



European Foundation for the Improvement of Living and Working Conditions

# Age and working conditions in the European Union



# Age and working conditions in the European Union

**Author:** Anne-Françoise Molinié

**Research institute:** Centre for research and studies on age and working populations (CREAPT), Paris

The analysis of the European working conditions surveys was conducted by Anne-Françoise Molinié, (CREAPT). The good practice examples were gathered by Professor Åsa Kilbom (National Institute for Working Life, Solna), Dr Karl Kuhn (Federal Institute for Occupational Safety and Health, Dortmund) and Serge Volkoff (CREAPT).

**Foundation project:** Third European Working Conditions Survey

**Research managers:** Agnès Parent-Thirion, Pascal Paoli



European Foundation for the Improvement of Living and Working Conditions

# Age and working conditions in the European Union

Cataloguing data can be found at the end of this publication

Luxembourg: Office for Official Publications of the European Communities, 2003

ISBN 92-897-0208-7

© European Foundation for the Improvement of Living and Working Conditions, 2003

For rights of translation or reproduction, applications should be made to the Director, European Foundation for the Improvement of Living and Working Conditions, Wyattville Road, Loughlinstown, Dublin 18, Ireland.

The European Foundation for the Improvement of Living and Working Conditions is an autonomous body of the European Union, created to assist in the formulation of future policy on social and work-related matters. Further information can be found on the Foundation website at [www.eurofound.eu.int](http://www.eurofound.eu.int).

European Foundation for the Improvement of Living and Working Conditions  
Wyattville Road  
Loughlinstown  
Dublin 18  
Ireland  
Telephone: (+353 1) 204 31 00  
Fax: (+353 1) 282 42 09 / 282 64 56  
E-mail: [information@eurofound.eu.int](mailto:information@eurofound.eu.int)  
**[www.eurofound.eu.int](http://www.eurofound.eu.int)**

Printed in Ireland

The paper used in this book is chlorine-free and comes from managed forests in Northern Europe.  
For every tree felled, at least one new tree is planted.

# Foreword

While the working population is ageing and plans are afoot to delay retirement in many countries, the production system still largely functions with a younger age structure than the current age pyramid. This imbalance will be even more marked in the years to come. Recent changes in working conditions and demography are starting to call these age-related selection criteria into question. If elements of work – which, until recently, were targeted mainly at young people – remain the same or increase while the proportion of young people falls, simple arithmetic suggests this distribution between younger and older workers cannot be sustained. Analyses of the Foundation's European working conditions surveys of 1995 and 2000 reveal a number of alarming trends:

- Owing to the growing scarcity of the workers in the youngest age group and the higher level of training and qualifications among this age group, the physical demands of work are increasingly being borne by workers in the intermediate age range (35-44 years). Older workers are still protected to some extent from these demands, but it is becoming increasingly difficult to avoid them.
- The age distribution of some work-related constraints or demands shows that selection criteria, which are linked statistically to age, continue to favour young people, rather than older workers, taking on certain types of work. This is still the case for shift or night work, the most demanding forms in terms of time constraints, but also includes multitasking and work involving new technologies.

These trends also indicate the future prospects for change at various levels. Measures to reduce the burden of work should both prevent premature wear and tear on today's young employees and make work easier for older employees. The findings highlight the potential future problems for employees of different ages, taking into account both today's work-related constraints and past work experiences. Working conditions are one of the determining factors which influence a worker's decision as to whether or not to continue working until retirement age.

Furthermore, demographic trends over the next few years should result in a further increase in the proportion of older workers and this will necessitate closer attention to their specific workplace needs and requirements. The question of how these workers can remain efficient in the 'second half of their working lives' and how to maintain and develop their skills and safeguard their health is worthy of careful examination. The challenge of ensuring a smooth transfer of change or learning for older workers is huge, but as more people retire from 2005 onwards it is equally important to make this knowledge available to younger workers for the benefit of all in the longer term.

Raymond-Pierre Bodin  
*Director*

Willy Buschak  
*Deputy Director*



# Contents

<b>Foreword</b>	<b>v</b>
<b>Introduction</b>	<b>1</b>
Demographic trends and changes at work: potential contradictions	1
Methodology	3
<b>1 – Age and physical demands of work</b>	<b>11</b>
Background	11
Exposure to vibrations	12
Difficult or painful postures	15
Carrying heavy loads	18
Repetitive movements (arms or hands)	21
Measures in the area of physical exertion	25
<b>2 – Age and irregular working hours</b>	<b>29</b>
Background	29
Age and stability of working hours	30
Shift or night work	32
Measures in the area of irregular hours	39
<b>3 – Age and speed demands at work</b>	<b>41</b>
Background	41
Age and constraints on the pace of work	41
The effects of the ‘dual constraint’	47
Measures in the area of time constraints	52
<b>4 – Age and access to new work situations</b>	<b>55</b>
Use of information technology	55
Access to training	55
Learning on the job, changing tasks	56
Measures in the area of training and changes in work	60
<b>5 – Perceptions about health and work and about working at the age of 60</b>	<b>63</b>
Health: the effect of the context in which questions were asked	63
Attitudes to working at the age of 60	66
<b>Bibliography</b>	<b>73</b>



**Annexes**

1. Evolution of the age structure of the working population, by country	79
2. Results of logistical regressions	80
3. Case studies	91

# Introduction

The ageing of the population throughout Europe is the result of a falling birth rate and a falling mortality rate. These characteristic trends of demographic transition have been at work for quite some time, though there is still no sign of equilibrium being reached. The demographic changes after the Second World War, which all countries have experienced at variable rates and intensities, will continue to play a decisive role in the years to come in changes in the age structure of the population. The baby boom immediately after the war and the subsequent drop in the birth rate are at the root of an 'imbalance' between the age brackets, the consequences of which will be felt right up to the middle of the century. The drop in the mortality rate has accelerated the ageing process: gains in terms of life expectancy, having benefited mainly young people and adults, have, since 1950, mainly benefited the elderly, causing a 'top-down' ageing of the age pyramid.

## Demographic trends and changes at work: potential contradictions

Within the population of working age, the proportion of the youngest age brackets is falling in all European Union countries.<sup>1</sup> The baby-boom generation of the 1950s and 1960s is reaching and exceeding the middle of their working lives. Those born in more recent decades, who are fewer in number, also stayed in education for longer and entered the workforce at a later stage. These phenomena were partly compensated by the combined effect of public and private-sector policies which have resulted in people leaving the workforce at a younger age. The result was a drop in the working rate among men over the age of 55, though not women, owing to generational effects (female employment having increased more generally at all ages and across the generations). In all, both a contraction of the age structures of the working population and a marked trend towards ageing has occurred, as the many people in the middle of their working lives continue to age. From this point of view, raising the employment levels of people over the age of 50 would only add to a trend already underway. Issues of health at work and the efficiency of ageing employees should therefore be examined more carefully.

From one social category to another and from one sector to another, this trend takes various forms (Anglaret and Cancé, 2002). In recent years, many industrial sectors have witnessed 'ageing' in the full sense of the word, with a considerable increase in the proportion of older workers. In other sectors, this same phenomenon occurs at a later stage, such as the delayed effect of the many young people hired in the early 1970s, followed by a sharp fall in recruitment. A number of special cases (in France, for example, IT companies or the hotel and restaurant trade) are characterised by the continuation of a young age structure. However, dividing up the sectors themselves does not take account of the wide variety of situations from one company to another.

How will the situation look in a few years' time? Even if the average time in education stabilises, the fall in the proportion of young people will continue, simply for reasons of numbers in the different generations. At the other end of the age scale, the debate in many countries on how to finance pensions suggests the levels of work performed by people in their fifties may increase, not to mention theories on continuing work after the age of 60.<sup>2</sup> At European level, the objective of

---

<sup>1</sup> Annex 1 contains a graph illustrating the development of the age structure of the working population in the 15 Member States of the European Union, as obtained from (weighted) data from European surveys. However, the sample of these surveys does not permit a meaningful analysis of these developments. These graphs are only shown to 'provide a framework' for the data used here.

<sup>2</sup> See for example: OCDE: *Des réformes pour une société vieillissante*, 2000, [OECD: Reforms for an Ageing Society], OCDE Publications, *Questions sociales*, [OECD Publications, Social Issues]. Blöndal, S., Scarpetta, S., 1999. 'The retirement decision in OECD countries'. Economics Department Working Papers ECO/WKP (98)15, version of 15 February 1999. Kilbom, A., 'Evidence-based programmes for the prevention of early exit from work'. *Experimental Aging Research*, 25, 1999, 291-299. European Commission memo, DG Employment, *Emploi à tous les âges*, [Employment at all ages], 4 December 1998.

raising the age when people actually retire by five years between now and 2010, particularly by limiting the option of early retirement, was set in Barcelona in 2002. These concerns reinforce the need for debate on the employment and conditions of employees in the various age brackets. The coming years should see a new increase in the proportion of older workers with one feature in common. On the one hand, they will be the group that needs to be put to best use, as they will be increasingly numerous. On the other, they will be the group that needs replacing as from 2005 on the numbers retiring will also increase (Topiol, 2001).

It could be said that the production system has all too often preferred to work with a younger age structure than the current – and, by extension, future – age pyramid. This becomes clear when the age distribution of certain work-related constraints or demands are examined. Until recently, selection criteria, linked statistically to age, led young people rather than older people to take on jobs with a particular characteristic. This was true until quite recently for night shifts, jobs with very demanding time pressures, and multitasking and access to new technologies, for example. Whatever the exact reasons for these selection processes, the combined trend in working conditions and demographics will call them into question. If work-related aspects which, until recently, tended to attract young people continue or increase in extent while the proportion of young people falls, simple arithmetic suggests this distribution between young people and older people cannot be sustained.

### **Company attitudes to the ageing of their workforce**

Will companies develop strategies to prepare for the problems that may arise? Their concerns regarding an ageing workforce vary over time (Teiger, 1995 ).<sup>3</sup> On the one hand, they may have few concerns, reflected in a serene approach to changes in the age structure. On the other, they may have grave concerns, reflecting an alarmist reading of these changes.

In France, a survey was conducted in 2001 on a sample of approximately 3,000 companies on the management of employees according to age. How do companies see their older workers? Are they aware of the ageing of the population and how do they see the potential consequences for the company? Are they taking steps to make it easier for older workers to remain in the workplace? The initial findings of this survey confirm the demographic trends emphasised earlier: an overall increase in the proportion of those in their fifties and a diversity of structures according to sector. However, at the same time, they stress that ‘companies are not very concerned about the ageing of the population’ (Minni and Topiol, 2002a ), even if this concern appears to be more prevalent today than in the earlier survey, 10 years ago: in almost one in two companies, the manager interviewed (the director of the company or manager of the human resources department, if any) had never given the matter any thought. There has been slightly more consideration of the issue among bigger companies. When the companies surveyed say they are taking steps to manage ageing, they frequently mean from a quantitative point of view (mainly early retirement). However, more than one third of companies that allow early retirement (mainly large companies) also say they are exploring solutions to keep older workers in employment, e.g. continuing training, specific arrangements regarding working times or the workplace, and so on. Nevertheless, the idea that the

---

<sup>3</sup> Teiger, C., ‘*Penser les relations âge/travail au cours du temps*’, [Considerations of the relationship between age and work over time]. In Marquié, J.C., Paumès, D., Volkoff, S., (eds.). *Le travail au fil de l’âge* [Working with age]. Toulouse, Éditions Octarès, 1995, 15-77 (English translation available). Marquié, J.C., Paumès, D., Volkoff, S., (eds.) Working with age. Taylor & Francis, 1998.

problem of an ageing workforce can be dealt with by tackling working methods seems not very common: only 7% of companies surveyed said they had made changes to the workplace to make employment easier for older workers (Minni and Topiol, 2002b).

## Methodology

To contribute to an approach towards ageing that questions both how work is performed within a company (adapting workplaces, tools and software, hours, training procedures, etc.) and the overall development of working conditions and organisation, it was considered useful to develop a quantitative framework allowing the approach to specify, at European level, the relationships between age and the constraints of work, to adjust any selection mechanisms based on age linked to these constraints, and/or review these mechanisms over time. That was the aim in analysing the European surveys conducted in 1991, 1995 and 2000, at the instigation of the Foundation.<sup>4</sup>

These analyses reveal alarming developments. However, at the same time, these concerns indicate prospects for changes at various levels. This is why, in each of the areas analysed in this report, the aim was to link the results of the analyses of the surveys to examples of measures taken in these same areas by several European companies.

### Statistical analyses of the 1995 and 2000 European surveys

The quantitative study is based on an analysis of data from the European Working Conditions surveys (included in the Eurobarometer) in 1995 and 2000. Comparisons were not made with the 1991 survey, for two main reasons: the first being linked to the enlargement of the region covered by the survey (12 Member States in 1991, 15 in 1995 and 2000). The hope was not to restrict the survey to 12 Member States, which would have excluded countries (particularly Sweden and Finland) which have conducted active policies in the field of ageing at work. The second reason was the considerable number of changes to the questionnaire between 1991 and 1995. The 1991 survey still had a slightly exploratory status and the questionnaire has since been enhanced considerably. The change in the context of the questioning probably altered the meaning of answers, even for questions with the same wording as in 1991.

The analyses were confined to employees. The self-employed deserve a specific study. However, the sample surveyed was too small to allow significant findings to be obtained by crossing age and work characteristics in this category. Nor was there a wish to introduce the category of self-employed as one of the variables of the socio-professional context, the effect of which would be studied 'all things remaining equal', the theory being that the relationships between status, working conditions and age have fairly specific configurations which cannot be processed in the same analyses for employees and the self-employed.

The analyses covered the population of all employees of the European Union, using weighted data (variable *w11*), without trying to compare the different countries. Given the small size of the sample of respondents in each country (roughly 1,000 for most countries), any overlap between the various age groups and working aspects would not have been very reliable. However, account of the 'country' entity was taken, in addition to other socio-professional variables, to see whether

---

<sup>4</sup> We made the 1991-1996 comparison during an initial working phase, which gave rise to a report (not published), submitted to the Foundation in 2000.

relationships the report had established between age and certain work constraints did not reflect more 'structural' characteristics. The logistical regressions<sup>5</sup> performed from this point of view revealed 'country effects' such as those emphasised by M. Gollac and S. Volkoff (2000) in the 1991 survey. Annex 2 lists the findings in this field. However, these are not commented on as such in the body of the report, which concentrates on the relationship between age and work.

### *Which analytical methods?*

Initially, two main types of analysis were conducted, 'to-ing and fro-ing' between the two: on the one hand, overlaps between age and work constraints, and on the other, 'landscape' analyses of working conditions, using multiple correspondence analysis models.

The direct overlaps between age and work constraints seek to describe, for all employees in the European Union, the situation of employees of different ages with regard to various work constraints. They make it possible to identify whether or not there is a differential distribution of constraints according to age (for example, constraints tending to weigh more heavily on young employees or more heavily on older employees, or equally over all ages) and whether this situation changed between 1995 and 2000.

However, the reality at work is a combination of a set of the constraints and demands of the job: one category of jobs is accompanied by one set of constraints, but not by another set: avoiding one constraint may force the person to accept another, etc. Employees of different ages are allocated in the context defined by this 'landscape'. The multiple correspondence analyses therefore enable these types of job to be identified, characterised by the frequent presence of one or other combination of work constraints and demands. These analyses were useful in conducting the report for choosing relevant age-work overlaps, and for how to comment on them. However, a decision was made in the end not to include them in this report because of difficulties reading the relevant graphs.

### **Analyses of multiple correspondences**

Like the other methods drawn from 'factorial analysis', the analysis of multiple correspondences (AMC) provides simplified pictures of (sometimes large) sets of variables which form each of the aspects of a problem studied. Hence it is a question here of examining the proximities between various modalities for a large number of qualitative variables (the modalities, for example, are yes/no, always/often/rarely/never, etc.), or which can be attributed to qualitative variables (belonging to an age bracket, for example). These proximities are evaluated according to the associations actually seen, the 'co-occurrences' between modalities.

The AMC can often be seen in graphs (which are called 'landscapes' above) in which the modalities of various variables have more chances of appearing in the vicinity of each other if they are frequently associated in reality – whereas, on the other hand, they are more likely to be distant if they rarely occur together. When the analysis has been well designed, it is possible to give meaning to the various areas of the graph (in view of the plotting of the variables) and identify 'clusters', i.e. types of situation characterised by the frequent position of one combination of modalities or another.

---

<sup>5</sup> See the next page for a brief presentation of this type of method.

In the AMC, some variables are called ‘active’, i.e. they are actually included in the calculations, making it possible to draw up the axes of the graphs and the positions of the various modalities. Other variables can be taken as ‘additional’: they are not included in the calculations, but they are plotted after the event on a graph which has already been drawn. In the analyses carried out, the active variables are generally characteristics of working conditions, while the additional variables are ages, structural characteristics (sectors, countries, social categories, size of the company, etc.) or even health-related characteristics.

The relationships between age and work revealed at the end of this first stage partly reflect the disparities in the demographic and socio-economic situations as well as probable differences in the interpretation of questions by the various respondents. An attempt was made to inform people of some of these factors by using multivariate analysis models, the aim of which is to bring out the effect of each variable by ‘correcting’ the structural effect due to the other variables.

Most of the fields used a ‘basic’ model in which the ‘explained’ variable is exposure to a work constraint and the explanatory variables describe certain ‘structural’ characteristics:

- age, grouped into five brackets: 15-24 years, 25-34 years, 35-44 years, 45-54 years, 55 years and over;
- sex;
- country: Austria, Belgium, Denmark, France, Germany, Greece, Ireland, Italy, Luxembourg, The Netherlands, Portugal, Spain, Sweden, the United Kingdom, Finland;
- size: 1-9 employees, 10-49 employees, 50-99 employees, 100 employees and over;
- socio-professional category<sup>6</sup>: ‘executives’, ‘employees’, ‘workers’;
- sector: agriculture, industry, services.

### Logistical regression models

Like any regression model, the logistical models aim to explain relationships with the hope of being able to interpret as cause-and-effect relationships. On the one hand, there is a variable ‘to be explained’. On the other, a number of seemingly ‘explanatory’ variables are brought together, each having its own effect which can be verified by statistical analysis or not. This situation is turned into a model by seeking a mathematical function linking the explained variable, on the one hand, and the various modalities taken by the explanatory variables, on the other, in such a way as to reflect the actual data as accurately as possible.

In a ‘logistical’ regression, the explained variable is the probability of the presence of a phenomenon (in this case exposure to a constraint, for example), which is studied through its ‘logit’, expressed by the formula:  $\text{Log} [p/1-p]$ . This formula has many advantages, which can be difficult to explain without going into more complex mathematical progressions.

<sup>6</sup> These approximate descriptions correspond to the following groups: ‘Executives’: Legislators and senior officials and managers; Professionals, Technicians and associate professionals. ‘Employees’: Office clerks; Service workers and shop and market sales workers. ‘Workers’: Skilled agricultural and fishery workers; Craft and related trades workers; Plant and machine operators and assemblers; Elementary occupations; Armed forces.



At the end of the analysis, the model provides ‘odds ratios’ for each of the modalities of an explanatory variable, compared with a modality taken as a benchmark (this choice of benchmark does not affect the results, all expressed in comparative terms). An odds ratio greater than one indicates that the ‘explanatory’ modality is accompanied by a greater probability of the explained variable appearing than for the benchmark modality, and even greater the higher the odds ratio. An odds ratio of between 0 and 1, on the other hand, indicates that this modality is accompanied by a lesser probability than for the benchmark, and even lower the closer the odds ratio comes to zero.

### *Which variables?*

In compiling this report the authors would have liked to be able to conduct certain analyses using specific ages, rather than a five or 10-year age bracket. The existing arrangements may introduce variable age thresholds according to country (particularly at the two extremes of working life), which have a considerable impact on the levels of activity. Only detailed analyses by year of age – or even by detailed age at the date of the survey – would have made it possible to identify such phenomena. However, they were not able to carry them out because the files supplied did not include age in detail; our analyses therefore depended on pre-set divisions into age brackets.

As regards work, for the purposes of the analysis and for this report, variables representative of important questions regarding the issue of ageing at work where there is already a body of knowledge ) were chosen.<sup>7</sup> Ultimately, four main areas were chosen:

- the physical demands of work: exposure to vibrations; difficult or tiring postures; carrying or moving heavy loads; performing repetitive movements with the hands or arms;
- the irregularity of working hours (particularly shift and night work);
- time constraints in the job;
- access to new jobs: using information technology, multitasking, training, etc.

Each of these areas is the subject of a chapter of this report.

An exploratory study was also carried out on a variable introduced for the first time in 2000 relating to people’s perception of being able to do the same job at 60 or not. In the current debate on changes at the end of working life, it was thought that it would be interesting to see how today’s work-related constraints contribute to notions among workers of different ages of their future working life.

### *Relationships between work and health: a very specific framework for analysis*

Finally, a plan was made to analyse the findings on health in order to answer the question, ‘Can links be demonstrated between age, health problems reported by workers and current work constraints?’.

However, account was not taken of the impact of the type of questioning used in the survey on this subject. It emerged that the European survey does not aim to describe a state of health, which

---

<sup>7</sup> And after various ‘landscape’ analyses incorporating all the ‘work’ variables of the survey.

could be compared (statistically) with the constraints or demands of work. Its explicit subject is the notion among workers of relationships between their state of health and their job. It is quite a different subject and one on which very little literature is available, particularly at international level. Very little is known about the factors which lead to establishing a link between this aspect of health and our work, and on the variability of these factors according to sex, age, country and the culture of the relevant company, etc. It is probably a subject for study in its own right, one that deserves to be examined in detail, particularly as part of an international comparison.

When the initial findings were obtained, it was a surprise, first of all not to discover any 'traditional' findings on the subject of health (differences in answers among men and women, links according to age, etc.). It was only then that the specific aspects of the European survey were outlined and that a decision was forced to make radical changes to the way data on health was used. At the beginning of chapter 5, the choices made are outlined and the way in which the problems in this area were expounded.

The findings on links between work and health are presented in this report in two different ways:

- in chapters 1 to 4, situations in which people 'accumulate' exposure to a particular work constraint and health problems capable of making this constraint particularly difficult are dealt with; and in the development with age of the frequency of these cumulative situations;
- in chapter 5, still with regard to age, ways to identify the work constraints which influence people's overall perception that their job affects or does not affect their health was sought; also analyses on potential relationships between this perception and people's notion of their job at the age of 60 were carried out.

*A major stumbling block: the lack of information on employment history*

It is becoming increasingly clear that the understanding of ageing at work should be based on a debate on professional histories, particularly 'work histories' (Molinié, 2001) – in other words, the succession of jobs people hold, the selection process which may have taken place, the 'marks' left by earlier jobs in relation to the constraints and discomforts of the work, opportunities to update or acquire skills, and so on. The findings of the French ESTEV survey showed the benefit of questioning workers both about the work constraints they had encountered during their professional lives and by following up these workers over several years.<sup>8</sup>

The dearth of information on employment history limits the possibilities of understanding the selection processes, of which only 'traces' can be gleaned through age structures. This makes it difficult to anticipate the effects of the ageing of the working population, it being impossible to adjust the analysis of differences by age according to the diversity of professional and work histories. It makes it impossible to assess relationships between work and health, which can evolve over time and are reflected by selection criteria (Volkoff, et al., 1997). At any given point in time,

<sup>8</sup> See the presentation of the methodology of the survey and the findings of the first phase of the survey in Derriennic F., Touranchet A., Volkoff, S. (eds.) (1996). *Âge, travail, santé. Études sur les salariés âgés de 37 à 52 ans. Enquête ESTEV 1990* [Age, work, health. Studies on employees aged from 37 to 52. ESTEV survey, 1990]. Éditions INSERM. Several studies carried out based on the longitudinal follow-up 1990-1995 were published in (2001) *Travail, santé, vieillissement. Relations et évolutions*. Conference, 18 and 19 November 1999, Paris. Éditions Octarès.



an employee's state of health either allows him to continue to be exposed to a particular constraint or it does not, and this state of health itself depends on employment history.<sup>9</sup>

In the analysis of the phenomena of selection by age, therefore an attempt was made, if not to compensate for the scarcity of information on employment history, at least to identify the limits of the findings of the European surveys. In the area of health, attributing health problems to exposure to the constraints of the current job was stopped: the lack of information on employment history and the wording of the questions contributes, in our opinion, to making links that could be statistically significant impossible to interpret.

### Examples of corporate practices

A few examples were given of corporate practices for the various areas in which the quantitative analyses carried out. These examples have come from a set of investigations which the Foundation asked researchers from a number of countries to carry out between 1996 and 1999.<sup>10</sup> The aim of this work was to describe situations in companies seeking to implement strategies to tackle ageing at work.<sup>11</sup> These examples of 'good practice' were collected (and/or coordinated) in seven countries by Prof. Åsa Kilbom (National Institute for Working Life, Solna) for Sweden, Finland, Norway, Denmark and The Netherlands; by Serge Volkoff (CREAPT, Paris) for France and by Dr Karl Kuhn (Federal Institute for Occupational Safety and Health, Dortmund) for Germany.<sup>12</sup>

As the questions were approached in a different way, it is not easy to establish a connection between these examples and the analyses resulting from the survey. Ultimately, a decision was made to present the monographs in such a way that they followed the subject sections used in this report: each chapter (except this one, which is more exploratory, on notions of health and work at the age of 60) was supplemented by a section dealing with corporate practices.

The areas of the corporate strategies investigated were as follows: the issue of ageing for these companies; the actors and decision-makers involved; the measures adopted on physical constraints, working hours, pace of work, types of learning, professional careers; and the results of these measures (if the company had been monitoring them long enough to be able to evaluate them). The researchers based their investigations on published documents and interviews with internal managers or consultants involved with these companies. The contents and details of the information gathered vary from one company to another, taking account of the types of contact made and how close relationships were between the researchers and the companies.

---

<sup>9</sup> By 'healthy worker effect', epidemiologists refer to the fact that individuals capable of doing regular work are in better health than the general population, where people are unable to hold down a job. This effect is all the more marked if working conditions are difficult. This 'effect' may mask relationships between work and health.

<sup>10</sup> All the monographs are contained in the annex to this report (Annex 3).

<sup>11</sup> These examples were identified by contacting people working on projects relating to ageing workers – researchers or company representatives. Neither organisations nor employers were surveyed on the existence of this type of good example. No selection process was made, either, given that all the cases identified are reported here. Cases of failures were not reported, as they were not requested. As a result, these 26 examples of good practice are not representative of the situation among ageing workers in these countries. Nor are they representative of existing activities in this context, whether the findings are conclusive or not.

<sup>12</sup> The examples analysed in France and Germany gave rise to an article: Volkoff, S., 'Des politiques du travail dans les entreprises pour tenir compte du vieillissement. Quelques exemples en France et en Allemagne' [Corporate employment policies taking ageing into account. Some examples in France and Germany]. *Travail et Emploi*, No. 69, 4/1996, 71-82.

The data gathered by the researchers was from eight French, five German, four Swedish, two Finnish, three Norwegian, two Danish and two Dutch companies.<sup>13</sup>

## Structure of the report

The report is divided into five chapters, each dealing with the main issues involved in ageing at work:

1. Age and physical demands of work
2. Age and irregularity of working hours
3. Age and speed demands at work
4. Age and access to new work situations
5. Perceptions about health and work attitudes to working at the age of 60

The first four chapters seek to highlight why these aspects of work are a considerable worry in connection with age, by basing the authors' views on the existing literature and their knowledge of work in the field, particularly ergonomics. The data from the European surveys, guided by a number of questions, were then examined in the light of the following questions:

- Are older workers more 'shielded' from this exposure than younger workers? Are they more, or less, exposed in 2000 than they were in 1995?
- Do any 'effects of age' identified reflect particular differentials in the socio-economic distribution of working people of different ages?
- Does this exposure combine with other constraints, potentially posing specific problems for older workers?
- Does this exposure to difficulties combine with health problems? Does this difficulty/health 'combination' vary with age?

An attempt was made to illustrate several examples of corporate measures on each of these subjects, with the aim of improving the situation of ageing employees.

Chapter 5 explores questions not yet tackled in the surveys.

---

<sup>13</sup> In presenting the examples, we will show the countries between brackets: Germany (D), Denmark (DK), Finland (FL), France (F), Norway (N), The Netherlands (NL), Sweden (S).



# Age and physical demands of work

# 1

The main physical demands identified by the surveys were as frequent in 2000 as in 1995, perhaps even slightly more frequent in the case of carrying heavy loads. However, the demands of work are becoming increasingly cumbersome for workers in the intermediate age range (35-44 years), who are not only those most affected, but also those who have seen the greatest increase in demands. Work-related demands are still frequent but stable for younger workers. The oldest workers are still relatively shielded. However, in 2000, they suffered from posture-related problems more than in 1995. The older workers become, the more exposure to physical constraints is accompanied by osteoarticular pain. This pain has not led to measures to 'shield' them from physical demands, whereas, from the point of view of those affected, the work was the reason for these disorders occurring in the first place.

When the human body is placed in difficult conditions (heavy physical work, postures placing constraints on the body, etc.), the characteristics of the work may prove particularly difficult for older workers, and even for some younger workers, both on account of the difficult nature of the work and the consequent wear and tear. Shielding older workers from jobs which are especially physically demanding may mean that, for some of them, account has been taken of the decline in maximum capacities in terms of muscular strength, endurance of the cardiorespiratory apparatus or joint flexibility. However, close observation of the work makes it possible to see that both individual and collective strategies which make up for these deficiencies can also be implemented when the organisation of the work and the employees' skills allow (movements required, preparation of work, cooperation, etc.).

## Background

The joint, muscle and cardiorespiratory systems change gradually with age, leading from the age of 30-35 to a reduction in maximum physical performance (Laville, 1989). During people's working lives, this reduction is generally limited and varies enormously on the job they do.

Muscular strength does not decrease considerably up to the age of 60, but flexibility does decrease a great deal and can make it difficult to adopt certain working positions. Furthermore, the reduction in cardiorespiratory capacities reduces the ability to exert concentrated intense effort over a short period (Shephard, 1999). The ageing body, which usually retains significant abilities to carry out fairly sustained work, cannot take on sudden heavy loads and, if it does, the consequences may be serious.

The literature available also stresses that, as people age, it becomes increasingly difficult to bear two types of constraint at the same time. At the age of 50, a man can carry out medium physical work, his heart rate remains moderate and similar to that of a man aged 25. However, if he is in a hot atmosphere (30°-50°C in a humid environment), his heart rate increases far more than that of a young man, and can reach dangerous levels (Aoyagi et al., 1997).

Age greatly increases differences between individuals. The distribution of the physical capacities of a population, which is already marked at 20, does not stop increasing with age. This is particularly true for height, muscular strength, lung capacity, maximum aerobic capacity and maximum systolic blood pressure. An ageing man who is fit and in good health easily has the medium capacity of a young man.

These considerations explain the remarkable performances of some ageing workers placed in harsh conditions. Although generally keeping fit can prevent some effects of ageing (as many Scandinavian studies have found, such as those of Ilmarinen, 1992), it has been observed that employees faced with 'heavy' muscular work (great strength over a prolonged period, muscular activity which tends to be static) are often in less good condition. Sustained muscular work is at the root of vascular changes, nervous disorders such as those associated with exposure to vibrations, or musculoskeletal disorders responsible for reductions in the muscular strength observed (Millanvoye, 1995).

As far as posture-related problems are concerned, the specific problems associated with age have long been established. Although most studies deal with the 'oldest workers', it is well known that joint limitations, and initially those affecting the spinal column or the knees, can become evident from the age of 30 or 40 (Bourlière, 1982). Furthermore, maintaining a difficult posture can prove as 'costly' as placing a sudden strain on the body, both for the cardiocirculatory system and for muscles.

The effects of these physical demands, 'combined' with those of advancing age, are often seen in the selection mechanisms, the consequences of which are seen later, particularly by analysing age structures. The findings of the European survey do not enable the authors to work directly on these selection mechanisms, as they do not contain information on the constraints employees may have encountered during their working history. The fact remains that some ageing employees hold extremely demanding jobs. Differences between individuals also play a role, as the implementation of compensatory strategies probably also does. And, as shown later, it does not follow that this situation does not affect the state of health of the employees affected.

On these subjects, the European surveys measure the frequency of exposure (all the time, almost all of the time, etc.) rather than the intensity of the constraints. The following variables were considered: exposure to vibrations (hand tools, machines, etc.); difficult or tiring postures; the carrying or moving of heavy loads; repetitive movements of the hands or arms.

### **Exposure to vibrations**

Overall, exposure to vibrations was approximately as frequent in 2000 as in 1995, affecting men more than women; one third of men and 11% of women were exposed to it in their work for at least a quarter of the time.

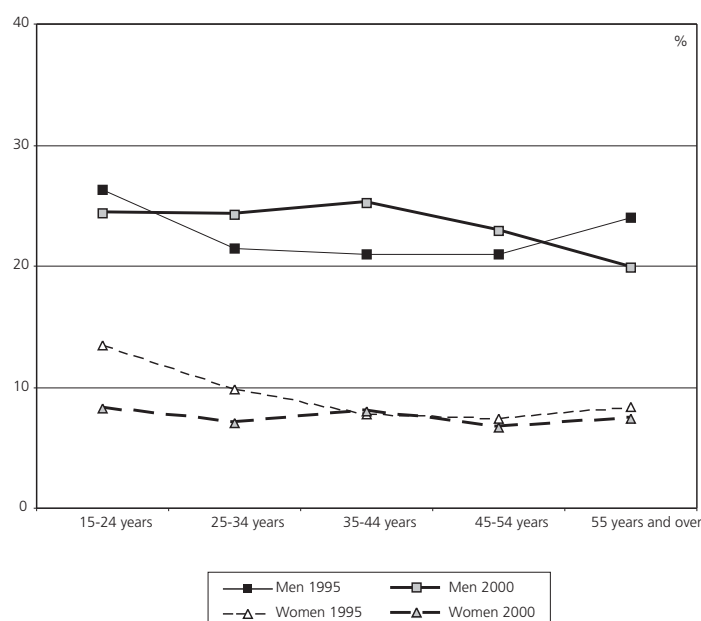
Relatively frequent exposure to vibrations (at least half the time) varied little with age for men and fell slightly for women; the differences between 1995 and 2000 were not significant (figure 1).

If account is taken of the frequency of exposure in a slightly more detailed manner,<sup>14</sup> the fact that older men (55 and over) said in 2000 that they were 'never' or 'almost never' exposed to vibrations more frequently in 2000 than in 1995 (figure 2) is shown.

---

<sup>14</sup> This has only been done for men, as exposure to vibrations is rare among women.

**Figure 1 Exposure to vibrations for at least half the time, in each age bracket, in 1995 and 2000**



The differences in exposure according to age were due to many factors, particularly differences according to age in the socio-professional distribution of working people. In order to take these 'structural' factors into account, as well as differences potentially due to a 'country effect', logistical regression models,<sup>15</sup> where exposure to vibrations appeared as the 'explained' variable and socio-economic characteristics (large sector, size of the company, broad social category), as well as country, sex and age, as 'explanatory' variables were used. Here, only the odds ratios for age (complete findings shown in Annex 2) (figure 3) are shown.

'All things equal', it appears that in 1995, the youngest (15-24 years) were those most exposed to vibrations, the differences between ages not being very marked beyond that. In 2000, the differences between ages were more marked and it was workers in the intermediate ages, particularly those between 35 and 44, who risked increased exposure compared with the others, with relative shielding for those aged 55 and over.

Among men subjected to vibrations in their work at least half the time, 58% said they suffered from osteoarticular pain (in the neck, back or limbs) which they believed was connected with their work. This proportion increased significantly with age, rising from 47% for 15-24 year olds to 70% for the oldest (55 and over) (figure 4). In the absence of exposure to vibrations, the proportion of people who mentioned such disorders was far lower (between 30% and 37%) and did not increase with age.<sup>16</sup>

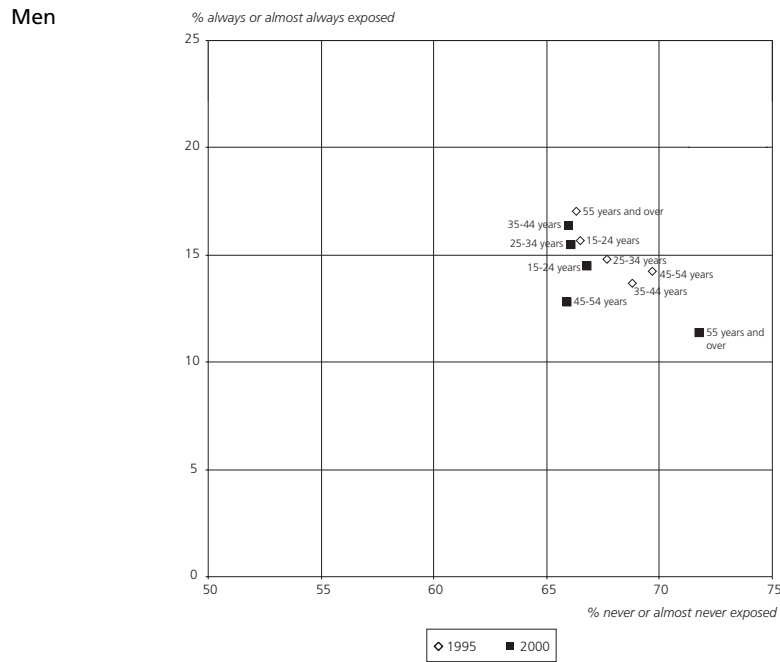
The data from the survey did not explain this work-related 'causality' which respondents were asked to prove nor, in particular, how to understand how it fits into a working history studied with various types of exposure, job changes connected or otherwise with the respondent's state of health, etc. On the other hand, it highlighted the fact that with age, more people suffer from

<sup>15</sup> See the general presentation of this type of model in the introduction.

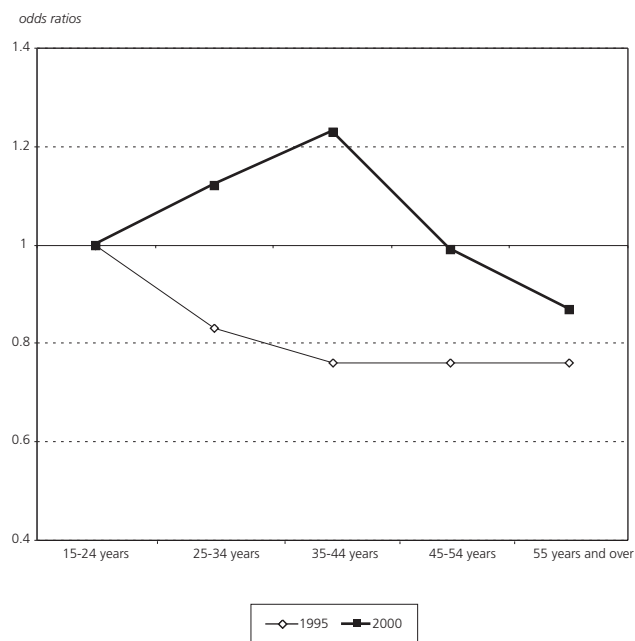
<sup>16</sup> It should be noted that in the European surveys, those not exposed to particular disorders or conditions rarely mention health problems. Therefore, the comparison between 'exposed' and 'not exposed' is irrelevant here and is only given as an information.

osteoarticular pain among those exposed to vibrations. Above all, this means that these pains have not led to people being 'shielded' from vibrations, even though, from the point of view of those affected, the work is the cause of the disorders.

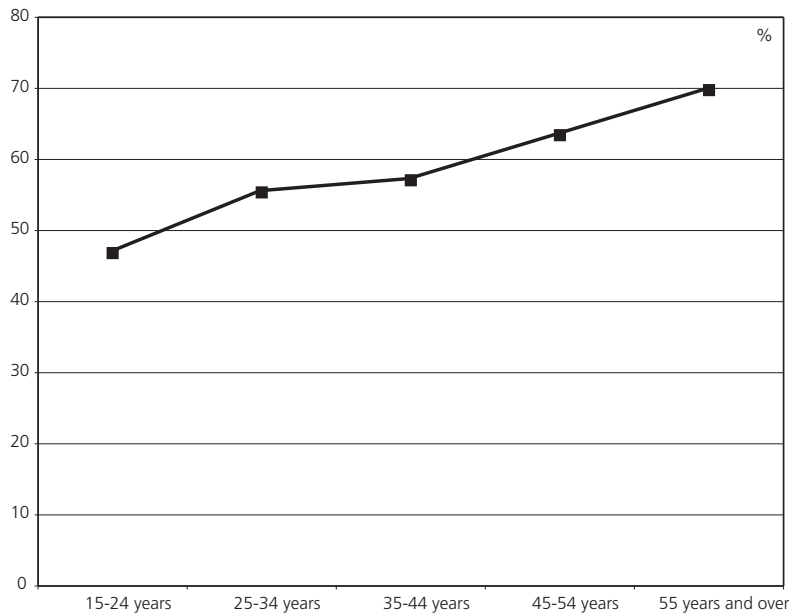
**Figure 2 Exposure to vibrations at different ages, according to the frequency of exposure, in 1995 and 2000**



**Figure 3 Odds ratios on age: 'explained' variable: being exposed to vibrations for at least half the time ('explanatory' variables other than age: sex, country, large sector, size of company, broad socio-professional category)**



**Figure 4 Osteoarticular pain (in the neck, upper or lower limbs or back) thought to be connected with work among men exposed to vibrations (at least half the time)**



### Difficult or painful postures

Working in difficult or painful postures was just as frequent in 2000 as in 1995: almost one worker in three said he had spent at least half his time at work in these postures.

For men in 1995, this exposure was mentioned in particular among younger age groups, and its frequency fell continually with age. This was no longer the case in 2000. Between these two dates, there was a sharp increase in the proportion of workers affected around the age of 40. It is within the age range 35-44 that exposure to these postural difficulties was mentioned most. This proportion fell with age, though the levels were higher than in 1995. For women, who generally say they are just as frequently affected as men by postural problems, the frequency of this constraint tends to increase with age. More than one third of the oldest women (55 years of age and over) said they spent at least half their working time in difficult or painful postures. The situation for the various age brackets in 2000 was fairly close to that in 1995 (figure 5).

These findings cannot only be attributed to the socio-professional structure and possible changes between the two dates. The analysis of the odds ratios on age confirms these findings, this time 'all things remaining equal' (figure 6).

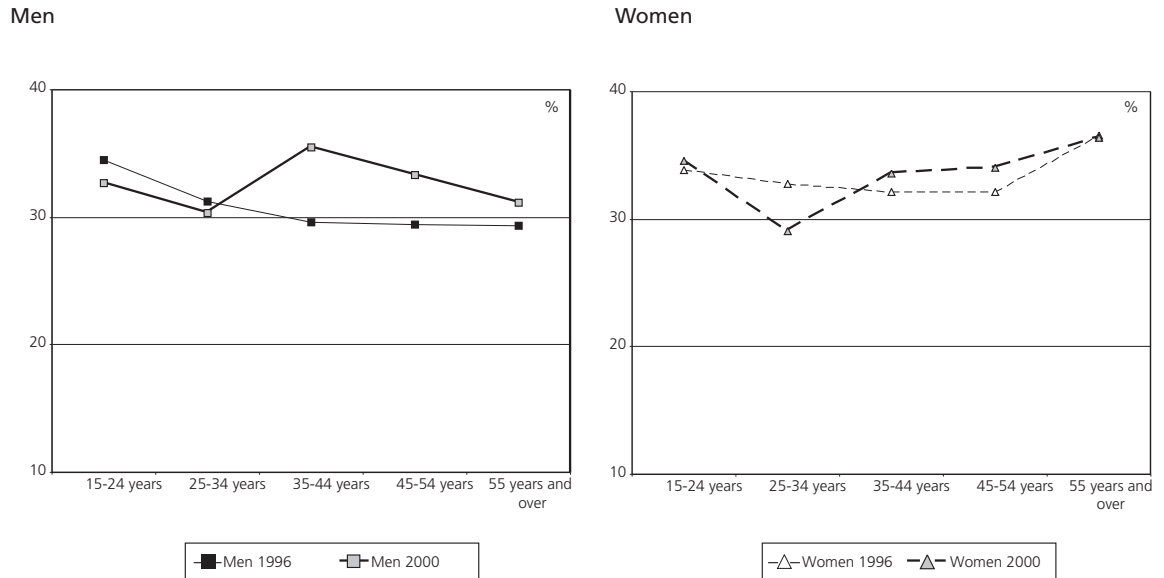
Closer analysis of the time spent in postures considered difficult or painful shows that it was the group of oldest women who most frequently mentioned permanent exposure to these constraints ('all the time' or 'almost all the time') and were most rarely shielded from them ('always' or 'almost always' exposed) (figure 7).

Many studies, particularly those on ergonomics, have emphasised that a combination of postural constraints and demands of work to be carried out rapidly can be the source of particular problems

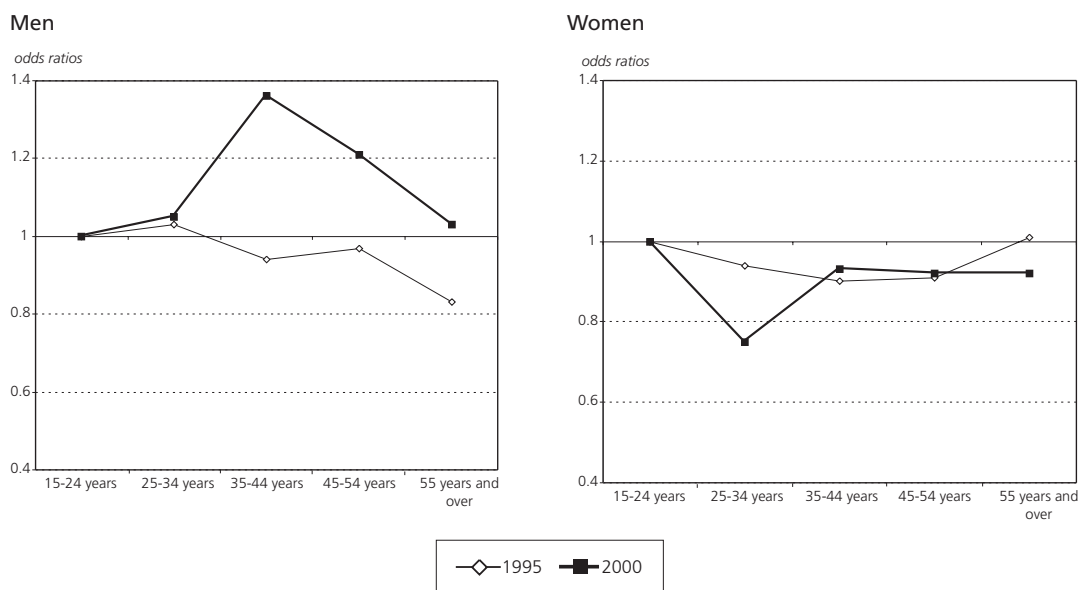


connected with age, which can go as far as forms of selection, with the possible exclusion of ageing employees (Tieger, 1989). These findings seem to be confirmed by the findings of the European surveys. The proportion of workers in each age bracket who say they often work in difficult or painful postures (at least half the time) and often also have periods when they have to work at a very rapid rate drops significantly and regularly with age, both for men and women (figure 8).

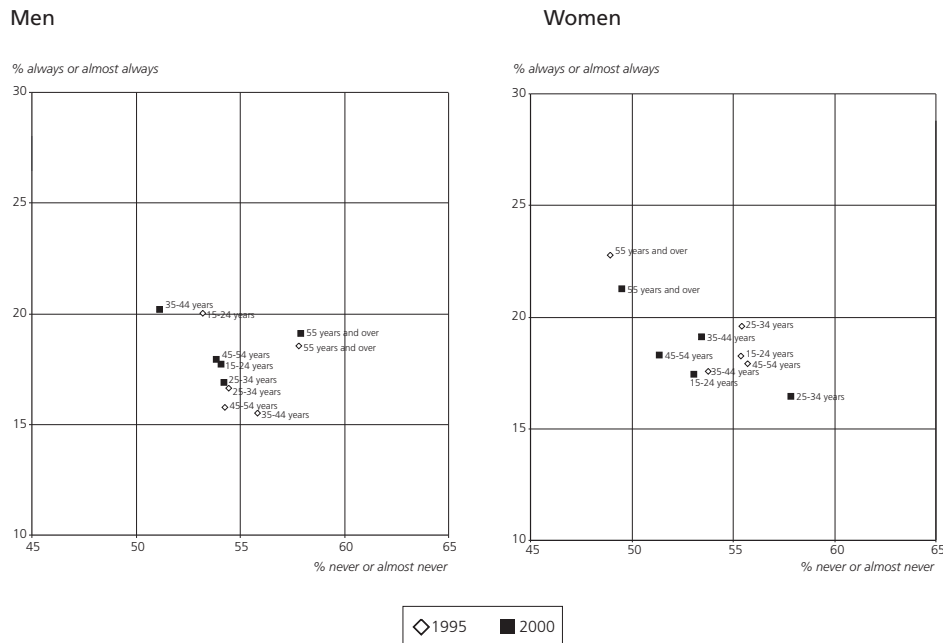
**Figure 5 Difficult or painful postures, at least half the time**



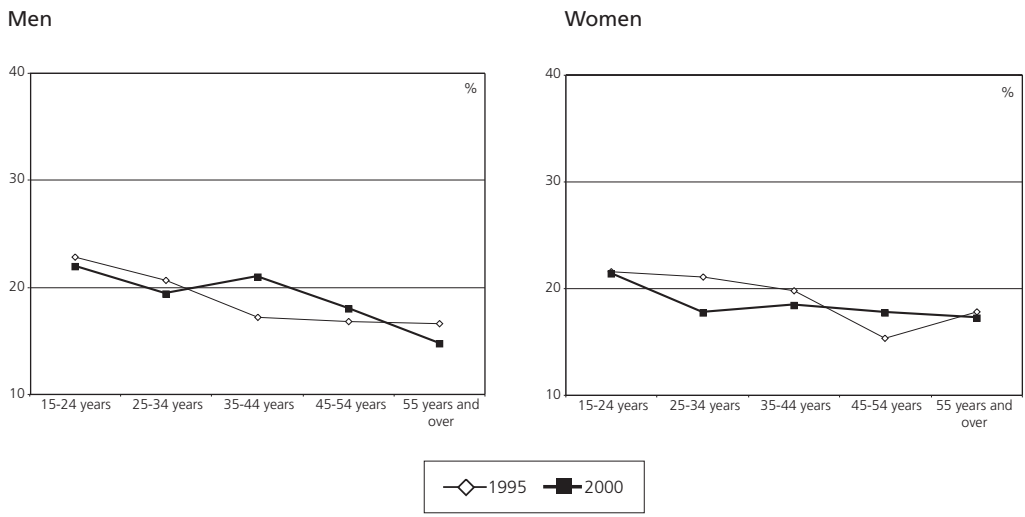
**Figure 6 Odds ratios on age: 'explained' variable: exposed at least half the time to difficult or painful postures ('explanatory' variables other than age: sex, country, sector, size of company, socio-professional category)**



**Figure 7** Difficult or painful postures at different ages, according to the frequency of exposure, in 1995 and 2000



**Figure 8** Difficult or painful postures and working at very rapid rates

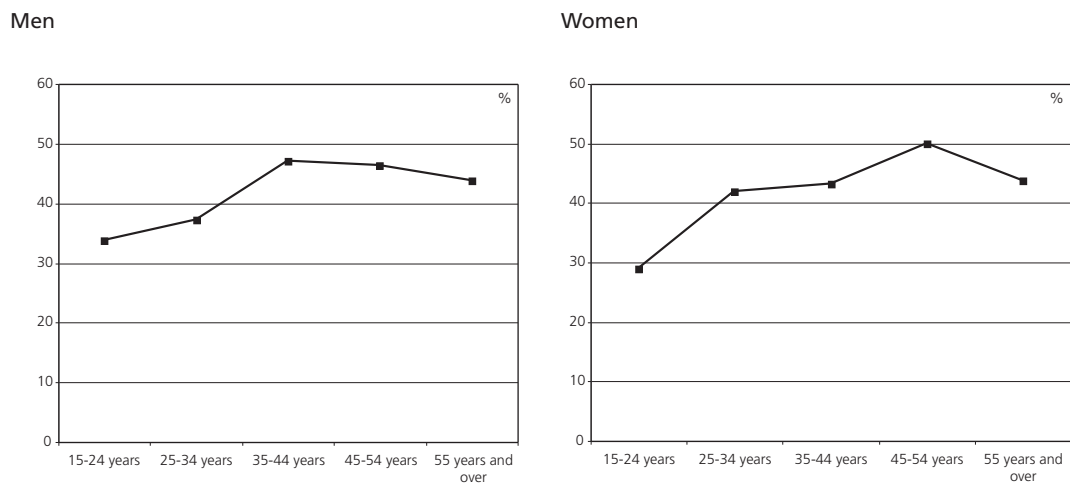


Employees who frequently work in difficult or painful postures also very often have osteoarticular pain and this proportion increases with age.

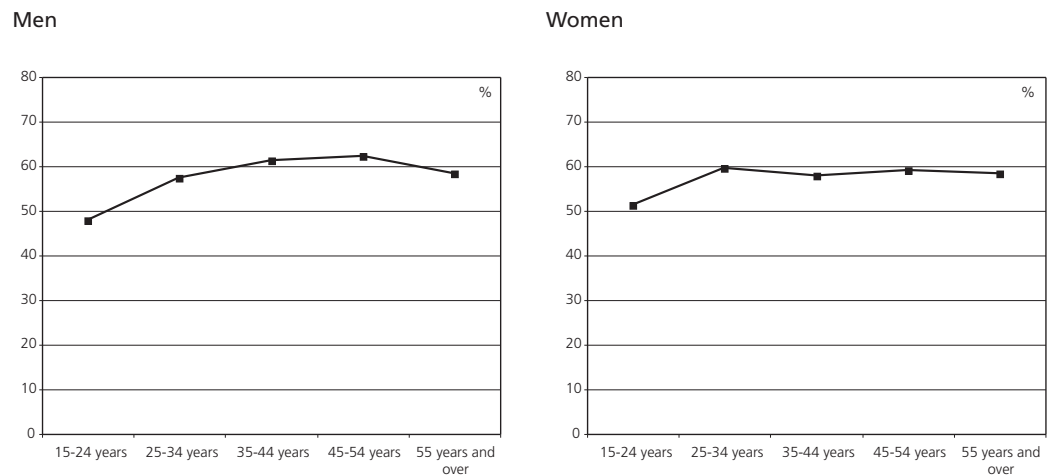
- From the age of 35, more than 45% of men and 40% of women who said they often worked in difficult or painful postures also reported neck pain connected with their job. This proportion was as high as 50% for women aged between 45 and 54 (these proportions were less than 15% for men and varied between 15% and 23% for women who did not mention these postural constraints) (figure 9).

- Approximately 60% of men and women who said they often worked in difficult or painful postures also said they suffered from back pain (figure 10).
- Overall (figure 11), 60-70% of men and women who often work in difficult or painful postures suffered from osteoarticular pain in at least one of the areas mentioned in the survey (neck, back, upper limbs, lower limbs). The figure was below 30% for those shielded from these postural constraints.

**Figure 9 Neck pain thought to be connected with work among those exposed to difficult or painful postures (at least half the time)**



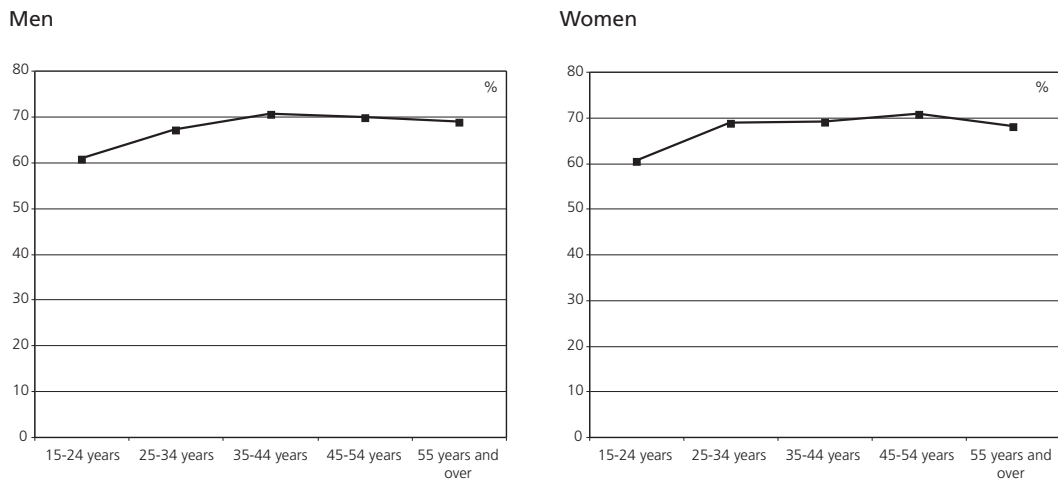
**Figure 10 Back pain thought to be connected with work among those exposed to difficult or painful postures (at least half the time)**



### Carrying heavy loads

Carrying heavy loads was a constraint mentioned slightly more frequently in 2000 than in 1995: one third of the working population said they were affected in 1995, against 37% in 2000. This constraint was present at least half the time for 19% of the working population in 1995 and 23% in 2000.

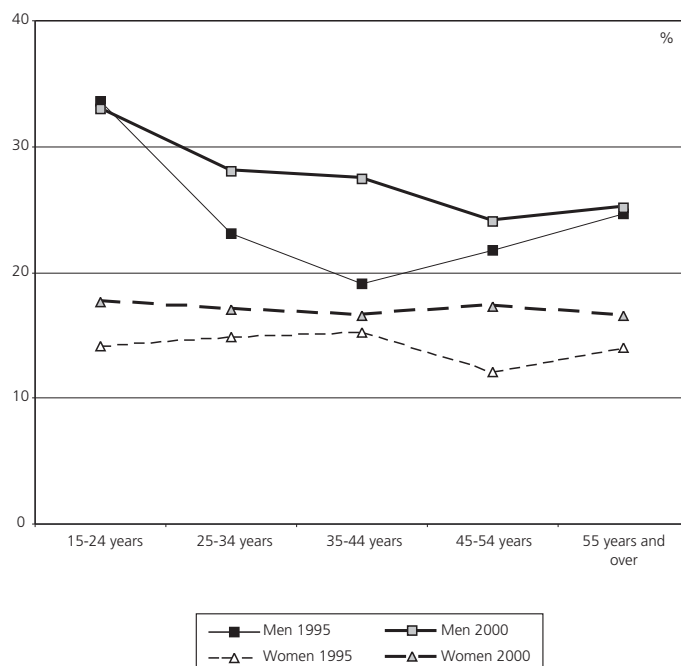
**Figure 11 Osteoarticular pain (neck, back, upper or lower limbs) thought to be connected with work among those exposed to difficult or painful postures (at least half the time)**



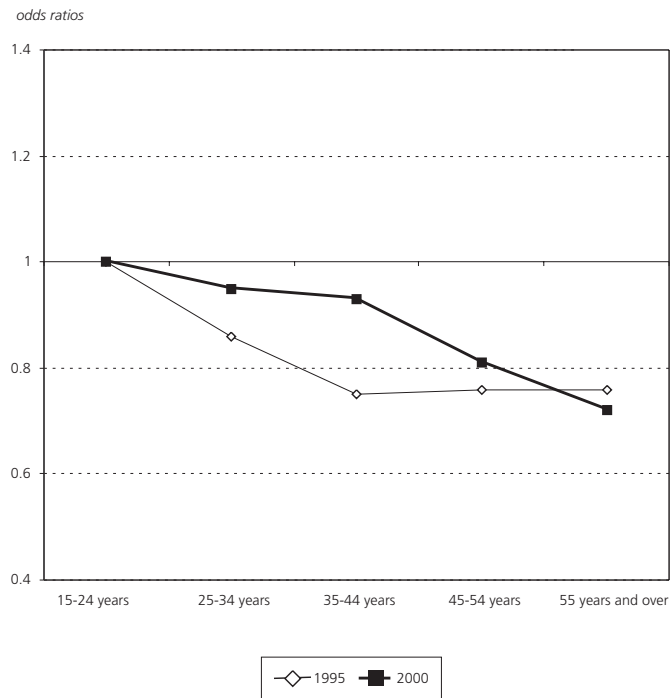
This constraint mainly affects young people, and over time the proportion of the working population affected tends to fall (figures 12 and 13). But it dropped less in 2000 than before and, 'all things equal', this constraint even appears to increase rapidly at the intermediate ages (between 35 and 44), mainly for men, and at all ages for women.

Both in 1995 and 2000, it was usually young men who were permanently subjected to this constraint (15-24 years). In the older age groups, a greater proportion of working time was protected from this constraint (figure 14).

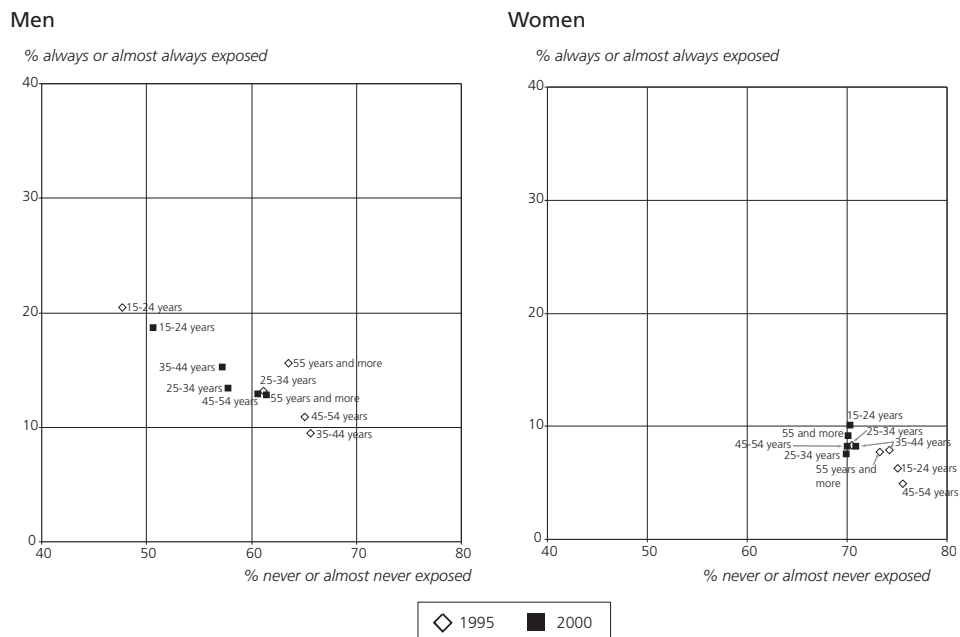
**Figure 12 Carrying or moving heavy loads, at least half the time, in 1995 and 2000**



**Figure 13** Odds ratios on age: 'explained' variable: exposed at least half the time to carrying heavy loads ('explanatory' variables other than age: sex, country, sector, size of company, socio-professional category)



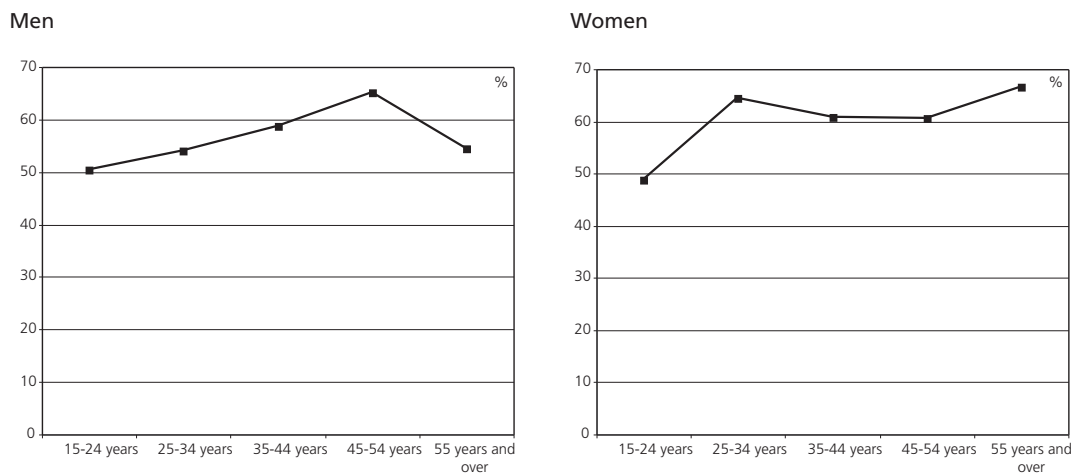
**Figure 14** Carrying or moving heavy loads, depending on the frequency of exposure, in 1995 and 2000



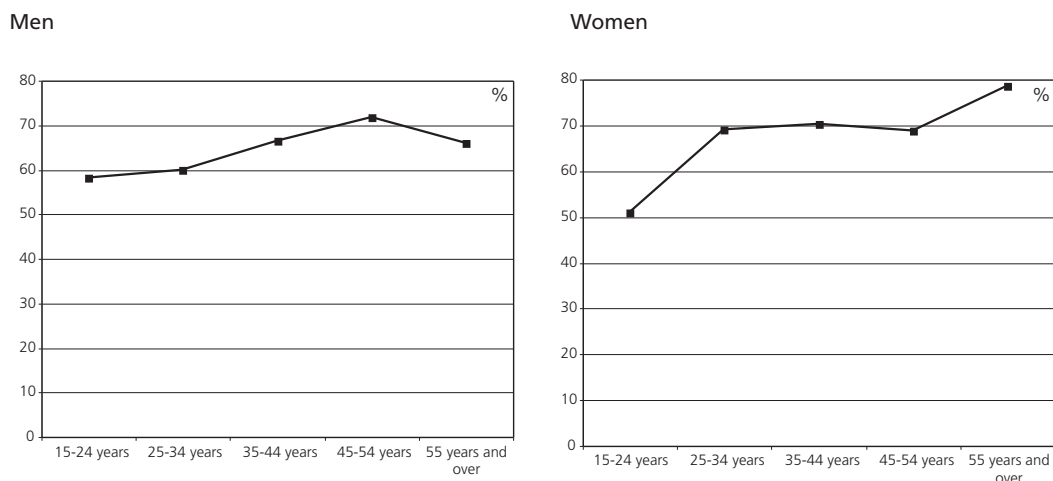
Those who carry heavy loads suffered just as often from back pain (and osteoarticular pain in general) which they blamed on their job: this was already the case for one in two under the age of 25 (men and women). With age, the proportion of men suffering from back pain among those who

carry heavy loads increased steadily to 70% between 45 and 54 years of age, falling thereafter. It could be suggested that after the age of 55, osteoarticular pain is one reason for shielding employees from carrying loads. For women, it seems more difficult to protect themselves: at the age of 55 and beyond, almost 80% of women who often carry heavy loads still suffered from osteoarticular pain which they blamed on their job (figures 15 and 16).

**Figure 15 Back pain thought to be connected with work among those exposed to carrying heavy loads (at least half the time)**



**Figure 16 Osteoarticular pain (neck, back, limbs) thought to be connected with work among those exposed to carrying heavy loads (at least half the time)**

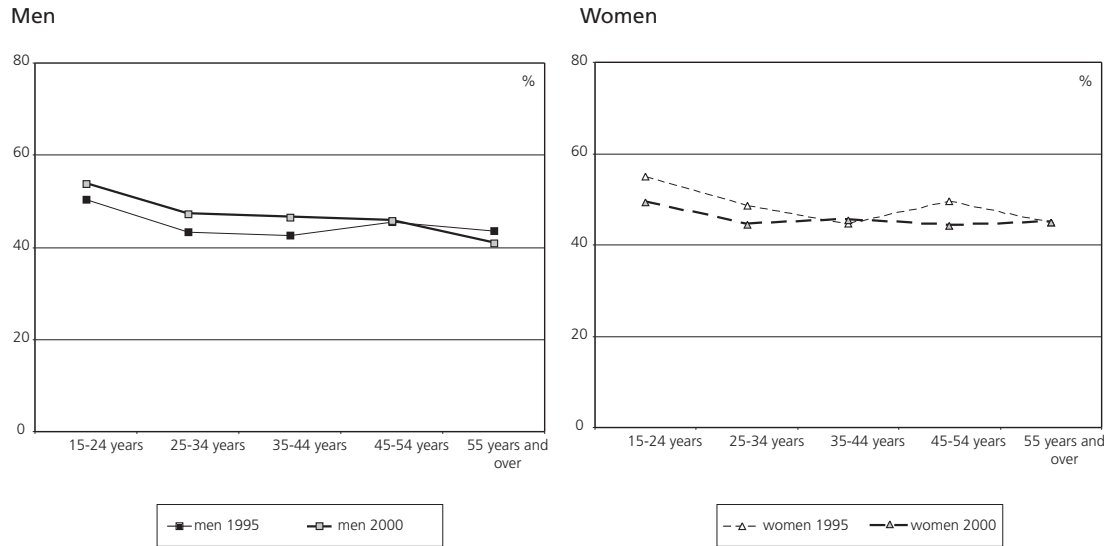


### Repetitive movements (arms or hands)

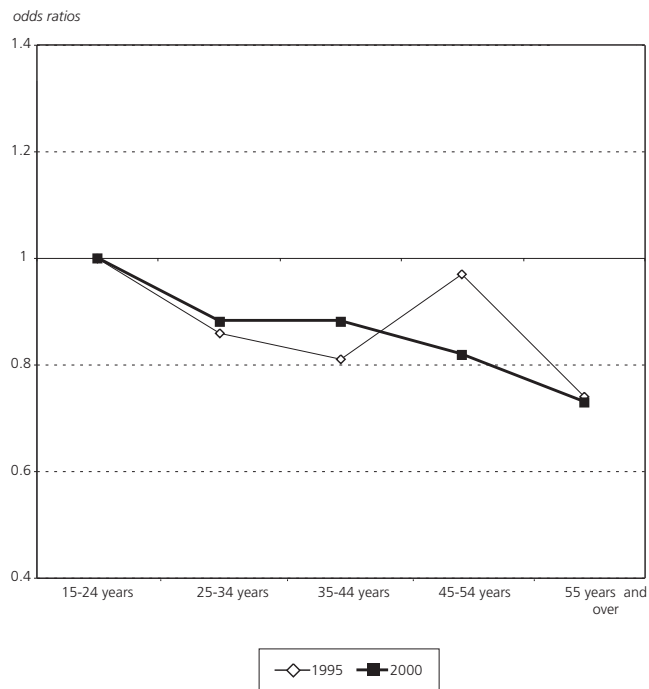
In 1995 as in 2000, 46% of the working population said they performed repetitive movements with their arms and hands during at least half their working time. These repetitive movements became slightly rarer with age (figures 17, 19), even allowing for differences in distribution by country, sector, social category and size of company (figure 18).

When the repetition is combined with working at rapid rates, the drop with age is clearly more marked, probably reflecting selectivity on increasing age (figure 20).

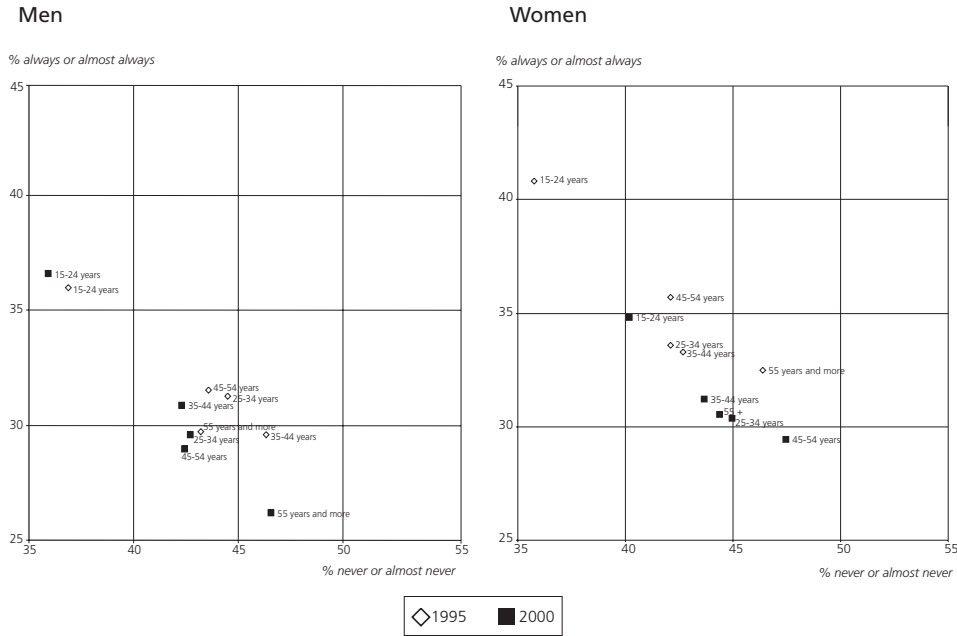
**Figure 17 Repetitive movements of the arms and hands, at least half the time**



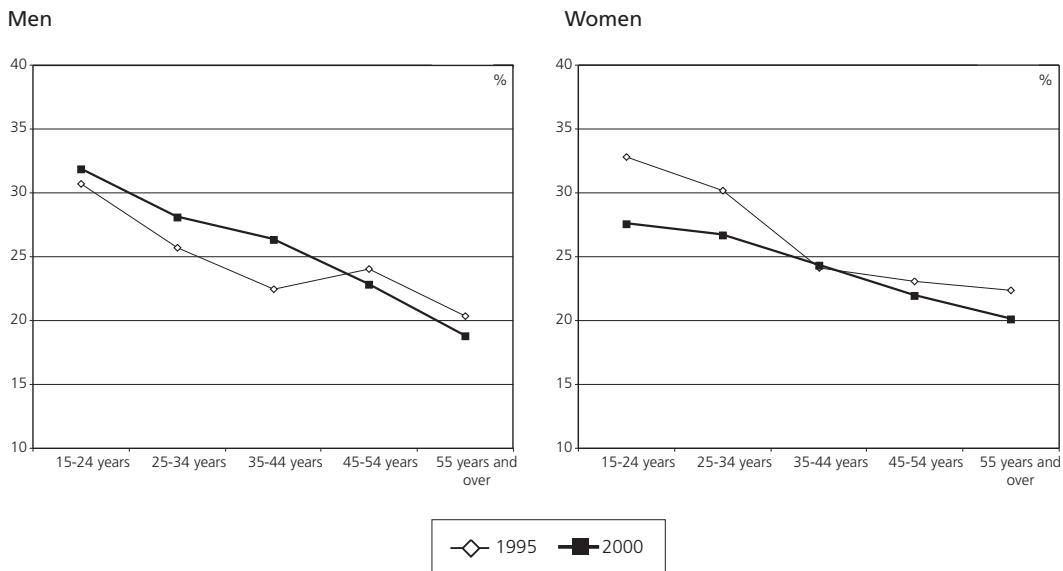
**Figure 18 Odds ratios on age: 'explained' variable: making repetitive movements with the arms or hands, at least half the time ('explanatory' variables other than age: sex, country, sector, size of company, socio-professional category)**



**Figure 19** Repetitive movements of the arms and hands at different ages, depending on the frequency of exposure, in 1995 and 2000



**Figure 20** Repetitive movements of the arms and hands combined with very high work rates, at least half the time

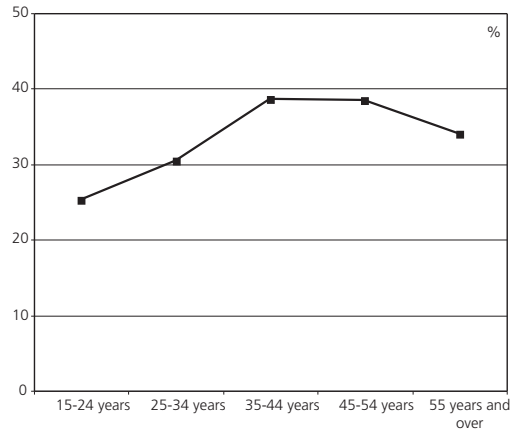


Among those who performed repetitive movements (arms or hands), the proportion of respondents suffering from osteoarticular pain (particularly neck pain) which they attributed to their job was high (at least 50%). This increased sharply with age, up to 60% for men between 35 and 44 and women between 50 and 54 years of age (figures 21-23).

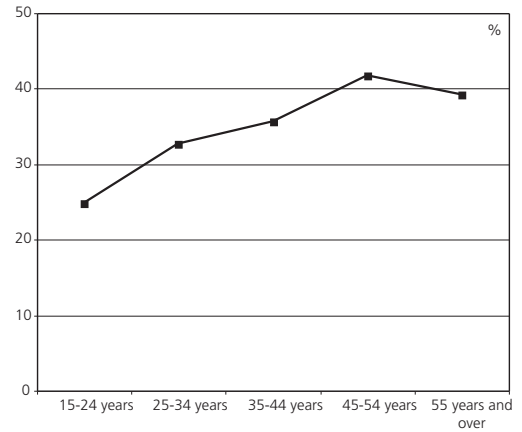


**Figure 21 Neck pain thought to be connected with work, among the working population performing repetitive movements of the arms or hands (at least half the time)**

Men

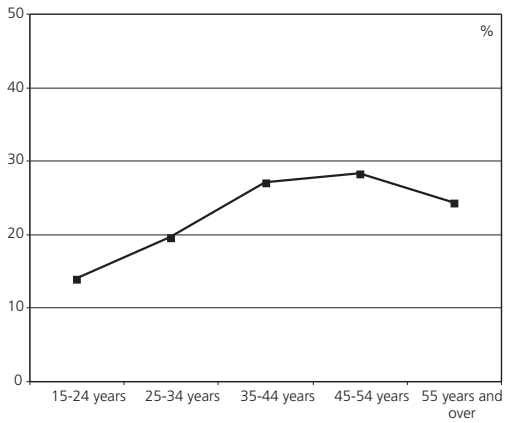


Women

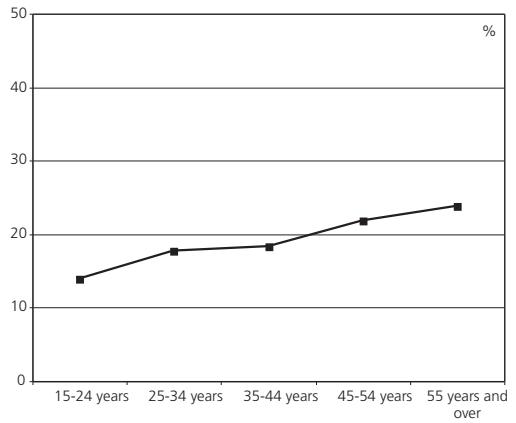


**Figure 22 Pain in the upper limbs thought to be connected with work, among the working population performing repetitive movements of the arms or hands (at least half the time)**

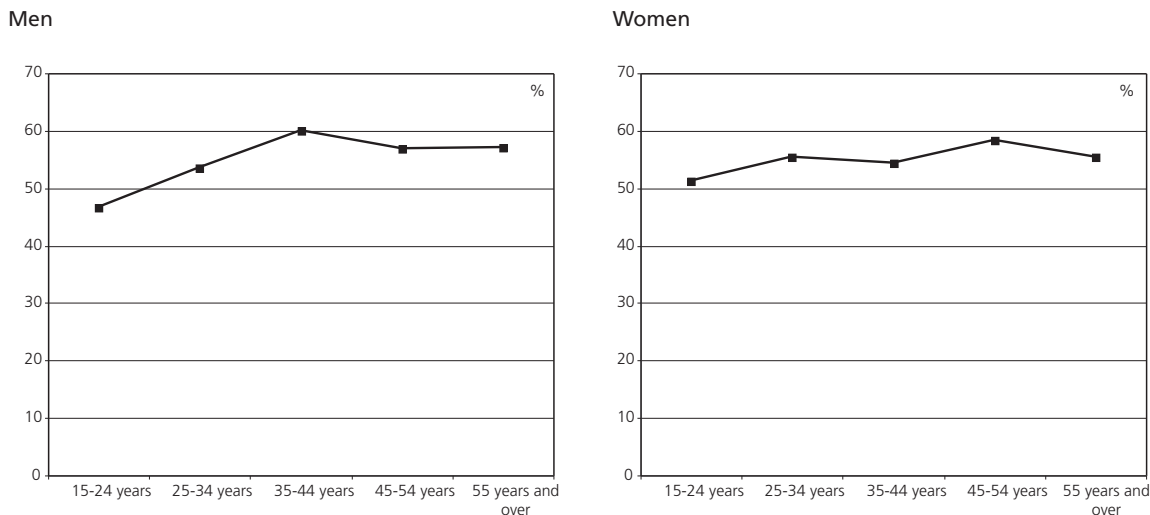
Men



Women



**Figure 23 Osteoarticular pain (neck, back, upper or lower limbs) thought to be connected with work, among the working population performing repetitive movements of the arms or hands (at least half the time)**



## Measures taken in the area of physical exertion

### Evaluation

The decline in physical abilities with age (strength, flexibility, endurance, etc.) is neither uniform nor systematic. That is why, in several companies, measures taken in the area of physical exertion to which an ageing population is exposed is initially based on an evaluation of abilities. Therefore, a survey of more than 2,000 iron and steel workers at Usinor (F) by company doctors showed 9% of staff under the age of 30 and 34% over the age of 50 had limited abilities. A similar evaluation at BMW (D) resulted in disparities of the same order.

The other aspect of this evaluation involves assessing the demands of posts in order to identify the proportion of posts occupied by a workforce with restricted abilities. At Volkswagen in Wolfsburg (D), this concern led to the creation of a database in which the company distinguishes between posts 'with a particular profile' (designed for the use of employees suffering from one or two mild deficiencies) and posts 'for people with reduced abilities' (posts which have to meet a long list of specifications). Renault (F) has introduced, and gradually enhanced, a method for the ergonomic analysis of assembly line jobs, a method designed to address the issues involved in ageing. The explicit aim is to avoid post selecting by age, in particular in the area of efforts and working postures.

What could be termed an 'intermediate' evaluation strategy between the two previous categories (evaluation of abilities and demands of the posts) involves directly identifying links between age and difficulties at work. The manufacturer of Continental tyres (D) is introducing a procedure for questioning workers of different ages in order to identify the characteristics of posts placing the greatest burden on older workers. The survey is supplemented by physiological measurements (heart rate, blood pressure, etc.) in a work situation in difficult posts, taking age into consideration when interpreting the results. In company (A), which specialises in lingerie production, concerns

about the ageing of its workers led to a systematic identification of posts 'selected by age'.<sup>17</sup> Particular attention was paid to those posts (in this case, machines for stitching quilt covers) mostly held by young women.

### **Measures involving physical training and working movements**

Among the solutions companies are seeking to identify the difficulties experienced by some of their older workers faced with physical stress, physical training, medical monitoring and promoting a healthy lifestyle play a prominent role. However, a few examples are briefly mention here, as the aim of this report is to explain the idea behind the working methods. At Swedish Steel in Borlänge (S), individual health assessments and rehabilitation measures are conducted, aimed in particular at cardiovascular risk factors; the company explains the health consequences of smoking to smokers and helps them stop. The food factory Saarioinen (FL) encourages employees of various ages to exercise on their own initiative. The project provides for tests at the beginning and end of the financial year, used to explain to employees their aptitude for work and their physical capabilities. Home helps of the municipality of Helsinki (FL) were able to participate, as part of a group, in physical exercises under supervision, twice a week. This programme was carried out for one year during working hours. At Siemens (NL), a group of employees was selected for a training programme involving pedalling, running and rowing for one hour three times a week. The physical constraints were increased gradually, based on several successive measurements of their physical capabilities.

Two trends can be identified where working movements are concerned. The first involves encouraging employees, by providing them with adequate training, to select movements requiring less effort and/or that keep their joints in good condition. Company F, which produces insulating materials, gave 70 employees over the age of 45, involved in handling many types of product, training in 'movements and postures'. Continental (D) has adopted a similar approach, the search for the 'right movement' performed on prototypes installed in the training suite.

As can be seen from evaluations of similar training methods (in particular in a hospital environment, where they are widespread), they have limited scope, because the implementation of the 'right theoretical movement' is not always compatible with the variability of the task to be performed or with the diversity of the characteristics of employees (i.e. the variability of one and the same employee from one moment of the day to another). Hence a second, fairly different, step adopted at A (the lingerie factory mentioned before), where the idea is to arrange the machine-stitching post so that workers who so wish may, but without being obliged to do so, learn to machine with two hands, already adopted by older workers who have 'held on' to these posts, which would otherwise be selective. Hence Renault's (F) interest in observations, including by video, which show particular strategies used by older workers in assembly line work (grouped supplies, tactile instead of visual checks, positioning in relation to pneumatic tools, etc.) in order to preserve these strategies when designing future production lines.

---

<sup>17</sup> For some of the companies surveyed, it was not possible to use documents already published or, when dealing directly with those in charge, to obtain permission to use their names. To give them credit for the measures they have adopted, these companies will be designated by their initial.

### Lightening the workload

However, in many companies, the main course taken by preventive measures to avert problems linked to ageing involve lightening the workload as far as possible. Especially with regard to problems posed by reduced capabilities (which become more frequent with age), companies are opting, in turn or simultaneously, for temporary part-time work, new divisions of tasks between employees or between teams (with the idea of 'spreading' the load) or bringing back work previously sub-contracted to increase the number of 'light' jobs. This also involves creating new jobs, though resolves only a small number of problem cases. At BMW (D), a marking system for jobs is compared (using histograms) with statistics on the aptitude levels of the workforce, produced by company doctors. An executive is then specifically appointed to coordinate or initiate the measures to be adopted in favour of allocating staff with reduced capabilities, so that at least 70% of them end up in a suitable job where they will be more productive. Another option involves designing an installation beforehand where older and 'worn-out' employees can be taken on, such as the caisson manufacturing plant at Chantiers de l'Atlantique (F), where automated supply and evacuation, levelling without manual handling and reduced noise nuisances have been implemented.

However, workload reduction measures to take account of ageing are not necessarily 'targeted' at employees with physical deficiencies, as it would be misguided to equate ageing with incapacity. At Swedish Steel (S), the design of a whole series of jobs has been reviewed: special equipment has been implemented for packaging steel bobbins and sheets and conveying suspended gantries. These measures are accompanied by task rotation to avoid muscle, joint and ligament fatigue. At Volkswagen (D), the specification for designing workstations stipulates that these 'must be capable of being used by older employees'. At Usinor (F), a review of workers retiring at 50 (since 1991) has led to managers modernising with the aim of reducing arduous tasks, particularly handling and exposure to heat and noise. At Chantiers de l'Atlantique (F), an increase in joint problems with advancing age has renewed interest in reducing physical burdens: stairs instead of ladders for moving items vertically, mechanising welding, etc. In factory G, which manufactures rubber clothing, the introduction of an adjustable, disengagable conveyor belt aims to reduce pain in the fingers and hands, particularly prevalent among female workers aged 40 and over, whose knowledge is considered essential to maintaining 'top-of-the-range' production. The same concern prevails at F, a company (already mentioned) which produces insulating materials in a rural environment, with an elderly workforce whose low turnover is favourable to the craftsmanship of its products. A job-transformation plan aims gradually to eradicate the demands of prolonged standing or repetitive load-carrying. The final example is the special case of home-helps employed by the municipality of Helsinki (FL). Most ergonomic problems were due to the fact that their working environment, by its very nature, is a private home. In spite of everything, it proved feasible to develop working methods and equipment that would considerably reduce the number of tiring postures. Furthermore, giving every employee a mobile phone and recourse to services which help, particularly the delivery of shopping, has improved the quality of everyone's working life, especially the oldest workers.



# Age and irregular working hours

# 2

Shift work and night work are constraints that are particularly selective in terms of age. Although workers find it increasingly hard to tolerate these hours, and are therefore shunning this type of work, the proportion of those who say they blame sleeping disorders on their job increases sharply with age among male shift workers. However, a lack of information on their working history limits the options of using the European surveys to assess either the selective effects of these hours or their impact on health, even after returning to 'normal' working hours.

## Background

There are two aspects to the problems associated with shift work of an irregular nature. Firstly, biological aspects, which involve problems associated with sleeping and eating times no longer being synchronised with the normal functioning of the body. Secondly, of a rather more social nature, working rhythms are out of step with the general pace of life in society. Over the years, it appears that increasing intolerance of these types of working hours, rather than becoming accustomed to them, may explain the trend in returning to 'normal' working hours (see summary, Quéinnec et al., 1995).

Health characteristics may partly explain the desire to change working hours. Studies on the impact of shift work emphasise the fact that health is affected, the main symptoms of which are: a reduction and deterioration in sleep, disorders of the digestive tract, cardiovascular disorders, endocrine disturbances, problems with psychological equilibrium (irritability, anxiety) associated with a general feeling of fatigue (see summary in *BEST*, 1/2000 ). Prolonged exposure to shift work can lead to lasting adverse changes, and these changes are not always completely reversible, even after returning to 'normal' working hours (Hornberger, et al., 2002).

Sleep disturbances are one of the frequent disorders associated with shift workers. The findings of the French ESTEV survey have established that at all ages, sleep disorders are more frequent among employees with irregular working hours (very early in the morning, late and at night) than in those without. In particular, though, those who have left shift work suffer levels of problems in between those 'currently' exposed and those 'never' exposed. Returning to daytime or regular hours is not sufficient to recover good-quality sleep. Furthermore, the effects of age and irregular working hours accumulate: the frequency of sleep disorders increases both with age and exposure to irregular hours (no interaction having been found between the two). It also appears that the excess of sleep disorders owing to shift work does not affect people in exactly the same way according to age: among the oldest employees (i.e. in ESTEV, those born in 1938), the effects of current or past night work are the most significant (Butat et al., 1999; Derriennic et al., 1999).

Working irregular or shift work hours also means having to manage the contradictions between the constraints of one's own body (such as difficulty staying awake at night or sleeping during the day), the demands of production and the stresses of family or social life, organised on the basis of rest at night or the end of the week, etc. Shift work has become increasingly unpopular over the years. Given the opportunity, more and more workers will try to escape it (Tepas, et al., 1993). However, the opportunity to abandon shift work varies considerably from one sector to another. As a result, shift work is increasingly rare (for France, see Bué and Rougerie, 1999).

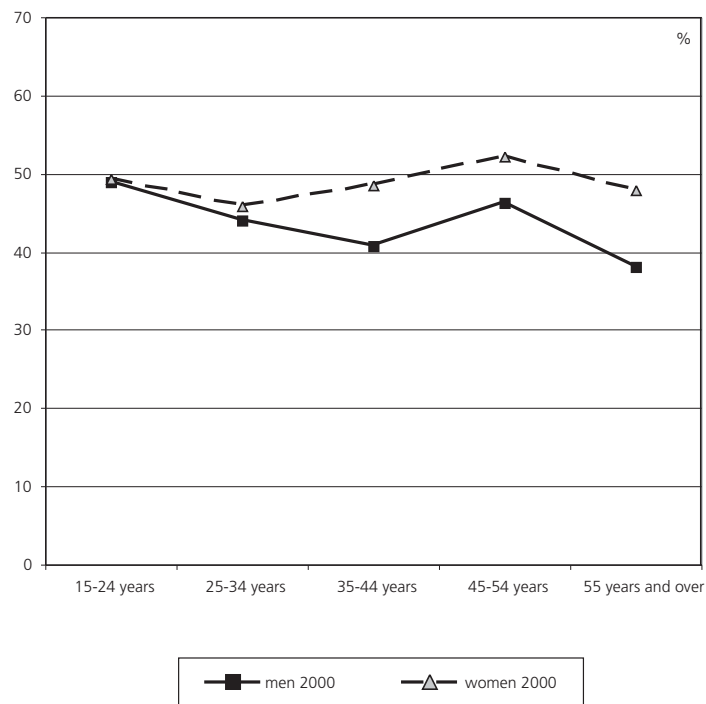
The 2000 European survey has many variables relating to working hours. It is one of the areas where the questionnaire is more complete than its forerunner. As a result, comparisons with earlier

data are either impossible if the question did not exist before or made difficult by the change in the context of the questioning. Furthermore, the main limitation of the survey involves the lack of data on exposure encountered by respondents during their working history. This absence of information on employees' working history is especially limited on all forms of irregular working hours. Consequently, the most serious health disorders are frequently encountered among those who have stopped working these hours, while those who stay remain in good health (the 'healthy worker effect') (Aanonsen, 1959; Angersbach et al., 1980; Bourget-Devouassoux, Volkoff et al., 1991; Knutsson and Akerstedt, 1992 ).

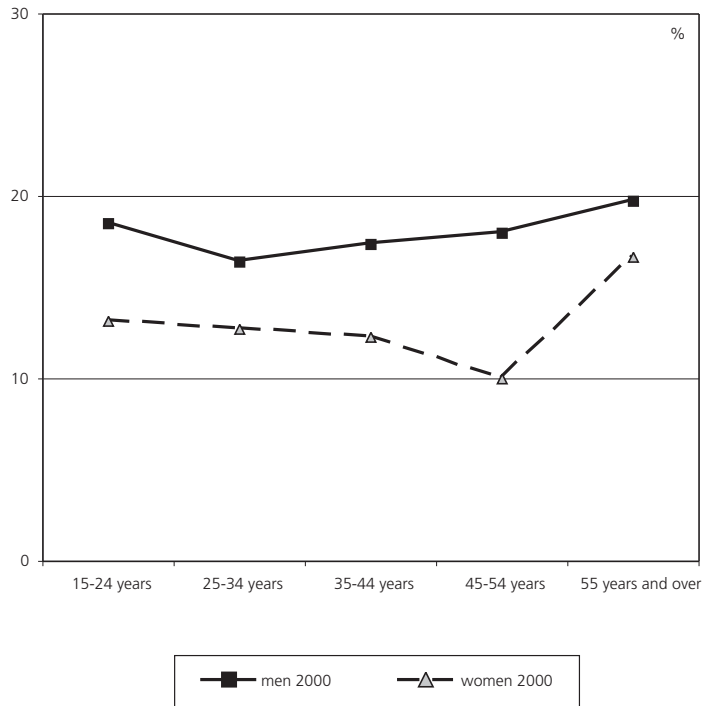
### Age and constancy of working hours

In general, the constancy, or conversely, the inconstancy of working hours is not closely linked to age. If we define 'constancy' by responding positively to all the following items: same number of hours worked each day; same number of days worked each week; fixed starting and finishing times, the proportion of 'regular' hours within each age bracket tends to decrease slightly with age up to 45 for men, while the proportion of 'inconstant' hours (defined here by a negative response to all the above items) would increase very slightly over the age of 25 (figures 24 and 25). However, these overall results broadly reflect the effects of the socio-professional structure. If these effects are 'corrected' by logistical modelling, no truly significant age effect is seen (figures 26 and 27).

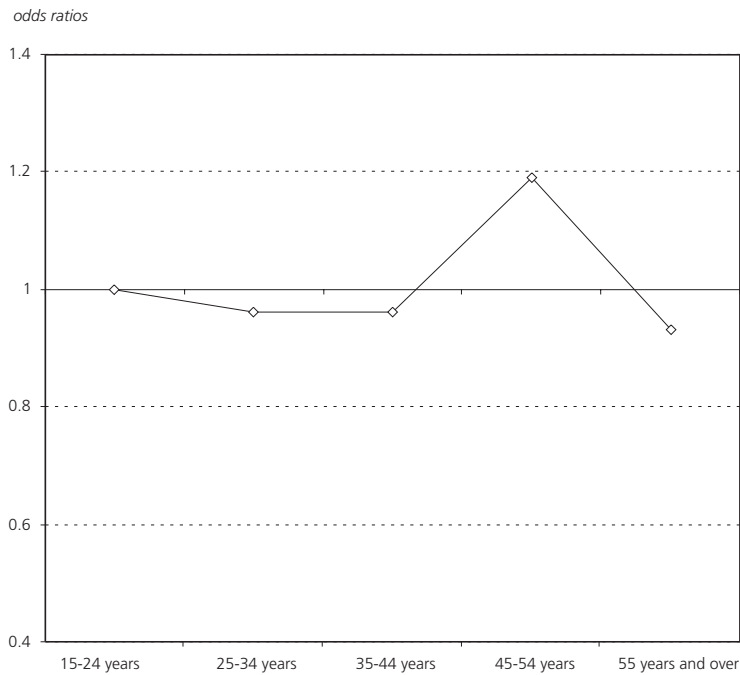
**Figure 24 'Constant' hours (same number of hours per day, same number of days per week, fixed starting and finishing times)**



**Figure 25** 'Inconstant' hours (neither the same number of hours per day, nor the same number of days per week, nor fixed starting and finishing times)

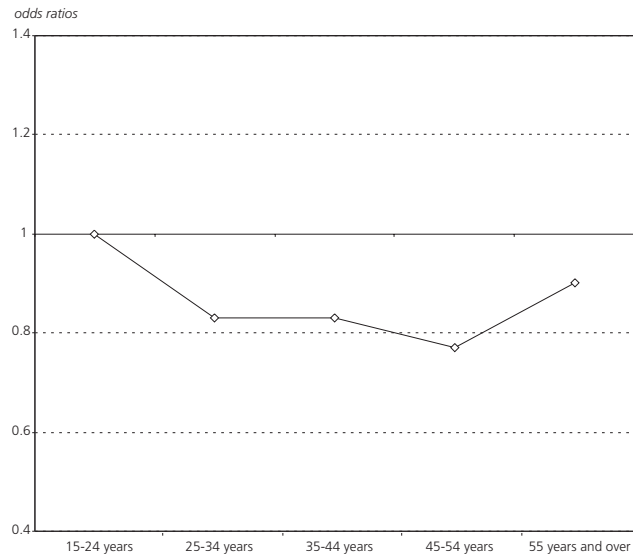


**Figure 26** Odds ratios on age: 'explained' variable: 'constant' hours ('explanatory' variables other than age: sex, country, sector, size of company, socio-professional category)





**Figure 27 Odds ratios on age: 'explained' variable: 'inconstant' hours ('explanatory' variables other than age: sex, country, sector, size of company, socio-professional category)**



### Shift and night work

On the other hand, the demographics of shift and night work suggest selection criteria by age are at work in these areas.

Occasional night work (at least one night a month) became slightly less frequent as of the age of 45, both in 1995 and in 2000; more regular night work (at least five nights a month) was most frequent between 25 and 34 years of age and fell from the age of 35 (figures 28 and 29). This relative drop with age is far clearer 'all things equal' (figure 30).

The proportion of working people who say they are in shift work also fell significantly after 45 years of age (figures 31 and 32). This was true more for shift work including night work (figure 33) than work in teams alternating during the day (morning/afternoon) (figure 34).

Figure 28 Working at least one night a month

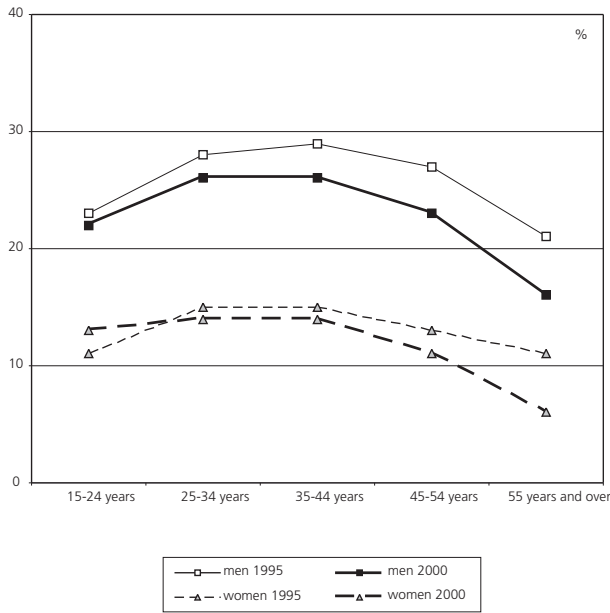
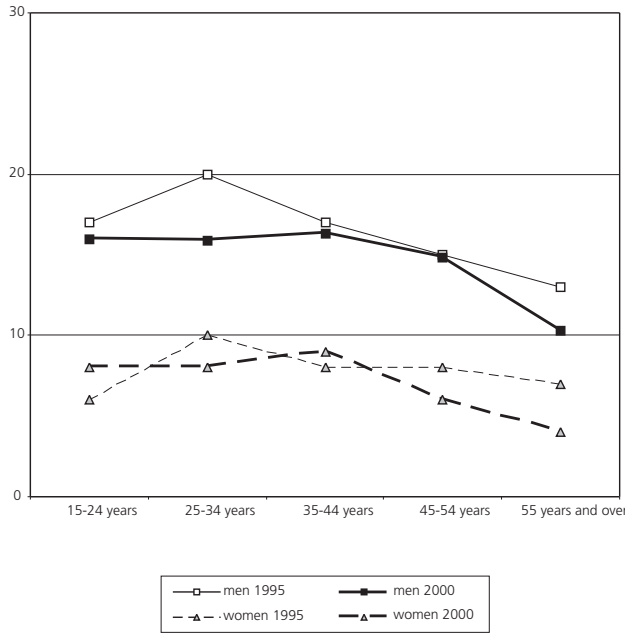
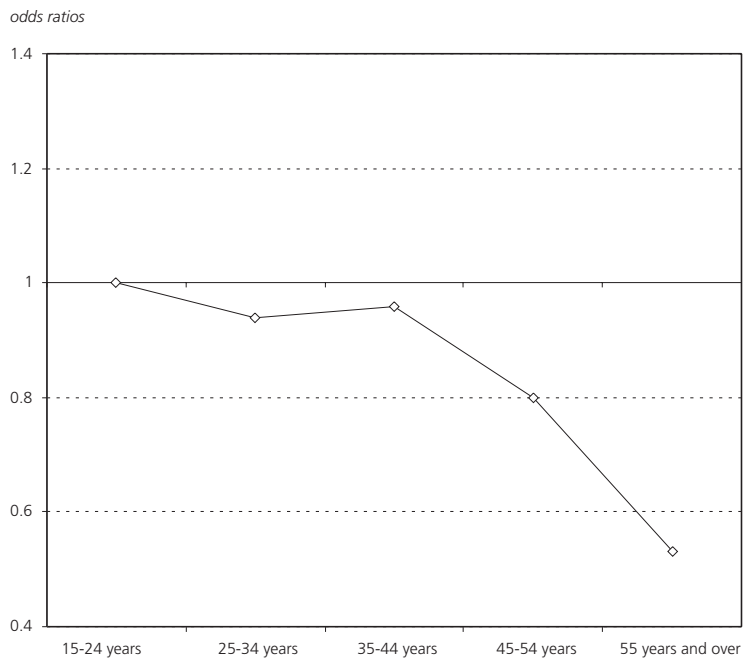


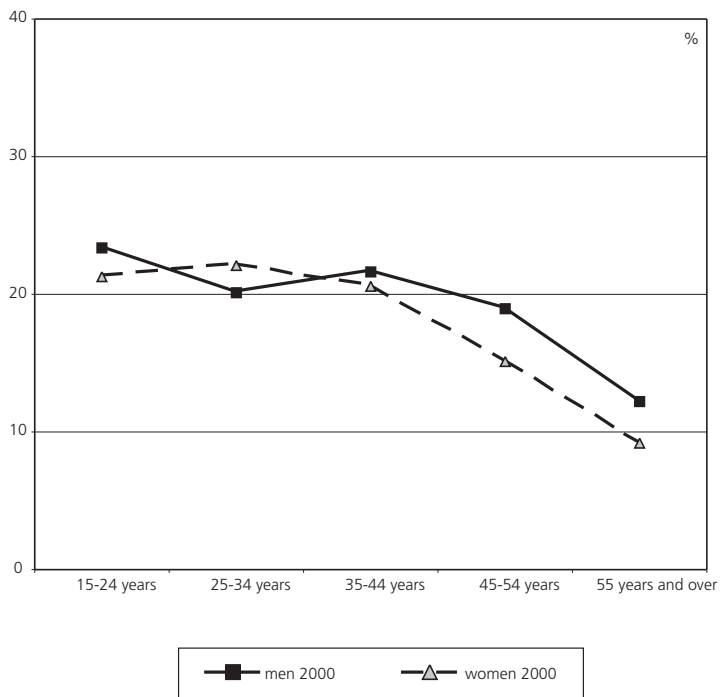
Figure 29 Working at least five nights a month



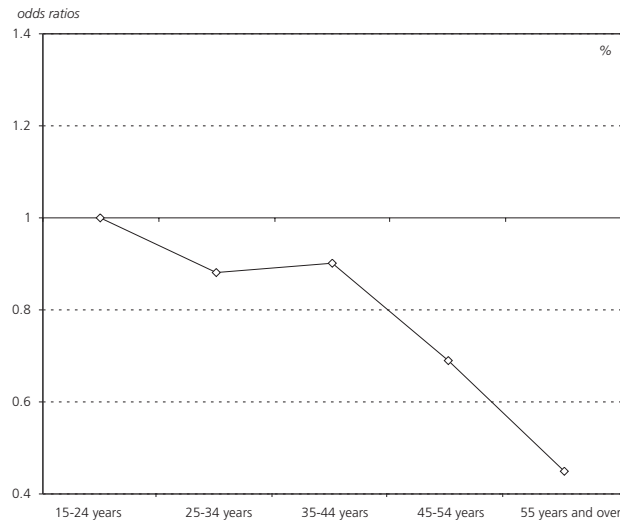
**Figure 30** Odds ratios on age: 'explained' variable: working at least five nights a month ('explanatory' variables other than age: sex, country, sector, size of company, socio-professional category)



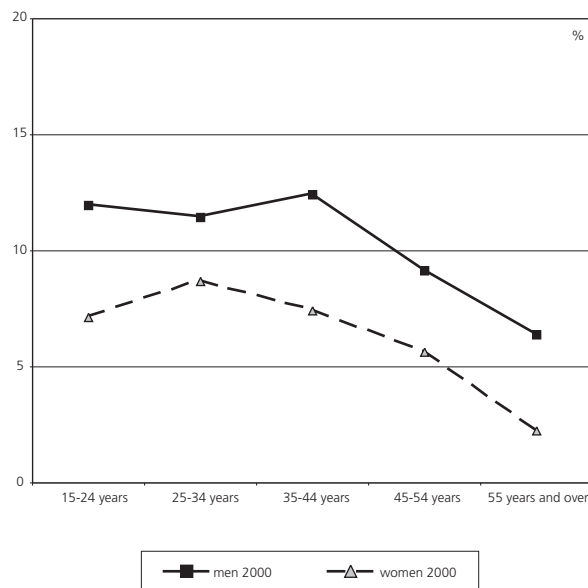
**Figure 31** Shift work



**Figure 32 Odds ratios on age: 'explained' variable: shift work ('explanatory' variables other than age: sex, country, sector, size of company, socio-professional category)**



**Figure 33 Shift work with night work (permanent night team or teams alternating day and night or teams alternating morning/afternoon/night)**

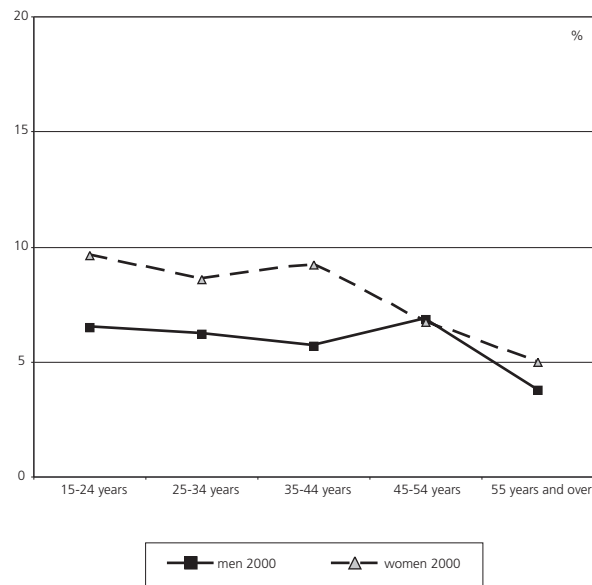


These forms of irregular working hours (shift work, night work, very early in the morning or very late) were categorised as 'stationary-selective' constraints in an extensive survey<sup>18</sup> carried out in France in 1990, and including information on current work and previous work: they change little from generation to generation, but a renewal is at work in the relevant population. Some (roughly half) of employees working irregular hours leave this type of work schedule after 10 to 20 years of exposure, with young employees taking their place.

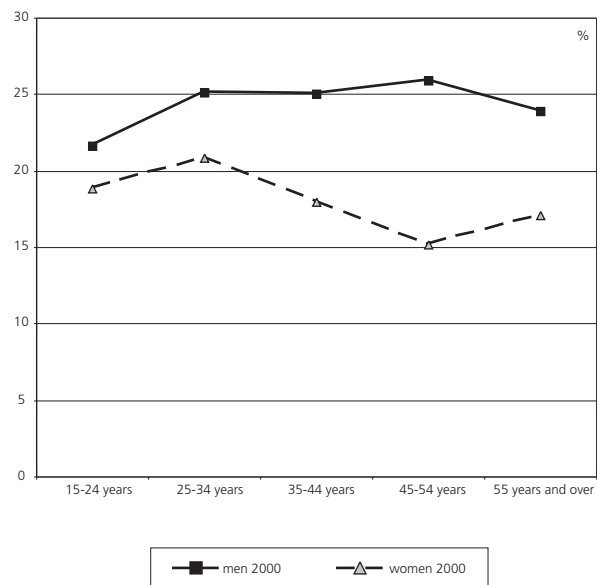
<sup>18</sup> The ESTEV survey on health, work and ageing ('*Enquête santé, travail et vieillissement*' (ESTEV)) was carried out in France in 1990 by company doctors among 21,378 employees born in 1938, 1943, 1948 and 1953. More than 87% of them were seen again in 1995. Derriennic, F., Touranchet, A., Volkoff, S., (eds). *Âge, travail et santé. Études sur les salariés âgés de 37 à 52 ans* [Age, work and health. Surveys of employees aged from 37 to 52]. ESTEV survey 1990. Éditions Inserm.

These trends are less clear where frequent evening work is concerned (between 18 and 22 hours), probably because this affects very different categories (executives, shift workers, etc.) (figure 35). However, 'all things equal', there is a discernible trend to shield the oldest workers (figure 36).

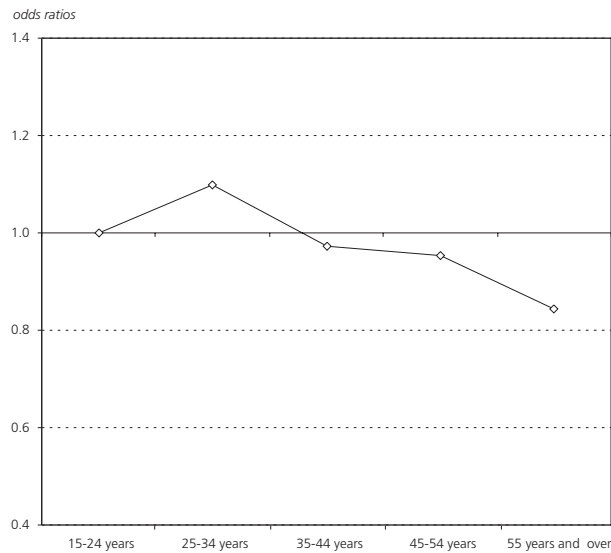
**Figure 34 Alternating shift work during daytime hours (teams alternating morning/afternoon)**



**Figure 35 Evening work between 6.00 and 10.00 p.m., at least 10 evenings a month**



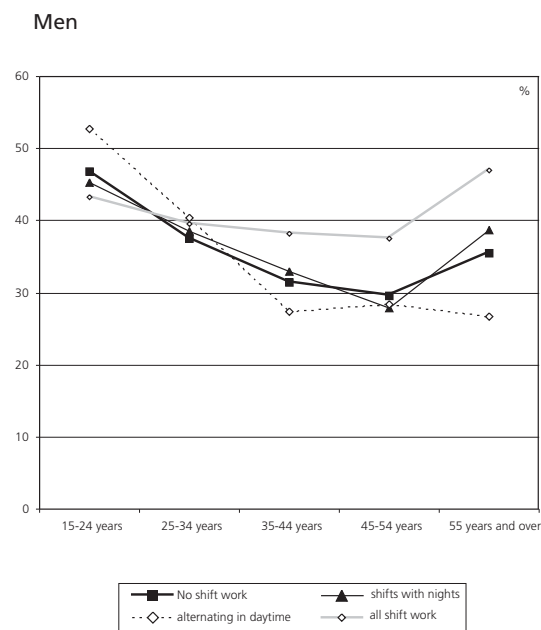
**Figure 36 Odds ratios on age: 'explained' variable: evening work (at least 10 evenings a month) ('explanatory' variables other than age: sex, country, sector, size of company, socio-professional category)**



**Health problems associated with work**

Below the age of 25, the highest proportion of men who believe their job does not affect their health is among shift workers (rather than non-shift workers). This finding tallies with the conclusions of studies that suggest 'self-selection' on the health of workers before accepting shift work (Knutsson and Akerstedt, 1992 ). With age, this proportion falls very sharply among workers still doing shift work. Above the age of 35, the proportion of respondents who think there is a link between their job and their state of health is far higher among shift than non-shift workers (figure 37).

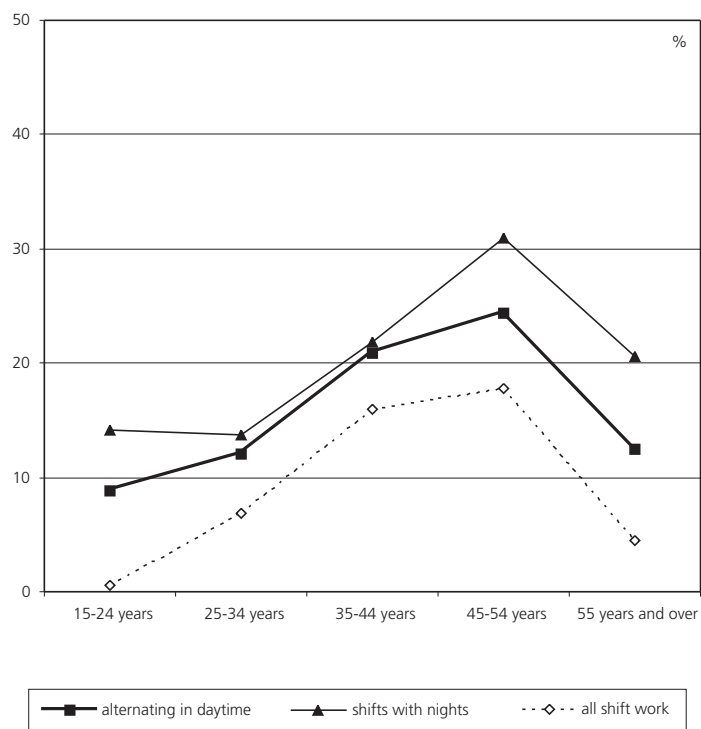
**Figure 37 Respondents who think their job does not affect their health**



Despite a high drop-out rate among workers who find it increasingly hard to tolerate these hours, with age, the proportion of respondents who blame sleeping disorders on their job increases sharply (up to 55 years) among male shift workers (figure 38). From the youngest ages (below 35), 15% of men<sup>19</sup> working shifts with nights<sup>20</sup> blame sleeping disorders on their work, which is almost never the case – at the same age – among those who alternate during the day. With age, the proportion of men who fall into this category increases sharply and in spite of being moved to other hours, it still remains higher among employees working shifts with nights. Between the ages of 45 and 54, close to one third of men who continue to do shift work with nights say they suffer from sleeping disorders which they blame on their job.

As regards disorders of the digestive tract, the situation among the various age groups differs according to the type of shift work (figure 39). Among men working shifts with nights, digestive disorders are frequent at all ages (and even slightly worse at young ages). For men working alternating daytime hours, digestive disorders attributed to work were particularly frequent around the age of 40. In both cases, as of the age of 55, digestive disorders are less common, probably because of the selective phenomena.

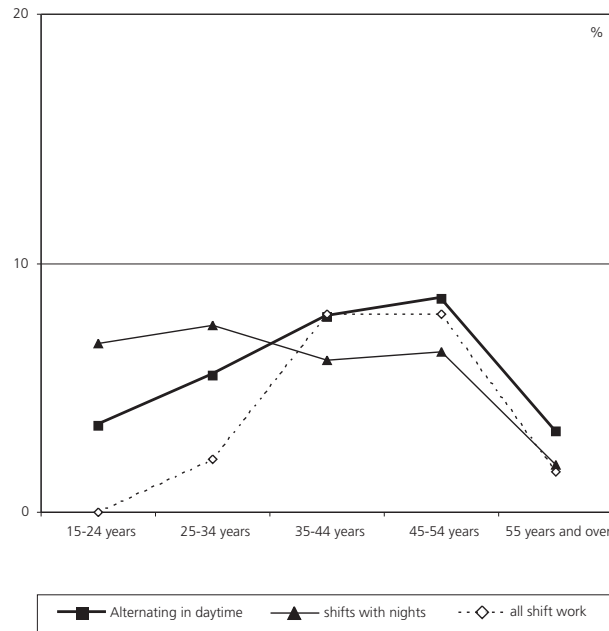
**Figure 38** Sleeping disorders among male shift workers thought to be associated with work



<sup>19</sup> For reasons of staff numbers, figures given here for the survey on the health of shift workers relate to men only.

<sup>20</sup> Under this heading are grouped the answers: alternating morning/afternoon/night; alternating day/night; permanent night teams.

**Figure 39 Digestive disorders among male shift workers thought to be associated with work**



### Measures in the area of irregular hours

To maintain the conditions for the sound collective regulation of irregular hours despite demographic ageing, one solution could be to try and reduce the overall volume of these hours. However, taking into account the organisational requirements of production and the use of equipment, none of the companies surveyed are planning to reduce shift work. On the contrary, several expect it to increase, even if it means adopting specific measures for their older employees.

One example of specific measures in this area is that of Swedish Steel (S). A lively debate on irregular hours, particularly on long working periods including night shifts, got underway in the company in the early 1990s. The company's employees, particularly the more elderly among them, were very dissatisfied with their working hours. The industrial medicine departments met groups of workers and their employer on several occasions to explain the basic health rules for sensible irregular hours: these rules mainly involve alternating shifts in a clockwise direction, i.e. morning, afternoon and night shifts should be alternated in that order. Each period of irregular hours cannot exceed a few days, two or three at the very most. Finally, one or more days' rest must be given before starting the next period.

It emerged that younger workers, who usually have no major problems working irregular hours, preferred to do so over long periods, keeping the same hours. That way, they could benefit from long periods of rest, particularly after periods of night work. This rest time could be used to do work at home, enjoy a leisure activity, perform another occasional job, etc. On the other hand, older workers preferred to combine just a few night shifts, even if that meant a shorter rest period. These differences in attitude show that it is important that the age groups understand each other, particularly by making younger workers understand the biological differences from one age to another and informing them of the health problems they could encounter at a later stage.



Subsequently, trade union organisations and workers implemented several work teams entrusted with drawing up quality hour grids taking specific account of older workers. Three different hour grids were designed from the basic rules mentioned above, namely that the periods of work involving the same hours in daytime (or at night) should be short. However, the unions and the employer did not make any decisions on how to use the grid. They agreed on a real size experiment. Over a thousand employees tested each of the three grids between 1996 and 1997. This was followed by a major survey using a questionnaire on the state of health and well-being according to each type of working hours. Approximately 70% of votes favoured the grid deemed to be the best according to scientific analysis: all employees have been working according to these hours since the beginning of 1998.

Another example involves a company known as Wavin (NL), which manufactures synthetic tubes. Here, some of the problems were overcome by switching (on a voluntary basis) from a semi-continuous shift system in three teams (interrupting work during the weekend) to continuous hours in five teams. The five-team system, which also offers the advantage of improving productivity, enabled employees – particularly older ones – to reduce the overall number of hours worked and to benefit from a system of manual/afternoon/night rotation with sequences of two days only, which they withstood relatively well.

# Age and speed demands at work

# 3

The increase in time constraints for performing work has led to the current trend towards intensifying work. The simultaneous presence of 'industrial' and 'commercial' constraints seems to be the source of particular problems for ageing employees and has led to selection by age.

The current trend in the work sphere is characterised by an increase and diversification in time constraints for performing work (Gollac and Volkoff, 1996; Boisard et al., 2003). Strict standards and tight deadlines – originally the preserve of industry – have now spread to office workers and executives. The world of industry is increasingly marked by dependence on time for 'demand', whether for clients, the public, a company placing an order or another workshop in the same establishment. At the same time, traditional forms continue: assembly line working in industry, for example, or the immediate response to the client in business and services.

This trend may prove contradictory with the ageing of the working population. Many studies, as well as fieldwork (Teiger, 1989 ) based on large-scale inter-professional surveys (Molinié 1999), have long revealed phenomena of selection by age in relation to time pressure at work.

## Background

It is true that one of the consequences of changes in the body as it ages may be a gradual slowing down (Salthouse, 1985). This can be seen, for example, in tasks requiring skilled movements. The literature on ageing describes a slowing down of sensory-motor performance with age, due to an increase in reaction time (Welford, 1958; Davies et al., 1991). Ageing workers are not thought to need more time to perform movements. However, they are thought to need more time to learn and direct them. Nevertheless, this trend varies considerably from one individual to another, particularly with age. It also varies according to experience. However, where they have the option, ageing workers adopt strategies (particularly time strategies) aimed at limiting situations in which they could find themselves in difficulty. Above all, this involves reducing the effects of disturbances and avoiding being overwhelmed in the event of an emergency, i.e. seeking to make such emergencies as rare as possible and to cope in the event of such an emergency arising. These are often anticipatory strategies, aimed both at evaluating in advance the results of one's own actions and those of others, and at assessing their effectiveness and relevance. However, work should still be organised in such a way that working strategies can be adapted. Moreover, time constraints should not be too tight or rigid.

## Age and constraints on the pace of work

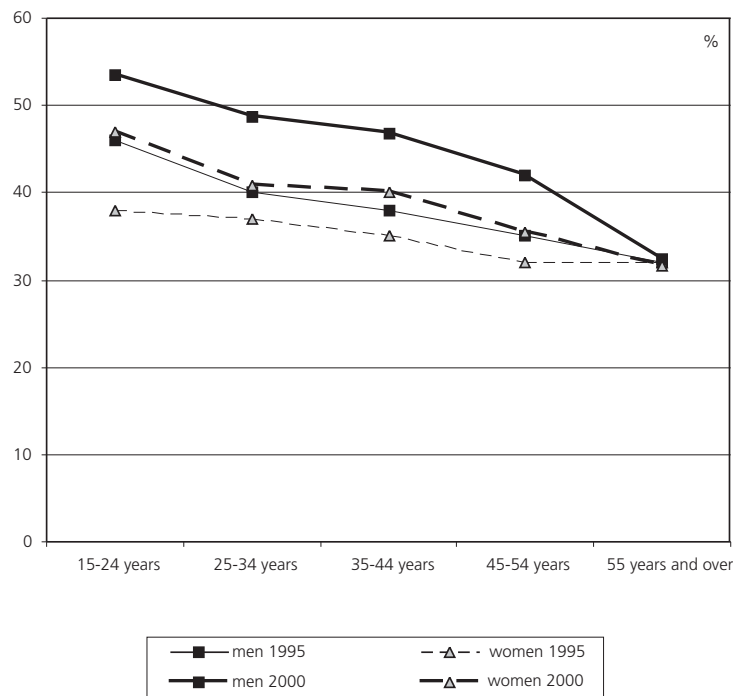
For that reason, particular attention will be paid to the nature of the constraints determining the pace of work. The European survey, like the French surveys on working conditions for example, indicates occurrences of these constraints, but not their intensity. As regards the activity, however, it could be said that the nature of these constraints can be a relevant index of their rigidity and predictability. From this point of view, analyses of the intensification of work (Gollac and Volkoff, 1996, Boisard et al., 2003 op. cit.), which stress the effects of the simultaneous presence of 'industrial' and 'commercial' constraints, seem to us to indicate areas of constraints that may be the source of particular problems for ageing workers. In a real work situation, other constraints, such as those linked to the work of colleagues or the permanent supervision of the hierarchy, may sometimes prove just as rigid. However, an understanding merely of the nature of the constraint does not enlighten us in this respect.

‘Industrial’ constraints involve a pace of work determined by either the ‘automatic rate of a machine or the automatic movement of a product’ or ‘quantified production standards’. ‘Commercial’ constraints refer to a given pace of work determined by ‘direct demand’ (clients, pupils, patients, etc.).

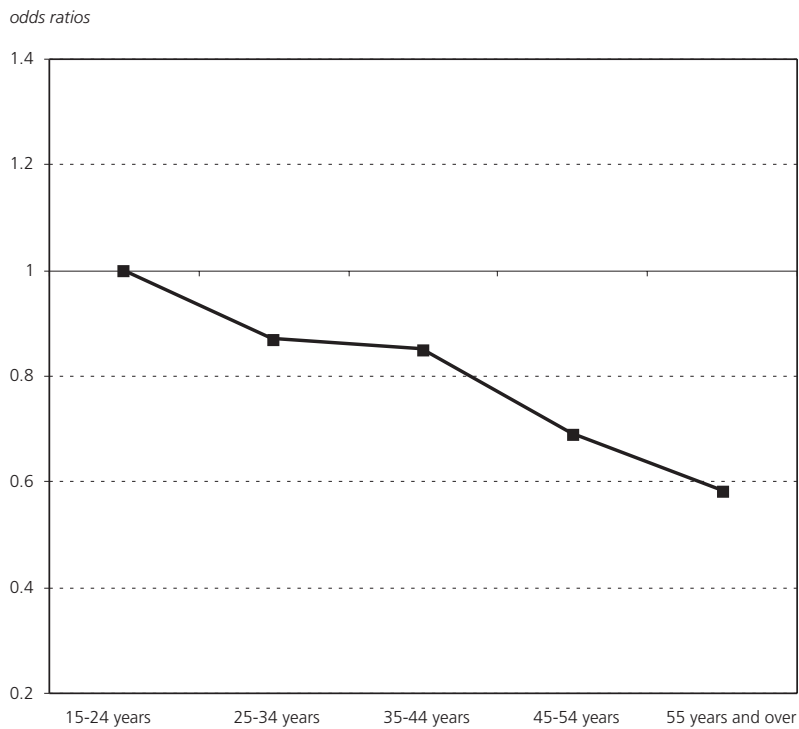
In 2000, constraints due to dependence on colleagues or demand were more frequent than in 1995 (from 37% to 43% for dependence on the work of colleagues and from 67% to 69% for dependence on direct demand), while those associated with the automatic rate of a machine or the direct supervision of the hierarchy were slightly lower (from 22% to 20% for the former and 34% to 32% for the latter). The question on production standards was worded differently in the two surveys, thus making comparison impossible.

Constraints associated with colleagues’ work (figure 40) or the direct supervision of the employer (figure 42) are mentioned in particular by young employees and become increasingly rare with age. These findings still apply ‘all things equal’ (odds ratios from logistical regressions) (figures 41 and 43). Dependence on direct demand, and slightly more frequent among the young in 2000 than in 1995 (for women), and was rarer among older employees (figure 44). ‘All things equal’, the probability of having a pace of work dependent on direct demand is particularly high in the intermediate ages (between 25 and 45) and then falls significantly, the pace of work of the older workers being slightly less affected by this direct demand (figure 45).

**Figure 40 Pace of work dependent on colleagues’ work in 1995 and 2000**

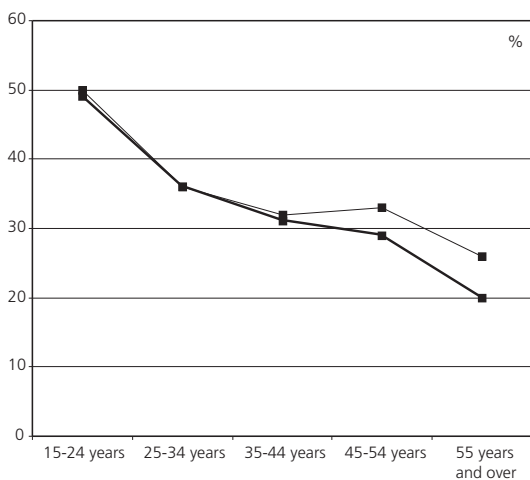


**Figure 41** Odds ratios on age. 'Explained' variable: pace of work dependent on colleagues' work (2000) ('explanatory' variables other than age: sex, country, sector, size of company, socio-professional category)



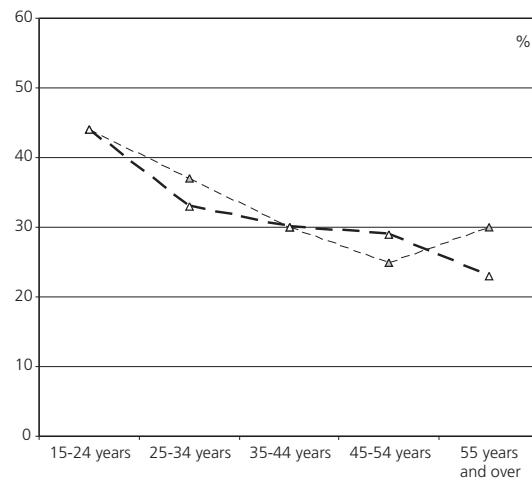
**Figure 42** Pace of work dependent on the direct supervision of the employer in 1995 and 2000

Men



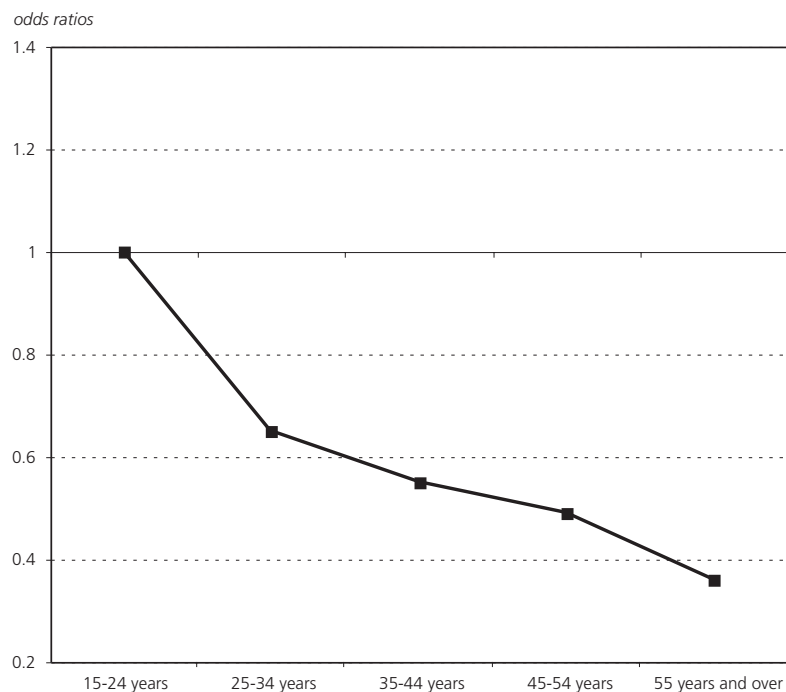
■ men 1995    ■ men 2000

Women

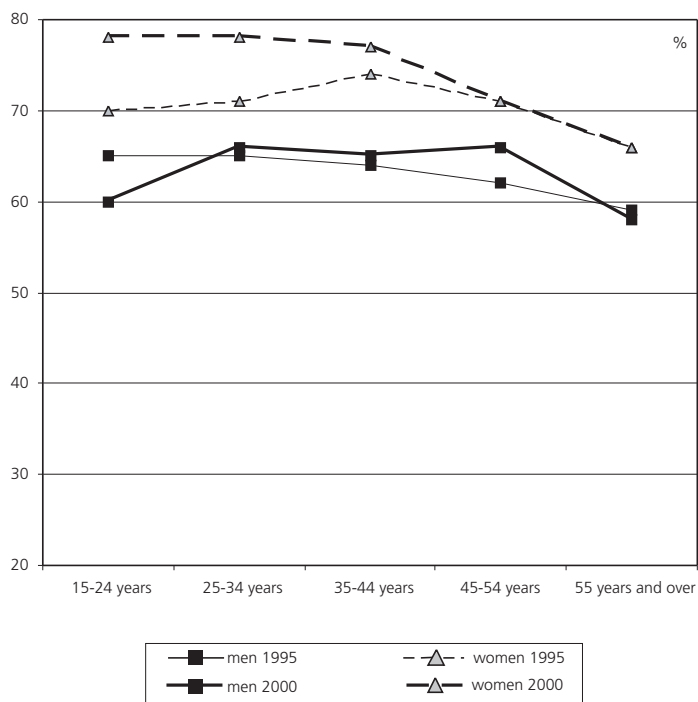


-△- women 1995    -△- women 2000

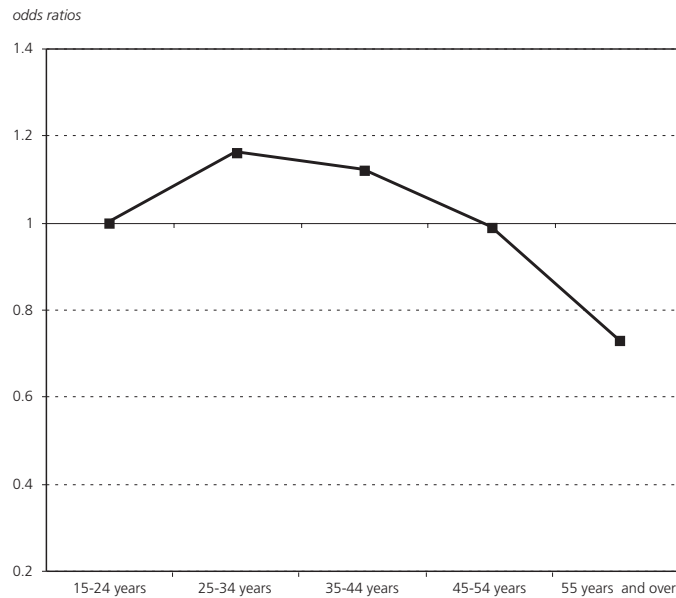
**Figure 43** Odds ratios on age. 'Explained' variable: pace of work dependent on the direct supervision of the employer (2000) ('explanatory' variables other than age: sex, country, sector, size of company, socio-professional category)



**Figure 44** Pace of work dependent on direct demand in 1995 and 2000

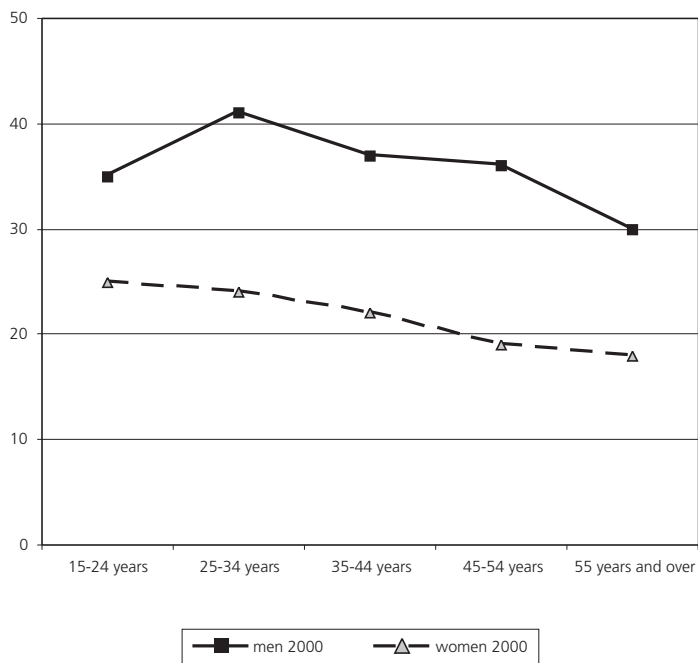


**Figure 45** Odds ratios on age. 'Explained variable': pace of work dependent on direct demand (2000) ('explanatory' variables other than age: sex, country, sector, size of company, socio-professional category)

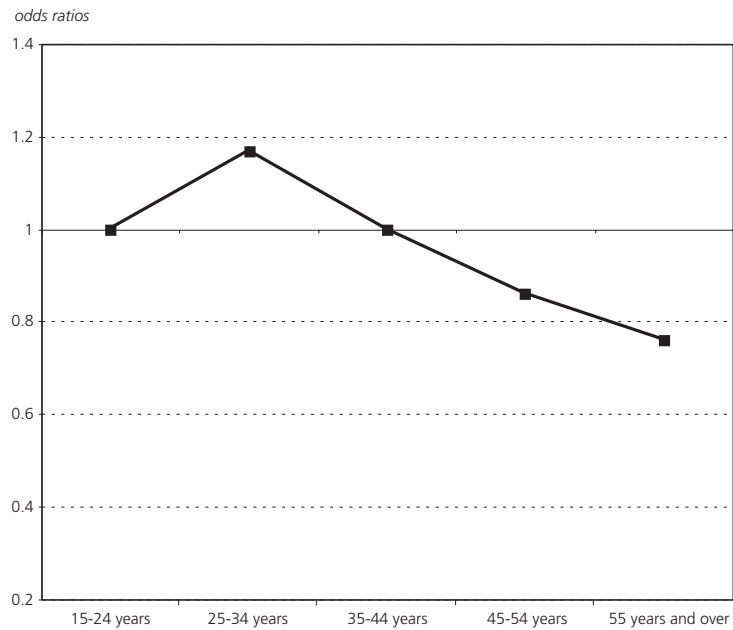


The frequency of 'industrial' constraints (figures 46-49) tends to fall as employees get older. This trend is particularly marked for 'automatic' constraints.

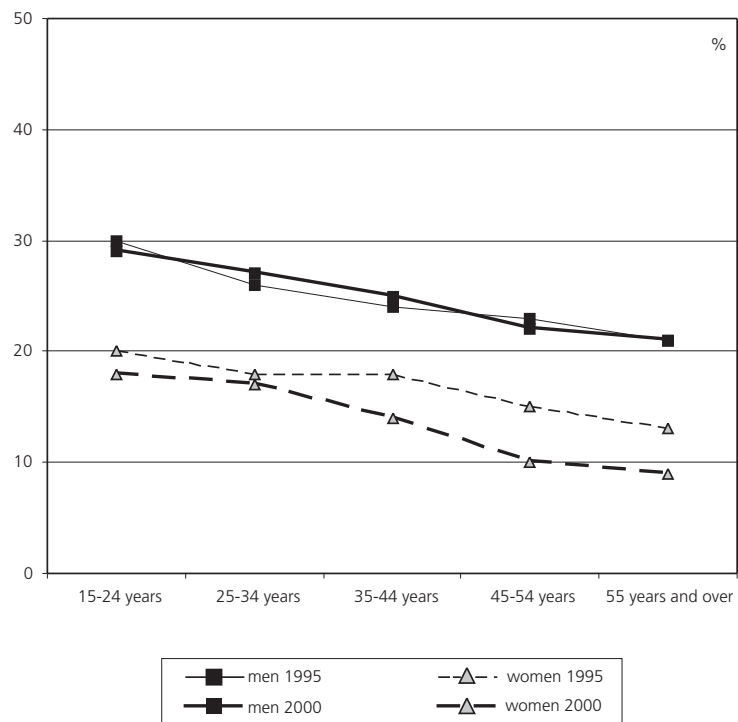
**Figure 46** Pace of work dependent on quantified production targets (2000)



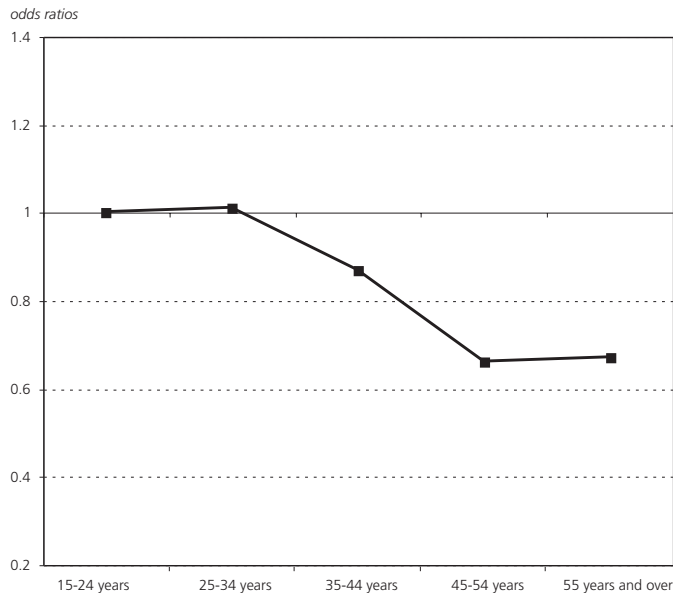
**Figure 47** Odds ratios on age. 'Explained' variable: pace of work dependent on quantified production targets ('explained' variables other than age: sex, country, sector, size of company, socio-professional category)



**Figure 48** Pace of work dependent on the automatic rate of a machine or automatically moving a product in 1995 and 2000



**Figure 49** Odds ratios on age. 'Explained' variable: pace of work dependent on the automatic rate of a machine (2000) ('explanatory' variables other than age: sex, country, sector, size of company, socio-professional category)



### The effects of the 'dual constraint'

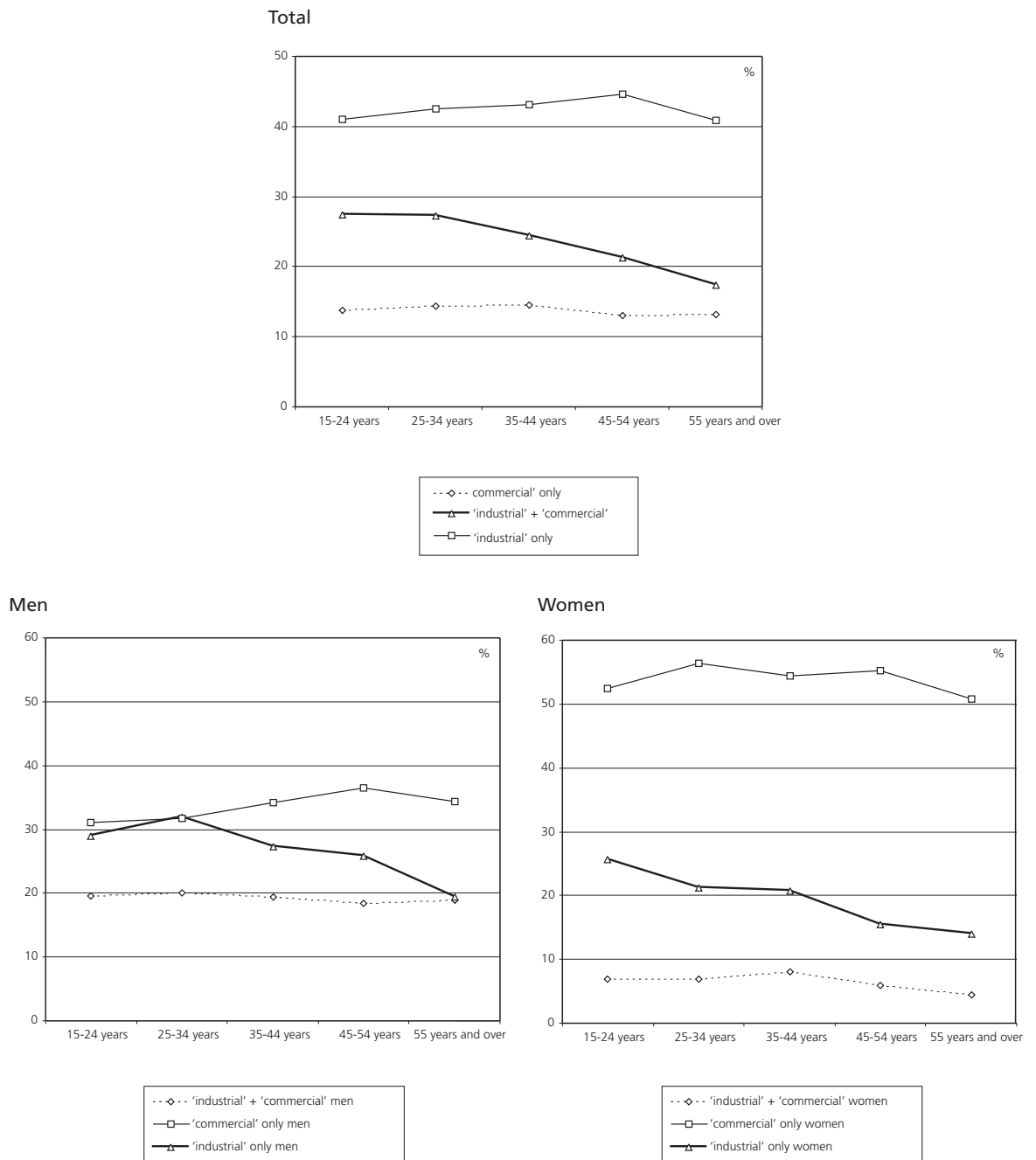
Because changes in the organisation models of the company lead to the development of this type of situation, we paid particular attention to the effect of 'industrial' and 'commercial' constraints, particularly to the effects of these two constraints occurring simultaneously, on the populations affected, i.e. any selection phenomena by age and effects, possibly differentiated according to age, on the work itself.

#### Selection by age?

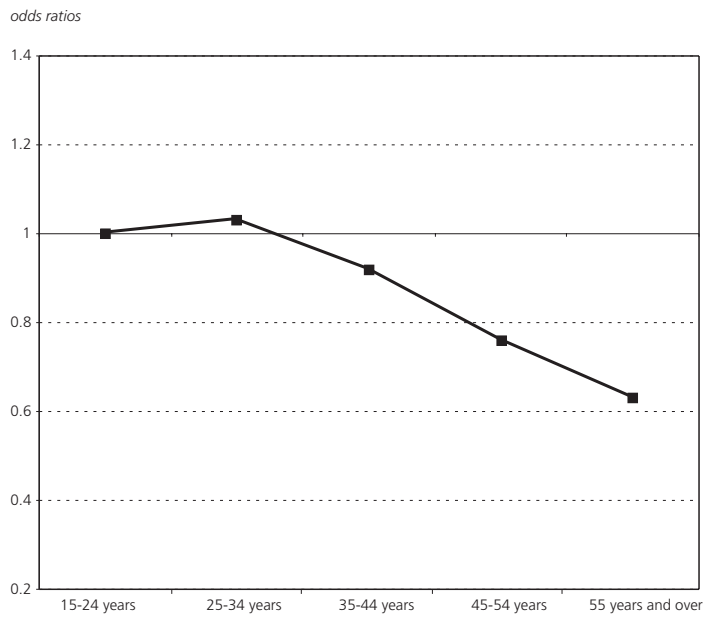
The first finding was that there is far more marked apparent selection by age when these two constraints occur at the same time, both overall and for both sexes. The proportion of workers affected falls sharply with age from when their pace of work is determined both by automatic constraints or quantified production targets and by demand-driven pressure; this development with age is far more marked than when an 'industrial' constraint alone is present (figures 50-53).



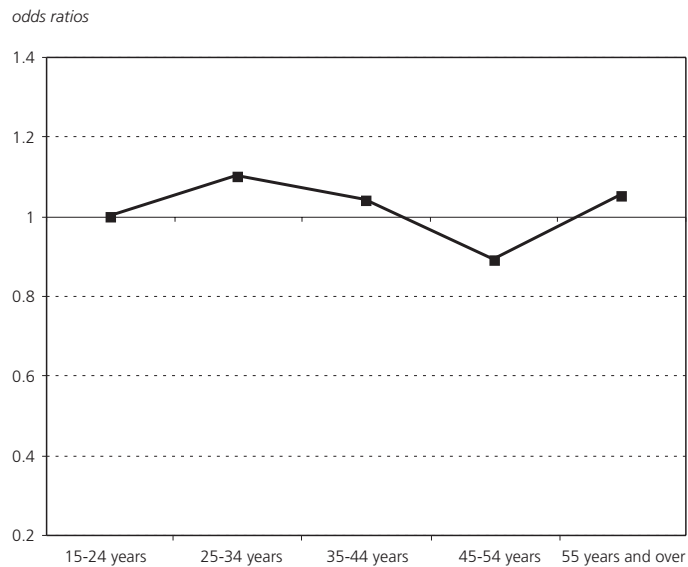
Figure 50 'Industrial' and 'commercial' constraints



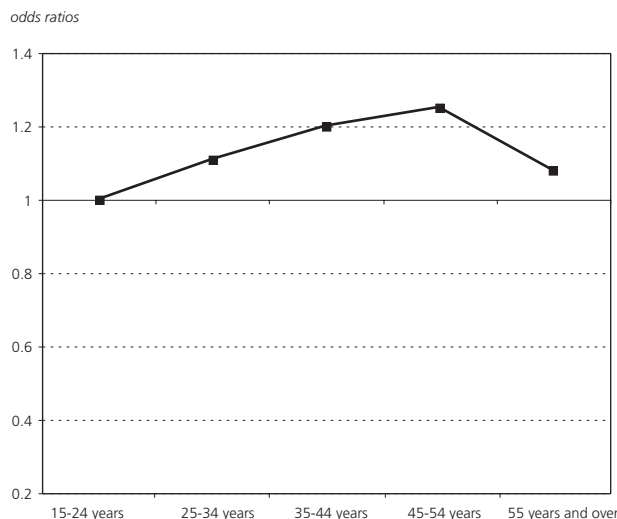
**Figure 51** Odds ratios on age. 'Explained' variable: simultaneous presence of 'industrial' and 'commercial' constraints ('explanatory' variables other than age: sex, country, sector, size of company, socio-professional category)



**Figure 52** Odds ratios on age. 'Explained' variable: 'industrial' constraint only ('explanatory' variables other than age: sex, country, sector, size of company, socio-professional category)



**Figure 53 Odds ratios on age. 'Explained' variable: 'commercial' constraint only ('explanatory' variables other than age: sex, country, sector, size of company, socio-professional category)**



If ergonomic studies are referred to, it seems the 'industrial' constraint is reflected in high pressure and low flexibility on the pace of work, but is generally fairly stable and predictable. Faced with this type of constraint, ageing employees could be seen trying to develop individual or collective effort and time-saving strategies (Gaudart, 1996), to avoid being 'overwhelmed' or having to face sudden overloads and at the same time try to preserve their health. The pressure of demand is probably often far more variable and more unpredictable. This time, the operator can seek a good compromise by using anticipatory and preparatory strategies, taking advantage of quiet times so as not to be caught out when the busy times arrive.<sup>21</sup> When the 'commercial' constraint is added to the 'industrial' constraint, the risk and unforeseen worries associated with demand could be thought to have an adverse impact on the savings and 'regularity' strategies which ageing workers seek to implement, creating potential sources of conflict between production targets and health preservation targets. Moreover, the 'industrial' constraint could be thought of as helping to reduce the quiet times and the preparation times required to cope with demand, possibly on an urgent basis, when it arrives.

Hence increased problems for ageing employees, who may either avoid (or be forced to leave) this type of situation or, if they cannot avoid it, run the risk of being 'overwhelmed', even more than when they face an 'industrial' or 'commercial' constraint alone. The reduction with age of the proportion of workers affected by this 'dual constraint' indicates the selective mechanisms to which this leads.

### **Analysing difficulties**

The aim of the authors was to set out to find indicators in the survey revealing difficulties for those who are under a dual constraint. Therefore a decision to examine whether this type of constraint on the pace of work 'impacted' on the fact of having to work 'in a rush' by analysing the variable

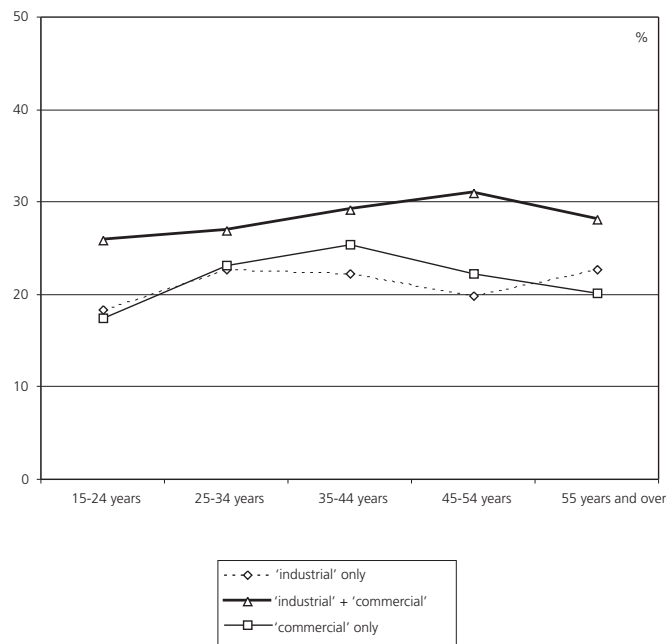
<sup>21</sup> The strategies of air traffic controllers, analysed by D. Paumès, are similar to this: Paumès, D., *L'expression du vieillissement au travail: présentation de deux études menées auprès de contrôleurs aériens* [The expression of ageing at work: a presentation of two studies carried out among air traffic controllers]. In Marquié, J. C., Paumès, D., Volkoff, S., *Le travail au fil de l'âge*, Éditions Octarès, Toulouse, 1995, 305-327 [English translation available: Marquié, J. C., Paumès, D., Volkoff, S., (eds.) Working with age, Taylor & Francis, 1998].

of ‘feeling you do not have enough time to do your job’ was made. Initially, a test was carried out to simply examine the proportion of people who had insufficient time, according to the type of pace of work constraints. Then, using logistical regression models, a test was carried out to see whether the ‘effects’ of the type of constraint of pace of work were the same according to age. A form of logistical modelling where the ‘not enough time to do your job’ appears in the ‘explained’ variable and the type of constraints on the pace of work in ‘explanatory’ variables, next to the structural variables usually used (country, large sector, size, broad socio-professional category, and sex) was used. Finally, this regression separately for two sub-populations defined by their age, i.e. below 45, and 45 and over was carried out.

The findings below confirm a different effect according to age of the simultaneous presence of industrial and commercial constraints on the feeling of ‘not having enough time to do your job’:

- The proportion of workers who feel they ‘do not have enough time to do their job’ is higher and increases with age up to the age of 55 among those who are under the industrial and commercial ‘dual constraint’; it is lower and remains relatively stable with age among those who are under the ‘industrial’ constraint only and falls from the age of 45 onwards for those who are under the ‘commercial’ constraint only (figure 54).
- The odds ratios on the ‘effects’ of the simultaneous presence of industrial and commercial constraints on notions of ‘not having enough time to do your job’ are significantly positive and clearly higher in the population of workers over 45 years of age than among younger workers. On the other hand, it can be seen that they are higher among those under 45 for constraints associated either with demand only, or with the pace of work of one’s colleagues or even with direct supervision by the employer (table 1).

**Figure 54 Do not have enough time to do their job, according to the type of constraint on the pace of work**



**Table 1 Odds ratios from logistical regressions**

‘Explained’ variable: not enough time to do your job

‘Explained’ variable	Not enough time to do your job Odds ratios
<b>‘Explanatory’ variables: constraints on the pace of work:</b>	
<b>Those aged 45 and over</b>	
‘Industrial’ constraint only	NS
‘Commercial’ constraint only	1.18
‘Industrial’ and ‘commercial’ constraint	1.90
Colleagues’ work	1.13
Direct supervision of the employer	1.22
<b>Those aged below 45</b>	
‘Industrial’ constraint only	NS
‘Commercial’ constraint only	1.25
‘Industrial’ and ‘commercial’ constraint	1.38
Colleagues’ work	1.47
Direct supervision of the employer	1.43

## Measures in the area of time constraints

### Measures aimed at older employees

To illustrate how companies can tackle the problems of older workers with heavy time pressure and rigid constraints involving the pace of work, we can take the case of Volvo at Torslanda (S). In this factory, a time analysis tool (MTM) is used. In agreement with the company and the local union, the production rate was set at 111%, which means each worker is supposed to do his job at a rate 11%, higher than the normal rate for the human body. It should be pointed out that this ‘normal rate’ usually applies to a male assembly line worker aged between 20 and 30. As the workforce was ageing, changes were made in the workplace and new colleagues hired. Absenteeism due to illness had increased. During the readjustment period preceding their return to work, some workers described their problems as insurmountable. Three solutions were devised to solve these problems, aimed at employees with more than 20 years’ service (having provided ‘good and loyal service’) and those requiring a medical certificate: a preparation room, a ‘resources’ team for assembling cars, and a ‘seniors’ team.

The idea of a preparation room was linked to efforts by the assembly room to develop preparation tasks and raise the status of preparation assembly line workers. The work started with the construction of this special room near the assembly line. The tasks were carried out in a sitting position and, more importantly, assembly line workers had more latitude for planning and organising their work than on the assembly line. The work consisted mainly of placing equipment orders, carrying out pre-assembly quality checks and driving fork-lift trucks. The demands of the job and the maximum constraints were just as great as on the assembly line. Using a signalling system, assembly-line workers indicate when they need new materials. The preparation team then has 10 minutes to deliver them.

Once it became clear that the small preparation room could not hold all workers deemed to have provided ‘good and loyal service’, the idea of a ‘resources’ team was launched. Its task was to provide the surplus of older staff with a relevant job in the form of services. In the wake of the initiatives launched by the factory managers in bringing about effective structural changes,

favouring basic processes and eliminating most of the tasks which were 'not invoiced' to the end consumer (the buyer of the vehicle), some categories of factory staff became superfluous. On the other hand, the 'resources' team took on tasks formerly subcontracted to outside companies: cleaning, painting, office fittings, palette handling; basically all the tasks that are not subject to the constraints of the rate of the assembly line.

The 'seniors' team consists of 10-15 people, with the same rights and obligations as any other team, but without the same productivity constraints. It was estimated that assembly-line workers, for one reason or another (including ageing), should be able to perform approximately 75% of normal production. It was also estimated that individual performance was not of vital importance, and that in any event it was less important than the homogeneity of the team. An autonomous assembly team (responsible for assembly, quality and profitability) was formed in each 'seniors zone', which should fulfil the same objectives as any other team, except that its maximum overall productivity is approximately 75% of the normal rate. Today, after several years in operation, these teams are so efficient that their production rate is close to the normal rate.

### **Non-targeted measures**

The concerns governing these initiatives at Volvo were also the basis for measures taken by other companies. However, these measures are not all aimed at ageing employees. For example at Renault (F), the 'zero stock' target (without wishing to undermine it) is sometimes implemented less rigidly, leaving scope for readjustment margins. These margins are explicitly included in the definition of the spaces allocated to each operator along the line. These spaces are then calculated taking account of the maximum working time required for certain models of vehicle, including fluctuations in production. At Citroën (F), as part of the 'Harmonie' project (adapting the work to man), buffer stocks called 'small lungs of spare parts' have been set up in an iron-working workshop employing many former workers.

More collective forms of time pressure adjustment may be promoted. Aérospatiale (F) is careful to allocate tasks more or less formally among assembly teams, on the initiative of workers themselves, with the aim in particular of sparing older workers the most stressful emergency situations (as well as long periods in a difficult posture). At G (a factory making rubber clothing, mentioned above), solutions have been sought by rotating tasks. Until recently, this rotation was quite difficult, owing to a lack of training, itself due to the considerable time pressure and lack of availability of the instructor, who was fully occupied in dealing with numerous technical accidents. Efforts to reduce accidents and the installation of the conveyor belt<sup>22</sup> released some time margins, making it possible to prepare and then introduce a rotation system every two hours. For its part, Volkswagen (D) believes in integrating older employees in semi-autonomous teams each time this type of organisation is implemented, while at the same time avoiding teams of older workers only. Finally, Continental (D), also believes the autonomous team – a formula that has been the subject of a series of three-year trials – is a promising prospect for older employees, particularly given the increase in the volume produced per unit of time. However, Continental has found that the team itself was not free from ageing. It was therefore a question of ensuring, by means of appropriate evaluation methods, that the collective effort to improve production does not lead to a situation where ageing or deficient employees find themselves under more pressure than under traditional hierarchical structures.

---

<sup>22</sup> See chapter 1 on physical exertion.



# Age and access to new work situations

# 4

The challenges around changes at work are very relevant for ageing workers, especially given the fact that demographic aspects constitute a strong incentive to stay at work longer. Training opportunities and the use of information technology are increasingly frequent at all ages. However, this development has not made disparities between age-groups (or generations) disappear. This segregation of older workers occurs in other areas of change in the workplace, e.g. multitasking.

The search for flexibility in corporate structures and the growing frequency of technical or organisational changes have led to an increase in mobility, the need for multitasking and, more generally, the greater frequency of learning and changes in work.

The problems encountered by ageing staff in these situations constitute one of their negative characteristics in the eyes of many employers (Walker and Taylor, 1992; Le Minez, 1995). These problems are echoed (perhaps exacerbating them) in the reticence of some workers themselves. Therefore, in a study of 620 people assigned tasks that may require the use of office automation (Marquié, Thon and Baracat, 1994), 62% of respondents associated advancing age with greater difficulty adapting to information technology. Knowledge of functional developments with age are not enough to explain the problems faced by older workers when the nature of their job actually changes or in learning situations. Literature on the psychology of work (Paumès and Marquié, 1995) provides some explanation for this reticence, suggesting fears for their jobs, worries about damaging equipment, apprehension when faced with learning situations and competing with younger employees. Furthermore, knowledge of ergonomics and the psychology of work shows the advantages older employees could derive from familiarising themselves with the task and consistency between its various components, in order to avoid excessive stress on basic mental processes. All these studies emphasise the characteristics of new technology, the conditions of the changes or training and the way in which these changes and learning situations are prepared and conducted.

However, this reticence has concrete effects. Marked disparities between ages can be seen in employees' access to training or new technologies, mobility and even multitasking.

## **Use of information technology**

The rapid spread of information technology affects all ages. It does not, however, make the disparities between age groups or generations disappear. In 2000, as in 1995, the proportion of respondents never using information technology at work increased sharply from the age of 45, even with 'all things equal' (i.e. sex, social category, sector or equivalent country). However, it was at a lower level in 2000 than several years before (figures 55 and 56).

## **Access to training**

Fairly similar changes can be seen in the area of training: at all ages, it was less common in 2000 than in 1995 not to have had training over the past 12 months, though the disparities between age-groups persist (figures 57 and 58).



Figure 55 Never work on a computer

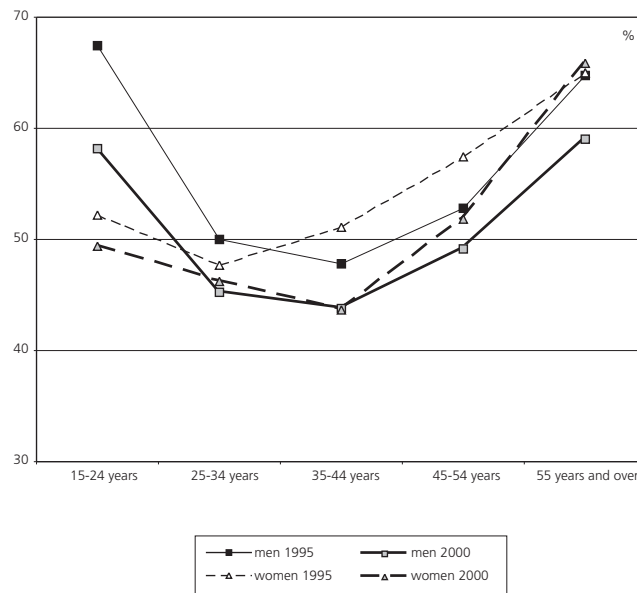
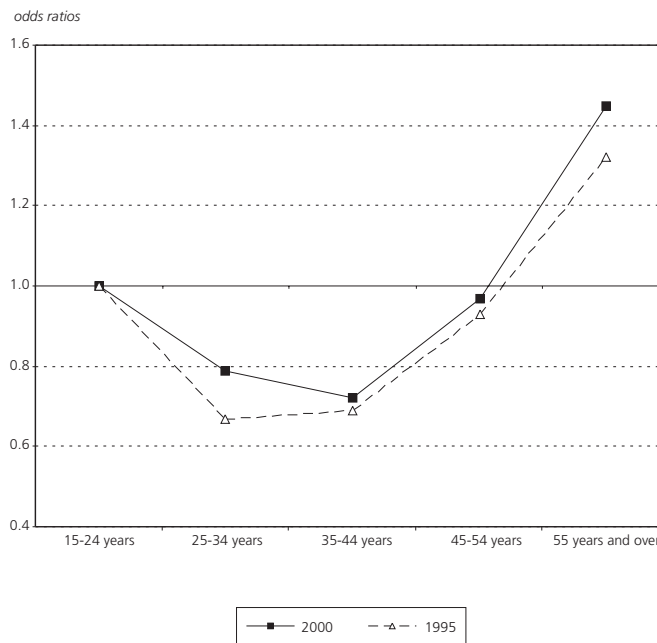


Figure 56 Odds ratios on age. 'Explained variable': never work on a computer ('explanatory' variables other than age: sex, country, sector, size of company, socio-professional category)

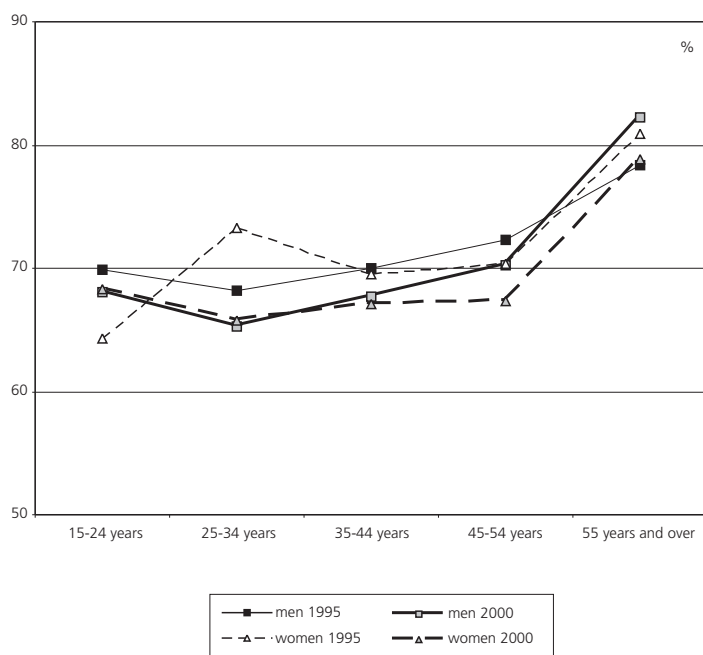


### Learning on the job, changing tasks

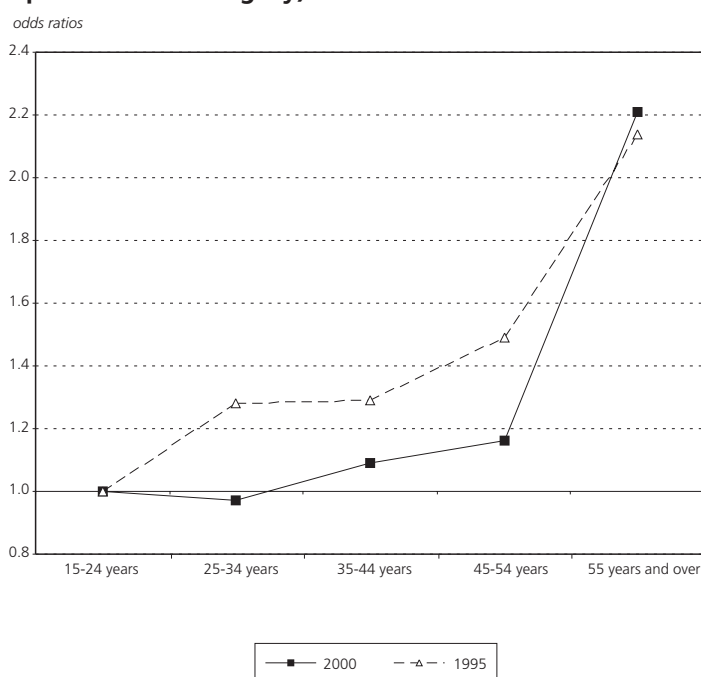
Nevertheless, the challenges around changes at work are most relevant for ageing workers, especially given the fact that, in most European countries, demographic aspects constitute a strong incentive to stay at work longer. Having experienced, or experiencing, a certain variety in tasks may have a positive impact on ageing workers. This variety may help reduce deterioration in health

associated with repetition at work. It can also help develop skills and keep the idea of a professional project alive. However, ageing workers may also fear new tasks are more difficult or harder than what they are familiar with, particularly if the time/work-saving strategies they have devised from experience cannot be transferred with any certainty (Gaudart, 2000). In reality, their stability and lack of experience of multitasking may actually be a sign of expertise (Gaudert and Pondaven, 1998).

**Figure 57 No training received over the past 12 months**

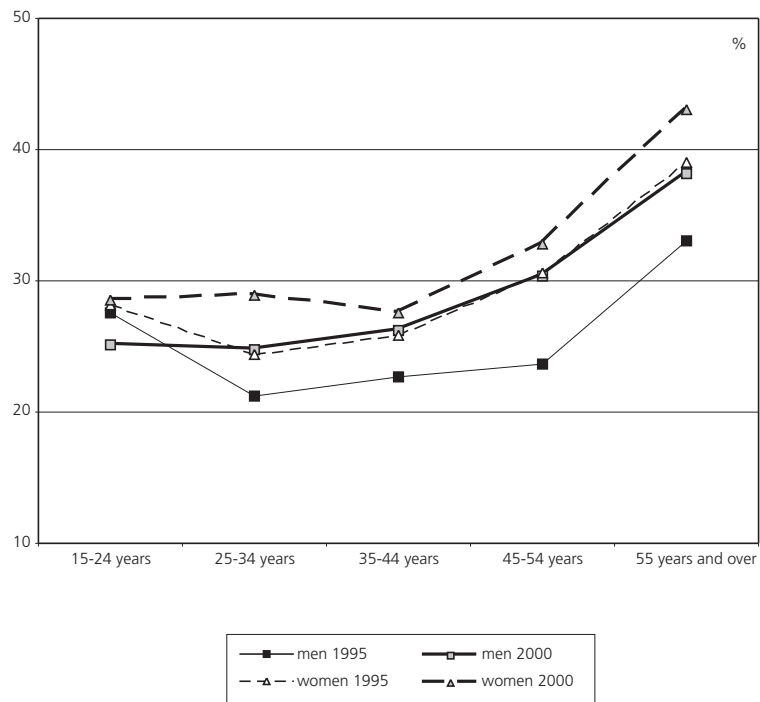


**Figure 58 Odds ratios on age. 'Explained' variable: no training over the past 12 months ('explanatory' variables other than age: sex, country, sector, size of company, socio-professional category)**



The findings of the European surveys also underline the fact that, the older they get, the more workers feel their job does not enable them 'to learn new things'. Multitasking ('the rotation of tasks between yourself and your colleagues') becomes significantly scarcer after the age of 45 (figures 59-62).

**Figure 59 Work does not enable employees to learn new things**



**Figure 60 Odds ratios on age. 'Explained' variable: work does not enable employees to learn new things ('explanatory' variables other than age: sex, country, sector, size of company, socio-professional category)**

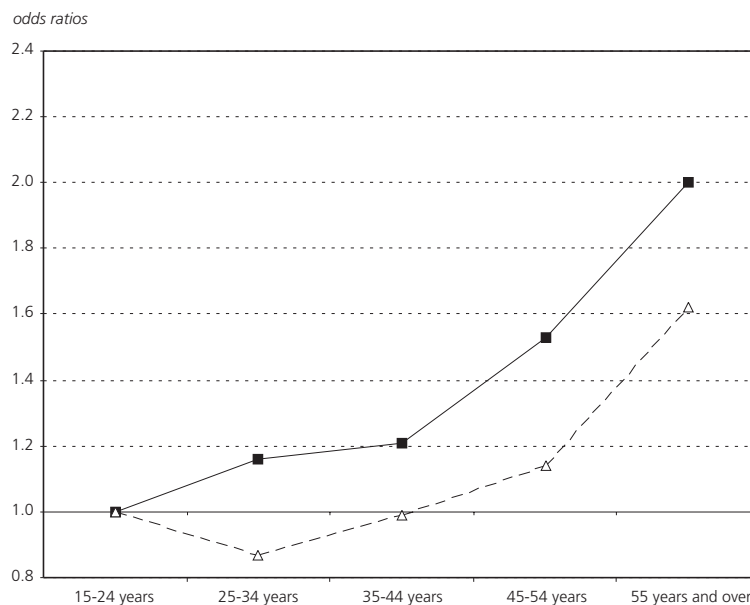


Figure 61 No rotation of tasks

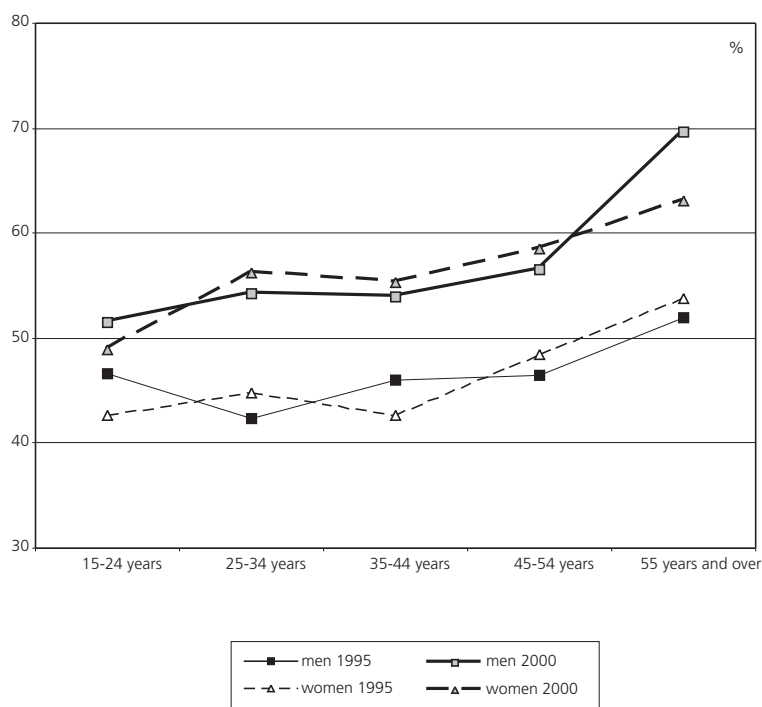
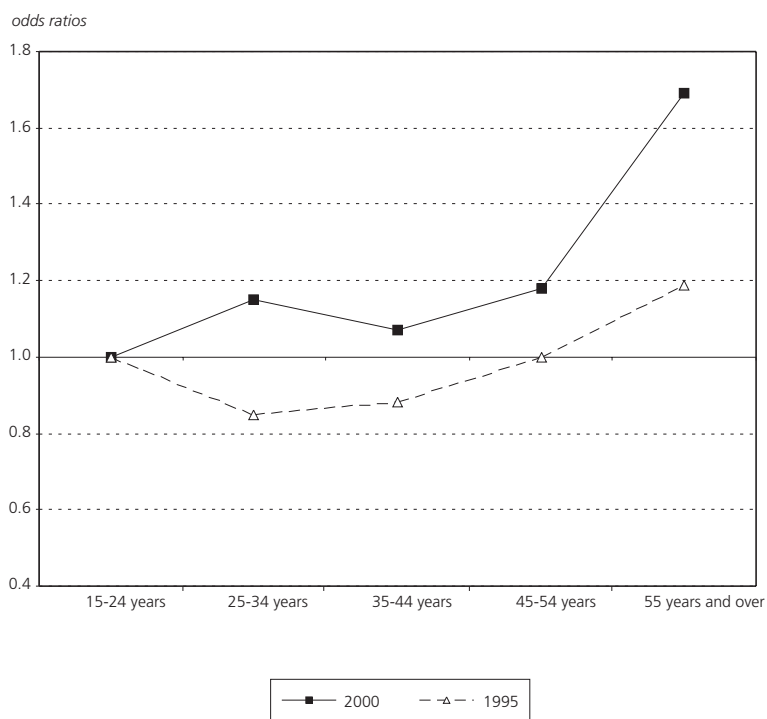


Figure 62 Odds ratios on age. 'Explained' variable: no rotation of tasks ('explanatory' variables other than age: sex, country, sector, size of company, socio-professional category)



However, it seems that the opportunity to ‘make a success of a change at work’ even in the final years of a person’s working life depends on many factors which companies can act upon. For example, a clear statement of the reasons for the change, training arrangements that take account of the characteristics of experienced workers (e.g. the diversity of their previous experience, links between their new and old knowledge, etc.), a timetable enabling them to spread and consolidate their skills acquired with particular attention to how the beginning of training or starting in new posts is organised, as well as more frequent recourse to life-long training. It is an important stake in the current context of increasing the proportion of those aged 50 and over in companies.

### **Measures in the area of training and changes in work**

As regards links between ageing and the ability to change at work and undergo training, the companies surveyed often considered it necessary to conduct a discussion and awareness campaign, to develop the views of the parties involved. The aim here was gradually to convince the hierarchy and ageing employees themselves that their negative opinions of their abilities to adapt were not necessarily justified.

#### **Changing people’s views**

The social security services of the district of Vestfold (N), for example, give priority to awareness campaigns, organising seminars and discussions in the workplace. These include a two-day seminar for operational directors, another also lasting two days, intended for workers between 45 and 57 years of age and finally, a third for employees aged 58 and over. Various meetings take place in the local offices between management and employees to discuss the seminars and how to implement the relevant measures.

One of these measures involves an interview with senior management. Here, each employee has a personal interview with management in order to devise a career plan. An interview of this type, known as a ‘career interview’, which follows seminars of the same type, has also been introduced into a state mortgage lending institution (N). The interview should last approximately two hours and brings together the employee and his immediate superior. One representative from human resources also attends, if this is the employee’s wish. A career interview is held every five years, on top of the appraisal interview held each year between each employee, whatever his age, and his immediate superior. Managerial staff are given information beforehand on how to conduct these interviews, which involve a commitment. The superior and employee both have a guide dealing with certain subjects and questions and including an agreement form to be completed and signed.

#### **Rethinking training**

Similar concerns and measures are found at Usinor (F). When the early retirement age in the French steel industry rose beyond the age of 50, in a context of continuing automation, diversification of production and increasingly rigid quality targets, the company had to rethink its training strategies in favour of older workers. Two principles guided this rethink: the development of individual interviews between staff and their immediate superior in order to best evaluate their training requirements and make the right choices of direction, taking account of their career history (in the context of the ‘A.CAP 2000’ agreement on the conduct of professional activity), and the weight given to integrated training at the workstation itself, which should take account of the experience acquired. These principles are accompanied by a series of recommendations: alternating theory and practice, ‘targeting’ training to the profession, avoiding heterogeneity of

levels in the groups of employees trained, keeping a constant annual flow of training rather than 'all-in-one-go' measures, and then placing the employee who has undergone training in a situation where he can use what he has learnt from the course as soon as possible.

Many other companies have given specific thought to this area. In each case, the problem of evaluation and recognition and even an enhancement of the skills acquired arises. Company F (insulators) chose to acquire ISO certification to formalise working procedures derived from considerable know-how, but so far unwritten (some of the workforce being illiterate). The case of 'composite centres of excellence' at Aérospatiale (F) should also be noted. Here, the opening of a new composite manufacturing workshop led to specific training, in the classroom and on the job, using innovative methods based on taking account of knowledge acquired at an earlier stage and highlighted by analysing the work of staff.

### **Recognising and enhancing the skills of older employees**

Recognising and enhancing skills can lead to concerns about using them more effectively, if necessary by creating new jobs within the company, or intensifying existing jobs. At Volkswagen (D), a number of quality-assurance and work-coordination tasks have been created in this vein. At Chantiers de l'Atlantique (F), middle-aged or older workers take on an adoptive-parent type role for passing on knowledge to young recruits. Taken to extremes, this may involve developing a genuinely specific project study for an inter-company 'training for trainers', based on a particular technique or earlier skills. This is the *raison d'être* of Keller, based in Wuppertal (D), which operates in industries using numerical control machines, training former tool-makers to become monitors of numerical control machines.

Other measures, which may complement the previous ones, are based on linking skills between employees of different ages. This is the spirit of the 'Creativity' project designed by the Sydkraft energy production and distribution group (S). Ten adjusters (five younger and five older employees) take part in this pilot project. The working method is based on several elements: classical knowledge of what is acquired by experience, exchange of ideas and tolerance of errors, time for thought and analysis of the experience acquired, the possibility of mutual advice, seeking above all a climate of confidence, encouragement and mutual support (negative criticisms and 'Mr-Know-It-All' are banned), which promotes self-confidence and involvement both in the projects and in everyday professional situations. The mix of employees of different ages has been considered most enriching.

### **Looking into mobility**

Still with a view to breaking with forms of 'cognitive sclerosis' due to prolonged professional immobility and with very few exchanges of experience, Siemens (N) suggested to its employees that they take part in a programme called 'Constructive Management Mobility'. The first of these programmes was run in 1989 and has been held every year since. The average age of participants was 56 in 1989 but has fallen gradually, to 45 in 1998. The programme consists of three two-day sessions spread over eight months, and combines plenary meetings, group work and individual work. A four-hour interview takes place with a work psychologist between the first and second session, which relates to the centres of interest and the possibilities and resources each has to offer. An interview with the personnel director is held between the second and third session, concentrating on other employment possibilities within the company. Throughout the process,

employees are asked to think about their professional and personal situation, in order to draw up an individual action plan for development and change.

Wavin (NL) also pays a great deal of attention to mobility opportunities in mid-career. The company has reached several agreements with unions on the subjects of education and training. The future development of the company and employees is discussed in an annual interview between employees and management. These interviews are designed to examine the options for horizontal movement within the company, a change in career, flexible retirement age and internal and external mobility. Furthermore, employees aged 45 and over have the option of taking a lower post in the hierarchy without suffering financial consequences. There are two preconditions: first of all, the decision to accept a lower position has to be voluntary (a union demand) and acceptable to the employer as well as the employee. Secondly, the reduction in gross salary (for employees under the age of 45) is set at an upper limit of 30% of the employee's previous salary.

Other organisations are seeking to develop periods of external mobility. One example is the Thorax Centre of the University Hospital of Uppsala (S). Here, improving education and training by breaking down barriers between units was a cause for concern for many. Doctors were of the opinion that it was impossible on account of the limits of each speciality. Medical staff were too specialised. Nurses and care assistants showed a certain interest, although most of them felt they had found their place within the care system and were working to maximum efficiency. Some feared that being employed in different departments would cause stress and make them feel they belonged nowhere. However, where such an initiative was actually implemented, as in the social security service of the district of Vestfold (N), its results were deemed satisfactory. The new system enables everyone to work elsewhere, within or outside the social security services (external work is particularly encouraged), for a period of two weeks to three months. Older employees who were 'guest workers' for some time say they learnt a great deal, were able to help the host company and found the experience stimulating and inspiring.

# Perceptions about health and work and about working at the age of 60

In this section, the respondents' general understanding of the relationship between their job and health, their notion of their ability (or will) to do the same job at the age of 60 and the way in which both aspects develop with age and some of the characteristics of their current job are examined. Notions of health and work at the age of 60 are compared, thus limiting this exploratory survey to people under the age of 60 (2000 survey).<sup>23</sup>

## Health: the effect of the context in which questions were asked

The European survey does not aim to describe a state of health, which could be attempted to compare (statistically) with the constraints or demands of work. Its explicit aim is to establish workers' notion of the relationship between their state of health and their job:

- Q34: Do you think your job poses a risk to your health or safety?  
Yes/No/Don't know
- Q35: Does your job affect your state of health? If so, how?  
No, it does not affect my state of health/Yes, hearing problems, etc.

The answer 'yes' is affected by the fact that the respondent attributes certain adverse effects on his health to his job and possibly recognises and identifies a work-related cause for the onset of specific disorders.

The wording of these questions raises several points:

- It refers to a relatively restrictive view of health, seen as an absence of disorders or diseases. The fact that the item 'My job improves my health'<sup>24</sup> appears in the final position does not mitigate the negative nature of the links sought between work and health. The answer 'No, my job does not affect my health' was interpreted very broadly as the respondent's judgement that his job does not affect his health in the sense that it is not, in his view, the 'cause' of illnesses, disorders or deficiencies. It seems unlikely that the European survey makes it possible to perceive work as an 'operator' of health. It is a very narrow interpretation of health. An example of a wider view of health was proposed by P. Davezies (1998), with three components: 'to be in good shape, [...]; to feel free, which implies the feeling of being in control as much as the knowledge and acceptance of one's own limitations; in other words, to understand the chain of events as a unit of which sense can be made and which constitutes a story'.
- Identifying a 'health problem', establishing a link between one's state of health and one's job, attributing a work-related cause to specific disorders, are complex procedures about which there is very little knowledge. Studies on the psychodynamics of work have emphasised that pain and fear at work may cause individual and collective (unconscious) defence strategies. In this type of situation, pain and the associated problems are less likely to be declared in a statistical

<sup>23</sup> This study is limited to an analysis of the findings for 2000, either because new questions are involved, because the wording changed slightly or because the context of the questions has changed a great deal.

<sup>24</sup> This item is mentioned by 1% of respondents and does not constitute a net variation with age.



survey. Even when 'health problems' are identified, the likelihood of establishing a link between this (or these) problem(s) and one's job depends greatly on the individual or collective nature of the symptoms, how far scientific knowledge has advanced, social debate on the subject, and so on. There is even less (or even no) knowledge of how these factors vary according to sex and age (two essential dimensions to our study), or according to country or profession or how they develop over time. As stressed in the introduction, it is a subject worthy of more in-depth examination, particularly from the viewpoint of international comparisons.

- As pointed out in the introduction to the report, the dearth of information on employment history is a major limitation when trying to establish a meaningful relationship between age, work and health.

The wording of the questions also makes it difficult to compare the findings of the European surveys with those of surveys seeking to describe respondents' state of health, or to establish links between state of health and working conditions. This difference in the context of questions explains why the findings of the European survey do not contain some of the 'classic' findings of health surveys. These include a greater propensity among women than men to mention health problems and a tendency for many health problems to increase with age.

To illustrate the impact of the type of questioning, as well as the associated problems of comparison with other sources, a number of findings from the French survey ESTEV (Survey on health, work and ageing), carried out in 1990 and 1995 by company doctors on 21,000 people, with those of the European survey of 2000 were compared. A few examples are quoted here:

- In ESTEV, the proportion of respondents suffering from pain in the neck and shoulders<sup>25</sup> varies between 17% at the age of 37 (in 1990) and 33% at the age of 57 (in 1995) in men; and between 25% at the age of 37 and 43% at the age of 57 in women (Monfort et al., 2001). In the European 2000 survey, 25% of men aged 35-44 and 24% of women in the same age group mention pain in the neck or shoulders which they believe is linked to their work. Moreover, this proportion does not increase with age.
- In ESTEV, the proportion of respondents suffering from sleeping disorders<sup>26</sup> varies between 14% at the age of 37 (in 1990) and 26% at the age of 57 (in 1995) for men and between 20% at the age of 37 and 34% at the age of 57 for women (Ribet and Derriennic, 2001). In the European survey, 10% of men aged 35-44, 12% aged 45-54 and 6% aged 55 and over, and 7% of women aged 35-44, 9% aged 45-54 and 10% aged 55 and over mention 'sleeping disorders' which they believe are linked to their work.

These findings suggest that sex and age play a key role in how workers establish – or deny – links between their job and health. It appears that women, who mention health problems more frequently than men, establish a link with their job less frequently than men; and that with age, work is cited less frequently as an explanation for health problems, perhaps because age by itself

---

<sup>25</sup> Subjects who said they had suffered for at least six months at one of these places during their medical examination.

<sup>26</sup> Subjects who mentioned at least two items of the five mentioned in the Nottingham Health Profile health test, at least one of which is a 'serious' item ('serious' items: 'I take drugs to sleep'; 'I stay awake most of the night'; other items: 'I wake up very early in the morning and have trouble getting back to sleep'; 'It takes a long time for me to get to sleep'; 'I don't sleep well at night').

plays a recognised role in health. In view of the subject of this survey (the relationship between age, work and health) and the lack of real knowledge about the relationship between age and the context of the questions in the European surveys, very restrictive approaches to answers regarding health for this analysis were deliberately chosen.

- The first approach, outlined mainly in chapter 1, on the physical demands of work, relates to particular health problems thought to be ‘work-related’: hearing problems, osteoarticular problems, digestive problems, and so on. It was difficult to establish any meaningful comparison between any greater or lower frequency of these problems according to exposure or non-exposure to any single constraint at work (e.g. posture, effort, irregular hours, etc.). The mere fact of being exposed (as opposed to ‘not exposed’) to a constraint is both a ‘risk factor’ for health and a ‘trigger’ of health problems, while scientific knowledge or social debate contributes to recognition of a link between a particular form of exposure and a particular type of health risk. For that reason, any comparison of health problems between ‘exposed’ and ‘not exposed’ seemed irrelevant, or at least quite different from the usual epidemiological approaches.

The analysis was confined to the frequency of health problems to the population ‘exposed’ to a particular constraint, from the point of view of ‘accumulations’: to be exposed to a constraint at work and at the same time suffer from a health problem that could make the job particularly difficult. An evaluation of the size of the population affected by this ‘accumulation’ and its development with age are also important elements in the debate on prevention policies and options for ‘shielding’ employees, particularly during the second half of their working lives.

- The second approach, presented in this chapter, concerns the overall understanding among individuals that their job does, or does not, affect their health. It is based on answers to the item ‘No, my job does not affect my health’. An attempt was made to clarify how this view varies according to the age and work constraints currently experienced by respondents. As already mentioned on several occasions, the scarcity of information on employment (and health) history limits the possibility to establish an overview of the link between work and health. However, this variable could be an interesting indicator of an overall understanding of the links between work and health, broader than could be established ‘in a groove’ from the absence of any mention of health problems.

*“To be able to, or want to, do the same job at the age of 60?”*

The question on this subject was introduced for the first time in the European survey of 2000, and to date there are no comparable findings<sup>27</sup>. For some years, many studies have been conducted on professional and extra-professional reasons for deciding to take early retirement (Tillsey, et al., 2000). They identify both factors leading to early retirement and factors which, on the other hand, help to keep people in employment. More frequently, however, work-related aspects are rarely taken into account. Furthermore, the ‘explained’ variable of most surveys is the desired age of retirement and the time from the actual (or ‘probable’ actual) age of retirement. These approaches are therefore difficult to compare with the findings of the European survey. Further and more detailed surveys should be conducted on this subject, beyond the mere exploratory phase.

---

<sup>27</sup> The VISAT survey includes two questions very similar to those of the European survey: ‘Do you think you will be able to hold on to your current job until retirement?’ and ‘Do you want to?’ However, neither of these questions has been exploited as yet. The VISAT survey was carried out by company doctors in the south of France in accordance with a protocol similar to that of ESTEV, but with more detailed questions on psychological aspects of work and health. Some 3,237 employees aged between 32 and 62 were surveyed during the first phase in 1996. Two other phases are planned with the same employees in 2001 and 2006.

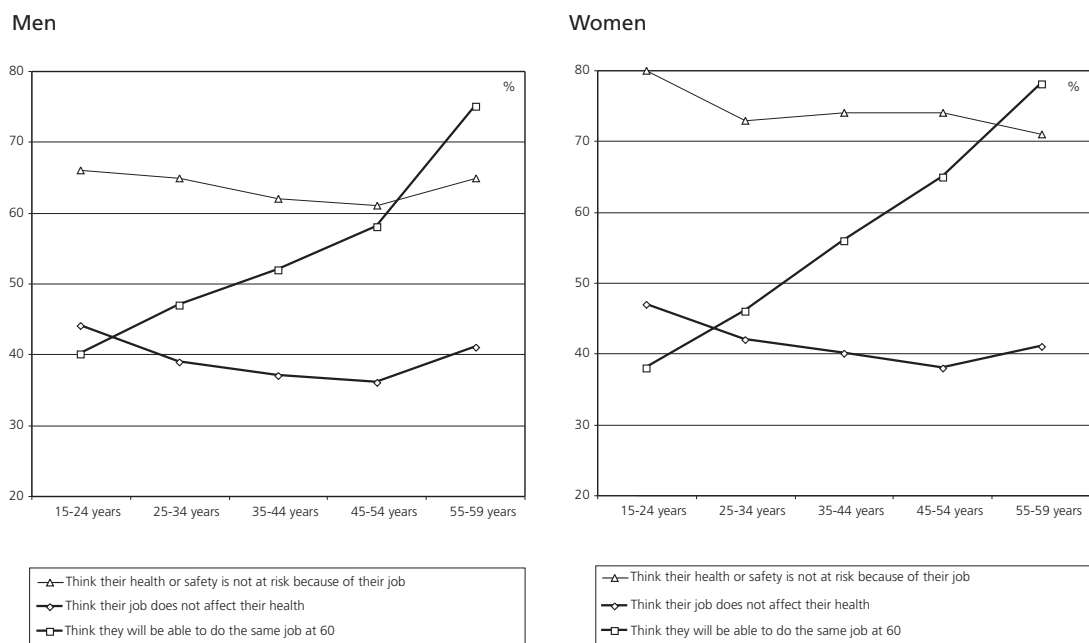
At first sight, this question could have been compared with one used by French ergonomists during the initial surveys highlighting selection by age: ‘Up to what age can you remain in your job?’ In repetitive work combining high demands in terms of precision of movement and speed (e.g. men working on an assembly line in the automobile industry; seamstresses in a machining shop, etc.), it appeared ‘workers are aware of the fact that they will not be able to continue up to retirement (Marcelin and Valentin, 1969; Teiger et al., 1973), but in general, they clearly underestimate age-related exclusion phenomena. Nevertheless, in a few years of doing this job, they become more and more pessimistic (...)’ (Teiger, 1989, p. 33). In reality, the statistical surveys involve a totally different context.

### Attitudes about working at the age of 60

The proportion of respondents who think they will be able to, or want to, do the same job at 60 increases with age (figure 63). For younger employees, the prospect of remaining in the same job until the age of 60<sup>28</sup> is difficult to imagine, while the closer workers get to 60, the more likely it seems. However, it is probably also true that adjustments occur during one’s working life both in terms of the job itself and the notion of links between age and work.

Overall, 63% of men and 74% of women feel their health or safety is not at risk because of their job. However, far fewer think their job has no effect on their health (39% of men and 41% of women). In both cases, these proportions decrease slightly with age up to 55 years of age.

**Figure 63 Age and understanding of the relationship between work and health; ability to do the same job at the age of 60**

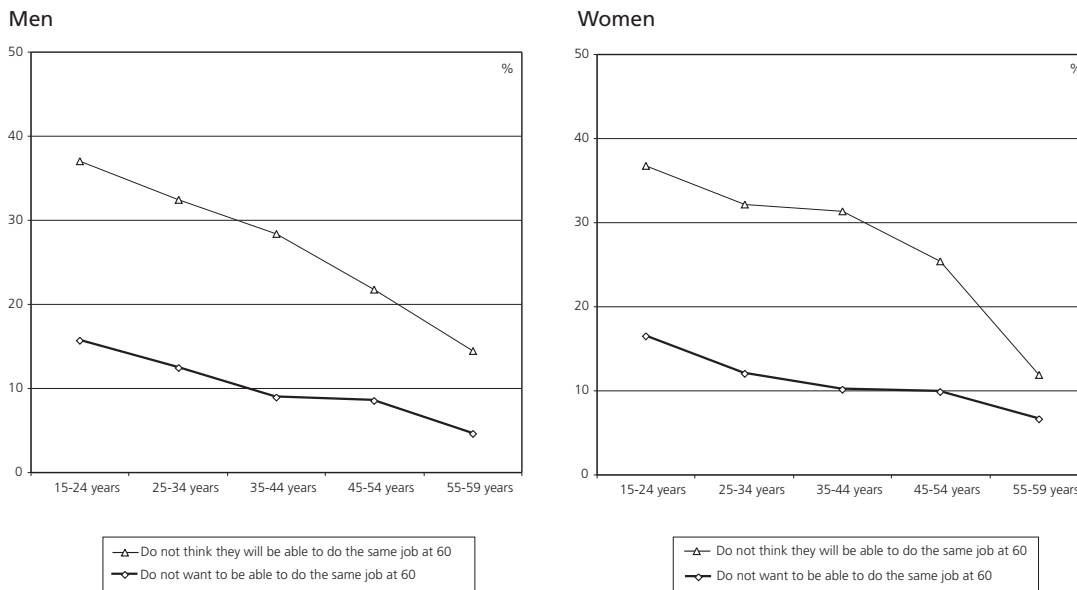


The questionnaire distinguished between two aspects in not being able to do the same job at 60: ‘No, I don’t think so’ and ‘No, I wouldn’t like to’. The first is more frequent than the second at all

<sup>28</sup> Although this is not the exact wording proposed: ‘doing the same job at the age of 60’, and not ‘until the age of 60’.

ages, but both fall with age and neither seems characteristic of a particular age group (figure 64). Therefore a decision to combine these two reasons, though it is difficult to interpret the distinction (at least in this exploratory context) was made, emphasising the fact that in both cases, respondents did not see themselves doing the same job at 60.

**Figure 64 Age and ability to do the same job at 60: the answers ‘No, I don’t think so’ and ‘No, I wouldn’t like to’**



At all ages, workers who felt their job affects their state of health were more likely to think they would not be doing the same job at 60 than those who saw no link between their job and their health (figure 65). A ‘poor’ state of health could be one of the reasons for wanting to leave one’s job before the age of 60. Moreover, identifying a work-related cause for these health problems may increase this trend.

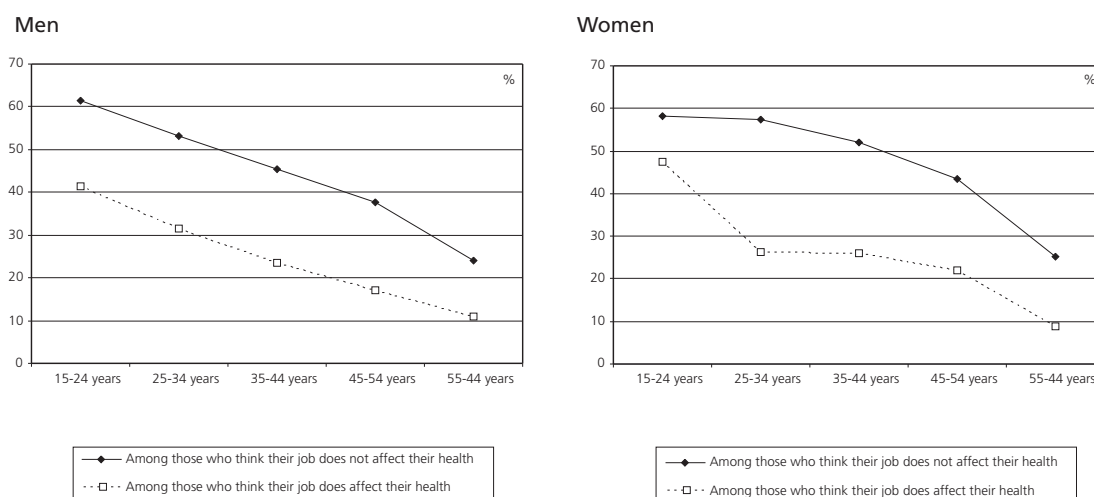
#### Which ‘explanatory’ factors?

To explain the variables that affect these two major aspects of health at work, logistical regressions, taking as ‘explained’ variables, on the one hand, the feeling that one’s job does not affect one’s health, and on the other, the feeling that one is not able, or does not want, to do the same job at 60 (odds ratios shown in table 2) were carried out. The main findings can be summarised as follows:

- The feeling that one’s job does not affect one’s health varies little with age, even if the odds ratios are slightly lower between the ages of 25 and 54 than at either end of the scale. On the other hand, seniority in the post increases the likelihood of establishing a link between one’s job and one’s health, as if it took time in a particular post and lasting experience of the marks left by one’s job, on the employee and probably also on others, to establish links between work and health.
- On the other hand, the feeling of being able, or wanting, to do the same job at 60 varies with age (the younger you are, the more you have the feeling you will not be doing the same job at 60), but has no clear link with seniority.

- The physical demands of the job (summarised here by the variable ‘being exposed to difficult working positions’, for at least half the time), time constraints (‘working at high speed’ at least half the time) and shift work greatly increase both the likelihood of feeling there is a link between one’s job and one’s health and feeling one will not be able to do the same job at 60.

**Figure 65** Proportion of people under the age of 60 who think they will not be able to – or do not want to – do the same job at 60



- Not working on a computer also increases the feeling of not being able to do the same job at 60, as though respondents felt missing out on advances in technology would make it more difficult to stay in their job (again, ‘all things equal’). On the other hand, this variable does not show any significant relationship with a perception of links between work and health.
- Having ‘enough time to do one’s job’ contributes, ‘all things equal’, to a more ‘optimistic’ view of relationships between work and health (with an odds ratio of less than 1, i.e. reducing the likelihood of feeling that one’s job affects one’s health) and is accompanied by a more likely feeling of being able to do the same job at the age of 60. The ‘room for manoeuvre’ created by having the opportunity to be helped by one’s colleagues in case of need, or having received training during the current year, does not present a clear relationship between these two variables.
- If the same logistic regression is used again as before with ‘thinking you will be able to do the same job at the age of 60’ as an explained variable, but adding the ‘explanatory’ variable ‘feeling that your job affects your health’, the latter appears to have a very marked impact, though it does not eliminate the effect of previous variables included in the model (which is actually lessened) (table 3). All things equal (including exposure to some work constraints), having the feeling your job has a negative impact on your health suggests you will not be able to do the job at 60.

**Table 2 Odds ratios from logistical regressions with ‘think their job does not affect their health’ and ‘be able to do the same job at 60’ in an ‘explained variable’**

‘Explained’ variables	Think your job does not affect your health	Think you will be able to do the same job at 60
‘Explanatory’ variables	Odds ratios 2000	Odds ratios 2000
Sex		
Man (ref)	1	1
Woman	—	0.81
Age		
15-24 years	1	1
25-34 years	0.88	1.29
35-44 years	0.89	1.70
45-54 years	0.87	2.39
55 years and over	(1.02)	5.24
Seniority		
Less than 1 year	1.29	0.89
1 to less than 4 years	1.10	(0.95)
4-9 years	1	1
10-19 years	0.86	(0.93)
20 years and over	0.79	0.79
Occupations		
Administrative employees	1	1
Senior executives	0.69	0.78
Intermediate professions	0.60	0.69
Service and trade employees	0.80	0.59
Farmers/fishermen	0.48	NS
Craft trades/workers in agriculture/fishing	0.54	0.63
Plant/machine operators	0.65	0.49
Non-qualified workers and employees	0.85	0.50
Other	NS	NS
Working conditions		
Difficult working positions (at least half the time)	0.29	0.54
Working at speed (at least half the time)	0.65	0.78
Never work on a computer	—	0.73
Shift work	0.82	0.79
No training over the past 12 months	NS	NS
Possibility of assistance from colleagues	NS	NS
Enough time to do one’s job	1.81	1.72

NB: Significant odds ratios at a threshold of 5% are given here. Odds ratios that are not significant at this threshold appear with the abbreviation ‘NS’, unless a series is involved. In that case, if one of the odds ratios of the series is significant at a threshold of 5%, the others are shown in brackets if they are not significant at this threshold.

Then the following was examined whether or not these are the same factors that play a role among the youngest and oldest employees.

- As regards notions of links between work and health, the same factors play a role among employees under 45 and older employees. However, factors linked to working position have a slightly greater impact on older than younger employees (table 4).
- As regards the feeling of being able (or wishing) to do the same job at 60, again, the same factors are significant among those under 45 and older employees, but with more or less marked

influences according to age. Still being in shift work colours the view of the future of older employees, probably because those who still work this type of hours after the age of 45 find it particularly difficult and no longer wish to continue doing so or, at least, reduce the time they work these hours to a minimum. Time constraints (the variable ‘working at high speeds’) have a greater impact on younger employees, as though the problems they cause were particularly marked before the age of 45, with attempts to leave this type of work (table 5).

**Table 3 Odds ratios from logistical regressions with ‘being able to do the same job at 60’ in an ‘explained variable’**

‘Explained’ variables	Think you will be able to do the same job at 60
<b>‘Explanatory’ variables</b>	
Sex	
Men	1
Women	0.81
Age	
15-24 years	1
25-34 years	1.29
35-44 years	1.70
45-54 years	2.51
55 years and over	5.46
Seniority	
Less than 1 year	0.84
1 to less than 4 years	(0.93)
4-9 years	1
10-19 years	(0.95)
20 years and over	0.82
Occupations	
Administrative employees	1
Senior executives	0.82
Intermediate professions	0.75
Service and trade employees	0.60
Farmers/fishermen	NS
Craft trades/workers in agriculture/fishing	0.69
Plant/machine operators	0.52
Non-qualified workers and employees	0.50
Other	NS
Working conditions	
Difficult working positions (at least half the time)	0.65
Working at speed (at least half the time)	0.83
Never work on a computer	0.72
Shift work	0.81
No training over the past 12 months	NS
Possibility of assistance from colleagues	NS
Enough time to do one’s job	1.59
Feel your job affects your health	0.45

*NB: Significant odds ratios at a threshold of 5% are given here. Odds ratios that are not significant at this threshold appear with the abbreviation ‘NS’, unless a series is involved. In that case, if one of the odds ratios of the series is significant at a threshold of 5%, the others are shown in brackets if they are not significant at this threshold.*

**Table 4 Odds ratios with 'think their job does not affect their health' and 'be able to do the same job at 60' as an 'explained variable'**

'Explained' variables	Think your job does not affect your health	
	Below 45 <i>Odds ratios</i> 2000	45-59 <i>Odds ratios</i> 2000
<b>'Explanatory' variables</b>		
Sex		
Men	1	1
Women	NS	NS
Seniority		
Less than 1 year	1.29	1.21
1 to less than 4 years	1.10	(1.12)
4-9 years	1	1
10-19 years	0.79	0.80
20 years and over	0.89	0.74
Occupations		
Administrative employees	1	1
Senior executives	0.73	0.70
Intermediate professions	0.65	0.59
Service and trade employees	0.87	0.70
Farmers/fishermen	0.54	0.57
Craft trades/workers in agriculture/fishing	0.58	0.56
Plant/machine operators	0.67	0.67
Non-qualified workers and employees	0.82	NS
Other	1.69	NS
Working conditions		
Difficult working positions (at least half the time)	0.29	0.27
Working at speed (at least half the time)	0.69	0.58
Never work on a computer	NS	NS
Shift work	0.82	0.78
No training over the past 12 months	1.22	1.25
Possibility of assistance from colleagues	NS	NS
Enough time to do one's job	1.88	1.91



**Table 5 Odds ratios with ‘think you will be able to do the same job at 60’ as an ‘explained variable’**

‘Explained’ variables	Think you will be able to do the same job at 60	
	Below 45 <i>Odds ratios</i> 2000	45-59 <i>Odds ratios</i> 2000
‘Explanatory’ variables		
Sex		
Men	1	1
Women	0.85	0.72
Seniority		
Less than 1 year	0.86	0.85
1 to less than 4 years	0.91	0.85
4-9 years	1	1
10-19 years	(1.08)	(0.91)
20 years and over	(1.14)	0.87
Occupations		
Administrative employees	1	1
Senior executives	0.77	0.83
Intermediate professions	0.63	0.74
Service and trade employees	0.48	0.64
Farmers/fishermen	NS	NS
Craft trades/workers in agriculture/fishing	0.59	0.63
Plant/machine operators	0.44	0.52
Non-qualified workers and employees	0.43	0.57
Other	0.14	0.30
Working conditions		
Difficult working positions (at least half the time)	0.54	0.51
Working at speed (at least half the time)	0.75	0.84
Never work on a computer	0.70	0.73
Shift work	0.83	0.68
No training over the past 12 months	NS	NS
Possibility of assistance from colleagues	NS	0.79
Enough time to do one’s job	1.75	1.80

NB: Significant odds ratios at a threshold of 5% are given here. Odds ratios that are not significant at this threshold appear with the abbreviation ‘NS’, unless a series is involved. In that case, if one of the odds ratios of the series is significant at a threshold of 5%, the others are shown in brackets if they are not significant at this threshold.

# Bibliography

- Aanonsen, A., 'Medical problems of shiftwork', *Industrial Medicine and Surgery*, 28, 1959, pp. 422-427.
- Angersbach, D., Knauth, P., Loskant, H., Karvonen, M. J., Undeutsch, K., and Rutenfranz, J., 'A retrospective cohort study comparing complaints and diseases in day and shift workers', *International Archives of Occupational and Environmental Health*, 45, 1980, pp. 127-140.
- Anglaret, D. and Cancé, R., 'Le papy-boom renforce l'activité des seniors, (The granddad boom boosts work among older workers), *Premières informations et premières synthèses*', No. 15.2, April 2002.
- Aoyagi, Y., McLellan, T., and Shehard, R. J., 'Interactions of physical training and health acclimatation: the thermophysiology of exercising in a hot climate', *Sports medicine* 23, 1997, pp. 173-210.
- Boisard, P., Cartron, D., Gollac, M., and Valeyre, A., European Foundation for the Improvement of Living and Working Conditions, *Time and work: the intensity of work*, Luxembourg, Office for Official Publications of the European Communities, 2003.
- Bourget-Devouassoux, J., and Volkoff, S., 'Bilans de santé des carrières d'ouvriers', (An analysis of the health of workers through their careers), *Économie et statistique* 242, 1991, pp. 83-93.
- Bourlière, F., *Gérontologie, biologie et clinique*, Paris, Flammarion, collection Médecine-sciences, 1982.
- Bué, J., and Rougerie, C., 'L'organisation des horaires: un état des lieux en mars 1998' (The organisation of working hours: the situation in March 1998), *Premières informations et premières synthèses*, 99.07, No. 30.1, 1999.
- Butat, C., Cosset, M., Barrit, J., Brugère, D., and Volkoff, S., 'Les troubles du sommeil: effets conjoints de l'âge, du sexe, des horaires décalés et de quelques contraintes de travail (une analyse quantitative)', (Sleep disorders: combined effects of age, sex, displaced working hours and constraints at work (a quantitative analysis)), *Le travail humain*, Vol. 62 (1), 1999, pp. 37-61.
- Davezies, P., 'De la récupération psychique', (On mental rehabilitation), *Santé et travail*, No. 25, 1998.
- Davies, D. R., Matthews, G., and Wong, C. S. K., 'Ageing and work behaviour', in N. Charness (ed.), *Ageing and human performance*, New York, John Wiley & Sons, 1991, pp. 293-332.
- Derriennic, F., Ribet, C., and Volkoff, S., 'Les troubles du sommeil, l'âge et le travail', (Sleep disorders, age and work), *Premières informations et premières synthèses*, 99.06, No. 22-3, 1999.
- European Commission, Projects assisting older workers in European countries (DG Employment and Social Affairs), *a review of findings of Eurowork age*, Luxembourg, Office for Official Publications of the European Communities, 1998.
- European Foundation for the Improvement of Living and Working Conditions 'Shiftwork and health', *BEST, European Studies on Time*, 1/2000, Luxembourg, Office for Official Publications of the European Communities, 2000.
- Gaudart, C., 'Conditions for maintaining ageing operators at work — A case study conducted at an automobile manufacturing plant', *Applied Ergonomics*, Vol. 31, No. 5, October 2000, pp. 453-462.
- Gaudart, C., 'Vieillir, mais tenir la cadence', (Age, but keep up the pace), *Gérontologie et société*, No. 77, 1996, pp. 84-100.
- Gaudart, C., and Pondaven S., 'Polyvalence, vieillissement et expérience dans deux métiers de la sidérurgie', (Multitasking, ageing and experience in two trades in the iron and steel industry), *Temps et travail*, Proceedings of the XXXIII SELF conference, 1998, pp. 599-609.
- Gollac, M. and Volkoff, S., Citius, altius, fortius, 'L'intensification du travail' (The intensification of work), *Actes de la recherche en sciences sociales*, No. 114, 1996, pp. 54-67.

- Gollac, M., and Volkoff, S., *Les conditions de travail*, (Working conditions), Éditions La Découverte, collection Repères, Paris, 2000, pp. 61-62.
- Hornberger S., Knauth P., Costa G., and Folkard S., (eds.) *Shiftwork in the 21st century. Challenges for research and practice*, Frankfurt, Peter Lang, 2000.
- Ilmarinen, J., 'Work ability of ageing workers', *Scandinavian Journal of Work, Environment and Health*, 18, 1992.
- Kilbom, A., (dir.), Ageing of the workforce. Keynote presentations and abstracts from a workshop held in Brussels, 23-24 March, 1998, Arbetslivsrapport 24, National Institute for Working Life, Stockholm, 1998.
- Knutsson, A., and Akerstedt, T., 'The healthy worker effect: self-selection among Swedish shift workers', *Work and stress*, Vol. 6, No. 2, 1992, pp. 163-167.
- Kuhn, K., Taylor, P., Lunde, A., Mirabile, M.- L. and Reday-Mulvey, G., *Career planning and employment of older workers*, Driekant, Maastricht, 1998.
- Laville, A., 'Vieillesse et travail', (Ageing and work), *Le Travail Humain*, 52 (1), 1989, pp. 3-20.
- Le Minez, S., 'Les entreprises et le vieillissement de leur personnel: faits et opinions', (Companies and the ageing of their staff: facts and opinions), *Travail et emploi*, No. 63, 1995.
- Marcelin, J., and Valentin, M., *Étude comparative d'ouvriers de 40 à 50 ans travaillant en chaîne dans deux ateliers de l'industrie automobile*, (A comparative study of workers aged between 40 and 50 working on a production line in two workshops in the automobile industry), Report No. 12 of the *Laboratoire de physiologie du travail — Ergonomie*, Paris, CNAM, 1969.
- Marquié, J. C., Thon, B., and Baracat, B., 'Age influence on attitudes of office workers faced with new computerized technologies. A questionnaire analysis'. *Applied ergonomics*, 25 (3), 1994, pp. 130-142.
- Millanvoye, M., 'Le vieillissement de l'organisme avant 65 ans', (The ageing of the body before the age of 65), in J. C. Marquié, D. Paumès, and S. Volkoff (eds.), *Le travail au fil de l'âge*, Toulouse, Éditions Octares, 1995, pp. 175-209 [English translation available: Marquié, J. C., Paumès, D., and Volkoff, S., (eds.), *Working with age*, Taylor & Francis, 1998].
- Minni, C., and Topiol, A., 'Les entreprises se préoccupent peu du vieillissement démographique', (Companies are not very concerned about the ageing of the population), *Premières informations et premières synthèses*, No. 15.1, 2002a.
- Minni, C., and Topiol, A., 'Peu d'initiatives en faveur des seniors dans les entreprises. Une analyse à partir de l'enquête sur l'emploi des salariés suivant l'âge', (Few corporate initiatives for the elderly. An analysis based on the survey on the employment of employees according to age), *Retraite et société*, October 2002b.
- Molinié, A. F., 'Professional careers, work constraints and selection according to age: a study on 21,000 wage-earners of four age cohorts, in 1990 and 1995', *Experimental Aging Research*, 25, 1999, pp. 399-404.
- Molinié, A. F., *Parcours de travail et fins de vie active dans différentes générations*, (Working history and the end of working life in different generations), Quatre Pages, No. 45, Centre d'études de l'emploi, May 2001.
- Monfort, C., Cassou, B., Norton, J., and Derriennic, F. 'Conditions de travail et évolution des douleurs musculosquelettiques chroniques du cou et des épaules', (Working conditions and the development of chronic musculoskeletal pain in the neck and shoulders), *Travail, santé, vieillissement. Relations et évolutions*, Toulouse, Éditions Octarès, collection Colloques, 2001, pp. 81-89.

- Paumès, D., and Marquié, J. C., 'Travailleurs vieillissants, apprentissage, et formation professionnelle', (Ageing workers, apprenticeship and vocational training), in Marquié, J. C., Paumès, D., and Volkoff, S., (eds.), *Le travail au fil de l'âge*, Toulouse, Éditions Octarès, 1995, pp. 391-410. (English translation available: Marquié, J. C., Paumès, D., and Volkoff, S. (eds.) *Working with age*, Taylor & Francis, 1998).
- Quéinnec, Y., Gadbois, C., and Prêteur, V., 'Souffrir de ses horaires de travail: poids de l'âge et histoire de vie', in Marquié, J. C., Paumès, D., and Volkoff, S., (eds.), *Le travail au fil de l'âge*, Éditions Octarès, Toulouse, 1995, pp. 277-304. (English translation: Quéinnec, Y., Gadbois, C., and Prêteur, V., 'Suffering from work schedules: the burden of age and life history', in Marquié, J. C., Paumès, D., and Volkoff, S., (eds.), *Working with age*, Taylor & Francis, 1998).
- Ribet, C., and Derriennic, F., 'Rôle pronostique de l'âge et des facteurs professionnels sur l'incidence et la disparition des troubles du sommeil entre 1990 et 1995 chez des salariés âgés de 37 à 52 ans', (The prognostic role of age and professional factors on the incidence and disappearance of sleep disorders between 1990 and 1995 in employees aged 37-52), in *Travail, santé, vieillissement. Relations et évolutions*, Toulouse, Éditions Octarès, collection Colloques, 2001, pp. 191-206.
- Salthouse, T., 'Speed of behavior and its applications for cognition', *Handbook of the psychology of ageing*, Van Nostrand Reinhold, New York, 1985.
- Shephard, R. J., 'Age and physical work capacity', *Experimental Aging Research*, 25, 1999, pp. 331-343.
- Snel, J. and Cremer, R., (ed.) *Work and ageing: A European perspective*, Taylor & Francis, London, 1994.
- Teiger, C., Laville, A., and Duraffourg, J., *Tâches répétitives sous contraintes de temps et charge de travail. Étude des conditions de travail dans un atelier de confection*, (Repetitive tasks under constraints of time and workload. A study of working conditions in a clothing factory) Report No. 39 of the *Laboratoire de physiologie du travail — Ergonomie* of the CNAM, Paris, 1973.
- Teiger, C., 'Le vieillissement différentiel dans et par le travail: un vieux problème dans un contexte récent', (Differential ageing in and through work: an old problem in a recent context), *Le travail humain*, 52 (1), 1989, pp. 21-56.
- Teiger, C., 'Penser les relations âge/travail au cours du temps', (Considerations of the relationship between age and work over time), in Marquié, J. C., Paumès, D., and Volkoff, S., (eds.), *Le travail au fil de l'âge* (Working with age), Toulouse, Marquié, J. C., Paumès, D., and Volkoff, S., (eds.) Éditions Octarès, 1995, pp. 15-77 (English translation available), *Working with age*, Taylor & Francis, 1998.
- Tepas D. I., Duchon J. C., and Gersten A. H., 'Shiftwork and the older worker', *Experimental Aging Research*, 19, 1993, pp. 295-320.
- Tillsey, C., Taylor, P., Beausoleil, J., Wilson, R. and Walker, A., *Factors affecting retirement*, Report for the Ministry of Education and Employment, September 2000.
- Topiol, A., *L'évolution des sorties d'emploi vers la retraite et la préretraite. Une approche par métiers*, (The development of work exits to retirement and early retirement. A profession-based approach) Ministry of Employment, DARES, working document, No. 48, July 2001.
- Volkoff, S., Molinié, A. F., and Davezies, P., 'Selection effects, differed effects, interaction effects: concerns arising from quantitative investigations on age - work - health relationships', in Kilbom, A., Westerholm, P., Hallsten, L., and Furaker, B., (eds.), *Work after 45?*, Proceedings from a scientific conference held in Stockholm, 22-25 September 1996, Arbets Livsinstitutet & Författarna, Vol 1., 1997, pp. 293-299.

- Walker, A., European Foundation for the Improvement of Living and Working Conditions  
*Combating Age Barriers in Employment: European research report*, Luxembourg, Office for  
Official Publications of the European Communities, 1997.
- Walker, A., European Foundation for the Improvement of Living and Working Conditions,  
*Combating Age Barriers in Employment: A European portfolio of good practice*, Luxembourg,  
Office for Official Publications of the European Communities, Luxembourg. European  
Foundation for the Improvement of Living and Working Conditions, 1997.
- Walker, A., and Taylor, P., 'The employment of older people: employers' attitudes and practices',  
ESRC Conference on past, current and future initiatives on ageing, London, 1992.
- Welford, A. T., *Ageing and human skills*, Oxford, Oxford University Press, 1958.

# Annexes

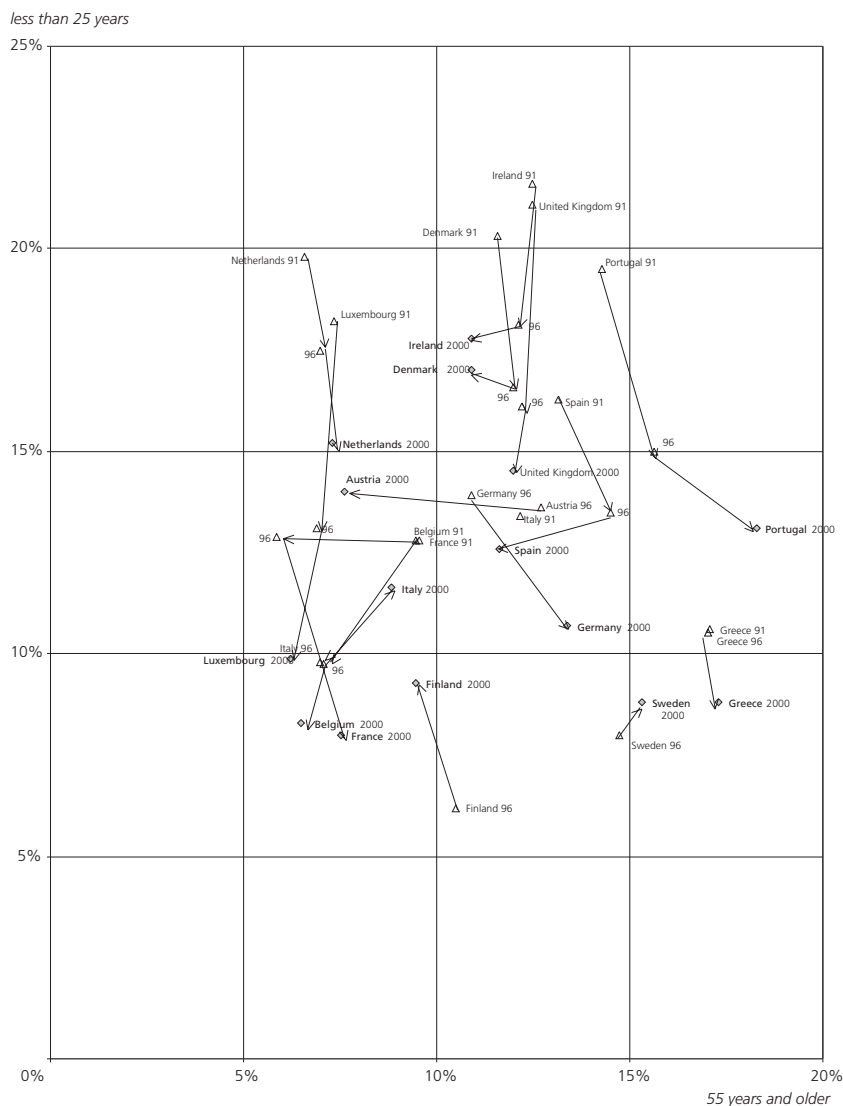
Annex 1 — Evolution of the age structure of the working population, by country	79
Annex 2 — Results of logistical regressions	80
Annex 3 — Case studies	91



# Annex 1

## Evolution of the age structure of the working population, by country

(according to weighted data from the European working conditions surveys)



Guide to this graph: the x-axis shows the proportion of ‘older’ working people (here: 55 and over), the y-axis the proportion of ‘young’ workers (here: under 25). The countries at the top and left-hand side show working populations with a high proportion of young people and very few older workers. Countries at the bottom and right-hand side have many older workers and few young workers. At the bottom and left-hand side feature populations with few young workers and few older workers, i.e. a majority of middle-aged workers.

Developments between the various dates are shown by arrows: an arrow ‘pointing down’ shows a drop in the proportion of young employees; if it points to the right, the proportion of older employees increases, if it points to the left, the proportion of older employees decreases.



# Annex 2

## Results of logistical regressions

### Physical difficulties

Table 6 — Logistical regression with exposure to vibrations (at least half the time) as an 'explained variable'

'Explanatory' variables	Odds ratios 1995	Odds ratios 2000
Sex		
Men	1	1
Women	0.57	0.56
Age		
15-24 years	1	
25-34 years	0.83	(1.12)
35-44 years	0.76	1.23
45-54 years	0.76	(0.99)
55 years and over	0.76	0.87
Country		
France	1	1
Belgium	0.61	0.73
Denmark	0.45	0.37
Germany	NS	0.87
Greece	1.72	1.36
Italy	0.72	NS
Spain	1.26	1.48
Luxembourg	NS	NS
Ireland	NS	NS
Netherlands	0.58	0.41
Portugal	1.38	NS
United Kingdom	0.73	0.74
Finland	NS	NS
Sweden	0.56	0.53
Austria	NS	NS
Size		
No employees	0.64	0.60
1-9 employees	0.70	0.87
10-49 employees	0.79	0.81
50-99 employees	1	1
100 employees and more	0.82	(0.92)
Category		
Executives	1	1
Employees	NS	0.71
Workers	6.30	5.58
Sector		
Agriculture	1	1
Industry	1.34	2.26
Services	0.59	0.78

NB: Significant odds ratios at a threshold of 5% are given here. Odds ratios that are not significant at this threshold appear with the abbreviation 'NS', unless a series is involved. In that case, if one of the odds ratios of the series is significant at a threshold of 5%, the others are shown in brackets if they are not significant at this threshold.

**Table 7 — Logistical regression with exposure to heat (at least half the time) as an 'explained variable'**

'Explanatory' variables	Odds ratios 1995	Odds ratios 2000
Sex		
Men	1	1
Women	0.88	NS
Age		
15-24 years	1	/
25-34 years	0.74	NS
35-44 years	0.85	NS
45-54 years	(0.92)	NS
55 years and over	(0.84)	NS
Country		
France	1	1
Belgium	0.68	NS
Denmark	0.63	0.52
Germany	0.57	0.75
Greece	2.80	2.40
Italy	0.72	0.75
Spain	1.32	1.35
Luxembourg	NS	NS
Ireland	NS	NS
Netherlands	NS	0.73
Portugal	NS	NS
United Kingdom	NS	1.21
Finland	0.61	0.66
Sweden	0.47	0.56
Austria	NS	0.69
Size		
No employees	0.54	0.61
1-9 employees	(0.90)	NS
10-49 employees	(0.87)	NS
50-99 employees	1	1
100 employees and more	1.23	1.36
Category		
Executives	1	1
Employees	1.20	1.22
Workers	3.66	2.84
Sector		
Agriculture	1	1
Industry	NS	1.45
Services	0.80	NS

NB: Significant odds ratios at a threshold of 5% are given here. Odds ratios that are not significant at this threshold appear with the abbreviation 'NS', unless a series is involved. In that case, if one of the odds ratios of the series is significant at a threshold of 5%, the others are shown in brackets if they are not significant at this threshold.

Table 8 — Logistical regression with handling heavy loads (at least half the time) as an 'explained variable'

'Explanatory' variables	Odds ratios 1995	Odds ratios 2000
Sex		
Men	1	1
Women	0.70	0.85
Age		
15-24 years	1	1
25-34 years	0.86	(0.95)
35-44 years	0.75	(0.93)
45-54 years	0.76	0.81
55 years and over	0.76	0.72
Country		
France	1	1
Belgium	0.73	0.62
Denmark	0.64	0.47
Germany	0.58	0.58
Greece	NS	NS
Italy	0.37	0.44
Spain	0.71	NS
Luxembourg	NS	NS
Ireland	NS	0.63
Netherlands	0.60	0.42
Portugal	0.54	0.48
United Kingdom	NS	NS
Finland	0.63	0.47
Sweden	NS	NS
Austria	NS	0.58
Size		
No employees	0.79	(0.95)
1-9 employees	(0.99)	1.19
10-49 employees	(0.94)	(1.08)
50-99 employees	1	1
100 employees and more	0.74	(1.02)
Category		
Executives	1	1
Employees	1.66	(1.10)
Workers	5.29	4.24
Sector		
Agriculture	1	1
Industry	1.59	0.69
Services	0.52	0.55

NB: Significant odds ratios at a threshold of 5% are given here. Odds ratios that are not significant at this threshold appear with the abbreviation 'NS', unless a series is involved. In that case, if one of the odds ratios of the series is significant at a threshold of 5%, the others are shown in brackets if they are not significant at this threshold.

**Table 9 — Logistical regression with maintenance of difficult or painful postures (at least half the time) as an 'explained variable'**

'Explanatory' variables	Odds ratios 1995	Odds ratios 2000
Sex		
Men	1	1
Women	1.46	1.45
Age		
15-24 years	1	/
25-34 years	(0.97)	0.89
35-44 years	(0.91)	1.14
45-54 years	(0.92)	(1.06)
55 years and over	(0.88)	(0.97)
Country		
France	1	1
Belgium	0.50	0.58
Denmark	0.38	0.29
Germany	0.49	0.44
Greece	1.57	1.79
Italy	0.69	0.65
Spain	0.70	0.80
Luxembourg	NS	NS
Ireland	0.34	0.54
Netherlands	0.35	0.33
Portugal	1.25	0.75
United Kingdom	0.49	0.56
Finland	0.44	0.50
Sweden	0.62	0.67
Austria	0.55	0.43
Size		
No employees	(0.98)	(1.13)
1-9 employees	(0.98)	1.23
10-49 employees	0.83	(1.06)
50-99 employees	1	1
100 employees and more	(0.93)	(1.09)
Category		
Executives	1	1
Employees	1.16	1.35
Workers	3.21	3.65
Sector		
Agriculture	0.59	
Industry	NS	
Services	0.58	NS

NB: Significant odds ratios at a threshold of 5% are given here. Odds ratios that are not significant at this threshold appear with the abbreviation 'NS', unless a series is involved. In that case, if one of the odds ratios of the series is significant at a threshold of 5%, the others are shown in brackets if they are not significant at this threshold.

**Table 10 — Logistical regression with maintenance of difficult or painful postures (at least half the time) as an 'explained variable'**

'Explanatory' variables	Women		Men	
	Odds ratios 1995	Odds ratios 2000	Odds ratios 1995	Odds ratios 2000
Age				
15-24 years	1	1	1	1
25-34 years	(0.94)	0.75	(1.03)	(1.05)
35-44 years	(0.90)	(0.93)	(0.94)	1.36
45-54 years	(0.91)	(0.92)	(0.97)	1.21
55 years and over	(1.01)	(0.92)	0.83	(1.03)
Country				
France	1	1	1	1
Belgium	0.56	0.58	0.46	0.57
Denmark	0.59	0.36	0.22	0.22
Germany	0.57	0.48	0.43	0.40
Greece	NS	NS	1.59	2.25
Italy	0.80	0.60	0.59	0.67
Spain	0.57	0.65	0.71	0.86
Luxembourg	NS	NS	NS	NS
Ireland	0.35	0.56	0.31	0.51
Netherlands	0.47	0.32	0.25	0.33
Portugal	NS	0.64	1.34	NS
United Kingdom	0.53	0.57	0.46	0.54
Finland	0.53	0.53	0.35	0.47
Sweden	0.68	0.78	0.51	0.57
Austria	0.46	0.41	0.63	0.46
Size				
No employees	(0.82)	(0.92)	(1.14)	1.34
1-9 employees	(0.85)	(1.02)	(1.13)	1.42
10-49 employees	0.70	(0.95)	(0.98)	(1.12)
50-99 employees	1	1	1	1
100 employees and more	(1.04)	1.33	0.86	(0.95)
Category				
Executives	1	1	1	1
Employees	0.86	1.15	1.83	1.68
Workers	2.60	3.04	4.01	4.33
Sector				
Agriculture	1	1	1	1
Industry	0.61	NS	0.60	NS
Services	0.67	NS	0.52	NS

NB: Significant odds ratios at a threshold of 5% are given here. Odds ratios that are not significant at this threshold appear with the abbreviation 'NS', unless a series is involved. In that case, if one of the odds ratios of the series is significant at a threshold of 5%, the others are shown in brackets if they are not significant at this threshold.

**Table 11 — Logistical regression with repetitive movements of the arms and hands (at least half the time) as an ‘explained variable’**

‘Explanatory’ variables	Odds ratios 1995	Odds ratios 2000
Sex		
Men	1	1
Women	1.50	1.36
Age		
15-24 years	1	1
25-34 years	0.86	0.88
35-44 years	0.81	0.88
45-54 years	(0.97)	0.82
55 years and over	0.74	0.73
Country		
France	1	1
Belgium	0.68	0.52
Denmark	0.57	0.46
Germany	0.49	0.35
Greece	1.53	NS
Italy	0.60	0.50
Spain	NS	1.17
Luxembourg	NS	NS
Ireland	0.56	0.63
Netherlands	NS	NS
Portugal	NS	0.75
United Kingdom	NS	0.64
Finland	NS	NS
Sweden	0.44	NS
Austria	0.65	0.40
Size		
No employees	NS	(1.13)
1-9 employees	NS	1.18
10 to 40 employees	NS	(1.08)
50-99 employees	1	1
100 employees and over	NS	1.17
Category		
Executives	1	1
Employees	1.86	1.67
Workers	4.08	3.83
Sector		
Agriculture	1	1
Industry	(1.08)	1.52
Services	0.83	1.13

NB: Significant odds ratios at a threshold of 5% are given here. Odds ratios that are not significant at this threshold appear with the abbreviation ‘NS’, unless a series is involved. In that case, if one of the odds ratios of the series is significant at a threshold of 5%, the others are shown in brackets if they are not significant at this threshold.

**Table 12 — Logistical regression with *repetitive movements of the arms or hands* (at least half the time) as an 'explained variable'**

'Explanatory' variables	Women		Men	
	Odds ratios 1995	Odds ratios 2000	Odds ratios 1995	Odds ratios 2000
Age				
15-24 years	1	1	1	1
25-34 years	0.83	0.85	(0.89)	(0.90)
35-44 years	0.75	(0.92)	(0.87)	0.86
45-54 years	(0.90)	0.83	(1.03)	0.82
55 years and over	0.63	0.83	0.83	0.67
Country				
France	1	1	1	1
Belgium	NS	0.54	0.61	0.50
Denmark	NS	0.57	0.48	0.37
Germany	0.55	0.40	0.44	0.32
Greece	1.69	NS	1.42	NS
Italy	0.60	0.48	0.58	0.51
Spain	0.75	NS	NS	1.26
Luxembourg	NS	NS	NS	NS
Ireland	NS	0.58	0.51	0.65
Netherlands	NS	NS	NS	NS
Portugal	NS	0.65	NS	NS
United Kingdom	NS	0.61	NS	0.67
Finland	1.52	NS	NS	NS
Sweden	0.50	NS	0.38	0.70
Austria	0.54	0.41	0.73	0.39
Size				
No employees	0.75	0.80	1.38	1.45
1-9 employees	0.84	(0.94)	1.22	1.44
10-49 employees	0.73	(0.90)	(1.14)	1.25
50-99 employees	1	1	1	1
100 employees and over	(1)	(1.12)	(1)	1.25
Category				
Executives	1	1	1	1
Employees	2.02	1.66	1.84	1.72
Workers	5.84	3.87	3.48	3.92
Sector				
Agriculture	1	1	1	1
Industry	NS	1.84	NS	1.48
Services	NS	NS	NS	1.18

NB: Significant odds ratios at a threshold of 5% are given here. Odds ratios that are not significant at this threshold appear with the abbreviation 'NS', unless a series is involved. In that case, if one of the odds ratios of the series is significant at a threshold of 5%, the others are shown in brackets if they are not significant at this threshold.

## Working hours

Table 13 — Odds ratios from logistical regressions on working hours

'Explained' variable	Night work (at least 5 nights a month)	Shift work	Evening work 6.00-10.00 p.m. (at least 10 evenings a month)
'Explanatory' variables	Odds ratios 2000	Odds ratios 2000	Odds ratios 2000
Sex			
Men	1	1	1
Women	0.42	0.88	0.62
Age			
15-24 years	1	1	1
25-34 years	(0.94)	0.88	(1.10)
35-44 years	(0.96)	(0.90)	(0.97)
45-54 years	0.80	0.69	(0.95)
55 years and over	0.53	0.45	0.84
Country			
France	1	1	1
Belgium	NS	NS	0.77
Denmark	NS	0.36	0.34
Germany	NS	NS	0.63
Greece	2.13	1.51	2.52
Italy	0.66	1.44	0.78
Spain	1.18	1.54	3.08
Luxembourg	NS	NS	NS
Ireland	NS	NS	NS
Netherlands	0.76	0.44	0.42
Portugal	1.34	0.48	0.81
United Kingdom	1.25	1.33	0.64
Finland	1.53	1.36	NS
Sweden	NS	NS	0.55
Austria	1.36	0.75	0.69
Size			
No employees	1.16	0.15	2.23
1-9 employees	(0.96)	0.47	1.47
10-49 employees	(0.87)	0.79	(1.10)
50-99 employees	1	1	1
100 employees and over	1.99	2.10	1.44
Category			
Executives	1	1	1
Employees	1.18	1.27	0.80
Workers	1.50	2.05	0.62
Sector			
Agriculture	1	1	1
Industry	1.63	1.22	0.62
Services	2.84	1.51	NS

NB: Significant odds ratios at a threshold of 5% are given here. Odds ratios that are not significant at this threshold appear with the abbreviation 'NS', unless a series is involved. In that case, if one of the odds ratios of the series is significant at a threshold of 5%, the others are shown in brackets if they are not significant at this threshold.



Table 14 — Odds ratios from logistical regressions on working hours

'Explained' variable per week	Work 45 hours or more	Work at least 10 hours a day (at least 5 times a month)	'Stable timetable' (same no. hours/day, same no. days/week, fixed starting and finishing times)
'Explanatory' variables	Odds ratios 2000	Odds ratios 2000	Odds ratios 2000
Sex			
Men	1	1	1
Women	0.28	0.34	1.45
Age			
15-24 years	1	1	1
25-34 years	1.27	1.50	(0.96)
35-44 years	1.43	1.64	(0.96)
45-54 years	1.55	1.58	1.19
55 years and over	1.60	1.40	(0.93)
Country			
France	1	1	1
Belgium	0.52	NS	NS
Denmark	NS	0.63	0.48
Germany	NS	0.73	NS
Greece	NS	1.42	1.62
Italy	1.34	0.66	NS
Spain	1.59	0.77	1.59
Luxembourg	NS	NS	NS
Ireland	1.69	NS	1.55
Netherlands	0.77	0.56	0.80
Portugal	1.97	NS	1.79
United Kingdom	1.93	1.48	NS
Finland	NS	NS	0.73
Sweden	NS	0.67	0.69
Austria	NS	NS	0.71
Size			
No employees	2.04	3.99	0.41
1-9 employees	1.60	2.44	0.83
10-49 employees	1.22	1.56	1.14
50-99 employees	1	1	1
100 employees and over	(1)	1.29	(0.99)
Category			
Executives	1	1	2.04
Employees	0.44	0.51	2.01
Workers	0.56	0.67	
Sector			
Agriculture	1	1	1
Industry	0.59	0.68	1.57
Services	0.68	NS	NS

NB: Significant odds ratios at a threshold of 5% are given here. Odds ratios that are not significant at this threshold appear with the abbreviation 'NS', unless a series is involved. In that case, if one of the odds ratios of the series is significant at a threshold of 5%, the others are shown in brackets if they are not significant at this threshold.

## Pace of work

Table 15 — Odds ratios from logistical regressions on the pace of work

'Explained' variable	Pace of work set by				
	colleagues' work	direct demand	quantitative production targets	automatic rate of a machine	direct supervision of employer
'Explanatory' variables	Odds ratios 2000	Odds ratios 2000	Odds ratios 2000	Odds ratios 2000	Odds ratios 2000
Sex					
Men	1	1	1	1	1
Women	0.83	NS	0.79	0.84	1.14
Age					
15-24 years	1	1	1	1	1
25-34 years	0.87	1.16	1.17	(1.01)	0.65
35-44 years	0.85	1.12	(1.00)	0.87	0.55
45-54 years	0.69	(0.99)	0.86	0.66	0.49
55 years and over	0.58	0.73	0.76	0.67	0.36
Country					
France	1	1	1	1	1
Belgium	NS	NS	NS	NS	NS
Denmark	NS	NS	0.35	0.49	0.28
Germany	0.61	0.67	0.63	0.86	0.53
Greece	1.30	NS	1.73	1.37	1.34
Italy	NS	NS	NS	NS	0.65
Spain	NS	0.79	1.51	1.40	NS
Luxembourg	NS	NS	NS	NS	NS
Ireland	1.86	NS	0.70	NS	NS
Netherlands	0.85	0.83	0.28	0.74	0.17
Portugal	NS	0.58	0.74	NS	NS
United Kingdom	1.76	1.42	NS	1.15	1.31
Finland	NS	NS	2.09	NS	0.23
Sweden	NS	1.25	1.49	0.36	0.31
Austria	0.74	NS	0.63	0.76	0.49
Size					
No employees	0.08	1.78	0.44	0.32	0.10
1-9 employees	0.84	2.13	0.66	0.65	0.59
10-49 employees	1.14	1.56	0.88	0.84	0.90
50-99 employees	1	1	1	1	1
100 employees and over	1.27	0.86	1.24	1.21	NS
Category					
Executives	1	1	1	1	1
Employees	1.12	NS	0.71	1.18	2.04
Workers	1.19	0.28	1.33	2.95	2.58
Sector					
Agriculture	1	1	1	1	1
Industry	1.59	0.71	1.79	1.83	1.60
Services	1.22	NS	0.48	0.71	1.17

NB: Significant odds ratios at a threshold of 5% are given here. Odds ratios that are not significant at this threshold appear with the abbreviation 'NS', unless a series is involved. In that case, if one of the odds ratios of the series is significant at a threshold of 5%, the others are shown in brackets if they are not significant at this threshold.

Table 16 — Odds ratios from logistical regressions on the pace of work

'Explained' variable	Pace of work set by		
	'industrial' constraints only	'commercial' constraints only	'industrial' and 'commercial' constraints
'Explanatory' variables	<i>Odds ratios</i> 2000	<i>Odds ratios</i> 2000	<i>Odds ratios</i> 2000
Sex			
Men	1	1	1
Women	0.89	1.27	0.71
Age			
15-24 years	1	1	1
25-34 years	NS	1.11	(1.03)
35-44 years	NS	1.20	(0.92)
45-54 years	NS	1.25	0.76
55 years and over	NS	(1.08)	0.63
Country			
France	1	1	1
Belgium	NS	NS	NS
Denmark	0.50	1.59	0.50
Germany	NS	NS	0.58
Greece	1.50	0.71	1.51
Italy	NS	NS	NS
Spain	1.34	0.57	1.42
Luxembourg	NS	NS	NS
Ireland	NS	NS	NS
Netherlands	0.57	1.40	0.51
Portugal	NS	0.71	0.79
United Kingdom	0.63	NS	1.47
Finland	NS	0.56	1.99
Sweden	0.66	NS	1.49
Austria	NS	1.22	0.73
Size			
No employees	0.26	2.10	0.75
1-9 employees	0.43	1.81	(1.07)
10-49 employees	0.69	1.35	1.12
50-99 employees	1	1	1
100 employees and over	1.58	0.86	(0.98)
Category			
Executives	1	1	1
Employees	0.66	NS	0.87
Workers	4.45	0.37	0.75
Sector			
Agriculture	1	1	1
Industry	1.47	0.52	1.32
Services	0.44	1.28	0.68

NB: Significant odds ratios at a threshold of 5% are given here. Odds ratios that are not significant at this threshold appear with the abbreviation 'NS', unless a series is involved. In that case, if one of the odds ratios of the series is significant at a threshold of 5%, the others are shown in brackets if they are not significant at this threshold.

# Annex 3

## Case studies

1. Renault (F)
2. Sollac (F)
3. Électricité de France – Gaz de France (F)
4. Aérospatiale (F)
5. Aigle (F)
6. Chantiers de l'Atlantique (F)
7. Entreprise A\*\* (F)
8. UDD-FIM (F)
9. BMW (D)
10. Volkswagen AG (D)
11. WIV Wein International (D)
12. R & S. Keller GmbH (D)
13. Continental (D)
14. SSAB Tunnpåt (S)
15. Sydkraft Group (S)
16. Volvo – Torslanda Plant (S)
17. Uppsala University Hospital (S)
18. Saarioinen Ltd (FL)
19. Helsinki City municipal home care (FL)
20. Vestfold County Social Security Service (N)
21. Norwegian State Housing Bank (N)
22. Siemens AS (N)
23. National Commission of the Danish Police (DK)
24. Realkredit Danmark (DK)
25. Siemens Nederland (NL)
26. Overijssel Wavin Social Unit (OWASE) (NL)

These examples of good practices have been collected (and/or coordinated) between 1996 and 1999 by:

- Professor Åsa Kilbom (National Institute for Working Life, Solna) in Sweden, Finland, Norway, Denmark and in the Netherlands;
- Serge Volkoff (CREAPT, Paris) in France;
- Dr Karl Kuhn (Bundesanstalt für Arbeitsschutz, Dortmund) in Germany.

Twenty-six examples of good practice were collected in seven European countries, eight from France, five from Germany, four from Sweden, three from Norway, two from Finland, two from Denmark, and two from the Netherlands.

The European Council called in its 'Resolution on the employment of older workers' of 1995 that the European Commission should promote the exchange of information and good practice concerning the employment of older workers across the EU. In this context the Foundation initiated a project in 1994.

One part of this project was to look at ageing issues from the labour market side, 'European project on combating age barriers in recruitment and training'. A report<sup>29</sup> has documented and published 167 examples of good practice in integration of older workers in 9 European countries. Still from the labour market side, in 1995 DG V of the European Commission funded the Eurowork Age project which aimed at identifying and disseminating examples of best practice in initiatives aimed at promoting the retention of older workers. The Eurowork Age project included mainly projects and organisations that provide vocational training, job-search training, career guidance, advice to employees regarding age-aware personnel policies, etc.<sup>30</sup> A report summarising experiences from both of these EU projects, with inclusion of a few case-studies has been published.<sup>31</sup> A number of case-studies of elderly workers in different companies can also be found in books, conference proceedings a.s.o.<sup>32</sup>

Another part of the project was to look at ageing issues from the work organisation side. This was accomplished by documenting examples of good corporate practice with regard to the handling of ageing issues in work-life. Ageing has been considered throughout this study as a dynamic process: as inadequacies between workers' capacities and job demands appear sometimes early in working life, in the twenties and thirties in some jobs, ageing has to be considered from an early stage. Inadequacies do not suddenly appear for a category of so-called 'older workers', 50 and over. Therefore the concept of 'ageing workers' has been used rather than the concept of 'older' or 'elderly' workers.

The examples were identified by contacting people who were active in projects concerning ageing workers – researchers or representatives from companies. No survey was done among organisations or employers regarding the existence of such good examples. No selection process was done as all identified cases are reported here. No non-successful cases were reported, as no such were asked for. These 26 examples of good practices are therefore not representative for the situation among ageing workers in these countries. These are neither representative for existing activities in this context, with successful or non-successful outcome.

### Context

Mainly large companies/organisations with more than 1000 employees were described. This overweight for large enterprises could reflect the fact that they have more activities in these issues or that their activities have become more known outside the company, e.g. through contacts with engaged consultants or researchers. Specific study or intervention groups, however, often consisted of one sub-department, typically with 20-50 workers.

---

<sup>29</sup> Walker, A., *Combating age barriers in employment – European research report*, Luxembourg, Office for Official Publications of the European Community, European Foundation for the Improvement of Living and Working Conditions, 1997. Walker, A., *Combating age barriers in employment – Portfolio of good practice*. Luxembourg, Office for Official Publications of the European Community, 1997.

<sup>30</sup> European Commission, Employment and Social Affairs 1998. *Projects assisting older workers in European countries. A review of findings of Eurowork age*, Luxembourg, Office for Official Publications of the European Community.

<sup>31</sup> Reday-Mulvey, G. and Taylor, A., *Career planning and employment of older workers*, European Foundation for the Improvement of Living and Working Conditions, Luxembourg, Office for Official Publications of the European Community, 1998.

<sup>32</sup> Snel, J. and Cremer, R., (eds), *Work and ageing: A European perspective*, Londres, Taylor & Francis, 1994. Kilbom, Å., (ed), *Ageing of the Workforce. Key-note presentations and abstracts from a workshop held in Brussels, March 23-24, 1998*, Arbetslivsrapport 24, Stockholm, National Institute for Working Life, 1998.

Both private enterprises and state or community owned organisations including both manufacturing and service activities were represented. Some companies could be described as belonging to the 'high-tech' sphere, others to the 'blue collar' or 'white collar' sectors and others to health care or other human service sectors. Some cases covered practically all employees at the enterprise (cases 17, 26) but other cases only specific occupational groups (e.g. home care workers (case 19), electric power line fitters (case 15). One case considered ageing top managers at the company (case 22). Both male and females participated. No specific gender aspects were described, however.

The age-related activities at the different companies/organisations were mainly accomplished during the 1990s. Age related problems at the different companies or organisations were of differing qualities. Most problems were related to consequences of the ageing process per se but also to changes in the working conditions and methods, or to new demands on workers e.g. for flexibility, extended knowledge and multitasking.

## **1. Renault (F)**

### **Context**

This automobile manufacturer, with 60,000 employees, is mostly based in France. It also has plants in other European countries, including Spain, Belgium, Slovenia and Portugal.

This diversified presence is accompanied by disparities in the demographic structure of the workforce. These disparities are taken into consideration when deciding which plant produces which vehicles. For tasks involved in assembling the successor to the Clio in a few years' time, a Spanish plant may be chosen, as these have large ageing populations. Production of the new model, and the use of a third daily team, could provide the opportunity for young employees to be recruited.

Overall, the company has seen a change in its main performance criteria. Obviously, the imperatives of cost, time and quality have been retained. However, these last two criteria have increased in importance over the past 10 years. Concerns about deadlines are particularly apparent in design activities, as large projects must be completed by the set dates.

### **Ageing-related problems**

Renault's employees have a relatively elderly structure. The average age is around 45. The various demographic scenarios for the coming years suggest high numbers of employees over the age of 50, which some of the company's managers consider excessive. These managers fear ageing will lead to a deterioration in the company's performance: apparently, retaining the know-how of ageing operators is not adequately offset by a deterioration in certain physical or mental abilities.

Some of these problems could be resolved as part of a general policy of improvement in working conditions. However, the investments required are sometimes deemed too costly (up to 1% of the manufacturing cost of a single vehicle).

Furthermore, the continuous expansion in the way operations are organised is leading to the gradual disappearance of small-scale preparation posts, and more generally posts involving light physical demands. Admittedly, technical modernisation is also doing away with the need for the

most demanding jobs. However, the fall in the number of problems associated with jobs entailing moderate demands does not solve the problem of some workers, i.e. those for whom ageing is accompanied by physiological deficiencies. This situation is manageable with the current age pyramid. It may no longer be once the pyramid shifts towards older age brackets.

This problem is exacerbated by considerations linked to salary scale. The number of years of service in the company determines the amount of 'career supplements', which lead to salary rising with age. In economic calculations, this phenomenon can lead the company to outsource some production work, especially in sectors employing an elderly workforce.

However, the company ethos does not simplistically associate ageing with a form of decline, nor with demotivation, except perhaps in the final years before retirement. Quite the contrary: the company has recently attempted to study the cost/benefit ratio of increasing multitasking among the oldest employees. As a rule, elderly workers' problems with multitasking are one of the company's main concerns when it comes to an ageing workforce.

### **Corporate initiatives in this field**

Before examining the various initiatives taken regarding various aspects of work situations, it should be noted that Renault is encouraging debate on these situations. Obviously, the primary aim of improvement measures is to ease postural or physical demands and pace-related constraints. Each of these constraints plays a key role. What matters most, however, is how these constraints are combined. This should be the focus of improvement measures.

For that reason, the company uses an ergonomic analysis scale, aimed at assessing existing facilities in terms of physical and mental demands and setting targets in the design of future facilities (see a copy of this analysis scale in the annexes), paying particular attention to those requirements that could create specific problems for ageing employees.

### ***Physical constraints***

Numerous examples of improvements could be given. The most visible are those that provide technical solutions to postural constraints. For example, work above the shoulders, for activities performed under the bodywork, can gradually be eliminated through the sideways rocking of the vehicle, or (if the engine makes this solution impossible) by automating the fixing of parts under the vehicle, as the operator need only place these parts on a mechanism plate.

Some difficult postures could also be eliminated by using variable height line systems, which avoid stooping, and work with arms in the air.

### ***Working hours***

The company is holding a series of discussions on industrial organisation, both to increase the flexibility of the arrangement and to create the conditions for reducing working time. Nevertheless, the proposed solutions, particularly those involving evening teams, do not include age issues as a specific concern.

### ***Pace-related constraints and types of organisation***

Without being called into question, the 'zero stock' target is gradually being implemented less rigidly, leaving some room for manoeuvre. This is explicitly included in the definition of the space

allocated to each worker along the assembly line. The space currently includes the maximum working time required on certain models of vehicle, taking account of fluctuations in production.

This development is not specifically due to the ageing of the population. However, it clearly aims to ease certain time constraints that are particularly difficult for older workers.

### ***Training, multitasking, technological changes***

Multitasking is mainly being increased in one or two factories, which are not among the most 'elderly' in the company. This means the company has no widespread multitasking policy. As already noted, however, the development of multitasking for workers of all ages is an increasingly specific target. To that end, with the participation of representatives of the four factories carrying out assembly tasks, the company is currently drawing up a guide of recommendations for learning situations.

### **Decision-making and players involved**

The DPAS (Personnel and Social Affairs Department) plays a key role in setting up and coordinating measures relating to ageing at work. It is involved in analysing situations, the managerial planning of jobs and setting corporate guidelines.

However, the decisions implemented increasingly involve managers in technical departments, on whom industrial investments in particular depend. New impetus was provided during the negotiation of a wide-ranging corporate agreement entitled 'Living' ('À vivre'). According to the foreword to the agreement, 'Today's personnel is tomorrow's Renault'; in other words, the success of the company's total-quality policy and overall performance depends primarily on its current personnel.

There has been a change in the main players involved. Ten years ago, action plans on ageing were mostly entrusted to the managers of human resources departments. These managers were involved in 'forecast job models', human relations strategies to maintain motivation, i.e. the prevention of specific effects of ageing through the prevention of alcoholism, for example, or the development of fitness training.

Today, the focus is on the design and planning of the workplace, which explains the key role of the DPAS' ergonomist. When the need arises, the ergonomist can consult the following parties: the network of in-house doctors; the managers of technical departments and factory managers; and, more recently, 'socio-technical engineers', who ensure the characteristics of workers and the task at hand are taken into account from the industrial project stage onwards.

None of these initiatives have given rise to corporate negotiations (except for a few specific areas, such as the case of workers who suffer handicaps as they get older). Unions are informed and consulted, but real negotiations on ageing at work seem complicated, as unions must also negotiate early retirement procedures (this being one of their priorities).

However, the unions could be said to be involved in this policy in two ways. Firstly, they are represented on health, safety and working conditions committees, which regularly discuss action plans on ageing. Secondly, these action plans are taken into consideration in the more general



context of plans to improve working conditions. The ergonomic analysis scale referred to earlier has been discussed with staff representatives, who are generally in favour of this analytical tool.

## 2. Sollac (F)

### Context

This company produces sheet steel, with turnover of FRF 34 thousand million (approximately EUR 5 thousand million), and 18,500 employees. Production is concentrated in Europe, mainly France, and the steel is sold in several countries. The company therefore has to adapt both to the demographic characteristics of France and the constraints of the global economy.

The company's production has a high capital/work ratio and is based mainly on continuous processes. The field of activity is expanding, encompassing more and more production work downstream, such as the shaping of parts. This development is accompanied by increased commercial concerns and closer links with customers.

From a technological viewpoint, the last substantial change was the appearance of continuous casting in the 1960s. Since then, there has been a gradual trend towards increased automation: the robotisation of roll changing in rolling mills, the steering of facilities in control rooms, and so on. This involves more mental stress for workers. It also increases the range of potential products, reducing the cost of adjustments, which leads to greater diversification of products.

The next major technological breakthroughs will be in seven or eight years' time. These will be the introduction of electric furnaces, which can be stopped and started again without any major problems. There will also be continuous castings of thin sheets, which will involve tools that are far easier to use and far more flexible than on current facilities.

### Ageing-related problems

From the 1970s until 1991, management of human resources at Sollac was marked by the considerable use of early retirement (workers automatically leaving at the age of 50) under a general social protection agreement (CGPS) in the iron and steel industry. Between 1987 and 1991, staff numbers in the company fell at a rate of 9% a year. Almost all of this fall took the form of early retirement.

This period left an impression at Sollac. For the decision-makers, early retirement was a 'painless' way of managing excess staff numbers, since broad consensus was in operation at the company. The transition now required to other types of job management is proving difficult. Furthermore, over the past 20 years, the company has been virtually unable to recruit anyone at non-executive level: State involvement in financing early retirement meant this assistance was not used to renew the workforce, except for a small number of employees with very specific skills.

Since 1991, the drop in staff numbers has slowed (at a rate of -2.5% a year), and the system of retirement at 50 has ended. The idea now is to find different jobs within the company for those over 50, who enjoy guaranteed employment. Sollac's managers now face the problem of putting an increasing number of ageing iron and steel workers to good use.

This rise in the proportion of older employees is accompanied by a certain lack of motivation, many staff regretting having 'missed out' (sometimes by just a few months) on the right to claim early

retirement. Furthermore, the ageing of this population has led to an increase in various health problems (work-related deafness, difficulty in adapting to shift work, etc.), which in turn has led to an increase in absenteeism, work-related illnesses and sick notes.

### **Corporate initiatives in this field**

In general, Sollac cannot be said to have introduced a series of measures aimed at taking account of the ageing of its employees when devising new working methods. To date, it is more a case of either identifying the impact of more wide-ranging policies or studying specific initiatives in this field, without having reached the implementation stage.

### ***Physical constraints***

The ongoing automation of the plant should make many jobs less difficult. Less maintenance work will be required, while periods of exposure to heat or noise will be shorter. As already noted, this is a general policy. However, it is accompanied by very decentralised management of the discrepancies between the characteristics of the various tasks and workers' state of health. The company's in-house doctors, operations managers and social affairs managers sometimes meet in small working groups, who take responsibility for all these situations. Attempts are currently being made to centralise the results of these initiatives in order to create an 'observation post' for the solutions implemented, to identify problems across the board and to make innovative solutions known.

### ***Working hours***

No specific policy has been implemented in relation to ageing workers, apart from agreements on working hours: half-time after 50, gradual early retirement with 'hours counters' after 55.

There has been an increase in irregular and night hours of late. Sollac has opted for the moderate use of temporary staff. The company's workforce is designed to cope with an average volume of production. In times of increased production volumes (the cyclical nature of iron and steel production is well known), staff must contend with both fewer hours and an increased intensity of work.

To limit the harmful consequences of these restrictive hours, the company's discussions mainly involve time organisation procedures, types of rotations, recruitment times, breaks, and so on. Furthermore, growth in part-time work among older employees (see above) could help with short alternating periods and spacing out the most difficult segments of hours.

### ***Pace-related constraints and types of organisation***

This is an area where the company has little room for manoeuvre. By integrating tasks (particularly tool maintenance by the workers themselves), working times have contracted. It may be possible to ease these time constraints by slowing down this trend towards the integration of tasks.

### ***Training, multitasking, technological change***

In recent years, Sollac has readjusted its in-house training programme in favour of older workers. This was necessary in view of demographic trends. To achieve this, two conditions had to be met: the development of individual interviews between workers and their immediate superiors, in order to best assess training requirements and choose the right path; and the stress on integrated training in the workplace, which should take account of experience acquired.

As regards multitasking, balance is not so important. This could be an opportunity to develop skills, even among older employees. However, this is only true if multitasking does not involve an increasing workload (see the text above on workers staying in their job). The criteria of workload can be used to assess to what extent technological development could prove profitable, both for older and younger workers.

### **Decision-making and players involved**

The major decisions on employment are the responsibility of the management committee (bringing together the main managers of the company and the various plants), as well as the corporate policy committee. The directions they decide on in labour force management, the studies and evaluations they raise have a direct impact on the management of ageing.

Negotiation procedures also play a role, since unions are called on to act in areas such as working hours, the duration of work and ways to stop work.

Finally, the above initiatives are implemented in highly decentralised conditions. Those involved in managing the development of human resources prefer to lead these networks and implement the 'cultural' change required. It was thanks to initiatives like this that Sollac could allow many workers over the age of 50 to stay working in its factories.

## **3. Électricité de France – Gaz de France (F)**

### **Context**

This nationalised utility employs 144,000 staff, as well as a growing number of temporary staff, employees of sub-contractors, and so on.

Its staff enjoy the status of guaranteed employment. Staff numbers have increased tremendously since the mid-1970s, following a rethink in policy towards nuclear fuels, which led to the creation of numerous sites. Subsequently, recruitment continued at a steady pace, particularly for executives and managerial staff, which led to a gradual transformation of the structure of expertise.

The workforce peaked at 152,000 in 1984. However, it would have peaked beforehand had it not been for the government's insistence that it recruit for reasons of employment policy. At a later stage, early retirement helped balance the workforce (for example, in 1992, 3,100 staff took early retirement out of a total of 5,000 retirees).

EDF-GDF has a tradition of early retirement. It was already implemented by the time the gas factories started to close down in 1957, given the difficult nature of the work. These same socio-historical factors explain why the age of retirement at EDF-GDF is 55 for all staff with at least 15 years' 'active service' (particularly those involved in the arduous task of constructing the electricity grid in the 1950s and 1960s).

Finally, it should be noted that the company has a long tradition of internal promotion. Some 58% of older executives were originally manual workers or office staff. The company has long offered 'a job for life' with considerable promotion opportunities.

### **Ageing-related problems**

In 1992, at the instigation of the general manager, the DPRS (personnel and labour relations department) was encouraged to discuss demotivation among ageing executives. The DPRS linked these issues to a more general concern about the development of staff skills and therefore extended the study to all company staff.

The demobilisation of the oldest employees was noted during a repeated survey, entitled 'you and your company', which involved 10,000-20,000 staff, and which demonstrated that some indicators deteriorate with age: the degree of mobilisation in relation to work, adherence to the company's commercial objectives, etc. In addition to this observation, the personnel department also felt there was a loss of skills, and that some of the oldest employees were 'not suited to their job'.

In addition to questions on 'demobilisation', the company is concerned about the demographic ageing of its staff, due to the over-representation of people in their forties, following the recruitments of the 1970s.

### **Corporate initiatives in this field**

As already noted, the company restricted the debate to particular ageing-related problems. It is therefore difficult to say that specific measures have been taken.

### ***Physical constraints***

No particular steps were taken to shield ageing workers from the heaviest physical demands. Obviously, like their colleagues, ageing workers benefit from the results of the company's prevention and safety policies. They also benefit from technological and organisational developments which have led to the automation of some difficult tasks, and a reduction in exposure to the elements.

### ***Working hours***

Working with alternating teams and night teams is fairly widespread in certain parts of the company. The oldest workers often prefer to avoid this constraint. To date, it has been possible to reassign them, particularly as a result of career promotion, allowing them to occupy skilled daytime jobs. However, an increase in the number of employees aged 40 and over and a concomitant increase in the need for reassignment could have a negative impact on the effectiveness of these mechanisms.

Elsewhere, the company is starting to look at measures relating to working time: the introduction of gradual early retirement, more widespread use of sabbaticals, and so on.

### ***Pace-related constraints and type of organisation***

The general policies adopted in this area tend to put older employees at a disadvantage. Since the mid-1980s, the organisation of work has undergone radical changes, with an increased drive for competitiveness and enhancement of commercial functions. This has had an adverse effect on older workers, who are steeped in a highly technical culture.

### ***Training, multitasking, technological changes***

In many cases, older employees started their professional lives without any educational qualifications, or with a vocational qualification with no particular link to the electricity or gas

trade. Their expertise was gained 'on the job'. Apparently, this situation makes it difficult for them to adjust to changes along the way.

For the moment, no age-differentiated training has been introduced. The company's managers are extremely wary of differentiated approaches, preferring to confine them to situations where there is a demonstrable handicap.

### **Decision-making and players involved**

As previously noted, EDF-GDF has not introduced specific policies in the field of ageing at work. The effects of ageing and the unsuitability of workers to particular tasks are tackled on a case by case basis.

As far as the company's managers are concerned, one theory is that some of the current problems (especially demotivation) are due primarily to generational effects, and could therefore become less marked in the years to come. On the other hand, they are concerned about new problems that may arise owing to technological and organisational transformations in the future.

## **4. Aérospatiale (F)**

### **Context**

This aeronautical construction company (aeroplanes, helicopters, space and other missiles, etc.) has 38,000 employees, a figure which is falling slightly. The development of its production has been characterised by specialising in different sites in order to streamline production. This has led to the subcontracting of a series of subsidiary activities, a trend which seeks to anticipate an increase in the demands of competitiveness and reactivity with changes in the market.

The company has undergone a number of more or less recent technical changes, mainly involving major computer systems for production, computer-aided design and the automation of certain manufacturing tasks, etc. Other changes are planned, but at a less rapid rate.

### **Ageing-related problems**

The ageing of the workforce at Aérospatiale is partly due to the general ageing of the French working population, and partly due to changes in recruitment: a rise in the number of recruitments in the 1970s, a fall in recruitments in recent years (especially highly qualified staff).

For reasons of economic constraints and technical developments, the departure of the oldest workers is an element of the company's labour management. Assigning older workers with difficulties or restrictions in their ability can pose complex problems: outsourcing subsidiary tasks has deprived the company of some tasks that could be reserved for those with physical deficiencies. This is particularly true for some administrative tasks, as well as the printing of plans or even store-keeping posts that have been subcontracted. Computerisation has led to a reduction in jobs in the technical tertiary sector (e.g. scheduling agents, methods technicians, assistants, etc.) once reserved for workers at the end of their career. The development of self-regulation has led to a reduction in jobs for controllers.

Some company managers also cite the demotivation of older employees, especially due to a change in mentality regarding early retirement.

## **Corporate initiatives in this field**

### ***Physical constraints***

For some time, Aérospatiale has been taking steps to improve working conditions and designing work stations which take account of physical aspects. These were initially based on hygiene concerns. More recently, they have addressed ergonomics, including examining psychological issues. For the past 10 years or so, the company has had an ergonomics department, one of the responsibilities of which is to train production and design engineers to take account of the characteristics of staff and their work. This training, which began in 1986, constitutes a considerable investment for the company, as it represents 33 days of training divided into 11 three-day seminars. The training focuses on factors relating to human variability with regard to age.

Taking the work of staff into account, particularly in terms of changes with age, has led to considerable progress being made. In the aeronautics sector, to mention but one, improvements have been made in aeroplane fuselage assembly work due, for example, to the introduction of working platforms which can be raised and the robotisation of difficult work, such as riveting and painting.

However, aeronautic construction still involves a large number of difficult tasks in assembly work, which are likely to both accelerate certain physiological ageing processes and to trigger age-related selection mechanisms. Important steps still need to be taken, particularly to reduce difficult postures and promote work in more physiologically natural positions.

### ***Working hours***

To take account of ageing, the company is attempting, wherever possible, to avoid using teams alternating with night work. However, economic constraints have made it necessary to adopt this working hour arrangement in some areas. Looking for new ways of arranging working hours has proved necessary. This is no easy task, however, given the wide range of preferences among workers.

### ***Pace-related constraints and types of organisation***

In missile manufacture, the assembly of many small parts has always involved very tight time constraints. The same did not apply to aircraft production, where the turnaround time was far longer, roughly a decade ago. However, time constraints have become tighter in recent years.

Taking the ageing of assembly workers into account therefore involves a close examination of how their work is organised. Studies have been carried out on this, but more needs to be done. Awareness campaigns are proving useful, as are training courses for decision-makers at all levels to make them more aware of the impact of the organisation of work on their staff's performance.

### ***Training, multitasking, technological changes***

Aérospatiale has implemented a number of interesting initiatives in this field. One involves providing support when technical changes occur in the manufacture of composites. The development of a centre of excellence for composites at one of the sites and the opening of a new workshop have provided support from an ergonomic viewpoint throughout the project. It is against this background that a specific training course has been run, taking people's ages into account. The workers in question were trained both in the classroom and on the job, using original methods



based on the use of knowledge and know-how acquired at an earlier stage. This procedure, some of the principles of which can be applied to other situations, has been included in early support to other technical changes.

For some years now, the training departments at Aérospatiale have been acquiring skills, particularly from this type of experience, enabling them to take account of age when planning their courses. A better understanding of how cognitive capacities develop with age may help them prepare an ageing employee for a change of job or a technological advance.

This policy is facilitated by corporate measures (e.g. training quotas, individual wage rises, career development, etc.) which involve a reassessment of the final years of a professional career.

### **Decision-making and players involved**

In the production sectors, the ageing of the workforce is initially identified and dealt with by supervisory staff. The problems they deal with do not always need to be passed on up the hierarchy. However, their ability to solve these problems depends on their room for manoeuvre. This room for manoeuvre is gradually being increased owing to greater awareness among production managers, including plant managers.

It is more difficult to extend this awareness to human resources managers, given the role of retirement among the oldest workers in personnel management. For that reason, the company decided to launch an information and training campaign for all human resources managers in 1995. The plans are to highlight current or future tools which will make it easier to anticipate developments in the staff population and jobs of the company.

Unions, who generally show interest in measures relating to ageing at work, have one overriding concern: not to compromise any plans for early retirement.

## **5. Aigle (F)**

### **Context**

Aigle has approximately 500 employees. Half its turnover is derived from the manufacture of rubber boots (they are the European leader), horse-riding wear (world leader) and clothing for cold conditions, the other half through the design and marketing of other footwear and garments, under fierce competition with Asia. To meet this competition, Aigle has decided to produce top-of-the-range goods, relying on local knowledge (in the Poitou region of France).

Staff numbers have fallen gradually for more than 20 years, and there has been virtually no recruitment since 1984, which has helped to raise age levels and length of service.

### **Ageing-related problems**

There have been complaints for some years in the rubber boot manufacturing area. These complaints relate to the difficulty of having to work in a standing position and uncomfortable postures, the repeated handling of heavy objects and pain in the fingers and hands. These complaints have been followed by reports of partial unfitness for work from the company doctor, especially among women aged 40 and over.

It should be noted that the automation of boot assembly, which would solve many problems involving the physical difficulty of the work, is not an option owing to the quality of the product and the company's brand image. For the same reasons, but in another area, the use of temporary work has to be limited and the skills acquired by older female workers are invaluable.

### **Corporate initiatives in this field**

#### ***Physical constraints***

A disengageable conveyor belt has been designed to allow the task to be performed in the stopped position. In the past, workers had to follow the 'mould' of the boot, a mould made of an aluminium alloy which moved before them, making it difficult to move with the precision required. The position of the moulds can now be adjusted according to the worker's height. On the other hand, the study of mechanical handling aids was not conclusive for reasons of cost and feasibility.

#### ***Working hours***

No particular problems to report.

#### ***Pace-related constraints and types of organisation***

One of the ways to remedy the harmful effects of repeated movements involves organising a rotation of tasks. This rotation used to be difficult due to a lack of training, itself due to time pressures, and to the instructor not being available as she was occupied elsewhere with numerous technical accidents.

The technical improvements described above have meant instructors are more available and have been able to organise a training itinerary which has resulted in a system of job rotation every two hours.

#### ***Training, multitasking, technological changes***

As has just been mentioned, training was required so that each operator would be able to master several jobs on a conveyor belt. This development in training and organisation has led to an increase in expertise.

#### **Decision-making and players involved**

All these measures have enjoyed government financing. They have been coordinated and implemented with the participation of an ergonomics consultancy, and have been supported by the work of several groups bringing together workers, management, in-house doctors, the staff representatives for this workshop and the company's various departments. The bodies representing staff have been informed of the progress of the operations in regular meetings. All staff in the sector have been convened at key moments.

## **6. Chantiers de l'Atlantique (F)**

### **Context**

This shipbuilding company employs over 4,000 staff in the port of Saint-Nazaire. Production has tended towards a reduction in the size of the ships built: more passenger ships, fewer tankers. This development has helped ease certain physical constraints, though production times have become much tighter. Today, a passenger ship is built in 22 months, while 10 years ago, it took 28 months. Deadlines are imperative: for passenger ships, the date of the maiden voyage is set a long time in advance, seats are already reserved, so producers face huge fines in the event of a delay.



Furthermore, a reduction in overall output and increase in productivity have led to a reduction in the number of staff recruited and the provision of early retirement. The age at which staff retire has been changing for the past 30 years. In 1966, it fell to 63, but many workers died at an earlier age or suffered health problems that forced them to stop performing production tasks. After numerous other changes, the retirement age fell to 53, which workers themselves found too early. Today, the basis for calculation is half-time work as of the age of 55 and retirement at 60. In practice, however, staff work part-time between the ages of 55 and 57 years and eight months, then stop work.

### **Ageing-related problems**

Shipbuilding is physically very demanding. This poses serious problems in terms of employing ageing workers, especially as these workers suffer from certain physiological deficiencies that have been accelerated by the difficult nature of the work itself. 'Soft' jobs (store keeper, sweeper, security, etc.), till recently occupied by employees who had suffered the most wear and tear, are increasingly rare, as a result of efforts to rationalise these tasks.

Furthermore, as already noted, production deadlines are much tighter. This increased time pressure is accompanied by more frequent pain in the joints (knees, hips and spine), because there is a close link between tight time constraints and difficult postures. Complaints and unfitness for work (15-20 workers are reallocated each year due to back pain) are especially frequent among older workers, who are most numerous: 1,500 workers are between the ages of 43 and 53, with many years' service ahead of them.

### **Corporate initiatives in this field**

#### ***Physical constraints***

The company is implementing a long-term action plan to limit the effects of frequent and very tiring movements in shipbuilding, particularly having to climb ladders. Replacing ladders by small stairs, wherever possible, makes it possible to go up and down in a less tiring manner and, above all, to free hands for carrying loads.

To reduce postural constraints, technical solutions are being sought to 'put some distance between the man and his task'. For example, welding with a gas-filled wire (which partly replaces electrode welding) forces the welder to adopt a difficult posture, to keep himself very close to the melting bath. Mechanisation of this welding is therefore being studied.

Furthermore, a box production plant is under construction. This production used to be sub-contracted, but the sub-contractor closed down recently. Chantiers de l'Atlantique then decided to take on this task again by creating a working space where ageing workers could be deployed when they encountered problems in other production tasks. It is inevitably repetitive work (300-400 boxes to be made each day), for which particular attention is paid to physical constraints: the supplying and emptying of the posts is automated, levelling is performed without manual handling and an acoustics expert is used to reduce noise nuisance.

#### ***Working hours***

No particular comments in this area, apart from part-time work after the age of 55 (see explanations above).

### ***Pace-related constraints and types of organisation***

In certain cases, technological modernisation allows beneficial reorganisations to be arranged. This is the case for the cutting out and assembly of shipbuilding panels. Blocks of panels used to be made with 'excess length'. This meant carpenters and cutting staff (many of whom were older) had to make numerous adjustments when assembling the ship in the slip, had to climb up and down ladders to draw and cut the excess lengths, check and transport jacks and welding torches, and so on. Now, measuring procedures and computer calculations make it possible to cut the blocks precisely in the pre-assembly area, in the open air, using materials the crane can carry. Only the final adjustments have to be made in the slip. This is a considerable advance, provided this change does not lead to an eventual reduction in manufacturing time.

### ***Training, multitasking, technological changes***

Young recruits are assigned a 'mentor', an older worker who takes charge of them. This method of passing on knowledge is very much appreciated by young recruits, and is very motivating for the older workers. However, these are more often aged 40-45 than in their 50s, as the latter rarely received the training required to tutor young recruits.

Furthermore, in the case of the box manufacturing plant described above, the training time, estimated at one month for young workers, has been increased to two and a half months to take account of the characteristics of this ageing population.

### **Decision-making and players involved**

In-house doctors play a key role by monitoring the state of health of staff and encouraging moves towards improvement. These measures involve many other staff in the company, including design managers and supervisors, with the participation, for each project, of some of the workers involved. In the specific case of the box shop, the project has benefited from financial aid from public funds.

## **7. Company A\*\* (F)**

### **Context**

A\*\* is a family-run company in the clothing industry. The plant under discussion, which employs 101 people (three-quarters of whom are women), specialises in producing lingerie and bedding articles (mainly mattress covers).

The commercial climate has prompted A\*\* to specialise in top-of-the-range articles and to diversify its models. However, the way in which female workers are paid, closely linking salary and output, tends to favour the quantity produced. Furthermore, client demands (mail order and large distribution companies) for delivery dates have become tighter, while the products are very sensitive to fashion, which makes it necessary to produce small runs, reduce stocks and handle a variable workload, hence the use of many temporary workers.

### **Ageing-related problems**

Apart from a few recent recruits, the trend over the past 10 years has been marked by a general ageing of the age pyramid, at A\*\* as a whole and above all at the plant in question. Throughout this period, exits by middle-aged workers both revealed and masked their increasing problems in meeting the demands of the production process.

During a recent reorganisation of the company, cutting out some activities and mechanising particular tasks, a production target was introduced for most employees. Management noted that some workers – particularly older ones – were not reaching the required targets. Moreover, as some tasks had disappeared, several workers were having problems adapting to their new tasks, even after a long period of retraining. Some were ‘tried out’ in several jobs, though the problems were not resolved.

**Corporate initiatives in this field**

***Physical constraints***

Seats and work areas have a major impact on postural constraints. An analysis of the working activity, particularly for women stitching mattress covers, showed the inadequacy of the furniture, which is now being replaced.

Furthermore, it is possible to limit difficult postures by ensuring work stations are regularly supplied and emptied, and to limit accidents by improved maintenance and adjustment of machines.

***Working hours***

No particular comments.

***Pace-related constraints and types of organisation***

Some changeovers between models and products create problems by causing a loss of time and accidents. Other changeovers run smoothly because they involve an equal distribution of the problems. The company will therefore give preference to the latter.

***Training, multitasking, technological changes***

To save time and on movements, experienced workers develop methods that differ from recent recruits. It may take several months to learn these methods. Acquiring these methods also depends on the layout of work stations. The learning of these methods should be organised. Work stations are being laid out in such a way as to ensure the methods are learned properly.

Furthermore, steps can be taken, in the field of training and management, to promote certain career paths, particularly from machine-stitching jobs to handling to distribution jobs.

**Decision-making and players involved**

Most steps were taken at the instigation of the in-house doctor, supported by the head of personnel, aided by middle management and the participation of workers to explain the most difficult constraints.

**8. UDD-FIM (F)**

**Context**

UDD-FIM, a subsidiary of the Swiss Von Roll group, has approximately 700 employees at its Delle plant and produces insulating materials for electronic and electrical engineering applications.

Recent years have seen the development of a new industrial approach, aimed at increasing the company’s global competitiveness. ‘ISO 9002’ certification procedures were initiated in 1991.

**Ageing-related problems**

The company, located in a rural area with jobs approximating those of the craft trades, has a stable population with low turnover: 40% of employees are over the age of 45, with an average period of service of 19 years. Workers at UDD-FIM who entered the company at an early age had insufficient training to be able to keep up with technological developments and new forms of work organisation. However, the company seeks to retain its current workforce and improve their expertise.

**Corporate initiatives in this field*****Physical constraints***

The various jobs have been re-evaluated and the work itself formalised into different categories in a bid to prepare for the improvement of working conditions and to reserve some jobs for those with the worst physical difficulties. Above all, these changes aim to eliminate having to stand for prolonged periods and repeatedly having to carry heavy loads. Handlers have also benefited from training in 'movements and postures' for 70 staff over the age of 45.

***Working hours***

No particular comments.

***Pace-related constraints and types of organisation***

Semi-autonomous teams have been introduced.

***Training, multitasking, technological changes***

The role of supervisor has been gradually changed. He now mainly provides staff with technical assistance, for which he has received the relevant training.

Workers are trained in economic facts in the context of the introduction of the semi-autonomous teams. The oldest workers also receive specific technical training.

Against this background, ISO certification has helped formalise procedures derived from a huge stock of know-how that had never been recorded in writing (some staff can neither read nor write). The company has trained its staff in a hundred or so tasks that are not taught elsewhere.

**Decision-making and players involved**

These changes were mainly instigated by human resources management. A union agreement confirmed the validation of know-how and the enhancement of expertise.

**9. BMW (D)****Context**

In the course of the project, the target group of physically disabled persons with an officially recognised reduction of earning capacity was initially extended to include those with changed capacities and finally to older employees. The group of persons with changed capacities – defined as employees who can no longer perform certain activities, or only with limitations, because of a health impairment objectified by the company doctors – were included because, on the one hand, the review of the actual situation revealed them to be numerically comparable with the disabled as a group and, on the other, they were to be regarded as potential disabled from a preventive point

of view. This also laid the basis for the inclusion of older employees. One reason was the fact that the majority of those with changed capacities consist of older employees, and another was that in-company medical examinations confirm the direct relation between age and impaired performance. An analysis of 44 impairments of performance established by occupational medical examination revealed that their individual number increased with age with regard to nearly all features. This applies both with regard to the physical efficiency and the compatibility of environmental influences/working substances. A particular increase in both regards was established from the age of 50 on.

### **Ageing-related problems**

BMW AG recognised as early as the mid seventies a development which only clearly emerged in many companies at the beginning of the eighties. It is characterised by the increase in the number of persons with changed capacities with a simultaneous decrease in the number of workplaces suitable for this group of individuals.

This development is due to a number of factors:

- Increasing rationalisation in production;
- Introduction of new techniques and technologies;
- Cut-back of general cost areas which previously served as 'collecting tank' for disabled persons and those with changed capacities;
- Reduction of production depth with the consequence of the abandonment of so-called light or pre-assembly workplaces.

Apart from the disappearance of suitable workplaces, there were also more rigorous requirements regarding the use flexibility of employees, which disabled persons and persons with changed capacities can often no longer live up to without further assistance.

The forms of corporate reaction at that time were admittedly not without their problems.

- The superiors have to date solved personnel assignment problems relating to older employees in particular (over 50 years of age) by reserving intrinsically low-requirement workplaces (sitting workplaces, mostly pre-assembly activities) and occupying them as required. The number of 'niches' fell steadily, however, with the increasing pressure to rationalise.
- The company medical certificates were often insufficient, because they were formulated too generally.
- Communication and cooperation were not sufficient.
- The previous problem-solving strategy was characterised not only by the department-related transfer of personnel by superiors, but also by the existence of a relatively low-strain production department. This demonstrated that disabled employees and those with changed capacities can maintain their efficiency without problems if given an assignment suited to their abilities, but on the other hand this is a one-way street from which there are no transfers to other areas. In this way, the vacancies here only became free by means of 'natural' fluctuation or the attainment of the statutory age limit. The department was no longer able to guarantee its

function as a 'collecting tank' for disabled employees and those with changed capacities, especially for older employees, as their number increased. In addition, the existence of such a department led to the neglect of work design in the other departments. Finally the low-strain department itself was affected by the pressure to rationalise.

Both department-related and cross-department solutions thus came up against the limits of their efficiency at BMW.

In the HdA project, the aim was pursued of creating an adequate number of suitable workplaces to which disabled persons can be assigned in accordance with the requirements and abilities. There was a need for action in particular with regard to the accumulation of strains at individual workplaces. Under the original notion, this was to be dealt with primarily by the development and use of technical working aids and by the improvement of the personnel assignment strategy.

The project is thus based on two major pillars. On the one hand occupational medicine, and on the other ergonomics. The problem at the start of the project is that of disabled employees, employees with changed capacities and older employees whose physical efficiency is impaired and whose workplaces set excessive performance standards.

### **Strategies**

Starting with this constellation, the strategy is divided into an analytical instrument and a concept of action.

Within the framework of the analysis, information is collected on the physical strain capacity of the employee and the strain requirements at the workplace. For this purpose, the so-called requirements and strain capacity analysis (in short ABA) was developed. This concerns a 'profile comparison method' which includes, on the one hand, a direct comparison of the individual strain capacity profile established in a company medical examination and, on the other, the requirements profile of the workplace established using an ergonomic procedure.

The project pursued the following objectives:

- The design measures are not only intended to reduce strains, but also to prevent performance impairments from arising.
- The design measures are to be prospective, i.e. future problem situations are also to be capable of being coped with.
- The project is to become a 'self-operator'.
- The project is to include three design areas, technology, personnel and organisation.
- The principle applies that design of the existing workplace has priority over transfer to a different one.
- Where transfers are inevitable, the employee is to be offered a workplace of equivalent value.
- The aim is not to reduce strain on a point-by-point basis, but to achieve a generally higher design level to ensure personnel assignment with appropriate loads.



**The requirements and strain capacity analysis (ABA)**

In the development of the ABA, first a catalogue was drawn up of 30 strains affecting mainly the physical efficiency of the employees and determining the requirements profile of the workplaces.

The ABA's innovative element consists of the possibility of evaluating the analytical results to establish what can be improved at the workplace.

Disabled employees and those with changed capacities in the company were examined by the company doctor. In this way it was established what impairments of strain capacity arise most frequently in the target group. On this basis, a design goal was set up in each case for nearly all strain features; the demand was put forward that at least 70% of the disabled and those with changed capacities should be up to the respective requirements profile.

The main feature of this approach is that the strain capacity of employees whose health is already impaired is referred to as the basis for organising the work of all employees, and so the limits which count as reliable ergonomically are fallen below by a large margin.

The second possible application for the ABA is as a decision-making aid for the company work organiser. It assumes that, in addition to the survey of those with changed capacities, the proportion of workplaces in the company with corresponding strain exposures is also recorded. If the two sets of results are compared, it becomes clear which requirements or strains are to be changed firstly, secondly or thirdly. This will allow the funds available to be deployed in an optimum fashion and will increase the chance for locating suitable workplaces for disabled employees, employees with changed capacities and older employees.

This is also the starting point for a prospective design of strains which are frequently classified as critical in company medical examinations, but which occur at a given point in time only at a small proportion of workplaces to any marked extent. If the company prevents the relevant strains arising when reorganising workplaces, the possibilities for assigning persons which changed capacities and disabled persons can be expanded. With such prospective measures, it is possible to avoid the retrospective design of workplaces already set up.

It should be mentioned that the ABA consists of two mutually independent parts. While part A is related to individual cases, with part B, the work situation is central, regardless of individual employees.

**Advantages and disadvantages of the ABA**

The requirements profile for a workplace can in principle be made up on a module basis of the requirements arising at the workplace and can be presented graphically in the form of a histogram.

The advantages of the analytical consideration of workplaces:

- The workplaces can be described on an application-related basis and compared with one another.
- The uniformity of documentation makes requirements profiles transparent and reproducible so that the design need is evident.

- The flexibility of the documentation scheme makes it possible to consider the change of requirements profiles as the result of technological change.

### **Analysis of employee strains**

The analytical documentation of the employees' physical strain capacity offers the following benefits:

- medical judgements can be more effectively operationalised for personnel assignment;
- major elements of health problems in the company can be recognised and corresponding design measures initiated.

### **Decision-making and players involved**

A decisive innovation in the BMW project was the institutionalisation of organisational units which were concerned with the assignment of disabled employees and those with changed capacities and which improved in-house cooperation and communication. Mention should be made first of the central department for the assignment of disabled personnel and the decentralised departments for social welfare advice and work structuring. The involvement of the central department in the corporate process of personnel assignment for disabled employees and those with changed capacities served primarily to advise and support in the search of direct solutions. The disabled consultant is an employee in the central personnel department and is responsible for all facilities of BMW AG in questions of

- work design for disabled persons;
- the organisation of personnel assignment for disabled employees and those with changed capacities;
- advice and counselling for company departments in individual cases, as well as with regard to internal public relations and;
- imparting the principles of work design to management personnel (foremen).

The consultant for the assignment of disabled employees is coordinator, initiator, moderator and expert. He deals with the field both in relation to individual cases and in a systematically preventive way. He coordinates the settlement of cross-departmental questions, supports the planning and producing domains in questions relating to work design for disabled persons and passes on knowledge to superiors to help find official arrangements and solutions in individual cases at the preparatory stage. He instructs on how to handle the profile comparison method; he convenes and moderates cross-departmental meetings on personnel assignment problems. His task is also to create problem awareness among those involved and to make up lack of information. With a long-term perspective, he is concerned with building up a workplace information card index system (computer-aided), describing the main requirement elements for workplaces. His tasks also include drawing up documentation material on which the company forecasts can be based which can be taken into account in new plans, as well as the ongoing qualification of the consultants for the assignment of disabled employees.

The BMW project shows that a series of organisational preconditions must be created if the assignment of disabled employees and those with changed capacities is to be guaranteed in the long run. The following aspects can be mentioned here:



- Anchoring the post of consultant in the structural organisation to create a balance with other company cooperation partners.
- Equipping the function with adequate areas of responsibility, especially the power to dispose of funds for the design of personnel-related and workplace-related measures. In this way, it is also possible to assist measures which the competent specialist departments would not be able to finance.
- Possibilities for influencing the personnel assignment of disabled employees and those with changed capacities in the case of the new design of workplace or, as the case may be, workplace systems.
- Possibilities for influencing the planning of production-related developments.

## **10. Volkswagen AG, in Wolfsburg (D)**

### **Context**

At Volkswagen, one has always been aware of the great responsibility for protecting and promoting the health of employees. Prevention and health promotion are regarded as an ethical and social obligation and as an economic necessity. They are at the same time an expression of the corporate culture at Volkswagen.

The aims of the corporate health system, which define the framework for its activity and go substantially beyond the statutory regulations, consist of:

- protecting the employees comprehensively from health impairments;
- promoting the health of employees;
- contributing to the humanisation of work;
- in this way making a contribution at the same time to the success of the company.

In the pursuit of these goals, the health system is guided by the following principles:

- ongoing, open dialogue with all those involved in occupational safety and health;
- active involvement of employees;
- participation in prospective work design;
- adoption of innovative approaches to health protection;
- consideration of cost-benefit aspects.

These principles represent important conditions for success-oriented prevention and health promotion in the company.

### **Ageing-related problems**

It has long been known that the psycho-physical prerequisites change with advancing age. Both the efficiency of the sense organs and various physical capabilities are subject to age-related changes.

In the area of physical efficiency, there is a decline of the so-called 'speed' achievements from the age of about 30, while the so-called 'crystallised' achievements are preserved to an advanced age. But once again there are considerable inter-individual differences. There is no such thing as the older employee.

Nevertheless, the design of the world of work – regardless of the statutory stipulations – continues to be marked by the notion of a fictitious 'normal employee'. This normal employee is male, about 25 years of age, healthy and fully efficient. Employees with performance impairments, female employees and older employees are frequently excluded.

This youth-centred point of view is certainly attributable to the fact that, with a lowering the age limit (early retirement), many older employees leave the companies and thus the questions of an ageing workforce has hardly arisen to date.

The proportion of older employees at Volkswagen is relatively small. If one draws the calendar limit for 'older' employees at 55 years, the proportion of older employees is only 1.5%; if the age limit is set at 50, the proportion is 16.5%.

In all the age structure of the Volkswagen workforce shows that the majority of employees are between 20 and 40 years of age. Even so, there are large differences between the individual plants and within the plants between the areas.

### **Corporate initiatives**

#### ***Work design at Volkswagen***

The part played by the subject of the 'assignment of older employees' is all the smaller, the more ergonomically the workplaces are organised.

Work design at Volkswagen begins already in the product development phase and in the planning stage for new installations and machines. The principle applying here is that workplaces have to be designed in such a way that older employees can also work at them.

To ensure this, corporate health protection is integrated in different ways comprehensively in work design.

A major instrument of work design at Volkswagen is the projection-oriented procedure of ergonomic workplace design. This procedure regulates in detail the sequence in the design of workplaces and the involvement of corporate health protection in it.

The procedure encompasses a total of 10 steps. Its special characteristic is that health-relevant aspects are considered from the initial planning deliberations through to series start-up. Continuous ergonomic consultancy and testing is provided by health protection during the whole planning sequence.

At the same time, precise workplace and activity descriptions are drawn up and certain occupational medical minimum requirements are specified, among other things. The workplace and activity descriptions and the minimum requirements involve various criteria which take account of the psycho-physical capacity of older employees.

The conclusion is in each case a standardised inspection of the relevant workplace, which is recorded in a report.

### ***Occupational medical recommendation of change of activity***

In cases where it is recommended to older employees from an occupational medical point of view that they change their activity (e.g. leaving the three-shift system or permanent night shift), an attempt is made basically to initially find another suitable workplace within the department.

In nearly all areas of the company there are workplaces which take account of the changed capacity of older employees (example: transfer from the cycles of the assembly line to the non-cycle-based module production).

### ***Assignment to so-called 'profile workplaces'***

Older employees who feel they are no longer up to the requirements of their workplace can be assigned to so-called 'profile workplaces'. Profile workplaces are workplaces with certain requirements profiles for employees who only experience one, or perhaps two minor impairments of performance – for example: not being bound to the assembly line cycle, not standing continuously. These workplaces are already defined in the planning phase. In the procedure for projection-related workplace design, a workplace and activity description is included for this purpose, in which the corresponding activity criteria are surveyed. Within the framework of the ergonomic inspection in situ, the workplaces are then confirmed as profile workplaces – or not.

The profile workplaces are documented in a database, where they are then available for personnel assignment purposes.

### ***Assignment to workplaces for employees with impaired performance***

Older employees with several and considerable performance impairments can also be assigned to special 'workplaces for persons with impaired performances'. Once again the principle applies that employees with impaired performance should be employed as far as possible in their home department.

'Workplaces for reduced performance' must meet special, precisely defined specifications with regard to occupational-medical design. In all, the stipulation procedure contains 19 requirements to be met by such a workplace.

The workplaces for employees with impaired performance are documented in the personnel department, and so they are available there for the purpose of specific personnel assignment.

### ***Safeguarding in collective agreements of an efficiency-related workplace***

Older employees at Volkswagen are entitled – to the extent that they satisfy certain preconditions – under collective wages and conditions agreements to a workplace which is in accordance with their capacity.

'The general wages and conditions agreement at Volkswagen stipulates among other things that an employee who'

- has been with the company for at least 20 years and has passed his 40th birthday, or
- has been with the company for at least 10 years and has passed his 50th birthday,

is to be transferred to a workplace which accords with his mental and physical capacities, if he is no longer up to the requirements of his workplace as a result of his constitution, the poor state of his health or a work accident, and this is to be done without loss of pay.

The transfers are subject to the principle that initially a different, suitable workplace is to be found in the employee's old department. Only if this search is fruitless, will cross-departmental transfers be made.

### ***Personnel development/qualification***

Within the framework of personnel development, an attempt is made to give older employees activities for which crystallised intelligence (e.g. care, experience, knowledge of people) is of special significance. Examples here are quality assurance, functions as a superior and coordinating tasks.

### ***Changes in work organisation (group work)***

In the case of changes in work organisation – this means here in particular the introduction of group work – the principle is that older employees should be integrated in the groups. There should be no special groups for older employees, but the formation of groups should be geared to existing employees.

Previous experience has shown that there are no special age-related problems with older employees in group work.

### ***Retirement***

The so-called 'staggered model' developed at Volkswagen is intended to enable older employees to achieve a smooth transition to retirement. For employees from 50 years of age it provides for the possibility of a step-by-step withdrawal from working life. The daily working hours are reduced continuously to the onset of retirement (24 hours/week up to the 59th birthday; from 60 on 20 hours/week).

Optionally, older employees can also make use of the possibility of being released in blocks on a yearly basis. The annual working time for employees who are between 56 and 59 years of age is then reduced to 10 months. And that for employees over 60 to 8.6 months a year.

### **Summary**

- The proportion of older employees at Volkswagen is relatively small.
- Projection-related work design means at Volkswagen basically that account is always taken of age-specific changes and circumstances. A specific work design for older employees is not necessary in view of this.
- Older employees at Volkswagen are entitled in law, provided they satisfy certain conditions, to transfer to a workplace which accords with their capacities. With all transfers, an attempt is always made first to find a suitable workplace within the employee's own department.
- Older employees whose capacities are impaired may be assigned to profile workplaces or workplaces for those with impaired performance.
- Within the framework of personnel development, an attempt is made to give older employees those activities which demand above all crystallised abilities.

- In the case of group work, the principle applies that older employees are to be integrated in the groups.
- The so-called staggered model is intended to enable older employees to achieve a smooth transition to retirement.

## **11. WIV Wein International (D)**

### **Context**

The WIV Wein International group owns 14 wide direct marketing companies in Germany with a total of 1,000 independent sales personnel and 1,700 employees. World-wide, approximately 4,500 people are employed by WIV in 16 countries.

It is part of the WIV philosophy to shorten the working hours for certain groups of employee. Many collective agreements over the past few years have taken account of this; a wide variety of modified agreements have been concluded, especially in the food and beverages sector in Germany.

In the confectionery, brewing and cigarette industries, older employees receive between 3 and 28 days additional paid leave every year, provided the employees are aged between 50 and 60. In one case, the employees even have the option of total release on 75 % pay or a 50 % release with continued payment of all remunerations. The trade union stresses that the intention with these measures is to save workplaces and advance the humanisation of the world of work.

A works agreement has been agreed between the management and works council which applies exclusively for older employees. It is headed: 'Staggered transition to retirement'.

At the end of 1992, the works agreement was reworded on the basis of the experience of the previous years. It now reads as follows:

1. For all older employees (from 50 years of age)
  - Notice for dismissal has been unilaterally extended (6 months to the end of the quarter) by the company.
  - Immunity against dismissal has been created (55 years, 10 years in the company).
  - The total income last received is guaranteed even if an activity with a lower rating on the pay scales is performed.
2. There is the possibility of shortening the weekly working hours in two stages (by free decision of the employee)
  - Stage 1: from the age of 58 to the 63rd birthday five hours less work weekly (normally Fridays free, because Friday is a five-hour day).
  - Stage 2: from the age of 63 to the 65th birthday 13.25 hours less work every week (normally Fridays and Mondays free = 13.25 hours)

In many cases, older employees are also granted or offered continued work beyond the statutory age limits.

3. Programmes to prepare for retirement are offered or supported in many different forms. (The leisure time – with preparatory programme – formerly conducted on one Friday every month is not longer provided.)

Although past experience has shown that the reduction of working time on Friday and/or Monday is the most popular form of involvement in the ‘staggered transition’, the company is willing to accommodate the modified wishes of employees. It is not permitted to save up working hours to take an extended holiday because this is not in accordance with the idea of a staggered transition to retirement.

A few additional points:

1. The ‘staggered transition’ is financed as follows: 50% of the free time is borne by the employee, 50% is paid for by the company.
2. The works agreement only applies for all employees in the wide range of production and in-house administrative domains. The employees in the field sales domain are not included.
3. In the in-house domain (approx. 1 000 employees), a maximum of 80 persons could participate. In some form (mainly the Friday/Monday arrangement), a total of 20 male and female employees are taking part. (Prior to 1979, WIV was a very ‘young’ company with an average age of 35 years and – almost – no older employees.)
4. After signature of the works agreement, the company invited all older employees who were eligible and presented the substance and spirit of this arrangement. In 1979 there was no open rejection, but a considerable degree of scepticism. Up to 1985, nearly all those eligible – with a few exceptions – were taking part in the works agreement.
5. A very positive experience should be mentioned: When the company was in a difficult crisis in 1985, all older employees voluntarily waived their right to participate in this arrangement. By doing overtime, they made an enormous contribution to the company’s good recovery since about 1990. Use of the opportunity provided in the works agreement has again been taken up, but only by about 25% = 20 persons.
6. It is important to convince the younger employees of the need for this action, to ensure that participation is not spoilt at the workplace for older employees.
7. When an additional paid free day per month was introduced for older employees in the general collective wages and conditions agreement, the company saw fit not to apply both at the same time. The employee himself decides ... either, or.
8. Replacement appointments are normally not necessary in the administrative areas, but they are in production, in despatch and in delivery.
9. An explanation is important: The works agreement does not apply for personnel in field sales. It became clear that the employees in this sector would have to be persuaded to move gradually into retirement in at least the same way. The personnel manager of the company attempted in more than 30 cases over the past few years to persuade older employees in field sales (ADM) to take a comparable path.

— Reduction of weekly working hours was offered.

— An additional paid free day every month as so-called age-related free time was also offered.

- A 50% cut in customer files with 75% payment of the previous income was presented as a possibility.
- Two years before beginning of pension payments, the ADM is to train a young successor at his customers for one year. In the final year before the pension, work only on a voluntary basis with full payment of salary.

Quite individual and partly ‘apparently crazy’ model-type proposals were offered, discussed and, in most cases, finally rejected by those concerned. (Few exceptions)

Clear insight for the personnel manager:

- The spirit and practice of ‘staggered transition to retirement’ cannot be transferred without further aid to the field sales personnel. Quite different forms have to be found here.
- From the knowledge that the retirement shock is frequently an undeniable phenomenon, WIV created an agreement which not only made possible a staggered progression to retirement, but also lets the older employees – every single one – ‘be as old as he feels’.

## **12. R. & S. Keller GmbH, Wuppertal (D)**

### **Context**

The change in the population structure in Germany shows a clear increase in older persons earning a living. This development requires that older employees stay longer in the active work process. For this purpose, it is absolutely necessary to secure the required qualifications, especially in the case of modern technologies, such as CNC.

The development requires the following for the assignment of older employees in future work processes

- on the one hand, greater qualification of older skilled personnel to operate modern technology and
- on the other hand, the design of modern CNC programming systems which also make possible the utilisation of the experience and knowledge of older employees.

Both directions of development are being pursued within a scientific project. In the present paper, mainly the qualification of older skilled personnel and the possible use of skilled personnel as multipliers in small and medium-sized companies will be dealt with.

### **Qualification of older skilled personnel**

In the course of the project, qualification concepts were developed and tried out in model course, taking account of the specific learning conditions of older skilled personnel in metal processing. These concepts enable even a 50 year old to take the step from traditional, conventional lathes and milling machines to CNC-controlled machine tools. The development of qualification concepts assumes the practical knowledge accumulated by the skilled personnel in conventional metal cutting. The practical knowledge of the skilled personnel is closely intertwined with the new subject matter. These concepts were tested and optimised in two forms of model course.



**Basic CNC courses:**

All older skilled personnel with knowledge of conventional metal cutting are qualified for work on CNC machine tools with a CNC training and production system of the company Keller. Over the whole course duration of eight weeks, training and familiar factory work with practical learning on site are alternated – amalgamated in each case to form a weekly block.

**Multiplier courses:**

The qualification of experienced skilled personnel is conducted to enable them to give in-works training of employees with the Keller CNC system. Main points of emphasis in the content are training in the pedagogical and educational domain and the use of CNC and production systems. The total duration of the training is 160 hours: 80 hours as instruction in a block – followed by practical exercise of what has been learnt in a basic course or in operational use with support.

The main points of emphasis in the preparation and implementation of the basic CNC courses are

- the incorporation of conventional metal cutting knowledge;
- building up on the basis of existing practical knowledge;
- the methodology and didactic adjusted to the learning habits of older skilled personnel.

The aim of the model courses for multiplier training is to enable the participants to conduct independently qualification measures in the company. The multipliers are taught how to

- impart and present in a graphic way the content of theory and practice on the machine tool and the production systems;
- instruct older skilled metal workers in the handling of control system and machine;
- deal with possible learning difficulties and the corresponding orientation of the methodological-didactic planning.

The pedagogical and methodological-didactic content of the multiplier training are shown in table 1.

**Table 1: Pedagogical and methodological-didactic content of the training of multipliers**

<b>Multiplier training 'Learning and Producing'</b>	
Theoretical training	<ul style="list-style-type: none"> <li>— Taking into account and integrating experience and knowledge of the trainees from day-to-day operational practice</li> <li>— Possible uses of qualification and production systems</li> <li>— Significance and possibility of motivation</li> <li>— Possibilities for illustrating contents, use of methods, simulation</li> <li>— Forms and methods of training</li> <li>— Behaviour and teaching style of trainers</li> </ul>
Practical training	<ul style="list-style-type: none"> <li>— Practical exercises for instruction</li> <li>— Written instruction plan to be implemented in training sections with the support of the supervising course leader</li> </ul>

**Implementation in company**

To illustrate the in-company implementation of the approach shown, the procedure adopted at VBW in Remscheid will now be described. The company VBW makes high-quality hand tools for



professional use in crafts. VBW employees about 300 people. The company has its own small training section, which performs the initial occupational training in collaboration with the joint training workshop at Remscheid.

Initially two employees, both over 50, from the pattern making and tool making sections respectively took part in a basic CNC course. During the works-based weeks between the training weeks at the company Keller, the course participants had at their disposal a PC with Keller software and a daily time budget of about two to three hours for independent exercise.

In the next stage, a younger employee from the same master craftsman section was trained at Keller's as a multiplier. During a further basic CNC course, the participants were supported during the works-based weeks by the multiplier. In future the multiplier will be responsible for the near-workplace training of employees of a production island within the master craftsman section. There is thus an evident step-by-step transition from the use of external further training to the implementation of in-house measures.

This company-based example also makes clear what framework conditions are essential for the 'workplace as a place of learning' (table 2).

**Table 2: Framework conditions for the 'workplace as a place of learning'**

---

**Organisational framework conditions:**

- Modern production organisation: group work in production islands
- Time budget for independent exercise in the further training phase without pressure of time
- Support of the learning process from a multiplier 'in situ'

**Technical framework conditions:**

- PC with educationally designed CNC software in the workshop for learning and producing
  - Different technologies in the production island, in this case a conventional milling machine, a copy-milling machine and a CNC milling machine. With such heterogeneous technical equipment, existing qualifications are demanded and maintained, the acquisition of new qualifications is made possible and promoted.
- 

### **Cross-company networking**

With the measures taken to date for the 'Learning and Producing' project, the further training of older employees in this and other companies was made into a subject of study and initial experience has been accumulated in this field. On the basis of this, cross-company working parties will soon be set up to exchange experience and for the purpose of developing further, on a strategic basis, in-company measures. From the point of view of future perspective, it will be tested whether and, if necessary, how cross-company cooperation can also succeed in the implementation of further training measures for older employees.

### **Summary**

The use of software systems suitable for skilled workers and the utilisation of the experience-based knowledge accumulated by older skilled personnel as multipliers in the work process represents a possibility for obtaining forward-looking qualification and production concepts through the linking of learning and working processes. With the integration of older employees in CNC qualification measures and the subsequent assumption of in-company training functions (multiplier), the

experience-based knowledge accumulated by older employees can be preserved and developed further.

### 13. Continental (D)

#### Context

What caused a corporate group in the early 70s (when the age distribution of the population was not as critical as now) to devote some thought to age-related work requirements? The reason for the implementation of a project as part of the HdA programme was that a certain group of production workers (so-called tyre assemblers) gave up their work or had to be transferred to other workplaces after they reached the age of 40. For those concerned, this frequently meant a social decline, the company suffered from the premature loss of experienced personnel and the financial burden of the relatively high training costs for new appointees. In addition to the humanisation aspect, there was then a very considerable business interest in the redesign of these workplaces, which were not adequate in terms of the age of employees. The two core questions of the project were:

1. What makes the assembler workplaces 'age-critical'?
2. What measures can be taken to achieve 'age stability'?

A workplace was described as 'age-stable' if a healthy employee can be assigned to it up to the age of 60.

In a pre-study, extensive physiological data was first collected – e.g. circulatory strain in the course of shifts using pulse frequency and blood pressure registration. The data collected and statements by the test subjects on subjectively experienced strains were incorporated in the result evaluation in the form of interviews. Once an initial catalogue of measures had been drawn up, the main study was prepared: two model areas with a total of 199 tyre assemblers were examined.

In the meantime the group's own machine factory had optimised and installed completely newly developed machines as prototypes in the model area. The ergonomic deficiencies found in the old machine in the pre-study had been largely eliminated in these prototypes. Again extensive strain-physiological and sociological data was collected for the new machines and compared with that for old installations. A verifiable physical strain relief was evident – parallel to this the senso-motoric strain and quantitative output rose. A group work test was set up in a model area especially to reduce the individual quantitative output.

#### Ageing-related problems

The following features were identified as age-critical for the tyre assemblers' workplace:

- Repetitive, fine-motoric activity with the emphasis of speed (high motional speed of the hands and the whole body with high precision standards);
- Short cycle times (a carcass or tyre in approx. 1 min.);
- Pressure of time (here free work under piece-work conditions, i.e. objectively less compulsive than piece-work determined by the machine cycle or conveyor belt work);
- Monotonous work with enduring high concentration (constant surveillance of the material condition and the feed system, constant quality monitoring);

- Rigorous requirements regarding sight (lighting of the black work object not adjusted to the sight of older employees);
- Break arrangements not adequate in terms of employee age (several long breaks, few short breaks);
- Strain through night shift with full piece-work output;
- In the widest sense age-critical: work sequences organised with high proportion of work (leads in the long term to 'threatening learning incapacity').

### **Catalogue of measures**

The catalogue of measures of the HdA tyre assembler project has three major starting points: technical design, organisational and individual measures. The most serious technical-ergonomic problem at the beginning of the project (heavy lifting work in partly very unfavourable body posture) was largely solved by a redesign of the material feed side. For the actual assembler workplace, ergonomic standards were drawn up for the first time (standards which still apply today) and were taken into account in new developments. The working environment was improved in all major respects: lighting, climate, near-machine break rooms, noise abatement measures.

The major organisational measures were tests to change the break behaviour and a three-year group work trial.

Among the individual measures, special mention should be made of 'method training': in a training room, older employees were able to check and optimise their pattern of movement on an exercise machine.

### **Successes of the study**

The positive effect of the study (including in respect to business aspects) can be seen most clearly in the development of the age structure of the tyre assemblers: from 6.5% in 1977, the proportion over 55 years of age rose to 27.6% in 1984! In 1990 the proportion is 18% – the statistical 'rejuvenation' corresponds, however, to the trend in the workforce as a whole, whose average age has fallen.

The new machine generations, which have now been developed display further ergonomic improvements – albeit with higher shift output.

Within the framework of the study, new forms of work were tried for the first time to a major extent at Continental (e.g. team work for a wide variety of occupational groups; application of ergonomic, occupational-medical and sociological methods to problem analysis and solving). Experience was accumulated with group work systems.

The sensitisation and qualification with respect to questions of ergonomics and work organisation has had a hitherto enduring positive effect on numerous project participant from a wide variety of disciplines.

### **Situation after conclusion of the project**

New working time arrangements and shift models agreed in the meantime are more problematical for older employees than for younger ones. An equal or increased unit output is achieved in a

shorter period of presence in the company (cut in working hours and abandonment of an unpaid half-hour break). In a domestic tyre plant, two 12-hour weekend shifts with full piece-work output (in other words without phases of work standby) were set up for the first time, a form of shift which is simply unsuitable for older employees.

The collectively agreed special arrangements for older employees have also changed: the daily easement of piece-work for older employees agreed during the period of the project was converted to monthly age-based non-working shifts – to a certain extent an unphysiological response to the changed capacities of older employees.

It has been more difficult to find alternative workplaces for tyre assemblers. The cut-back of niche workplaces, a new quality assurance concept and the endeavours to decentralise play a role here.

Transfers are also made more difficult by the fact that a collectively agreed guarantee of income of the old kind only exists in a weaker form now.

The evaluation of age stability in the latest machine generations or of the automatic tyre assembly machines currently at the prototype stage is not uniform in the company. The fact is that mainly younger employees are to be found at present working on modern machines: there is an inhibition threshold on the part of tyre assemblers in handling a visual display unit and keyboard. With the simultaneous introduction of group work, there are reservations regarding the group capability of older employees who have worked on an individual piece-work basis for decades.

### **Future tasks**

The aspect of age stability must be taken into account as a matter of routine (as a criterion of the specification) in the development of new machines and work systems. Additional costs for more laborious work system design with the aim of work stability must be accepted on the part of controlling departments. This assumes relevant decisions by corporate management. The increasing significance of the 'short-term effect' narrows the chances of realising what tend to be investments with short-term effect to solve the problem of age.

The change of older employees to age-stable workplaces must be planned on a corporate basis. In many cases specific training measures will have to be organised.

Group work models remain a major future prospect for older employees. An essential thesis of the study is: After solution of the major ergonomic problems, group work is, under the given economic framework conditions, the only possible response to the rise in senso-motoric strain caused by greater unit outputs. Group work is, however, not age-stable in itself. It has to be ensured by means of framework conditions that the optimisation endeavours of the group do not lead to a situation where older employees and those with changed capacities are forced out more than with traditional hierarchical organisational structures.

The more recent collective agreements in the sector of working time and shift organisation take greater account of the leisure needs of younger employees than the physiological circumstances of older ones. Work intensity rises – work output is compressed into an ever decreasing number of working days. Arrangements concerning the release of older employees from the night shift are

inadequate or do not even exist. It is absolutely necessary for the parties in collective negotiations to take account of the special physiological features of older employees.

#### **14. SSAB Tunnpå, Borlänge (S)**

*Bertil Grönqvist, Former Chief Medical Officer*

##### **Context**

SSAB Tunnpå (SSAB Strip Products) is part of Swedish Steel (SSAB) and consists of two steel works located in Luleå and Borlänge. This report describes some efforts at the Borlänge plant to keep older employees in good health and, if possible, in work up to the regular retirement age of 65. At present (1998) this plant has about 2,500 employees and produces steel sheets and coils.

In the steel industry with all its environmental problems like heat, noise, vibration, dust, and fumes, the health of the employees has always been of great interest.

##### **Ageing-related problems**

The idea of focusing on the older part of the workforce, who of course were subjected to the general infirmities of old age like muscular-skeletal and cardio-vascular disorders, started at least 15 years ago. At that time Swedish steel industry was going through extensive structural transformations. In 1982 over 300 workers at the Borlänge plant were offered early retirement with a pension when they were 58 years old or older. The acceptance of the offer was at the worker's own free will. Ten of them refused to retire because they wanted to keep on working. All the others accepted and are included in the following study.

Some questions were raised on what would happen to the physical and mental health of these retired workers when they stopped working prematurely. No earlier scientific reports on this subject could be found. In cooperation with the Department of Family Medicine at Uppsala University we carried out a detailed study of the physical and mental health of the retired workers two years after retirement. As a control group the 300 oldest workers still working was used as a model.

The result which revealed that the early retired workers had much better physical and mental health than those still working even though the retired workers were on an average six years older than those in the control group was a surprise.

Attention was then now focused on how to improve the health of older workers. It was not acceptable that those still at work had so much poorer health than the retired workers who were six years older. This triggered a number of steps to improve the health of the employees with the focus on the older workers.

With age a lot of physiological functions change for the worse, e.g. vision: the need for more light and deteriorating near point sight, hearing, muscular strength, general fitness, and ability to work shifts. On the other hand a lot of mental abilities are improved such as responsibility, self-esteem, active interest in work, and experience.

##### **Improvements of work environment and individual health check-ups**

The starting point was improving the working environment in many ways with special consideration for older employees. The lighting at the workplaces was improved, investigated near

sight and gave spectacles to employees who needed it for special work, e.g. work at display units. The conference rooms were equipped with hearing loops for the hearing impaired and ergonomically unsuitable working places were facilitated and sometimes rebuilt. Special devices for packaging steel coils and sheets as well as for driving overhead cranes were introduced. These measures were combined with rotation on several different kinds of work to avoid overstraining the muscles, joints, and ligaments. To this were added individual health check-ups and rehabilitation specially aimed at cardiovascular risk factors and musculoskeletal disorders. But also discovered were several other ailments or disorders like high blood pressure, diabetes type II, overweight, bad physical fitness etc. The medical consequences of smoking were explained to smokers and helped cure them of their habit; all this led to an improvement in the general health of workers.

### **Age dependent ability for shift work**

It is known that older people have difficulties in working shifts and recently there have been several papers published focusing on this problem.

In shift work older workers seem to adapt their metabolism and melatonin secretion in an inferior way compared to younger people. At the beginning of the 90s an extensive discussion started at SSAB about the existing shift schedules, e.g. long periods with night shifts. (Each shift at SSAB is eight hours long). The workers, especially the old ones, were very unhappy with these shift schedules. The Occupational Health Service had several meetings with groups of workers and employers and explained the basic medical principles of a sound shift schedule. Among these were clock-wise rotating shifts, i.e. morning shifts, afternoon shifts, and night shifts, in that succession. Each shift period should not comprise more than a few days, for instance two or three days only. Then the worker could have one or several days off, before they go on to the next period, e.g. a few afternoon shifts followed by one or several days off before the period with a few night shifts that should be followed by three or more days off.

The younger workers who generally have no difficulty working in shifts prefer doing so with long periods of shift at the same part of the day. This means that they can have long periods of time off, especially after their night shift period. This period off from work can be spent building or working on their own houses, practising their hobbies, taking occasional extra jobs, etc. The older workers, on the other hand, often prefer few night's shifts in succession, although this encroaches on their former long periods of time off.

These differences in attitude made it important to create an understanding between the age groups especially by making the younger workers understand the biological differences between young and old workers and by informing them about the medical problems that they would face in the future.

### **Company and union initiatives**

Subsequently the unions and the workers introduced several working teams aiming at constructing a good shift schedule taking into special consideration the older workers. Three different schedules were framed based on the basic medical principles mentioned above that the shift periods with work on the same part of the day should be short. But the union and the company would not decide which of these schedules was to be brought into action. So the employer and the unions agreed to a full-scale trial. From April 1996 to January 1998 about 1,000 workers tried out these



three different shift schedules. In November 1997 an extensive study of which schedule was best for the health and well-being of the workers was accomplished. This was done through a questionnaire made in cooperation with the Department of Occupational and Environmental Medicine at Uppsala University. The scientific evaluation was followed by a decision-making vote among the workers. About 70% of the votes were cast for the schedule that proved to be the best one according to the scientific evaluation, and from February 1998 all workers use this type of shift schedule.

This process towards a good shift schedule is quite unique, both as regards its size and its democratic design. (Particulars about the structure of the shift schedule that was introduced at SSAB are not given.) The amount of days off or at work on different shifts mentioned above must be regarded as theoretical only. What must be stressed, however, is the great importance of not neglecting the democratic though laborious process towards an appropriate shift schedule taking into account the basic medical principles as well as the wish of the workforce.

### **Further – what has to be done?**

The ergonomic optimisation of the places of work, individual health service, and good shift schedules is not enough to keep all the older employees at work up to regular retirement age. One of the most important measures was shown to be the option of reduction in the working hours for older employees, at least from the age of 58.

The social insurance's collective as well as local and individual agreements and working rules must be designed to allow part-time and half time work for shift workers. In the 1980s the Swedish National Health Insurance for instance, stated that when half time sick-listed the workers had to work four hours a day. But the practical consequences of this and the prevailing set of rules on the labour market made it impossible for shift workers to be half time sick-listed. There was also some reluctance among employers to organise work to allow half time work. But with time state regulations have grown more flexible and the attitude of the company has softened. Many shift-workers who a few years ago would have been full-time sick-listed now for example work full-time one or two days, are then free from work one or two days etc, i.e. are only half time sick-listed. This has proved a good way of organising work for many older employees and given them the opportunity to work up to regular retirement age.

### **Comments**

One of the most important steps to allow older people to work up to their regular retirement age is to organise work so as to permit part-time and half-time work and, for shift workers, to try to design a shift schedule that takes into account the wishes of the workers as well as the basic medical principals. Social insurance, state regulations, and central and local agreements must also be adapted to allow that type of work. And a pedagogical problem must not be neglected: to make the younger workers understand the biological differences between themselves and the older workers and to make them realise that they will also face medical problems in the future.

## **15. Sydkraft Group (S)**

*Lage Björnsström, project leader, Sydkraft*

**Context**

The Sydkraft Group is organised into four areas of activities: electricity, gas, heat, and services, which together make Sydkraft into a complete energy group with more than 6,000 employees. Within the group, there are around 60 active companies, whereof around 30 have their own staff who are involved in the sale, distribution and production of electricity, natural gas, gasohol, heat, solid fuels, information technology, contract work, service and maintenance, network services and telecommunications and consultation services.

**Ageing-related problems**

Sydkraft is generally characterised by a high age structure and the most noteworthy is that of service-fitters. As well as the problems involving age, there are severe musculoskeletal problems within this work group. An example from one of the subsidiaries shows that 66% of fitters are over 45 years, and in five and 10 years this figure will increase to 76% and 88%, respectively. Apart from this, the over 55 group will of course increase, so that in 10 years, 56% of all fitters will be over 55 years. In this particular company, there are also around 50 fitters with physical limitations for certain work tasks.

The possibilities of reassignment within the company are very limited.

New technology with respect to network operations and technical aids for installation work will also put new demands on training. This involves a great deal of work since not everyone has the desire or ability to learn new technologies, or change at all when facing changing work conditions.

Based on the above, a corporate project started in 1996 with the following tasks:

- to identify the implications of the current situation with regard to physical limitations and cases for rehabilitation;
- to develop proposals for measures such as health care programmes and long-term planning for groups of older fitters;
- to implement and follow up rehabilitation measures.

**Process and actors**

The project was begun by cataloguing the situation in five subsidiaries with respect to age structure and physical limitations for various work tasks.

A three-day seminar of ideas was held for 15 older fitters, of whom most had some kind of health problem.

The purpose of the seminar was to discuss how one can make use of the knowledge and work life experience of the older workers, suitable work tasks when 'you grow older' and how to maintain good health, or regain health when you have been suffering from ill health.

Many good ideas were put forward during the seminar.

The steering committee for the project 'Older Worker Training' decided that three of the suggestions from the seminar participants should be further developed as sub-projects, namely rehabilitation, creativity, and health training.



***The rehabilitation project***

Seventeen fitters participated in the rehabilitation project. The project involved cataloguing ill health, not just to note the symptoms, but to discover the reason behind them. Concrete measures to improve health were also discussed with the fitters.

Three external companies active in the area of rehabilitation were given the task of implementing the project.

After the implementation of measures such as adapting tools, vehicles, work clothes, and initiating suitable training programmes, all the fitters are back at work full-time. Many still occasionally experience pain in their limbs, but they now have insights into how to prevent the injuries from becoming worse.

***The creativity project***

Five younger and five older fitters participated in the creativity project. The purpose of this project was to prevent ill health and create a pleasant working environment through promotion of creativity and inventiveness.

The following factors were worked on:

- to increase self-confidence;
- to provide support and encouragement;
- to break routine thinking;
- attitudes and values;
- to identify obstacles and point to opportunities;
- creativity and inventiveness training;
- how creativity is rewarded;
- to find channels to disseminate new ideas and suggestions among groups of fitters.

The working method was based on:

- traditional knowledge of how one learns through experience, exchange of thoughts, and tolerance of mistakes;
- making room for reflection and analysis of the experiences one has gained.
- being allowed to act as consultant for each other;
- negative criticism and 'know it all' attitudes are banned;
- attempting to create a climate of trust where one encourages and supports each other, which leads to increased self-confidence and involvement both in projects and in the day-to-day work situation.

The following conclusions could be drawn from the creativity project:

- that the degree of creativity and scope of a project is not of decisive importance, but the insights and knowledge one acquires about one self and the organisation is at least as important;
- that there is a great need among fitters to be recognised and to be encouraged;
- that the mixing of workers of different age was extremely enriching, where the young represent enthusiasm and new thinking, and the older workers have invaluable knowledge and

experience;

- that the enthusiasm of the young workers caused a heightening of the activities, interest and power to act among the older workers;
- that it is important to keep the flame alive through further efforts of a similar kind when newly awakened inventiveness and active energy otherwise risk dying for lack of nourishment.

### ***Health training project***

The health training project lasted one year and had 13 participants. Most of the participants were over 50 years old and suffered from ill health. The project was started in September 1997 and ended in September 1998. The purpose was to create knowledge among the participants about the importance of their life styles to their health, for example, the importance of diet, alcohol, tobacco, exercise, medications, and negative and positive thoughts.

Each week during the entire year, a light form of physical training was carried out in a heated pool, or in a gym. The purpose was to achieve greater agility and strength in the limbs, and also to increase calorie consumption since most of the participants suffered from excess weight.

Attendance at all classes was almost 100%. The reason was 'peer pressure' and positive experiences on the mental and physical level.

At the start of the project, the participants underwent a fitness test and a medical examination. After six months, new tests and examinations were performed. All the participants had improved almost all their test results.

### **Comments**

The staff of fitters is a gratifying group to work with. They are not accustomed to having any attention paid to their situation.

It is important that the supervisors of the participants are in agreement with why the project is implemented, and that they provide support to the participant when he returns to his regular environment. Herein lie perhaps some of the greatest difficulties for the implementation of the project. Supervisors have been informed and influenced through 'internal marketing' through various media, e.g. Intranets, newsletters, and working environment training.

The trade union has provided good support, largely due to the fact that a union representative was part of the steering committee and that he was used as a 'sounding board' for ideas during the period.

A high work potential is found among fitters, one that is not utilised due to shortcomings among the management, which in turn are caused by fears that have tended to increase during the last few years.

An important task for a successful company will be to create insights among the co-workers about how they can preserve good health or regain health if they are suffering from ill health.

It is important to have an open climate where values are discussed, and that the company management clarifies its values to employees, customers, owners, suppliers, in other words everyone that they have any contact with.

### **16. Volvo, Torslanda Plant (S)**

*Robert Lundgren, rehabilitation manager, VOLVO PASSENGER CARS INC. - Volvo Torslanda Plant*

#### **Context**

The Volvo Torslanda Plant manufactures, paints, and assembles the passenger cars Volvo S70 and S80. Within the Volvo Torslanda Plant's Final Assembly, production takes place on two separate assembly lines where the new work places for seniors are also found.

#### **Ageing-related problems**

The mean age among the car assemblers is 37 years. About 23% are 45 years or older. In production, a time study instrument called MTM is used. In an agreement between the company and the local union (Metal), the production rate has been determined to be 111% (= regular production rate). This means that each employee is expected to perform at an activity level that is 11% above what is normal for the human body. It can be added that what is normal is a male assembly worker between the ages of 20 and 30. As workers aged, changes occurred in the workplace and new co-workers arrived, the number of sick leaves increased. During rehabilitation to return to the workplace, individual workers described their problems as insurmountable.

Muscle capacity decreases throughout a person's working years by an average of 30%. In other words, what is an easy task for a 25-year old is more difficult for a 50-year old. Of course, issues such as feelings of being left out, less education, unfulfilled expectations ('lighter/easier work'), and greater difficulty learning new things need to be added.

The consequences were that workers were forced out of their jobs and this occurred primarily through sick leaves (for those who could not find other work). The number of employees who did not contribute to production grew, and there were insufficient opportunities for light work available outside production.

#### **Company initiatives to preserve older worker capacity**

The company has no special policy for older workers. The policy is rather an expression of the company's desire to employ staff taking into consideration sex and age, in order to reduce the development of any particular minority in the work place. The personnel policy of the plant establishes that 'a work climate is to be built where each co-worker can feel satisfied and be stimulated to contribute actively to our development.'

All people are not alike, they do not have the same ambitions, values, or goals for their work. Also people can grow with the right type of work and in the right type of organisation, just as the wrong type of work and the wrong organisation/team can end with sick leave. Creating content and introducing a rapid rate of change may be seen as positive steps by a large portion of the work force, while for a smaller portion this may be viewed as a threat/stress factor. Human beings often have a reduced need for change as they age.

## **Process and actors**

### ***Initiatives step by step***

The idea of senior work teams developed several years earlier when the project leader was given the task of rehabilitating workers on long term sick leave so that they could return to the work place. After about a year with not very good results from this rehabilitation, the situation was analysed and the idea for this project was born.

Experiments were carried out under simplified conditions, but they had to be suspended. The manager in charge was subject to negative pressure from his superior and from colleagues. Afterwards, two facts of importance were identified for this negative development: 1) the idea was not sufficiently entrenched within the management of the company; 2) there were surplus staff in production.

Two years after a hiring freeze there was an over-all surplus of staff but a shortage in the production departments. At this stage, something radical had to be done. No new people could be hired until the surplus staff were handled in a positive manner.

A decision was made by the company management to introduce senior work teams.

Discussions took place between the parties involved regarding:

- which individuals should be recruited to the senior work teams;
- recruitment of team leaders;
- a policy for seniors, with respect to recruitment, work tasks and salary conditions;
- work tasks for staff replaced by seniors;
- introduction and training of seniors.

### ***The roles of the participants in the various stages***

An analysis was done of the entire situation and a proposal for senior work teams was presented by the project leader. The final assembly manager issued an order that surplus workers were to be included in senior work teams as per the proposal. The appointed product plant manager negotiated with the trade union, coordinated, appointed leaders for the senior work teams and followed up on the activities. The project leader recruited staff, developed/followed up and supported the activities. The top safety ombudsman contributed to the development of the work place, the activity and to the recruitment of staff. Discussions took place between the human resources department, production, company health care, and trade union representatives.

### **Company activities/initiatives**

For older individuals with various types of work impediments and individuals on sick leave there are now a number of different alternatives available:

- Component Shop;
- Car Assembly Resource Team;
- Senior Work Teams.

In order to get an opportunity to work in the Component Shop, in a Car Assembly Resource Team and in Senior Work Teams, long and loyal service (15-25 years) is required, or documented medical reasons.

Since good worker relations is the single most important incentive for an individual's happiness in a work place, it is important to create a homogenous work place/group for all employees.

### ***The Component Shop***

In 1992, the Assembly Plant made efforts to develop preparatory work tasks and increase the status for the preparatory assembly workers. The work began by constructing a Component Shop in the proximity of the Assembly Plant. The work is done while sitting and can be planned and organised by the assembler to a greater degree than work on the assembly line.

This would be a work place where work rotation, responsibility and involvement would be the guiding star for all employees. The following would be done away with: name calling, low status, monotonous work tasks.

Since its start in 1992, the Component Shop has grown so that in October 1994 it had more than 200 employees. The work consists primarily of ordering material, pre-assembly, quality control and operating forklifts. The demands of the job and the maximum work requirement are as high as for the assembly line. Via a signalling system, assemblers on the line announce when they require new material and then the work team in the Component Shop has only 10 minutes to deliver, since the Shop works according to the principle 'just-in-time.'

### ***Car Assembly Resource Team***

When it became obvious to the Assembly Plant that the Component Shop could not absorb all loyal long-service employees that existed, the Car Assembly Resource Team was started and it now has over 200 employees. The resource group is an organisation whose task it is to provide surplus older staff with meaningful employment in the form of service work. In step with the plant's efforts towards an efficient structural change with emphasis on the core process and elimination of most of what the car buyer does not pay for, a number of groups within the plant have become superfluous. Since its start in August 1992, the resource group has absorbed work that was previously done by outside companies. Work such as cleaning, painting, light office construction, pallet stand construction and all types of work that was previously done by consultants.

### ***Senior Work Teams***

A Senior Work Team consists of 10-15 individuals with the same rights and duties as any other work team, but not with the same production demands. It was estimated that the assemblers who were left without work tasks for one reason or another (age or medical reasons), should be able to manage about 75% of the regular work requirement. It was also estimated that the work rate itself is not of crucial importance to each individual. One must not forget the importance of a homogenous work team.

Senior work teams were created as a result of the rehabilitation programme, when it was realised how difficult it is to rehabilitate people to return to the same job that caused the sick leave.

At first, 'seniors' were recruited primarily from the Car Assembly Resource Team. They are now more used to offer rehabilitated individuals a work place. Senior work teams are also gradually being used more to provide jobs as a preventive measure to individuals who would otherwise have gone on sick leave. There always has been individuals who for various reasons no longer can carry out their work. Also there will always be in the future staff arriving at the stage when they no longer can do their work in a fully satisfactory manner. It would be foolish to believe that these 'problems' could be continuously pushed onto somebody else and still remain credible.

Since the customer pays for the product and for nothing else, there is a need to ensure that the number of productive people is greater than the number of non-productive, and not increase the non-productive portion to the detriment of hiring new staff. The purpose is to ensure a dignified work place on the production line for staff with work impediments, or rather: personnel with reduced work capacity.

In other words, it is important not to specifically separate this group from the core activities, regardless of whether it is in production or in another department. Recruitment takes place mainly within the same organisation (e.g. product shop) and it must be personnel that cannot manage a full workload for documented medical reasons or purely due to age.

Within each 'senior area,' an autonomic car assembly team (responsible for assembly, quality and economy) is created, with the same objectives and goals as any other work place, but with the difference that their combined maximum work output is measured according to a lower requirement, e.g. 75 %, compared to the regular work requirement.

### **Health care**

In efforts to reduce ill health among our co-workers, a number of systems and routines were created. Company health services work closely together with these work places and deal with issues of ill health. The company routinely work to improve both the physical and the mental and social work environments. A rehabilitation routine and various rehabilitation programmes have been created. As a tool for early discovery of ill health, employee welfare rounds have been introduced. The role of fellow worker support has been formalised, with the hope that it will reduce ill health.

### **Education and training of older workers**

The company does not have a specific programme for older workers, but each worker together with his/her supervisor designs his/her own development plan with various activities.

### **Outcome**

Today, there are several senior teams with over 50 individuals who previously did not do any productive work, but who at best cleaned up or helped out with various tasks that did not contribute anything to the product. Naturally, it is more expensive for the production department to have 50 individuals instead of 35-40 who perform a full work load. But over-all for the company it is even more expensive to let 50 'seniors' stand 'outside.' Consequently, what's saved here is not having to absorb the cost of a new employee, not having to train 35-40 individuals, and not leaving 50 seniors outside.



Today, they are in the process of creating a routine so that in the future they can offer individuals with reduced work capacity the opportunity to continue in production in a 'senior team.' Recently a new production line started for the new model S80 and already from the start its planned for special work places for personnel with reduced work capacity. The number of employees will therefore increase in these work places.

The next step is to foster an attitude, a mentality where nobody is allowed to be discarded, to have to be on disability pension, not even to have to go on sick leave – 'the principle of zero faults.' An example of this is the myth that it is hardly possible to rehabilitate a person who has been absent for more than two years. In 80% of cases this is caused by an incorrect life style and difficulties in handling, processing and experiencing the meaning of one's life and work. This is what is often called psycho-social 'illness.' Therefore, work is on extending/expanding rehabilitation and education activities. In the rehabilitation shop of the assembly plant, a 35-year old immigrant woman who had been on long-term sick leave for nine years was rehabilitated back to the line. A 50-year old woman, who had been on sick leave for seven years, was also rehabilitated back to the assembly line. Both individuals were expected by those around them to be pensioned off. Both of them succeeded because the company had created unconventional opportunities – work places for seniors.

The work began with senior work teams at the end of 1993, the work requirement rate was 75 % of the regular requirement, but now there is a work production rate that is closer to the production average. This naturally gives rise to one thought: 'The importance of working in a homogenous work team' and of not being left out.

### **Evaluation**

After six months (spring 1994), 30 individuals were in assembly work on the production line in senior teams. Attendance was better than anywhere else for the same age category in final assembly. Costs were reduced by about SEK 10 million. The quality of the production work was above target. After another six months, a new work team started on the second production line and the total number of individuals was then 50.

Today in 1998, these individuals, apart from those who left the company for normal reasons (pension, etc.), are still there and have absorbed extra work, so called additional tasks.

### **Comments**

To discover that one can no longer keep up (negative stress) causes pain in the back, neck, shoulders, arms, wrists and headaches. One day the body sends out a message: STOP, and the individual then goes to see a doctor to get help. When has a doctor put a patient on sick leave due to age? No, what will happen now is that more and more often, talk will be about pain in various parts of the body. Yes, the symptoms are pain, but the cause of the pain often does not revolve around what is primary but around secondary matters, and the result is extensive medical examinations and unsuccessful rehabilitation. Of course, the reason is not just that muscle capacity is reduced with age, but there are also elements of being left out, not being able to meet expectations. Since the assembly tasks on the line are mostly performed by younger men in their 20s or 30s, it is also easy for these men, either consciously or subconsciously, to create a norm for the entire work place.

Furthermore, the assembly plant with its lines is not the kind of work place where people stay during their entire working life. Those individuals who remain there may feel inadequate for 'having missed the boat', 'I'm no good for anything else, can't advance,' etc. An impression is that corresponding personnel in countries like Belgium and France are not in the same situation as in Sweden. The difference lies in work culture and work values. What is mostly considered a springboard (assembler on the line) towards development for other jobs within the company, is seen by assemblers in Belgium and France as the final goal. There are individuals who are perfectly happy where they are and who also do perfect assembly work, individuals who do not have the ambition to have a career, but who are dutiful and loyal towards their work place.

Many of these individuals who are now in rehabilitation have a great need to justify themselves. These are people who have developed aches and pains in their bodies for some reason they cannot understand, since they have always thought of themselves as healthy. But when these individuals end up with work tasks performed together with others who are compatible with them (age, years of employment and background), then these pains often disappear. It has been confirmed, that the work environment and in particular the work climate in a department play very important roles for the individual.

It does not really matter very much what you do. The most important thing is not to feel like an outsider, to be seen and recognised by co-workers, supervisors and relatives.

Certainly, negative effects will occur if people's needs are not seen and understood. Certainly, sick leave will increase if there is no motivation, if expectations are not met. Certainly, older people are less likely than younger people to want to change, to want to learn new things. But, it can be observed that this is absolutely not true for those departments/organisations that have understood that they must recognise human needs.

In a work team that is homogenous, or where humility and understanding exist, all are allowed to work regardless of sex, age or nationality.

At Nedcar in Born, Holland, the same phenomenon occurred as what has been seen in these senior departments. They had created a work team with personnel who had been made superfluous on the assembly line, personnel who for some reason no longer could keep up. They were brought together into one unit to do preparatory work tasks. Since these were advanced work tasks, they were not expected to accomplish much more than 50%. But this group became such a close-knit group and also constituted a homogenous work team (according to their background), and in time productivity there also improved, so that it later reached close to 90%.

Examples of similar senior team ideas are found in the education system, where in some places technical and computer training is arranged for women only.

## **17. Uppsala University Hospital (S)**

*Margareta Åkerstedt, clinical supervisor, Uppsala University Hospital*

### **Context**

The University Hospital is both a university hospital and the county hospital for Uppsala County. The hospital has 10 divisions and 16 clinics. In 1995, the number of employees was around 8,000



individuals, whereof around 800 were physicians, 5,600 other health care professionals, and 1,600 other employees. The average age was around 41 years.

Project '45+' was carried out at the Thorax Centre, which is representative of the entire hospital with its 685 employees, whereof 92 were physicians, 544 health care professionals, and 49 other employees. It has the following departments and units: Anaesthesia and Surgery, Intensive Care Unit, ward units, out-patient clinics, laboratories, clerical offices and administration.

### **Ageing-related problems**

The average age of the employees is high. In 1995 it was 41.3 years and will in 2010 be 55 years. Many exits due to retirement mean that valuable experience and knowledge disappear from the work place. The age composition in the organisation is already creating problems. Older physicians and health care professionals cannot endure working long shifts, being on call, late nights, and early mornings. The purpose of the project is 'to increase preparedness in the face of future demands for changes in management, organisation and work routines, and to contribute to a good working environment and the development of employees who are 45 years of age or older.'

By examining, for example, the age breakdown one wants to arrive at changes that are necessary in order for the Thorax Centre and the hospital to be able to provide continuity in the supply of trained professionals. The target group for the project was all employees at the Thorax Centre who were 45 years or older, i.e. 213 individuals out of a total of 685 employees.

### **What do workers above 45 have in common?**

The group 'older individuals' is not uniform. Variations are great. Age explains only a limited number of differences in ability and interests. The differences are rather the result of the varying life and work conditions of the people. It is not possible to point to a general deterioration with increased age up to the age of retirement. There are many negative age myths about older people. They are often described as a lost generation when it comes to learning and mastering new techniques and information technology, since they were not raised with computers, computer games and the Internet like the young generation is. However, middle aged and older individuals can learn and develop during their entire working life. It is true, that older people often lack basic knowledge and their previous practice and school education may be inferior. This can mean that it will take them longer to learn new things. The most successful methods are based on an individual approach and active participation from the participants. For older people, the possibilities for discussions and the relevance to the subjects own previous experiences are especially important. This means that the training can take more time.

A teaching organisation should make use of the entire staff's potential for knowledge and experience. The ability of a single individual to grow is the result of many interacting factors, such as basic theoretical education, previous professional experience, motivation, degree of specialisation, and personality.

The need for life-long learning and ongoing improvement of knowledge has been emphasised for a long time. In order to achieve life-long learning, it is important that the daily work is planned and leaves room for informal thinking. This will be facilitated by the opportunities for the employees to influence their work and communications. However, informal learning provides limited specific

qualifications, so that informal and formal learning should be combined. Education should be clearly individualised, with much room left for each individual to affect its content.

When it comes to health, preventive efforts are the most rewarding. Such preventive work should be done with a broad life time perspective and should include advice both for work and leisure time. It is also necessary to apply a life time perspective on the consequences of working conditions. The health of the employees is an important factor for productivity. Simple measures can improve the work organisation and the ergonomics at the work place.

The organisation can do much by stimulating good dietary and exercise habits. Each individual's own responsibility for daily habits, such as choice of means of travelling to work and choice of hobbies can create a basis for good health and function for a long time ahead.

### **Process and actors**

The project organisation included the following groups:

- steering group;
- management group at Thorax Centre;
- union group;
- idea group – this was the first working group. It was composed of all categories of professionals within the Thorax Centre. The participants were 45 or older;
- health group – consisting of personnel from the Thorax Centre, the Health Centre, County Health, and from the Centre for Care Research;
- scheduling group – consisting of personnel from the Thorax Centre who had shown a particular interest in scheduling issues, and also supervisors.
- training and education group – consisting of personnel within the Thorax Centre who work with educational issues, as well as the project leader.

### **Methods**

Project '45+' began in 1995. Methods that were used in the project were questionnaires, interviews, and discussions in the places of work. The groups each developed a questionnaire, had brainstorming sessions, did literature studies and listened to lectures, wrote reports and made plans for action. Those interviewed were fellow employees.

A questionnaire was sent to 213 individuals in the Thorax Division who were 45 years or older. The response, which was anonymous, was 84% (whereof 77% were women). Almost all respondents had worked for more than 11 years in the care system, and 70% had worked more than 20 years. The purpose was to get as many ideas and suggestions as possible. For this reason, space was left at the end of the questionnaire for individual comments.

When compiling the responses to the questionnaire, it was noted that certain questions needed additional information. Therefore, physicians interviewed physicians, nurses interviewed nurses, etc.

### **The results of the questionnaire and the interviews**

The following is a selection of responses to the questionnaire and from the interviews that were most important for the continued efforts.

#### ***Training and Education***

To improve training and education by crossing the boundaries between clinics worried many. The physicians felt that it cannot be done due to the limits of each speciality. The physiology assistants are too specialised. Among nurses and nursing assistants there is a certain amount of interest, even if most of them felt that they had found their place in the care system and function most efficiently where they are. Some felt that it could create stress to be placed in different departments and get the feeling of not belonging anywhere. Such matters can affect work negatively.

In order to make good use of the knowledge among older individuals that comes from a familiarity with work, mentoring was suggested: Younger employed staff would have a mentor to turn to for an extended period of time.

Educational development also provides a break and prevents burnout.

#### ***Working environment, health versus stress***

Around 80% indicated ever-increasing stress in their daily work. This is not only due to an increased workload and faster work tempo. People feel uncertainty about their employment because so many have been laid off. New and more work tasks have been added. Unclear work tasks and unclear objectives for the work and the clinic also often create stress. Some have a feeling of not being adequate, not least when it comes to taking care of patients in a satisfying manner, and they feel bad when they cannot affect their work situation.

The increase in work tempo and the stressful working environment, the general situation of uncertainty, and increased individual competition lead to an increase in conflicts, both within each individual professional group and between various groups of professionals. There is too little time for communication. Communication is a prerequisite for the cooperation that is required by the current work situation.

Around 50% did not exercise during their free time, but half of them would do exercise if they could do it during their working hours. Some felt that they did not have the energy to exercise, and that the one hour allotted per week for such activities, work permitting, was felt to be a further stress factor. If they took advantage of this hour, this would increase the workload of their colleagues.

#### ***Work and work hours***

Only 3% wanted to work evenings or weekends. More than one quarter did not get enough rest at night. Many among the older staff find it harder to wind down after late evening shifts and have difficulty sleeping. This is aggravated by the type of schedule where you work late nights and early mornings. It is impossible to get enough rest between the shifts. The work schedule plays an important role. Earlier retirement age and shortened work hours were a wish from older staff.

## **Proposal to the Thorax Centre**

### ***Teaching organisation***

Continued training and education for the staff are beneficial for the survival and development of the entire organisation. The ability of older staff to handle changes in position and organisation can deteriorate if their knowledge is not up-to-date.

A natural goal for continued learning is to maintain and develop professional competence. Learning may also involve acquiring more in-depth knowledge about how your organisation functions, to widen the network of contacts, and to attempt new tasks inside and outside your own organisation. Educational development must be a natural part of the planning of activities. Developments in medicine together with technological developments will make demands for different combinations of education and training in the care organisation.

Mentorship means working with the transfer of knowledge and experience between co-workers in the organisation. It is highly desirable to implement mentorship in the organisation. It would lead to a certain easing of the workload for older staff, and at the same time, the knowledge that comes with experience would be transmitted to younger staff and they in turn would share their newly gained knowledge with their mentors.

The following proposals were made:

- each manager is given the task of making a plan for education and training to be offered for the next 10 years, together with a cost estimate.
- during the coming two-year period, each manager shall also set up individual educational plans for all of his/her staff in accordance with the so called wheel of training and education (professional, technical, strategic, personal, and communications training) based on the needs of the organisation.
- education and training development should be included in the work schedule.

### ***Flexible work hours and retirement age***

Flexibility is desired with respect to work hours and retirement age in order to enable optimum utilisation of individual differences. A lowering of the retirement age for care personnel would also mean that young personnel could enter the care sector.

Various projects with respect to work hours have proved that freedom of choice and new solutions to work schedules are possible within the health care sector. It is not possible to select one single model as the best one, since wishes and needs are so different. Each department must decide which model is best suited to its activities and personnel.

The following proposals were made:

- a trial period with a six-hour work day should be started in a few departments;
- flexible retirement age should be tried.

### ***Health-care***

The greatest future health benefits can be achieved by preventive work – by investments in employment, in environmental development, in healthy living, i.e. efforts on aspects other than direct health care.

In order to inspire staff to improve their dietary and exercise habits and to emphasise each individual's own responsibility in this regard, it is a good idea to develop a health profile and opportunities be given for other personnel counselling with respect to health.

The following proposals were made:

- implement a health profile with follow-up;
- include health and exercise hour in the regular work schedule;
- offer various health and exercise alternatives, e.g. aerobics, Qi-gong, Tai Chi, strength training, swimming, walking, jogging, massage, etc;
- individual support in the form of discussions aimed at increasing self-confidence including a follow-up plan.

### ***Work place groups***

In work place groups, each group learns to handle conflicts and changes, and how to participate in the work to implement changes; first with the aid of facilitators, later in 'self-operating' groups which develop into voluntary interest groups, e.g. scheduling groups, physical space groups, organisation groups, work environment groups, etc.

The following proposal was made: a pilot project with a work place group is implemented on a voluntary basis in one or two departments for later evaluation.

### **What has happened since the project started?**

The mean age at the hospital in 1997 was 44.3 years. Thus, in two years, it has increased by three years.

### ***The Thorax Centre***

#### *Continued education*

It is the ambition of all the departments to have regular departmental lectures. Work place groups have been formed in order to work on an education programme for the 45+ staff. The programme contains the same components that were brought out in Project '45+', i.e. personal input opportunities, communications between various professional groups, work place meetings, equality, internal control, etc.

#### *Education in care sciences*

Care seminars twice per semester have begun. There is a discussion going on with the Care Institute in order to begin 5 or 10 point courses in care science methodology.

#### *Leadership*

Discussions have begun regarding the principles and forms of a gradual and long-term change of management culture, attitudes towards management, organisational structure and the hierarchies.

Thereby, a path can be prepared towards a change in generations among management, a change that maintains knowledge and satisfies the demands for continuity and renewal. This applies for example to the management of physicians.

### ***Palliative Care Clinic***

In another clinic, the Palliative Care Clinic (providing care at the end of life) where the mean age among the staff is 46 years, a project with flexible work hours was begun in May 1998. This means primarily abandoning fixed scheduling of work hours, and schedules are instead made from month to month. The common feature is that the staff has assumed responsibility for scheduling their work hours within the framework of a determined staffing objective. Experiences from flexible work hours are overall positive and personnel costs are not affected to any extent worth mentioning.

## **18. Saarioinen Ltd (FL)**

*Clas-Håkan Nygård, Tampere School of Public Health*

*Marita Pitkänen, Tampere School of Public Health*

*Heikki Arola, Tampere Occupational Health Service*

*Eeva Sipilä, Saarioinen Ltd*

*Marja-Liisa Manka, Saarioinen Ltd/Tampere University of Technology*

*Kari Tupeli, Saarioinen Ltd*

### **Context**

Saarioinen Ltd is a consolidated food manufacturing company which employs about 1,900 workers in Finland. The company includes four food factories, one of which concentrates on meat products, the other on broiler products and processed foods, the third on preserved foods and the fourth on ice cream products and desserts.

Finnish consumers rely heavily on domestic raw materials and products made of these. This confidence has, however, required planned work on quality improvement. All enterprises of Saarioinen Ltd have received a quality certificate and are thus part of a quality system.

Demand for domestic foods is growing quite slowly, and competition in food industry has increased. For these reasons Saarioinen Ltd has sought new opportunities through export which is especially directed at Sweden, the Baltic countries and Russia. In 1997 export accounted for 3% of the total volume of sales and it is expected to double in 1998. During the past two years large investments and development projects have been carried out within the company. The goal is to increase activities and market shares in a controlled way in 1998.

### **Ageing-related problems**

As the labour force gets older and early retirement is on the rise, Finnish enterprises have experienced the need to ensure that ageing workers cope with their work as long as possible. Together with occupational health care the enterprises are implementing actions that promote work ability, which focus on the worker, but also on the working community and work environment.

The workers of Saarioinen Ltd are between 17-65 years of age. 30% of the workers are under the age of 30, 27% between 30-39, and 25% of the workers are 40-49 years of age. 18% of the workers are over the age of 50. Women form the majority in the oldest age groups.



Despite the development of automation, the food factories still have plenty of operations, in which especially arms and the shoulder-neck region become overstrained. Nearly half of the absences were caused by musculoskeletal disorders. At most, the rate of absences has been about 10-15%.

This example is one of the enterprises of Saarioinen Ltd, namely the 'Ruoka-Saarioinen' (Food-Saarioinen). It employs about 670 workers, 65% of which are women. Of the women working at Ruoka-Saarioinen 22% are over the age of 50. In the 1990s the enterprise has carried out projects aiming at e.g. maintaining work ability and decreasing absences caused by sick leaves.

At the end of 1980s the convenience food factory of Ruoka-Saarioinen suffered from a continuous labour shortage. The turnover of the employees was high, and skilled and permanent staff was lacking. Readiness for early retirement was increasing among the oldest workers. Musculoskeletal disorders were the most common reason for early retirement. Due to the great turnover, the age structure of the enterprise resembled a two-humped camel: the workers were either too young or ageing. There were only few middle-aged workers.

The enterprise became aware of the costs of early retirement to the employer. The first project was started in collaboration with occupational health care and it aimed especially at maintaining the ageing workers' work ability and at improving the working climate.

### **Maintaining work ability**

On the initiative of the occupational health service a project was started in 1989, which aimed at improving the coping at work of employees' close to pension age in the processed food factory. The target group of the project consisted of 60 ageing employees who were 49-54 years old. Before the project started the management and the staff were motivated to take part in the project. The project was not started until all staff groups were committed to action. The measures focused on working conditions, working community and the workers. Working conditions were examined by methods that included e.g. health education and counselling, videotaping of the work points and interview with the workers. The workers' health status was checked by the occupational health physician and a physiotherapist. An occupational health nurse interviewed the workers on issues related to their way of life. The project also included training for superiors and group discussions of the topic 'content of the work in the future'. Positive changes were apparent over a period of one year; feelings of stress had decreased, mental and physical work ability had improved and the number of satisfied workers had increased. As a consequence of the project sickness absenteeism showed a decrease, and the participants felt that especially the flow of information had improved significantly. On the basis of the results it was decided to expand the project to all employees over the age of 45 years. The project showed that it is important to concentrate on rather simple things such as losing weight, motivating oneself to exercise and solving work-related problems.

Remarkable was that pension costs declined when compared to national mean values since the campaign managed to prevent early retirements. Due to the project, 30 people of the initially 60 took part in a training programme in 1992 that supported coping with work. Three quarters of the training emphasised mental coping and one quarter focused on improving physical fitness.

### **Training in adaptation to production changes**

In 1993 the food factory started to use plastic transport boxes instead of old styrofoam frames to deliver

food to customers. As a consequence of this change the packing and dispatch departments were rebuilt.

Because of these changes there was a clear need to train the workers; it was necessary to inform them about the change and about the effects it would have on their jobs. It was also regarded as important to reduce the feelings of fear before the changes.

A large apprenticeship training programme was introduced. A follow-up was carried out in the form of questionnaires before and one year after the production change.

In the follow-up younger subjects reported a highly significant increase in their feeling of security regarding future and a significant improvement in their satisfaction with the working community. The flow of information, paradoxically, had declined. Stress caused by work did not increase. The perceived exertion at work had increased among older subjects. Nevertheless, the perceived work ability of both younger and older subjects improved whereas it decreased among a control group in the same factory. Therefore it can be said that the training maintained and improved the work ability of the subjects. The older subjects also benefited from training, even though not as much as the younger ones. The project also managed to reduce the relatively high figures of sickness and absenteeism.

#### **Educational training programme**

A project to improve workers team-working abilities was organised in the factory. The programme was carried out from the end of 1995 to the end of 1997. The objective of teamwork is to form autonomous groups in which the workers' capacity for cooperation is one of the basic preconditions for success. Teamwork also requires the capacity to acquire a new way of working. The aim of the study was to investigate the effects of a two-year training programme among workers in a food factory. Particular attention was paid to the effects of age on the changes in attitudes and work ability. Both the supervisors and the workers found that in particular the rate of independent initiative had improved. Sickness absenteeism was also reduced during the project. The increase in perception of team spirit and growth motivation were greatest among the oldest workers. The results show that this two-year training programme had positive effects on workers of all ages but especially the positive changes among elderly workers were encouraged.

#### **Physical exercise**

The projects focusing on teamwork abilities also included an exercise intervention during winter 1997, which aimed at encouraging the workers of different ages to exercise on their own initiative. The project included initial and final tests that were used to explicate the workers' work ability and physical capacity. Of the 22-59-year-old workers 23 attended an exercise group for 10 times during which an individual plan was devised for every worker to better their condition and leisure time activities. The exercise group aimed at learning new working techniques that are of benefit in their work. As the exercise group terminated their action, it was found, that even though work ability did not show significant improvement during the project, the improvement of muscular strength was obvious compared to a control group in the same factory, which did not increase their physical activity. The workers also expressed satisfaction at the group's actions and continued it on their own spare time. The economic outcome of the exercise group was also followed during the project, and it was found that because of the decrease in sickness absenteeism the exercise group paid for itself in about five months.



### **Setting up work groups to promote work ability**

The experiences of the first project have encouraged Saarioinen Ltd to implement several new projects in the 1990s in collaboration with occupational health care emphasising work ability and age. Researchers from the university has also collaborated in the discussions and planning of some projects. A seminar that was held in spring 1997 in collaboration with an insurance company strengthened comprehensive commitment to the promotion of ageing workers' work ability. The topic of the seminar was that of lowering retirement costs. The seminar discussed the common phenomenon of early retirement, its causes and the costs to the enterprise. This is an issue of great importance to Finnish industry, since in Finland it has been more common to retire early than in the OECD-countries on average.

The seminar also considered the amount of absences and the cost caused by these to Saarioinen Ltd. The aim of the seminar was to develop an operational model to decrease rates of early retirement and absences due to sick leaves. The seminar resulted in a decision to start activities to promote work ability, which aim at supporting especially the elderly employees' coping with work.

Every enterprise of the company devised a plan for actions in order to promote work ability in the respective enterprise, and committed to take measures to reach these goals.

The measures focused on three different sectors, that is:

- on the worker: development of professional skills and attitudes, work ability and functional capacity;
- on work: organisation of work, development of work environment;
- on the working community: teamwork.

A follow-up team was set up in each enterprise to plan and organise actions. The team included the managing director of the factory, the occupational safety representative, a representative of occupational health service and the staff manager. The teams have started their work and a follow-up study on their progress will also be conducted.

### **In-company vocational training**

From the beginning of 1997 the Saarioinen Ltd has offered the employees an opportunity to complement their vocational education by taking a vocational degree in the food industries alongside their regular work. The training takes about a year and includes about 20 contact days as well as practical training and distance education. There have been three training periods and the fourth is about to begin in autumn 1998. The training has been attended by 54 workers, 38 of which have already completed their courses. The age of the attendants ranges from 20 to 54 years. 30% of the attendants are under the age of 30. Attendance has been most general in the group of 30-44-year-old employees, since 44% of the attendants belong to this age group. 26% of the attendants are over the age of 45. Thus it seems that interest in taking a vocational degree is quite strong among those over 45: these persons often have a lower basic education when compared to younger workers.

### **Summarising comments**

In the 1990s Saarioinen Ltd has carried out projects that have been directed at promoting the employees' work-related abilities, and also at promoting their work ability and health. These

projects have shown that the oldest employees' coping with work can be enhanced e.g. through training and organised exercise. The oldest workers have participated actively in the training and as a consequence of this e.g. issues related to group spirit and growth motivation have been on the rise even more than among younger workers.

Sick leaves and early retirement rates have also decreased as a consequence of projects focusing on work ability. The latest project is seeking to promote work ability and to integrate it into the regular workday by means of a special work group set up for this purpose.

Work in the food industry is extremely strenuous and offers only few opportunities for the employees to take part in decision-making. However, in order to maintain work motivation, there is a need to perform more versatile tasks and, on the other hand, to gain a possibility to influence one's own work. The strong emphasis on developing organisational structures and the content of work is based on this. It is obvious that creation of new organisational models for work takes time, since changes require a new kind of organisational culture, and especially confidence in the workers' ability to make decisions concerning their own work. It seems that changing roles has been most difficult for the supervisors. The fact that as many of the employees and elected officials as possible take part in development work is considered especially important. Development work is a learning process, effects of which can be seen also on a larger scale as an increase in the employees' well-being. This is a challenge for the personnel in all but especially in the sense of promoting health and work ability of elderly employees.

## **19. Helsinki City municipal home care (FL)**

*Tiina Pohjonen*

### **Context**

The ageing of population and a policy emphasising open services in the care of elderly people, have increased the work pressure within the social and healthcare professions and especially in home care work. Home care is a part of the municipal social services the main aim of which is to increase the possibilities of the elderly people to live in their own homes as long as possible. Apart from the increased number of customers, the intensity of the services has been grown as well. In 1995 in the Helsinki City municipal home care there were 79 elderly people customer visit per year, the number in 1997 was already 198. The people working within home care services is in relative and absolute measures the most growing professional group in the 1990s.

Even in the beginning of the 1980s, it was observed, that strain in the home care work was greater than in other female municipal professions on the average. Home care was classified as an occupational group characterised by a high probability of decreased work ability and high prevalence of diseases. Later a follow-up study indicated that home care work is a women's high-risk occupation for the ageing workers, meaning that the requirements of the work exceeds the individual capacity.

### **Ageing-related problems**

The ageing of the population is also reflected in the age structure of the social and healthcare personnel. The average age of the workers is 42 years and every 5th (21%) is more than 50 years old. The proportion of those aged less than 30 years being only 11%. Due to economical factors, it

is not very likely that the amount of personnel in the care professions will increase during the coming years. This meaning that the average age of the personnel will be even higher than today. The work will become extremely hard if the elderly customers in open care will need more intensive care without a simultaneous development of the working methods and the capacities of the personnel. The consequence of this is likely to reduce the health of the workers.

Of the 13.200 Finnish home care workers, every 10th is employed by the city of Helsinki. The average age is 42 years and 42% of them is more than 45 years. Most of them are women (98%) and usually they retire earlier (at age 59) than other occupational groups. The main reason for early retirement is musculoskeletal diseases. Even though the high strain of home care work has been known for a long time, very little has been done to make thing better. Because the working environment in this case is the private home of the customers, it is very difficult to try to influence the working environment and methods.

### **Process and actors**

#### ***Negotiation issues***

In the beginning of 1990 the city of Helsinki contacted the Finnish Institute of Occupational Health (FIOH) which had a leading role in the 'Finn Age – respect for the ageing programme'. Especially occupational health care services and safety organisations were worried about workers' coping. Concrete solutions were demanded for improving the work capacity and a decrease of the strain of the work. The target area was chosen taking into consideration the geographical area of the city, where the houses are old and where there were many defects in the ergonomic conditions. Also the employees (n=144) within the area had more musculoskeletal symptoms and diseases than workers on average.

#### ***Initiatives and steps***

A management team which approached the question from different aspects was appointed. The representatives included members from executives of the Social Center of Helsinki city, employees representative, health care personnel, work safety organisations and the researcher from FIOH. Based on the discussions it was agreed upon to execute intervention research where the effects of physical exercise on work capacity and the effects of the ergonomic measures on work strain would be clarified. The main principle was to execute the measures within ordinary working units, and not just focus on ageing workers. The study was financed from the city budget, which gave permission to use working hours for development work.

#### ***Actors involved at various stages***

In the first step an analysis was made to survey the current situation, measuring the work ability, the strain of work, and the characteristics of the work experienced by the employees. Measurements showed for example, that every fourth of the employees over 45 years of age had higher cardio-respiratory strain during the working hours than the recommended maximum level for an eight-hour working day. Also the musculoskeletal capacity of the workers was lower than the age-related reference among women.

With the help of the researcher, the working units started analysing the baseline results and began studying solutions for developing the work. In the physical exercise group the employees participated in controlled and supervised physical exercise twice a week. The interventions lasted one year and they were carried out during paid working hours.

### ***Evaluation procedures***

Interventions were carried out in 1993, when the signs of a recession were high and the number of workers was strongly reduced. In spite of this, the work units participated very actively in the physical exercises and work development. The research showed that it is possible to develop the working methods and the equipment although the work environment is a private home. After ergonomics changes it could be observed, that the straining work postures decreased significantly. The professional skills were also increased implying more potential for individual decision making more possibilities to regulate the work-pace, and the possibilities to more effectively use own resources.

Physical exercise prevented the decrease of the functional capacity and work ability despite the workers' age. Physical exercise affected the work ability so clearly, that it was decided to carry on the exercise programme during paid working hours also after the intervention period was finished.

### **Company initiatives**

In Finland ageing is a problem especially within the municipal sector. On the average, the proportion of Finnish workforce over 45 years is 37%, but in the municipal sector it is 42%. In the city of Helsinki the situation is even worse, as about 50% of the employees (n=38 800) are more than 45 years old. The average age of the employees is 42 years and the largest groups are between 50 and 51 years old. The actions to maintain and to improve work ability are targeted to the whole personnel and there is no separate age policy in the city administration. During this year each department funds a group which coordinates the execution of the activities targeted on work ability improvements. The organisation and responsibility of the actions are in the hands of the management of the each department.

The home care service research project was the first project within the city of Helsinki, which systematically tried to find solutions to improve the working methods and work ability. After this pilot project, there have been a number of development projects, in which especially physical exercise has been a key factor in promotion of a better work ability. Since 1996 the Work Ability Index has been used in the evaluation of the work ability in the city's human resource reporting and accounting. In 1997 2.5% of the whole personnel belonged to the poor work ability group and 13.4% to the average work ability group. This means that approximately 1000 employees of the municipal workers in the city of Helsinki had difficulties to cope with the requirements of the work. In the home care service branch this % was even higher (31.6%).

Partly due to the results of the study and the ageing of the employees, the home care resources were increased with 230 workers for the years 1998-2000. All this happened during a period when the number of municipal workers was decreased on average.

The effectiveness and the quality of the customer service have been improved by procuring mobile phones to all of the workers. In addition teamwork has been developed and the use of assisting services such as grocery deliveries has increased. The quality aspects of the home service have been defined, and the maintenance of work ability has been seen as one of the essential ways to ensure quality. The quality handbook mentions that exercise and health guidance can activate both the workers and the customers to maintain and improve their health. After this study, another exercise project in the home service was carried out. It investigated the effects of physical exercise

during the working hours on working productivity. Exercise did not reduce productivity as measured in number of customers or home-help visits.

### Comments

The model for developing work and work ability used in home care work can be considered applicable at least to the female dominated basic service sector (for example, cleaning and kitchen work). Early rehabilitation should focus on every worker, not only the ageing workers.

There are at least three key prerequisites for feasible and successful interventions carried out in the work places:

- the project must have the unreserved support from the top management and the line management;
- the actions must be carried out in small regular work units;
- the measures of the interventions must be based on the needs of the workers.

In Finland actions to maintain work ability have focused mainly on separate parts of the work ability. Developing human resources and work hasn't been considered as part of personnel policy or management systems. The roots for maintaining work ability are in the occupational health services and therefore the target for actions has been the health of individuals and above all their physical capacity, rather than developing the work methods or the organisation. Comprehensive developmental actions which would consider simultaneously both the resources of the individual and the factors of the work are rare. However, from the aspect of ageing workers such a comprehensive approach is the only way to maintain and improve work ability.

## 20. Vestfold County Social Security Service, (N)

*Per Erik Solem, psychologist, Norwegian Social Research*

### Context

The Social Security Service of Vestfold County consists of 15 local offices, a county office and a technical aid station for disabled persons, and employs 300 people. The County Social Security Service is part of the National Social Security Service, which employs a total of 7000 people. Considerable changes are taking place and are expected to take place in the near future. Traditionally, casework in the social security service has been specialised and split up in simple routines. Over the last two decades the caseworkers have met increased demands on breadth in their competence. The organisation of work is changing as more group work and project organisation is introduced. Decisions are increasingly decentralised, and the public is demanding higher standards of service. The public wants more information, counselling, prevention and follow-up, and not only acceptance or rejection of applications for social security allowances. New information technology is a central part of the changes in the work role. At the same time, budgets have been reduced and the demands on efficiency have increased. All together this has increased the pressure on the employees, and many older workers were tired and would choose the earliest possible option for retirement.

### **Ageing-related problems**

The Vestfold Social Security Service has an old work force; 50% are above 50 years and 70% are above 45. The administration sees two main challenges for the next 10 years; to adapt working conditions to an ageing work force and thereby benefit from the vast competence of older workers and to recruit new workers and secure their growth in competence.

### **Process and actors**

From the early 1990s the central authorities have promoted senior personnel policies for government employees, and in 1996 the Ministry of Labour and Administrative Affairs sent out a guide for competence development for mid and late career employees (45+). The National Insurance Administration then decided to carry out a pilot project in the county of Vestfold for a later possible implementation in the social security services nation wide. The Work Research Institute was asked to evaluate the pilot project. The project was divided in two parts. Phase one focused on awareness raising through seminars, discussions at the workplace, and collection of proposals for measures to be implemented in phase two. During the process the focus was changed from senior personnel policies to a life phase orientation. One reason was that at some local offices the senior focus was considered to be discriminating; why were those below 45 years excluded from adaptations of working conditions? With the actual age distribution of the work force it seemed unfair to exclude, at some offices, the one or two employees not being old enough.

Phase two will focus on implementation of suggested measures to improve working conditions.

There is a steering group for the project with representatives for three different unions, management at three levels (local, county and national) and external consultants; Centre for Senior Planning and Work Research Institute. It was planned to set up working groups at each local office, but only one such group was established. Of the 15 local offices in Vestfold, six accepted the invitation to take part in the pilot project. In addition one department of the county office took part.

The Work Research Institute completed the evaluation of phase one by March '98 (Lahn & Karlsen, AFI-notat 3/98). The evaluation is based on the participants' written evaluation of the seminars, interviews with participants and managers, including managers of local offices not taking part in the project.

### **Company initiatives**

The main elements of the project's phase one was:

- a two-day seminar for first line managers;
- a two-day mid-life seminar for workers aged 45-57 years;
- a two-day senior seminar for workers aged 58 and over;
- meetings at the local office level between the manager and the employees to sum up the seminars and discuss implementation of measures proposed at the seminars;
- senior dialogues between manager and employee to develop an individual career plan;
- a suggested measure of working as a guest at another department or enterprise was implemented before the end of phase one.



The aim of the guest-worker system was to counteract burnout and to stimulate fresh thinking and growth. The system gives the option of, during a period of two weeks to three months, working at another workplace inside or outside the social security service. Employees were encouraged to try to work outside the social security service. During the autumn of 1997 10 employees (out of about 60 included in the project) did work as a guest at another workplace; five at other offices of the social security service, and the other five worked at job centres or in private business.

### **Outcome**

The main aim of the pilot project's phase one was awareness raising. The evaluation report sums up the results as positive. At the individual level a greater awareness concerning the life situation and career opportunities was rated as helpful. The older workers considered their capacities and learning abilities in a more positive way. Even younger workers changed their attitudes towards older workers and were looking more positively on seniors at work. Managers were more aware of age and challenges connected to ageing. The evaluators see a basis for the development of a life phase oriented personnel policy, but hold that to achieve success it will have to take some time. Too quick and restless measures may be counterproductive. Even if implementation mainly was planned to take place in phase two, the participants were somewhat disappointed about the practical outcomes. They felt locked up in a situation with personal responsibility for high amounts of work. Those who found room for a period of guest work reported to have learned from it, to have been able to contribute to the host and to have been stimulated and inspired. They also reported some practical problems yet to be solved.

Some of the proposals for measures from phase one are listed below:

- guest work and other kinds of variation at work, e.g. to get new tasks or exchange tasks with a colleague;
- adapted working hours (flexible schedule);
- home work (implemented at one local office by August '98);
- take a walk in open air during working hours;
- gymnastics groups;
- attend at least one course each year;
- after 20 years of employment, be offered to take guidance tasks (guiding juniors);
- combination of pension and work (gradual retirement).

### **Comments**

The project is not yet completed. It is too early to establish what effects it may have, and if it will spread to the social security service nation wide. The success of measures to adapt the working situation of older workers will probably depend upon more general changes in the working context, such as flexibility of work organisation and sufficient staffing. If, for example, the worker is confronted with the same or even a higher pile of uncompleted cases when he returns from a period of guest working, no gains may be achieved. Under high pressure the personal responsibility of getting the work done in time is hard to cope with unless the organisation takes care of the employee's work while he is away. That requires a flexible organisation with sufficient resources.

The change from senior focus to a life phase orientation during the process illustrates how senior policies may inspire the general personnel policies.

## **21. The Norwegian State Housing Bank (N)**

*Per Erik Solem, psychologist, Norwegian Social Research*

### **Context**

The Norwegian State Housing Bank is an executive body for governmental housing policies, and gives home loans and grants. About 50% of new homes in Norway are funded by the State Housing Bank (1997). The Bank employs 350 people and has five offices around the country. In 1997/98 the Bank was reorganised to meet changing conditions, to improve service and relations to customers, and is increasingly market-oriented. During the reorganisation employees are moved around in the system, with new affiliation to departments and superiors. This naturally creates some insecurity, not least among older workers. However, the senior policy project is independent of the reorganisation process, it is not developed as a part of or a response to reorganisation. But in a situation where changes are expected to continue, the older workers are considered to need special attention through an active senior policy, particularly because of a relatively old work force.

### **Ageing-related problems**

More than half of the work force (54%) is above 40 years. This proportion is calculated to increase to 75% during the next 10 years. Traditionally the Bank has not been particularly youth-oriented in recruitment, even workers close to 60 have been recruited. In the personnel policy guidelines from 1994, a paragraph on senior policy is included, stating that it is a benefit for the company to have employees with a long and solid work experience. The senior policy project described in the following, has its background in the intention to use the competence and experience of older workers in the best interests of the company and to promote individual growth through new challenges and options. There is a general trend in working life towards early retirement. To balance an orientation among older workers towards early retirement the company has seen a need to focus on motivation and stimulation for development and growth even in the last part of the career.

### **Process and actors**

The senior project was initiated and implemented by the human resources management (HRM) department. Planning started in 1996. It was decided to start out with a pilot project and the district office in Bergen with its 55 employees, was chosen. All local leaders and union representatives were invited to discuss the plans, and they supported the pilot project. The design and measures were worked out by the local HRM officer in cooperation with the Centre for Senior Planning. It was decided to start in a small scale and to take action without a too long period of planning and negotiations. Rather than collecting long lists of proposals and wishes in a long process with a risk of the whole project coming to nothing, they chose to demonstrate feasibility by quick action. Seniors (45+) were invited to a senior seminar limited to 12 participants (about 50% of all 45+ in the Bergen office), and the list was full within half an hour. The first seminar was held in June 1997. Still a pilot project, in 1998 one seminar is carried out at another local office and the third seminar is scheduled for the autumn 1998. The top management of the Bank is strongly supporting the pilot project and in a couple of months it will be formally decided if the senior policy actions will be implemented on a permanent basis in all divisions. Most probably the senior policy paragraph of



the personnel policy guidelines of the Bank will be revised to include more active formulations on implementation of senior seminars, 'milestone dialogues' and individual solutions negotiated through the dialogues. The next step will be to create senior policy measures designed for employees in leading positions.

In addition to participant evaluations of the seminars, the HRM department will continuously evaluate methods and effects, and in particular follow up the implementation of the negotiated individual arrangements.

### **Company initiatives**

The senior policy includes three main elements.

- 1 The senior seminar for employees aged 45+. The format is: duration of two days, located outside the workplace and with a mixture of plenary sessions, small groups and individual work. The focus is on reflections concerning the individual work history, life situation and preferred changes for the future. Both cognitive and affective involvement is encouraged. Part of the seminar is a preparation for the milestone dialogue, which is preferably conducted within the next month.
- 2 The milestone dialogue is supposed to take about two hours and includes the individual worker and his or her superior. A HRM officer is present if the worker prefers that. The milestone dialogue is (as the senior seminar) planned to take place every 5th year, and is additional to the yearly dialogue between workers of all ages and their superior. The superiors are briefed in advance about how to conduct a milestone dialogue, and a commitment is created. Both the superior and the worker are equipped with a guide with themes and questions and an agreement form to be filled in and signed.
- 3 Individual solutions negotiated in the milestone dialogue are stated in the agreement form together with who is responsible for implementation. Examples of negotiated actions are; different kinds of training arrangements, guest working at other departments of the Bank or outside the Bank, changes in tasks and duties, changes in working hours, and mentorship.

### **Outcome**

One result of the actions taken is raised awareness on senior policy issues throughout the company. The HRM department has by this work acquired a more active attitude towards older workers and formulated senior policy guidelines according to that. The former guidelines had more of a disengaging and patronising undertone. It is too early to see any long term effects, but one immediate result is that all the 24 senior workers (45-62 years) who by now have participated in seminars and milestone dialogues, have signed an agreement with their superior on individual solutions.

### **Comments**

Probably, this small scale and quick action pilot approach will, by showing it's feasibility, spread throughout the organisation and even outside as the HRM department already have presented it for other companies. The actions taken are concluding with individual arrangements. Finding individually preferred and adapted solutions through an open dialogue would increase the probability for success. However, this requires flexibility in the organisation and real options for implementation of a great variation of solutions.

## 22. Siemens AS (N)

*Per Erik Solem, psychologist, Norwegian Social Research*

### Context

Siemens AS is one of Norway's leading electro-mechanical concerns and employs about 3,000 people at 26 sites throughout the country. About 1/3 of the employees are engineers or engineering scientists, and 84% of the work force are male. Siemens AS was established in Norway in 1898 and is a wholly owned subsidiary company of the German concern, Siemens AG. There has been a long tradition in personnel policies for employees to be expected to have their whole working career inside the company. In 1987 a new career system with two parallel career ladders was implemented, and a professional ladder was added along with the administrative ladder for advancement. Professionals did not need to take administrative responsibility in order to advance. This, together with too little mobility among the key people, is the immediate background for introducing the system of Constructive Management Mobility described below.

### Ageing-related problems

Towards the end of the 1980s the company was concerned about ageing of the work force. There was a low internal mobility. Some parts of the firm were in a steady market situation and employees tended to stagnate. The company wanted more mobility and development of employees, particularly among managerial staff. The proportion of older workers is as the national average (47% above 40 years and 22% above 50 years (1997)).

### Process and actors

Actions were initiated and implemented by the Department of Management Development and Training. External expertise on organisational psychology was engaged to develop a training programme in cooperation with the company's own expertise. An inquiry was sent to all employees at the four top levels of the career ladder (consisting of 12 levels), as the structure was most frozen at the top levels. They were asked if they would like to take part in a programme of Constructive Management Mobility. Mainly leaders aged 55-64 enrolled. The first programme was run in 1989 and has since then been repeated every year. The mean age of the participants was 56 years in 1989 and has gradually decreased to 45 years in 1998. In 1993 a similar programme for non-managerial staff was introduced (TIPTOP - Senior Resource), and a programme for all employees, irrespective of age, started in 1996 (Active Reorientation Process). There is a continuous evaluation of the programme and a scientific dissertation is in process.

### Company initiatives

#### ***Constructive Management Mobility***

This programme has a format of three two-day meetings over a period of eight months, with a mixture of plenary sessions, group work and individual work. Between the first and second meeting there is a four-hour dialogue with an organisational psychologist, focusing on individual interests, options and resources. Between the second and third meeting there is a dialogue with the personnel director, focusing on alternative job opportunities in the company. During the whole process the workers are invited to reflect upon their work and life situation in order to end up with an individual action plan for further development and changes. Various techniques and methods to stimulate personal growth are used. Each programme has 12-5 participants who throughout the process belong to one of four small groups, so called coaching groups. The members of each group are recruited from different divisions of the company.

***TIPTOP - Senior Resource***

The format is two seminars lasting two days each, and three seminars lasting one day each. There is about three weeks between each seminar and the whole programme takes four months. The participants are given exercises to work on between the seminars. Non-managerial staff with more than 10 years of experience is invited. Each programme has 12-15 participants. The programme focuses on practical challenges of work and the working situation. The aim is to improve competence and to give incitement. It is not intended to increase mobility.

***Active Reorientation Process***

This is a one and a half-day's seminar open to all employees, and is part of the effort to create a learning organisation and readiness for change. The company also offers a three-day pre-retirement preparation programme for employees aged 58 years plus.

**Outcome**

One year after completing the programme of Constructive Management Mobility two thirds of the participants have experienced a major change in their job, i.e. they have got new tasks or changed job, and in some cases moved to another division of the company. About 10% have found a new job outside the company and few (3%) have taken early retirement.

Participants report they have taken more responsibility for their own development, have increased their competence, and have become more open for changes. The company considers participants to have improved their ability to work in teams, which they see as important for meeting future challenges.

The programme of Constructive Management Mobility has attracted interest from other companies and a few external participants were accepted for the 1998 programme. Plans to establish this programme as a separate business for external participants are under discussion.

**Comments**

The programmes of Siemens are interesting because of the long experience and gradual expansion over a 10-year period. There are ample indications on the effectiveness and success of the programme. The dimensions and content seem to require organisational resources that are not available in most companies. Thus transferability of the programmes may be limited. However the plans to offer external programmes may result in substantial transfer.

**23. The National Commission of the Danish Police (DK)**

*Søren Steen-Jensen, Senior Consult*

*Ole Ravn Jørgensen, Dissipative Management*

**Context**

The Danish Government wants to keep the senior employees on the labour market.

The Minister of Labour has concretised his intention in a statement regarding the introduction of a senior policy, the establishment of a Senior Political Initiative Committee and finally, an effort to arm the employment system in being much better at guiding and informing unemployed workers above 50 years old.

The Ministry of Finance and the Danish Federation of State Employees have taken the initiative to complete this project.

### **Ageing-related problems**

The wish to keep the senior employees on the labour market for more than the present retirement age of 60 years is based on two conditions:

- expected problems with the financing of increasing transfer payment;
- problems with the recruiting of young employees due to the small age classes.

It is a fact that more and more employees want to leave the labour market either because of the 'push model' or the 'pull model'. The effects of the 'push model' can briefly be described as physical or psychological wear down, and the 'pull model' can be described as a 'dream' about another life situation with new degrees of freedom and new possibilities.

Irrespective of the sympathetic intentions, measures particularly aimed at the 'push model' have not yet resulted in a decisive breakthrough in an effort to solve the two problems: demography and retirement pattern.

An effort to play down the 'pull model's' strength by offering other working conditions, functions and working hours has not changed the situation radically. According to the authors' opinion, the missing results are due to the fact that the importance of the psycho-social working environment as well as the target group's opinion of the same has not had any influence on the preparation of the measures. The measure described in the following is based on action research and breaks this pattern by including representatives from the target group in order to create a 'common language'. It also includes a frame of reference that should define the real causes of early retirement irrespective of whether the causes should be identified within the physical or within the psycho-social working environment.

The process thus breaks with the traditional opinion of the management's sole responsibility and exclusive right to formulate problems and solutions of the same. On the other hand, the clear connection to the employees' working day means that the proposals for solving the problems in advance are ensured a high degree of organisational acceptance and joint responsibility for sustainable solutions and implementation.

Furthermore, the process creates new learning, reveals myths and promises and makes the dialogue goal-oriented. It also creates a better commitment, a better use of resources and a new sense of responsibility for the results in general. Finally, the process means that if the learning is based on the organisation, the organisation will be able to solve future problems containing elements outside the realm of experience.

### **The National Commission of the Danish Police: Senior political status**

The term senior policy is relatively new within the Danish police but in practice, it has existed under the term 'light work' (work which is not physically demanding), special duty etc.

The demographic development shows that the group of senior employees within the Danish police will increase until year 2005 from 2,161 – 3,880 (79%). Internal and external studies show that

senior employees within the National Commission of the Danish Police want to participate in senior political measures, and that the implementation of a goal-oriented senior policy would be a lucrative investment. Moreover, internal studies show that the physical and particularly the psycho-social working environment is a heavy burden.

### **Process and actors**

The pilot project was completed in Frederikshavn police district in 1997. The police district has approx. 150 employees.

The project's action plan included the following phases:

#### ***Preliminary phase:***

- preliminary work;
- information;
- establishment of steering group;
- preliminary study.

#### ***Pilot phase:***

- innovation phase (innovation seminar);
- fact-finding;
- testing and preliminary evaluation.

#### ***Implementation:***

- implementation;
- final evaluation and reporting.

In the preliminary phase, a questionnaire study was made among all employees in Frederikshavn police district. The purpose was to reveal the following: What do the employees think about their own retirement? When do they want to stop working? What can make them postpone their planned retirement? What proposals do they have for their own senior activities that would make them want to stay longer on the labour market?

In the study they were also asked to look back upon the last year and consider whether conditions like reorganisation, changes in structure, technological and administrative rationalisations, increased demands on efficiency and productivity, insecure employment and finally, the physical and psycho-social working environment have changed their opinion about when they have decided to leave the labour market. This part of the study tries to identify a number of organisational variables and their influence on the retirement pattern.

In the qualitative part of the study, the respondents were asked to make proposals for job enlargement in the middle and the last part of their career. The respondents' answers in the qualitative part of the study served as a basis of defining and presenting proposals for the following practical pilot project.

The pilot phase is based on more recent experiences within senior development that shows that it is possible to find solutions containing elements outside the realm of experience if the process is

'turned around'. Previous studies show that many senior employees have a large development potential regarding their own job and the creation of new organisation and work structures, which breaks with the traditional barriers taking the general interest into consideration, in other words a 'sustainable development'.

A total of 20 interested volunteers participated in the seminar phase with the purpose to define possible solutions containing elements outside the realm of experience within the senior field. Moreover, the seminar also included a description of proposals, documentation for sustainable solutions, expected results, possible consequences and finally, economy. Afterwards the results were tested and evaluated. The participants ranged from 35 to 58 years of age, and included employees from operative and administrative functions including doormen and the deputy chief constable. The seminar took place over three days with the participants sleeping overnight.

### **Proposed actions**

As a result of the seminar, the participants introduced their proposals for representatives of the management, the Consultative Committee, the relevant unions, the Ministry of Finance and the Danish Federation of State Employees. The concrete proposals may be grouped under the headline: the need for innovation and a disciplinary open dialogue concerning the distribution and planning of work. As the participants realised that they included a number of organisational variables which have been 'protected' so far, they suggested to establish a so-called 'free station'. The purpose of the 'free station' was to make use of the employees' knowledge and experience by allowing a higher influence on their own working situation (decision space) including consultation before implementation of organisational changes. In other words, the employees should be regarded as conscious and responsible partners in the dialogue concerning the future development within the police. The project 'free station' can be regarded as a proposal for the establishment of a permanent 'laboratory' which, according to requirements, should define and test solutions containing elements outside the realm of experience not previously observed. In other words, a draft proposal for a continued dynamic process including discussion and reformulation of job demarcations, e.g. proposals for a 'national police'. Finally, concrete proposals for the development of qualitative cooperation methods between the police and the surrounding world were presented.

At the present moment (October 1998), the concrete testing/implementation of the 18 senior political action areas completed in Frederikshavn police district is expected to start. The proposals are described in a senior political index of ideas prepared by the innovation group. The index of ideas describes the following action areas:

- courses – which consider the interest of the senior employees – with main focus on data processing;
- technology – which is homogenous as regards operation and contents;
- job rotation – leading to a meaningful life;
- mental training – which improves the senior/retirement life;
- vocational supplementary training – up-to-date courses;
- flex time/part-time – with the possibility of working 2/2 – 1/2 and 1/3 time;
- home working – with the possibility of having a PC workstation at home;



- exemption from shift work;
- exemption from management positions without loss of prestige;
- a 'stand by police' system – with the possibility of living as a retired employee;
- a 'national police' – where all employees can carry out the same functions;
- leave of absence agreements – with the possibility of retraining/education for two years;
- external senior jobs – agreements with other companies;
- mentor/supervisor – culture and experience for younger employees;
- senior club – contact between retired employees and workplace;
- senior crises/senior health – follow-up on violent events;
- senior accept – accept of strong and weak points;
- senior interview – the work period up to retirement age.

Other concrete proposals include follow-up and documentation of knowledge and experience. In other words prevention of future mistakes. A member of the innovation group acts as 'the grounding element' in the testing phase after having completed a police training course as a 'process consultant'. The authors have conducted a seminar for the 'process consultants' within the police. They have also prepared a senior political manual which should help the 'process consultants' with the future work concerning the implementation of the process in the other police districts.

### Comments

Action research as a method contributes to release creative powers among the employees. The process creates a strong psychological contract between the participants, which means that they strengthen each other's effort. A long number of research results show that action research is a methodological necessity for involving the employees actively in an open process with the purpose to acquire knowledge and find useful solutions, e.g. within staff policy. Participation and training in the methodical intake (action research) has given the senior development process within the police a qualitative lift. The method is particularly strong in connection with innovation and accept of changes. It creates a mental space which leads towards a consensus by means of a dialogue concerning the qualitative aspects as a reference point for the decisions at action plan level. Nowadays, employees want to know why changes are necessary. A dictate to changes at action plan level without clear qualitative grounds have only incidental and very often limited motivation power.

Moreover, it is our opinion that the applied intake, action research, can be used within all organisational innovation processes where the intention is to clarify and define solutions not previously observed.

The economic effect of senior political measures may be described as a range of positive aspects. It goes without saying that as long as the psychological and physical wear down is reduced, the need for treatment and help among retired employees will decrease. Absence due to sickness means pressure on the other colleagues, a vicious circle leading to further wear down. Finally, wear

down leads to a considerable reduction in the job performance which again leads to a negative influence on the working environment (particularly colleagues) in general. A reduction in the job performance (60%) combined with a subsequently early retirement will be a heavy burden on both institution and society if the retired employee is not self-supporting. A maintenance of the job performance at 85% and a few years postponement of the retirement as a self-supporting retired employee will reduce the expenses on society and institution considerably.

It is believed that the police will get far within the initiated senior development process. Moreover, it will serve as a model for other public institutions in the future where initiatives within the senior political field are needed. The important element is especially the top management's deep and lasting interest in the project.

## 24. Realkredit Danmark (DK)

*Jette Nielsen, MD, National Institute of occupational health, Denmark*

### Context

Realkredit Danmark is one of the biggest finance houses in Denmark. In 1995 the firm had 1,200 employees with an average age of 40. They were allocated to four regions and 25 local offices. The firm's share of the market is 27%, and they serviced about 60,000 customers. The balance in 1996 was 1,387 millions Danish crowns, the solvency was 12.9% and the costs were 0.34%.

In 1995 Realkredit Danmark was honoured with a price due to their high level of customer service and development of their products.

The public esteem of the firm was still increasing as they started to recruit employees at the age of 50+. This was a new signal from this sector: During the last years the sector had been struggling with the demographic problem of increasing age of the employees. The traditional attitude to solve this problem had been based on economical solutions for early retirement and by firing the older employees.

### Ageing-related problems

During the late eighties the firm had reduced the staff due to the financial crisis and the structural changes. During the nineties the picture had changed according to changes of the law and according to low interest rate. These had led to an increased demand of workforce, which was met by engaging substitutes. But this model was not suitable in the long run. Permanent work tasks demanded a permanently employed staff, which could be integrated in the firm. Furthermore, the type of tasks of the firm had changed in a manner that demanded more direct customer service and advising of customers. Earlier only 30% of the customers directly contacted Realkredit Danmark. In the new financial system about 56% of the customers directly contacted the Realkredit Danmark. Finally, it became important to have a broader age distribution of the staff, because the middle-aged and elderly customers preferred to talk with middle-aged advisors.

The list below includes the reasons why they want the 50+ years old persons:

- many unemployed within this age group;
- need of more employees for direct customer service;



- broader age distribution within the firm;
- natural retirement within a limited time period;
- matching the age of the customers;
- more direct contact with customers;
- experienced employees advising and already educated and trained from previous job;
- local knowledge;
- stability;
- quickly adopted to the job.

### **Process and actors**

At the society level the discussions of senior politics were ongoing and within the firm they had just started to discuss these problems. The idea of engaging 50+ years was created by the managing director Kjeld Jørgensen. Together with the personnel manager, Inger Lise Meldgaard, he planned the recruitment programme and introduced it to the firm.

The list below emphasises the headlines of the recruitment programme:

- advertising in national news papers;
- limited demands, special customer service and advising;
- fixed salary;
- recruitment procedure;
- introduction;
- education/training.

### **Implementation and outcome**

About 1,400 applicants responded. The distribution of the genders was 50-50 and only 1/3 was unemployed. A total of 58 persons were engaged. The distribution of age was from 48 to 59 years of age. After a short period of training they were allocated to 24 local offices all over Denmark.

The attitudes and reactions among the other employees were moderate to negative. After an introduction period the attitudes changed and became positive. The permanently engaged staff experienced their new colleagues as very competent and with high ability to solve the problems in the new tasks.

Primarily the idea was to achieve a high flexibility within the firm. The elderly employees were a good alternative to the substitutes and to permanently engaged staff, who were engaged at a young age. Secondly, when the firm engaged seniors they got personnel with a time-limited career. The seniors are closer to retirement than the young ones and the permanently engaged staff.

The new type of task had previously been served in other types of financial institutions.

Furthermore, the newspapers, radio and television stations told the story and emphasised the positive attitude towards seniors and this gave everybody a good support. Inger Lise Meldgaard says that it has been a success for both the younger and elderly employees.

Only very few of the 58 seniors have left the firm and most of them are well integrated. The firm needed qualified finance people with work and life experiences, who also had experience in the new type of tasks.

## 25. Siemens Nederland (NL)

*Willem J. A. Goedhard, Dept. of Occupational Health and Ageing, Faculty of Medicine, Free University, Amsterdam*

*Tjip S.H.W. Rijpstra, Dept. of Occupational Health and Environment, Siemens Nederland*

### Context

Physical fitness is an important aspect of work ability. Lack of physical exercise as well as several other risk factors like smoking, increased blood pressure, work stress, high cholesterol, increase the risk of coronary heart disease (CHD). At the Siemens Nederland Company 1.3% of the workforce of about 2,400 employees suffered from CHD over a period of four years (1987-1991). The total costs of subsequent sick leave were HFL. 3,000,000, —. Based on literature data and reports by the Netherlands Heart Foundation about the relationship between a lack of physical exercise and an increased risk of CHD, it was decided to do a pilot study on employees with an increased risk of CHD based on their risk profile.

### Ageing-related problems

CHD is an age-associated disease. Atherosclerosis increases with age and subsequently the risk of a CHD. There is epidemiological evidence that physical exercise diminishes the degree of atherosclerosis and therefore the risk of CHD. Besides, physical exercise may have several other favourable effects as well, like decrease of blood pressure, decrease of body weight, decrease of the risk of diabetes mellitus. Based on the Framingham Index it was found that in the age group of 35-55 years employees with a high physical capacity virtually no association between risk of CHD and age existed. However, in the group with a low physical capacity the risk of CHD increased significantly with age. Furthermore, there is also a relation between lack of physical exercise and age. Many elderly people tend to give up physical exercise.

### Process and actors

#### *Negotiation issues*

Costs of sick leave due to coronary heart disease are an important aspect for negotiations.

#### *Initiatives and steps*

The initiative for implementation of a training programme was begun by Siemens Occupational Health. Based on information from experts in physical exercise a programme of nine months was determined. The budget for 29 persons was settled at HFL. 51.000, —. Upon approval by the Board of Siemens Nederland, selection of the employees was started. A group of 29 employees was selected based on the individual scores of the Framingham Index. A first group of 15 employees started in October 1993 and a second group of 14 employees a few months later. The training period of nine months was divided in five sub periods.

Before the programme started maximal physical endurance capacity was measured in each individual. This test was repeated after two and six months of training respectively, as well as two-three months after finishing the training programme; 19 of the 29 employees participated in the whole training programme. The programme consisted of cycling, running, and rowing with an intensity of three one-hour sessions per week. The loads were adapted to the physical capacities of the individual employee. Stepwise increase of physical loads was achieved based on successive measurements of physical capacity.

From those who left the programme for various reasons the majority had remained on a higher level of voluntary physical exercise. At the end of the programme aerobic power had increased in nearly all the participants. The increase varied between 3% and 58%. Maybe even more important was the average decrease of the Framingham Index score from 181/1000 to 53/1000, a decrease in risk of CHD of 70%.

### **Company initiatives**

#### ***Policy***

It was decided to extend the training programme to employees with lower but still elevated risks of CHD. A total of 10 groups of 10-15 employees were also invited for the training programme.

#### ***Actions aimed at work demands***

No interventions on work demands were included in this programme.

#### ***Actions aimed at adapting workers***

All employees were encouraged to perform more physical exercise. Contracts of Siemens company with fitness training schools enabled employees to participate in physical exercise at reduced costs. This was not specifically addressed towards elderly employees but comprised all employees.

### **Outcome**

Absenteeism is an important marker of the health of employees. The average figure at Siemens Nederland decreased from 4.3% in 1993 to 3.1% in 1997. Also a marked decrease in cases of CHD was observed.

### **Comments**

A good physical condition is probably an important indicator of health and work ability. Fitness programmes, encouraged by companies, may have beneficial effects on health of the employee as well as on productivity and absenteeism. For elderly employees a good physical condition is of even more importance than for younger employees. Therefore, elderly employees should primarily be encouraged to participate in fitness programmes.

## **26. Overijssel Wavin Social Unit (OWASE) (NL)**

*Bart C.H. de Zwart, PhD, Coronel Institute for Occupational and Environmental Health, Academic Medical Center, University of Amsterdam*

*Sophia J.C.M. van Hattum, MSc, Wavin, OWASE Companies*

### **Context**

Wavin is the largest synthetic-processing company in Europe, with around 4,200 employees. Most of the Dutch employees work in departments located in Overijssel (northeast Netherlands). The core

business of the company is the design, production and sales of synthetic pipe systems. Wavin began as part of the Dutch Waterworks Company Overijssel. Initially, the company produced pipe systems for its own use. However, an increasing interest of other companies for the synthetic pipes led the Waterworks Company to split off the production department in the 1950s. It now operates independently under the name of Wavin. Wavin developed rapidly, both in size and number of activities. In addition to the production of synthetic pipe systems, management initiated the manufacturing of other synthetic products including boxes and trays, tubes for food, window frames, flexible packing, glass fibre-strengthened pipes, etc.

For several years, for strategic reasons, the management decided to fully concentrate on the core business of the company again: the production of synthetic pipe systems. Consequently, most of the other manufacturing activities were completely or partly taken over by external partners. Most of these companies are still located on the same grounds as the present Wavin departments. Among the employees, there has always been a strong feeling and need to belong to one big Wavin family. Many of the external partners expressed their desire to implement a number of Wavin systems and conditions, especially concerning conditions of employment. This was also supported by the employees' council of Wavin. This wish for cooperation recently resulted in the foundation of the OWASE (Overijssel Wavin Social Unit). Within the OWASE companies, including the Wavin company, around 1,700 workers are employed.

### **Ageing-related problems**

For elderly workers in The Netherlands, the possibilities for voluntary early retirement have diminished rapidly over the last years, due in part to the high costs involved. As a result, ageing issues have become an important point on the agenda of many companies over the last years, including the companies involved in the OWASE. For example, more flexible regulations for retirement had to be developed for Wavin employees. Moreover, it became clear to the company that an increasing shortage of young and qualified persons in the labour market created a need for the company to retain its experienced older workers for economic reasons.

The mean age of the 1,700 OWASE employees is 41 years. Around 32% of the employees are aged 45 or older. Due to reasons stated above, this % is expected to increase in the next years. Consequently, attention to the group of elderly workers has been given high priority by the management of the OWASE companies, who took the initiative to make a start with the development of an age-conscious personnel policy.

### **Company initiatives**

All companies participating in the OWASE jointly decide which issues will be handled collectively. Several issues have already been formulated:

- a basic framework for the collective labour agreement (with possibilities for the companies to add company-specific agreements);
- a standard pension system;
- an internal mobility bureau;
- an age-conscious personnel policy;
- issues at the level of the social policy, beneficial for employees in all age groups, but especially for employees with high seniority.

Several of the age-associated initiatives will be discussed in detail below.

### **An age-conscious personnel policy**

#### ***System of flexible retirement***

With the lifting of the voluntary early retirement regulations, the need to develop other more flexible regulations for (early) retirement arose. It was stated that this should be a mutual responsibility of the employers and employees. The essence of the present flexible retirement system is that each employee can decide at what age he or she will retire (within the boundaries of 55-70 years) and that each employee will take responsibility for saving money and time for this retirement system. The employee has three ways to save:

- a collective part: from the age of 35 years, all employees give up three free days a year, or an equivalent part of their salary, to fund the possibility of retirement at the age of 62 years (all workers are allowed to work up till the age of 70 years).
- a 'small collective' part (optional): a department or team can decide to create extra savings for their retirement. For example, they can decide to save a number of extra hours worked.
- an individual part: individual employees can save a part of their gross salary for their pension.

All the financial savings are paid into an individual bank account. From the age of 55 years, the employee can use the money in the account to retire earlier, to start a part-time pension ('gradual retirement') or to increase the amount of his/her retirement pay (for example, a break in pension contributions due to temporary unemployment or non-transferability of pension rights due to a change in job during the employee's career may have adversely effected the employee's pension).

The present state of affairs:

- a number of employees already used the new system to retire earlier or start part-time pension.
- many employees are taking advantage of the saving options, especially the collective and individual parts.
- employees have a less rigid picture of their retirement age. They are now more in the 'driver's seat'.

#### **Individual working careers**

The companies participating in the OWASE have decided to give all employees aged 45 years or older the possibility to take a lower position without suffering the financial consequences. When an employee younger than 45 years of age takes a lower position, a reduction is made in the salary according to the collective labour agreement. However, for employees aged 45 years or older, the employer compensates for a part of the decrease in salary. The employer pays an increasing portion of the difference as the age at which the employee accepts a lower position increases. Two prerequisites have been formulated in this system. First, the decision to change to a lower position is made on a voluntary base (claimed by the trade union) and is acceptable for both employer and employee. Second, the decrease in gross salary is limited to a maximum of 30% of the former salary.

The present state of affairs:

- to date, none of the employees have made use of the possibility to change to a lower position.

- the system has been accepted by the employee councils and trade unions. Among the employees, the system is the talk of the town. Opposition is decreasing.

### ***Combating age discrimination for education and training***

The companies participating in the OWASE made several agreements with the trade unions concerning education and training. In an annual discussion between the employee and the management, future developments of the company and the individual will be handled. During these conversations, attention will be paid to possibilities for a horizontal change in position within the company, a change in career, and flexible retirement as well as internal and external mobility. Moreover, matching educational and training programmes will be discussed. The outcome of the discussion is an educational and training programme for the employee at the company level.

On this issue, the trade unions explicitly have reserved a task for the employee's councils. In case an employer discriminates against a certain group in the company by not providing them the possibilities for education and training, workers can report this to the employee's council. The companies' record data on the ratio of employees aged 40- and 40+ in the company, as well as the ratio of their educational and training programmes. If there are discrepancies in these ratios, the employees' council can take action.

### **Policy issues**

#### ***Risk assessment and evaluation of working conditions***

At the level of safety, Wavin complies with the national legislation. Many potential risk factors are now assessed and reduced to acceptable levels. At this time, extra effort is put into ergonomics and identifying factors that can pose a long-term health risk. For employees who will stay with the company for many years, this kind of action will be beneficial.

#### ***Different shift-work schedules***

In several companies, employees are given the possibility to switch from a semi-continuous schedule (interruption in work at the weekend: three crews) to a continuous schedule (seven day workplace operations, 24 hours a day: five crews) on a voluntary base. This only takes places in those departments where this switch in schedule also is beneficial for the production process. At this moment, it seems that in particular the five crew schedule with a forward rotation after two days leads to a reduction in sick leave figures.

#### ***Hiring policy***

Policies already in place ensure that, at the start of their career, employees are told that frequent job rotation within the company and development of their employability will be stimulated by the management. To accomplish this, new employees are trained within different working places in the companies. In this way, employees get familiar with the different processes within the companies, increasing the possibilities for job rotation in the near future.

#### ***Internal mobility bureau***

By request of the management or individual employee, an internal bureau mediates in case of a wish for an internal job rotation and matching educational and training programme.

#### ***Reintegration of (partly-) disabled employees***

In case of (partly-) disablement of employees, the company in which the employee worked at the time he or she became disabled finances a supplement. This amount is paid into a fund. Therefore,



the (new) employer only has to pay a part of the salary. In this way, the (partly-) disabled employee remains flexibly employable. In most cases, however, the employer of the company in which the employee worked at the time he or she became disabled, makes a strong effort to find or create a suitable job for the disabled employee within that own company.

### ***Individual care***

All companies participating in the OWASE initiated a mutual project to solve the problems of sick leave. The companies are investing money in the prevention of sickness absence. For example, a number of companies have organised training sessions for the middle-management to teach them how to hold sessions with the workers in which issues like working conditions and health risks are discussed. In this way, the middle management is involved at an early stage.

### ***Decentralised activities***

Besides initiatives at the central level, specific measures have been introduced at the company level to keep employees motivated and employable up to older ages. Examples of these initiatives are:

#### ***Autonomous teams***

Companies that introduced autonomous teams on the working floor have made clear to the teams that the main issue is cooperation. It is not necessary that all team workers can perform all jobs in the team, but rather that the team as a whole can do all the jobs. Within these teams, every worker has to find a place best suited to his individual needs and capacities. Experience shows that younger employees have great solidarity for the elderly colleagues in their team.

#### ***The role of mentor for the elderly employee***

Several companies have given their elderly employees the role of mentor or internal technical trainer, in order to use and transfer the specific experience and knowledge of this group to the younger workers.

#### ***Specific research on the position of elderly employees***

One of the companies studied the employability of elderly workers, and found increasing problems within this group. Based on these results, a specific educational programme has been developed.

#### ***Additional educational programmes on technical knowledge***

Several companies have developed specific educational programmes on technical knowledge, such as:

- 'refresher courses' for employees who received their basic education a long time ago;
- 'intake programmes' bridging the gap between regular educational programmes for those persons who have limited employability and want to/or are required to increase their employability by means of educational programmes;
- 'educational programmes' in particular practical training sessions in their own working situation of which several are now also examined.

#### ***Educational programmes on handling a computer***

Employees who are not used to working with a computer can choose to take part in regular educational programmes or extended programmes in which more time and attention is paid to

specific questions from the participants. Although initially started for all employees, elderly employees seem to have a strong preference for these programmes.

**Comments**

The implementation of the age conscious personnel policy within the different OWASE companies is still in progress. At a decentralised level, differences can be found in the way the management handles with these age conscious policy measures. At this moment, a structured quantitative evaluation of the effectiveness of the different policy measures is lacking. However, the first qualitative results of the actions undertaken, as stated in the text, are promising for the future.





# Advisory committees

The Advisory Committees, whose members are nominated from the Foundation's tripartite Administrative Board and Committee of Experts, provide advice on the design and implementation of the Foundation's programmes and other major activities. The Advisory Committees monitor the development of the Foundation's work, discuss the findings, and advise on the publication and dissemination of the results.

## **Advisory Committee for Working Conditions**

### **Government group**

#### *Members*

Inger Ohlsson, National Institute for Working Life, Sweden  
Birgit Stimmer, Federal Ministry for Economy and Labour, Austria

#### *Alternate*

Michel de Gols, Ministry of Employment and Labour, Belgium

### **Employers group**

#### *Members*

Marie-Louise Thorsén-Lind, Confederation of Swedish Enterprise, Sweden  
Natascha Waltke, Union of Industrial and Employers' Confederations of Europe (UNICE), EU-level

#### *Alternate*

Maria Angeles Asenjo Dorado, National Confederation of Construction (CNC), Spain

### **Workers group**

#### *Members*

Hermann Fonck, Confederation of Christian Trade Unions (ACV/CSC), Belgium  
Roger Sjöstrand, European Trade Union Confederation (ETUC), EU-level

#### *Alternate*

Erik Pentenga, Dutch Trade Union Federation (FNV), Netherlands

### **European Commission**

#### *Members*

Jürgen Kretz, DG Employment and Social Affairs

### **Committee of Experts**

#### *Members*

Fred Huijgen, University of Nijmegen, Netherlands  
Jouko Nätti, University of Jyväskylä, Finland

#### *Alternate*

Françoise Piotet, University of Paris I – Panthéon Sorbonne, France



European Foundation for the Improvement of Living and Working Conditions

**Age and working conditions in the European Union**

Luxembourg: Office for Official Publications of the European Communities

2003 – VIII, 170 pp. – 21 x 29.7 cm

ISBN 92-897-0208-7

**Venta • Salg • Verkauf • Πωλήσεις • Sales • Vente • Vendita • Verkoop • Venda • Myynti • Försäljning**  
<http://eur-op.eu.int/general/en/s-ad.htm>

**BELGIQUE/BELGIË**

**Jean De Lannoy**  
 Avenue du Roi 202/Koningslaan 202  
 B-1190 Bruxelles/Brussel  
 Tél. (32-2) 538 43 08  
 Fax (32-2) 538 08 41  
 E-mail: jean.de.lannoy@infoboard.be  
 URL: <http://www.jean-de-lannoy.be>

**La librairie européenne/  
 De Europese Boekhandel**  
 Rue de la Loi 244/Wetstraat 244  
 B-1040 Bruxelles/Brussel  
 Tél. (32-2) 295 26 39  
 Fax (32-2) 735 08 60  
 E-mail: mail@libeurop.be  
 URL: <http://www.libeurop.be>

**Moniteur belge/Belgisch Staatsblad**  
 Rue de Louvain 40-42/Leuvenseweg 40-42  
 B-1000 Bruxelles/Brussel  
 Tél. (32-2) 552 22 11  
 Fax (32-2) 511 01 84  
 E-mail: eusaales@just.fgov.be

**DANMARK**

**J. H. Schultz Information A/S**  
 Herstedvang 12  
 DK-2620 Albertslund  
 Tlf. (45) 43 63 23 00  
 Fax (45) 43 63 19 69  
 E-mail: schultz@schultz.dk  
 URL: <http://www.schultz.dk>

**DEUTSCHLAND**

**Bundesanzeiger Verlag GmbH**  
 Vertriebsabteilung  
 Amsterdamer Straße 192  
 D-50735 Köln  
 Tel. (49-221) 97 66 80  
 Fax (49-221) 97 66 82 78  
 E-Mail: Vertrieb@bundesanzeiger.de  
 URL: <http://www.bundesanzeiger.de>

**ΕΛΛΑΔΑ/GREECE**

**G. C. Eleftheroudakis SA**  
 International Bookstore  
 Πανεπιστημίου 17  
 GR-10564 Athina  
 Tel. (30-1) 331 41 80/112/3/4/5  
 Fax (30-1) 325 84 99  
 E-mail: elebooks@netor.gr  
 URL: <http://www.hellasnet.gr>

**ESPAÑA**

**Boletín Oficial del Estado**  
 Trafalgar, 27  
 E-28071 Madrid  
 Tel. (34) 915 38 21 11 (libros)  
 913 84 17 15 (suscripción)  
 Fax (34) 915 38 21 21 (libros)  
 913 84 17 14 (suscripción)  
 E-mail: clientes@com.boe.es  
 URL: <http://www.boe.es>

**Mundi Prensa Libros, SA**

Castelló, 37  
 E-28001 Madrid  
 Tel. (34) 914 36 37 00  
 Fax (34) 915 75 39 98  
 E-mail: libreria@mundiprensa.es  
 URL: <http://www.mundiprensa.com>

**FRANCE**

**Journal officiel**  
 Service des publications des CE  
 26, rue Desaix  
 F-75727 Paris Cedex 15  
 Tél. (33) 140 58 77 31  
 Fax (33) 140 58 77 00  
 E-mail: europublications@journal-officiel.gouv.fr  
 URL: <http://www.journal-officiel.gouv.fr>

**IRELAND**

**Alan Hanna's Bookshop**  
 270 Lower Rathmines Road  
 Dublin 6  
 Tel. (353-1) 496 73 98  
 Fax (353-1) 496 02 28  
 E-mail: hannaas@iol.ie

**ITALIA**

**Licosa SpA**  
 Via Duca di Calabria, 1/1  
 Casella postale 552  
 I-50125 Firenze  
 Tel. (39) 055 64 83 1  
 Fax (39) 055 64 12 57  
 E-mail: licosa@licosa.com  
 URL: <http://www.licosa.com>

**LUXEMBOURG**

**Messageries du livre SARL**  
 5, rue Raiffeisen  
 L-2411 Luxembourg  
 Tél. (352) 40 10 20  
 Fax (352) 49 06 61  
 E-mail: mail@mdl.lu  
 URL: <http://www.mdl.lu>

**NEDERLAND**

**SDU Servicecentrum Uitgevers**  
 Christoffel Plantijnstraat 2  
 Postbus 20014  
 2500 EA Den Haag  
 Tel. (31-70) 378 98 80  
 Fax (31-70) 378 97 83  
 E-mail: sdu@sdu.nl  
 URL: <http://www.sdu.nl>

**PORTUGAL**

**Distribuidora de Livros Bertrand Ld.ª**  
 Grupo Bertrand, SA  
 Rua das Terras dos Vales, 4-A  
 Apartado 60037  
 P-2700 Amadora  
 Tel. (351) 214 95 87 87  
 Fax (351) 214 96 02 55  
 E-mail: dlb@ip.pt

**Imprensa Nacional-Casa da Moeda, SA**

Sector de Publicações Oficiais  
 Rua da Escola Politécnica, 135  
 P-1250-100 Lisboa Codex  
 Tel. (351) 213 94 57 00  
 Fax (351) 213 94 57 50  
 E-mail: spoce@incm.pt  
 URL: <http://www.incm.pt>

**SUOMI/FINLAND**

**Akateeminen Kirjakauppa/  
 Akademiska Bokhandeln**  
 Keskuskatu 1/Centralgatan 1  
 PL PB 128  
 FIN-00101 Helsinki/Helsingfors  
 P./fn (358-9) 121 44 18  
 F./fax (358-9) 121 44 35  
 Sähköposti: sps@akateeminen.com  
 URL: <http://www.akateeminen.com>

**SVERIGE**

**BTJ AB**  
 Traktorvägen 11-13  
 S-221 82 Lund  
 Tlf. (46-46) 18 00 00  
 Fax (46-46) 30 79 47  
 E-post: btjeu-pub@btj.se  
 URL: <http://www.btj.se>

**UNITED KINGDOM**

**The Stationery Office Ltd**

Customer Services  
 PO Box 29  
 Norwich NR3 1GN  
 Tel. (44) 870 60 05-522  
 Fax (44) 870 60 05-533  
 E-mail: book.orders@theso.co.uk  
 URL: <http://www.itsofficial.net>

**ISLAND**

**Bokabud Larusar Blöndal**

Skölavördustig, 2  
 IS-101 Reykjavik  
 Tel. (354) 552 55 40  
 Fax (354) 552 55 60  
 E-mail: bokabud@simnet.is

**SCHWEIZ/SUISSE/SVIZZERA**

**Euro Info Center Schweiz**

c/o OSEC Business Network Switzerland  
 Stampfenbachstraße 85  
 PF 492  
 CH-8035 Zürich  
 Tel. (41-1) 365 53 15  
 Fax (41-1) 365 54 11  
 E-mail: eics@osec.ch  
 URL: <http://www.osec.ch/eics>

**BĂLGARIJA**

**Europress Euromedia Ltd**

59, blvd Vitosha  
 BG-1000 Sofia  
 Tel. (359-2) 980 37 66  
 Fax (359-2) 980 42 30  
 E-mail: Milena@mbox.cit.bg  
 URL: <http://www.europress.bg>

**CYPRUS**

**Cyprus Chamber of Commerce and Industry**

PO Box 21455  
 CY-1509 Nicosia  
 Tel. (357-2) 88 97 52  
 Fax (357-2) 66 10 44  
 E-mail: demetrap@ccci.org.cy

**EESTI**

**Eesti Kaubandus-Tööstuskoda**

(Estonian Chamber of Commerce and Industry)  
 Toom-Kooli 17  
 EE-10130 Tallinn  
 Tel. (372) 646 02 44  
 Fax (372) 646 02 45  
 E-mail: einfo@koda.ee  
 URL: <http://www.koda.ee>

**HRVATSKA**

**Mediatrade Ltd**  
 Pavla Hatza 1  
 HR-10000 Zagreb  
 Tel. (385-1) 481 94 11  
 Fax (385-1) 481 94 11

**MAGYARORSZÁG**

**Euro Info Service**

Szt. István krt.12  
 III emelet 1/A  
 PO Box 1039  
 H-1137 Budapest  
 Tel. (36-1) 329 21 70  
 Fax (36-1) 349 20 53  
 E-mail: euroinfo@euroinfo.hu  
 URL: <http://www.euroinfo.hu>

**MALTA**

**Miller Distributors Ltd**

Malta International Airport  
 PO Box 25  
 Luqa LQA 05  
 Tel. (356) 66 44 88  
 Fax (356) 67 67 99  
 E-mail: gwirth@usa.net

**NORGE**

**Swets Blackwell AS**

Hans Nielsen Hauges gt. 39  
 Boks 4901 Nydalen  
 N-0423 Oslo  
 Tel. (47) 23 40 00 00  
 Fax (47) 23 40 00 01  
 E-mail: info@no.swetsblackwell.com  
 URL: <http://www.swetsblackwell.com.no>

**POLSKA**

**Ars Polona**

Krakowskie Przedmiescie 7  
 Skr. pocztowa 1001  
 PL-00-950 Warszawa  
 Tel. (48-22) 826 12 01  
 Fax (48-22) 826 62 40  
 E-mail: books119@arspolona.com.pl

**ROMÂNIA**

**Euromedia**

Str.Dionisie Lupu nr. 65, sector 1  
 RO-70184 Bucuresti  
 Tel. (40-1) 315 44 03  
 Fax (40-1) 312 96 46  
 E-mail: euromedia@mailcity.com

**SLOVAKIA**

**Centrum VTI SR**

Nám. Slobody, 19  
 SK-81223 Bratislava  
 Tel. (421-7) 54 41 83 64  
 Fax (421-7) 54 41 83 64  
 E-mail: europ@ttb1.sltk.stuba.sk  
 URL: <http://www.sltk.stuba.sk>

**SLOVENIJA**

**GV Zalozba**

Dunajska cesta 5  
 SLO-1000 Ljubljana  
 Tel. (386) 613 09 1804  
 Fax (386) 613 09 1805  
 E-mail: europ@gvestnik.si  
 URL: <http://www.gvzalozba.si>

**TÜRKIYE**

**Dünya Infotel AS**

100, Yil Mahallesi 34440  
 TR-80050 Bagcilar-Istanbul  
 Tel. (90-212) 629 46 89  
 Fax (90-212) 629 46 27  
 E-mail: aktuel.info@dunya.com

**ARGENTINA**

**World Publications SA**

Av. Cordoba 1877  
 C1120 AAA Buenos Aires  
 Tel. (54-11) 48 15 81 56  
 Fax (54-11) 48 15 81 56  
 E-mail: wpbooks@infovia.com.ar  
 URL: <http://www.wpbooks.com.ar>

**AUSTRALIA**

**Hunter Publications**

PO Box 404  
 Abbotsford, Victoria 3067  
 Tel. (61-3) 94 17 53 61  
 Fax (61-3) 94 19 71 54  
 E-mail: jpdavies@ozemail.com.au

**BRESIL**

**Livraria Camões**

Rua Bittencourt da Silva, 12 C  
 CEP  
 20043-900 Rio de Janeiro  
 Tel. (55-21) 262 47 76  
 Fax (55-21) 262 47 76  
 E-mail: livraria.camoes@incm.com.br  
 URL: <http://www.inc.com.br>

**CANADA**

**Les éditions La Liberté Inc.**

3020, chemin Sainte-Foy  
 Sainte-Foy, Québec G1X 3V6  
 Tel. (1-418) 658 37 63  
 Fax (1-800) 567 54 49  
 E-mail: liberte@mediom.qc.ca

**Renouf Publishing Co. Ltd**

5369 Chemin Canotek Road, Unit 1  
 Ottawa, Ontario K1J 9J3  
 Tel. (1-613) 745 26 65  
 Fax (1-613) 745 76 60  
 E-mail: order.dept@renoufbooks.com  
 URL: <http://www.renoufbooks.com>

**EGYPT**

**The Middle East Observer**

41 Sherif Street  
 Cairo  
 Tel. (20-2) 392 69 19  
 Fax (20-2) 393 97 32  
 E-mail: inquiry@meobserver.com  
 URL: <http://www.meobserver.com>

**MALAYSIA**

**EBIC Malaysia**

Suite 45.02, Level 45  
 Plaza MBf (Letter Box 45)  
 8 Jalan Yap Kwan Seng  
 50450 Kuala Lumpur  
 Tel. (60-3) 21 62 92 98  
 Fax (60-3) 21 62 61 98  
 E-mail: ebic@tm.net.my

**MÉXICO**

**Mundi Prensa México, SA de CV**

Río Pánuco, 141  
 Colonia Cuauhtémoc  
 MX-06500 México, DF  
 Tel. (52-5) 533 56 58  
 Fax (52-5) 514 67 99  
 E-mail: 101545.2361@compuserve.com

**SOUTH AFRICA**

**Eurochamber of Commerce in South Africa**

PO Box 781738  
 2146 Sandton  
 Tel. (27-11) 884 39 52  
 Fax (27-11) 883 55 73  
 E-mail: info@eurochamber.co.za

**SOUTH KOREA**

**The European Union Chamber of Commerce in Korea**

5th Fl, The Shilla Hotel  
 202, Jangchung-dong 2 Ga, Chung-ku  
 Seoul 100-392  
 Tel. (82-2) 22 53-5631/4  
 Fax (82-2) 22 53-5635/6  
 E-mail: eucock@eucock.org  
 URL: <http://www.eucock.org>

**SRI LANKA**

**EBIC Sri Lanka**

Trans Asia Hotel  
 115 Sir Chittampalam  
 A. Gardiner Mawatha  
 Colombo 2  
 Tel. (94-1) 074 71 50 78  
 Fax (94-1) 44 87 79  
 E-mail: ebicsl@slnet.lk

**TAI-WAN**

**Tycoon Information Inc**

PO Box 81-466  
 105 Taipei  
 Tel. (886-2) 87 12 88 86  
 Fax (886-2) 87 12 47 47  
 E-mail: euitupe@ms21.hinet.net

**UNITED STATES OF AMERICA**

**Bernan Associates**

4611-F Assembly Drive  
 Lanham MD 20706-4391  
 Tel. (1-800) 274 44 47 (toll free telephone)  
 Fax (1-800) 865 34 50 (toll free fax)  
 E-mail: query@bernan.com  
 URL: <http://www.bernan.com>

**ANDERE LÄNDER  
 OTHER COUNTRIES  
 AUTRES PAYS**

**Bitte wenden Sie sich an ein Büro Ihrer  
 Wahl/Please contact the sales office of  
 your choice/Veuillez vous adresser au  
 bureau de vente de votre choix**

Office for Official Publications of the European  
 Communities  
 2, rue Mercier  
 L-2985 Luxembourg  
 Tel. (352) 29 29-42455  
 Fax (352) 29 29-42758  
 E-mail: info-info-opoce@cec.eu.int  
 URL: [publications.eu.int](http://publications.eu.int)

*The European Foundation for the Improvement of Living and Working Conditions carried out major surveys on working conditions in Europe in 1990, 1995 and 2000. The findings of these surveys reveal a number of alarming trends regarding age and working conditions, in particular: a low level of access to training for older workers, a high degree of physical work among workers in the middle age category, and an over-representation of young people in shift and night work. There are also contradictory trends to be observed in policies aimed at older workers. Despite plans to extend working life in many countries, the production-based system still operates largely on the basis of a younger age structure than the current workforce. Based on a secondary analysis of the findings of the Third European working conditions survey (2000), this report explores the main trends in the relationship between age and work in Europe.*

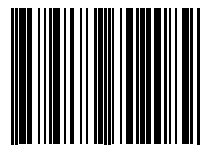
The European Foundation for the Improvement of Living and Working Conditions is a tripartite EU body, whose role is to provide key actors in social policy making with findings, knowledge and advice drawn from comparative research. The Foundation was established in 1975 by Council Regulation EEC No 1365/75 of 26 May 1975.



Publications Office

*Publications.eu.int*

ISBN 92-897-0208-7



9 789289 702089