiikan saavutukset ja rajat. In: *Työpoliittinen aikakauskirja 1/2005*, vsk. 48. Edited by P Tiainen. Ministry of Labour, Helsinki 2005, 65–80.
- Sihvonen A-P, Martelin T, Koskinen S, et al.: Sairastavuus ja toimintakykyinen elinaika. In: *Gerontologia*. Edited by E Heikkinen, T Rantanen. *Duodecim*, Tampere 2003, 48–59.
- Siltala J: *Työelämän huonontumisen lyhyt historia. Muutokset hyvinvointivaltioiden ajasta globaaliin hyperkilpailuun*. Otava, Keuruu 2004.

Smolander J, Ilmarinen J, Korhonen O, et al.: Feasibility and effects of an exercise promotion program on physical fitness and work ability among middle-aged workers in a metal company: the Stala project. In: FinnAge—respect for the aging. Edited by J Ilmarinen, V Louhevaara. People and work research reports 26. Finnish Institute of Occupational Health, Helsinki 1999, 74–79.

Snel J, Cremer R (editors): Work and aging: a European perspective. Taylor and Francis, London and Bristol 1994.

Soininen H, Louhevaara V: Work ability of ageing policemen. In: Paths to productive aging. Edited by M Kumashiro. Taylor and Francis, Basingstoke 1995, 321–324.

Spirduso WW: Job performance of the older worker. In: Physical dimensions of aging. Chapter 13. Edited by WW Spirduso. Human Kinetics, Champaign (IL) 1995, 367–387.

Statistics Finland: Yritysten henkilöstökoulutustutkimus 1999, CVTS2. Statistics Finland, Helsinki 2000.

Suvanto S, Huuhtanen P, Nygård C-H, et al.: Performance efficiency and its changes among aging municipal employees. Scandinavian Journal of Work, Environment & Health 17(1991): Suppl 1, 118–121.

Sydänmaanlakka P: Älykäs johtajuus. Talentum, Hämeenlinna 2004.

Takala M: Onko osa-aikatyöstä ratkaisuksi työssä jatkamiselle? In: Eläkeuudistus ja ikääntyvien työssä jatkamisaikheet. Eläketurvakeskuksen raportteja 37. Edited by E Tuominen. Finnish Centre for Pensions, Helsinki 2004, 85–129.

Taylor P: New policies for older workers. Transitions after 50 series. The Policy Press, Southampton 2002.

The Geneva Association: Études et Dossiers No. 285. Follow-up of international symposium in Cambridge. Public policy, ageing and work and related papers on Europe and China. Working paper series of The Geneva Association. The Geneva Association, Geneva 2004.

Tikkanen T: Learning and education of older workers: lifelong learning at the margin [dissertation]. Jyväskylä studies in education, psychology and social research 137. University of Jyväskylä, Jyväskylä 1998.

Tuomi J, Elämänskulturyöryhmä: Elämänskultuuri ja terveys. Katsaus teorioihin ja sovellutuksiin. Raportti II. In: Elämänskultuuri ja terveys. Sosiaali- ja terveysministeriön julkaisuja 1999:22. Edita, Helsinki 1999, 31–167.

- Tuomi J: Aetatis hominum—elämäkulun vaiheet antiikin ja keskiajan kirjallisuudessa. In: Suomalainen elämäkulku. Edited by E Heikkinen, J Tuomi. Tammi Publishers, Vantaa 2000, 13–37.
- Tuomi K, Ilmarinen J, Jahkola A, et al.: Työkykyindeksi. Finnish Institute of Occupational Health, Helsinki 1992.
- Tuomi K (editor): Ikääntyvä työntekijä v. 1981–92. Työn, elämäntyylin, terveyden ja työkyvyn muutokset. Kyselytutkimus. Työ ja Ihminen, tutkimusraportti 2. Finnish Institute of Occupational Health, Helsinki 1995.
- Tuomi K (editor): Eleven-year follow-up of aging workers. *Scandinavian Journal of Work, Environment & Health* 23 (1997): Suppl 1.
- Tuomi K, Ilmarinen J, Martikainen R, et al.: Aging, work, life-style and work ability among Finnish municipal workers in 1981–1992. *Scandinavian Journal of Work, Environment & Health* 23 (1997): Suppl 1, 58–65.
- Tuomi K, Ilmarinen J, Jahkola A, et al.: Work ability index. Finnish Institute of Occupational Health, Helsinki 1998, 2nd revised edition.
- Tuomi K (editor): Yrityksen menestyminen ja henkilöstön hyvinvointi. Työ ja ihminen, tutkimusraportti 15. Finnish Institute of Occupational Health, Vammala 2000.
- Tuomi K, HUUHTANEN P, NYKYRI E, et al.: Promotion of work ability, the quality of work and retirement. *Occupational Medicine* 51 (2001):5, 318–324.
- Tuominen E (editor): Eläkeuudistus ja ikääntyvien työssä jatkamisaikeet. Eläketurvakeskuksen raportteja 37. Finnish Centre for Pensions, Helsinki 2004.
- Tuominen E, Takala M, Tuominen K: Työnantajat ja joustava vanhuuseläke. Eläketurvakeskuksen monisteita 51. Finnish Centre for Pensions, Helsinki 2004.
- Törmäkangas T, Heikkinen R-L, Ilmarinen J: Change and stability in measuring social functioning among aging Finnish municipal workers in two repeated measurements. *Hallym International Journal of Ageing* 5 (2003): 2, 159–182.
- UN (United Nations): World population ageing: 1950–2050. Executive summary. ST/ESA/SER.A/207/ES, 2001. UN Department of Economic and Social Affairs, Population Division, New York (NY) 2001.

UN (United Nations): Follow-up to the Second World Assembly on Ageing. Resolution adopted by the General Assembly. Fifty-eighth session. A/RES/58/134, 26 January 2004. UN, New York (NY) 2004a.

UN (United Nations): Follow-up to the Second World Assembly on Ageing. Report of the Secretary-General. General Assembly, Fifty-ninth session. A/59/164, 21 July 2004. UN, New York (NY) 2004b.

Uotinen V: Age identification: a comparison between Finnish and North-American cultures. *International Journal of Aging and Human Development* 46 (2) 1998 109–124.

Uotinen V: I'm as old as I feel. Subjective age in Finnish adults [dissertation]. *Jyväskylä Studies in Education, Psychology and Social Research* 276. University of Jyväskylä, Jyväskylä 2005.

Uotinen V, Rantanen T, Suutama T: Perceived age as predictor of old age mortality: a 13-year prospective study. *Age and Ageing* 34 (2005) 368–372.

Vahtio E-L: Rekrytointi, ikä ja ageismi. Työpoliittinen tutkimus nro 244. Ministry of Labour, Helsinki 2002.

Vahtera J: Työn hallinta, sosiaalinen tuki ja terveys. Työ ja ihminen, lisänumero 1. Finnish Institute of Occupational Health, Helsinki 1993.

Vartia P, Ylä-Anttila P: Kansantalous 2028. Elinkeinoelämän tutkimuslaitos ETLA (B204). Taloustieto Oy, Helsinki 2005.

Väyrynen E: Väestön ikääntyminen—haaste ja mahdollisuus teknologian ennakkoinnille ja innovaatioille—VIHMA. Kauppa- ja teollisuusministeriön tutkimuksia ja raportteja 17/2003. Ministry of Trade and Industry and Edita, Helsinki 2003.

WHO (World Health Organization): Grades of hearing impairment. *Hearing Network News*, 1991:1.

WHO (World Health Organization): Aging and working capacity. Report of a WHO Study Group. WHO Technical Report Series 835. WHO, Geneva 1993.

Ylikoski M: Kasvaminen on elämänprosessi. Hyvä ikä: Ikäohjema 1998–2002. *Uutislehti* 2 (2000) 4.

Web pages of interest

www.abloy.fi

www.eurofound.eu.int: European Foundation for the Improvement of Living and Working Conditions

www.finlex.fi: Työterveyshuoltolaki, työturvallisuuslaki

www.klinikka.fi: VETO-ohjelma

www.mediona.fi

www.mol.fi: jaksamisohjelma/svenska_english_eng_index.htm

www.noste.fi: NOSTE-ohjelma 2003–2007

www.saunatec.com: Saunatec Group Oy

www.ttl.fi: KESTO-ohjelma

www.tykes.fi: TYKES-ohjelma 2004–2009

www.valtioneuvosto.fi: Hallituksen ohjelma 24.6.2003

http://www.vn.fi/stm/english/publicat/publications_fset.htm:
National Programme on Ageing Workers