

European Agency for Safety and Health at Work

EUROPEAN RISK OBSERVATORY REPORT

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**OSH in figures:
Work-related musculoskeletal disorders
in the EU — Facts and figures**

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Work-related musculoskeletal disorders in the EU —
Facts and figures**

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ABBREVIATIONS AND GENERAL SOURCES

- EODS**.....European Occupational Disease Statistics. Available at: http://epp.eurostat.ec.europa.eu/portal/page/portal/health/health_safety_work/data/database
- ESAW**European Statistics on Accidents at Work. Available at: http://epp.eurostat.ec.europa.eu/portal/page/portal/health/health_safety_work/data/database
- ESWC**European Survey on Working Conditions. Available at: <http://www.eurofound.europa.eu/ewco/surveys/index.htm>
- ESCC**European Survey on Working conditions in the Candidate Countries, 2001. Available at: <http://www.eurofound.europa.eu/ewco/surveys/previousurveys/survey2001.htm>
The 2001 European Working Conditions Survey was an extension of the 2000 survey to cover the then Candidate Countries (Estonia, Lithuania, Latvia, Poland, the Czech Republic, Slovakia, Hungary, Slovenia, Romania, Bulgaria, Cyprus and Malta).
- LFS**Labour Force Survey, Work-related health problems and occupational accidents module. Available at: http://epp.eurostat.ec.europa.eu/portal/page/portal/health/health_safety_work/data/database
- ISCO**International Standard Classifications of Occupations
- NACE**Nomenclature statistique des activités économiques dans la Communauté européenne (Statistical Classification of Economic Activities in the European Community)



COUNTRY CODES

AT	.....	Austria
BE	.....	Belgium
BG	.....	Bulgaria
CY	.....	Cyprus
CZ	.....	Czech Republic
DE	.....	Germany
DK	.....	Denmark
EE	.....	Estonia
EL	.....	Greece
ES	.....	Spain
FI	.....	Finland
FR	.....	France
HU	.....	Hungary
IE	.....	Ireland
IT	.....	Italy
LT	.....	Lithuania
LU	.....	Luxembourg
LV	.....	Latvia
MT	.....	Malta
NL	.....	Netherlands
PL	.....	Poland
PT	.....	Portugal
RO	.....	Romania
SE	.....	Sweden
SI	.....	Slovenia
SK	.....	Slovakia
UK	.....	United Kingdom

EU-12 12 countries that joined the European Union over the past years:
Bulgaria, Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Romania, Slovakia, Slovenia.

EU-15 Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden and the United Kingdom.

EU-27 Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxemburg, Malta, the Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden and the United Kingdom.

NMS 10 countries that joined the European Union on 1 May 2004:
Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia, Slovenia.

NMS-2 Two countries that joined the European Union on 1 January 2007: Bulgaria, Romania.



FOREWORD

Musculoskeletal disorders (MSDs) remain the most common occupational disease in the European Union and workers in all sectors and occupations can be affected. They are also an increasing problem and one of the most important causes of long-term sickness absences. Beside the effects on workers themselves, MSDs may lead to high costs to enterprises and the society as a whole.

Known risks continue. New equipment and ways of working can lead to new risks. Nevertheless, they can be prevented using the prevention approach enshrined in EU legislation. For these reasons, EU-OSHA has embarked upon activities to help reduce the risks and this has included conducting two campaigns (in 2000 and 2007) to raise awareness about musculoskeletal disorders amongst all concerned parties and describe the extent of the problem with solutions needed. These actions have targeted employers, workers, OSH experts, researchers, labour inspectors, trainers, employment agencies and those responsible for rehabilitation, return to work and compensation.

This latest report, following on from the Agency's previous research, aims to give an updated overview of the current European situation as regards musculoskeletal disorders, the trends over the years since the first campaign in 2000, and a detailed insight into the causes and circumstances behind MSDs. It is the fourth in a series of European Risk Observatory thematic reports describing health and safety at work with regards to specific exposures, sectors or groups of workers. The intention is to provide as comprehensive a picture as possible of the potential related risks and health effects in the world of work. These reports reflect the main objective of the European Risk Observatory: the earlier identification of emerging trends and risks at work in order to help target resources and to enable more timely and effective interventions. It is also complementary to the broad selection of good practice examples collected by the Agency over the last ten years.

With this study we hope to highlight the main issues and provide a well-founded evidence base, helping policy makers, actors at enterprise and sector level, as well as researchers and those who record, prevent and compensate occupational diseases in the European Union to set the agenda for the next years following the EU OSH approach.



Jukka Takala
Director
European Agency for Safety and Health at Work
February 2010



EXECUTIVE SUMMARY

EU-OSHA first took an in-depth look at the topic of work-related MSDs in its reports on work-related low back and upper-limb disorders in 2000. This time it looks at all MSDs, including the generally over-looked incidence of lower-limb disorders. This report confirms the Agency's first research and highlights new aspects and trends.

What are work-related musculoskeletal disorders?

The World Health Organization has defined a work-related disorder as one that results from a number of factors, and where the work environment and the performance of the work contribute significantly, but in varying magnitude, to the causation of the disease.^{1,2} The term musculoskeletal disorder denotes health problems of the locomotor apparatus, i.e. muscles, tendons, the skeleton, cartilage, the vascular system, ligaments and nerves. Work-related musculoskeletal disorders (MSDs) include all musculoskeletal disorders that are induced or aggravated by work and the circumstances of its performance.

Musculoskeletal disorders – the extent of the problem

MSDs are still an increasing and significant health problem within the European Union

Recent European studies still provide substantial evidence that MSDs such as back, neck and upper limb disorders are a significant ill health and cost problem and are on the increase. Every year millions of European workers in all types of jobs and employment sectors are affected by MSDs through their work. Musculoskeletal disorders (MSDs) cover a broad range of health problems. The main groups are back pain/injuries and work-related upper limb disorders, commonly known as “repetitive strain injuries” (RSI). Lower limbs can also be affected. Lifting, poor posture and repetitive movements are among the causes and some types of disorders are associated with particular tasks or occupations. Treatment and recovery are often unsatisfactory especially for more chronic causes. The end result can even be permanent disability, with the loss of employment.

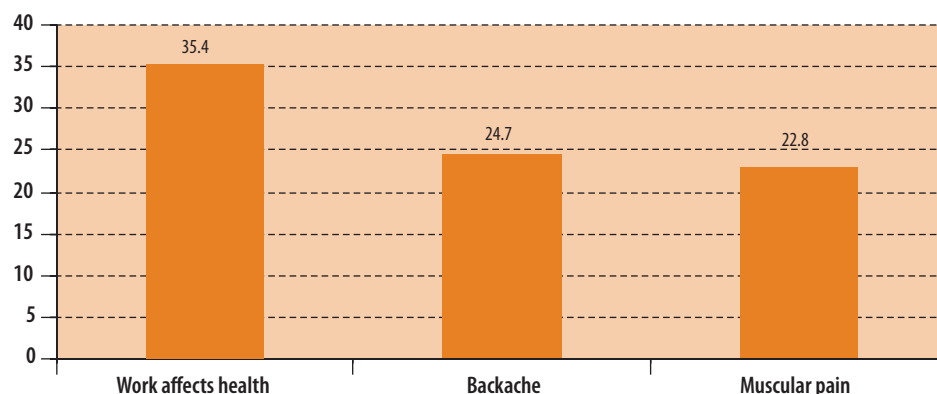
⁽¹⁾ World Health Organization, Protecting Workers' Health Series No. 5, Preventing musculoskeletal disorders in the workplace, 2003, Available at: http://www.who.int/occupational_health/publications/muscdisorders/en/

⁽²⁾ “Defining the problem”, Buckle P. and David G., in: Magazine 3, Preventing Work-related Musculoskeletal disorders, European Agency for Safety and Health at Work, EU-OSHA., 2000, p. 5.



Self-reported MSDs

Figure 1: Percentage share of workers reporting health problems, EU-27, 2005



Source: European Survey on Working Conditions (ESWC) 2005

According to the latest figures of the European Survey on Working Conditions (ESWC), 24.7% of the European workers complain of backache, 22.8% of muscular pains, 45.5% report working in painful or tiring positions while 35% are required to handle heavy loads in their work. Within the EU-15, backache seems to be the most prevalent work-related health problem, in the acceding and candidate countries, backache comes in second.

There are more differences in self-reported musculoskeletal health problems between the Member States, which are explored more in-depth in this report.

Lower-limb problems underestimated

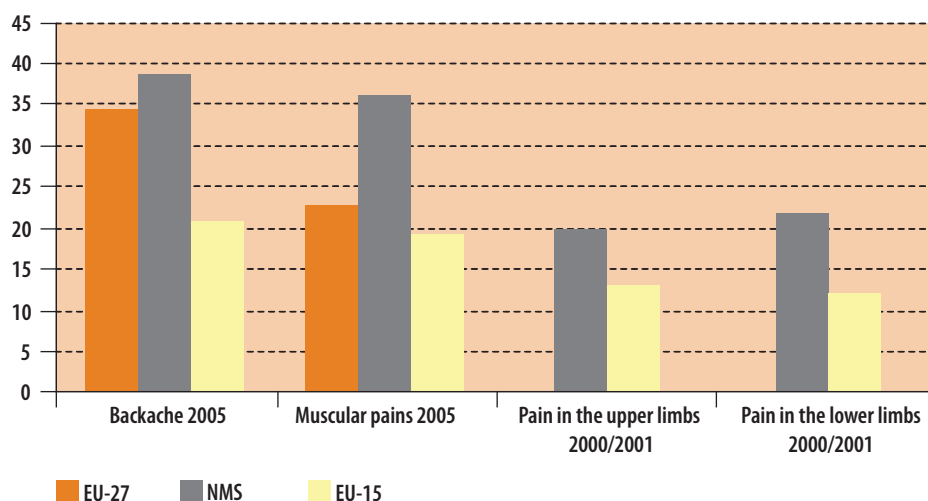
A trends analysis of data on muscular pains of the lower limbs is not possible, as it was only introduced in the ESWC 2000. However, what can be seen in figure 2 is that pain in the lower limbs may be as important as pain in the upper limbs, although this hardly finds any reflection in the recognised occupational musculoskeletal diseases. Some national data provide more extensive information on lower-limb disorders, distinguishing by body part affected, although this is again hardly reflected in the lists of occupational musculoskeletal diseases recognised by Member States. Different profiles of exposures and health problems emerge from these national surveys. The information can be traced to specific groups of workers in specific occupations and this has to be seen in connection with data on prolonged standing and walking as a risk factor for developing lower-limb disorders.

There are also gender differences in the type and frequency of lower-limb disorders. As women are significantly exposed to prolonged standing and walking, they might be strongly affected by lower-limb disorders not currently recognised. For example, it is men in construction that are most affected by knee problems, while women in the retail sector and in health care report more problems in hips, legs and feet. It can be concluded that more detailed EU-level trends data should be collected on lower-limb disorders and the conditions leading to them and a differentiated analysis should be conducted.

As women are significantly exposed to prolonged standing and walking, they might be strongly affected by lower-limb disorders not currently recognised.



Figure 2: % Workers reporting MSDs, ESWC 2005, 2000 and European Survey of Candidate Countries (ESCC) 2001



Source: ESWC, ESCC

Recognised cases of MSDs

Musculoskeletal disorders have a multifactorial aetiology. It is difficult in most cases to point out the exact cause of an individual case of disease. They are also not very commonly accepted as occupational diseases in the national compensation or reporting systems. There is little evidence of the use of standardised diagnostic criteria for MSDs across Member States of the European Union, and a range of terms and health problems have been covered in different countries to describe these disorders. This variation is reflected in the nationally reported data and makes comparisons between Member States difficult.³ Based on the available data from the Member States, it can nevertheless be concluded that occupational musculoskeletal disorders are one of the major health issues at Europe’s workplaces. In Belgium, diseases caused by mechanical vibrations (mainly back injuries that occur in the transport and construction sector) account for the largest number of submitted compensation applications of all occupational diseases. In the Czech Republic, occupational musculoskeletal disorders represent about 33% of all reported occupational diseases. In Spain, occupational musculoskeletal diseases are the most prevalent of all occupational diseases. In addition, a rising trend can be observed in many Member States.

According to Eurostat figures on recognised occupational diseases (EODS), musculoskeletal disorders are also the most common occupational disease. As mentioned before there are considerable differences between the national compensation systems. Disorders of the lower back and neck and shoulder region are accepted as occupational diseases by only a few Member States and only for specific forms of disease⁴. It is therefore also difficult to collect comprehensive European level data on recognised occupational musculoskeletal disorders. Despite this evident

There are considerable differences between the national compensation systems. Disorders of the lower back and neck and shoulder region are accepted as occupational diseases by only a few Member States and only for specific forms of disease.

⁽³⁾ “Defining the problem”, Buckle P. and David G., in: Magazine of the European Agency for Safety and Health at Work – 3. Preventing Work-related Musculoskeletal disorders, 2000, p. 5.

⁽⁴⁾ European Occupational Diseases Statistics (EODS) – Phase 1 methodology. Eurostat working papers. Population and social conditions 3/2000/E/No 19. Reference metadata on occupational diseases, compiling agency: Statistical Office of the European Communities (Eurostat) available at http://epp.eurostat.ec.europa.eu/cache/ITY_SDDS/EN/hsw_occ_dis_esms.htm



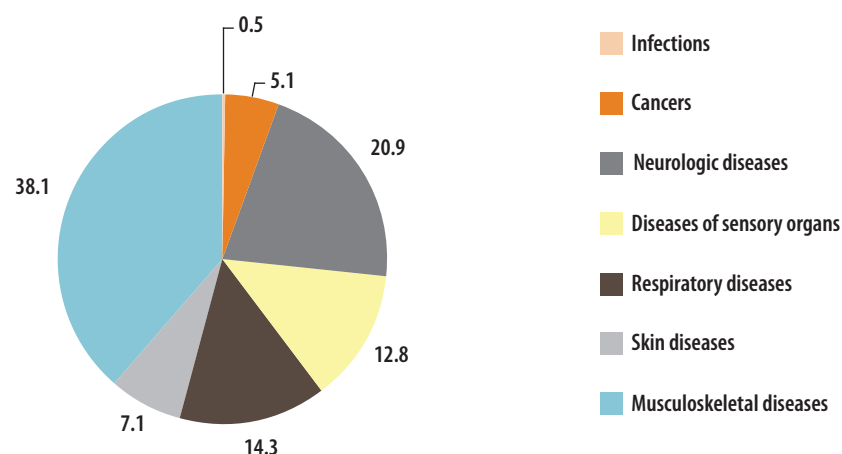
underestimation, in 2005, musculoskeletal disorders covered about 39% of the total EODS occupational diseases according to the obligatory list.

The European figures relate to mostly three diseases, all in the category of upper-limb disorders: hand/arm tenosynovitis, epicondylitis of the elbow and carpal tunnel syndrome.

According to the 2005 EODS data collection of 12 Member States providing data on recognised cases of occupational diseases, the most common musculoskeletal occupational diseases were epicondylitis of the elbow (16,054 cases) and tenosynovitis of the hand or wrist (12,962 cases). Additionally there were 17,395 cases of carpal tunnel syndrome, a neurological disease of the wrist.

The European Schedule of Occupational Diseases⁵ includes specific conditions linked to vibration, local pressure and overuse of tendons, peritendinous tissues and of tendon insertions.

Figure 3: Proportion of occupational diseases, EODS obligatory list, 2005



Source: EODS

An increasing trend at the EU level

MSDs + carpal tunnel syndrome increased by 32% from 2002 to 2005 (by 39% among women).

MSDs + carpal tunnel syndrome accounted for 59% of all recognised disease covered by EODS in 2005 (about 85% of all ODs among women).

But all in all, the number of accepted cases of occupational disease is much smaller than the number of self-assessed work-related cases described in the previous section would suggest.

⁽⁵⁾ Commission Recommendation (EC) 3297/2003 of 19 September 2003 concerning the European Schedule of Occupational Diseases.



Annual figures lead to an underestimation of the problem.

For chronic diseases like musculoskeletal disorders, which may lead to a high impairment and a significant reduction in work ability while not leading to a fatal outcome, it is worth looking at cumulative figures instead of considering only annual new cases or annual increases as in the above-mentioned EODS. Only a few Member States provide such figures. And in those Member States where musculoskeletal disorders are more widely recognised, estimates of how many workers may be affected go into hundreds of thousands. In France, for example, an approximated 275,000 cases have been recognised and compensated in the 10 years between 1996 and 2006 and diseases caused by constraining postures at work accounted for 68% of all occupational diseases in 2003.⁶

Some professions are strongly affected, but occupational diseases figures do not reflect that.

When comparing workplace assessments and survey results, there are clear indications that service workers are greatly affected, a fact that is in contradiction with the low number of recognised diseases. While service professions such as health care or transport report high shares of health problems in worker surveys, the European occupational diseases figures are still comparatively low for these sectors, far below average. The effect is enhanced by the increasing tertiarisation of work, meaning more workers, especially women and young people, moving into service professions.

Women suffer more MSDs, but still underrecognised.

Beyond different recognition practices, there are indications that musculoskeletal diseases affect the female working population more than the male population, but that there is a lack of awareness about these issues. This is backed by the European figures presented above, recognising that MSDs are of a greater importance in the overall picture and are increasing more rapidly in the female working population. Recognition has been focusing on back pain, and upper-limb and neck disorders, but very little emphasis has been put on lower-limb disorders, that might affect women more, because a high proportion of them are standing frequently at work, for example in health care, the hotel and catering sector, cleaning work, education or retail.

MSDs increasing in younger working populations.

It is also important to look at disease monitoring and recognition from an age perspective. Even though rates of reported diseases are lower for younger workers, there are indications that they are affected by musculoskeletal disorders. Figures from the national level show that those workers with a recognised disease are increasingly younger workers and in some countries, such as Spain, young workers represent the most affected group. This is also confirmed by an earlier European Risk Observatory report analysing the health and safety situation of young workers and national figures⁷. While it is often argued that young people are “unfit”, the report has found that their situation is comparable to that of women workers: they often work in service sectors and are overexposed to MSDs risk factors.

⁶ See “MSDs in France – monitoring and recognition – a national experience”, Nicole Guignon, Presentation European “Lighten the Load” Summit 2007. Available at: http://osha.europa.eu/en/campaigns/ew2007/europeansummit/index_html/presentations/guignon.ppt

⁷ OSH in figures: Young workers – facts and figures, European Agency for safety and Health at Work, EU-OSHA, Bilbao, 2007. Available at: <http://osha.europa.eu/en/publications/reports/7606507>



Accidents at work linked to MSDs risk factors (e.g. lifting of loads)

In some countries, like Spain or the UK, accident figures address acute episodes of musculoskeletal problems, for example those occurring after lifting of heavy loads. Where this is the case, the proportion of these accidents in the overall accidents rate is high. Prevalences, that is rates of workers affected, tend to be much higher than those of the related occupational diseases. Nevertheless, underrecognition is still high for the same groups of workers mentioned above: young, female and service workers.

Absenteeism linked to musculoskeletal disorders

Given the data on occurrence presented, one would expect MSDs to account for a significant proportion of absenteeism. This is in fact confirmed by national and European studies: musculoskeletal disorders do have a huge impact on work-related absence and a high proportion of days lost in the Member States of the European Union is due to MSDs. This puts a high emphasis on targeted back-to-work strategies.

As could be demonstrated in an earlier Agency report on return to work⁸, some MSDs, such as lower-limb disorders, are not addressed by return-to-work policies. Another Agency study demonstrated that young workers are more and more concerned by MSDs, but rehabilitation does not target them. Equally, the link to psychosocial working conditions is underestimated.

There is therefore a need to enlarge the scope of return-to-work and rehabilitation policies, both in terms of the diseases covered and coverage of a diverse working population.

Costs of MSDs

Work-related musculoskeletal disorders are a cause of concern not only because of the health effects on individual workers, but also because of the economic impact on businesses and the social costs to European countries.

As stated in a previous Agency report⁹, the true extent of MSDs costs within the workplace across Member States is difficult to assess and compare. This can be due to the different organisation of insurance systems, the lack of standardised assessment criteria and the fact that little is known of the validity of reported data. The report mentions nevertheless that certain studies have estimated the cost of work-related upper-limb musculoskeletal disorders (WRULD) at between 0.5% and 2% of Gross National Product (GNP).

More recent figures, for example from Austria, Germany or France, demonstrate an increasing impact of musculoskeletal disorders on costs. In France, for example, in 2006, MSDs have lead to seven million workdays lost, about 710 million EUR of enterprises' contributions.

Musculoskeletal disorders do have a huge impact on work-related absence and a high proportion of days lost in the Member States of the European Union is due to MSDs.

Recent figures, for example from Austria, Germany or France, demonstrate an increasing impact of musculoskeletal disorders on costs.

⁽⁸⁾ Work-related musculoskeletal disorders: Back to work, European Agency for Safety and Health at Work, EU-OSHA, Bilbao, 2007. Available at: <http://osha.europa.eu/en/publications/reports/7807300>

⁽⁹⁾ Buckle P. & Devereux J. Work-related neck and upper limb musculoskeletal disorders. European Agency for Safety and Health at Work, EU-OSHA, Bilbao, 1999. Available at: <http://osha.europa.eu/en/publications/reports/201/view>



Risk factors for MSDs

As has been mentioned, the causes of work-related MSDs are usually multifactorial and there are numerous well-established work-related risk factors for the various types of musculoskeletal disorders. These include physical, ergonomic and psychosocial factors.

The main European source of comparable data is the above-mentioned European survey for working conditions. It addresses the following risk factors for the development of musculoskeletal disorders:

- Repetitive work;
- Painful/ tiring positions;
- Carrying or moving heavy loads;
- Other risk factors that contribute to musculoskeletal disorders and more specific to certain professions, such as exposure to vibrations, lifting or moving people, and prolonged standing or walking.

It also includes work organisational risk factors such as speed of work, but it does not provide for analysis of combined risks as some national monitoring tools do, and it does not monitor some risk factors such as application of force or forceful movements and application of direct mechanical pressure on tissues as some national tools do.

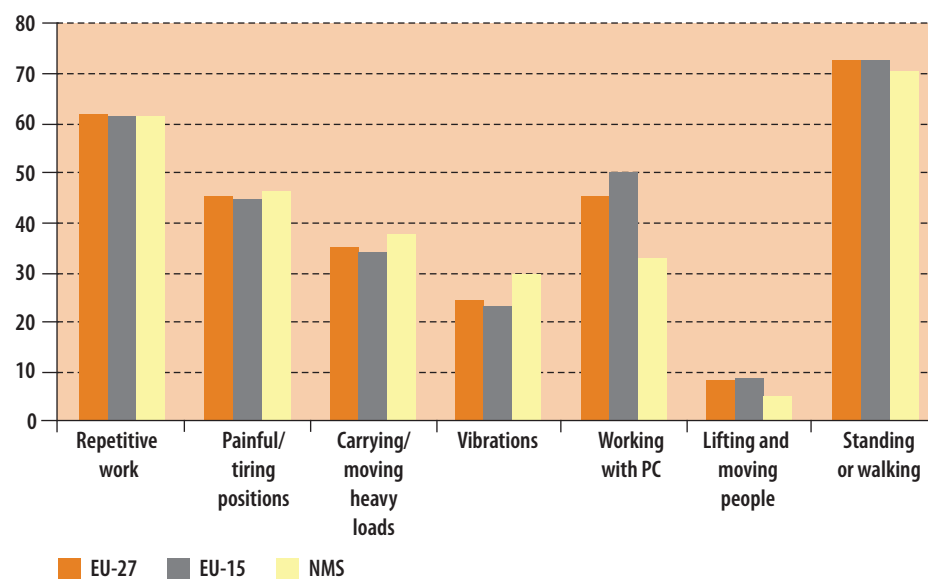
At EU level, repetitive work is the most common and widespread risk factor for the development of MSDs. About 74% of the workers in the NMS-2¹⁰ and 61.5% of the workers in the EU-15 and newer Member States reported being exposed to repetitive hand or arm movements at least a quarter of the working time.

About 52.7% of the workers in the NMS-2, 46.4% in the other newer Member States and 44.4% in the EU-15 report being exposed to painful or tiring working positions. For carrying or moving heavy loads at least a quarter of the working time, the figures are 42.8% for NMS, 38% and 33.9% for the NMS-2, NMS, and EU-15 respectively. Exposure to vibrations is a notable risk factor in both EU-15 and EU-12.

⁽¹⁰⁾ At the time of the latest European survey for working conditions two countries (Romania, Bulgaria) were still candidate countries.



Figure 4: Risk factors for MSDs, % of workers being exposed a quarter of the working time, ESWC 2005



Source: ESWC

Women are considerably exposed, but data need to be extracted.

A breakdown by gender first appears to show that male workers are more exposed to most of the main MSDs risk factors. As women are more segregated into fewer specific, mainly service sectors, and often also perform different tasks than men, data extraction should be made by sector and occupation. This approach reveals that women in some specific sectors and occupations are actually highly exposed to some of the risk factors. As an example, carrying or moving heavy loads affects on average 5.8% of the workers, but when looking at the female-dominated health care sector, it affects almost half the working population, 43.4%, an effect suppressed by a general averaged appreciation of the situation. Considering that the main group in the health care sector is characterised by middle-aged to older women, this highlights the need for them to be addressed by prevention. While this seems evident for this very specifically exposed sector, moving and lifting people being a well-known risk mainly occurring in health care, similar findings can be made when looking at exposure to vibrations for women in manufacturing, a risk particularly important in the newer Member States, but hidden when not specifically addressed by data collection, and of which there is very little awareness. **Vibration also has not been identified as a priority for prevention in women workplaces¹¹ in industry, although the data presented in this report indicate it should.**

Young workers overexposed to MSDs risk factors.

A breakdown by age reveals, as outlined in a previous European Risk Observatory report on the situation of young workers, that they are overexposed to most of the MSDs risk factors, with the exception of painful and tiring positions and having to move and carry people. These findings are consistent with the sectors and occupations they are employed in, mainly in services, low-skilled manufacturing work and construction.

⁽¹¹⁾ Workplace exposure to vibration in Europe: an expert review, European Agency for Safety and Health at Work, EU-OSHA, 2008. Available at: http://osha.europa.eu/en/publications/reports/8108322_vibration_exposure/view



Similarly to female workers, they are more concentrated in certain sectors and, to describe their specific situation, it is necessary to extract data for these sectors and occupations that are otherwise masked by general averaging.

As a result, young workers are at considerable risk of developing musculoskeletal disorders, which is confirmed by some national data on diseases, for example in Spain.

Workers exposed to several MSDs risk factors at the same time

For most of the risk factors commonly addressed, with the exception of exposure to vibrations and carrying heavy loads, at least a quarter to a third of workers report continuous exposures. More detailed monitoring in national surveys demonstrates that workers are generally exposed to several MSDs risk factors at the same time, and that this might be even more relevant for female workers in service professions.

For most of the risk factors, with the exception of exposure to vibrations and carrying heavy loads, at least a quarter to a third of workers report continuous exposures.

Blue-collar and service workers tend to be more exposed to physical risks such as carrying or moving heavy loads, painful and tiring positions and vibrations, while repetitive work and working at high speed affect all occupations. Prolonged standing and walking is a notable risk factor in the “traditional” sectors such as agriculture and construction, but also greatly affects workers in service professions, above all in hospitality and retail, a fact that is, as mentioned before, barely reflected in monitoring and recognition of lower-limb disorders. Self-employed workers are also very concerned, being overexposed to tiring and painful positions (54.8% vs. 43.5% of the employed), carrying or moving heavy loads (44.7% vs. 33.1% of the employed), repetitive movements (64.5% vs. 61.7%), and prolonged standing and walking (77.3% vs. 72%). The available data from the Member States give a more detailed picture concerning the groups at risk in the different countries.

In addition, national surveys suggest that there is a trend towards static work postures and prolonged standing and sitting particularly in some of these sectors. These findings imply very different prioritisation and targeting of workplace action than in current approaches, which are based on the assumption that male workers are mainly affected by physically strenuous work. They also have implications for current recognition policies.

Overall, it can be concluded that the European-level data are confirmed by the national surveys and occupational diseases statistics. What is needed is a more holistic concept when assessing the situation. A French concept with a more holistic approach defines the term “pénibilité au travail”, that could be translated as “strenuousness”, “burden” or work “hardness”. This could be a possible way forward.



Some key findings highlighted

- The findings of previous Agency research were confirmed, but some new trends could also be identified.
- MSDs and exposure to MSDs risk factors are increasing in younger working populations.
- Women are also considerably exposed, but the effects are still underrecognised.
- Service professions are still not regarded as physically strenuous, a fact that is reflected in MSDs recognition figures, and in contradiction with data on exposures.
- Work-related lower limb disorders are insufficiently addressed by monitoring, prevention, compensation and rehabilitation.
- Self-employed workers appear to be more affected by MSDs and exposed to MSDs risks. This confirms recent policy initiatives to include self-employed workers into the scope of OSH prevention.
- Workers are generally exposed to several MSDs risk factors. A new approach is needed to address multiple risks in research, workplace action and health care.
- There is a trend towards static work postures.
- Also, prolonged standing and sitting are a significant risk factor still underestimated.
- There is also a trend away from the standard “one worker - one workplace” model towards varying workplaces, a particular challenge for research, workplace intervention and standard setting.
- Detailed data extraction and analysis is needed in order to identify groups at risk and have a correct perception of the situation in specific industrial sectors.
- Data are otherwise hidden by general averaging and risks for vulnerable groups such as women, young people, migrant and impaired workers not addressed.
- Cumulative figures of MSDs would provide a better picture of the actual situation.
- European data should always be compared and complemented with national, sectoral, group-, gender- and age-related studies. They provide a better insight and allow for an earlier identification of emerging issues.
- Current harmonised monitoring tools provided limited data on some MSDs and risk factors. Some national data systems could serve as a model for further development, for example on cumulative disease figures and multifactorial assessment.
- Recognition practices still vary considerably between Member States, but overall more MSDs are being recognised. A major obstacle is the difficulty of the current monocausality approach in addressing the multifactorial aetiology of MSDs.



What to do

- **Include groups normally not in the focus of attention** (young workers, women, temporary agency workers).
- **Detailed monitoring** is necessary. It is also important to assess gender differences and identify groups at risk.
- Consider **changes in employment patterns** on MSDs (move from industry to service professions, working at home, home carers, working from a remote location, temporary agency work, short-term contracts).
- Include **workers on shift work, night and weekend work**, and part-time workers – working time patterns are changing!
- Look closer at risks involving **lower-limbs**, in investigation of MSDs, recognition, prevention and rehabilitation.
- Address the “**whole load on the body**”—ie all the strains, including psychosocial issues.
- Include **exposure to vibrations**.
- **Adapt identification methods and recognition policies for work-related diseases** to a multifactorial approach.
- **Tailor rehabilitation policies** to include all groups, and include in them MSDs not in the focus of attention, such as lower-limb disorders.
- **Train and inform inspectors, OSH actors at enterprise level and employment agencies** to address the changes in the world of work.



European Agency for Safety and Health at Work

EUROPEAN RISK OBSERVATORY REPORT

1.

INTRODUCTION



1.

INTRODUCTION

Work-related musculoskeletal disorders (MSDs) are a group of painful disorders of muscles, tendons, joints and nerves. All parts of the body can be affected, although upper limb and back are the most common areas. MSDs arise from movements such as bending, straightening, gripping, holding, twisting, clenching, squatting, kneeling and reaching. These common movements are not particularly harmful in the ordinary activities of daily life. What makes them hazardous in work situations is the continued repetition, often in a forceful manner, and most of all, the speed of the movements and the lack of time for recovery between them. Heat, cold and vibration also contribute to the development of MSDs.

Work-related musculoskeletal disorders are a cause of concern not only because of the health effects on individual workers, but also because of the enormous economic impact on businesses and the social costs to European countries. A previous Agency report mentions that certain studies have estimated the cost of work-related upper limb musculoskeletal disorders (WRULD) at between 0.5% and 2% of Gross National Product (GNP). MSDs are still an increasing and significant health problem. At the European level, musculoskeletal diseases are the most common occupational diseases: in 2005, they made up about 39% of the total occupational diseases according to the obligatory list. According to the latest figures of the European Surveys on Working Conditions, in the EU-15, backache seems to be the most important work-related health problem, in the newer Member States, backache takes the second place after overall fatigue.

EU-OSHA first took an in-depth look at the topic of work-related musculoskeletal disorders in its reports of 2000.^{12,13} Supporting the previous findings, this report goes into greater depth to provide a fuller, up-to-date and complementary picture of the incidence of MSDs and its implications, to identify groups at risk, identify trends and emerging issues of concern, and indicate ways forward for prevention. The report also addresses lower-limb disorders, which were previously not covered. The description is based on the collection of data from European and national OSH monitoring systems, complemented with literature reviews and case studies.



⁽¹²⁾ Buckle P. & Devereux J. Work-related upper limb musculoskeletal disorders. European Agency for Safety and Health at Work, EU-OSHA, Bilbao, 1999. Available at: <http://osha.europa.eu/en/publications/reports/201>

⁽¹³⁾ Op de Beek, R. & Hermanns, V., Research on work-related low back disorders, European Agency for Safety and Health at Work, EU-OSHA, Bilbao, 1999, Available at: <http://osha.europa.eu/en/publications/reports/204/view>

By courtesy of FPS Employment, Labour and Social Dialogue, Belgium



European Agency for Safety and Health at Work

EUROPEAN RISK OBSERVATORY REPORT

2.

DEFINING THE PROBLEM



2. DEFINING THE PROBLEM

The World Health Organization has defined a work-related disorder as one that results from a number of factors, and where the work environment and the performance of the work contribute significantly, but in varying magnitude, to the causation of the disease.¹⁴ The term musculoskeletal disorder denotes health problems of the locomotor apparatus, i.e. muscles, tendons, the skeleton, cartilage, the vascular system, ligaments and nerves.

So, work-related musculoskeletal (MSDs) disorders include all musculoskeletal disorders that are induced or aggravated by work and the circumstances of its performance.¹⁵

MSDs cover a wide range of inflammatory and degenerative diseases of the locomotor system. They include:

- Inflammations of tendons (tendinitis and tenosynovitis), especially in the forearm wrist, elbow and shoulder, evident in occupations involving prolonged periods of repetitive and static work;
- Myalgias, i.e. pain and functional impairments of muscles, occurring predominantly in the shoulder-neck region, that occur in occupations with large static work demands;
- Compression of nerves – entrapment syndromes – occurring especially in the wrist and forearm;
- Degenerative disorders occurring in the spine, usually in the neck or lower back, especially in those performing manual handling or heavy physical work. However, they may also occur in the hip or knee joints.



These disorders are chronic, and symptoms usually occur only after exposure to work related risk factors for a period of time.

There is little evidence of the use of standardised diagnostic criteria for MSDs across Member States of the European Union, and a range of terms have been used in different countries to describe these disorders. For example, when they affect the upper limbs, the terms include Repetitive Strain Injuries (RSI), Work-Related Upper Limb Disorders (WRULDs), Troubles Musculo-Squelettiques (TMS) and Cumulative Trauma Disorders (CTD). This variation is reflected in the nationally reported data as well as the research literature and makes comparisons between Member States difficult.

⁽¹⁴⁾ Defining the problem”, Buckle P. and David G., in: Magazine of the European Agency for Safety and Health at Work, EU-OSHA – 3. Preventing Work-related Musculoskeletal disorders, 2000

⁽¹⁵⁾ World Health Organization, Protecting Workers' Health Series No. 5, Preventing musculoskeletal disorders in the workplace, 2003. Available at: http://www.who.int/occupational_health/publications/muscdisorders/en/index.html

European Agency for Safety and Health at Work

EUROPEAN RISK OBSERVATORY REPORT

3.

HEALTH PROBLEMS



3.1. MUSCULOSKELETAL DISORDERS – THE OVERALL EUROPEAN PICTURE

In 2005, 35.4% of workers in the EU-15 and in the newer Member States consider that their work affects their health.

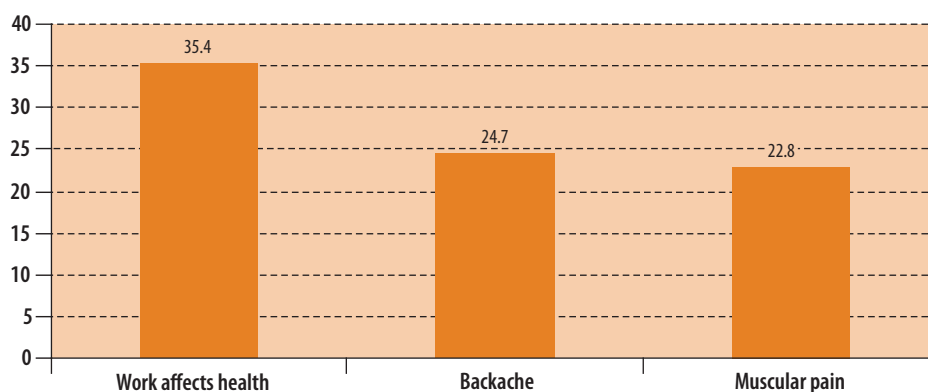
Musculoskeletal diseases are the most prevalent occupational diseases at European level.

Data on work-related musculoskeletal disorders at the EU level is provided by two surveys – the European Survey on Working Conditions and the Labour Force Survey 1999 ad hoc module, and the European Occupational Diseases Statistics (EODS).

3.1.1. Self-reported MSDs

The Fourth European Survey on Working Conditions (ESWC) shows that 35.4% of respondents in the EU27 consider that their work affects their health. The most prevalent health problems are backache, muscular pains (combined index of pain in shoulders, neck and/or upper/lower limbs), overall fatigue and stress. Almost one quarter of respondents (22.8%) report muscular pains.

Figure 5: Percentage share of workers reporting health problems (general), EU27, 2005



Source: ESWC

Within the EU, backache seems to be the most prevalent work-related health problem before overall fatigue (22.5%) and stress (22.3%).

There are numerous established work-related risk factors for the various types of musculoskeletal disorders. These include physical, ergonomic and psychosocial factors. Unfortunately there are only limited European-wide data on their occurrence and distribution in the population. According to the ESWC, 8.1% to 72.9% of workers¹⁶ report exposure to risk factors of musculoskeletal diseases.

⁽¹⁶⁾ 8.1% of European workers report lifting or moving people for at least one quarter of their working time. Similarly, 24.2% of workers in the EU27 are exposed to vibrations from hand tools or machinery for at least one quarter of their working time, 45.5% are exposed to painful or tiring positions, 35% to carrying or moving heavy loads, 62.3% to repeated hand or arm movements and 72.9% are standing or walking at least one quarter of their working time.

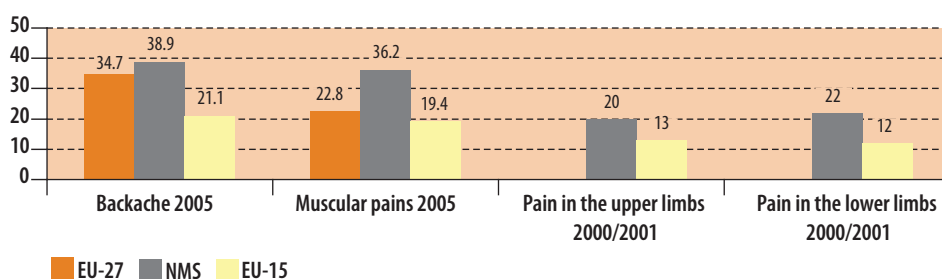


About 24.7% of European workers consider that their work affects their health in the form of backache. The situation is quite similar for muscular pains in shoulders, neck and/or upper/lower limbs, which are reported by about 22.8% of workers.

Within the EU, backache seems to be the most prevalent work-related health problem before overall fatigue (22.5%) and stress (22.3%). Figures for self-reported MSDs from the newer Member States tend to be higher: backache (38.9%) takes the second place after overall fatigues (40.7%).

In both the EU-15 and the acceding and candidate countries, in 2000, about 23% of the workers reported neck and shoulder pains. Within the EU-15, about 13% of workers consider that their work affects their health in the form of muscular pain in the upper limbs and 12% in the lower limbs. Within the acceding and candidate countries, the 2000 figures were higher: about 20% for muscular pain in the upper limbs and 22% in the lower limbs.¹⁷

Figure 6: % Workers reporting MSDs, ESWC 2005, 2000 and ESCC 2001

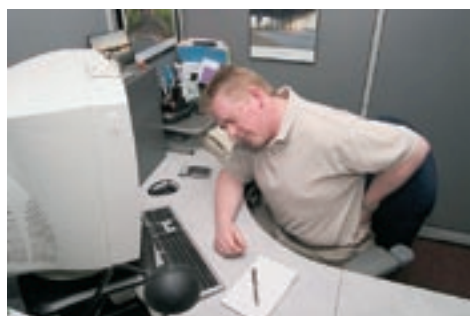


Pain in the lower limbs may be as important as pain in the upper limbs, but it hardly finds any reflection in the recognised musculoskeletal diseases.

Source: ESWC, ESCC

The ESWC does not provide for a trends analysis of data on muscular pains that discriminates between upper and lower limbs, because the level of detail of the survey questions have changed over time. However, what can be seen in figure 6 above is that pain in the lower limbs may be as important as pain in the upper limbs, but it hardly finds any reflection in the recognised musculoskeletal diseases. This has to be seen in connection with data on prolonged standing and walking, one of the major risk factors for developing lower limb disorders.

3.1.2. Self-reported MSDs – Variations between Member States

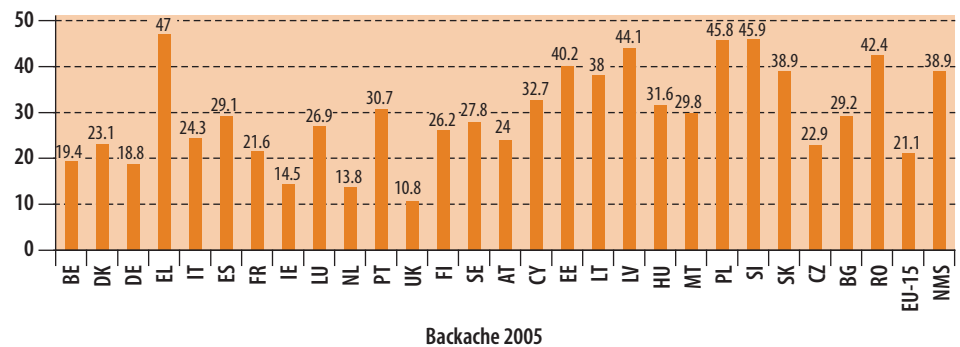


Variations between Member States are high.

⁽¹⁷⁾ European Foundation for the Improvement of Living and Working Conditions. European survey on working conditions, 2000, and European survey on working conditions in the Acceding and Candidate countries, 2001. Available at: <http://www.eurofound.europa.eu/ewco/surveys/previous-surveys/index.htm>



Figure 7: % Workers reporting backache, ESWC 2005

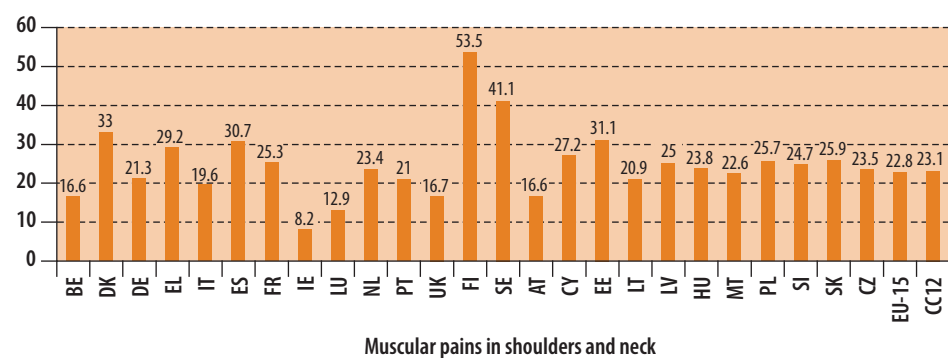


Source: ESWC

As mentioned above, in 2000/2001, the ESWC provided for a differentiated picture between muscular pain of the neck and shoulders and of both upper and lower limbs. In both the EU-15 and the acceding and candidate countries, about 23% of the workers reported neck and shoulder pains. The range extended from 8.2% in Ireland to 53.5% in Finland (Figure 8).



Figure 8: % Workers reporting muscular pain in neck and shoulders, ESWC 2000 – ESCC 2001



Source: ESWC, ESCC

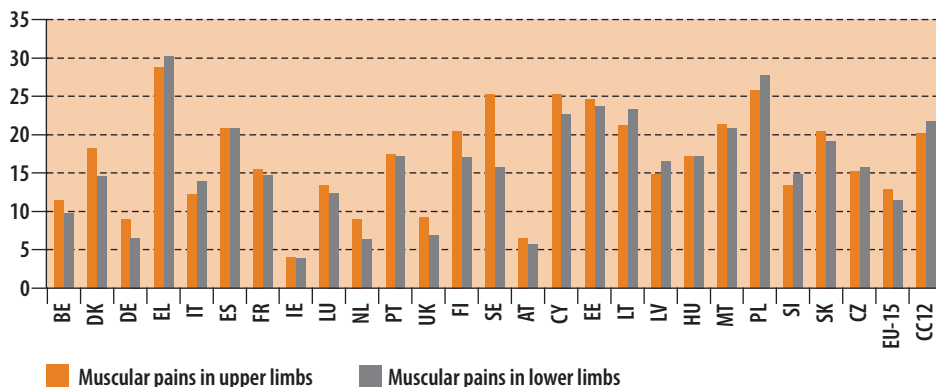
Unfortunately, the European survey for working conditions does not provide for a trends analysis on the prevalence of upper limb disorders versus lower limb disorders. As can be seen from Figure 8 and 9, there seems to be a difference between the newer Member States and the southern European countries, which show higher incidences, versus the other Member States.

These differences need to be further explored. National data from some of the Member States (see sections 3.7. and 5.2. of the report, “Data from the Member States”),



demonstrate that workers are normally exposed to more than one factor of musculoskeletal disorders and that lower limb disorders are not reflected in the exploration of work-related diseases or in the recognition of occupational diseases.

Figure 9: % Workers reporting muscular pain in upper and lower limbs, ESWC 2000 – ESCC 2001



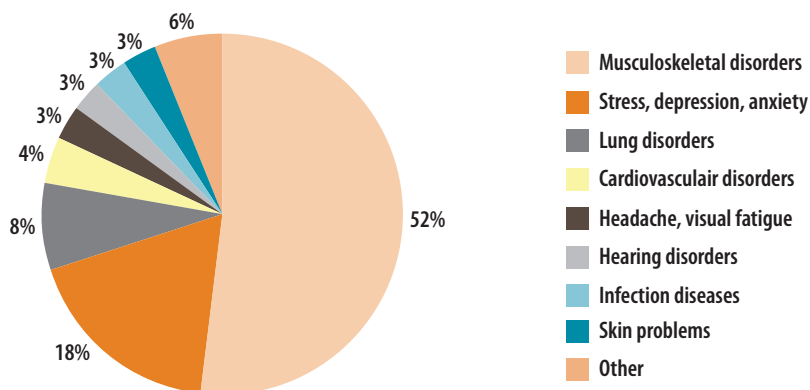
Muscular pains of lower limbs seem to affect workers more in the newer Member States. Risk factors and health problems related need to be further explored.

Source: ESWC, ESCC

According to the Labour Force Survey 1999 ad hoc module, the other European survey source of harmonised data, MSDs, as most serious health problem only, covered more than half of the respondents reporting health problems (Figure 10).

About 0.8% of the respondents had suffered from conditions that led to 14 days or more of absence from work during the past 12 months. An updated version of the survey (ad hoc module on accidents at work and work-related health problems) has been carried out in 2007,¹⁸ but unfortunately results were not yet available for this report.

Figure 10: Work-related health problems, EU-15, %, LFS 1999 ad hoc module



Source: Eurostat, LFS

⁽¹⁸⁾ See Commission Regulation (EC) No 341/2006 adopting the specifications of the 2007 ad hoc module on accidents at work and work-related health problems provided for by Council Regulation (EC) No 577/98 and amending Regulation (EC) No 384/2005 [Official Journal L 55 of 25.2.2006]



3.1.3. Recognised cases of MSDs: European Occupational Disease Statistics (EODS)

MSDs + carpal tunnel syndrome increased by 32% from 2002 to 2005.

MSDs + carpal tunnel syndrome accounted for 59% of all recognised disease covered by EODS in 2005.

Musculoskeletal disorders have a multifactorial aetiology and a mixture of genetic, environmental and behavioural factors are involved. It is difficult in most cases to point out the exact cause of an individual case of disease. Therefore musculoskeletal diseases are not very commonly accepted as occupational diseases in the national compensation or reporting systems.¹⁹

As regards musculoskeletal diseases, the European Schedule of Occupational Diseases²⁰ includes specific conditions linked to vibration, local pressure and overuse of tendons, peritendinous tissues and of tendon insertions. Whereas for example disorders of the lower back and neck and shoulder region are accepted as occupational diseases by only a few Member States and only for specific forms of disease²¹. It is therefore difficult to collect comprehensive European level data on recognised occupational musculoskeletal disorders.

According to the European Occupational Diseases Statistics (EODS) data collection²², the most common occupational diseases are musculoskeletal diseases. The data refer to incident occupational diseases recognised for the first time during the reference year.

In 2005, musculoskeletal disorders covered about 38% of the total occupational diseases according to the obligatory list (Figure 11). Carpal tunnel syndrome (99% of the neurologic diseases), a neurological disease of the wrist, is normally added to the figures.

⁽¹⁹⁾ Eurostat. Work and health in the EU: A statistical portrait Data 1994-2002. 2003. Available at: http://ec.europa.eu/health/ph_information/reporting/statistical_en.print.htm

⁽²⁰⁾ Commission Recommendation (EC) 3297/2003 of 19 September 2003 concerning the European Schedule of Occupational Diseases.

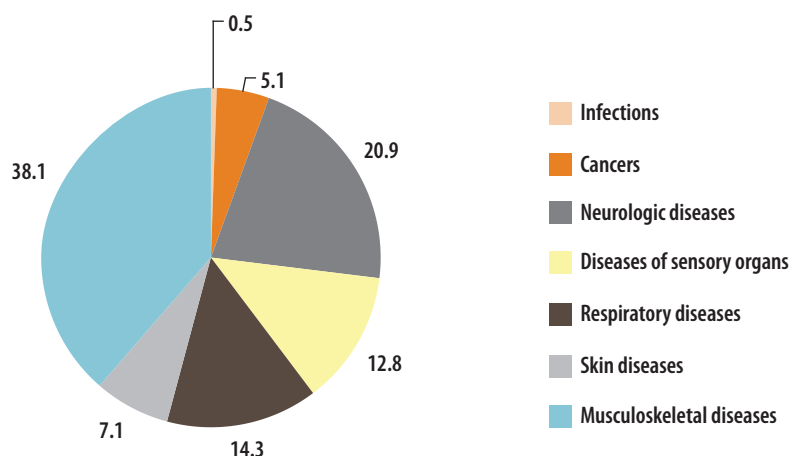
⁽²¹⁾ European Occupational Diseases Statistics (EODS) – Phase 1 methodology. Eurostat working papers. Population and social conditions 3/2000/E/no. 19.

⁽²²⁾ **Coverage:** For incident occupational diseases the data are available for all old EU-Member States combined (EU 15) for the 1995 pilot data and for 12 Member States combined (Belgium, Denmark, Spain, Ireland, Italy, Luxembourg, the Netherlands, Austria, Portugal, Finland, Sweden and United Kingdom) for the 2001 data. From 2002 onwards the data are available for the same countries, except Ireland. The EODS methodology has been implemented in the newer Member States and in the Candidate Countries with first data to deal with the reference year 2004.

Data characteristics: The data refer to incident occupational diseases recognised for the first time during the reference year and to deaths due to occupational disease. The indicators used are the number and incidence rate of incident and fatal occupational diseases. The incidence rate of incident occupational diseases is the number of incident occupational diseases per 100 000 persons in employment during the reference year. The national EODS sources are based on the recognitions of occupational diseases by the public (Social Security) or private specific insurance bodies for occupational diseases, or by other relevant national authority for countries having a “universal” Social Security system.



Figure 11: Proportion of occupational diseases, EODS obligatory list, 2005



Source: EODS

The most common musculoskeletal occupational diseases are tenosynovitis of the hand or wrist, and epicondylitis of the elbow. (Table 1).

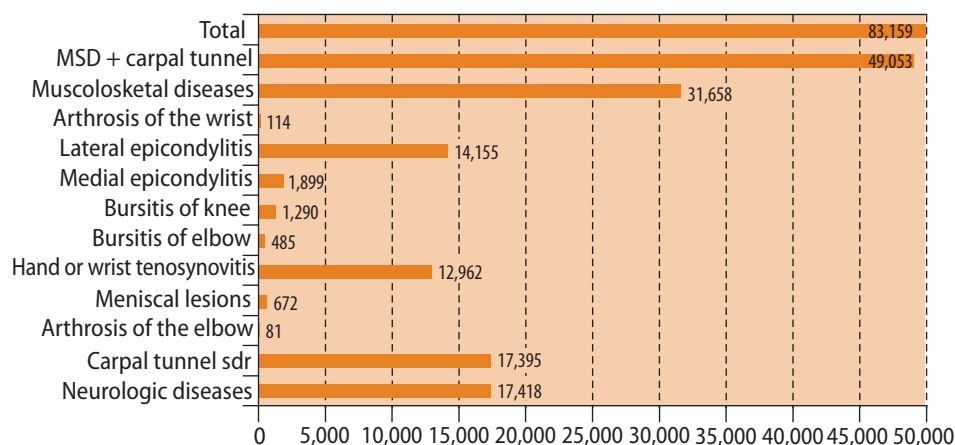
Table 1: Number of occupational diseases, EODS obligatory list, 2001 - 2005

	2001	2002	2003	2004	2005
Carpal tunnel (g560)	2,483	12,575	14,058	14,964	17,395
Musculoskeletal diseases (m00_to_m99)	11,189	24,696	26,601	28,734	31,658
Arthrosis of the elbow (m192)	12	88	90	87	81
Meniscal lesions (m232)	334	693	694	751	672
Hand or wrist tenosynovitis (m700)	5,379	10,028	11,246	11,629	12,962
Bursitis of elbow (m703)	183	380	338	340	485
Bursitis of knee (m704)	442	1,337	1,269	1,347	1,290
Medial epicondylitis (m770)	428	1,130	1,400	1,670	1,899
Lateral epicondylitis (m771)	4,157	10,658	11,494	12,840	14,155
Arthrosis of the wrist (m931)	254	382	70	70	114

Source: EODS



Figure 12: Absolute number of MSDs and carpal tunnel syndrome, 2005. EU15, except Germany, Greece and Ireland



Source: EODS

Table 2: Incidence rate (per 100 000 workers) of occupational diseases, EODS obligatory list, 2001-2005

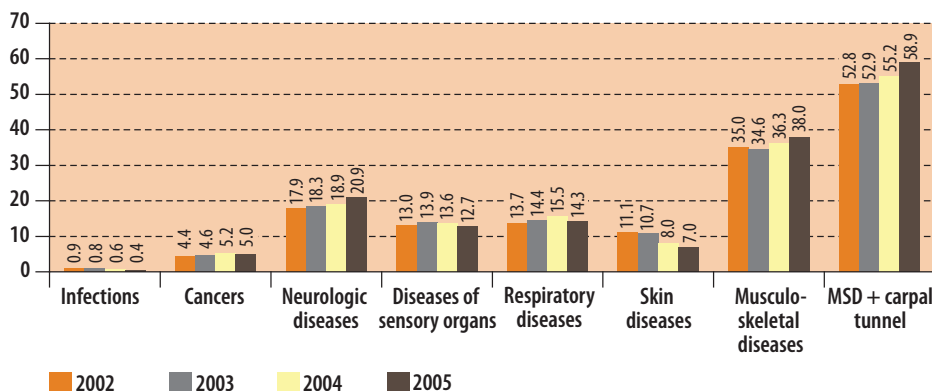
	2001	2002	2003	2004	2005
Infections	0.5	0.6	0.6	0.5	0.4
Cancers	2.4	3	2.7	3.8	4
Neurologic diseases	8.5	12.1	13.5	13.8	16.5
of which Carpal tunnel syndrome	8.4	12.1	13.5	13.8	16.5
Diseases of sensory organs	4.5	8.9	10.2	10	10.1
Raynaud's syndrome	3.1	2.5	1.7	1.1	1
Respiratory diseases	7.7	9.3	10.6	11.3	11.3
Skin diseases	5.3	7.5	7.9	5.8	5.6
Musculoskeletal diseases	15.2	23.7	25.5	26.4	30
Total	47.1	67.7	73.8	72.8	78.8

Source: EODS

When analysing the percentage distribution of occupational diseases it can be seen that MSDs represent the highest share among workers in the 12 countries under consideration (EU15, except Germany, Greece and Ireland). As shown in the graph, 38.1% of occupational diseases in 2005 were MSDs, and when including the carpal tunnel syndrome the share goes up to 59%. Neurological diseases, diseases of sensory organs and respiratory diseases follow at some distance.



Figure 13: Percentage distribution of occupational diseases, 2002-2005. EU15, except Germany, Greece and Ireland



All in all, the number of accepted cases of occupational disease is orders of magnitude smaller than the number of self-assessed work-related cases.

Source: EODS

MUSCULOSKELETAL DISORDERS – DATA BY GENDER

3.2.

Over one quarter (26.6%) of men and 22.3% of women in the EU27 suffer from backache, while muscular pains report slightly lower shares: 24.3% and 20.8%, respectively.

There are different patterns of musculoskeletal diseases among men and women, probably reflecting their segregation in different sectors and jobs.

The incidence rate for musculoskeletal disorders is higher for men than women, but MSDs make up a much higher proportion of all occupational diseases for women:

MSDs + carpal tunnel syndrome represent 85% of all occupational diseases among women (59% on average).

MSDs + carpal tunnel syndrome increased by 39% among women from 2002 to 2005 (32% on average).

3.2.1. Self-reported MSDs

Over one quarter (26.6%) of men and 22.3% of women in the EU27 suffer from backache, while muscular pains report slightly lower shares: 24.3% and 20.8%, respectively.

Typical activities and occupations at risk for muscular pain in neck and shoulder, caused by repetitive movements of the upper limbs, include assembly of electronic equipment, cashiers in super markets, textile and sewing workers and typists and computer operators²³. These activities are predominantly carried out by women. Workers in retail,

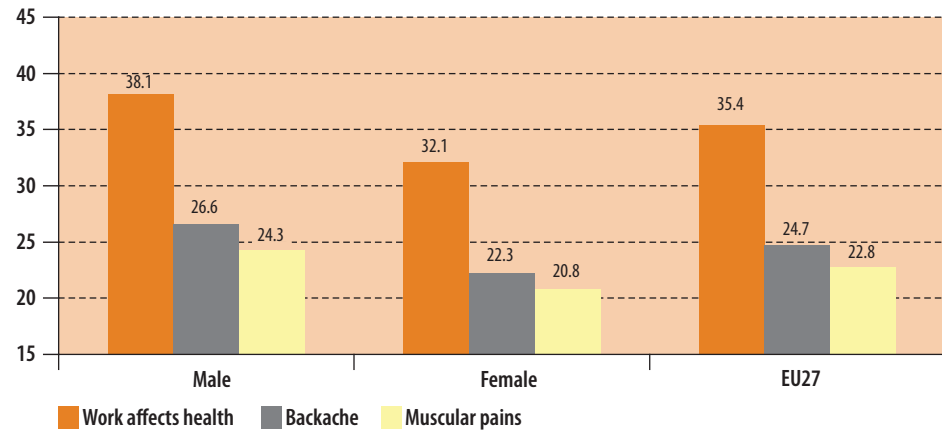
⁽²³⁾ European Agency for Safety and Health at Work, EU-OSHA, The state of occupational safety and health in the European Union - Pilot study, 2000. Available at: <http://osha.europa.eu/en/publications/reports/401/view>.



Over one quarter (26.6%) of men and 22.3% of women in the EU27 suffer from backache, while muscular pains report slightly lower shares: 24.3% and 20.8%, respectively.

the agriculture and the construction sector are more often required to handle heavy loads at work.

Figure 14: % workers reporting health problems, backache and muscular pains, by gender, EU27, 2005



Source: ESWC

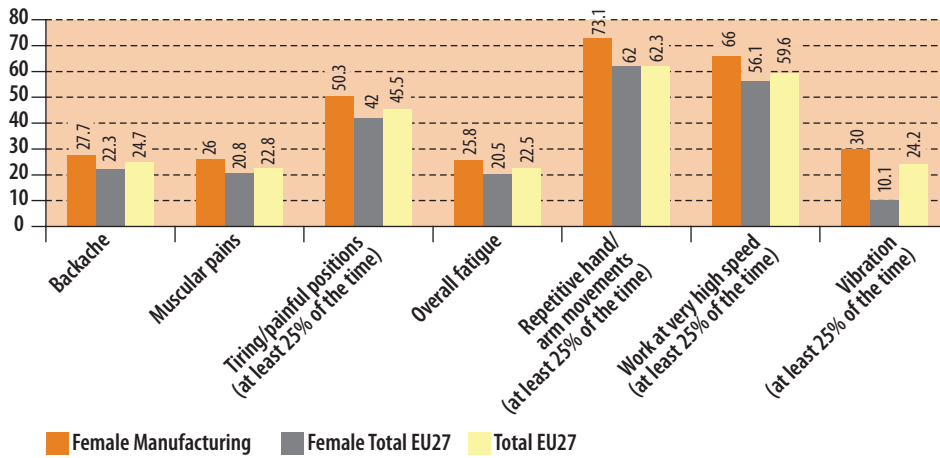
According to the LFS 1999, male workers also suffered slightly more from MSDs (1,279,302 cases compared with 1,196,027 for female workers).²⁴

Nevertheless, to identify gender differences, as women are more segregated in specific sectors and occupations, it is necessary to look at the risks and exposures by gender and sector. Figure 15 shows the situation of women in the manufacturing sector by exploring ESWC data more in-depth. Women in manufacturing seem to be exposed to a large number of MSDs risk factors. Consequently, they report higher rates of musculoskeletal health problems. It is worth noting that women in the manufacturing sector also report high rates of exposure to vibrations, a risk not normally attributed to “female workplaces”. Exposures to vibrations also appear to be higher for women and young people in the newer Member States.



⁽²⁴⁾ Eurostat. Work related health problems and accidental injuries (ad hoc module of the 1999 Labour Force Survey). Available at: http://epp.eurostat.ec.europa.eu/cache/ITY_OFFPUB/KS-57-04-807/EN/KS-57-04-807-EN.PDF

Figure 15: % Women in the manufacturing sector reporting a specific health problem or to be exposed to a certain risk factor, EU-27, ESWC 2005



Women in the manufacturing sector also report high rates of exposure to vibrations, a risk not normally attributed to “female workplaces”.

Source: ESWC

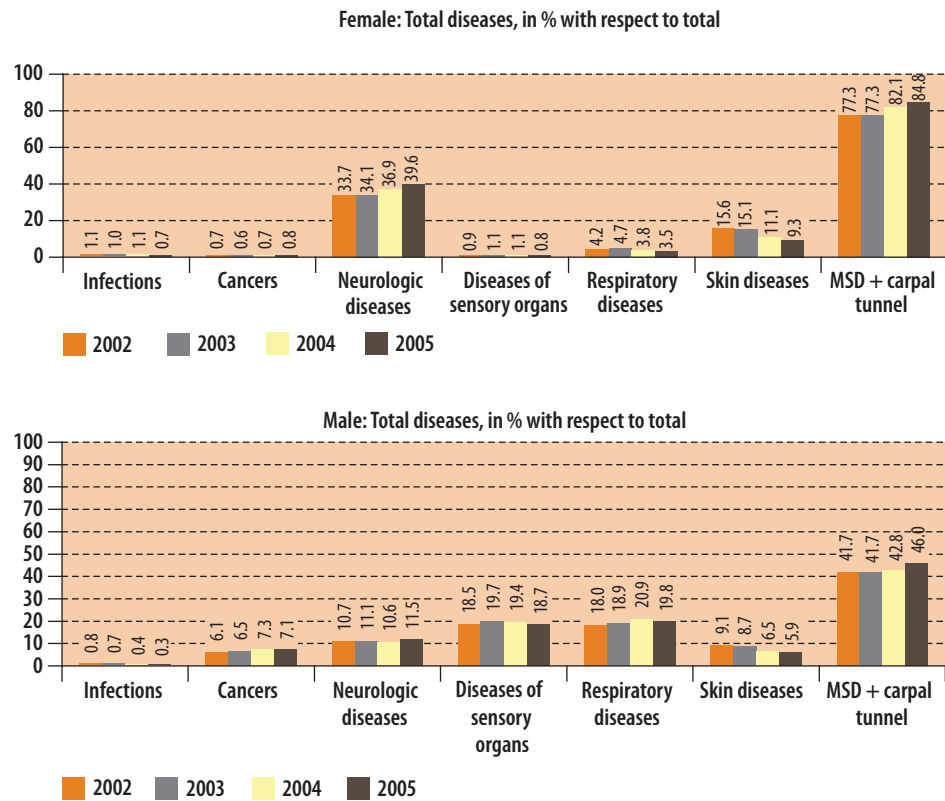
3.2.2. Recognised occupational diseases – gender differences

Musculoskeletal diseases make up a much higher proportion of all recognised occupational diseases among female workers than among male workers (Figure 16).

The distribution of diseases is also quite different: female workers are much more affected by carpal tunnel syndrome and hand or wrist tenosynovitis. This probably partly reflects recognition practices, but is probably mostly due to gender segregation in different sectors and occupations, and within occupations in different tasks and jobs.



Figure 16: Musculoskeletal diseases – percentage as compared to all recognised occupational diseases – by gender, EODS 2002-2005

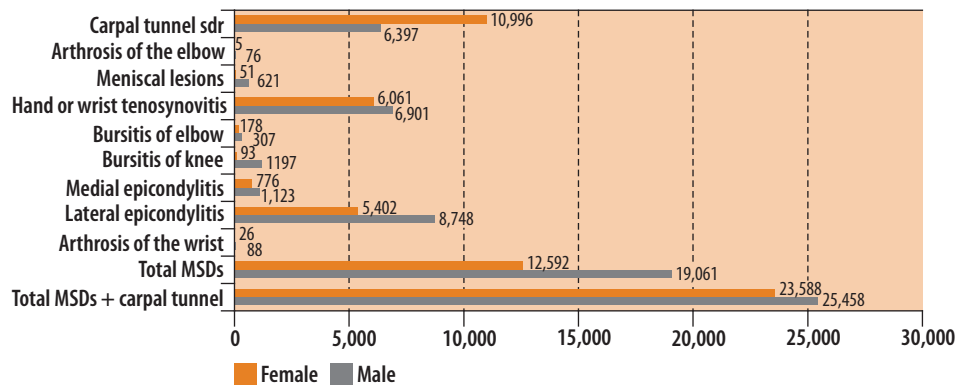


Source: EODS

Based on the EODS data, the incidence rate for musculoskeletal disorders is higher for men than for women (32.5 and 26.9 per 100 000 respectively in 2005), but for both it has been increasing since 2001 (when it was 14.1 and 11.2). Carpal tunnel syndrome seems to affect women more and figures are also on the increase since 2001.

Figure 17: Absolute number of MSDs and carpal tunnel syndrome. EU15, except Germany, Greece and Ireland, by gender, 2005

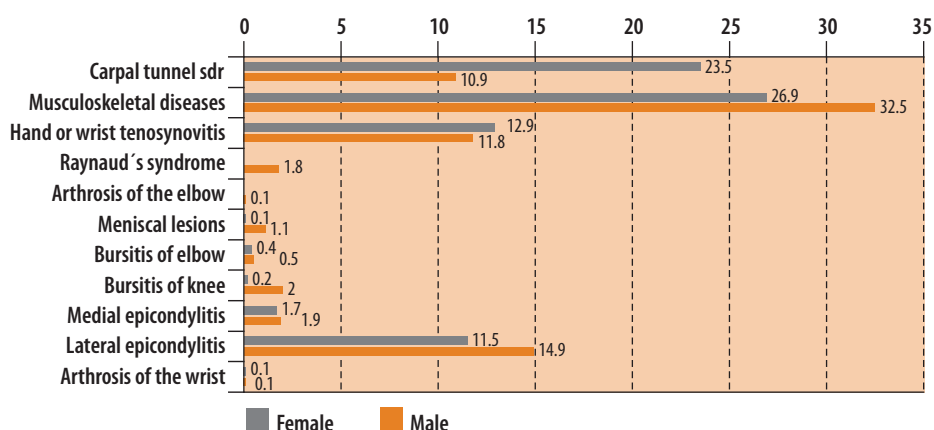
There are different patterns of musculoskeletal diseases among men and women, probably reflecting their segregation in different sectors and jobs.



Source: EODS



Figure 18: Incidence rate (per 100 000 workers) of non-fatal occupational musculoskeletal diseases, EODS obligatory list (by gender), EU-15, except Germany, Greece and Ireland, 2005



Source: EODS

3.3.

DATA BY AGE

The occurrence of MSDs increases with age.

- Older workers in Europe report more MSDs problems. For example, 24.2% of workers over 55 years old report suffering from backache. Many older workers will have spent more time working in situations that are prone to lead to MSDs.
- However young workers under 25 years old too report significant shares of MSDs: 17.7% of them suffer from backache while 16.5% complain of muscular pains.

3.3.1. Self-reported MSDs

The share of workers who believe that their health is affected by work increases with age until the 40-54 age group: 38.8% in the EU27. Workers above 55 report a 33% share, a bit lower than that of the 25-39 age group (35.7%).

Similar patterns are found for backache and muscular pain, with increasing prevalence until the 40-54 age group. Over a quarter of workers in this age category (27.3%) complain of backache while the prevalence of muscular pains is very similar: 25.4%.

However, it would be incorrect to conclude that MSDs are a health problem only for older workers, since incidence rates are also notable in younger people. 26.1% of the youngest workers under 25 years of age already report that their health is affected by work. 17.7% of young workers report suffering from backache while 16.5% complain of muscular pains. Taking into account EU population figures, that would mean that about 3.8 Mio young workers in Europe have backpain and about 3.5 Mio young workers in Europe suffer from muscular pain due to their work.

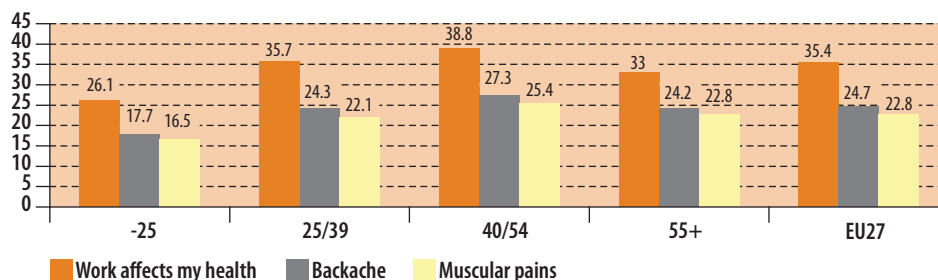
Age, years of employment and training issues are often strongly correlated which makes it difficult to disentangle their effects on the occurrence of MSDs. They all can confound each other's effect. A person of 30 years may experience low back pain and

It would be incorrect to conclude that MSDs are a health problem only for older workers. About 3.8 Mio young workers in Europe have backpain and about 3.5 Mio young workers in Europe suffer from muscular pain due to their work.



already may have performed lifting tasks for 10 years. In addition, young people with little experience often report low back pain due to unadjusted postures, a lack of training or because they are placed in jobs that require more manual material handling because of their lower seniority.

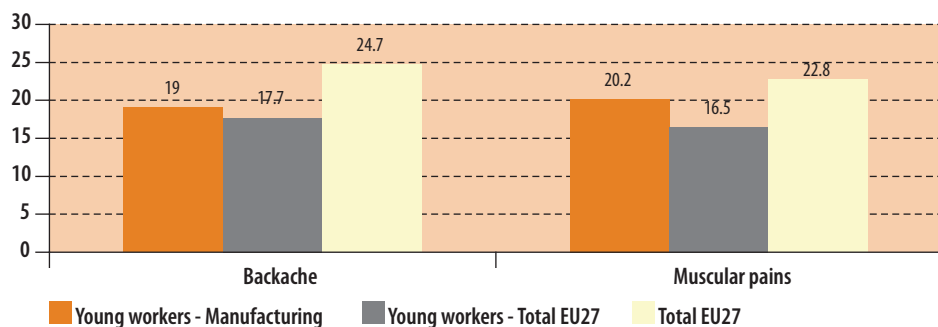
Figure 19: Percentage share of workers reporting health problems, backache and muscular pains, by age, EU27, 2005



Source: ESWC

Focusing on young workers, it is interesting to look at them in manufacturing, as they report a higher share of backache and muscular pains than the average across all sectors in the EU27. 19% of young manufacturing workers under 25 years of age complain of backache as opposed to the average 17.7% for this age group across all sectors. Similarly for muscular pains, over a fifth of young manufacturing workers (20.2%) in the EU27 report suffering from work related muscular pains while the average for this age group across all sectors is 16.5%. They also report higher exposures to MSDs risk factors (see section 5.1.8 of this report).

Figure 20: Percentage share of workers reporting backache and muscular pains: young workers (under 25) in manufacturing, total young workers in EU27 and total EU27, 2005



Source: ESWC

As could be demonstrated in a previous study of the European Risk Observatory, young workers are mainly employed in sectors where physical work is frequent, and some of the risk factors for MSDs, such as repetitive work, are prevailing²⁵. The major risks to health and safety of young workers in these sectors are described, illustrated by examples of specific research and workplace initiatives. A sectoral breakdown showed that within the EU-25, the highest proportion of young workers can be found within “Hotels and restaurants” and “Trade”. Typical “young” occupations included service, shop and market sales work, work in the armed forces, and elementary occupations,

⁽²⁵⁾ European Agency for Safety and health at Work, EU-OSHA, OSH in figures: Young workers-facts and figures, 2007, available at <http://osha.europa.eu/en/publications/reports/7606507/view>



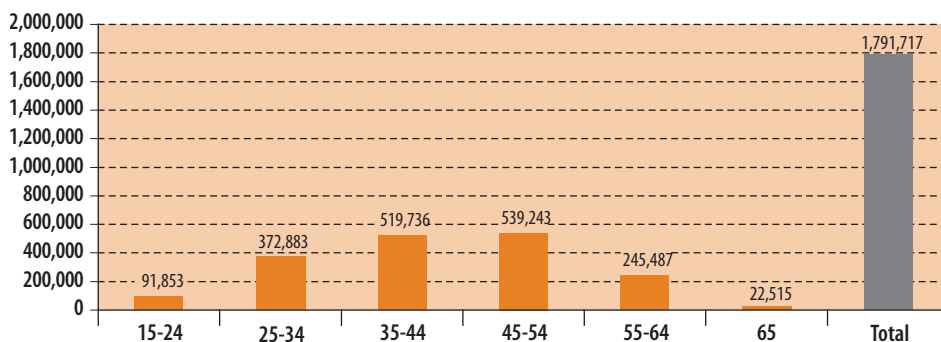
for example low-skilled manufacturing jobs. This distribution has important implications for the occupational safety and health of young people because of the specific set of harmful conditions that characterises these sectors (including low payment, temporary seasonal work, poor employment conditions and physically demanding work).



By courtesy of INSHT, Spain

Data from the ad-hoc module of the LFS (1999) too reveal an increasing number of MSDs with age, until the 45-54 age group: 539,243 cases. The prevalence rate for MSDs was highest for workers between 45 and 64: 3,399 for workers aged 45-54 and 3,555 for those aged 55-64, compared to an average of 2,645 per 100 000 workers.

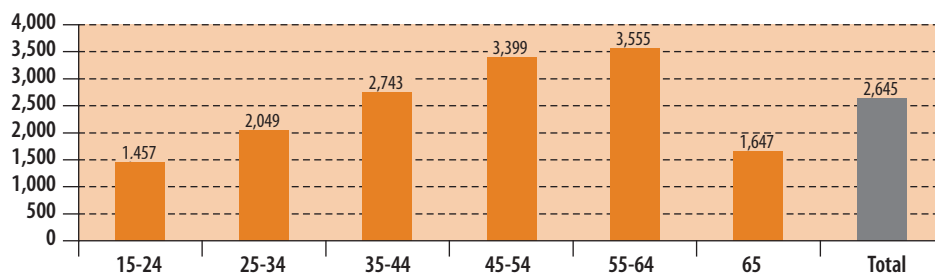
Figure 21: Number of work-related health problems: musculoskeletal disorders, 1999



Source: Eurostat, LFS



Figure 22: Standardised prevalence rate of work-related health problems: musculoskeletal disorders (rate per 100 000 workers), ad hoc module LFS 1999



Source: Eurostat, LFS

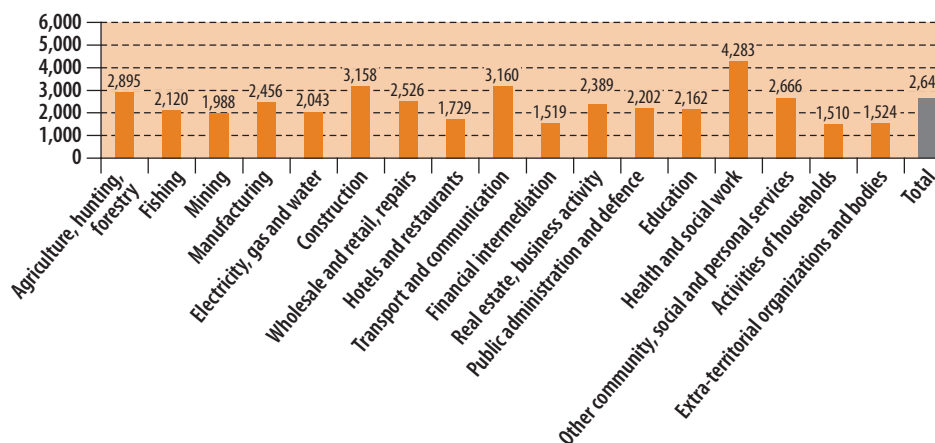
3.4. DATA BY SECTOR

Agriculture, construction, transport & communication, manufacturing, hotels & restaurants, health & social work and mining (in the newer Member States) are the most exposed.

3.4.1. Self-reported MSDs

According to the ad-hoc module of the LFS (1999), the highest incidence rates of MSDs were found among workers in health and Social work, transport, storage and communication, construction and agriculture (1.2 to 1.6 times higher than average).

Figure 23: Standardised prevalence rate (per 100,000 workers) of musculoskeletal disorders, by sector, ad hoc module LFS 1999



Source: Eurostat, LFS

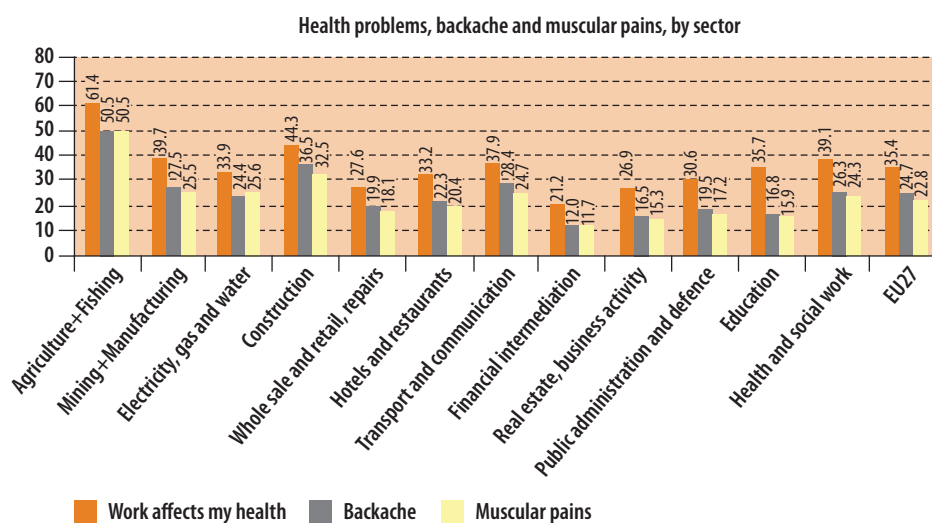
According to the ESWC, on the other hand, in 2005, about 35.4% of European workers considered that their work affects their health. 24.7% of them reported suffering from backache, a share that is doubled among workers in agriculture and fishing (50.5%), and higher in construction (36.5%) and transport, storage and communication (28.4%), followed by health and social work (26.3%).





The situation is quite similar for muscular pains. About 22.8% of respondents considered that their work causes them muscular pains and the rate was highest in agriculture and fishing (50.5%), construction (32.5%) and utilities (25.6%), followed by mining and manufacturing, transport and communication and health and social work.

Figure 24: Percentage share of workers reporting health problems, backache and muscular pains, by sector, EU27, 2005



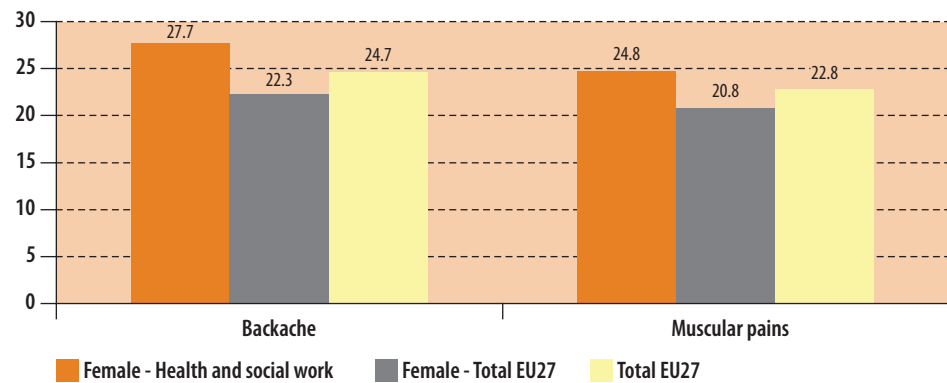
Source: ESWC

It is interesting to take a closer look at women in health care, as they report higher than average shares of MSDs and their number is steadily increasing: 27.7% of women in the sector complain of backache, as opposed to the overall shares of 22.3% (women across all sectors) and 24.7% (both genders across all sectors) in the EU27.

Similarly, when it comes to muscular pains, 24.8% of women in health and social work report suffering from muscular pain, as opposed to the overall shares of 20.8% (women across all sectors) and 22.8% (both genders across all sectors) in the whole of the EU27. Unsurprisingly, their exposures to MSDs risk factors are also high and multiple (see chapter 5.1.5 of this report)



Figure 25: Percentage share of workers reporting backache and muscular pains, women in health and social work, total women in EU27 and total EU27, 2005



Source: ESWC

3.4.2. Recognised cases of MSDs

According to the EODS, the incidence rate of MSDs and carpal tunnel syndrome varies greatly between sectors. It is by far the highest in manufacturing, while construction and agriculture also have an incidence rate clearly higher than service sectors and such mostly involved with office type work. However, it must be underlined that this may be due to the fact that the national recognition practices are better established for recognition of such diseases occurring under non-office type working conditions.

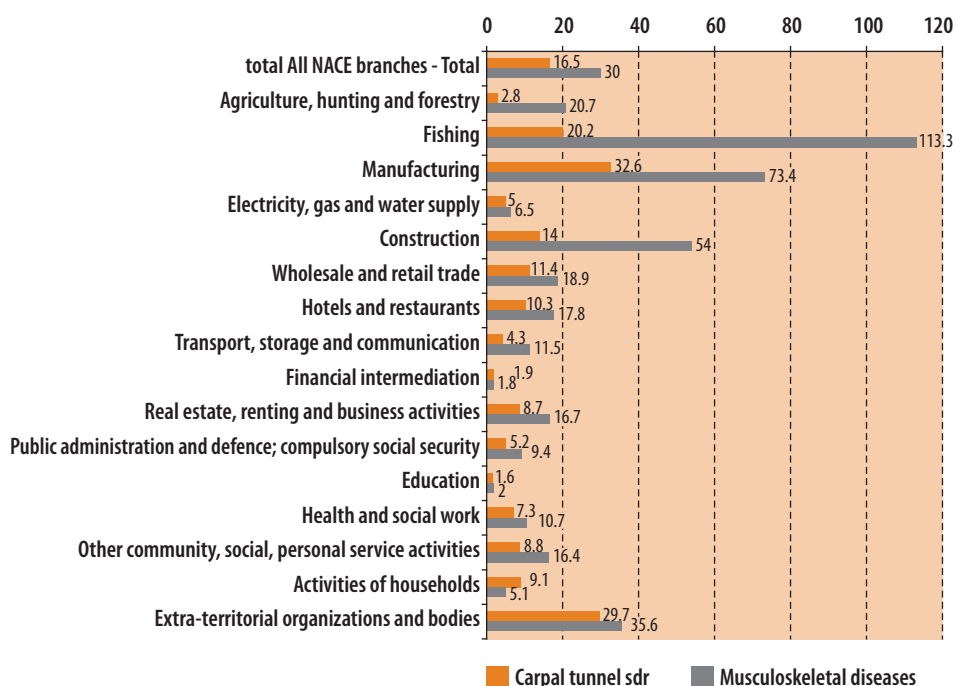
The incidence of MSDs by sector of economic activity does not necessarily correlate with the exposure to risk factors in the development of MSDs. The service sectors seem to catch up on traditional sectors associated with heavy work, but rates are still lower than would be expected from the results of worker surveys. As demonstrated in section 5 of this report, workers in practically all sectors of economic activity are highly exposed to repetitive movements and painful/tiring positions: manufacturing, construction, agriculture, hotels & restaurants and transport & communication are some of the sectors reporting the highest exposures, while construction, agriculture and mining in the newer Member States score highest on carrying/moving heavy loads at work.



It should be mentioned that according to the EU LFS, the number of workers in the sectors most at risk, construction and health and social work has been steadily increasing over the last ten years, while in agriculture, still an important sector in the newer Member States, a slight overall decrease can be observed.

By courtesy of INSHT, Spain

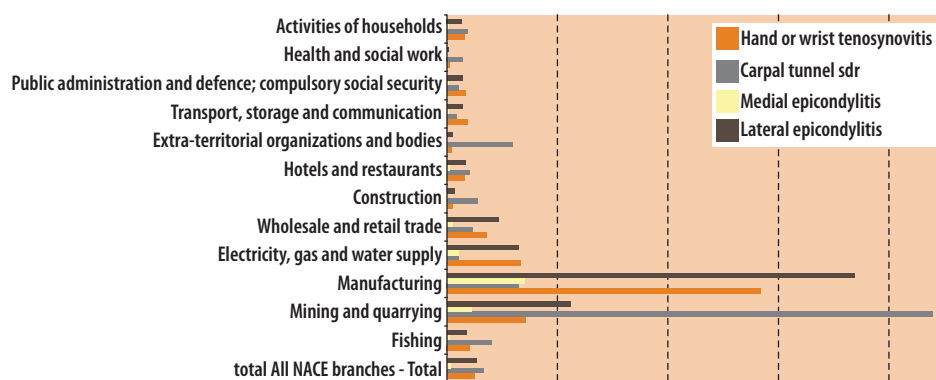
Figure 26: Incidence rate (per 100 000 workers) of non-fatal occupational musculoskeletal diseases and carpal tunnel syndrome, EODS obligatory list (by sector, except mining), 2005



Source: EODS

Figure 27 demonstrates that the patterns of recognised occupational MSDs of the upper limbs are also very different in the different sectors: incidence rates of recognised hand/wrist tenosynovitis and of elbow epicondylitis vary greatly. They are by far the highest in mining and quarrying and manufacturing, utilities, but the wholesale and retail trade also has an incidence rate clearly higher. Again, it must be underlined that this is partly due to the fact that the national recognition practices are better established for “traditional” sectors considered to be at risk, and not necessarily consistent with self-reported exposures. The causative factors reported for tenosynovitis and epicondylitis in 2001 were repetitive work (91%), work postures (1%), mechanical vibrations (1%) and biomechanical factors in general (6%). As mentioned before, repetitive work and forced postures are predominant in practically all sectors.

Figure 27: Different patterns of recognised upper-limb disorders by sector Incidence rate (per 100 000 workers), EODS obligatory list (by sector), 2005



Source: EODS



3.5. DATA BY OCCUPATION

Service workers, manual workers both skilled and unskilled and craft related trade workers are most at risk.

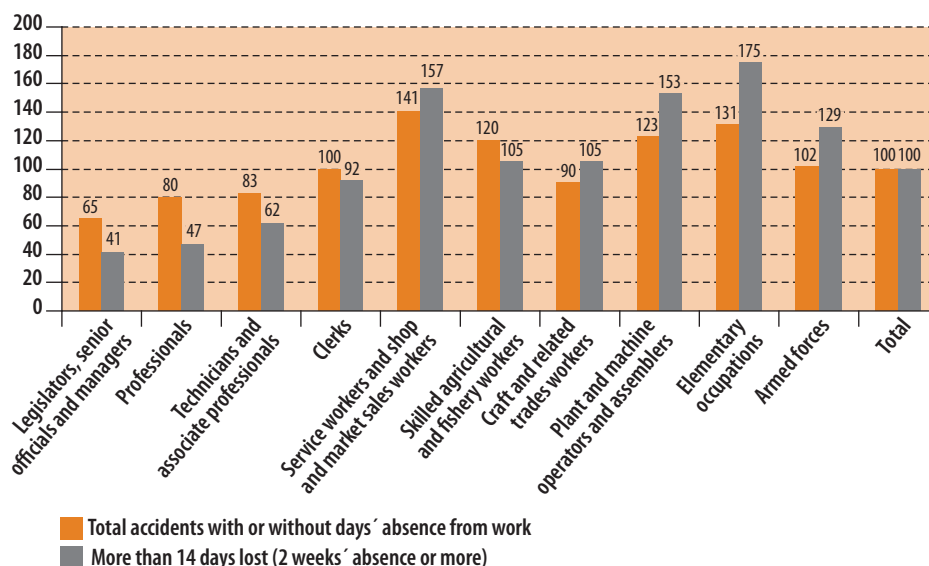


3.5.1. Self-reported MSDs by occupation

According to the LFS 1999 ad hoc module, as shown in the graph below, the relative prevalence rate (with or without days' absence from work) of MSDs is highest among service workers and shop and market sales workers (ISCO 5), elementary occupations (ISCO 9), plant and machine operators and assemblers (ISCO 8) and skilled agricultural and fishery workers (ISCO 6). When taking into account absence from work, it can be seen that those in elementary occupations (ISCO 9) report most long absences (two weeks or more) from work due to MSDs: 175 vs. the 100 EU average, followed by service workers and shop and market sales workers.

When taking into account absence from work, it can be seen that those in elementary occupations (ISCO 9) report most long absences (two weeks or more) from work due to MSDs: 175 vs. the 100 EU average, followed by service workers and shop and market sales workers.

Figure 28: Relative prevalence rate of work-related health problems: Musculoskeletal disorders (EU mean rate = 100 for each severity), by occupation, ad hoc module LFS 1999



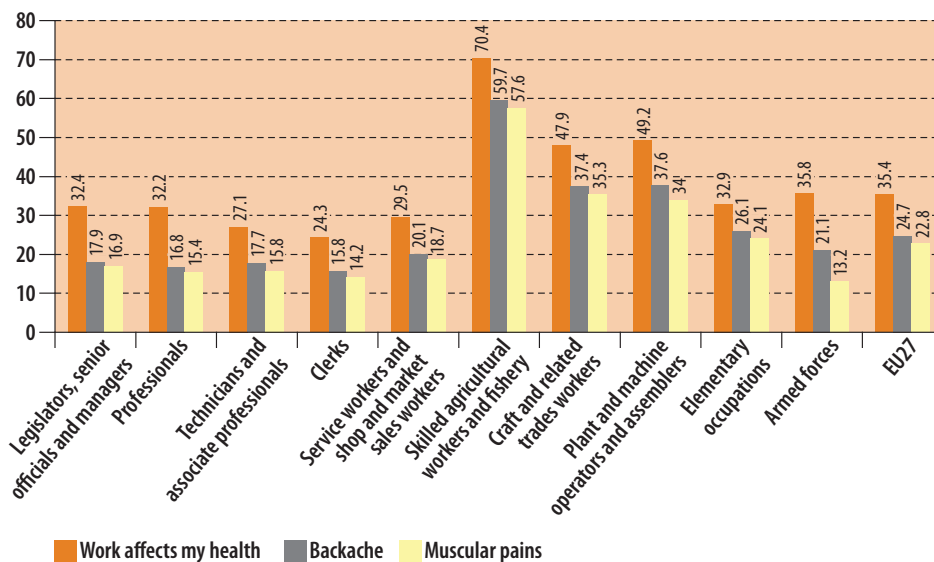
Source: Eurostat, LFS

The ESWC 2005 provides somewhat different results: the occupations reporting the highest shares of workers who believe that work affects their health are skilled agricultural and fishery workers (70.4%), plant and machine operators and assemblers (49.2%) and craft and related trades workers (47.9%).



For backache and muscular pain, the occupations mentioned above are also reporting the highest incidences. The shares of both backache and muscular pains are particularly high among skilled agricultural and fishery workers: 59.7% and 57.6%, respectively.

Figure 29: Percentage share of workers reporting health problems, backache and muscular pains, by occupation, EU27, 2005

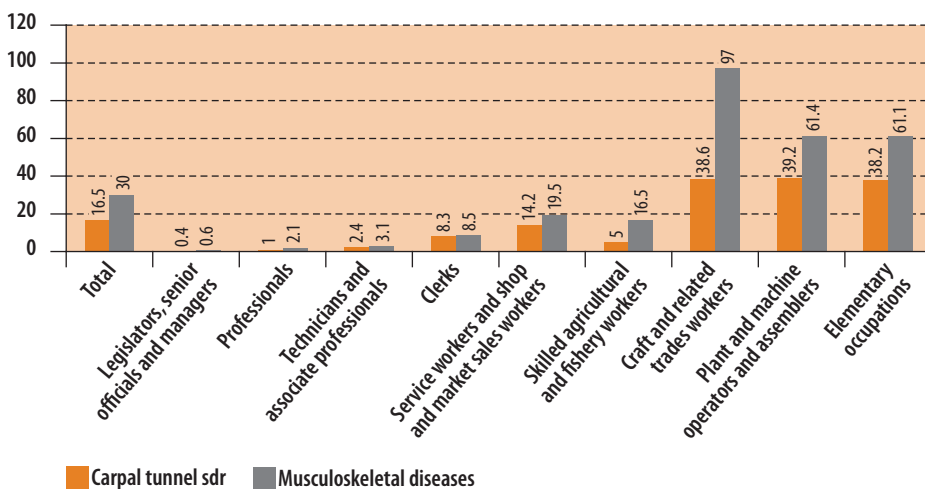


Source: ESWC

3.5.2. Recognised cases of MSDs in specific occupations

Again there is a slightly different picture in the recognised diseases than in self-assessed health problems: the incidence rate (per 100,000 workers) of recognised MSDs according to the EODS varies significantly among different occupational groups, being highest among craft and related trades workers, plant and machine operators and assemblers, and elementary occupations. Carpal tunnel syndrome also seems to have the highest recognition rates within these occupations.

Figure 30: Incidence rate of non-fatal occupational musculoskeletal diseases and carpal tunnel syndrome (per 100 000 workers) by occupation, disease, EODS obligatory list, 2005



Source: EODS



The prevalence of MSDs by occupation does not necessarily correlate with the exposure to MSDs risk factors (see section 5.1.10 of this report). Most occupations are exposed to repetitive work, working at high speed, forced or painful postures and prolonged standing or walking, while recognised diseases are mostly concentrated in only three of the occupations.

3.6. DATA BY EMPLOYMENT STATUS

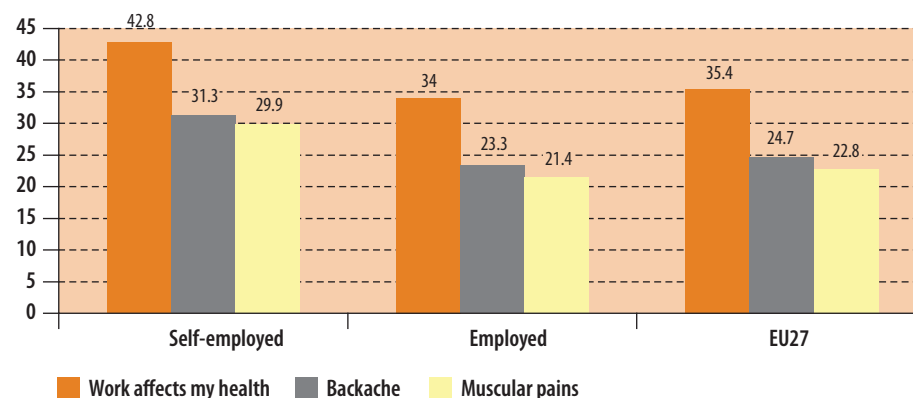
Self-employed appear to be more at risk than employees

3.6.1. Self-reported MSDs

Work seems to be affecting the health of self-employed workers (42.8%) more than that of employees (34%) in the EU27. As far as backache is concerned, almost one third of self-employed workers (31.3%) complain of backache, while the share is 23.3% among employees. Similarly, 29.9% of self-employed and 21.4% of employees report suffering from muscular pains.

According to earlier ESWC results, workers on fixed-term contracts and in apprenticeships were more likely to suffer from muscular pains.²⁶

Figure 31: Percentage share of workers reporting health problems, backache and muscular pains, by employment status, EU27, 2005



Source: ESWC

An in-depth analysis of previous ESWC results showed similar trends. In addition, temporary employees were more likely to report fatigue, backache and muscular pains but less likely to report health-related absenteeism in comparison with other types of employment status. Similar findings were observed across job categories, economic sectors and countries. Working conditions of temporary employees were worse than those of permanent workers. Temporary workers were found to be more exposed to

⁽²⁶⁾ Data extracted from ESWC 1995 and 2000 survey results by Prevent for OSH Data Collection 2004.



painful positions, intense noise, repetitive movements and short repetitive tasks.^{27,28} In addition, non-permanent workers often have little experience and lack of training on the job.

MUSCULOSKELETAL DISORDERS — DATA FROM THE MEMBER STATES

3.7.

In the following chapter, a selection of more in-depth data from the Member States is presented. This chapter intends to clarify issues of concern previously highlighted, such as the lack of information on lower-limb disorders and confirm some of the trends observed, such as increasing concern over young and female workers.

3.7.1. Scoreboard 2005 (Denmark, Finland, Sweden, Netherlands, Ireland, UK)

The aim of this scoreboard was to assess activities taken by the participating countries using a self-completed questionnaire and collating this information in the scoreboard. The national policies addressed the implementation of the European health and safety strategy 2002-2006 and more concretely the implementation of the recommendations to the Member States (Council Resolution from 3 June 2002) scoreboard²⁹. The first scoreboard – Score Board 2003 – was launched in spring 2004. At the first meeting of European Union Directors' General, which met in Dublin in April 2004, Ireland, the Netherlands and the UK accepted an invitation to join the pilot project.

This scoreboard focused on eight strategic objectives:

1. Harmonisation of statistics
2. Setting up measurable targets
3. Reduction of occupational accidents
4. Reduction of musculoskeletal disorders
5. Combatting work-related stress
6. Reduction in exposure from chemical agents
7. Productivity and economy
8. Preventive potential.

⁽²⁷⁾ Analytical report Employment status and health, European Foundation for the Improvement of Living and Working Conditions, 1999.

⁽²⁸⁾ Types of employment and health in the European Union, European Foundation for the Improvement of Living and Working Conditions, 2005.

⁽²⁹⁾ Setting up an international scoreboard – benchmarking national policies for implementing the European Strategy 2002 – 2006 on health and safety at work.– A pilot project from the Nordic Countries in association with Eire, the Netherlands and the UK. Working group European Strategy on Health and Safety at Work, October 2005, available at <http://fi.osha.europa.eu/systems/strategies/scoreboard2005.pdf>



A national strategy was defined as follows in relation to the Resolution text:

a developed and implemented co-ordinated, coherent prevention policy. A requirement for an implemented strategy is that necessary changes in the law or regulations have been made. Strategies that require more (or different) inspections by the labour inspectorate (in a certain sector) can only be called "implemented" when the planned higher number of inspections (or different inspections) have been carried out for a least half a year. An information campaign should have started before a strategy that contains this element can be called implemented.



Table 3: Overview: Scoreboard 2005, national strategies regarding musculoskeletal disorders and upper-limb disorders

	Denmark	Finland	Ireland	Netherlands	Sweden	UK
Disorders caused by lifting heavy loads						
10-year-trend	↘	?	No significant trend	?	↗	↘
National strategy	No statistics					
Sectors in focus of strategy	All	Construction Health and social work Manufacturing	Agriculture, forestry, fishing Health and social work Construction Mining and quarrying Public administration	Agriculture, forestry, fishing Manufacturing and Construction Wholesale and retail trade Hotels and restaurants Real estate, renting and business activities, Public administration Health and social work Other community, social and personal services	Construction Health and social work Transport, storage communication Education Wholesale and retail trade Transport, storage and communication	Health and social work Manufacturing Construction Wholesale and retail trade Transport, storage and communication
Work-related upper-limb disorders						
10-year-trend	↘	↘	No significant trend	↗	↗	↘
National Strategy	-	+	+	+	+	+
Sectors in focus of strategy	All	Manufacturing (D-15, D-26, D-28, D-36) Construction (C-45)	All	Manufacturing Real estate, renting and business activities Public administration	Construction Health and social work Manufacturing (D-20, D-361) Transport, storage and communication Education	Manufacturing Health and social work Construction Wholesale and retail trade Public administration Transport, storage and communication

NACE C-45: Construction / NACE D-15: Manufacture of food products and beverages / NACE D-20: Manufacture of wood and of products of wood and of products of cork, except furniture; manufacture of articles of straw and plaiting materials / NACE D-26: Manufacture of other non-metallic mineral products (glass, bricks, ceramic, abrasive, ceramic, etc.) / NACE D-26.1: Manufacture of glass and glass products
NACE D-28: Manufacture of fabricated metal products, except machinery and equipment / NACE D-36: Manufacture of furniture; manufacturing n.e.c.

More information on the trends at national level and the sectors affected is presented in the following chapter for each of the countries mentioned.



3.7.2. Austria

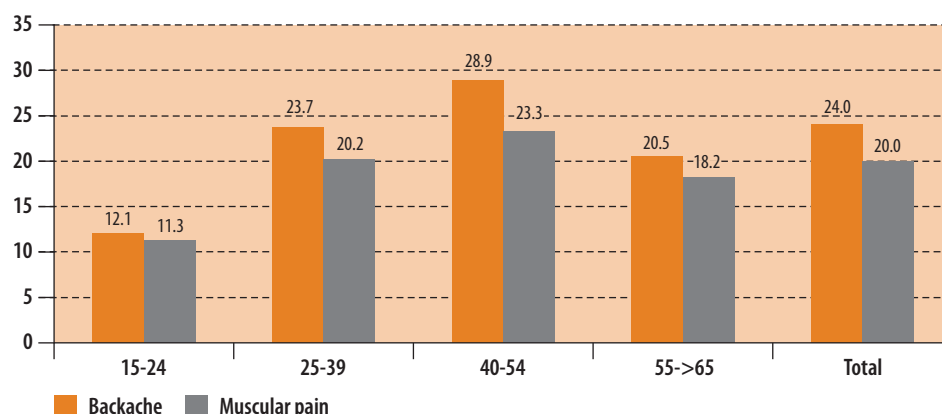
Self-reported MSDs

According to the ESWC 2005, young workers are less likely to report work-related musculoskeletal health problems. The occupations most at risk are skilled agricultural and fishery workers, plant and machine operators and assemblers and elementary occupations.

Almost a quarter of Austrian workers (24%) complain of backache (ESWC), while muscular pain affects 20% of the surveyed people.

By age, the 40-54 age group shows the greatest incidence (28.9%) followed by those aged 25-39 (23.7%). As far as muscular pain is concerned, and in line with the findings on backache, workers in the age groups 40-54 and 25-39 report the highest shares: 23.3% and 20.2%, respectively.

Figure 32: Effect on health: percentage share of workers reporting backache and muscular pain, by age, 2005, Austria



Source: ESWC

Rates are only marginally different between genders: while men seem to be a little more affected by backache than women (24.3% and 23.6%, respectively) the reverse is true for muscular pain: 20.2% among women and 19.9% among men.

Data broken down by sector reveal that agriculture, construction, transport and communication, and hotels and restaurants report higher than average shares of both backache and muscular pain. In manufacturing, backache is more frequent than on average too (24.9% vs. 24%) while in education and health muscular pain also exceeds the Austrian average (22.3% vs. 20%).

By employment status, a slightly higher incidence of both backache and muscular pain is found among self-employed workers than among employees. In any case, the differences among both groups are not very wide for any of the indicators.



National absenteeism data

The Austrian labour inspection has published on its website a detailed report analysing trends and issues linked to work-related absenteeism.³⁰

About a quarter of the time lost (24.3%) was attributed to musculoskeletal disorders. Musculoskeletal disorders also accounted for about a quarter of the long-lasting absences (more than six weeks), that represent all in all 35% of all days lost. Average duration of absence is 10 days, among the longest with mental health disorders, respiratory diseases and accidents.

In all age groups about half of the absences due to MSDs were back disorders, about 75% of the work-related absences in terms of number of cases, and 60% of the work-related absence duration (days lost). Bursitis and tenosynovitis (affections of tendons and bursa) have a notably higher incidence among younger workers, while older workers are more affected by osteoarthritis.

Table 4: % of all days lost due to MSDs by age groups, Austria

ICD9 - 710- 739	15-29	30-49	50-64	Average
Dorsopathies 720-724	5.7	15.5	22.9	15
Total due to MSDs	11.3	24.5	37.1	24.3

Source: Fehlzeitenreport 2007

Similarly to the results of the ESWC mentioned above, the results of the study indicate that occupation and age have a stronger impact on absenteeism due to MSDs than gender. Rates of absenteeism due to back pain for blue-collar workers are three times those of white-collar workers.

Among blue-collar workers, the contribution of MSDs to absenteeism is highest for young workers (2/3 higher than for white-collar workers), for workers between 30-49 it is 1.5-fold, and for the older age group (> 50) the difference is still 20-25%.

The study included sick leave rates of the unemployed and found a significant increase, while the sick leave rates of the employed went down. Possible explanations were the impact of the “healthy worker” effect (higher risk of unemployment for workers with high sick leave rates and/or durations) and increasing “presenteeism”.

This study concludes that further research should be directed at the impact of working time arrangements, for example part-time work.

Other sources

A labour inspection web feature for the European Week campaign 2007 presents data and advice for workplace assessment of MSDs and examples of good practice.³¹

⁽³⁰⁾ Fehlzeitenreport 2007. Available at: http://ew2007.osha.europa.eu/news/local_news/news_article.2007-10-24.MSDs_Austria

⁽³¹⁾ Pack's leichter an, Webfeature of the Austrian labour inspection for the European Week campaign 2007, accessible at <http://www.arbeitsinspektion.gv.at/ew07/startseite.htm>

Musculoskeletal disorders also account for about a quarter of the long-lasting absences (more than six weeks).

In all age groups about half of the absences due to MSDs were back disorders.

Among blue-collar workers, the contribution of MSDs to absenteeism is highest for young workers (2/3 higher than for white-collar workers),



An Austrian survey showed that the chances of developing problems with the spinal cord increased significantly with multiple exposures to risk factors at the workplace.

The impact on costs was also estimated: about 38% of the costs of work-related absenteeism was attributed to MSDs. The costs of all absences have been estimated in the above-mentioned report to amount to 2.1 to 3.1% of the GDP³².

The impact on disability pensions is also high: about 34% of newly attributed work-related disability pensions, of which two thirds linked to back pain.

Case study – Multiple exposures to risk factors at the workplace and the development of MSDs (Austria)



An Austrian survey showed that the chances of developing problems with the spinal cord increased significantly with multiple exposures to risk factors at the workplace. With any exposure the chance is 1.7%. With exposure to one risk factor it is 10.1%; with exposure to two risk factors it is 13.8%; with exposure to three risk factors it is 18.6%; with exposure to four/five risk factors it is 26.2%; and with exposure to six or more risk factors it is 38.2%.³³

⁽³²⁾ Fehlzeitenreport 2007, p. 131

⁽³³⁾ Fasching, Melitta. Arbeitsbedingungen in Österreich, Bundesministerium für Arbeit, Gesundheit und Soziales, Wien, 1999

Table 5: Overview: Groups affected by MSDs, Austria

	Age	Gender	Occupation, sector
Self-reported MSDs	40-54, followed by those aged 25-39	Males: backache, lower limbs Females: neck-shoulder, upper limbs	Agriculture, construction, transport and communication, hotels and restaurants. Also health and education. Agricultural workers Plant and machine operators and assemblers Elementary occupations
Absenteeism data	Highest contribution in workers aged >50 Very high rates of absenteeism in young blue-collar workers below the age of 30	Both genders, sector/ occupation and age have a stronger impact than gender	Blue-collar workers much more affected, differences are highest for the young, effect is decreasing with age

3.7.3. Belgium

Self-reported MSDs

According to the Belgian data from the ESWC, almost one third (29%) of Belgian workers consider that their work affects their health (35.4% EU27 average). Almost one fifth of them (19.4%) report suffering from backache, while 17.2% complain of muscular pain.

ESWC data for Belgium show that the highest shares of backache and muscular pain are found in the 40-54 age group. The proportion increases with age precisely until 40-54 years of age, to fall among those aged 55 and over. A similar pattern can be found both for backache and muscular pain. Musculoskeletal disorders are also more or less equally common to report for both men and women.

Belgian workers in the sector “electricity, gas and water”, “construction” “transport and communication” “real estate, business activity”, and “agriculture, hunting and forestry” report the highest shares of MSDs. Regarding occupations, the highest prevalence is found among blue-collar workers (in elementary occupations, plant and machine operators and assemblers, craft and related trades workers) and skilled agricultural and fishery workers. Blue-collar and agricultural workers are most susceptible to muscular pains. A slightly higher prevalence is observed among self-employed workers.

Recognised cases of MSDs

In Belgium, in order to obtain benefit payments following an occupational disease, an application has to be submitted to the Occupational Diseases Fund who will then examine whether or not the condition can be recognised as an occupational disease. This can only happen if the disease appears on a list of occupational diseases (closed system) or if the person concerned can demonstrate a causal link between the

Highest shares of backache and muscular pain are found in the 40-54 age group.



condition and the occupational activity (open system). The person concerned then has to provide proof of exposure to the risk cited, proof of the disease and proof of the casual link between the exposure and the condition. Together they are referred to as the “mixed system”.

The closed system includes:

MSDs S (skeleton):

- Bone and joint conditions of the upper limbs caused by mechanical vibrations (code 160511).
- Conditions of the lumbar region of the spine, with premature degenerative abnormalities caused by mechanical vibrations transmitted to the body via the seat (code 160512).

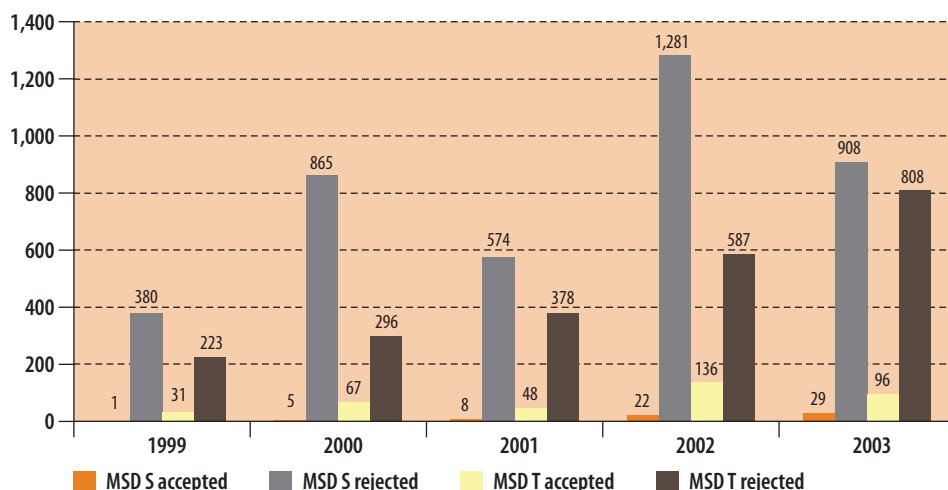
MSDs T (tendinitis):

- Conditions of the tissue of the tendon sheaths and muscle and tendon sites caused by excessive strain on tendons (performing artists only) (code 160621).

Occupational diseases relating to MSDs, for which the largest number of compensation applications were submitted in 2005, are bone, joint and angioneurotic diseases caused by mechanical vibrations (MSDs S): They are mainly back injuries that occur in the transport and construction sector.

MSDs applications via the open system have increased over the last few years. In 2001, 87% of compensation applications under the open system concerned conditions of the locomotor apparatus (back complaints, skeleton conditions, vibration arthrosis, etc.) and the muscles (tendinitis and other RSI's or “Repetitive Strain injuries”). The bulk of them were rejected however. Tendinitis is the one that is accepted the most. This is not surprising, as in the closed system this disease can only be submitted by performing artists. Nevertheless, the number of accepted cases for both MSDs S and MSDs T submitted via the open system has increased since 1999.³⁴

Figure 33: Number of accepted and rejected cases MSDs in the open system (general), Belgium



Source: Occupational Diseases Fund

⁽³⁴⁾ Occupational diseases statistics, Fonds voor beroepsziekten, <http://fmp-fbz.fgov.be/>



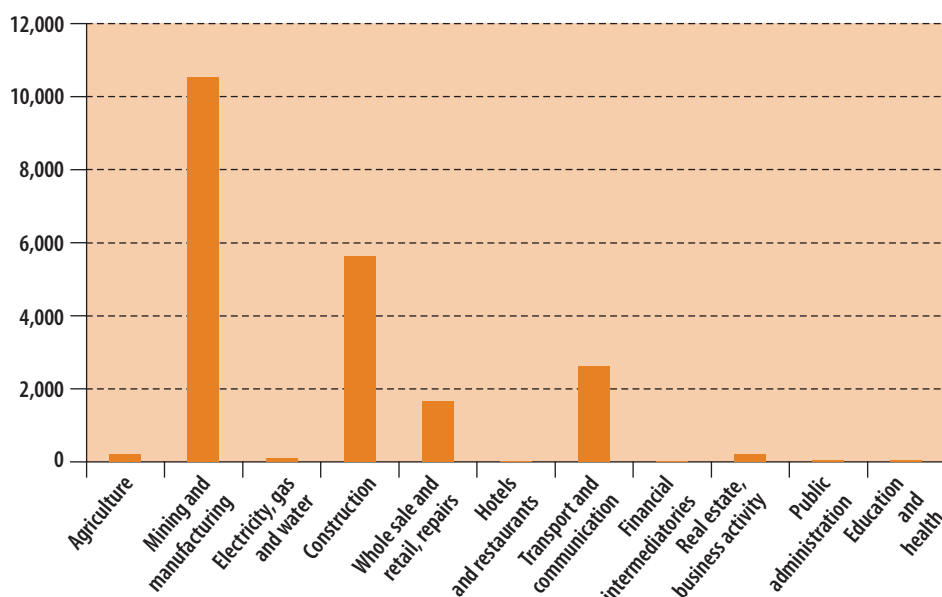
According to the Belgian Occupational Diseases Statistics, the number of accepted cases for MSDs, in the closed and open system is the highest in the age category 40-54, followed by the category +55.

They are mainly back injuries occurring in the transport and construction sector, which are typically male jobs. In case of MSDs T (tendinitis) the difference between both sexes is smaller.

The highest proportion of accepted cases of MSDs S (skeleton) are in the sector “Mining and Manufacturing” and “Construction”, followed by “Transport and communication” and “Gas, electricity and water”. Plant and machine operators are the most affected by occupational MSDs S.

Almost all accepted cases of MSDs S (skeleton) in the closed and open system are of male workers.

Figure 34: Number of accepted cases MSDs Skeleton in the closed system (1990-6/10/2004), Belgium



Source: Occupational Diseases Fund

For MSDs T, the highest incidences are for workers in the mining and manufacturing sector (C-D), followed by construction (F) and wholesale and retail, repairs (G). These three sectors concentrate 83.1% of all accepted MSDs T cases in the open system.

Table 6: Overview: Groups affected by MSDs, Belgium

	Age	Gender	Sector	Occupation
Self-reported MSDs	Highest prevalence in 40-54 age group	No difference	Agriculture Construction Electricity, gas and water Real estate, business activities	Agricultural workers Blue-collar workers



	Age	Gender	Sector	Occupation
Recognised cases	>40	Skeleton: Males	Mining & Manufacturing	Blue-collar workers
		Tendinitis: no difference, most recognised cases for women in the open system	Construction Transport & communication, wholesale and retail for tendonitis (MSDs T)	Plant and machine operators and assemblers

3.7.4. Cyprus

Self-reported MSDs

About 32.7% of Cypriot workers report backache according to the ESWC 2005, about 31.5% muscular pains. In 2001, in the Candidate Countries Survey, about 27% reported muscular pain in shoulders and neck, about 25% muscular pain in upper limbs and about 23% in lower limbs.

National study on working conditions

The basic findings of the study “Assessment of the situation regarding physical and mental diseases of the working labour” are presented here. The study was carried out by CYMAR Market Research Ltd. on behalf of the Department of Labour Inspection of the Ministry of Labour and Social Insurance.

The main objective of the study was to assess and detect health problems faced by employees which are caused by the nature of their profession. The study was national and covered 1200 households with people aged 18 to 63 who are currently working or have worked in the past. Data were gathered through personal interviews. The fieldwork took place in October 2006.

Two out of ten persons interviewed mentioned that they face health problems which were caused or worsened as a result of the profession they have now or had in the past.

The occupation categories which have reported most health problems are presented in Table 7.

Table 7: Occupational categories reporting work-related health problems, national survey, Cyprus, in %

Occupation	Percentage of workers who reported a health problem ³⁵
Mining and construction workers	14.0%
Service workers and shop and market sales workers	13.4%
Office clerks, secretaries, cashiers and tellers, and related clerks	7.2%

⁽³⁵⁾ Percentages based on people who stated that they face a health problem

MSDs are the main health problem in all professions, with the exception of the teaching profession which is mostly associated to stress issues.



Occupation	Percentage of workers who reported a health problem ³⁵
Food processing, wood treaters, cabinet-makers, textile, garment, felt, leather, shoemaking and related trades workers	7.0%
Labourers in mining, construction, manufacturing and transport	6.4%
Finance and associate professionals, business services and trade brokers, and other associate professionals	5.3%
Metal, machinery and related trades workers	5.3%
Housekeeping and restaurant services workers	5.1%
Models, salespersons and demonstrators	4.5%

Source: National survey 2007

- Based on the survey results, the main problem are musculoskeletal problems (pain on the bones, joints or muscles): About 71% of those who face work-related health problems described their problem as pain on the bones, joints or muscles. This percentage corresponds to 13% of the total sample (people who currently work or have worked in the past). Other health problems caused by the occupation are less frequent.
- The majority of persons who suffer from musculoskeletal problems said that the pain is mostly experienced in the back. Based on the total of respondents who are currently working or have worked in the past, the percentage which suffers from:
 - back pain is 10%;
 - nape/shoulder pain is 5%;
 - feet and leg pain is 5%;
 - hands and arm pain is 3%.
- Musculoskeletal problems are proportional with the years of working: The percentage of people who are currently working or have worked and suffer those problems increases as the number of years in the profession increases.
- MSDs are also the main health problem in all professions, with the exception of the teaching profession which is mostly associated to stress issues.

About 71% of those who face work-related health problems, described their problem as pain on the bones, joints or muscles.

Table 8: Main work-related health problems reported, national survey, Cyprus, in %

Health problems caused by the kind of occupation	Based on those who have a work-related health problem	Based on total sample
Pain in the bones, joints or muscles	70.8%	13.1%
General fatigue	32.1%	5.9%
Stress	23.2%	4.3%
Heart disease or other problem in the circulatory system	8.9%	1.6%



Health problems caused by the kind of occupation	Based on those who have a work-related health problem	Based on total sample
Breathing problems	3.1%	0.6%
Sight problems	2.9%	0.5%
Hearing problems	1.9%	0.4%

Source: National survey 2007

3.7.5. Czech Republic

Self-reported MSDs

Workers aged 25 to 39 reported the highest prevalence of MSDs in the Czech Republic in 2005.

Findings from the Fourth European Survey on Working Conditions (ESWC) reveal that more than one third of Czech workers (36.1%) consider that work affects their health. The prevalence of backache and muscular pains is relatively similar, around the 23% mark: 22.9% of workers reported to suffer from work related backache while 23.7% complained of muscular pains.

According to the ESWC, workers aged 25 to 39 reported the highest prevalence of MSDs in the Czech Republic in 2005: 26.1% of them suffered from backache while 27.7% reported muscular pains. It is worth stressing though that youngest workers (15-24) also report a significant share of MSDs: 13.5% of them report suffering from backache and 16.7% from muscular pains. The figures are relatively similar for workers in the 40-54 and 55-65 age groups.

Regarding gender, the ESWC provides similar results to the Czech national information and shows that male workers reported a higher prevalence of MSDs. Over a quarter of them reported backache (26.7%) and muscular pains (28.9%) in 2005. The corresponding figures for women were lower: 17.9% for backache and 17% for muscular pain.

The sectors most affected by MSDs in the Czech Republic appear to be construction and transport and communication. In construction 35.4% of workers report suffering from backache, while 37.4% complain of muscular pains. Very similar figures are found in transport and communication: 35.3% and 37.6%, respectively. Manufacturing too reports a high incidence of both backache (28.2%) and muscular pains (30.3%), while utilities (electricity, gas and water supplies) witness a particularly high incidence of muscular pains: 30%.

The most affected occupational groups were plant and machine operators and assemblers (ISCO 8) and craft and related trades workers (ISCO 7). In both groups there is a 34.9% rate of workers who complain of muscular pains, while the share of workers affected by backache is very similar too: 32.9% among plant and machine operators and assemblers and 31.2% among craft and related trades workers. Those working in elementary occupations too report a higher than average share of both muscular pains (31.8%) and backache (29.5%).

Self-employed workers in the Czech Republic report a slightly higher prevalence of MSDs than employees.

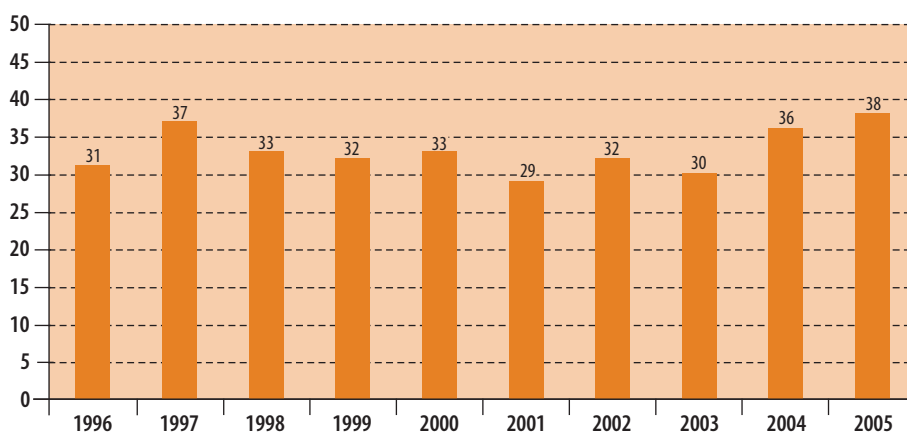
Recognised cases of MSDs

From 1996 to 2005, a total of 6,047 cases of occupational musculoskeletal disorders were reported in the Czech Republic, which represent about 33% of all reported occupational diseases.



The absolute number of the reported occupational disorders decreased by 45% between 1996 and 2005, while the proportion of MSDs on the total number of occupational diseases remained relatively stable, i.e. about 30-35%³⁶ (Figure 35).

Figure 35: Proportion (%) of occupational MSDs in the total number of Occupational Diseases, Czech National Registry of Occupational Diseases, 1996-2005



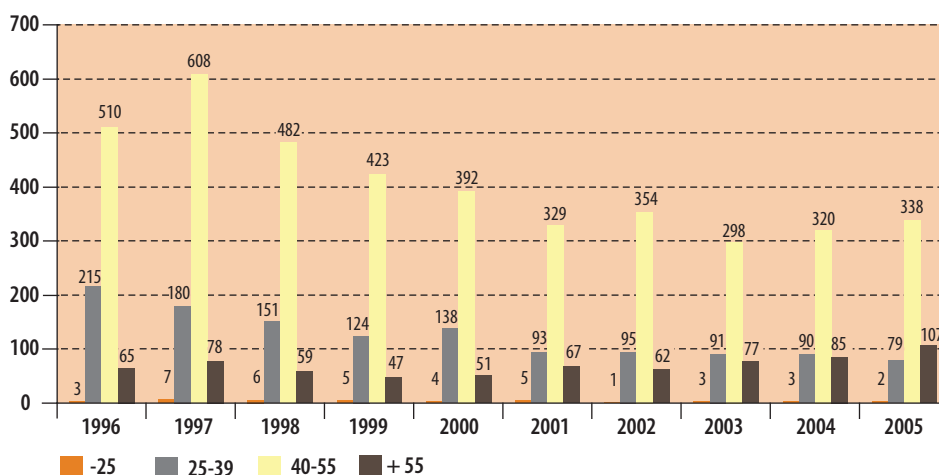
Source: Czech National Registry of Occupational Diseases, 1996-2005

Fewer musculoskeletal disorders are reported in the Czech Republic than in other EU Member States. Among other reasons, there is the fact that vertebrogenic disorders (such as low back pain) are not included in the Czech list of occupational diseases and therefore cannot be recognised as such. In this sense, the monitored musculoskeletal disorders include compressive neuropathies (e.g., carpal tunnel syndrome, cubital tunnel syndrome, and other peripheral mononeuropathies), arthroses, epicondylitis, tendonitis, bursitis and other.

Low back pain is not included in the Czech list of occupational diseases

Most occupational MSDs were in the age category 40-55 years (67% on average). The proportion of younger age categories slightly decreased over time, while the share of those aged over 55 years increased from 8% to 20%.

Figure 36: Number of occupational musculoskeletal disorders in the Czech Republic, by age, 1996-2005

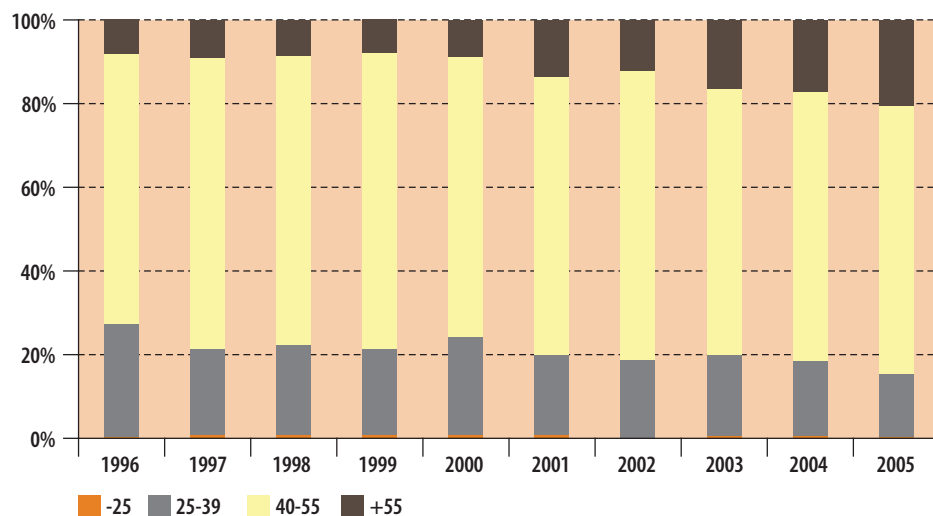


Source: Czech National Registry of Occupational Diseases, 1996-2005

⁽³⁶⁾ National Institute of Public Health, Center of Occupational Health, Czech National Registry of Occupational Diseases, Available at: <http://www.szu.cz/>



Figure 37: Proportion of various age categories in the total number of occupational musculoskeletal diseases in the Czech Republic, 1996-2005



Source: Czech National Registry of Occupational Diseases, 1996-2005

Throughout the whole period under consideration male workers reported more cases of occupational MSDs than their female counterparts. However, the proportion of women in the total count of affected workers rose from 24% in 1996 up to 33% in 2005. The prevalence for men was most pronounced in construction while the highest shares for women were found in education and health care.

Most cases of occupational MSDs occurred in mining or manufacturing (82% on average), followed by agriculture, hunting, forestry, and fishing (9%). This finding is consistent throughout the whole period under consideration.

Most cases of occupational MSDs occurred among craft and related trades workers (71%), followed by plant and machine operators and assemblers (17%).

Table 9: Overview: Groups affected by MSDs, Czech Republic

	Age	Gender	Sector	Occupation
Self-reported MSDs	25-39	Men	Construction Transport and communication Manufacturing Electricity, gas and water supplies	Craft and related trades workers
Recognised cases	40-54	Men Increasing rates in women	Mining & Manufacturing Agriculture Highest shares for women were found in education and health care	Plant and machine operators and assemblers Craft related trade workers



3.7.6. Denmark

Self-reported MSDs

According to the ESWC 2005, about 23.1% of the workers report backache and about 30% report muscular pains.

National strategy on MSDs

In February 2005, the Danish government stipulated that, in collaboration with the social partners, it would prepare a new list of priorities which would ensure that focus was on the most important working-environment problems. Nationwide prioritisation meant to ensure that all the working-environment players work towards a common goal.

Recommendations from the Danish Working Environment Council for priority working-environment problems were set up for a national action plan up until 2010. The four priority areas identified were industrial accidents, psychological working environment, noise and musculoskeletal disorders. Indicators and quantitative goals for reduction were identified for the first three factors (20% reduction of injury, 10% for absenteeism due to sickness, 15% for noise causing hearing damage, 10% for other noise).³⁷

In its justification, the Council stated that there was a need for general preventive measures and that despite efforts over many years, e.g. aiming at monotonous, repetitive work and heavy lifting, the importance of musculoskeletal disorders was expected to continue in the future.

The Working Environment Council therefore found that, within the framework of a new national action plan, a prevention strategy should be set up aiming at musculoskeletal disorders.

Nordic scoreboard 2005

According to the Scoreboard 2005 conducted by the Working Group European Strategy on Health and Safety at Work, musculoskeletal disorders caused by lifting heavy loads had been decreasing in Denmark in the previous ten years. The sectors with the highest incidence rates identified were fishing, public administration, manufacturing, health and social work and construction. The same trend could be observed for work-related upper limb disorders and the sectors with the highest incidence rate were manufacturing, public administration, fishing, transport and communication, financial intermediation and other community, social and personal service activities.³⁸

⁽³⁷⁾ Report on future working environment 2010 – new priorities for the working environment, Danish working Environment Authority, 2005, <http://www.at.dk/graphics/at/Engelsk-pdf/Andre-informationsmateriale/Future-working-environment.pdf>

⁽³⁸⁾ Scoreboard 2005, Working group European Strategy on Health and Safety at Work, 2005, Available at: <http://fi.osha.europa.eu/systems/strategies/scoreboard2005.pdf/download>



Table 10: Overview: Scoreboard 2005, trends in musculoskeletal disorders and in upper-limb disorders

Disorders caused by lifting heavy loads						
	Denmark	Finland	Ireland	Netherlands	Sweden	UK
10-year-trend	↘	?	No significant trend	?	↗	↘
Sectors at risk	Fishing Public administration Manufacturing Health and social work Construction	Construction Manufacturing Agriculture and forestry Wholesale and retail trade Health and social work	Agriculture, forestry, fishing Health and social work Construction Mining and quarrying Public administration	?	Agriculture, forestry, fishing Construction Health and social work Manufacturing Transport, storage and communication	Health and social work Manufacturing Construction Wholesale and retail trade Transport, storage and communication
National Strategy	-	+	+	+	+	+
Sectors with highest incidence	Manufacturing Public administration Fishing Transport, storage and communication Financial intermediation Other community, social and personal service activities	Agriculture and forestry Construction Transport, storage and communication Wholesale and retail trade	Mining and quarrying Education Hotels and restaurants Manufacturing	Agriculture and forestry Fishing Construction Other community, social and personal service activities Activities of households Extra-territorial organizations and bodies Transport, storage and communication Mining and quarrying Manufacturing Electricity, gas and water supply	Manufacturing Construction Agriculture and forestry, fishing Transport, storage and communication Public administration	Manufacturing Health and social work Construction Wholesale and retail trade Public administration Transport, storage and communication



3.7.7. Finland

Self-reported MSDs

Information from the Fourth European Survey on Working Conditions (ESWC) reveals that almost half (42.5%) of all Finnish surveyed workers felt that their health is affected by work. According to the ESWC 2005, about 26.2% of the workers report backache, about 32.8% report muscular pain. By gender, and similarly to national data, the ESWC also reveals a higher prevalence of MSDs among Finnish women than among their male counterparts. By sector, the highest prevalence is found in construction, electricity, gas and water supply, hotels and restaurants and agriculture. It is also worth stressing the high share of muscular pain reported by workers in financial intermediation (44.4%).

As it was the case with age and gender, there is a higher prevalence of muscular pain than backache across all activity sectors. The occupations with highest prevalence of MSDs are service workers and shop and market sales workers, craft and related trades workers, plant and machine operators and assemblers and legislators, senior officials and managers. Finally, the self-employed report a higher share of MSDs than employees in Finland.

The Finnish surveys have not consistently asked about work-relatedness of musculoskeletal (or other) symptoms. Therefore, the relationships found in survey data are at best inferential. According to a series of surveys, about two-thirds of Finns aged 25-64 have reported at least one musculoskeletal problem during the previous month. In this short series (1997-2003), no clear overall trend has emerged.

According to the Finnish work and health surveys, roughly 70% of respondents have experienced musculoskeletal symptoms in 2003.³⁹ Women have, however, reported higher prevalence than men, and prevalence of musculoskeletal symptoms seems to increase with age. Most of the chronic diseases diagnosed by a physician are MSDs (52%) and one third of employees had musculoskeletal symptoms that were considered to be clearly work-related. Of the musculoskeletal symptoms, low-back pain was reported most often by agricultural and construction workers, whereas neck-shoulders symptoms were more evenly distributed among the different occupational groups.

With regard to economic activity, Finnish surveys and occupational disease statistics agree that agriculture is a risk sector for musculoskeletal disorders. Manufacturing does not appear to be particularly risky, but the food industry is likely to be missed in this combined category. On the other hand, the hotel and restaurant branch emerges as a risky activity in the survey data.

Concerning occupations, agricultural and elementary occupations stand out as those exposed to higher risks. The latter include cleaning, packaging and warehousing occupations, and some health care occupations. It is apparent that these workers typically experience musculoskeletal disorders that are not registered as occupational diseases (e.g., back, neck, and shoulder problems).

According to the Scoreboard 2005 conducted by the Working Group European Strategy on Health and Safety at Work, work-related upper limb disorders have been increasing over the previous ten years (see Table 10 above). The sectors with the

In Finland, women report higher shares of work-related MSDs than men.

There is a higher prevalence of muscular pain than backache across all activity sectors.

³⁹⁾ Finnish Institute of Occupational Health, Work and health survey, 1997-2001-2003



In Finland, MSDs compensated are primarily disorders of upper limbs caused by repetitive work.

highest incidence rate were: agriculture and forestry, manufacturing, construction, Transport, storage and communication, and the wholesale and retail trade.⁴⁰

Recognised cases of MSDs

Surveys and occupational disease statistics give somewhat different pictures of the occurrence of musculoskeletal disorders. The differences boil down to evidence about the work-relatedness of a particular disorder. In Finland, musculoskeletal disorders compensated as occupational diseases are primarily disorders of upper limbs caused by repetitive work, e.g., tenosynovitis, peritendinitis, epicondylitis. These are reported particularly often from food industry, agriculture, and construction work.⁴¹

Case study – MSDs and women in kitchens (Finland)



Prevalence (%) and 95% confidence intervals (CI) of musculoskeletal pain in different anatomical sites during the past 3 months among women in kitchen work.⁴²

	Prevalence %	CI (95%)
neck pain	71	67.0-75.0
shoulder pain	34	29.8-38.2
forearm and hand pain	49	44.6-53.4
low back pain	50	45.6-54.4
hip pain	19	15.6-22.4
knee pain	29	25.0-33.0
ankle or foot pain	30	26.0-34.0

Table 11: Overview: Groups affected by MSDs, Finland

	Age	Gender	Sector	Occupation
Self-reported MSDs	Increase with age Highest in 40-54 age group	Higher share reported by women	Agriculture Hotels & Restaurants	Service workers and shop and market sales workers Agricultural workers Elementary occupations, include cleaning, packaging and warehousing occupations and health care
Recognised cases*			Food industry Agriculture Construction	

* Primarily disorders of upper limbs caused by repetitive work

⁽⁴⁰⁾ Scoreboard 2005, Working group European Strategy on Health and Safety at Work, 2005, Available at: <http://fi.osha.europa.eu/systems/strategies/scoreboard2005.pdf/download>

⁽⁴¹⁾ Occupational Diseases in Finland, Finnish Institution of Occupational Health. Available at: <http://www.ttl.fi/Internet/English/Information/Electronic+publications/>

⁽⁴²⁾ Haukka E. et al., Co-occurrence of musculoskeletal pain among female kitchen workers, Int Arch Occup Environ Health.80 (2):141-8, 2006



3.7.8. France

All in all, in France, between 1996 and 2006 an approximate 275,000 cases were recognised and compensated.

Most diseases recognised were for workers in the 40-59 age group.

Diseases caused by postures affected more women.

Self-reported MSDs

Regarding the ESWC 2005, 21.6% of French workers reported suffering from work related backache while the share of those complaining of muscular pain reached 18.8%. As far as the ESWC is concerned, the highest prevalence of MSDs is found among the 40-54 age group workers. More specifically, 26.3% of workers in this age group report suffering from backache while 22.5% of them complain of muscular pain.

By age, the highest prevalence of MSDs is found among the 40-54 age group workers, whereas by gender, a higher prevalence of backache is found among men (22.2%) than women (20.9%) but muscular pain shows the reverse: 20.3% among women and 17.3% among men.

The ESWC also shows that agriculture, construction and hotels and restaurants are the sectors with the highest prevalence of MSDs. Regarding muscular pain, again agriculture reports the highest share (44.4%), followed by construction (34%) and education and health (22.5%). By occupation, skilled agricultural and fishery workers (ISCO 6) are the most affected by MSDs, with almost 60% of them reporting both backache and muscular pain (57.1%). Backache is particularly frequent too among plant and machine operators and assemblers (36.4%), craft and related trades workers (35.8%) and elementary occupations (28.1%). Regarding muscular pain, the most affected occupations, after skilled agricultural and fishery workers, are craft and related trades workers (31.7%) and elementary occupations (26.8%).

Finally, by employment status, it can be seen that self-employed workers report higher prevalence of MSDs than employees.

Recognised cases of MSDs

The AT-MP section of CNAMTS (social security organisation) recognises some diseases as occupational and compensates.

Criteria for recognition are laid down in a table specifying:

- Profession
- Agent or hazard
- Diagnosed health outcome
- Average delay between exposure and diagnosed health outcome.

There are 115 tables. The table linked to upper limb disorders was set up in 1972 and revised in 1991. Work-related musculoskeletal disorders are recorded in the French statistics under table T57 "periarticular diseases caused by gestures and postures at work", and T69 "diseases caused by vibration and shocks due to machines-tools, tools



In 2005, three quarters of the occupational diseases were musculoskeletal disorders.

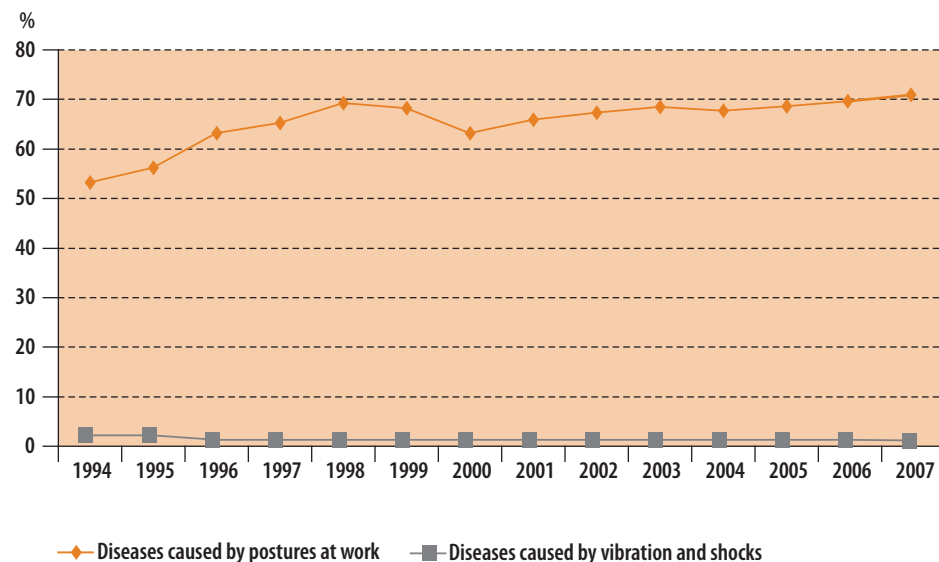
and objects and to iterative shocks at the palm heel of the hand on fixed elements". Diseases caused by postures at work (T57) accounted for 68% of all occupational diseases in 2003 with 23,672 cases (53% in 1994 with 3,963 cases). Diseases caused by vibration and shocks (T69) accounted for 1% of all occupational diseases; their number increased regularly from 134 in 1994 to 187 cases in 2003.⁴³ (Figure 38).

The number of recognised occupational diseases in France has also risen significantly between 1990 and 2006. In 1990, 6,592 occupational diseases were recognised in France (4,236 with absence from work) whereas by 2006 the figure has risen to 55,700 (41,871 with absence from work). All in all, over 275,000 cases of MSDs have been recognised and compensated in ten years.

In a press release accompanying the national Plan on Health and Safety at Work (Plan Santé Travail 2005-2009), the French government highlighted an increase of about 20% per year of musculoskeletal disorders in 10 years.

The number of recognised occupational diseases is increasing, but still the real extent of diseases is regarded to be significantly underestimated.

Figure 38: MSDs – Proportion (%) of all recognised cases, 1994-2003, CNAMTS, France⁴⁴

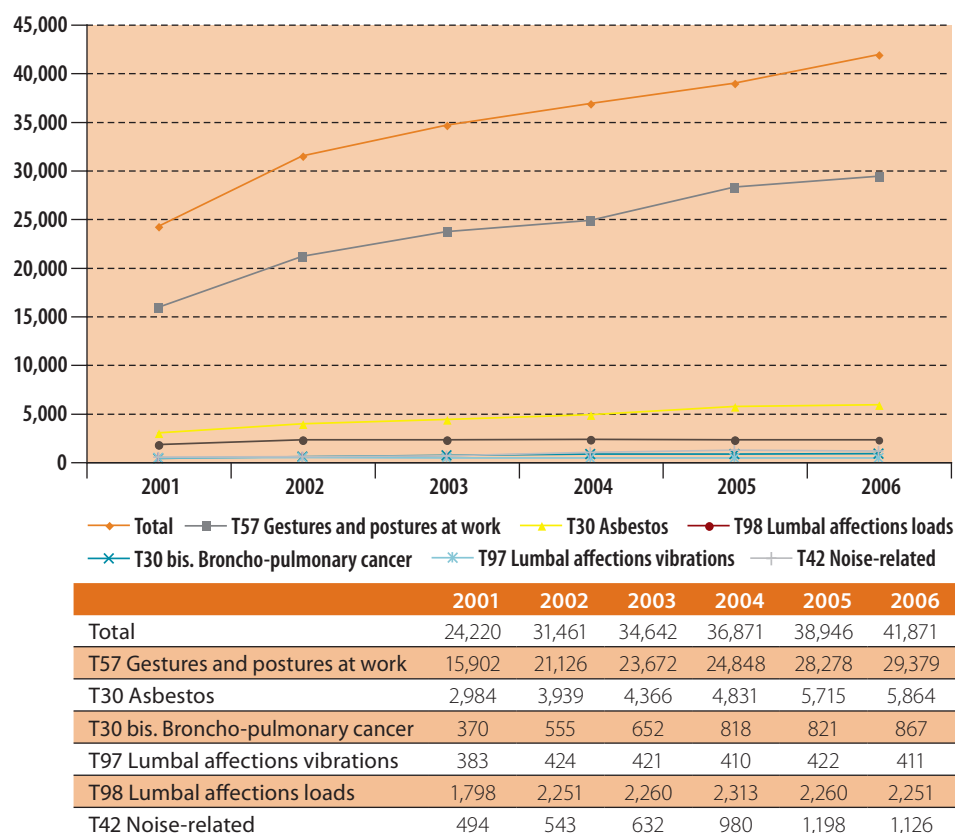


Source: CNAMTS

⁽⁴³⁾ CNAMTS, National statistics for occupational accidents and diseases and accidents to and from work, Available at: http://www.risquesprofessionnels.ameli.fr/fr/synthese/statistiques_synthese_1.php

⁽⁴⁴⁾ http://www.risquesprofessionnels.ameli.fr/atmp_media/2008-0247SinistraliteATMP20032007.pdf



Figure 39: Trends in the distribution of occupational diseases, Number of recognised (major) occupational diseases, with absence of work, 2001-2006, CNAMTS


Source: CNAMTS

Table 12: Limb disorders 2000-2004 by specific health problem and location, France

Localisation	%		%
Shoulder	30	Total shoulder	29.5
		Of which	
		Stiff shoulder	12.8
Elbow	19	Pain in shoulder	16.4
		Total elbow	19.2
		Of which	
Wrist and hand	47	Epitrochleitis	1.8
		Epicondylitis	16
		Total hand	47.3
		Of which	
		Carpal tunnel syndrome	37.3
Total upper limbs	96	Tendinitis	6.8
		Tenosynovitis	2.9
		Lower limbs	4
Total	100		

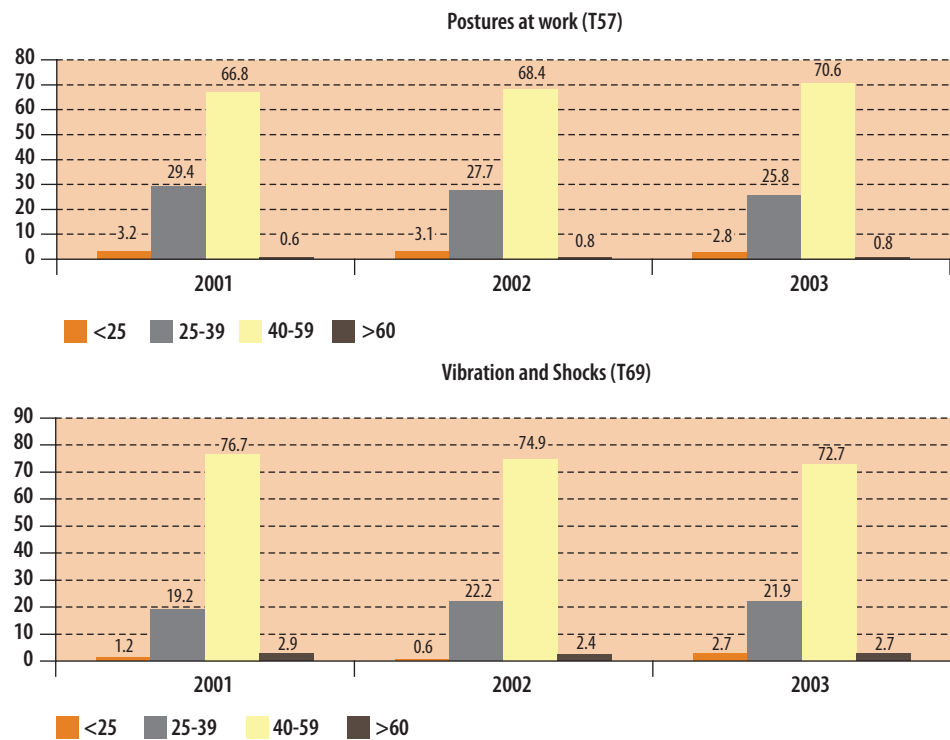
Source: CNAMTS

People aged 40-59 are particularly concerned by MSDs: 73% for the diseases caused by vibration, 71% for the diseases caused by gestures and postures.



Most MSDs are recognised among workers aged 40-59.

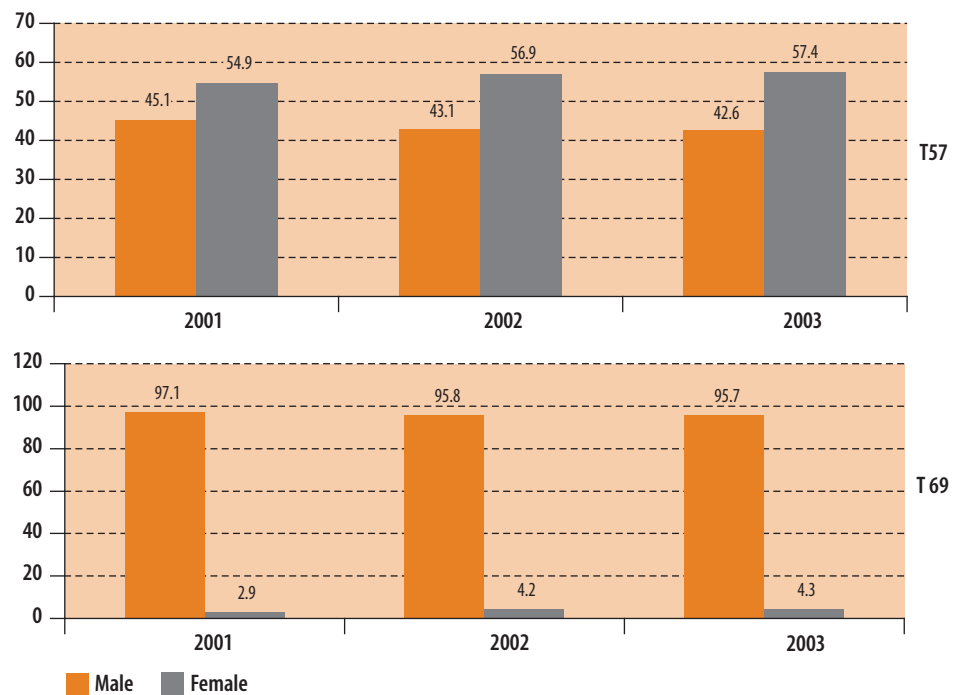
Figure 40: Percentage distribution by age of occupational diseases caused by postures at work (T57) and vibration and shocks (T69), 2001-2003, France



Source: CNAMTS

The diseases caused by vibration and shocks concerned especially men (96%), while the diseases caused by gestures and postures concerned women in 57% of the cases.

Figure 41: Percentage distribution by gender of occupational diseases caused by postures at work (T57) and vibration and shocks (T69), 2001-2003



Source: CNAMTS

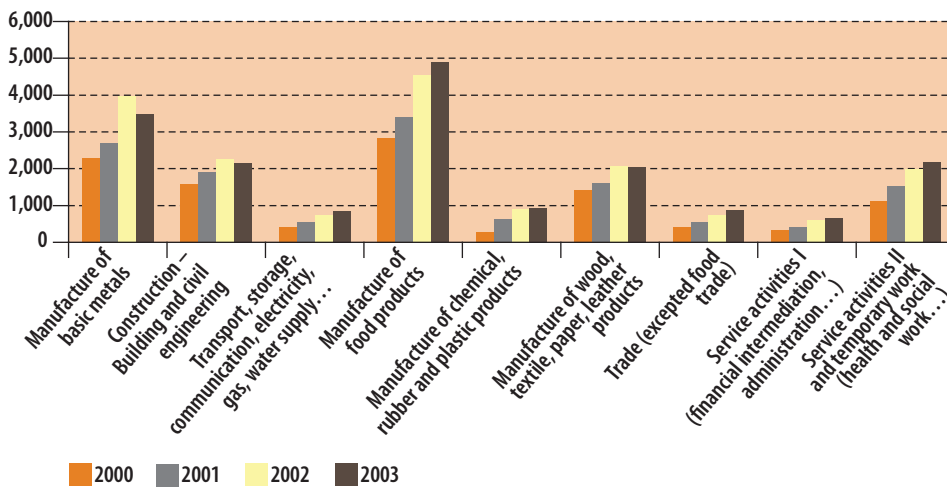




By courtesy of INSHT, Spain

Diseases caused by postures at work were recorded particularly in the sectors manufacturing of food products (D) and of basic metals (A). For the diseases caused by vibration the construction sector (B) and the manufacture of basic metals sector (A) can be mentioned. For both table T57 and T69, craft and related trades workers, plant and machine operators, and elementary occupations were the occupations the most reported.⁴⁵

Figure 42: Distribution by sector of occupational diseases caused by postures at work (T57), France



Source: CNAMTS

Three categories concentrated the bulk of diseases caused by postures at work in 2003: craft and related trades workers (37% of all cases), plant and machine operators (23%) and elementary occupations 22%.

These three occupations are also significant for diseases caused by vibration and shocks, especially for the craft and related trades workers, which accounted for 76% in 2003 with 143 cases.

Case study – Backache and gender differences

According to the ESTEV⁴⁶ survey, there were differences between men and women, depending on socio-professional category and sector of occupation. The socio-professional category with the most joint and low back pain is that of blue collar worker. The highest frequency of back pain, in almost all age groups, is to be found among blue collar workers, male and female. The frequency of joint and



⁴⁵ CNAMTS, National statistics for occupational accidents and diseases and accidents to and from work, Available at: http://www.risquesprofessionnels.ameli.fr/fr/synthese/statistiques_synthese_1.php

⁴⁶ ESTEV (Enquête Santé, Travail et Vieillesse), survey: health, work and ageing, see <http://www.hcsp.fr/hcspi/docspdf/adsp/adsp-21/ad214545.pdf>



low back pain among managerial staff is far from negligible, with the increase being virtually identical in both categories between the ages of 37 and 52. In men, it is in building and civil engineering at all ages that the highest frequencies of joint and low back pain are found. In women, 25% to 30% of them have low back pain from the age of 37 onwards. It is in non-trading services and the agri-food industries that at the age of 52 the most joint and low back pain is found. The frequency of low back pain in women in industries is the same as for men.

Case study – MSDs in cleaning workers (France)



A survey of cleaners in the Paris region in France found that men had more back pain and women, more joint pain. A group of 924 workers in the Ile-de-France (Paris) region was followed for a year by the physicians of an inter-enterprise medical service. Social (background, status, living conditions, etc.), occupational (job titles, operations, etc.) and medical data on the individuals were collected. The medical data bore especially on occupational accidents, skin diseases and problems of bones and joints. 37.5% of women report problems with one or more joints, against 26% of men.

There was a marked gender-related differentiation in terms of the location of the painful joint: men suffered back pain more than women (57%), whereas women complain more of the other joints, in particular, shoulders and knees. Having pains in several joints at the same time was more common among women: on average women complain of 1.8 joints affected, against 1.23 in men.⁴⁷

Table 13: Overview: Groups affected by MSDs, France

	Age	Gender	Sector	Occupation
Self-reported MSDs	40-54	Backache: men	Agriculture, construction,	Skilled agricultural workers
		Muscular pains: women	Hotels and restaurants,	Craft and related trades workers
			Education and health	Elementary occupations
Recognised occupational diseases	40-59	Females	Manufacture of food products	Craft and related trades workers
			Manufacture of basic metals	Plant and machine operators
		Males	Construction sector Manufacture of basic metals sector	Elementary occupations
Diseases caused by gestures and postures at work				
Diseases caused by vibration and shocks				

⁽⁴⁷⁾ Enquête sur les ouvriers nettoyeurs Opatowski S., Varailac P., Richoux C., Sandret N., Peres L., Riffiod D., Iwatsubo Y., Documents pour le médecin du travail, 3rd Quarter 1995, No.63, p.167-180. 31. Available at: [http://www.inrs.fr/inrs-pub/inrs01.nsf/intranetobject-accesparreference/TF%2060/\\$file/tf60.pdf](http://www.inrs.fr/inrs-pub/inrs01.nsf/intranetobject-accesparreference/TF%2060/$file/tf60.pdf)



3.7.9. Germany

Self-reported MSDs

Younger workers report to be highly affected by MSDs.

Different patterns of MSDs by gender: women are more affected by pains in the neck/shoulder, arms/hands and feet/legs (including swollen legs), while men are more affected by problems in the knees and hip.

Only very few MSDs recognised and compensated, far below overall average rates, especially for back disorders.

Data from the Fourth European Survey on Working Conditions (ESWC) reveal that almost one quarter (23.6%) of German workers feel that work affects their health. As far as MSDs are concerned, almost one fifth of surveyed workers (18.8%) report suffering from backache while 14.8% complain of muscular pain. In 2000, women complained more about pains in neck and shoulder, men have more problems with the knees.

The national BIBB/IAB surveys are large representative surveys of 0.1% of the labour force in Germany concerning qualifications, career history and current occupational situations. These surveys are conducted jointly by the Federal Institute for Vocational Training Affairs (BIBB), and the former Institute for Employment Research (IAB), now in co-operation with the Federal Institute for Occupational Safety and Health (BAuA) at intervals of 6-7 years. The aim of the studies is to obtain differentiated representative information about the labour force on the one hand and about jobs on the other. Regarding research into occupation and qualification, the surveys constitute a social science addition to the micro census survey conducted annually by the Federal Statistical Office, whose legally stipulated questionnaire is restricted to a few key structural variables.

The sample size of the BIBB/ IAB; BIBB/ BAuA surveys, which is unusually large for such surveys in empirical social research, permits differentiated analyses of occupational fields, industries and various labour force sub-groups. Each of the individual surveys has a special focus subject. With all flexibility in incorporating new subject areas, in the surveys conducted so far a broad set of comparable variables has been included in order to determine structural changes over time.

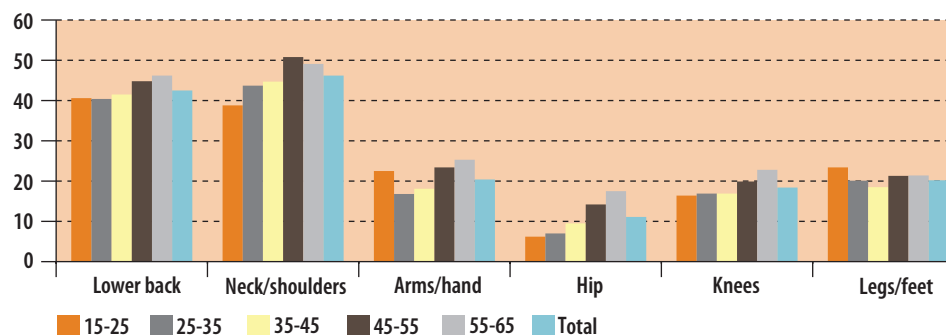
The BIBB/IAB survey has been renamed BIBB/BAuA survey, and the survey carried out in 2005 covered 20,000 workers.

According to the analysis of the BIBB/BAuA survey, which provides information on MSDs broken down by body part, the highest rates of each MSDs (lower back, neck/shoulder, hip, knees) are found among those aged 45 and above. They report higher than average prevalence shares for all body parts, the highest being lower back pain and pains in the neck and shoulder. In any case, it is worth stressing that younger workers (under 25 years old) also report significant shares of MSDs, the highest for pain in legs/feet.⁴⁸

⁽⁴⁸⁾ Arbeitsbedingungen in Deutschland - Belastungen, Anforderungen und Gesundheit, BauA Website, http://www.baua.de/nn_56326/de/Informationen-fuer-die-Praxis/Statistiken/Arbeitsbedingungen/pdf/Tabellen-Beschwerden.pdf



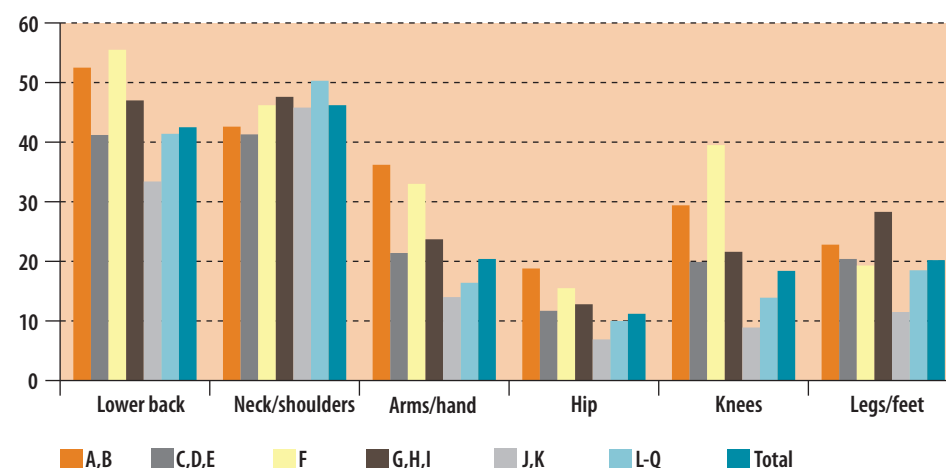
Figure 43: Prevalence of MSDs during/after work, by body part and age group, in %, BIBB/BAuA survey, 2006, Germany



Source: BIBB/BAuA survey

As expected, workers in agriculture and construction report the highest rates of MSDs. Neck and shoulder problems are above average in the administration and service sector (50.3%), while legs and feet problems are the highest in the whole sale, retail, hotel, restaurants and transport sector (28.3%).

Figure 44: Prevalence of MSDs during/after work, by body part and sector, in %, BIBB/BAuA survey, 2006, Germany



Source: BIBB/BAuA survey

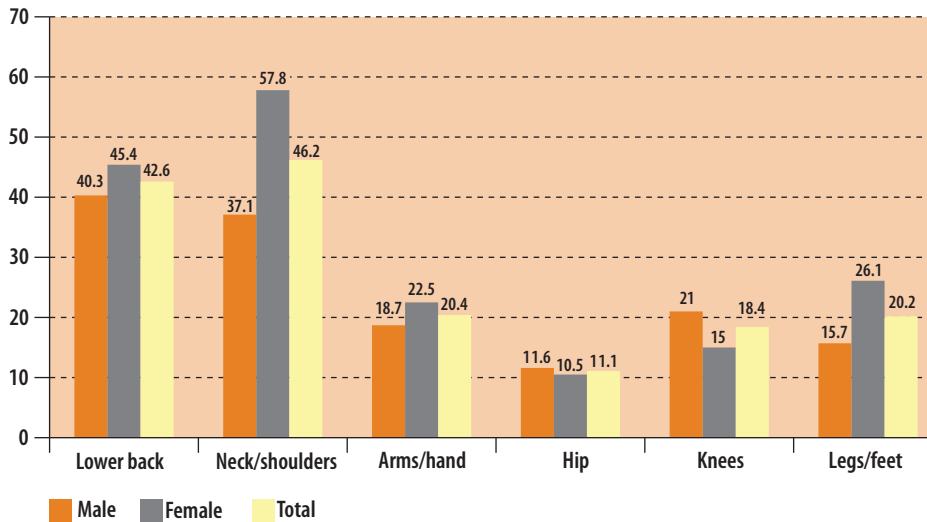
Sector groups (sections in NACE Rev 1.1) used in tables and figures:

- | | |
|-----------------------------------|--|
| A: Agriculture, hunting, forestry | J: Financial intermediation |
| B: Fishing | K: Real estate, business activity |
| C: Mining | L: Public administration and defense |
| D: Manufacturing | M: Education |
| E: Electricity, gas and water | N: Health and social work |
| F: Construction | O: Other community, social and personal service activities |
| G: Whole sale and retail, repairs | P: Activities of households |
| H: Hotels and restaurants | Q: Extra-territorial organizations and bodies |
| I: Transport and communication | |



When looking at data by gender, not surprisingly, different patterns of MSDs emerge: women are more affected by pains in the neck/shoulder, arms/hands and feet/legs (including swollen legs), while men are more affected by problems in the knees and hip

Figure 45: Prevalence of MSDs during/after work, by body part and gender, in %, BIBB/BAuA survey, 2006, Germany



Source: BIBB/BAuA survey

Workers with contracts on a permanent basis show slightly more back pain and neck/shoulder pain than workers with a fixed term contract.⁴⁹

Recognised cases of MSDs

According to the SUGA⁵⁰ reports, the annual national reports on safety and health at work, the highest number of working days lost are due to musculoskeletal disorders: 23.7% in 2006. Hence, MSDs caused nearly a quarter of all days lost. This had an economic impact which was estimated to represent 0.4% in productivity loss and MSDs represent the highest percentage share of productivity loss among all occupational diseases.

The number of reported MSDs due to physical strain and carrying/lifting of loads or bad posture decreased from 1999-2004. In 2006, of all 64,182 cases of occupational diseases, 7,181 cases were MSDs (back pain and meniscus disorders); this is equivalent to about 11%.

Regarding compensated occupational diseases, it can be said that meniscus disorders have a higher number of compensations compared to the disorders of the vertebral column.⁵¹ (Figure 46-47). However, and despite the significant difference between reported and recognised diseases, the recognition rate has increased slightly in the period under consideration for the meniscus disorders and remained relatively the

⁴⁹⁾ BIBB/ IAB-Erhebungen Berufliche Qualifikation und Erwerbssituation in Deutschland, Federal Institute for Vocational Training Affairs (BIBB)/ Institute for Employment Research (IAB) Bundesanstalt für Arbeitsschutz und Arbeitsmedizin (BAuA) also took part in the last survey (1998/1999) http://de.osha.eu.int/statistics/erhebungen_und_umfragen, <http://www.bibb.de/de/>

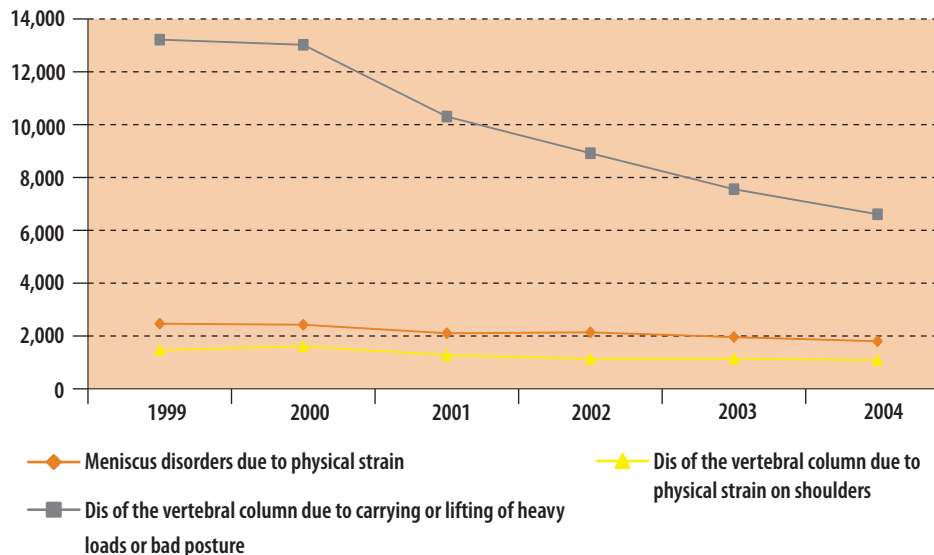
⁵⁰⁾ Bericht zum Stand von Sicherheit und Gesundheit bei der Arbeit, latest report: SUGA 2006, http://de.osha.europa.eu/statistics/statistiken/suga/suga2006/3_ueberblick.pdf

⁵¹⁾ SUGA (Sicherheit und Gesundheit bei der Arbeit), Report on the Current Level of Safety and Health at Work, Available at: <http://osha.europa.eu/fop/germany/en/statistics/statistiken/suga>



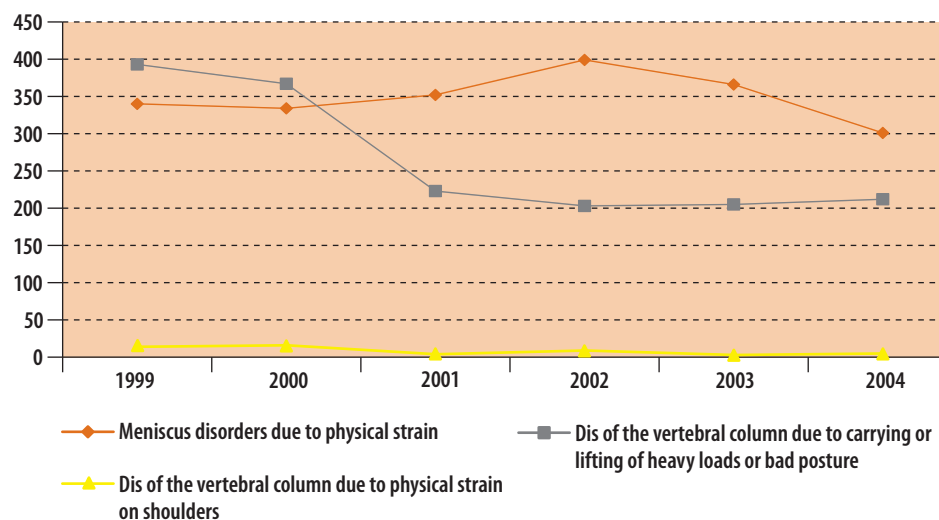
same for the disorders of the vertebral column. The percentage share of recognised meniscus disorders is notably higher than that of disorders of the vertebral column. In any case, the recognition rate of MSDs is far below the overall rate of occupational diseases, which fluctuates around the 25% mark.

Figure 46: Number of reported musculoskeletal diseases 1999-2004, SUGA, Germany



For 2006, the ratios of reported to recognised diseases are about 3% for back pain and 18.6% for meniscal disorders.

Figure 47: Number of accepted musculoskeletal diseases 1999-2004, SUGA, Germany



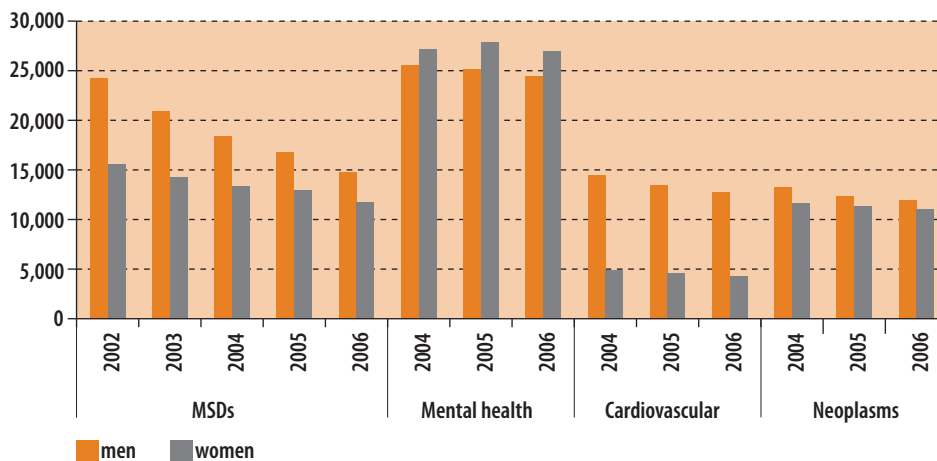
Source: SUGA



For 2006, the ratios of reported to recognised diseases are 5839/198 (about 3%) for back pain and 1342/249 (18.6%) for meniscal disorders.

However, despite the low recognition rates, the impact on work-related disability pensions is high. As can be seen in Figure 48 below, musculoskeletal diseases are the second cause contributing to newly attributed disability pensions. It is important to note that for men the average age for attribution of a disability pension is about 50 years while for women it is about 49.

Figure 48: Number of newly attributed disability pensions by cause of disease, SUGA 2006⁵²



Musculoskeletal diseases are the second cause for newly attributed disability pensions. For men the average age for attribution of a disability pension is about 50 years while for women it is about 49.

Source: SUGA

⁽⁵²⁾ SUGA 2006, Rentenzugänge wegen verminderter Erwerbsfähigkeit nach Diagnosegruppen, 2004-2006



Table 14: Overview: Groups most affected by MSDs, Germany

	Age	Gender	Sector	Occupation
Self-reported MSDs				
Backache	45 years and older, all age groups highly affected	Women	Construction Agriculture Whole sale and retail, repairs Hotels and restaurants Transport and communication	Permanent workers
Neck – shoulder	Highest for 45-55, followed by 55-65	Women	Public administration and defense Education Health and social work Other community, social and personal service activities Activities of households Extra-territorial organizations and bodies Wholesale and retail, Hotels and restaurants, Transport and communication Construction	
Hands – arms	High for workers <25, and for older workers	Women	Agriculture Construction Whole sale and retail, repairs Hotels and restaurants Transport and communication	
Hip	55-65	Men		
Knees	55-65	Men	Construction Agriculture Wholesale, retail	
Leg – feet	Young workers, older workers also affected	Women	Wholesale, retail Hotels and restaurants Transport sector Agriculture	

3.7.10. Greece

Self-reported MSDs

About 47% of Greek workers report backache according to the ESWC 2005, and about 45.7% report muscular pain.

Unfortunately there are no statistics for MSDs by sector in the country. The only specific data (however only for some sectors or sub-sectors only) comes from Hellenic Institute for Occupational Health and Safety (ELINYAE), which has conducted a number of sectoral surveys. Some results are presented here.^{53, 54, 55}

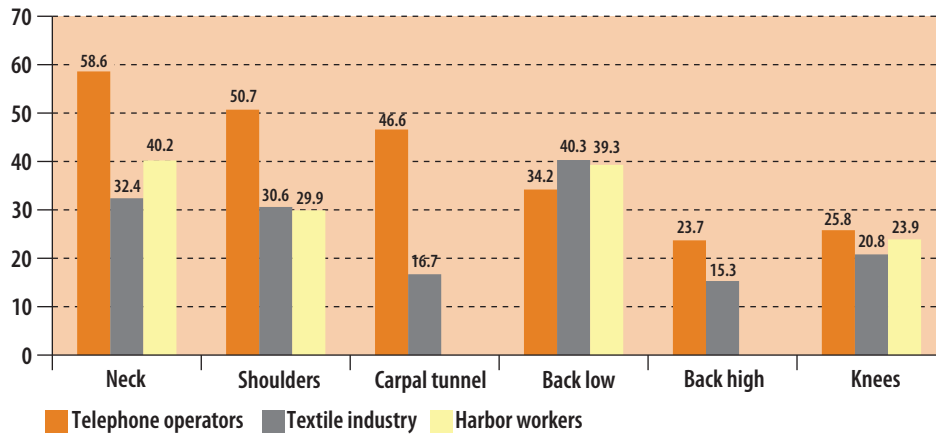
⁽⁵³⁾ Telecommunications sectoral survey, Hellenic Institute for Occupational Health and Safety, 2006, http://www.elinyae.gr/el/lib_file_upload/telecom.1110201673307.pdf

⁽⁵⁴⁾ Derrick Operators and Harbor Workers sectoral survey, Hellenic Institute for Occupational Health and Safety, in press, 2006

⁽⁵⁵⁾ Textile industry sectoral survey, Hellenic Institute for Occupational Health and Safety, in press, 2006



Figure 49: Results of sectoral surveys, 2006, % workers reporting health problems, ELINYAE, Greece



Source: ELINYAE

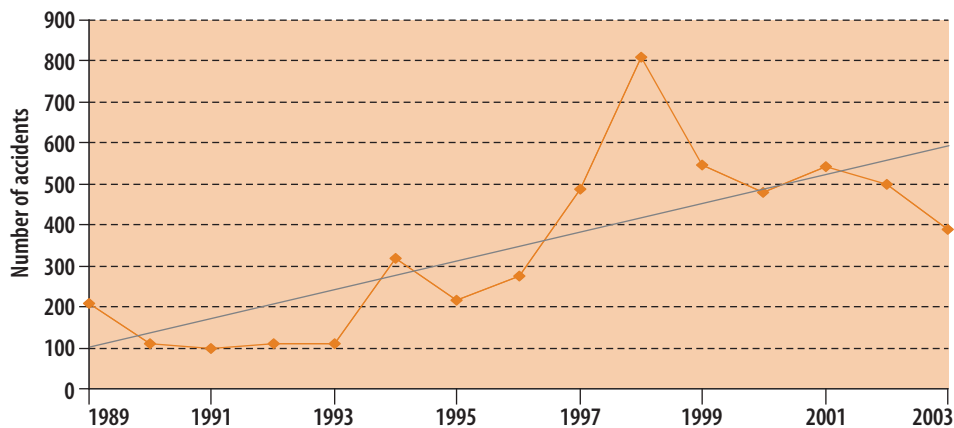
MSDs related accidents

According to data (1999-2005) collected by the Greek labour inspectorate (SEPE) which concern occupational accidents reported to SEPE and related to MSDs, classified by sector of economical activity, the following facts should be mentioned:

Due to the nature of activities involved, the manufacturing and mining sectors account for a large portion of the total number of MSDs-related accidents (48%). However accidents seem to present a downward tendency since 2002. Wholesale and retail, repairs comes second in number of MSDs related accidents, corresponding to 20% of the total reported from 1999 to 2005. Transport and communication takes the third place reporting a total of 180 accidents (11.5%) over the six years. The construction sector has reported some 148 accidents, representing 9.5% of the total.

Although there is a serious underreporting problem in workplace accidents (and even more in occupational diseases, including MSDs). Figure 50 shows some MSDs reported as accidents to the main private sector insurance institution:

Figure 50: Accidents at work due to physical strain or over exertion (1989-2003), Greece



Source: SEPE

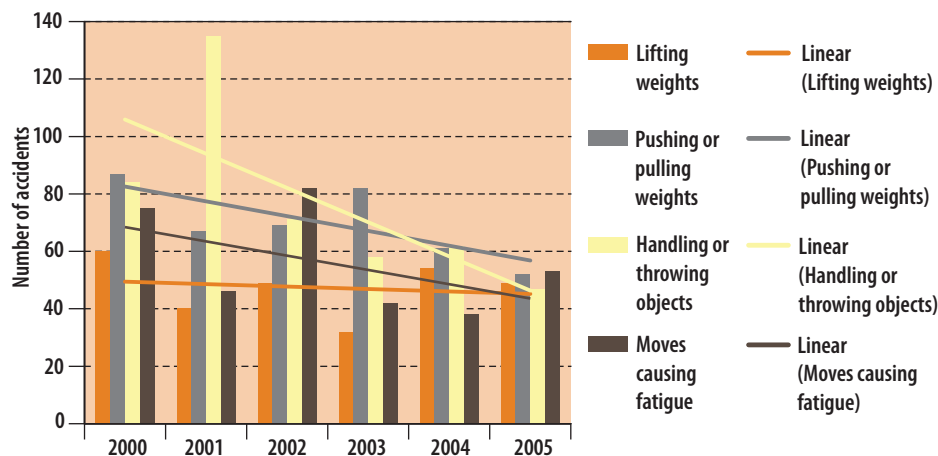
This information can be more clearly presented in Figure 51. Accidents at work due to physical strain or over-exertion since 1989 have an upward tendency. The 1990s saw a clearly increasing trend in MSDs accidents, which seems to start changing from 2000



onwards. One indication that could support this tendency is the increasing trend of employment in some sectors that involve increased physical strain (construction, hotels & restaurants).⁵⁶

Another source of information is the sample of workplace accidents reported to Labour Inspectorate. Although the problem of underreporting is also present, some comparative conclusions can be drawn. Information from this table is also presented in the following graph.

Figure 51: Accidents at work by work activity, Greece



Source: SEPE

Since 2000, all accidents due to certain work activities (lifting weights, pushing or pulling weights, handling or throwing objects, moves causing fatigue) are shown to have a downward tendency, although the total number of accidents reported to the Labour Inspectorate increases.⁵⁷

3.7.11. Ireland

Self-reported MSDs

The ESWC 2005 concludes that about 14.5% of the workers report backache, about 13.8% report muscular pain.

According to the earlier mentioned scoreboard 2005 conducted by the Working Group European Strategy on Health and Safety at Work, no significant trend in musculoskeletal disorders caused by lifting heavy loads and work-related upper limb disorders can be observed within the previous ten years. The sectors with the highest incidence rate of musculoskeletal disorders caused by lifting heavy loads were agriculture, health and social work, construction, mining and public administration (see also Table 10). The sectors with the highest incidence rate of work-related upper limb disorders were mining, education, hotels and restaurants and manufacturing.⁵⁸

⁽⁵⁶⁾ Annual Occupational Accidents Report 2003, I.K.A. Social insurance institute, http://www.ika.gr/gr/infopages/stats/stat_report_results.cfm

⁽⁵⁷⁾ Annual Report 2005, S.E.P.E. Ministry of employment and social protection, <http://www.ypakp.gr/>

⁽⁵⁸⁾ Scoreboard 2005, Working group European Strategy on Health and Safety at Work, 2005, Available at: <http://osha.europa.eu/fop/finland/fi/systems/strategies/scoreboard2005.pdf>



Case study – Safety in manual handling for migrant and seasonal workers (Ireland)⁵⁹

This project addressed the increasing occupational safety and health (OSH) problems among immigrants and foreign workers in Ireland. Its aim was to improve their access to information on good practices, bearing in mind that the seasonal nature of their work and difficulties with the language create barriers to information. It is intended to be transferable to other countries with similar problems.



The project promoted the use of 'Working wisely', a series of short instructional videos for SMEs that employ both seasonal and foreign national workers. These clearly explain the principles of safe manual handling, and related ergonomics, in the workplace. The project-holders set out to create a safety information training resource of a high enough quality to enable the material to be used for a minimum of five years, with the capability of having further language versions added according to demand. They also wanted to make sure that it was relevant to a physically disabled audience.

They produced a training pack that included a CD-ROM in four languages (English, Mandarin, Romanian and Russian) and distributed it widely. The authority advised on the languages they felt were key to training minority sectors in Ireland in the hospitality sector. It was due to be promoted on the Irish Health and Safety Authority's website and available to any group for the cost of postage and packaging only, for the remainder of 2004. The approach was to use engaging, humour-based drama to illustrate the principals of safe lifting and manual handling. They were written and designed to make the message easier for non-English native speakers to understand.

An accompanying booklet for employers was also produced, in English only, outlining the content, purpose and methodology of the programme. The project-holders sent an information pack on the initiative — containing the CD ROM, a leaflet and a questionnaire for feedback — to a number of social partners.

The initiative was co-financed under the Agency-coordinated SME Funding Scheme 2003-2004.



⁽⁵⁹⁾ European Agency for Safety and Health at Work, EU-OSHA, Promoting health and safety in European Small and Medium-sized Enterprises (SMEs), SME Funding Scheme 2003-2004, 2005. p.50. Available at: <http://osha.europa.eu/en/publications/reports/ag05001>



3.7.12. Latvia

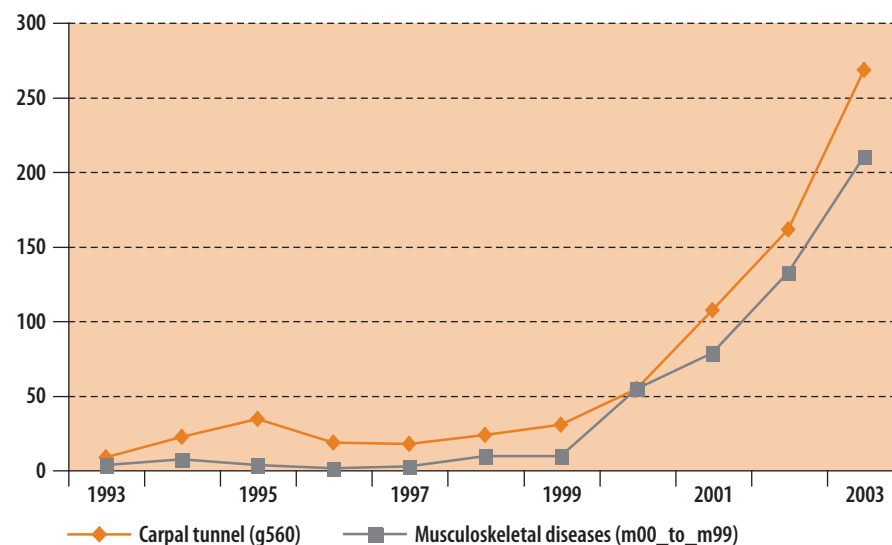
Self-reported MSDs

About 44.1% of the workers report backache according to the ESWC 2005, about 35.5% report muscular pains.

Recognised cases of MSDs

According to the database of occupational diseases in Latvia, there has been a remarkable increase of carpal tunnel syndrome and musculoskeletal diseases since 1993. (Figure 52).

Figure 52: Number of occupational diseases, 1993-2003, database of occupational diseases in Latvia



Source: Database of occupational diseases, Latvia

3.7.13. Netherlands

Self-reported MSDs

According to the ESWC 2005, about 13.8% of the workers report backache, about 15.6% report muscular pain.

According to the Scoreboard 2005 conducted by the Working Group European Strategy on Health and Safety at Work, work-related upper limb disorders had been increasing over the previous ten years (see Table 10).

The sectors with the highest incidence rate are: agriculture, construction, transport and communication and mining, manufacturing and electricity, gas and water supply.⁶⁰

⁽⁶⁰⁾ Scoreboard 2005, Working group European Strategy on Health and Safety at Work, 2005, Available at: <http://osha.europa.eu/fop/finland/fi/systems/strategies/scoreboard2005.pdf>



3.7.14. Poland

Self-reported MSDs

About 45.8% of the Polish workers report backache according to the ESWC 2005, and about 43.9% report muscular pains.

Recognised cases of MSDs

Between 2000 and 2005, the total number of recognised and notified cases of occupational diseases has decreased in Poland by more than 55% - from 7,339 cases in 2000 to 3,249 in 2005. The incidence rate per 100,000 employed has changed from 46.9 in 2000 to 25.5 in 2005. At the same time the number of occupational diseases related to musculoskeletal system disorders (including chronic diseases of locomotor and peripheral nervous system and vibration syndrome) has decreased by about 47% - from 516 cases in 2000 to 275 in 2005 (Figure 53).

These figures may seem surprising, but, according to the Nofer Institute of occupational medicine, considerable changes have been observed as to the number of workers with an employment contract: the proportion of workers employed by means of the contract for work has been decreasing while an opposite trend has been noted with respect to the self-employed workers. In 2005, according to the same source, the self-employed are reported to make up as much as 40% of all the working population.⁶¹ In the 1980's, the system of preventive care is reported to have covered 6,500,000 workers in approximately 9,000 plants. At the end of 2000, this referred to as many as ca. 10,000,000 workers in about 2,300,000 registered enterprises, a particular challenge for inspection services.

Chronic diseases of locomotor and peripheral nervous system and vibration syndrome are mostly recognised in the age groups 40 – 49 and 30 – 39.

According to these figures, women are more likely to suffer from chronic diseases of the peripheral nervous system than men (incidence rates are 2-4 times higher), while vibration syndrome is more frequently recognised for men (incidence rates 7-13 times higher). This is explained to be mainly because of the workforce structure (e.g. men are more likely to perform tasks for which vibration syndrome is most common).

Mining and manufacturing are activities with the highest numbers of recognised cases of occupational diseases in 2000-2005. Vibration syndrome is one of the most frequently recognised diseases in these activities (60 cases in 2005).

The sector with highest numbers of chronic locomotor and nervous system diseases are education and health care. In the latter, the highest number of cases of occupational diseases has been recognised for personal care and related workers.⁶²

The incidence rates per 100,000 employed persons for chronic diseases of locomotors and nervous system have not changed significantly over the period considered. It was 0.8 in 2005 (1.7 in 2000). For chronic diseases of peripheral nervous system the figures are 1.1 in 2005 (1.5 in 2000) and for vibration syndrome 1.0 in 2005 (2.0 in 2000).

Women are more likely to suffer from chronic diseases of peripheral nervous system than men (incidence rates are 2-4 times higher).

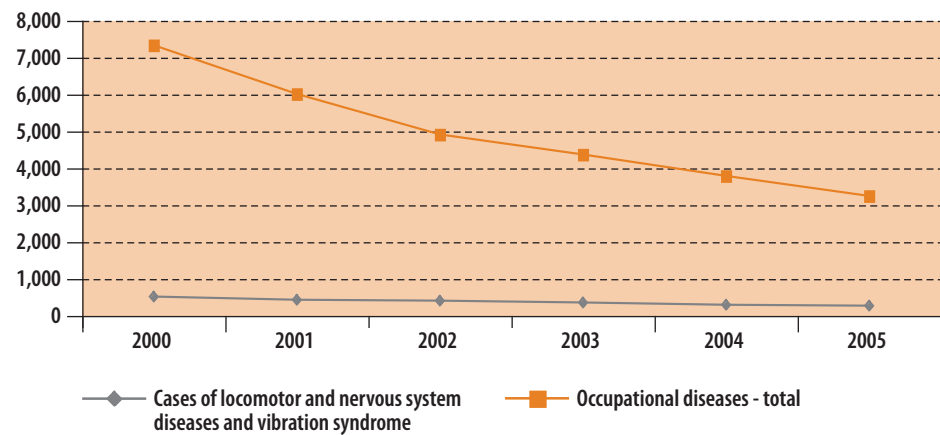
⁶¹ Cardiovascular diseases as an occupational health problem in Poland, Alicja Bortkiewicz, Konrad Rydyński, Nofer Institute of Occupational Medicine, presented at the 4th International Conference on Work Environment and Work Cardiovascular Diseases, March 9-11, 2005, Newport Beach, California Available at: <http://www.workhealth.org/2005%20ICOH/fri%20presentations/F23%20bortkiewicz.pdf>

⁶² Central Register of Occupational Diseases, The Nofer Institute of Occupational Medicine, <http://www.imp.lodz.pl/>



In general, the cases of vibration syndrome are the most important of the chronic musculoskeletal diseases. However, in 2005, carpal tunnel syndrome (within chronic diseases of peripheral nervous system) were the most frequently recognised occupational musculoskeletal diseases – 33% of all cases.

Figure 53: Occupational diseases in Poland, by year, Central Register of Occupational Diseases, Poland



Source: Central Register of Occupational Diseases



Case study – MSDs and food production (Poland)

92 women employed as packers in a food production enterprise were examined in order to identify possible disorders related to repetitive work. The women had packed 5,000 – 10,000 different food products per shift. The results of examination were as follows:

- 35 % of women the objective symptoms of carpal tunnel syndrome have been identified,
- 26% of women have reported the subjective symptoms of carpal tunnel syndrome,
- 6% of women the objective symptoms of other overuse and pressure syndromes have been identified.
- Only 29% of the women had no symptoms of overuse and pressure syndromes of hands.

Symptoms of overuse and pressure syndromes of hands were common for women working as packers 5-6 years and longer.⁵³

⁽⁶³⁾ Bugajska, J., Łastowiecka, E., Hands disorders related to use, overuse and pressure, *Bezpieczeństwo pracy* 12/2002

Table 15: Overview: Groups concerned by MSDs, Poland

Recognised occupational diseases	Age	Gender	Sector	Occupation
Chronic diseases of locomotor system	30-49	No difference	Mining	Craft and related trades workers
Chronic diseases of peripheral nervous system		Females	Manufacturing Education and Health	Plant and machine operators
Vibration syndrome		Males	Agriculture Mining Manufacturing	Elementary occupations

3.7.15. Portugal

Self-reported MSDs

According to the ESWC 2005, about 30.7% of the workers report backache, about 28.8% report muscular pains.

Work-related musculoskeletal disorders seem to prevail in construction, mining and manufacturing. Men are more affected in craft, plant machines operators and assemblers, while women are more affected as service workers and shop and market sales workers. The most common complaints are long periods standing and walking, tiring postures, repetitive tasks, and heavy lifting. Mainly female and young workers in their first job and workers on a fixed term contract seemed to be more affected by MSDs.⁶⁴

Table 16: Overview: Groups affected by MSDs, Portugal

	Age	Gender	Sector	Occupation	Employment status
Self-reported MSDs	Young workers	Females	Construction Mining and manufacturing	Women: Service workers and Sales workers Males: craft, plant machines operators and assemblers	Fixed term contract

3.7.16. Slovenia

Self-reported MSDs

About 45.9% of the workers report backache according to the ESWC 2005, about 38.2% report muscular pains.

⁽⁶⁴⁾ Evaluation of the working conditions, Departamento de Estatística do Trabalho, Emprego e Formação Profissional, April 2001, <http://www.dgeep.mtss.gov.pt/estatistica/condicoes/ct.pdf>

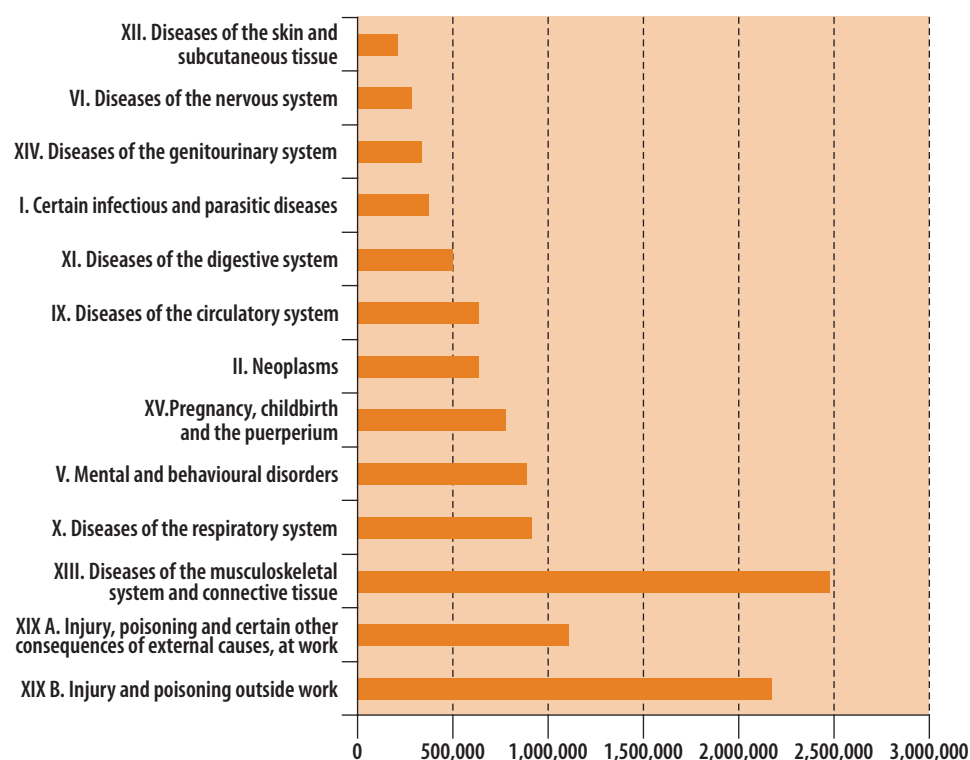


Sick leave due to MSDs

In an analysis of sick leave for Slovene workers in 1997, older workers were found to have more complaints regarding musculoskeletal diseases than young workers. In the years 1991 to 1998, women had been more often away from work because of MSDs. In 1990, the first year of collecting data by gender, the situation was reversed.⁶⁵

As can be seen from the chart below, after accidents, musculoskeletal disorders are the main cause of absenteeism among workers, followed by respiratory disorders and mental health problems: 2,478,906 out of 13,026,763 days lost (19%) are due to MSDs.

Figure 54: Number of sick leave days for full-time employed persons by ICD-10 chapters 2006, Slovenia



Source: Health Statistical Yearbook-Slovenia 2006

Attendance for outpatient curative services and causes of accidents

The national database on out-patient attendances⁶⁶ provides additional information regarding MSDs: Almost half of curative attendances⁶⁷ are because of back pain, which is also the first reason for visits of workers to general practitioners in Slovenia, while shoulder injuries cover only 3% of the cases.

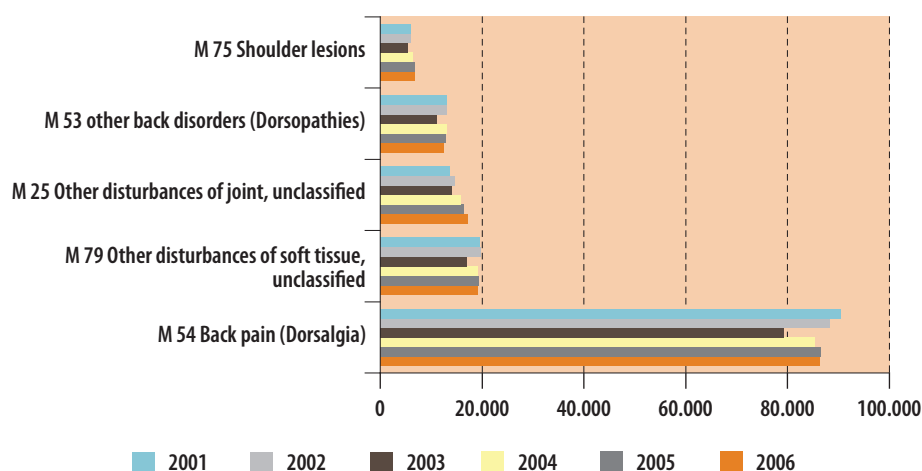
⁶⁵ Sick leave, Slovenia (2004); Institute of Public Health of the Republic of Slovenia

⁶⁶ Zdravstveni statistični letopisi: <http://www.ivz.si/index.php?akcija=novica&n=834>

⁶⁷ Persons seeking curative treatment



Figure 55: Five most frequent causes for attendance of employees in outpatient health care services by ICD-10, 2001-2006, Slovenia



Source: Health Statistical Yearbook-Slovenia 2001-2006

Slovenian statistics on accidents at work⁶⁸ provide data about the causes of accidents. In 1998 and 1999 manual handling has caused 4.3 and 5% of accidents at work, respectively.

3.7.17. Spain

Self-reported MSDs

According to the ESWC 2005, about 29.1% of the workers report backache, about 27% report muscular pains.

The National Survey of Working Conditions (Encuesta Nacional de Condiciones de Trabajo), face-to-face interviews with workers in their enterprises, describes a broad range of questions in the field of working conditions. In the last Survey 11,054 workers were interviewed in the whole of the country. It represents an important source of information on MSDs.

Similarly to other national surveys, for example in Germany and France, it provides detailed information about pain and health complaints in different parts of the body, including the lower limbs. In that way, it allows for the identification of different patterns of health complaints for different groups of workers, depending on age, gender, sector and occupation.

There are considerable differences between male and female workers' profiles of MSDs. For example, according to the latest results presented in the figure below, neck ache is significantly more frequent in women than men (32 vs. 24%).



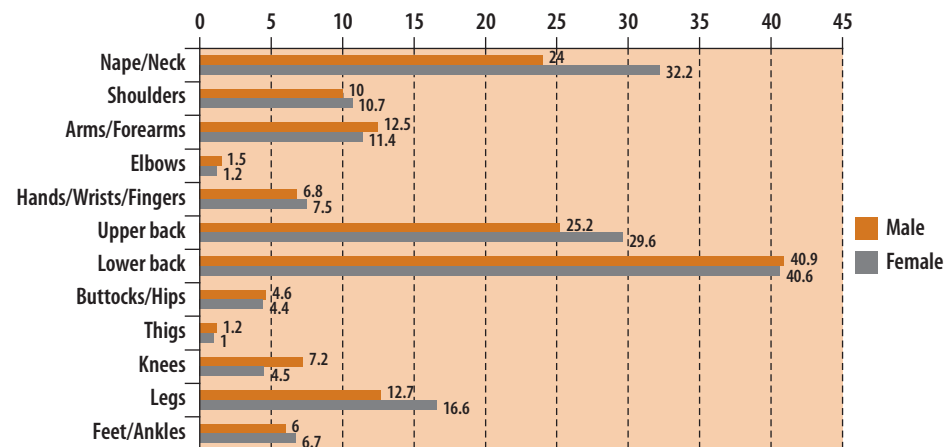
Regarding occupations, whereas in technicians, assistant technicians and clerks the part of the body affected is mainly the neck, in the remaining considered occupations (service workers, qualified workers, operators and non qualified workers), the most frequent part of the body mentioned is the lower back. With a proportion of around 80% respectively, the occupations reporting most MSDs are agricultural and fisheries

⁽⁶⁸⁾ Slovenian statistics on accidents at work – Office for Safety and Health at Work, Office for Safety and Health at Work (Ljubljana). Available at: <http://si.osha.eu.int/statistics>



workers and drivers (including truck and taxi drivers and other distribution workers driving), these are also the workers reporting most lower back pain (53.4% and 52.3% respectively). High percentages of neck ache are to be observed in clerks (42.1%), while construction and mining workers report pains in the arms and forearms, and sales and home service workers, cleaners and waiters report problems in the legs (around 21%).⁶⁹

Figure 56: Musculoskeletal health problems of workers by body part and gender (Encuesta Nacional 2007), Spain



Source: National Survey of Working Conditions (published 2007)

Neck ache and disorders in legs and feet/ankles are significantly more frequent in women than in men.

The percentage of workers reporting musculoskeletal problems increases with age, but it is already high in young workers between 16 and 24 (65.8%), increasing to 80% for those aged 65 and more.

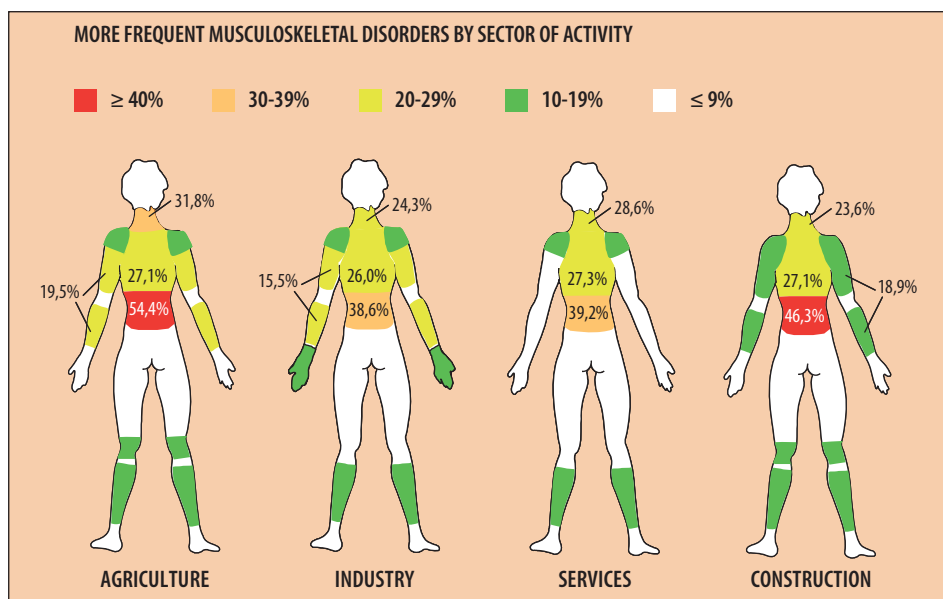
By sectors, workers in agriculture and fisheries are most affected by MSDs (81.6%), followed by health and social services (79.9%) and the chemical industry (79.4%).

Low back pain is the top health problem, especially in agriculture and fishery (54.4%) and in health and social services (49.6%). Neck/nape pain is mostly reported in transport and communications (35.4% and 31.3% respectively) and again in health and social services (34.4% y 32.4%). The arms and forearms were mentioned in metal (20%), agriculture and fishing (19.5%) and construction (18.9%); and problems with the legs in retail and hospitality (25.5%).

⁽⁶⁹⁾ National Survey of Working Conditions, Instituto Nacional de Seguridad e Higiene en el Trabajo, http://www.insht.es/Observatorio/Contenidos/InformesPropios/Desarrollados/Ficheros/Informe_VI_ENCT.pdf



Figure 57: Body part affected by MSDs by sector, VI Encuesta Nacional, 2006, Spain



Source: VI Encuesta Nacional (2006)

The percentage of workers reporting musculoskeletal problems increases with age, but it is already high in young workers between 16 and 24 (65.8%), increasing to 80% for those aged 65 and more.

Recognised cases of MSDs

In Spain, occupational musculoskeletal diseases are the most prevalent of all occupational diseases (Figure 58). The data cover all workers affiliated to the national social security system with full insurance (economic and sanitary) for accidents at work. An average of about 14 million workers were covered in this system in 2004. Groups excluded are:

- Self-employed workers (approx 2.5 millions), although since 2004 they have also the chance to join the system.
- Civil servants (approx 700,000).



By courtesy of INSHT, Spain

In 2003, the incidence rate for occupational musculoskeletal disorders was about 150 per 100,000 workers, compared to an overall rate of 173 per 100,000 workers.⁷⁰ In 2005, there were 26,224 new cases of MSDs registered (87.3% of all new cases). 89.6% of the female workers were affected, compared to 86% for male workers.⁷¹ Workers in the industry and the service sector were most at risk for occupational MSDs.

Diseases due to overstraining of the tendon sheaths were the most frequent MSDs for young workers (77 % of the total for young workers) compared with 74% for all workers in 2004.

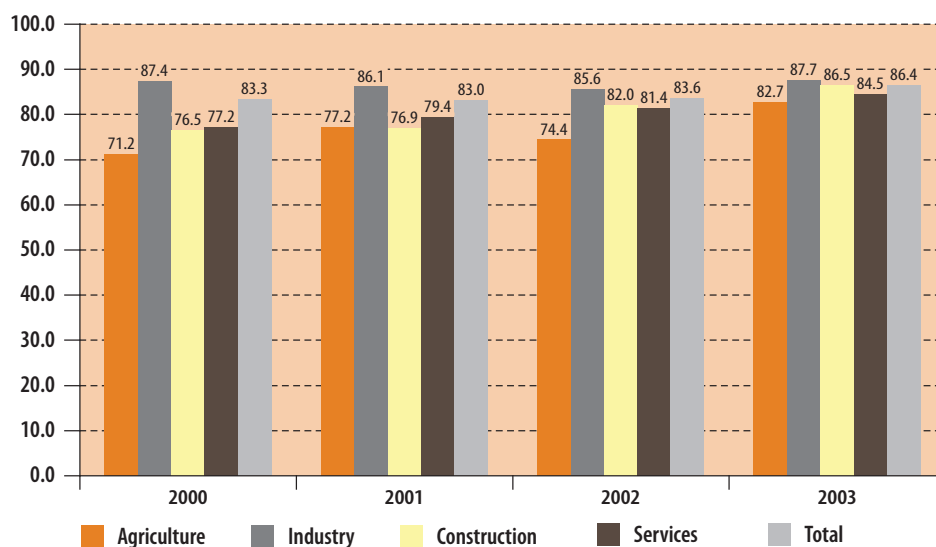
⁽⁷⁰⁾ Ministerio de Trabajo y Asuntos Sociales, Estadísticas de enfermedades profesionales. Available at: <http://www.mtas.es/estadisticas/>

⁽⁷¹⁾ Press release 20 March 2007, <http://www.tt.mtas.es/periodico/Laboral/200703/LAB20070320.htm>



MSDs are increasing in the services sectors.

Figure 58: Percentage share of MSDs in total occupational diseases reported by sector, 2000-2003, Spain



Source: Occupational Diseases File

Occupational accidents statistics also provide information about the way in which the accident has taken place (note that it is not the cause of the accident) and the “agent” that has caused the damage to the worker, both of them codified. In an indirect way, they provide information on safety situations, chemical handling, heavy loads, and physical violence at work.

Table 17: Overview: Groups at risk for development of MSDs, Spain

Age	Gender	Sector	Employment status	Occupation
Self-reported MSDs				
Neck	Women	Agriculture Services		Technicians Clerks
Shoulders				
Arms/ forearms	Men	Agriculture Construction		
Hands/ wrists fingers	Women	Manufacturing		
Upper back	Women	Services Agriculture	Non-permanent workers	
Lower back	Men slightly more	Agriculture Construction Services Manufacturing		Workers of services Qualified workers, Operators Non qualified workers
Knees	Men			
Legs	Women	Retail Hotels and restaurants		
Feet/ ankles	Women			
Recognised cases				
	Young workers: over straining of the tendon sheaths	Industry Service sector		



3.7.18. Sweden

Self-reported MSDs

About 27.8% of the workers report backache according to the ESWC 2005, and about 38.2% report muscular pains.

According to the Scoreboard 2005 conducted by the Working Group European Strategy on Health and Safety at Work (see Table 10), musculoskeletal disorders caused by lifting heavy loads have been increasing within the previous ten years. The sectors with the highest incidence rate were agriculture, construction, health and social work, manufacturing and transport and communication. Work-related upper limb disorders were also increasing, the sectors with the highest incidence rate being: manufacturing, construction, agriculture, transport and communication, and public administration.

Case study – Repetitive and monotonous work among women: Interventions among supermarket cashiers involving job rotation (Sweden)

Repetitive and monotonous work is frequently associated with neck and shoulder pain and negative psychosocial factors inducing stress reactions.



Analysis of the Work Environment Surveys and of the Work-Related Disorders Surveys for the period between 1997 and 2002⁷² had showed female store checkout operators to be a particularly vulnerable group from the viewpoints of work environment and health:

- 93% (as compared to 44% of all women) reported that they had physically monotonously, repetitive work at least half the time,
- 73% (31%) that they performed strenuous, repetitive work movements part or all of the time,
- 72 % (39%) that they had strenuous work postures part or all of the time,
- 73% (59%) that they had little chance of deciding the pace of work for themselves,
- 57% (43%) that their work was stressful,
- 45% (21%) that their work was restricted and unfree,
- 55% (34%) that their work involved a high degree of tension, which is a combination of high demands and low control which can be harmful to health.
- 46% of the checkout operators (36%) that reported having pain in the shoulders and arms every week, and 43% (40%) pain every week in the neck and upper lumbar region.

Altogether 31% of the checkout operators (24%) reported that in the past 12 months they had had physical disorders due to their work which had made it hard for them to carry on working or with their daily chores in the home. The checkout operators felt these disorders to be due above all to strenuous work postures and short, repetitive working movements.

⁽⁷²⁾ Ensidigt upprepat arbete. Arbetsmiljöförhållanden, besvär, sjukfrånvaro, sjuknärvaro. Information om utbildning och arbetsmarknad 2003:4. Arbetsmiljöverket (the Swedish Work Environment Authority) and Statistiska Centralbyrån (SCB – Statistics Sweden). 2003.



(Figures in brackets refer to the corresponding percentages among all gainfully employed women in Sweden)

Those women who had monotonously repetitive working movements for at least half the time ran a 60% greater risk of being on sick leave for more than 5 weeks for disorders of the upper lumbar region than those not performing such movements.

A series of studies⁷³ evaluated the introduction of job rotation among female cashiers. Following extensive research on retail checkouts, the Swedish National Board of Occupational Safety and Health had issued an ordinance for work in checkouts which came into force on 1st January 2003, and which is also available in English. The aim of these provisions was to limit the risk of musculoskeletal injuries, and also to reduce the specialisation of checkout work, and to make possible both physical and mental variety in the duties of the checkout cashier. For example, in one intervention, thirty-one female cashiers were investigated before and after job rotation was introduced. Before the reorganisation, the participants were only performing cash-register work at the checkout counters, then they shifted between cash-register work and work in different departments in the supermarket. The results indicated positive effects on diastolic blood pressure, muscle activity, and partly on neck and shoulder pain (significantly reduced by 35%), although perceived stress was unchanged. Work satisfaction after reorganisation was high. The authors highlighted that these empirical findings were particularly relevant for women who, compared with men, more often perform repetitive and monotonous work and are also more often affected by neck and shoulder pain.

The Swedish authorities have published guidance for the Inspectorate⁷⁴. Amongst other measures, it stipulates that repetitive and closely controlled checkout work should be organised in such a way that for the individual employee it:

- Does not normally exceed 4 hours per working day and 20 hours per week, and
- Does not last for more than 2 hours at a time and is then followed by at least a 20 minute break or intermission or by other work affording variation of work postures and job content.

⁽⁷³⁾ Rissén, Dag (2006). Repetitive and monotonous work among women: Psychophysiological and subjective stress reactions, muscle activity and neck and shoulder pain. PhD Thesis. (2008-09-15) <http://www.dissertations.se/dissertation/b83733c8e0/>

⁽⁷⁴⁾ Arbetsmiljöverket, 2007. Physically monotonous, repetitive and closely controlled checkout work, CTB 2004/22094. Eng <http://www.av.se/dokument/arkiv/slic2008/Guidelines%20-%20Guidance%20on%20repetitive%20and%20closely%20controlled%20checkout%20work.pdf>



3.7.19. United Kingdom

Self-reported MSDs

According to national surveys, musculoskeletal disorders were by far the most common.⁷⁵

Musculoskeletal disorders and stress, depression or anxiety accounted for just over three-quarters of new (incidence) cases of work-related illness in 2006, affecting an estimated 247,000 and 245,000 people who have ever worked respectively. Stress, depression or anxiety and musculoskeletal disorders also accounted for the majority of working days lost in 2006/07, with an estimated 13.8 million and 10.7 million days off work (full-day equivalent) respectively.

The estimated incidence of work-related musculoskeletal disorders in 2006/07 was 125,000 for males who have ever been employed and 122,000 for females. In terms of days lost per worker, the rate for males (0.46 days) was of a similar order to the rate for females (0.47 days). The rate of 2,900 per 100,000 males (2.9%) ever employed was statistically significantly higher than the corresponding rate of 2,400 per 100,000 for females (2.4%).

Of the estimated prevalence of individuals suffering from a work-related musculoskeletal disorder in 2006/07, around two-fifths (493,000) suffered from a disorder mainly affecting the back, over one-third (426,000) mainly affecting the upper limbs or neck and around one-fifth (224,000) mainly affecting the lower limbs. In total, around one-fifth of the estimated prevalence of work-related musculoskeletal disorders in 2006/07 were new cases, 247,000 people ever employed.

In 2006/07, an estimated 10.7 million working days (full-day equivalent) were lost through work-related musculoskeletal disorders. The average annual days lost per case for musculoskeletal disorders, was at 16.7 days. The average days lost per worker of 0.46 in 2006/07 was similar to the corresponding rates in earlier surveys. Of the estimated number of days taken off work due to work-related musculoskeletal disorders, around three-quarters were accounted for by conditions mainly affecting the back and those mainly affecting the upper limbs or neck, at 4.7 million days and 3.5 million days respectively. The remainder, an estimated 2.5 million days, was accounted for by conditions mainly affecting the lower limbs.

Incidence rates of self reported musculoskeletal disorders by industry estimate statistically significantly higher rates in construction, other community, social and personal service activities and health and social work.

A range of occupations carried high rates: skilled agricultural trades; skilled construction and building trades; health and social welfare associate professionals; transport and mobile machine drivers and operatives; textiles, printing and other skilled trades; process, plant and machine operatives; skilled metal and electrical trades and caring personal service occupations. All these rates were statistically significantly higher than the rate for all occupations. Prevalence rates were also consistently high in these occupations. The occupations carrying above average number of days lost per worker were process, plant and machine operatives, elementary occupations and personal service occupations.

About one fifth of the self-reported disorders were of the lower limbs.

⁽⁷⁵⁾ HSE. Self-reported work-related illness and workplace injuries in 2006/07: Results from the Labour Force Survey, Health & Safety Statistics 2007/08

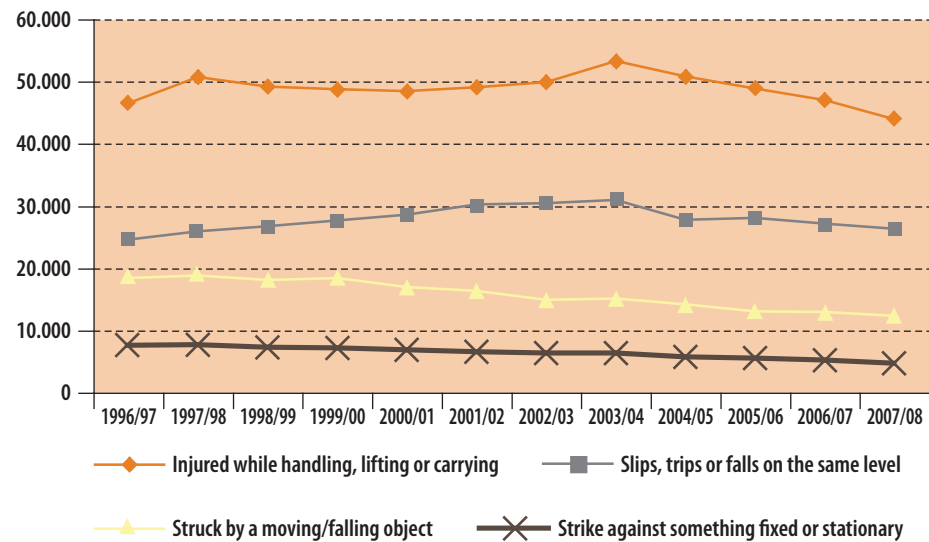


Injuries with more than 3 days lost sustained while handling, lifting or carrying account for 40% of all with an average number of seven days lost per case.

Accidents data by cause

The number of over-3-day injuries to employees sustained while handling, lifting or carrying decreased by 6.5% in 2007/08 from 47,000 to 44,000. However, this is still the most common kind of over-3-day injury, accounting for 40% of all such injuries in 2007/08⁷⁶.

Figure 59: Over 3 day injuries to employees by most frequent kind of accident 1996/97 to 2007/08, HSE, UK



Source: RIDDOR

The estimated days (full-day equivalent) off work due to self-reported workplace injuries, by accident kind, were 1,359,000 in 2006/2007 with an average number of seven days lost per case⁷⁷.

Case study – Workmen regularly carried 50kg bags⁷⁸



A food production company was prosecuted and fined £53,000 including costs for failing to meet duties owed to its employees under the Health and Safety at Work etc Act 1974. An accident in June 2006 brought to light a failure to control the manual handling risks when a 50kg bag of rice fell on an employee's neck.

Investigation established that large consignments of bags of rice were routinely being manually offloaded from containers without mechanical aids. Access to containers and retrieval of initial sacks of rice was also being carried out by employees being raised and lowered on a pallet placed on the forks of a forklift truck. It was also disclosed that the company had also failed to heed advice given by both the HSE in 2002, including an improvement notice during 2002, and the company's own health and safety consultant in 2005.

⁽⁷⁶⁾ Health and safety executive, Injury analysis - kinds of accident, <http://www.hse.gov.uk/statistics/causinj/kindssofar.html>

⁽⁷⁷⁾ Health and safety executive, working days lost by kind, 2006/07 (LFS), <http://www.hse.gov.uk/statistics/lfs/0607/injkind2.htm>

⁽⁷⁸⁾ www.safetynews.co.uk, February 2008



Recognised cases of MSDs

Since January 1996, occupational physicians have reported new cases of musculoskeletal disorders, along with other occupational diseases to OPRA⁷⁹. Since October 1997 rheumatologists have been reporting to MOSS, the surveillance scheme for musculoskeletal disorders caused by work. Occupational physicians reporting to OPRA saw an estimated 2786 new cases of work-related musculoskeletal disorders in 2007 and a further estimated 1608 individuals were seen by rheumatologists reporting to MOSS in the same period. In 2007, upper limb disorders accounted for just over 60% of all diagnoses made by rheumatologists and occupational physicians in the MOSS and OPRA schemes. Spine or back disorders (neck/thoracic spine, lumbar spine/trunk) accounted for approximately 25% of diagnoses, whilst lower limb disorders (hip/knee/leg, ankle/foot) comprised an estimated 8% of all diagnoses.

The Industrial Injuries Disablement Benefit Scheme (IIDB) provides statistics on a limited number of specifically work-related musculoskeletal disorders that are classed as prescribed diseases under the scheme: namely beat hand, beat elbow, beat knee, cramp of the hand or forearm and inflammation of tendons of the hand, forearm or associated tendon sheaths (tenosynovitis). Beat hand and beat elbow are grouped together because of small numbers. With the exception of beat knee these are all upper limb disorders. In 2006/07 there were 215 new cases assessed for disablement benefit due to a prescribed musculoskeletal disorder under the Industrial Injuries Scheme. In addition 435 new cases of carpal tunnel syndrome were assessed for disablement benefit.

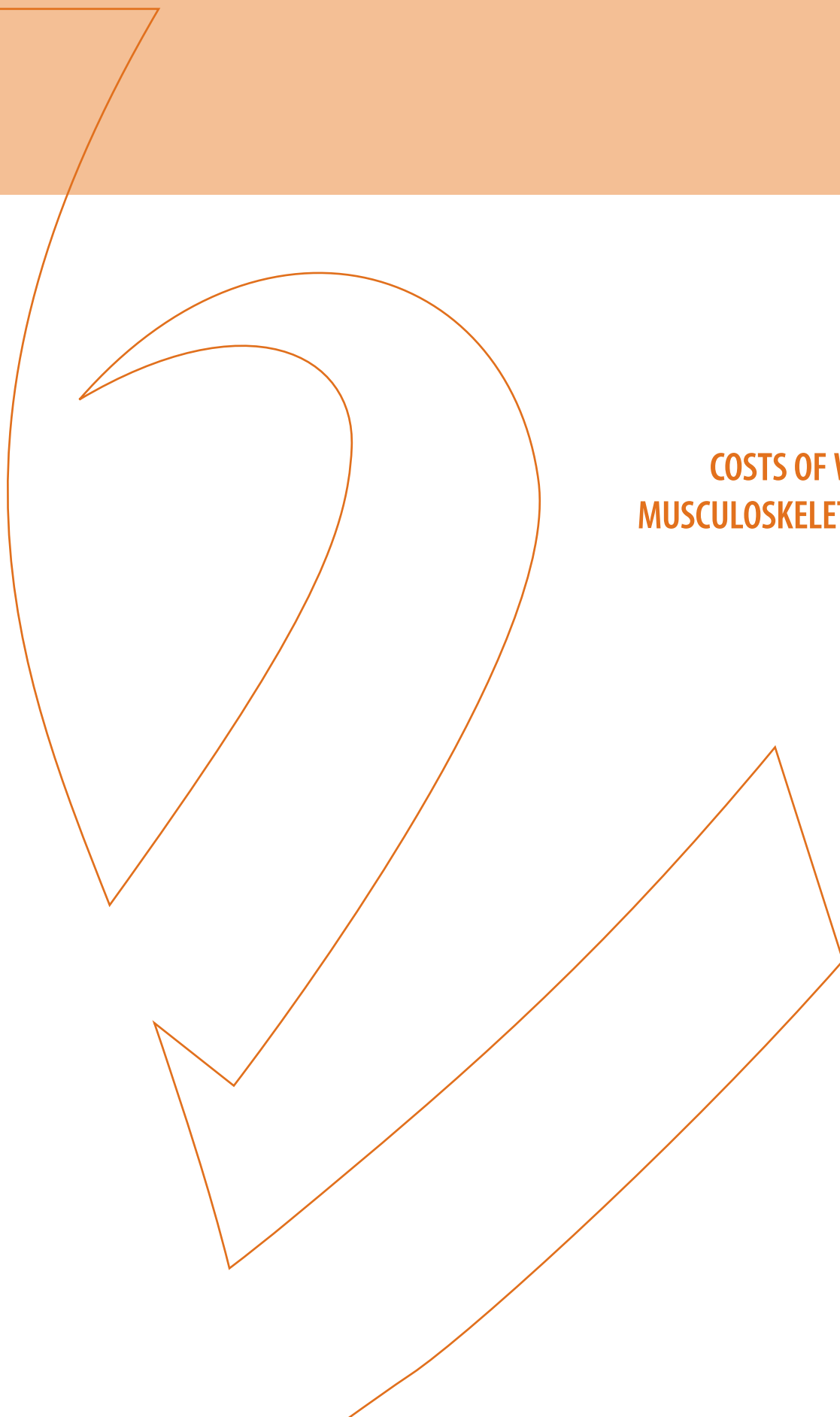
All in all, it can be said that the number of occupational diseases are orders of magnitude lower than the rates of health problems reported by workers.

⁷⁹⁾ Statistics Musculoskeletal disorders, UK Health & Safety Executive, <http://www.hse.gov.uk/statistics/causdis/musculoskeletal/index.htm>



4.

COSTS OF WORK-RELATED MUSCULOSKELETAL DISORDERS



Work-related musculoskeletal disorders are a cause of concern not only because of the health effects on individual workers, but also because of the economic impact on organisations and the social costs to European countries.

When examining the cost of MSDs, a distinction can be made between direct and indirect costs. The direct, visible costs are due to the management of identified musculoskeletal disorders and include insurance, compensation, medical and administrative costs. The indirect, hidden costs can be attributed to sick leave costs, including the hiring and training of new employees, the reduced productivity levels and the effects on production and quality of work (e.g. possible loss of customers due to delays or dissatisfaction).

As stated in a previous Agency report⁸⁰, the true extent of work-related MSDs' costs across Member States is difficult to assess and compare. This can be due to the difference in organisation of insurance systems, the lack of standardised assessment criteria and the fact that little is known on the validity of reported data. The 2000 report mentions nevertheless that certain studies have estimated the cost of work-related upper limb musculoskeletal disorders (WRULD) at between 0.5% and 2% of Gross National Product (GNP).

Some national studies conducted since the report was published in 2000, may also help to assess the costs:

In a press release accompanying the national Plan on Health and Safety at Work (Plan Santé Travail 2005-2009), the French government highlighted an increase of about 20% per year of musculoskeletal disorders in 10 years. In 2005, three quarters of the occupational diseases were musculoskeletal disorders. The 31,000 compensated diseases have led to a loss of 6.5 million workdays and a cost of 650 million EUR. The indirect costs have to be added to these direct costs.^{81,82}

According to another source, in 2006, MSDs have led to 7 million workdays lost, about 710 million EUR of enterprises' contributions⁸³. Another French study, commissioned by the national working conditions agency (ANACT), tried to examine the real costs of MSDs in three companies with over 500 employees in the engines and electronics industries^{84,85}. The indirect costs of MSDs appeared to be 10 to 30 times higher than their direct costs. The total cost was estimated to be between 6,800 and 11,200 EUR per person affected each year from high absence rates and productivity losses (about 7%). The study concluded that the more the company invests in terms of human and financial resources, the greater the overall savings are in the long term.

⁽⁸⁰⁾ European Agency for Safety and Health at Work, EU-OSHA, Buckle P. & Devereux J. Work-related neck and upper limb musculoskeletal disorders, 1999. Available at: <http://osha.europa.eu/en/publications/reports/201/view>

⁽⁸¹⁾ La prévention des troubles musculo-squelettiques (TMS), 27 Octobre 2005, http://medetram.com/documents/prevention_tms.pdf

⁽⁸²⁾ Plan santé au travail 2005-2009. Ministère du Travail, des Relations sociales, de la famille et de la solidarité. 2005 <http://www.travail-solidarite.gouv.fr/IMG/pdf/PST.pdf>

⁽⁸³⁾ Rapport d'information enregistré à la Présidence de l'Assemblée nationale le 27 mai 2008, En conclusion des travaux de la mission sur la pénibilité au travail, <http://www.assemblee-nationale.fr/13/pdf/rap-info/i0910-ti.pdf>

⁽⁸⁴⁾ Fauconnier D. & Pépin M. Approche économique de la problématique des troubles musculo-squelettiques. Des coûts aux risques stratégiques. 2005, 7 p. Available at: www.ptolemee.com/dares/PDF%20021205/1%20Fauconnier.pdf

⁽⁸⁵⁾ See also: Eurofound. <http://www.eurofound.europa.eu/ewco/2004/02/FR0402NU33.htm>



An Austrian labour inspection web feature for the European Week campaign 2007⁸⁶ presents data and advice for workplace assessment of MSDs and examples of good practice. The impact on costs was also estimated.⁸⁷ About 38% of the costs of work-related absenteeism was attributed to MSDs. The impact on disability pensions is also high: about 34% of newly attributed work-related disability pensions, of which two thirds linked to back pain.

Table 18: Austria: the cost of MSDs estimated

	Employer	Total Economy	Worker
Direct costs	€ 164.7 million	€ 29.6 million	€ 135 million
	Continued payment of salary	Statutory sick pay	Contribution to treatment costs
		€ 300.4 million	
	Cost of medical treatment		
		Costs of rehabilitation and disability pensions	
Indirect costs	“Non-wage-costs”	€ 236 – 315 million	Lost income
	Production loss	Lost productivity	Reduced employability
	Costs for replacing the worker (overtime, salary, etc.)	€ 103.8 million	
		Disability pensions	

Source: Pack’s leichter an, Web feature of the Austrian labour inspection

In another recent Austrian study⁸⁸ the total costs of illness-related absences at work have been estimated to amount to 2.1% to 3.1% of the GDP. The cost for continued salary payment alone was estimated at about 2 billion EUR in 2003.

The German Federal Institute for Occupational Safety and Health (BAuA) estimated the productivity loss due to MSDs at 0.59% of the GNP in 2002 and 0.4% in 2004 and 2006. Of all occupational diseases, MSDs appeared to cause the highest percentage of productivity loss. The most recent German national report on safety and health at work (SUGA 2006)⁸⁹ provides updated estimations of costs of musculoskeletal diseases: about 23.7% of days lost (95 million days lost), and 23.9 billion EUR or 1.1% of the GNP in lost productivity and gross value added.

⁽⁸⁶⁾ Pack’s leichter an, Webfeature of the Austrian labour inspection for the European Week campaign 2007, accessible at <http://www.arbeitsinspektion.gv.at/ew07/startseite.htm>

⁽⁸⁷⁾ Klaus Wiitig, Kosten von MSD, in the above-mentioned Web feature: <http://www.arbeitsinspektion.gv.at/ew07/startseite.htm>

⁽⁸⁸⁾ Fehlzeitenreport 2007, available at: http://ew2007.osha.europa.eu/news/local_news/news_article.2007-10-24.MSDs_Austria

⁽⁸⁹⁾ Sicherheit und Gesundheit bei der Arbeit 2006, Bundesministerium für Arbeit und Soziales, downloadable at http://de.osha.europa.eu/statistics/statistiken/suga/suga2006/suga_2006.pdf



Table 19: Productivity loss related to diagnosis 2006, Germany

Diagnosis	Days of sick leave (Number of lost working days)		Productivity loss		Gross value added lost	
	Million days	% of total	Billion €	% of GNP	Billion €	% of GNP
MSDs	95.2	23.7	8.5	0.4	15.4	0.7
Total	401.4	100.0	36.0	1.6	65.0	2.8

Source: Sicherheit und Gesundheit bei der Arbeit 2006

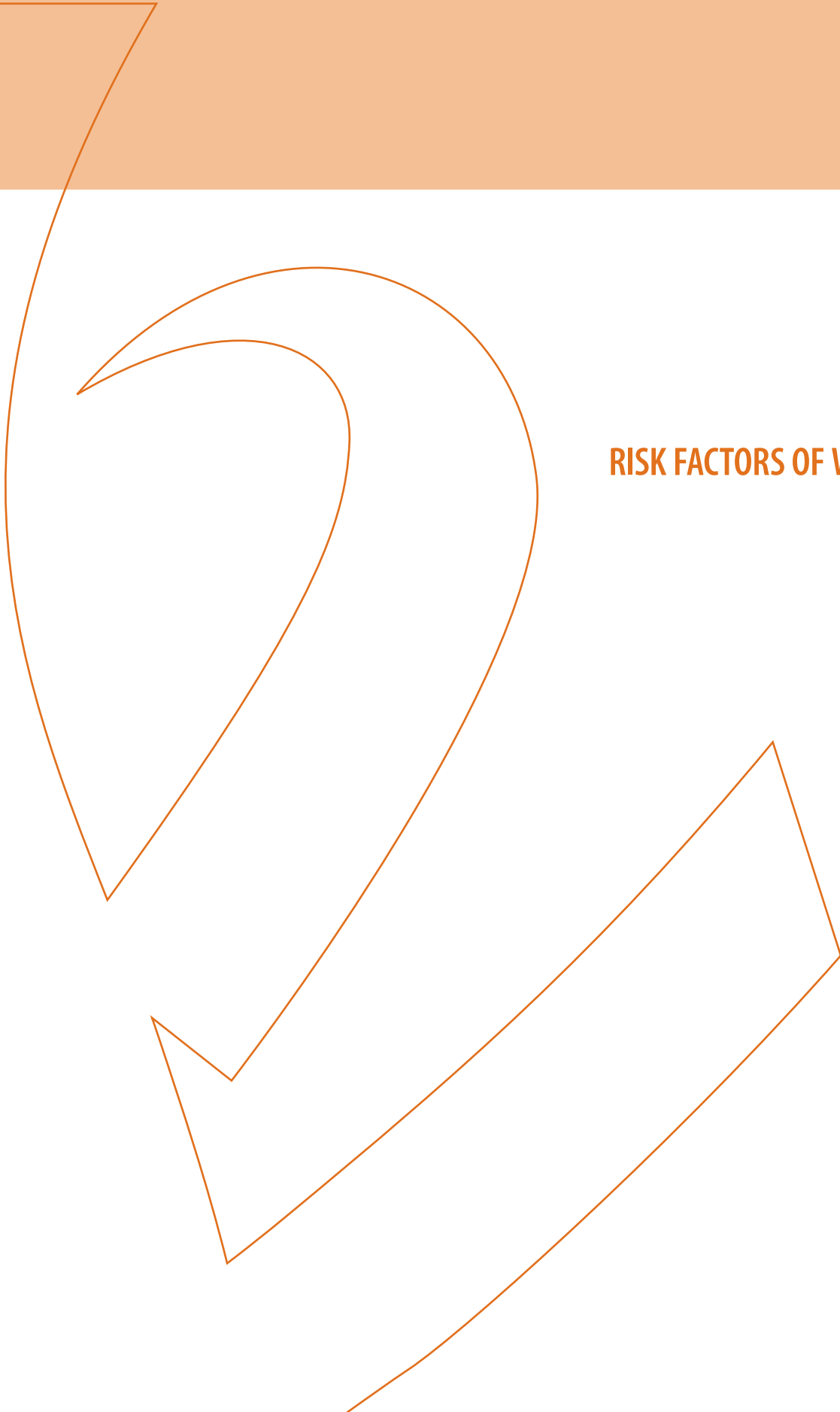
A Dutch study from 2005⁹⁰, commissioned by the ministry of Social Affairs and Labour, revealed that the total yearly costs due to RSI (Repetitive Strain Injuries i.e. WRULD) are estimated to be 2.1 billion EUR. An item with high costs, besides the costs due to sickness absence (962 million EUR per year), is the productivity loss as a consequence of working with RSI (808 million EUR per year). According to the study, the construction and transport industry are the branches that deserve preventive attention because of a combined risk of sickness absence and disability pensions due to RSI. Further, construction, health care, industry, education and trade industry are the branches in which savings could be highest.

⁽⁹⁰⁾ Blatter B et al. Gezondheidsschade en kosten als gevolg van RSI en psychosociale arbeidsbelasting in Nederland. TNO Quality of Life. Study commissioned by the ministry of Social Affairs and Labour. August 2005. Available at: http://docs.szw.nl/pdf/129/2006/129_2006_3_8656.pdf



5.

RISK FACTORS OF WORK-RELATED MSDS



5.1 EUROPEAN DATA SOURCES

- Repetitive work is the most common and widespread risk factor for the development of MSDs in both the EU-15 and EU-10 and seems to be on the increase.
- Exposure to vibrations is a notable risk factor in both EU-15 and EU-12.
- Continuous exposure to painful/ tiring positions and carrying/ moving heavy loads appears to be more common in the newer Member States.

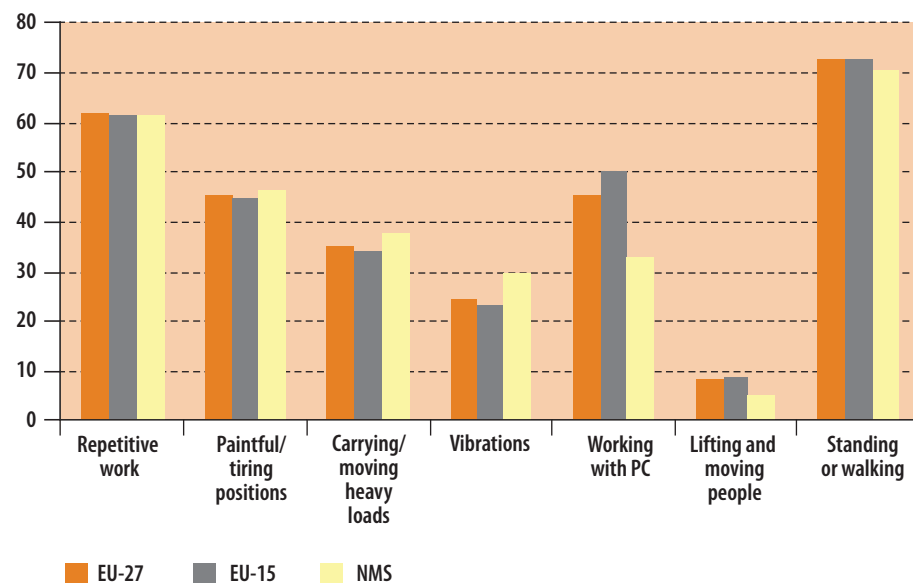
5.1.1. Self-reported exposure to MSDs risk factors

There are numerous established work-related risk factors for the various types of musculoskeletal disorders. These include physical, ergonomic and psychosocial factors. Unfortunately there are only limited European wide data on their occurrence and distribution in the population.

The European Survey on Working Conditions addresses the following risk factors for the development of musculoskeletal disorders:

- Repetitive work;
- Painful/tiring positions;
- Carrying or moving heavy loads;
- Other risk factors that contribute to musculoskeletal disorders and more specific to certain professions, such as exposure to vibrations, lifting or moving people, tiring or painful positions, and prolonged standing or walking.

Figure 60: % of workers report being exposed at least 25% of the working time, ESWC 2005



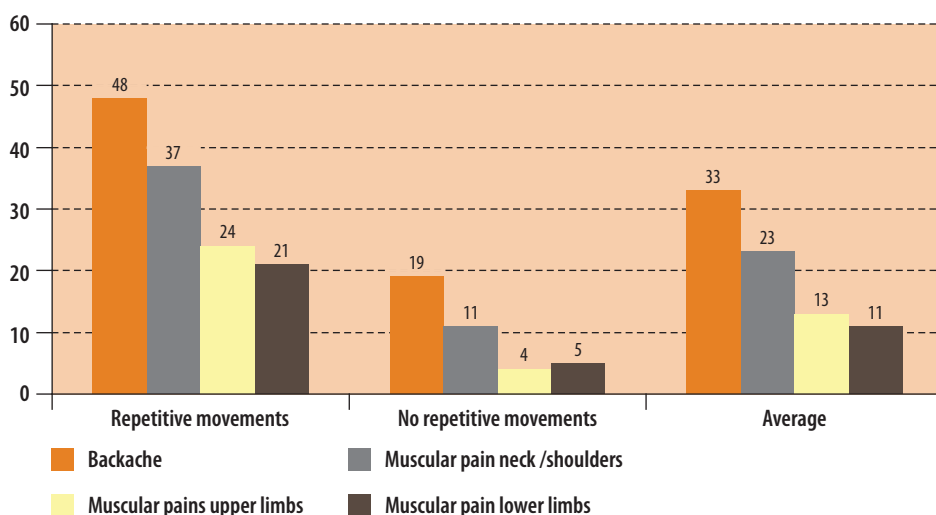
Source: ESWC



According to the European survey on working conditions, in 2005, 45.5% of workers in the EU27 reported working in painful or tiring positions at least 25% of the time; 35% were required to handle heavy loads in their work and 62.3% reported repetitive hand or arm movements.

As shown below, repetitive work correlates closely with MSDs⁹¹.

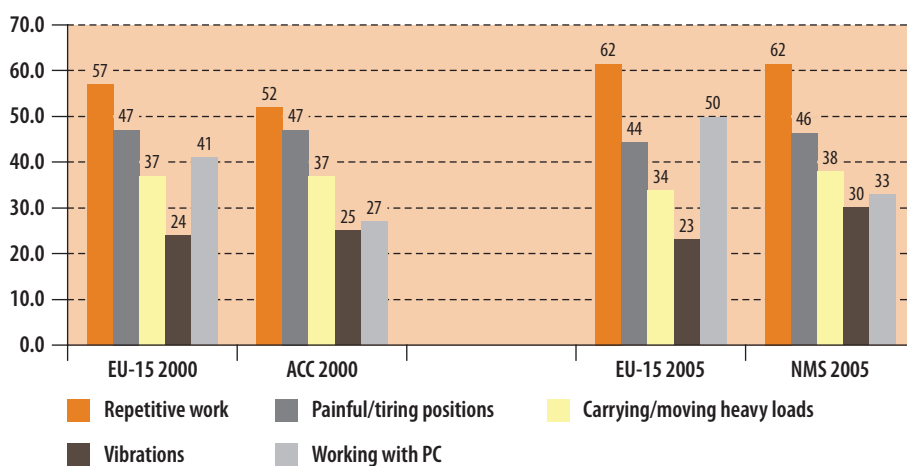
Figure 61: Health problems related to making repetitive hand/arm movements, % workers, ESWC 2000, EU-15



Source: ESWC

Regarding exposure to MSDs risk factors, trends over time seem to remain similar or slight increases can be noted.

Figure 62: % of workers report being exposed at least 25% of the working time, ESWC 2000 /2005 and ESCC 2001



Regarding exposure to MSDs risk factors, trends over time seem to remain similar or slight increases can be observed.

Source: ESWC

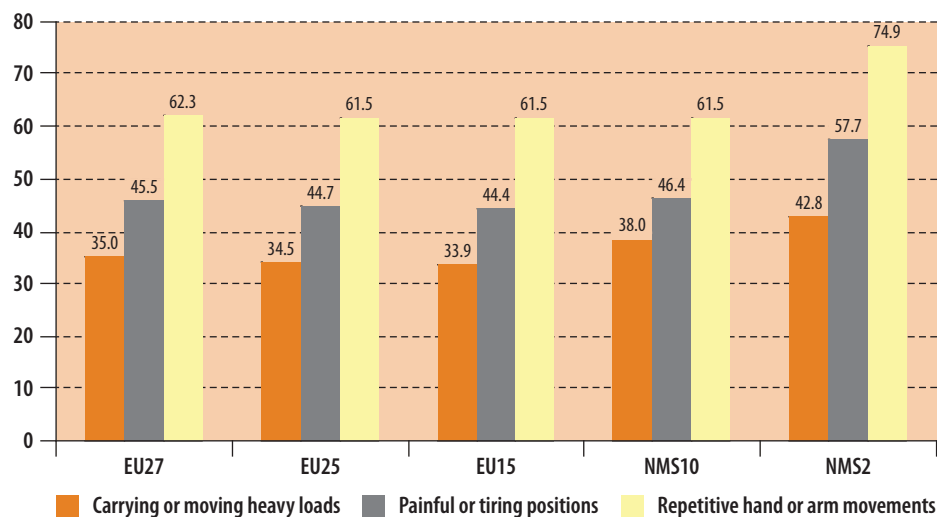
⁹¹⁾ European Foundation for the Improvement of Living and Working Conditions. Ten years of working conditions in the European Union. 2001. Available at: <http://www.eurofound.europa.eu/publications/htmlfiles/ef00128.htm>



As can be seen in Figure 63 below, there are notable differences between the EU-15 and the newer Member States. The corresponding shares in the EU15 and EU25 were similar, while in the 10 Member States that joined the EU in 2004 – NMS10 – and, particularly in Bulgaria and Romania – NMS2 – the percentage of workers reporting exposure to the risk factors was higher.

Figure 63: Percentage workers carrying or moving heavy loads, working in painful/tiring positions and reporting repetitive hand/arm movements (all of them at least 25% of the time), by geographic area, 2005

Notable differences: In the 10 newer Member States that joined the EU in 2004 – and, particularly in Bulgaria and Romania – exposures to MSDs risk factors were higher.



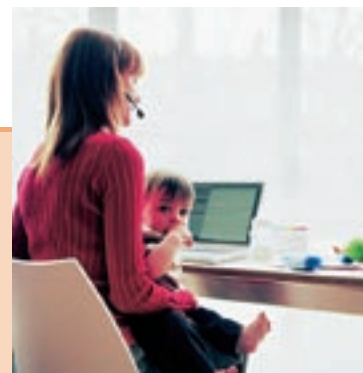
Source: ESWC

5.1.2. Gender, jobs and working conditions in the European Union

Analysis of the 2000 ESWC results – The impact of working conditions on health, work-family compatibility and satisfaction (EU)⁹²



The rising proportion of women in employment in recent decades has been one of the major changes affecting European labour markets. However, ‘weight of numbers’ has not produced an automatic reduction in gender segregation, which remains a persistent feature of European society. There is still a ‘glass ceiling’ reinforced by workplace cultures and informal procedures that makes it difficult for women to break through into the higher levels of management. The unequal division of unpaid household work also persists. Women continue to shoulder the main responsibility for the second shift of running the home and looking after children, even when employed full-time.



The report examined the gender pattern of differences and similarities in working conditions in Europe, the reasons for the persistent gender segregation of the

⁽⁹²⁾ The impact of working conditions on health, work-family compatibility and satisfaction, European Foundation for the Improvement of Living and Working Conditions, Eurofound, 2002

European labour markets and drew up policy recommendations for action aimed at providing decision makers with the relevant information they need. Multivariate analysis was used to examine which working conditions have the greatest impact on the probability of work-related illness, whether or not the job is judged to offer work-family compatibility, and satisfaction with working conditions.

Each of the following working conditions was found to have a significant and independent effect on the probability of having work-related illness. The 'traditional' health and safety hazards of poor ergonomic, physical and material conditions are bad for health. A number of aspects of working time conditions –having disruptive interruptions in the work-day, unsociable work schedules (evening, nights or long days), an intense pace of work and long hours of work– also increased the risk of work-related illness. Working-time autonomy helped to reduce the risk of work-related illness. Once specific working conditions are taken into account, being in managerial, professional or skilled manual work further increases the risk of work-related ill health.

When differences in men and women's working conditions and occupational position are controlled in the analysis it was found that women were more susceptible to work-related ill-health than men. This may be partly due to the additional domestic workloads that many women carry. It may also be because there are other working conditions that women are disproportionately exposed to but which are not picked up by the existing indicators in the survey. The authors concluded that this issue required further analysis and consideration in light of the current review of the EU regulatory framework on health and safety.

Secondary analysis of the ESWC 2005^{93,94} – Working conditions in the European Union: The gender perspective

The findings revealed persistent gender inequalities in many, although not all, aspects of working conditions. Such disparities include differences in working hours, occupation, economic sector and work-related health risks, which not only result in gender inequality but also perpetuate existing inequalities. Vertical and horizontal segregation is persistent: many working conditions were found to be more closely related to occupational position or sector of the economy than to gender as such. Hence, an appreciation of the highly segregated pattern of men's and women's employment was still found to be essential for identifying and interpreting gender differences in working conditions. As noted in previous gender analysis studies of the survey results, when corrected for differences in working conditions and occupations, women reported more ill-health and more multiple exposures and health effects. Additionally, psychosocial loads, such as emotionally demanding work or dealing with difficult clients/external parties were found to be higher for female than for male workers.



The study also reveals that the difference in working conditions between men and women seems to be changing at very different rates in different parts of

⁽⁹³⁾ European Foundation for the Improvement of Living and Working Conditions, Eurofound, Working conditions in the European Union: the gender perspective, 2007. Available at <http://www.eurofound.europa.eu/publications/htmlfiles/ef07108.htm>

⁽⁹⁴⁾ European Foundation for the Improvement of Living and Working Conditions, Eurofound, Working conditions in the European Union: The gender perspective – Executive summary, <http://www.eurofound.europa.eu/publications/htmlfiles/ef0854.htm>



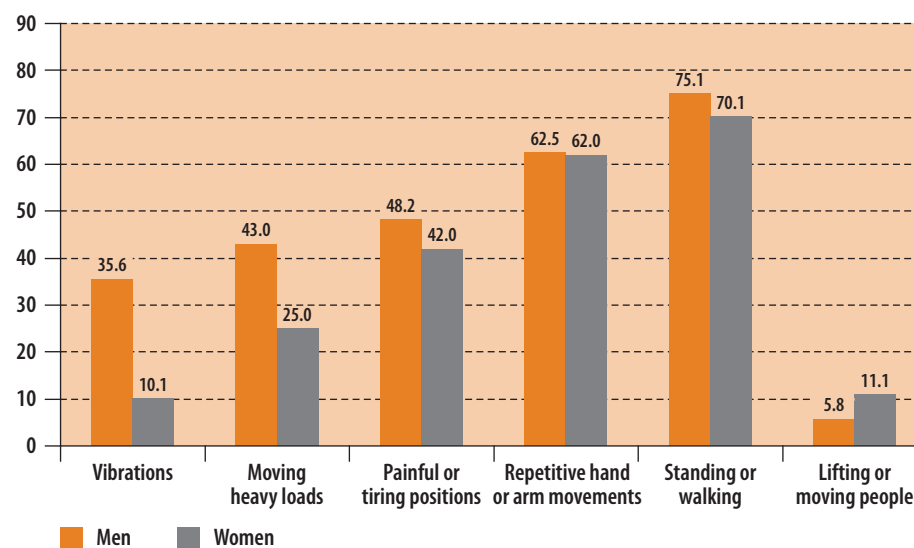
Europe. At the extremes, remarkable stability is apparent in the gap between men and women in the EU15 Member States, while considerable flux may be found in the newest member countries. The study associates these observations with economical and political changes including the impact of EU accession. It is worth noting that, for example, against the overall EU-27 trend, female employment is decreasing in some Member States and similarly working time patterns also move from full-time to part-time patterns.

5.1.3. MSDs risk factors and gender

When looking at Figure 64 below that presents data for the EU-27 average male and female working population, it appears that with the exception of repetitive work and moving and lifting of people, men seem to be more exposed to the main MSDs risk factors. As women are concentrated more in a few, mainly service, sectors, it is worth looking at exposures by gender and specific sectors. Two examples are presented below for the manufacturing sector and for the health care sector. When extracting data for these sectors, it becomes clear that female workers are in fact significantly exposed to physical risks and may be highly affected by MSDs.

Also, female workers are considerably exposed to prolonged standing and walking at work.

Figure 64: Overview: Exposure to MSDs risk factors, by gender, exposed at least 25% of the working time, ESWC 2005



Source: ESWC

Standing or walking – gender differences

A geographical perspective of where male or female workers perform their work mainly standing or walking reveals that in many Member States, a notably higher proportion of the female workers report to carry out their work mainly standing or walking. The situation is particularly marked in countries that have a predominantly service-sector oriented industrial structure, such as for example the United Kingdom. Main sectors in which women have to carry out their work standing include retail, education and health care work, growing sectors in Europe.



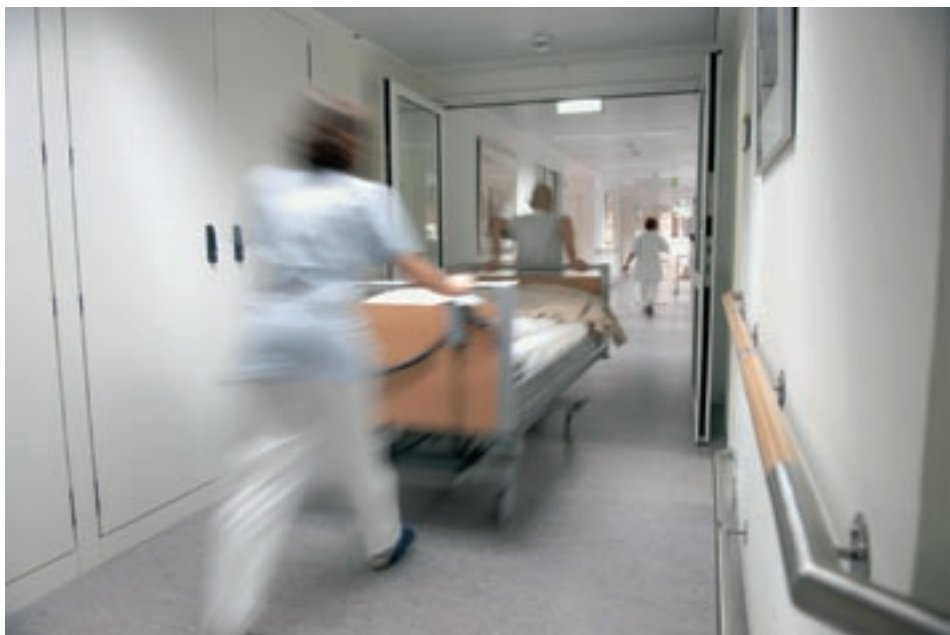
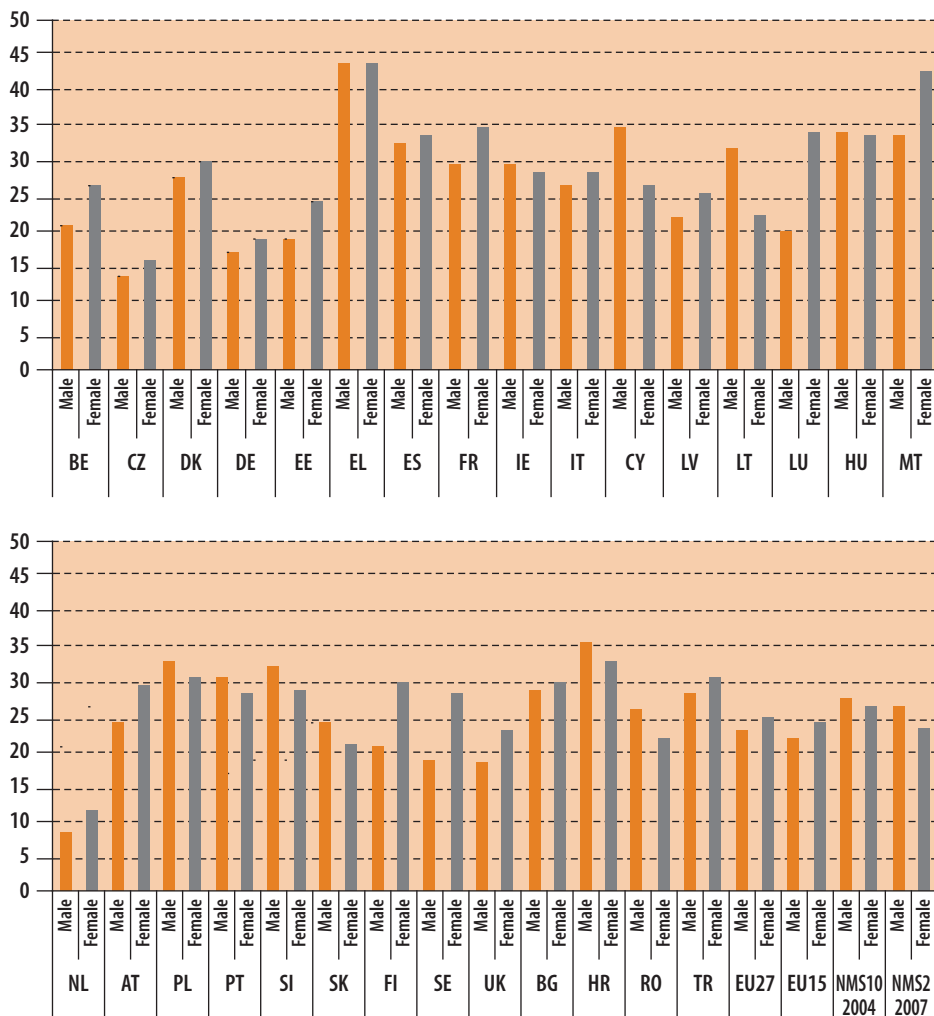


Figure 65: EWCS 2005 results by gender – geographical distribution: Does your main paid job involve – standing or walking? (Percentage of workers, all the time)



Source: ESWC



Case study – Standing, sitting and associated working conditions (Canada)⁹⁵



This study described self-reported usual working posture, based on the 1998 Quebec Health and Social Survey, a population-based survey of 11,986 private households in a population and their associations with other working conditions and demographic variables. It contained a self-administered questionnaire, including an extensive occupational health section. The analyses in this study were limited to respondents with paid employment who had at least 6 months seniority in their current job, a total of 9,425. The overall prevalence of usual work in a standing posture was 58%; more common among men, workers under 25 years, those in the two lowest educational quintiles and those with low incomes. Only one person in six who worked standing reported being able to sit at will. Women and men differed in the types of usual standing and sitting postures at work. Those who worked standing and/or who worked in more constrained postures were more likely to be exposed to other physical work demands, such as handling heavy loads, repetitive work, forceful exertion and low job decision latitude. The association between decision latitude and constrained postures was highlighted by the authors as an important link between psychosocial and physical stressors in the workplace.



By courtesy of INSHT, Spain

A specifically female task: lifting and moving people

43.4% workers in the health sector report having to move or lift people more than a quarter of their working time. Consequently, more than a quarter of these workers report backache and almost as many muscular pains. About 78% of these health care workers are women and the health care sector is growing: in the EU-27, the proportion of health care workers has increased by 10% from 2000-2006 (from 8.6 to 9.5% of the total working population)⁹⁶. Within the female working population it has increased from 15 to 17%.



By courtesy of FPS Employment, Labour and Social Dialogue, Belgium

⁹⁵ Tissot F, Messing K, Stock S., Standing, sitting and associated working conditions in the Quebec population in 1998. *Ergonomics*. 2001 Oct 10;44(12):1038-55.

⁹⁶ Calculated from Eurostat LFS employment statistics (Employment by sex, age groups and economic activity (1000)), see http://epp.eurostat.ec.europa.eu/portal/page?_pageid=0,1136184,0_45572595&_dad=portal&_schema=PORTAL

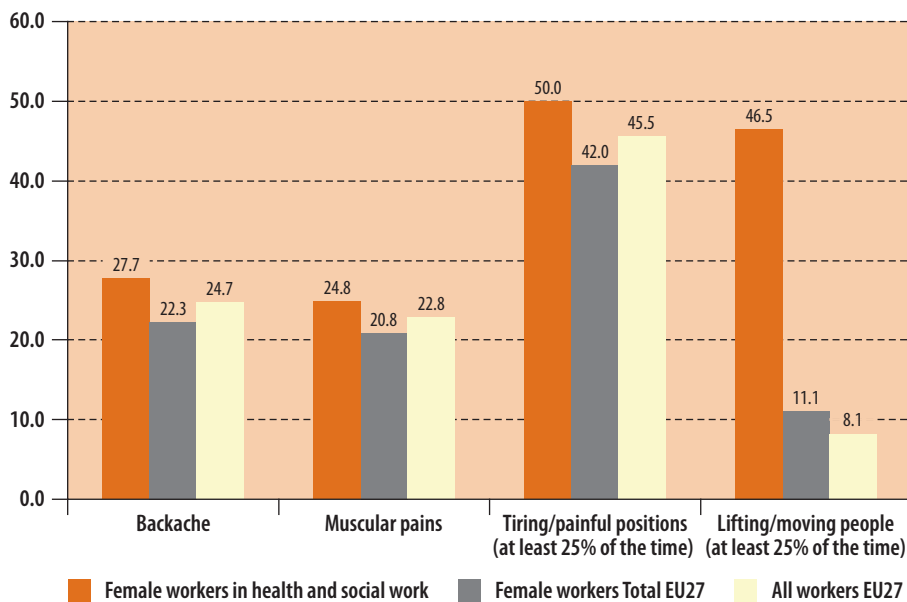




By courtesy of INSHT, Spain

That means that about 3% of the EU working population (or 6.8 million workers) are women who work in the health care sector and who have to lift or move people.

Figure 66: Self-reported exposure to MSDs risk factors in the health care sector, ESWC 2005



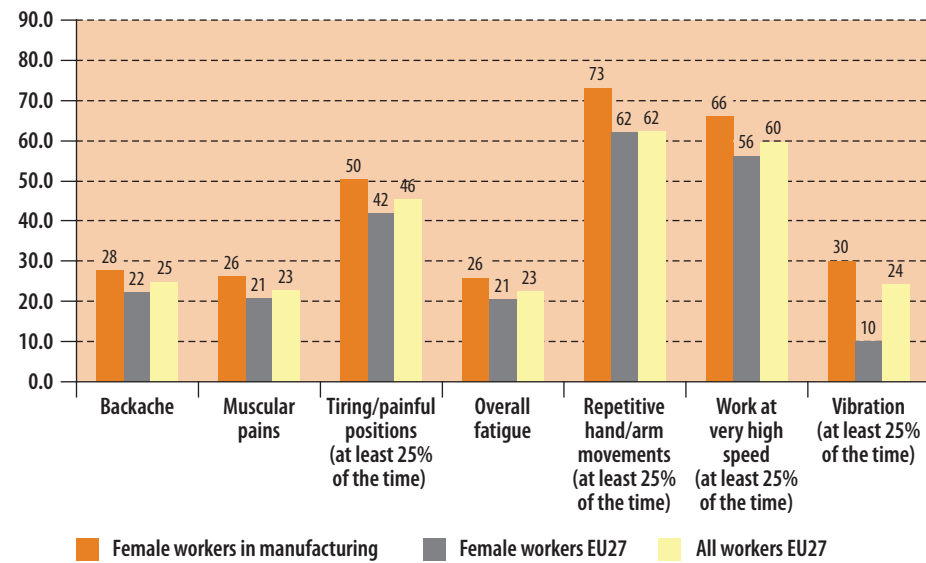
About 3% of the EU working population (or 6.8 million workers) are women in the health care sector who have to lift or move people.

Source: ESWC

A similar picture can be seen when extracting data for women on exposure to MSDs risk factors in the manufacturing sector: MSDs risk factors affect them significantly. It also has to be noted that exposure to vibration, generally considered to be a rather “male” risk factor is very relevant for these female manufacturing workers, and especially so in the newer Member States, where rates were found to be higher.



Figure 67: Self-reported exposure to MSDs risk factors in manufacturing, ESWC 2005, % workers reporting exposure



Source: ESWC

Case study – A comparative analysis on musculoskeletal disorders between Greek and Dutch nursing personnel⁹⁷



The aim of this study was to analyse cross-cultural differences between Greek and Dutch nursing personnel in association with the risk factors, and occurrence and consequences (absenteeism and medical care seeking) of musculoskeletal disorders. The study was based on questionnaire surveys among 393 nurses and caregivers in nursing homes and homes for the elderly in the Netherlands and among 351 nurses in general hospitals in Athens, Greece. In both countries similar risk factors were associated with the occurrence of low-back pain. Cross-national differences were less important for the risk factors and musculoskeletal complaints than for the consequences of these complaints and for medical care seeking.



By courtesy of FPS Employment, Labour and Social Dialogue, Belgium

⁽⁹⁷⁾ Alexopoulos EC, Burdorf A, Kalokerinou A., Int Arch Occup Environ Health. 2006 Jan; 79 (1):82-8.

Case study – Prevention of low back pain in the hospital sector (Belgium)

In Belgium, it is estimated on the basis of 1999 social security data that lumbago accounts for a loss of one billion euros due to absences from work each year, while the medical costs are 200 million euros.



The economic and social costs of acute lumbago are substantial, but may be even greater: If pain persists, there is a substantial risk that the patient will never work again: 50% of the workers return to work after six months of absence, 30% after one year, and only 5% after two years.

A prevention policy for musculoskeletal disorders in place was limited to certain chronic conditions. Therefore, legislation was revised and new approaches were proposed. The Royal Decree of 16 July 2004 should help to reduce back complaints caused by professional work. The aim was to increase and accelerate the return to work through a rehabilitation programme, whose efficiency has been demonstrated in the scientific literature.

The Occupational Diseases Fund launched a trial project on 1 March 2005 to test the feasibility of a programme, which is aimed at the secondary prevention of low back pain in the hospital sector ⁹⁸ (hospitals, psychiatric hospitals, rest homes and care homes).

The project encourages hospital employees with low back pain to register for a multidisciplinary back rehabilitation programme. It comprises a maximum of 36 sessions of two hours each for a maximum of six months. The project is aimed at wage-earning nursing or care staff working in a hospital, psychiatric hospital, or rest and care home.



The condition is that the employees perform back-straining lifting movements when caring for the sick and bedridden (for example, nurses, carers, ambulance staff, etc.).

The aim of the project is to foster a quick return to work for employees who are unfit for work as a result of back complaints.

By courtesy of FPS Employment, Labour and Social Dialogue, Belgium

Case study – Safe lifting and moving of nursing home residents (USA)

Frequent heavy lifting and repositioning of residents leads to the risk of MSDs development in caregivers of nursing homes. The size and weight of the residents, combativeness, and propensity to fall or lose balance are factors that



⁽⁹⁸⁾ A nationwide programme for early rehabilitation of low back pain workers, Philippe Mairiaux, Belgian Fund for Occupational Diseases, presented at the "Lighten the Load" Summit. Available at http://osha.europa.eu/en/campaigns/ew2007/europeansummit/index_html/presentations/mairiaux.ppt



contribute to the difficulty of lifting and moving residents. In addition, performing resident transfers in the confines of small bathrooms and rooms cluttered with medical equipment and furniture works against the caregiver being able to use good body mechanics. These conditions contributed to the 211.000 occupational injuries suffered by caregivers in 2003 (Bureau of Labor Statistics, 2003). Because of the rapidly expanding elderly population in the US, employment for nursing aides, orderlies, and attendants is projected to increase by 25% between 2002 and 2012, adding an estimated 343.000 jobs (Bureau of Labor Statistics, 2004). Due to the ongoing demand for skilled care services, musculoskeletal injuries to the back, shoulder, and upper extremities of caregivers are expected to increase.⁹⁹

Numerous studies have also shown that training caregivers how to use proper body mechanics to lift residents is not an effective prevention measure because lifting the weight of adult patients is intrinsically unsafe.

Research conducted by the National Institute for Occupational Safety and Health (NIOSH), the Veterans' Health Administration (VHA), and the University of Wisconsin-Milwaukee has shown that safe resident lifting programs that incorporate mechanical lifting equipment can protect workers from injury, reduce workers' compensation costs, and improve the quality of care delivered to residents. A guide was issued that also presents a business case to show that the investment in lifting equipment and training can be recovered through reduced workers' compensation expenses and costs associated with lost and restricted work days. This guide is intended for nursing home owners, administrators, nurse managers, safety and health professionals, and workers who are interested in establishing a safe resident lifting program.

MSDs risk factors: the youngest workers are generally the most exposed, with the exception of painful positions and carrying and moving people.

5.1.4. MSDs risk factors and age

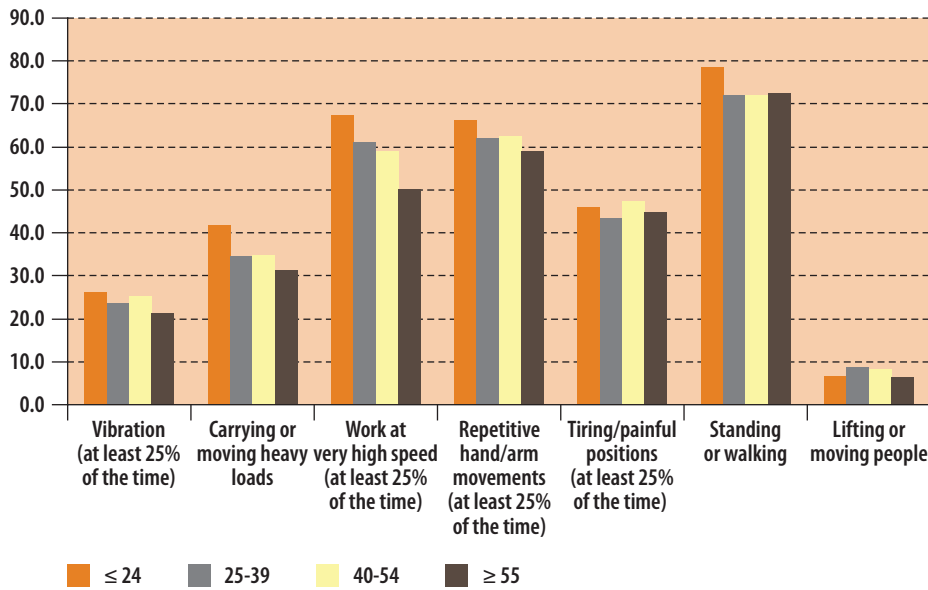
With the exception of painful and tiring positions and having to move and carry people, young workers appear to be the age group most exposed to MSDs risk factors. This confirms results from a larger Agency study on young workers¹⁰⁰, that analysed more in-depth the OSH situation of young workers. These risks are often linked to certain sectors (e.g. hotels and restaurants, construction, agriculture, etc.), occupations and types of employment. As a result, young workers are at considerable risk of developing musculoskeletal disorders (including low back pain). National data presented in the first section of this report, for example data from Spain, indeed suggest that they might be highly exposed, as the number of occupational diseases of younger workers is increasing. Similarly to female workers, they are more concentrated in certain sectors and it is worth extracting data for these sectors.

⁽⁹⁹⁾ Safe lifting and moving of nursing home residents, NIOSH, 2006 <http://www.cdc.gov/niosh/docs/2006-117/>

⁽¹⁰⁰⁾ OSH in figures: Young workers - Facts and figures, European Agency for Safety and Health at Work, 2007, Available at <http://osha.europa.eu/en/publications/reports/7606507/view>



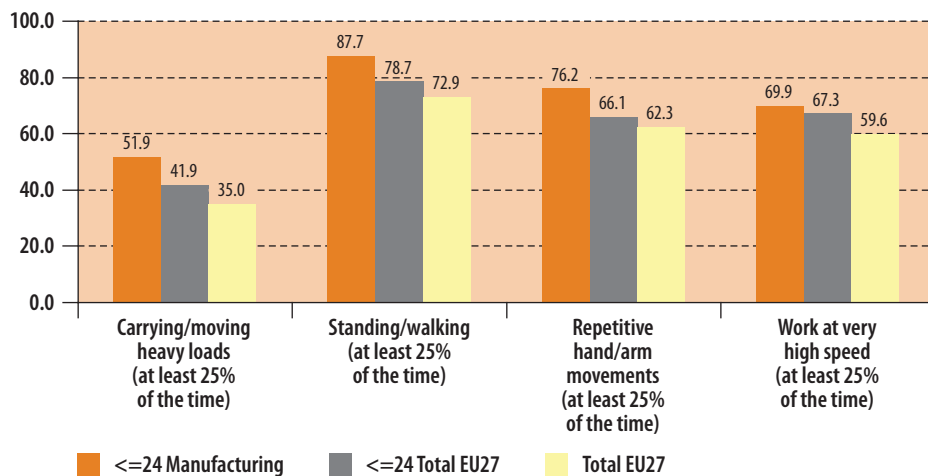
Figure 68: Self-reported exposure to MSDs risk factors by age, ESWC 2005, % workers reporting exposure, at least a quarter of the working time



Source: ESWC

For example, as can be seen in Figure 69 below, young workers in manufacturing are highly exposed to MSDs risk factors, including vibration.

Figure 69: Self-reported exposure of young workers to MSDs risk factors in manufacturing, ESWC 2005, % workers reporting exposure



Source: ESWC



Case study – MSDs in Hungarian Construction Apprentices¹⁰¹

The primary purpose of this project was to determine the prevalence of occupational MSDs in construction apprentices from Hungary.

Methods: 119 apprentices from plumbing and sheet metal apprenticeship schools participated in the study. Data collection consisted of a self-administered symptom survey (similar to the standardized Nordic Questionnaire) and a job factors survey. Additionally, hand symptoms and electrophysiological studies of the median nerve at the wrist were assessed to determine the prevalence of carpal tunnel syndrome.

Results: The participation rate among the apprentices was 98%. The average age of the apprentices was 17 years (range 15 to 21). The average number of years in the trade (classroom or on the job training) was 2.9 years. The highest 12-month period prevalence of self-reported occupationally related MSDs symptoms were in the low back (30% indicating “yes”), wrist / hands (18% indicating “yes”), and shoulders (12% indicating “yes”). Nearly 40% of the apprentices that indicated the presence of back pain were prevented from working at least one-day in the previous 12 months as a result. Though 18% of the apprentices indicated that they had had occupationally related hand / wrist symptoms, none of the apprentices met the case definition of carpal tunnel syndrome. The three job factors with the highest percentage of apprentices indicating that they contributed to work-related symptoms were “continuing to work injured or hurt,” “working in the same position for long periods,” and “bending or twisting the back in an awkward way”.

Conclusions: It appears that occupational MSDs begin early in a construction worker’s career. Carpal tunnel syndrome, however, is not a condition that is prevalent among construction apprentices in Hungary. The authors concluded that comparison of this data with data from other countries should be performed to identify international differences in the prevalence of MSDs and ergonomically efficient work methods and practices.

For most of the risk factors, with the exception of exposure to vibrations and carrying heavy loads, at least a quarter to a third of workers report continuous exposures.

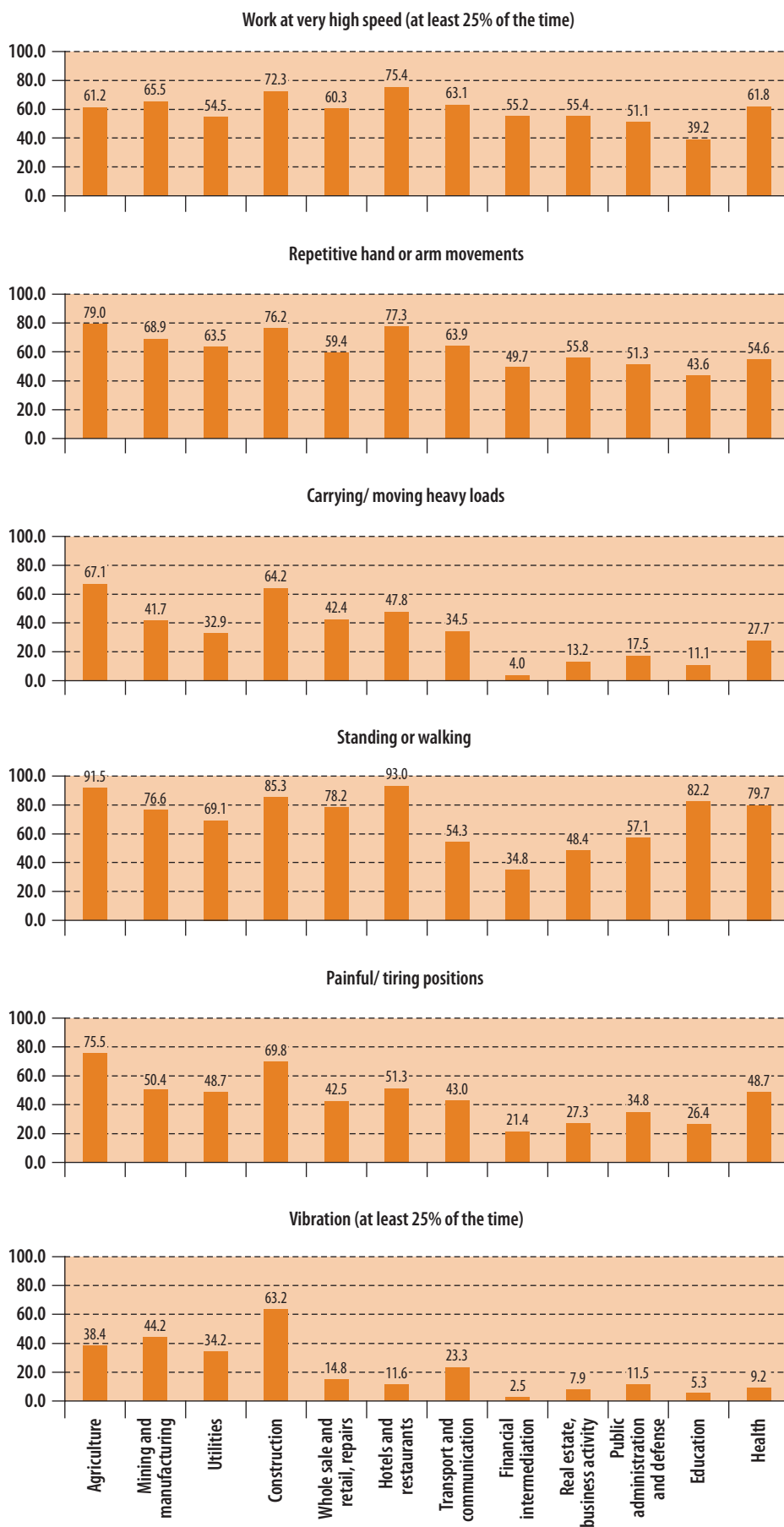
5.1.5. MSDs risk factors and industrial sector

As can be seen in Figure 70 below, in many sectors, workers are exposed to several MSDs risk factors at the same time. When looking at self-assessed exposure, it isn’t surprising that MSDs health problems affect workers in many sectors. For most of the risk factors, with the exception of exposure to vibrations and carrying heavy loads, at least a quarter to a third of workers report continuous exposures. This is confirmed by national figures, for example from Spain and France, that provide a more in-depth analysis of the exposures and risk factors (see section 5.2. for more details). While some of these factors, such as repetitive work, are recognised physical risks in the traditional industrial sectors, agriculture and construction, there is a general underrecognition in the growing services sectors, such as health and education. Some of these risks may highly affect specific groups of workers, as outlined above for example women or young workers, who are concentrated in these sectors.



⁽¹⁰¹⁾ Musculoskeletal Disorders in Hungarian Construction Apprentices, Electronic Library of Construction Safety and Health, USA, 2000. <http://www.cdc.gov/elcosh/docs/d0100/d000197/d000197.html>

Figure 70: Overview: Exposure to MSDs risk factors by sector, ESWC 2005, % workers exposed



Source: ESWC

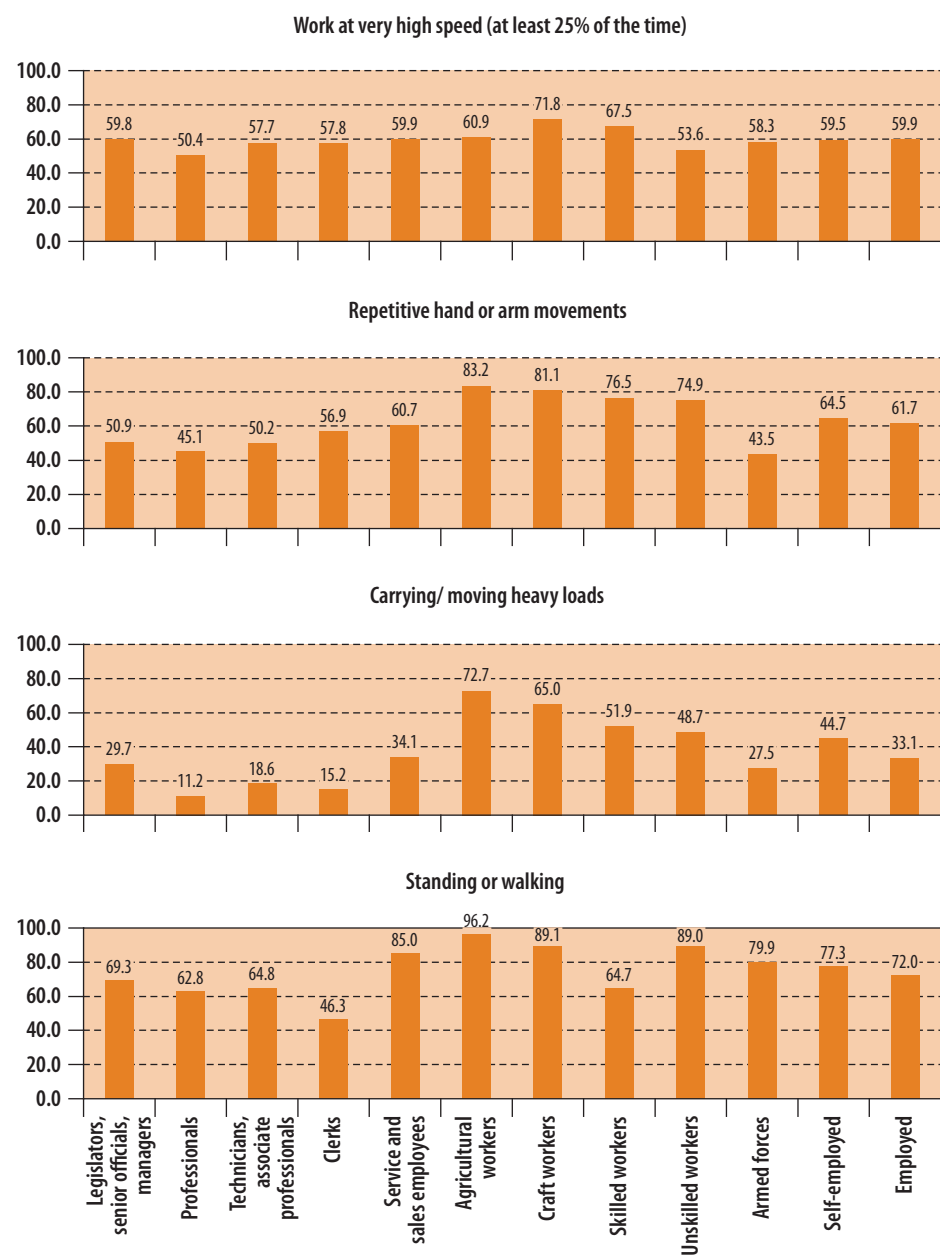


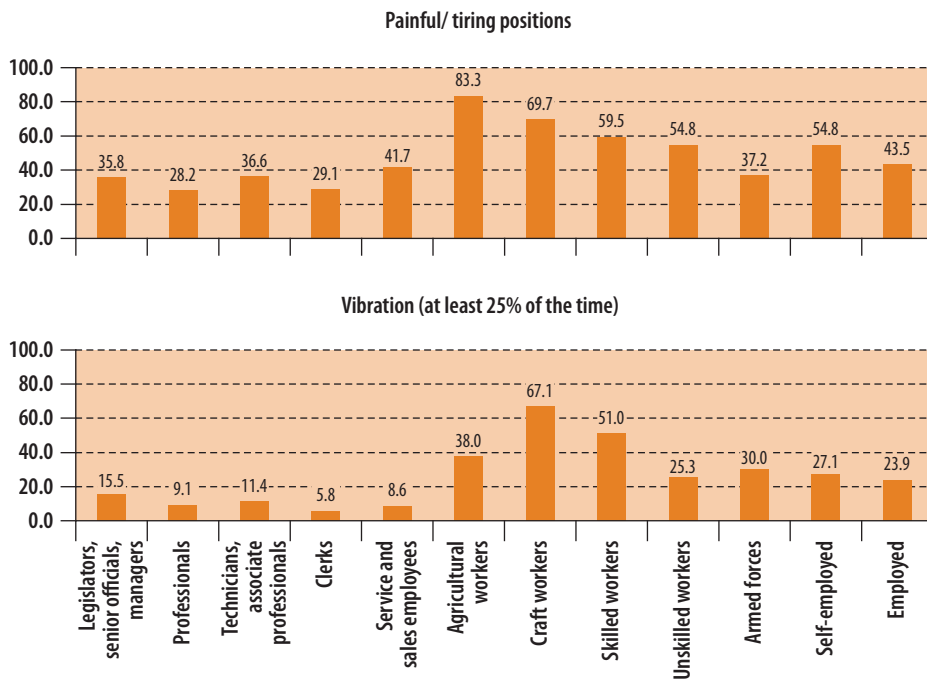
Blue-collar and service workers tend to be more exposed to physical risks such as carrying or moving heavy loads, painful and tiring positions and vibrations, while repetitive work and working at high speed affect all occupations.

5.1.6. MSDs risk factors and occupation

Blue-collar and service workers tend to be more exposed to physical risks such as carrying or moving heavy loads, painful and tiring positions and vibrations, while repetitive work and working at high speed affect all occupations. Prolonged standing and walking is a notable risk factor in the “traditional” sectors such as agriculture and construction, but also highly affects workers in service professions, above all in hospitality and retail, a fact that is barely reflected in monitoring and recognition of lower limb disorders. Again, it can be observed that workers are generally exposed to several MSDs risk factors simultaneously, particularly service and blue-collar workers. Also, it has to be observed that self-employed workers are highly concerned by the major MSDs risks.

Figure 71: Overview: exposure at least a quarter of the time, by occupation, ESWC 2005



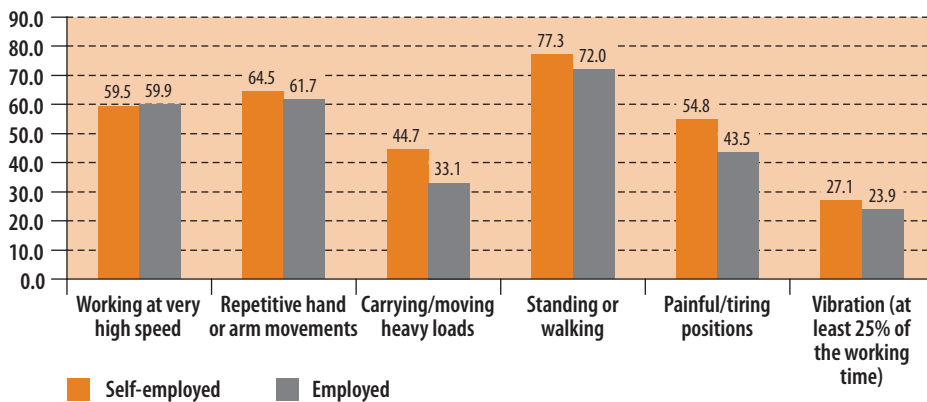


Source: ESWC

5.1.7. Self-employed workers

According to the ESWC, self-employed workers are more exposed to several MSDs risk factors: repetitive movements, carrying/moving heavy loads, prolonged standing or walking, painful and tiring positions and exposure to vibrations.

Figure 72: Overview: exposure at least a quarter of the time, self-employed versus employed workers, ESWC 2005



Source: ESWC



5.1.8. Summary: Groups at risks

Table 20: Overview: Groups exposed to risk factors for development of MSDs, Europe, ESWC 2005

Risk factors	Age	Gender	Sector	Occupation	Employment status
Working at high speed	Decreasing with age, highest for < 25		All sectors	All occupations	
Repetitive movements	Least for older workers		All sectors Agriculture; Hotels and restaurants; Construction, Mining and manufacturing Transport and communication score highest	All occupations, Most for Agricultural, Craft, Skilled and unskilled workers	Self-employed
Carrying/moving heavy loads	<25	Male workers, Female workers in service sectors	Agriculture Construction Hotels and restaurants, Wholesale and retail, Mining and manufacturing Utilities	Agricultural, Craft, Skilled and unskilled workers	Self-employed
Painful/tiring positions	All ages	Male workers, Female workers in manufacturing and services	Agriculture Construction Hotels and restaurants, Mining and manufacturing Utilities	Agricultural, Craft, Skilled and unskilled workers	Self-employed
Prolonged standing or walking	<25	Male and female workers in main employment sectors	Hotels and restaurants Agriculture Construction Wholesale and retail Mining and manufacturing	All occupations, Most for blue-collar and service and retail workers	Self-employed
Lifting and moving people	25-54	Women	Health care sector		
Vibrations	Least for older workers	Men, Women in manufacturing	Construction Mining and manufacturing Agriculture Utilities	Craft, Skilled and Agricultural workers, Armed forces	Self-employed



5.2.

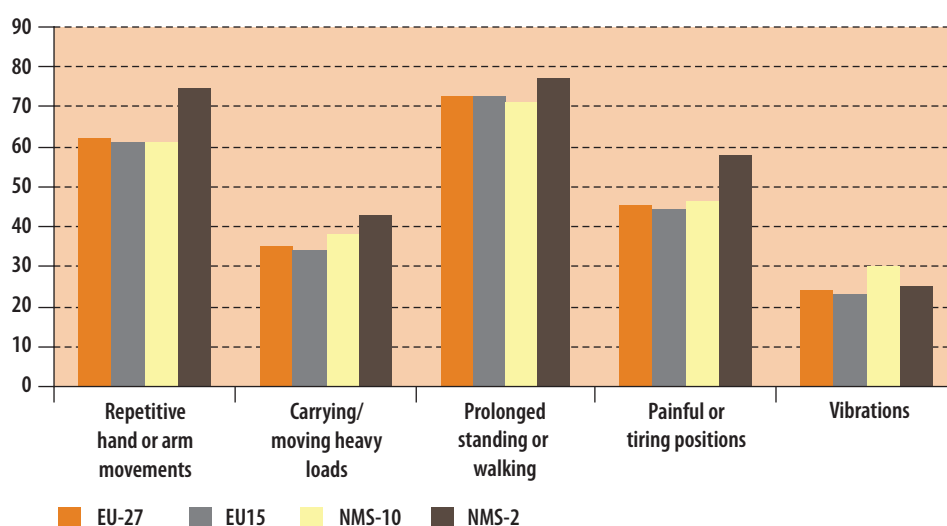
DATA FROM THE MEMBER STATES

5.2.1. ESWC data – Overview by country and risk factor

The table below provides an overview of the responses to the ESWC 2005 by Member State. Exposures tend to be slightly higher in the EU-12 (newer Member States) than in the EU-15. This is especially true for exposure to vibrations.

In any case, a very high proportion of workers is exposed to MSDs risk factors, and very probably to several at the same time. Data from some of the Member States as presented in this section further confirm these findings, as well as the trend to workplaces that involve static postures, frequent or constant sitting and standing or walking.

Figure 73: Overview: exposure to MSDs risk factors at least a quarter of the time, ESWC 2005



Source: ESWC



Table 21: Workers exposed to risk factors for development of MSDs, ESWC 2005, Member States data, % workers exposed

Member state	MSDs risk factor				
	Repetitive hand or arm movements	Carrying/ moving heavy loads	Prolonged standing or walking	Painful or tiring positions	Vibrations
Belgium	52.4	30.6	67.1	39.4	18.7
Bulgaria	67.6	36.0	71.0	45.9	24.8
Czech Republic	66.6	31.2	59.6	30.0	25.4
Denmark	61.2	29.8	73.5	35.5	16.8
Germany	56.9	31.8	73.5	46.4	28.8
Estonia	65.4	39.7	72.8	50.9	33.6
Greece	76.8	41.3	75.0	66.2	30.6
Spain	64.5	40.7	72.8	48.2	26.8
France	60.7	39.2	74.9	52.8	21.8
Ireland	51.5	32.1	72.0	31.6	20.1
Italy	64.6	28.5	74.1	48.9	24.4
Cyprus	64.5	29.8	62.1	59.6	28.4
Latvia	59.1	41.4	74.1	48.5	31.7
Lithuania	69.3	41.9	80.4	47.2	31.8
Luxemburg	54.1	25.6	64.7	43.6	18.8
Hungary	62.3	36.3	70.5	53.2	34.2
Malta	51.1	36.0	70.2	44.2	23.1
Netherlands	60.7	22.0	59.1	24.8	15.9
Austria	57.2	35.9	72.9	50.1	24.3
Poland	58.1	40.8	73.1	51.0	31.2
Portugal	74.2	37.0	80.0	57.1	33.3
Romania	77.2	45.1	78.8	61.5	25.6
Slovenia	64.3	35.0	72.7	51.8	29.2
Slovakia	64.7	36.1	75.3	33.2	24.1
Finland	79.6	38.5	79.4	45.2	21.6
Sweden	64.2	36.7	77.6	43.6	15.1
United Kingdom	60.0	33.9	71.6	30.6	15.4
EU-27	62.3	35.0	72.9	45.5	24.2
EU-15	61.5	33.9	72.9	44.4	23.1
NMS-10	61.5	38.0	71.0	46.4	30.1
NMS-2	74.9	42.8	76.9	57.7	25.4

Source: ESWC



5.2.2. Czech Republic

The results from the Fourth European Survey on Working Conditions (ESWC) reveal that almost a quarter of Czech workers reported suffering from MSDs and that the most affected age group was that of workers aged 25 to 39 years old. By gender, the prevalence of MSDs seems to be higher among men while in terms of activity sector, workers in construction and in transport and communications are the most affected by MSDs.

Exposure to MSDs risk factors in the Czech Republic according to the ESWC is as follows:

- 66.6% workers exposed to repetitive hand or arm movements
- 30% to painful or tiring positions
- 31.2% carrying or moving heavy loads
- 59.6% standing or walking
- 25.4% exposed to vibrations.

About 752,000 workers, of which 272,000 women, are currently exposed to awkward working postures, mainly standing or sitting.

According to the Czech National Registry of Working Activities¹⁰², about 752,000 workers were exposed to awkward working postures in 2006, of which 272,000 women (36%). The level of exposure of most workers (97%) corresponds to risk category 2. Category 2 jobs are performed predominantly standing or sitting or alternating those postures, with a certain ratio of conditionally “acceptable” and “unacceptable” work postures¹⁰³. The workload is evaluated for each part of the body independently. The overall duration of work in “acceptable” and “unacceptable” work positions must not exceed half of the 8-hour shift. Category 3 jobs are performed under conditions in which the limits set for Category 2 are exceeded.

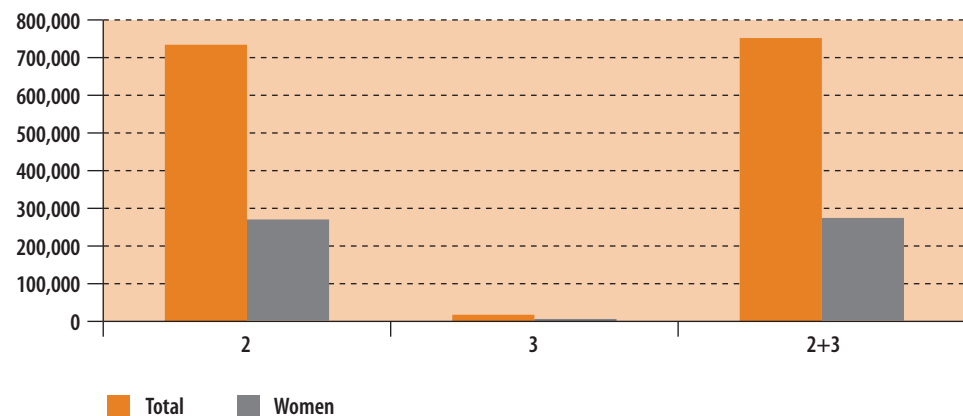
Workers are most exposed in mining and manufacturing; most of them are craft and related trade workers. The data are cross-sectional, thus time trends cannot be assessed. Unfortunately, no data on age and employment status are available.

⁽¹⁰²⁾ Czech National Registry of Working Activities, National Institute of Public Health, Center of Occupational Health

⁽¹⁰³⁾ For the activity to be characterised category 2, the sum of the time periods during which the work is performed in each conditionally acceptable working posture should be between 100 and 160 minutes per 8-hr shift; simultaneously, the duration of separate conditionally acceptable working positions should not exceed the limit set in specific legal regulations: the overall duration of work in individual unacceptable working positions between 20 and 30 minutes per 8-hr shift. The work load in conditionally acceptable and in unacceptable positions is evaluated for each part of the body independently. The overall duration of work in conditionally acceptable and in unacceptable working positions must not exceed half of the 8-hr shift.



Figure 74: Workers exposed to awkward postures by risk category and gender



Source: Czech National Register of Working Activities

5.2.3. Finland

The results of the ESWC 2005 reveal that:

- About 79.6% of the workers report being exposed to repetitive movements,
- About 38.5% carrying or moving heavy loads,
- About 45.2% of the workers report being exposed to painful or tiring postures at least a quarter of the time,
- About 21.6% exposure to vibrations,
- About 79.4% standing or walking.

Case study – MSDs among dentists and teachers¹⁰⁴



The study aimed to investigate the effect of mechanical stress on finger osteoarthritis (OA) by comparing women from two occupations with different hand load but the same socio-economic grade, and to investigate whether hand load may affect the pattern of joint involvement in OA. The study found that finger osteoarthritis in middle-aged women is highly prevalent and often polyarticular. Hand use may have a protective effect on finger joint OA, whereas continuing joint overload may lead to joint impairment.

Table 22: Prevalence of osteoarthritis of grade 2 or more in any finger joint among dentists and teachers by age categories

Age (years)	Prevalence (%)	
	Dentists	Teachers
45-49	30	40
50-54	41	38
55-63	64	63

⁽¹⁰⁴⁾ S. Solovieva, T. Vehmas, H. Riihimäki, K. Luoma and P. Leino-Arjas, Hand use and patterns of joint involvement in osteoarthritis. A comparison of female dentists and teachers, 2005, Rheumatology 2005;44:521–528



Table 23: Overview: Groups exposed to risk factors for development of MSDs, Finland, Work and health survey¹⁰⁵

Risk factors	Age	Gender	Sector	Occupation
Carrying/ moving heavy loads	No difference	Men	Construction Hotels & restaurants Agriculture Transport	Agricultural workers Craft & related trades workers Elementary occupations Service workers Painful/ tiring postures
Painful/ tiring postures		Women	Construction Hotels & restaurants	Craft & related trades workers

5.2.4. France

Groups particularly exposed to heavy work are young workers, blue-collar workers, service workers, apprentices and temporary workers.

28% are exposed to more than two MSDs risk factors, women are slightly more prone to have multiple exposures.



According to the results of the ESWC 2005:

- About 60.7% of the workers report being exposed to repetitive movements,
- About 39.2% carrying or moving heavy loads,
- About 52.8% being exposed to painful or tiring postures,
- About 10.9% having to lift or move people at least a quarter of the working time,
- About 74.9% standing and walking.

The national SUMER survey¹⁰⁶ provides an inventory of employee exposure to the main occupational risks in France. The survey is instigated and jointly led by the Labour Relations Directorate (Direction des Relations du Travail, DRT) and the Directorate for Research, Analysis and Statistics of the Ministry of Social Affairs, Labour and Solidarity (DARES). Occupational physicians survey workers under their medical care. The survey population includes all workers covered by the unemployment insurance system (Union Nationale Interprofessionnelle pour l'Emploi dans l'Industrie et le Commerce, Unedic), or by the agricultural mutual insurance (Mutuelle Sociale Agricole, MSA). A new round of the survey is planned to be conducted in 2009. For the first time, the survey will also cover parts of the public sector.

In 2003, almost 7.5 million French workers had to lift or move "heavy loads".

Regarding MSDs risk factors, according to the SUMER survey, in 2003, almost 7.5 million workers had to lift or move heavy loads, as defined by European regulations. There has been a slight increase in manual handling of loads: 41% of workers in 2003, against 38% in 1994. Some 10% of all workers repeat the same movement, or set of movements, for more than 10 hours a week. This compares with 12.5% in 1994. Irrespective of duration,

⁽¹⁰⁵⁾ Work and health survey, Finnish Institute of Occupational Health

⁽¹⁰⁶⁾ Description and results available at <http://www.travail-solidarite.gouv.fr/etudes-recherche-statistiques-de,76/statistiques,78/sante-au-travail,87/enquetes,273/>



Groups particularly exposed to "heavy work" are young workers, blue-collar workers, service workers, apprentices and temporary workers.

17% of all workers have to make repetitive movements, which are known to contribute, along with other factors, to musculoskeletal disorders.

According to the SUMER 2003 survey, 32% of all workers are also exposed to situations generating fatigue: e.g. frequently walking from one place to another, remaining standing for long periods, and fast pace repetitive work. 21% of all workers have to cope with constrained postures: kneeling, arms raised or a position involving twisting. 10% of all workers are also exposed to neck constraints. In all, almost one of every two workers suffers at least one constrained posture or joint stress that can be considered serious.

Finally, and again according to the SUMER 2003 survey^{107,108}, groups particularly exposed to heavy work are young workers, blue-collar workers, service workers, apprentices and temporary workers.

Heavy work is defined as follows:

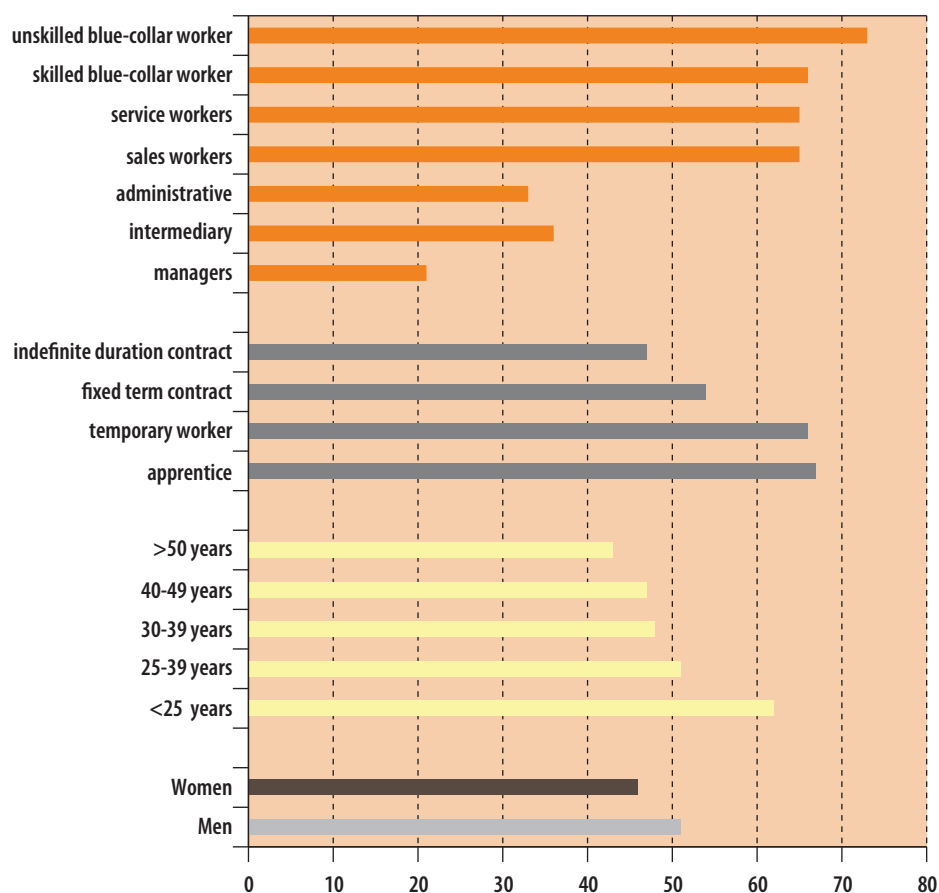
- Repetitive work with high frequency > 20 hours/week
- Manual handling of loads > 20 hours/week
- High psychological demand > 3rd quartile of Karasek
- Low social support < 1st quartile of Karasek
- Visual (screen work or use of binoculars, or precision work) > 20 hours/week
- Elevated arms > 10 hours/week
- Use of vibrating tools > 2 hours/week
- Other painful postures (twisted, squatting) > 10 hours/week
- Exposure to cold > 20 hours/week

⁽¹⁰⁷⁾ Contraintes posturales et articulaires au travail, DARES Premieres synthèses, Informations Mars 2006, available at <http://www.travail-solidarite.gouv.fr/IMG/pdf/2006.03-11.2.pdf>

⁽¹⁰⁸⁾ Nicole Guignon, MSDs – Monitoring of exposures and related diseases in France, Presentation at the Lighten the Load Summit, European Agency for Health and Safety at Work, Bilbao, 26th February 2008, available at http://osha.europa.eu/en/campaigns/ew2007/europeansummit/index_html/presentations/guignon.ppt



Figure 75: % Workers exposed to “heavy work”, SUMER 2003 results, France¹⁰⁹



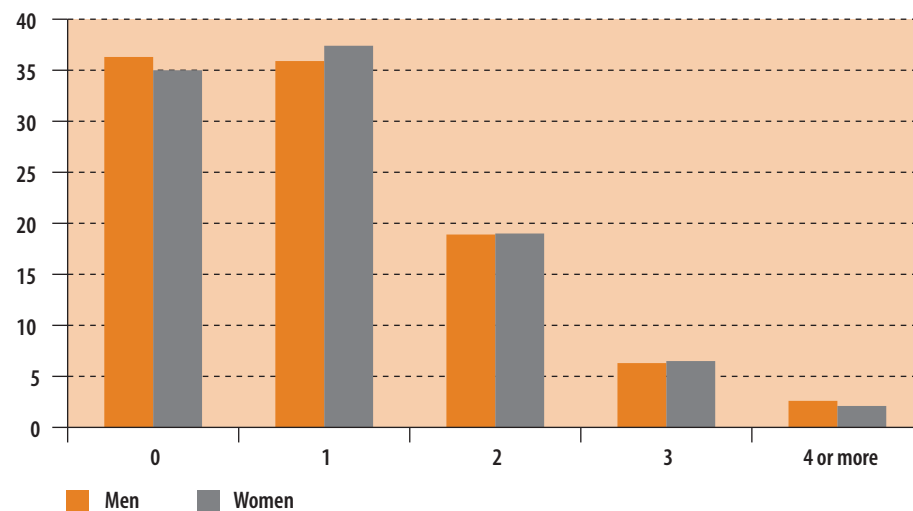
Source: Sumer 2003

It is also important to look at the number of MSDs risk factors to which workers are exposed. When looking at multiple exposures to MSDs risk factors, it can be seen that women have a slightly higher exposure to more than one risk factor.

⁽¹⁰⁹⁾ Intermediary professions according to INSEE: two thirds of the group are middle managers and employees in education, health care and social work (teachers, nurses, social workers), technical professions and foremen, includes categories 41 and 46-48 of the PCS 2003. (http://www.insee.fr/fr/methodes/default.asp?page=nomenclatures/pcs2003/n1_4.htm)



Figure 76: Number of risk factors by gender / % of workers exposed, SUMER 2003, France

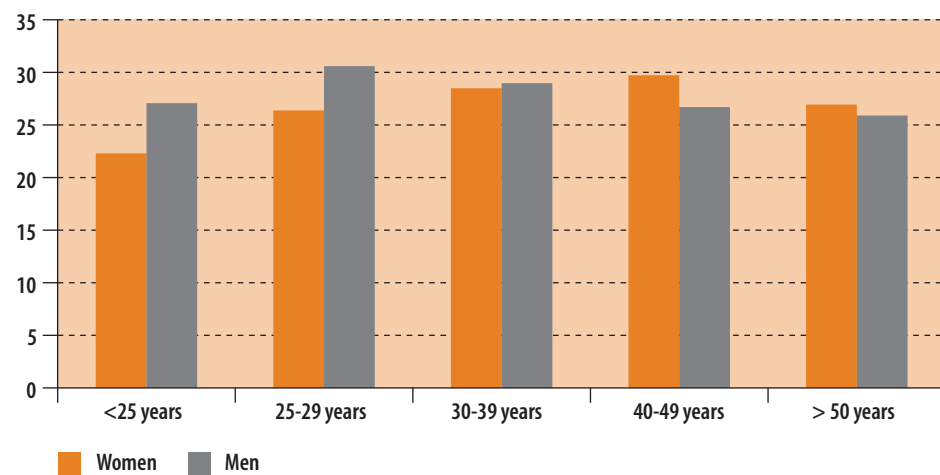


Source: Sumer 2003

According to SUMER 2003, 27.7% of the workers have a high exposure to multiple MSDs risk factors (> 2). A simple extrapolation to the total population to which SUMER applies would yield a number of 4.8 million workers with high exposure to MSDs risk factors.

Figure 77: % Workers exposed to two or more MSDs risk factors by gender and age, SUMER 2003, France

27.7% of the workers are exposed to more than two MSDs risk factors. A simple extrapolation would yield a number of 4.8 million workers with high exposure.



Source: Sumer 2003

The analysis also shows that regarding multiple exposures, with increasing age and beyond the age of 30, the situation of men is improving, while the situation of women is continuously worsening.

Regarding sectors, more than half of all blue collar and clerical workers in the trade and service sector perform manual load handling. In the construction sector, almost seven out of ten workers are concerned, and one worker out of four spends more than ten hours a week on such activities.

Repetitive work essentially concerns unskilled workers, both male and female. It is very common in the clothing and leather industries (almost one worker out of two), and to a lesser extent in personal service activities and private households with employed persons, the home equipment and textile industries, agri-food and agriculture.

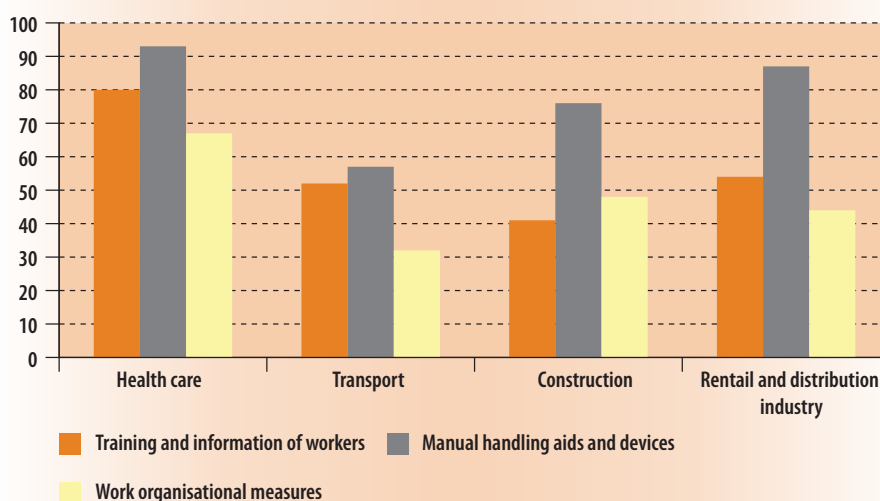


SLIC manual handling campaign (France)¹¹⁰

The national report on the 2007 inspection campaign is included in the annual report of the French ministry of labour (Bilan conditions de travail 2007). It was carried out in the framework of a Europe-wide campaign of the Senior Labour Inspectors' Committee ¹¹¹ focusing on manual handling. Three sectors were in the national focus of the campaign: construction, transport and health care.

About two thirds of the enterprises had conducted and documented a risk assessment, with the health care sector taking the lead.

Figure 78: SLIC manual handling inspection campaign France - sectoral results (% enterprises who have introduced measures)



While enterprises generally put at the disposal of workers lifting and moving aids, work organisational measures are much less often implemented.

Source: adapted from Bilan des Conditions de travail 2007, Chap. 6

Regarding prevention measures, while enterprises generally put at the disposal of workers lifting and moving aids, work organisational measures were much less often implemented.

Some issues of concern mentioned identified in the report are:

- for transport: the lack of awareness in air transport and the strongly growing courier (parcel) services sector,
- for the health care sector: the reluctance of patients to allow the use of lifting aids, the lack of prevention measures in complementary tasks for example in laundries and kitchens, and the lack of prevention measures in home and elderly care services
- for construction: the still high average weight of loads, lack of training of workers, and the particular situation of more precarious and temporary workers.

⁽¹¹⁰⁾ Bilan des conditions de travail 2007, chapitre 6, bilan de la campagne de contrôle manutention manuelle, pp. 159-170. http://www.travail-solidarite.gouv.fr/IMG/pdf/Chap_06.pdf

⁽¹¹¹⁾ In 2007, the Senior Labour Inspectors Committee initiated the European inspection campaign in the transport and health care sectors, called "Lighten the load". For more information see chapter 5.4.1. and <http://www.handlingloads.eu/en/site/>



Already in the 1980s, women in France were found to be more often exposed to repetitive work with fast pace.

Case study – Repetitive work and upper-limb symptoms among industrial workers



Relationships between repetitive work with fast pace and upper-limb symptoms among industrial workers were first studied in two epidemiological surveys carried out by occupational practitioners in the late 1980s. The ESTEV¹¹² survey (covering 21,378, men and women, aged 37, 42, 47, and 52 when the survey was started), and the slaughterhouses-canneries survey showed that women report upper-limb pain more often than men, whatever their age, and they were more often exposed to repetitive work with fast pace.¹¹³ This is in line with the latest findings from the SUMER 2003 survey.



Table 24: Overview: Groups exposed to risk factors for development of MSDs, France, National statistics for occupational accidents and diseases and accidents to and from work¹¹⁴

	Age	Gender	Sector	
Self-reported exposures	Young workers, Apprentices	Female workers slightly more affected by multiple exposures	Clothing and leather industries Personal service activities and private households Agri-food and agriculture	Unskilled workers, both male and female Temporary workers Blue-collar workers Service workers Apprentices

5.2.5. Germany

The results of the ESWC 2005 reveal that:

- About 56.9% of the workers report being exposed to repetitive movements,
 - About 31.8% carrying or moving heavy loads,
 - About 46.4% being exposed to painful or tiring postures,
 - About 73.5% report standing or walking,
 - 6.9% having to lift or move people,
- at least a quarter of the working time.

⁽¹¹²⁾ ESTEV (enquête santé, travail et vieillissement), survey: health, work and ageing, see <http://www.hcsp.fr/hcspi/docspdf/adsp/adsp-21/ad214545.pdf>

⁽¹¹³⁾ Repetitive work with fast pace and upper-limb symptoms among industrial workers, 1997

⁽¹¹⁴⁾ National statistics for occupational accidents and diseases and accidents to and from work, http://www.risquesprofessionnels.ameli.fr/fr/synthese/statistiques_synthese_1.php



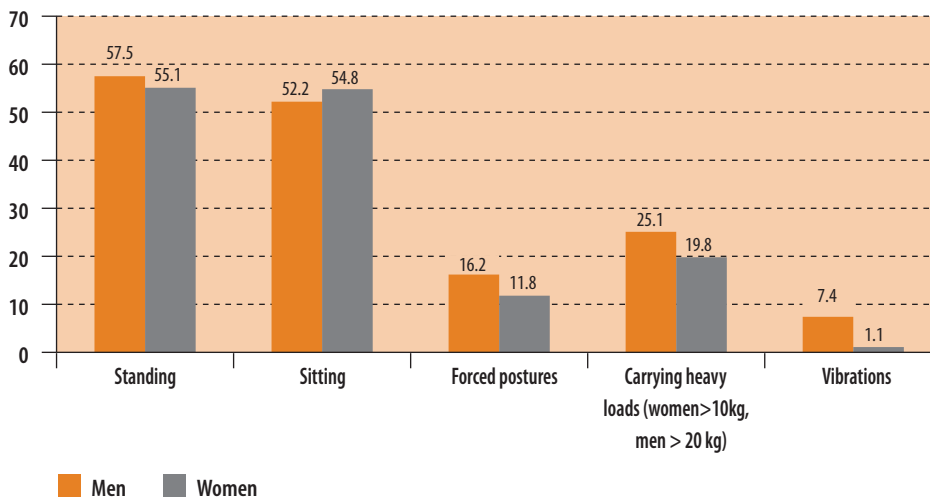
When looking at the figures from the latest national survey¹¹⁵ in terms of exposures to MSDs risk factors, it can be seen that these results are more or less in range with national findings, except for postures:

- 56.5% report frequent standing,
- 53.3% sitting,
- 14.3% forced postures,
- 22.8% lifting heavy loads (exceeding 10 kg for women and 20kg for men),
- 4.6% to be exposed to shock or vibration.

The national BIBB/IAB surveys are large representative surveys of 0.1% of the labour force in Germany concerning qualifications, career history and current occupational situations. These surveys are conducted jointly by the Federal Institute for Vocational Training Affairs (BIBB), and the former Institute for Employment Research (IAB), now in co-operation with the Federal Institute for Occupational Safety and Health (BAuA) at intervals of 6-7 years. The BIBB/IAB survey has been renamed BIBB/BAuA survey. The survey carried out in 2005 covered 20,000 workers.

By gender, in the national figures, there are no major differences between women and men as concerns standing or sitting, but there are when looking at heavy loads and exposure to vibrations, where exposures are higher for men.

Figure 79: MSDs risk factors by gender, BIBB/BAuA survey, in %, 2006, Germany



Source: BIBB/BAuA survey 2006

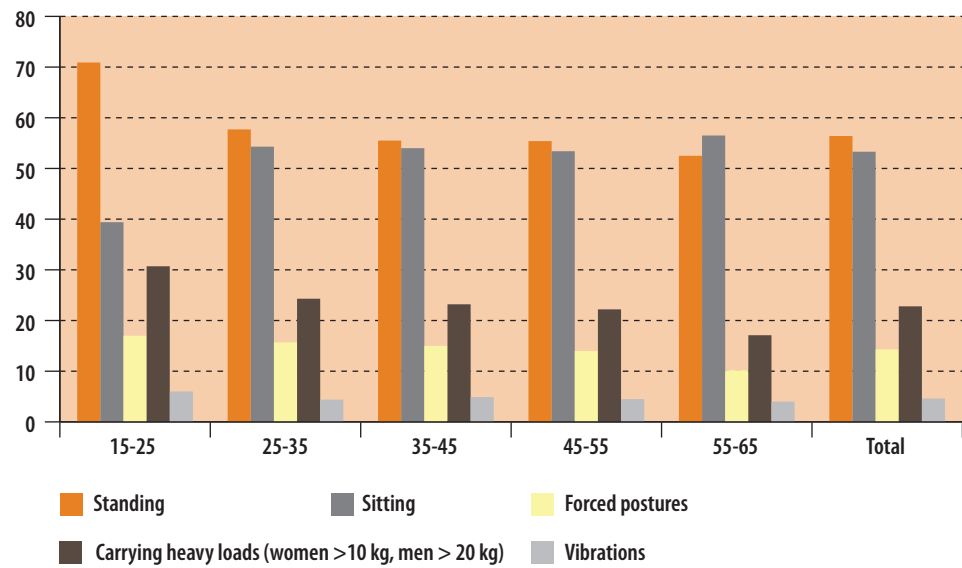
As can be seen in the figure below, patterns of exposure are very different for the different age groups. Young workers report high exposures of all MSDs risk factors. This is consistent with the findings of a European Risk Observatory report on young workers published in 2007, which found that in Germany top sectors for the employment of young people were hotels and restaurants (20.9%), trade (14%) and construction (11.9%).

⁽¹¹⁵⁾ Arbeitsbedingungen in Deutschland - Belastungen, Anforderungen und Gesundheit, BAuA Website, http://www.baua.de/nn_56326/de/Informationen-fuer-die-Praxis/Statistiken/Arbeitsbedingungen/pdf/Tabellen-Beschwerden.pdf?



*Patterns of exposure are very different for the different age groups
Young workers report high exposures to all MSDs risk factors.*

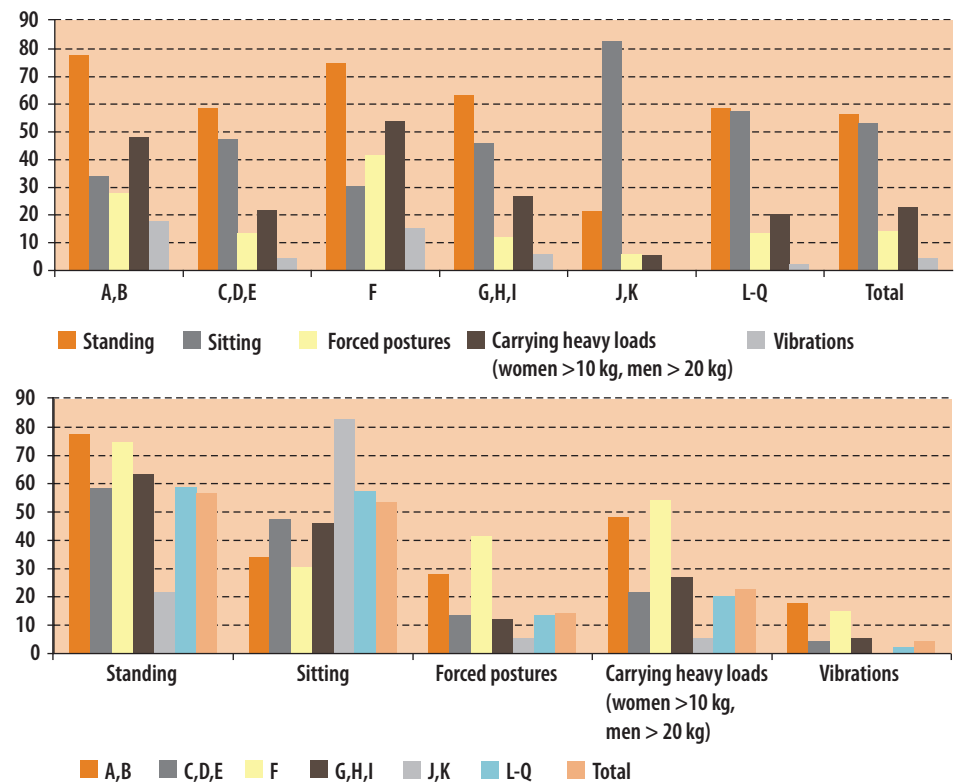
Figure 80: MSDs risk factors by age, BIBB/BAuA survey, in %, 2006, Germany



Source: BIBB/BAuA survey 2006

Very different profiles of exposure also apply to the different industrial sectors. Generally, service professions are as affected as manufacturing or construction by multiple exposures.

Figure 81: MSDs risk factors by sector, BIBB/BAuA survey, in %, 2006, Germany



Source: BIBB/BAuA survey 2006

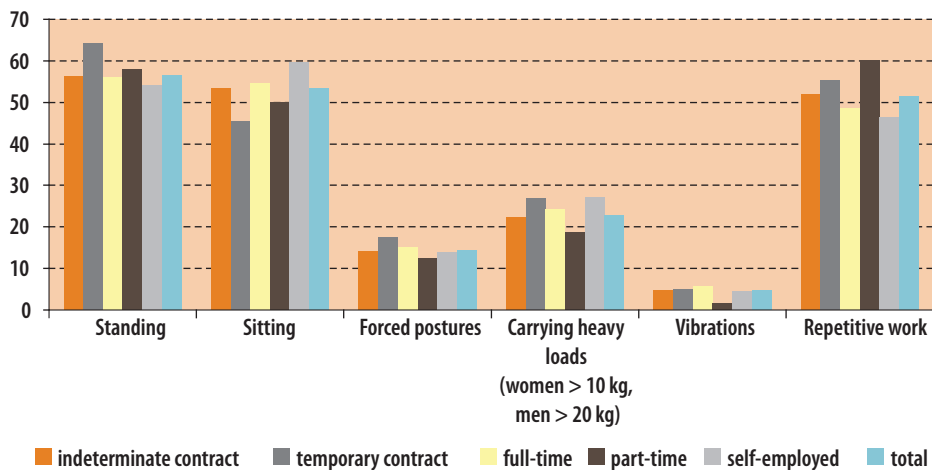


Sector groups (sections in NACE Rev 1.1) used in tables and figures:

- A: Agriculture, hunting, forestry
- B: Fishing
- C: Mining
- D: Manufacturing
- E: Electricity, gas and water
- F: Construction
- G: Whole sale and retail, repairs
- H: Hotels and restaurants
- I: Transport and communication
- J: Financial intermediation
- K: Real estate, business activity
- L: Public administration and defense
- M: Education
- N: Health and social work
- O: Other community, social and personal service activities
- P: Activities of households
- Q: Extra-territorial organizations and bodies

As to the employment status, standing work, carrying heavy loads, forced postures, and repetitive work are relevant for temporary workers, sitting and carrying heavy loads to the self-employed and repetitive work and standing to part-timers.

Figure 82: MSDs risk factors by employment contract, BIBB/BAuA survey, in %, 2006, Germany



Source: BIBB/BAuA survey 2006



Table 25: Overview: Groups exposed to risk factors for development of MSDs, Germany, BIBB/BAuA survey¹¹⁶

Risk factors	Age	Gender	Sector	Employment status
Standing	Highest in workers <25	Slightly higher in men	Agriculture Construction Retail, Hotels and restaurants, Transport	Temporary Part-timers
Sitting	All to a lesser extent young workers	Slightly higher in women	Financial intermediation Real estate administration	Self-employed, Full-time Indeterminate
Vibrations	Young workers most exposed	Men	Agriculture Construction	All except Part-timers
Carrying/moving heavy loads	<25	Men	Construction Agriculture Retail, hotels and restaurants Transport	Self-employed, Temporary Full-time
Painful/tiring postures	Young workers most exposed	Higher in men	Construction Agriculture	Temporary
Repetitive work				Part-timers, temporary

5.2.6. Hungary

The ESWC 2005 data:

- About 62.3% of the Hungarian workers report being exposed to repetitive movements,
- About 36.3% carrying or moving heavy loads,
- About 53.2% being exposed to painful or tiring postures,
- About 34.2% to be exposed to vibrations at least a quarter of the time,
- About 70.5% report to carry out their work standing or sitting.

According to another survey conducted by ILO ¹¹⁷ the three most common safety problems – whether serious or minor – in the workplaces surveyed were transport of materials, lifting and falls. About 70.9% of the respondents considered transport of materials, 62.1% lifting, and 59.7% falls as safety problems of some degree at their workplaces. However, the most common serious problems were lifting (a serious problem in 14.8% of workplaces in the survey), fire risk (12.3%) and transport of materials (10.6%).

⁽¹¹⁶⁾ BIBB/ IAB-Erhebungen Berufliche Qualifikation und Erwerbssituation in Deutschland, Federal Institute for Vocational Training Affairs (BIBB)/ Institute for Employment Research (IAB), Bundesanstalt für Arbeitsschutz und Arbeitsmedizin (BAuA) also took part in the last survey (1998/1999): http://de.osha.eu.int/statistics/erhebungen_und_umfragen/, <http://www.bibb.de/>

⁽¹¹⁷⁾ Safety and Health at the Workplace – Trade Union Experiences in Central and Eastern Europe, ILO, available at http://www.ilo.org/public/english/region/eurpro/budapest/social/safety_cd/hungary/index.htm



Case study – Hand-arm vibration syndrome of Hungarian uranium miners

Complex examination of "Hand-arm vibration syndrome" (HAVS) with special emphasis on osteo-articular changes was carried out between 1998-2004 on 136 uranium miners with evidence of previous exposure to vibration.¹¹⁸ HAVS is recognized as an occupational disease, and on this basis 44 new cases have been notified, and 5 notifications were registered elsewhere. Vascular changes predominated in the clinical manifestation of HAVS, and the severity of these changes showed good correlation with the duration of exposure. Examination of the peripheral nervous system was carried out in 119 cases, the most frequent finding was carpal tunnel syndrome (49 cases; 43.4%) and peripheral neuropathy of the upper limb (16 cases; 14, 14.2%). The longer the exposure, the more frequent the neurological changes, too. Radiology of osteoarticular changes: the predominance of arthrosis (47.1%) and pathological periarticular changes (23.5%) correspond to the physical burden of mining. Most common is the affection of the acromioclavicular and cubital joints. Lesions of the shoulder were most frequent among the examined population, which can be explained by the direct vibration exposure of this region. The simultaneous incidence of aseptic bone necrosis and osteochondritis dissecans, is considerable too. HAVS, which has to be notified and compensated, is irreversible; the clinical appearance remains unchanged even after a long time after the cessation of exposure.



Another study looked at the effect of earlier workplace overpressure of 1.0-2.4 bar in the development of vibration-induced osteoarticular damages of upper extremities detectable in radiographs. A group of 30 caisson miners was investigated and compared to 30 coal miners working under normal atmospheric pressure¹¹⁹. The subjects were match-paired to sex, age and duration of exposure and examined applying the same protocol. The only difference between the two groups was a sixfold occurrence of aseptic carpal bone necrosis among coal miners, suggesting that the workplace overpressure may exert a potential protective effect against the vibration-induced aseptic carpal bone necrosis by a better oxygen saturation in the plasma of the blood — it means a better transmission of oxygen into tissues. The confirmation of this observation and the explanation of its mechanism require further investigation.

5.2.7. Poland

The ESWC 2005 data:

- About 58.1% of the Polish workers report being exposed to repetitive movements,
- About 40.8% carrying or moving heavy loads,
- About 51% being exposed to painful or tiring postures,

⁽¹¹⁸⁾ Uránbányászok "kéz-kar vibrációs szindrómája" (Hand-arm vibration syndrome of uranium miners), Hungarian Society for Radiology – Section of Osteology, 2005. Available at: http://www.mrtos.hu/docread.aspx?web_id=&r_id=39343735&mode=2

⁽¹¹⁹⁾ Befolyásolja-e a munkatérben uralkodó túlnyomás a kéz-kar vibrációs expozíció okozta osteoarticularis eltérések kialakulását a carpalis régióban? (Does overpressure in the workplace influence the development of vibration-induced osteoarticular lesions of the upper limbs?), Hungarian Society for Radiology – Section of Osteology, 2003. Available at http://www.mrt-os.hu/upload/mrtos/document/0404_220.pdf





By courtesy of INSHT, Spain

- About 31.2% to be exposed to vibrations at least a quarter of the time,
- About 73.1% report to carry out their work standing or walking.

According to a national working conditions survey in high-risk sectors, (construction, scheduled passenger land transport, lead, zinc and tin production, copper production, casting of iron, treatment and coating of metals, manufacturing of furniture, and manufacturing of rubber products) in 2003: ¹²⁰

- 81% of workers reported exposure to repetitive movements,
- 67% of workers reported exposure to painful or tiring position and,
- 38% of workers were carrying heavy loads at least a quarter of working time.

Men were found to be more likely to perform repetitive movements, work in painful or tiring position and carrying heavy loads than women.

5.2.8. Spain

The ESWC 2005 data reveal that:

- About 64.5% of the Spanish workers report being exposed to repetitive movements,
- About 40.7% carrying or moving heavy loads,
- About 48.2% being exposed to painful or tiring postures,
- About 26.8% to be exposed to vibrations at least a quarter of the time,
- About 72.8% report to carry out their work standing or walking.

The National Survey of Working Conditions provides a high level of detail on specific postures, shortly described in the following:

According to this source, the more frequent postures at work are “Standing and often walking”, with 37.5% workers affected and “Sitting getting up often” with 32.2%. Considering the length of workers’ exposure to physical demands, the highest percentages are found in “Maintain the same posture” and “Make repetitive hand or arm movements”.

⁽¹²⁰⁾ Working conditions survey in high-risk sectors (construction, transport, manufacturing of basic metals, manufacturing of furniture, manufacturing of rubber products) based on the questionnaire of European Foundation for the Improvement of Living and Working Conditions, data from Central Statistical Office and environmental measures. CIOP-PIB, 2003.



There are no significant differences by age groups or by gender, thus “Maintain the same posture” is most often in both male and female (33% of the total) workers.

The posture “standing and often walking” is most frequent in construction, chemistry and wholesale and retail/hotels and restaurants while the posture “sitting getting up often” is particularly frequent in financial intermediation.

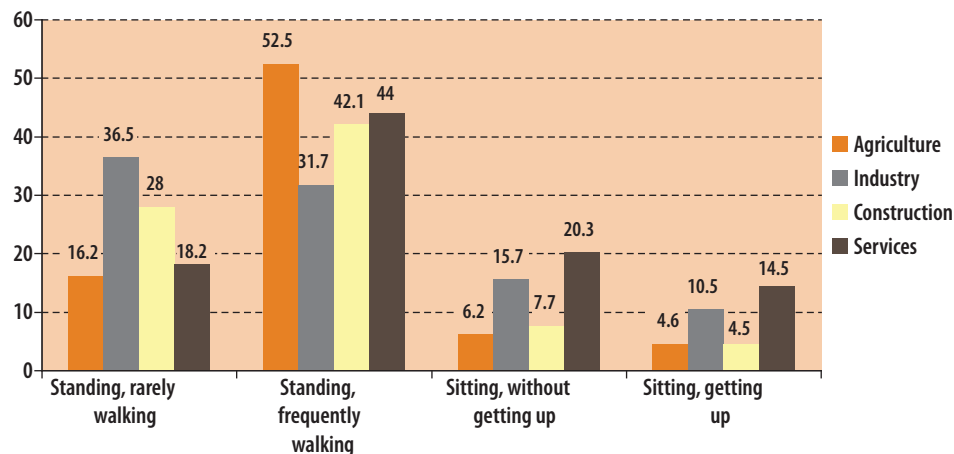
In construction the highest incidence of strained postures can be observed: 9.4% of workers in this sector point out as normal working postures “standing with my knees slightly bent, kneeling or squatting”. Concerning other tiring postures “standing and barely walking”, is very common in sectors such as Metal (25.2%) and in Other Manufacturing Industries (21.4%), and the posture “sitting hardly ever getting up” is often found in Financial Intermediation (26.7%) and Other Services.

When analysing working postures by occupation the figures illustrate that the normal posture for technicians, assistant technicians and clerks is “Sitting, getting up often”, whereas “Standing and often walking” is the common posture for the rest of occupations (service workers, qualified workers and no qualified workers)

“Sitting” is the main posture among workers employed on a permanent basis (50.4%), “Standing” is the most common posture among workers employed on a temporary contract (58.1%).¹²¹

Overall, what can be said is that there seems to be a trend to static postures, illustrated by the diagram below. In an Agency-commissioned expert survey¹²², static postures at work (increasingly sedentary work) were also identified as an emerging workplace risk.

Figure 83: Main postures at workplaces, four main sectors, VI Encuesta Nacional, 2006, Spain



Source: VI Encuesta Nacional (2006)

Overall, there is a trend to static postures to be observed. “Sitting” is the main posture among workers employed on a permanent basis.

⁽¹²¹⁾ National Survey of working conditions, Instituto Nacional de Seguridad e Higiene en el Trabajo, http://www.oect.es/Observatorio/Contenidos/InformesPropios/Desarrollados/Ficheros/Informe_VI_ENCT.pdf

⁽¹²²⁾ Expert forecast on emerging physical risks related to occupational safety and health, European Agency for Safety and Health at Work, EU-OSHA, 2005, <http://osha.europa.eu/en/publications/reports/6805478/view>



5.3. MORE STUDIES AND INITIATIVES – COMBINED EXPOSURES AND ORGANISATIONAL MSDs RISK FACTORS

5.3.1 Time constraints at work and health risks in Europe (EU)^{123,124}



The third European survey on working conditions highlighted the risks and dangerous working conditions that continue to pose a threat to workers' health, as well as the increase in time and organisational constraints at work. Secondary



analysis studies, based on the statistical use of the data gathered from the survey provided more information on the organisation of working time. It explored the links between the organisation of working time and the duration of working time, and the health risks to which workers in the EU are exposed. Trends observed were: a rising trend in atypical working hours and declining working hours but remaining disparities. The report analysed industrial and market constraints on the pace of work and the impact on employees of increasing intensity of work, while trying to identify the sources of strain.

Results of the analysis:

Employees were increasingly inclined to believe that their work threatens their health and indeed reported that their health suffers more if they are forced to work long hours. There was also a distinct correlation between long working hours and employees reporting muscular pain.

The pace of work was found to be subject to different constraints, which can be grouped into two categories. Industrial constraints are related to a desire to standardise productive activity: production targets, speeds of automatic machine, automatic moving of products. Market constraints on the other hand arise from a concern to adapt to customer demand in the broadest sense. An increase in the pace of work can result in a deterioration of working conditions if it is not compensated by an increase in workers' autonomy.

According to employees, industrial constraints impacted significantly on the risks of succumbing to both physical and psychological health problems. Market

⁽¹²³⁾ Time and work: Duration of work, European Foundation for the Improvement of Living and Working Conditions, 2002, available at: <http://www.eurofound.europa.eu/pubdocs/2002/11/en/1/ef0211en.pdf>

⁽¹²⁴⁾ European Foundation for the Improvement of Living and Working Conditions, 2003, available at: <http://www.eurofound.europa.eu/pubdocs/2003/07/en/1/ef0307en.pdf>



constraints were found to have a considerably negative impact on psychological health and a more varying impact on physical health. The impact from the customer's presence is greater than that of simple dependence on demand.

Daily interruptions were linked to a distinct and significant increase in all risks of illnesses recorded (reported by employees and attributed by them to their work). These interruptions, common to so-called 'flexible' and poorly managed organisations, may well be a particularly harmful form of work intensification. Conversely, autonomy and social support at work were found to be susceptible of reducing risks, at least on the psychological level.

Employees subject to the longest working hours were also found to be in the group of employees forced to work at high speed. In this sense, research showed that time pressures at work affects workers' state of health; all the mental problems and most of the physical disorders recorded seemed to be closely linked to work intensity.

5.3.2. Return to work after long-term sickness absence (United Kingdom)¹²⁵

This study was carried out by Loughborough University and funded by the Mental Health Foundation's grants programme. It examined the role of depression in returning to work after a period of sickness absence across 4 types of chronic illnesses: depression and anxiety, back pain, heart disease and cancer.



The study conducted focus groups with employers and questionnaires and interviews with employees in order to examine the interaction between depression and the psycho-social work environment.

The report shows that almost half (45%) of those with a physical condition experienced mild to moderate depression, but were more worried about telling their employer about their mental health issues than their cancer or heart disease. The most notable occurrence of depression was among those with back pain and it was recognised this may be due to work itself contributing to back pain, the level of pain experienced and the uncertainty around the recovery period for employees. Low levels of colleague support were associated with symptoms of depression in those with depression and anxiety and for those with back pain.

The study also found that while most line managers were initially supportive when a person returned to work, they were not aware of the long-term effects of a serious physical illness or condition upon an employee's ability to work and mental health.

⁽¹²⁵⁾ Returning to work. The role of depression. Mental Health Foundation, Loughborough University. 2009 <http://www.mentalhealth.org.uk/our-work/all-adults/role-of-depression-following-return-to-work/?locale=en>



5.3.3. Temporary Agency work (Germany, SUGA 2006) ¹²⁶



In its 2006 annual report on safety and health at work, the German government chose temporary agency work as a priority topic and dedicated a chapter to the related health and safety concerns and national statistics.

Most of the jobs are in manufacturing, unskilled labour, eg. in construction, and service jobs, including retail and low-skilled office work.

The number of temporary agency workers has more than tripled between 1995 and 2006, from less than 200,000 to 600,000.

About half of these workers, have contracts with a duration between 1 week and 3 months.

Working conditions of temporary agency workers are unfavourable:

- 76% of the temporary agency workers (vs. 57% on average) carry out their work standing,
- 37 (vs. 24 %) are carrying of heavy loads,
- More of them have to work in unfavourable work postures (19 vs. 16%),
- They are more exposed to noise and unfavourable climatic conditions,
- They have more paced work (39 vs. 32%),
- And less job control (31 vs. 25%).



David Tijero ©

⁽¹²⁶⁾ Sicherheit und Gesundheit bei der Arbeit 2006, Bericht der Bundesregierung über den Stand von Sicherheit und Gesundheit bei der Arbeit und über das Unfall- und Berufskrankheitengeschehen in der Bundesrepublik Deutschland im Jahre 2006, Schwerpunkt – Sicherheit und Gesundheit in der Zeitarbeitsbranche, pp. 42-59. Available at http://de.osha.europa.eu/statistics/statistiken/suga/suga2006/4_schwerpunkt_zeitarbeit.pdf



By courtesy of INSHT, Spain

Consequently, the related health problems of temporary agency workers are:

More:

- pain in hands and arms (32 vs. 22%),
- pain in legs and feet (29 vs. 22%),
- pain in the knees (25 vs. 19%),
- tiredness, exhaustion (48 vs. 43%).

They are less satisfied with:

- physical working conditions (26 vs. 16%),
- training opportunities (46 vs. 30%),
- the type and content of work (21 vs. 7%),
- the opportunity to apply skills (24 vs. 13%).

Also, more than 40% of the occupational accidents concern young temporary agency workers between 20-30 years of age.

5.3.4. Upper limb disorders in keyboard workers (UK)

In a recent study¹²⁷ by the Institute of Occupational Medicine (IOM), carried out on behalf of the HSE, over 1,300 users of display screen equipment (DSE) from various UK organisations were studied. A variety of ill-health symptoms have been associated with work with Display Screen Equipment (DSE) including musculoskeletal disorders; mental stress; and visual fatigue. The project sought information about the extent of such ill-health in DSE workers through a survey of employees.



Key findings were:

- 73% of all respondents to the questionnaire survey reported one or more musculoskeletal symptom.
- 12 month prevalence of individual musculoskeletal symptoms ranged from 12% for elbow and forearm symptoms to 47% for neck symptoms. Symptoms involving the shoulder, neck and back were most frequently reported together.
- Slightly over half of all respondents reported symptoms affecting the head and/or eyes.
- As expected from the literature, symptoms were reported more frequently by women than men.

⁽¹²⁷⁾ Melrose, A.S., Graveling R.A., Cowie H., Ritchie P., Hutchison P., Mulholland R.M., Better Display Screen Equipment (DSE) work-related ill health data, prepared by the Institute of Occupational Medicine for the Health and Safety Executive 2007, RR561, HSE Research Report. Available at <http://www.hse.gov.uk/research/rrhtm/rr561.htm>



- There was little evidence of differences in prevalence between companies of different sizes or different industry sectors.
- Prevalence of these symptoms was higher among those who spent more time at their computer at work and among those who worked for more than one hour without a break.
- All symptoms were more common among respondents who also had indications of stress, anxiety and/or depression.
- 12 month incidence of musculoskeletal symptoms ranged from 2.7% for forearm and leg symptoms to over 6% for hand and neck symptoms.

Incidence of eye discomfort was higher than for all the musculoskeletal symptoms at 9.5%.

An extensive literature review sought to identify consistent evidence on any possible causal role of workplace factors. These findings were broadly consistent with other studies in the literature. The results showed a significant influence of DSE work in that the prevalences of symptoms were higher among those who spent more time at their computer at work and among those who worked for longer without a break. All symptoms were more common among respondents who had indications of stress, anxiety and/or depression. These findings are again consistent with the published literature. Although many studies have examined possible causal factors, methodological differences make it hard to draw any firm conclusions about causation of symptoms.

5.3.5. Periarticular disorders of the upper limbs and sector (France)



According to the results of epidemiological surveys, the sector is a significant variable for shoulder pain and for carpal tunnel syndrome. For shoulder pain, working in the agri-food industry (excluding packaging) and even more so, working at a checkout, are especially high-risk factors. For carpal tunnel syndrome, the risk in packaging is roughly 4 times higher than with non-exposed subjects and in agri-food, excluding packaging, it is multiplied by three.¹²⁸

A joint epidemiological study of InVS with regional and research institutions¹²⁹ looked at the relationship between the number of MSDs risk factors and the occurrence of diseases. The study built on the SALTSA questionnaire, which defines 19 risk factors for upper limb diseases. Risk factors considered were:

⁽¹²⁸⁾ Periarticular disorders of the upper limbs and organisation of work. Results of the national epidemiological survey, 1996

⁽¹²⁹⁾ Réseau expérimental de surveillance épidémiologique des troubles musculo-squelettiques dans les Pays de la Loire, Roquelaure, Y., Ha, C., Sauteron, M. Available at http://www.invs.sante.fr/publications/2005/rapport_tms/rapport_tms.pdf. Results also presented at the Lighten the Load summit of the 2007 European Week for Safety and Health at Work

General	1. Very repetitive upper-limb movements
	2. No recovery, because movements too repetitive
	3. Muscle effort of arm/forearm
	4. High psychological demand
	5. Low social support
Specific	6. Flexion of the neck
	7. Stretching the neck
	8. Work with screen/binoculars
	9. Working with hands above the shoulders
	10. Extension of arm(s) to the back
	11. Working with arms away from body (> 2 hours)
	12. Working with arms away from body (> 4 hours)
	13. Flexion/extension of the elbow
	14. Rotation movement
	15. Rotation of the wrist
	16. Using index/thumb
	17. Using a vibrating tool
	18. Using a touch keyboard
	19. Exposure to cold

A total of 1,495 workers were surveyed by the INVS in the Pays-de la Loire region. The results showed that there is a correlation in the occurrence of disease with the number of risk factors mentioned above. The workers were exposed to an average of five of the MSDs risk factors mentioned above. On average, half of the workers were exposed to at least two risk factors for the respective body part.

Mapping of combined exposures showed that young workers with less than 30 years are particularly often highly exposed (66% vs. 56%) and that exposures differ in body part by gender, women being more affected by risk of neck disorders. A further conclusion of the study was that when considering repetitive work, it is also important to look at the “quality” of the movement. There can be considerable differences, for example related to different jobs being carried out by male or female workers (horizontal segregation).

Exposures were also found to be particularly high for workers in agriculture, agrifood industry, in the manufacture of consumer goods, in personal services, and in energy and transport. Temporary workers were also found to be higher exposed.

There is a correlation in the occurrence of disease with the number of risk factors. Workers were exposed to an average of five of the MSDs risk factors.



5.3.6. MSDs in call centres (Sweden)



In the study 'Call centre work - characteristics, physical, and psychosocial exposure, and health related outcomes'¹³⁰, it was found through a comparative study that a higher proportion of group call centre workers reported musculoskeletal symptoms compared to other professional computer users. Three out of four operators reported symptoms in the neck/shoulder or arm/hand region. Comfort of the work environment showed the strongest association with symptoms in the neck/shoulder or arm/hand, in both. Other exposures associated with symptoms in the neck/shoulder or arm/hand were: low complexity of work, long total time of customer calls per day, continuous computer work without a break, high psychological demands, low decision latitude, lack of social support from colleagues and lack of support from a supervisor.

5.3.7. Work-related musculoskeletal symptoms reported by female flight attendants on long-haul flights (USA)^{131,132}

Flight attendants with MSDs had higher psychological job demands, job insecurity, and physical load.



This study targeted flight attendants working on long-haul international commercial airline operations. A cross-sectional, mailed survey was conducted with female flight attendants randomly selected from a union membership list. A total of 185 returned completed questionnaires (63% response rate). MSDs in nine body regions were measured by the Nordic Musculoskeletal Questionnaire and the National Institute for Occupational Safety and Health Symptom Survey. Almost all (97%) of the respondents experienced some MSDs, many involving more than one body region. The flight attendants with lower back work-related musculoskeletal disorders, compared with those without lower-back work-related musculoskeletal disorders, had higher perceived psychological job demands, job insecurity, and physical load. The authors emphasised in their conclusions the importance of assessing the influence of both job tasks and work-related psychosocial factors on lower-back work-related musculoskeletal disorders.

⁽¹³⁰⁾ Call centre work – characteristics, physical, and psychosocial exposure, and health related outcomes. Norman K., National Institut for Working Life, Stockholm, 2005, 64 p. Available at: http://osha.europa.eu/data/links/osh_dbcontent.2006-01-02.7745186283

⁽¹³¹⁾ Lee H. Wilbur J. Conrad K.M., Mokadam D., Work-related musculoskeletal symptoms reported by female flight attendants on long-haul flights. *Aviat Space Environ Med.* 2006 Dec;77(12):1283-7

⁽¹³²⁾ Lee H. Wilbur J. Kim MJ, Miller AM. Psychosocial risk factors for work-related musculoskeletal disorders of the lower-back among long-haul international female flight attendants, *J Adv Nurs.* 2008 Mar;61(5):492-502

5.3.8. Influence of low job control on MSDs - Analysis of sickness absence data (Germany) ¹³³

Sickness absence data of approx. 50,000 employees were gathered from the health insurance funds of five companies from the metal processing and retail trade. The employees were grouped in 83 different job types according to the job characteristics. Each job type was assessed with respect to the occurrence of risk factors (70 items). Finally, adjusted relative risks for disease-specific sickness absence were calculated. With respect to all diseases studied "low job control" turned out to be the risk factor highest associated with sickness absence. For example, for back disorders a relative risk of 4.7 was seen for employees whose jobs were highest characterised by "low job control" compared to employees without. In contrast, relative risks concerning "high job demands" were well below one. In general, associations between physical work (e.g. heavy work, vibrations) and sickness absence from various diseases were also observed, but those of psychosocial factors were more consistent and dominant.



5.3.9. The importance of variation of tasks and control over the speed of work – The "BIT" follow up study on office workers (Denmark) ^{134,135,136}

A baseline questionnaire was delivered to 5,033 office workers in 11 Danish companies in the first months of 1999, and a follow up questionnaire was mailed in the last months of 2000 to 3,361. The questionnaire contained questions on ergonomic factors and factors related to work technique. Health outcome was defined as musculoskeletal symptoms for >7 days within the last year of follow-up among the nonsymptomatic respondents at baseline. The study attempted to identify risk factors for musculoskeletal symptoms in the neck and hand-wrist regions among the workers using computers at work. Men's and women's previous symptoms, women's low influence at work and high-placed computer screen, and men's short time in the same job and good computer skills were associated with neck symptoms. For those with almost continual computer use, hand-wrist symptoms were associated with mouse use for at least half of the work time. Furthermore, low influence at work predicts both neck and hand-wrist symptoms.



⁽¹³³⁾ Bödeker W, Effect of occupationally related stress on diagnosis-specific work incapacity, *Soz Präventivmed.* 2000;45(1):25-34

⁽¹³⁴⁾ Juul-Kristensen B., Jensen C., Self-reported workplace related ergonomic conditions as prognostic factors for musculoskeletal symptoms: the "BIT" follow up study on office workers, *Occupational and Environmental Medicine* 2005;62:188-194

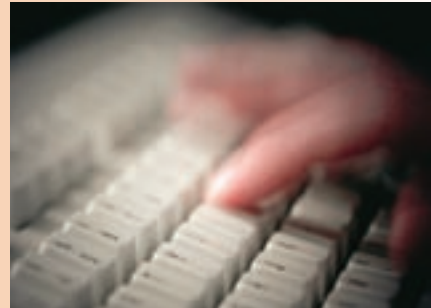
⁽¹³⁵⁾ Jensen C., Development of neck and hand-wrist symptoms in relation to duration of computer use at work, *Scand J Work Environ Health.* 2003 Jun;29(3):197-205

⁽¹³⁶⁾ Risk factors for developing symptoms in shoulder, elbow, and back among computer users - the "BIT"-follow-up study of office workers. *Scandinavian Journal of Work Environment and Health.* 2004 Oct; 30(5): 390-8



The authors of this study also aimed to identify prognostic ergonomic and work technique factors for musculoskeletal symptoms. A subgroup with highly monotonous repetitive computer work that were repeating the same movements and/or tasks for at least 75% of the work time was identified.

Identifying the strong correlation of musculoskeletal symptoms with influence at work, and ergonomic factors such as prolonged use of the computer mouse, the authors concluded that when organising computer work it is important to allow for physical variation with other work tasks, thereby avoiding working with the computer during the whole work shift, and further to consider the worker's own influence on the speed of work. They also stated that limiting computer use to less than three quarters of the working time would help to prevent hand-wrist symptoms.



5.3.10. Horizon scanning: Teleworkers and the trend to mobile workplaces (United Kingdom)¹³⁷

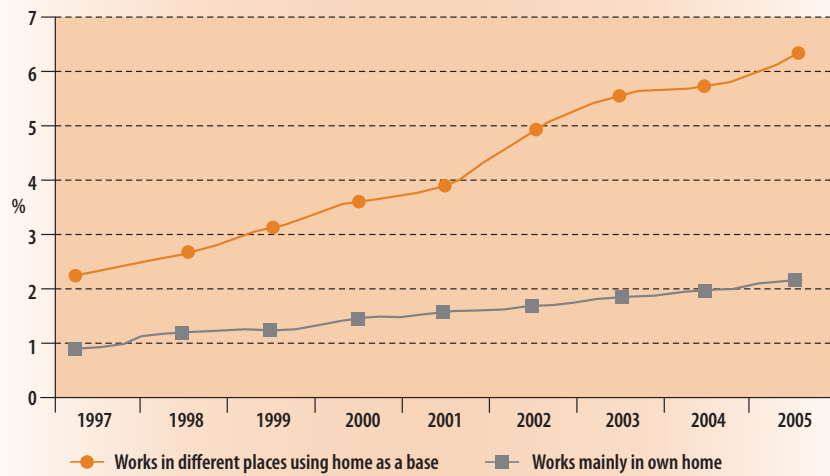


The HSE horizon scanning intelligence group has published in 2006 a short report on flexible working patterns and highlighted that growing numbers of people are working from other locations using the home as a base or working from home. Currently, 8% of the UK workforce are considered to be teleworkers. It was suggested that by 2015, 70-80% of workers could be, at least partially, working from a remote location. The increase is mainly in people working in different places using home as a base, rather than working from home, levels of which have remained relatively stable.



⁽¹³⁷⁾ HSE horizon scanning intelligence group, Flexible working and employment patterns, Horizon scanning SR 003, <http://www.hse.gov.uk/horizons/precwrkreport.pdf>

Figure 84: Flexible working patterns in the UK – facts and previsions



Source: Horizon scanning

The number of people with second jobs has also increased by 68% between 1984 and 2001, rising to its highest level of 1.3 million in 1996, levelling to 1.15 million by 2003.

Keyboard work is one of the most commonly cited causes of work-related MSDs, reported by 14% of those affected. Increased use of wireless devices has also generated health and safety concerns (e.g. 'BlackBerry Thumb'), as the design of such devices tends to be more concerned with size than ergonomics¹³⁸.

⁽¹³⁸⁾ HSE horizon scanning intelligence group, Do keyboards have a future?, Horizon scanning SR 006, <http://www.hse.gov.uk/horizons/keyboards.pdf>



5.4. EUROPE-WIDE INITIATIVES

5.4.1. SLIC manual handling campaign¹³⁹



In 2007 Senior Labour Inspectors Committee initiated this European inspection campaign in the transport and health care sectors¹⁴⁰. The overall goals of the campaign were

- Better compliance in the EU with EU Directive 90/269/EEC (manual handling of loads) in order to reduce musculoskeletal disorders,
- Improving the inspection and communication methods of the labour inspectorates by learning from existing methods,
- Greater harmony in the enforcement of manual handling of loads throughout the EU.

The weight of problems connected with musculoskeletal disorders and the experience gained during the implementation of the campaign in 2007, influenced the decision on continuing activities undertaken by the European labour inspections in 2008 and combining a second round with training and awareness raising activities. Supported by the European Commission, it has been implemented in cooperation with EU-OSHA, and linked to the Agency's campaign on risk assessment – a topic closely related to manual handling of loads.

For awareness raising and information purposes, the SLIC working group had prepared three brochures and a press announcement in each EU language. The first brochure is a more general brochure about the EU directive, the inspection project manual handling of loads and the possible assessment methods. It also contains a short description of the problems on manual handling of loads in Europe. **The second and third brochures** are sector specific and address manual handling problems in the **health care and transport sectors**, their assessment and possible source solutions.

The 2008 campaign is targeting construction and the retail trade, one of the aims being to implement a more uniform approach, for example in supermarket chains established in several of the participating countries.

For the 2008 campaign the following actions and products were defined:

1. Communication campaign using the Internet and mass media;
2. Training for labour inspectors, conducted at a national level based on common European auxiliary methodological and training materials;
3. Publications for the construction and retail sectors;

⁽¹³⁹⁾ For more information see the 'Lighten the load' SLIC campaign site, <http://www.handlingloads.eu/en/site/>, site available in all official languages

⁽¹⁴⁰⁾ SLIC European inspection and communication campaign, 'Manual Handling of Loads in Europe 2007 in transport and care', SLIC 2006 http://www.handlingloads.eu/en/site/px_en-measures.pdf

4. Inspection campaign implemented on the basis of common guidelines on the strategy of preventing the risk of injury during manual handling of loads;

5. A seminar summing-up the campaign carried out in the years 2007 and 2008.

EU experience indicates that inspectors find manual handling more difficult to address than most other topics. Therefore the SLIC set up a 2-day European 'Train the trainers on Manual Handling of Loads' programme. These trainers can train the participating inspectors in the participating countries on the inspections of manual handling of loads in a harmonised way, supported with EU/ SLIC material.

A risk assessment guideline Manual Handling of Loads applicable to all sectors is downloadable from the Website. It consists of a checklist for risk identification, and provides two proven and tested methods for risk assessment (the **Key Indicator Method (KIM)** and **Manual Handling Assessment Charts (MAC)**).

A summary of national results from one of the participating countries, France, is outlined in chapter 5.2.5 of this report.

5.4.2. MSDs in the telecommunication sector

Research by the Health and Safety Working Group of the Social Dialogue Committee for Telecommunications in 2003 revealed that over 60% of the 1.3 million people employed in the sector are display screen equipment (DSE) workers while approximately one quarter are service technicians; risk assessment of this latter group showed 85% to be at high or medium risk of developing MSDs. It further showed that a range of activities are being undertaken to address these problems but there is no clear statement of good practice which would help to provide a common understanding of the risks and how they can be minimised. The Social Partners therefore determined to conduct further and more detailed research in this area so that good practice relating to the prevention of MSDs could be accurately defined and then widely disseminated.



Following a multi-national tender process Prevent, an occupational hygiene and ergonomics institute based in Belgium, was selected to carry out the company specific research. This element of the project reviewed the working practices and control measures employed by European telecommunication companies to minimise the risk of MSDs. Data was collected by structured questionnaires sent out to 48 telecommunications companies throughout the EU. This was supplemented by workplace visits to 3 companies during which a range of activities associated with the development of MSDs were closely observed and documented. Written work procedures, training schedules and health surveillance protocols from all participating companies were collated and compared to identify examples of best practice in the avoidance of MSDs. Particular attention was paid to the problems of older workers and the MSDs data, statutory and of non-statutory, collected by companies. The results are available at: <http://www.msdonline.org/working.htm>.¹⁴¹

⁽¹⁴¹⁾ Addressing musculoskeletal disorders in the telecommunications industry, Health and Safety Working Group of the Social Dialogue Committee for Telecommunications, Available at: <http://www.msdonline.org/index.html>



5.4.3. European agreement of the agricultural social partners concerning musculoskeletal disorders



The social partners EFFAT and GEOPA recognised the considerable frequency of musculoskeletal disorders in the sector which have negative consequences for the workers, employers, social security systems and hence for the whole society.

In this context they signed an agreement on 21 November 2005 on the reduction of the exposure of workers to the risk of musculoskeletal disorders. This framework of actions, which has been negotiated following a Commission consultation of the social partners, aims to promote good practices and to support national policies of risk prevention.¹⁴²

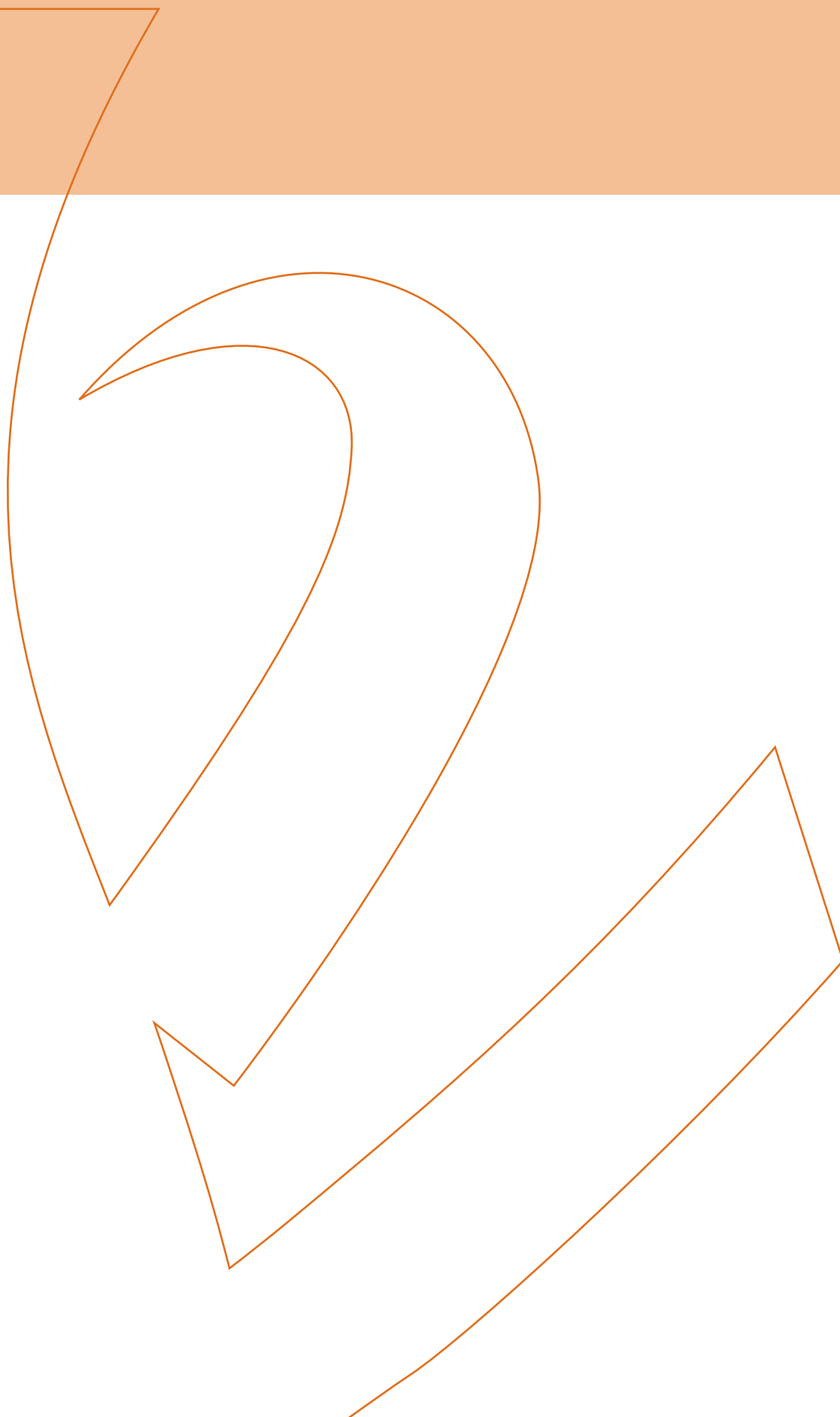


⁽¹⁴²⁾ European agreement of the Agricultural Social partners concerning Musculoskeletal disorders, EFFAT and GEOPA, 2005, http://ec.europa.eu/employment_social/dsw/public/actRetrieveText.do?id=10625



6.

CONCLUSIONS



MSDs are still an increasing and significant health problem within the European Union.

In 2000, the Agency conducted one of its first EU-wide campaigns to raise awareness of the rising problem of musculoskeletal disorders and had a first in-depth look at the topic. This report aimed to provide an updated and more in-depth assessment of MSDs. The results of previous Agency research on work-related low back problems and upper-limb disorders were confirmed by this research, and some emerging issues were also identified. The following chapter provides a short summary of the findings and recommendations for action in research, monitoring and prevention, as well as proposals for the recognition and compensation of diseases on the one hand and for rehabilitation and back-to-work activities on the other.

6.1. SELF-REPORTED HEALTH PROBLEMS AND RECOGNISED CASES OF MSDs

Every year millions of European workers in all types of jobs and employment sectors are affected by MSDs through their work. European studies provide substantial evidence that MSDs such as back, neck and upper limb disorders are a significant ill health and cost problem and are on the increase.

An increasing trend at the EU level

According to the latest figures of the European Surveys on Working Conditions, 24.7% of European workers complain of backache, 22.8% of muscular pains, 45.5% report working in painful or tiring positions while 35% are required to handle heavy loads in their work. Within the EU-15, backache seems to be the most frequent work-related health problem, in the newer Member States, backache takes the second place after overall fatigue.

According to European figures on occupational diseases, MSDs + carpal tunnel syndrome increased by 32% from 2002 to 2005 (by 39% among women). MSDs + carpal tunnel syndrome accounted for 59% of all recognised disease covered by EODS in 2005 (about 85% of all ODs among women).



Recognised diseases and recognition practices vary considerably between the Member States

When comparing to the Agency's 2000 research, there is still little evidence of the use of standardised diagnostic criteria for MSDs across Member States of the European Union for the assessment of MSDs, and a range of terms have been used in different countries to describe these disorders. A broad selection of different health complaints are being monitored, recognised and compensated. This variation is reflected in the nationally reported data and makes comparisons between Member States difficult.¹⁴³ Despite the differences, based on the data from the Member States presented in this report, it can be concluded that occupational musculoskeletal disorders are widespread. A rising trend can be observed in those Member States with a wider recognition, and where a wider

⁽¹⁴³⁾ "Defining the problem", Buckle P. and David G., in: European Agency for Safety and Health at Work, EU-OSHA, Magazine 3. Preventing Work-related Musculoskeletal disorders, 2000, p. 5

spectrum of diseases are being recognised. European harmonised statistics also indicate that numbers and incidence rates of MSDs are increasing.

In Belgium, diseases caused by mechanical vibrations (mainly back injuries that occur in the transport and construction sectors) account for the largest number of submitted compensation applications of all occupational diseases. In the Czech Republic, occupational musculoskeletal disorders represent about 33% of all reported occupational diseases. In France, diseases caused by postures at work accounted for 68% of all occupational diseases in 2003. In Spain, occupational musculoskeletal diseases are the most prevalent of all occupational diseases.

Based on the different recognition practices, it can be concluded that the diseases figures do not reflect the real situation of workers and underrecognition is still an important factor.

When looking at cumulative figures, it can be seen that hundreds of thousands of workers are affected by MSDs.

The European statistics refer to incident occupational diseases recognised for the first time during the reference year, i.e. annual additional cases. For chronic diseases like musculoskeletal disorders, which may lead to a high impairment and a significant reduction in work ability while not leading to a fatal outcome, it is worth looking at cumulative figures. Only then is there a real insight into the extent of the problem at a given moment in time. Only a few Member States provide such figures. As an example, France, that has a high recognition rates and high spectrum of diseases covered, has recognised 275,000 diseases in the 10 years between 1996 and 2006.

The monocausality principle is an obstacle to a correct assessment of the situation.

Recognition of occupational diseases is frequently based on a principle of “one cause-one disease”.

The plausibility of the occurrence of the disease increases when it can be unequivocally linked to a specific cause and interferences are as low as possible. This increases the probability for the disease to be recognised and compensated. However, some of the most frequent MSDs, such as back pain, have been demonstrated to have a multifactorial aetiology, with a combination of physical, work organisational and psychosocial factors influencing the outcome. It has been clearly demonstrated in this report that the probability of contracting an MSDs is multiplied when several exposures occur at the same time.

For back pain, the principle of monocausality is therefore fundamentally opposed to the description of the “real” situation. That leads to the paradoxical situation that the most frequent diseases may very well be most underrecognised. As a matter of fact, back pain, one of the most frequent health problems reported by workers, is recognised as an occupational disease only in a few countries.

Therefore, it can be assumed that the pattern and distribution of occupational diseases currently recognised and compensated is far from reflecting the actual health impairment of workers through MSDs caused by their work.

Current recognition practices also provide some possible ways to address the situation: Some currently recognised occupational diseases are also very specifically attributed to workers in specific work activities – this is the case for knee disorders in construction workers-, or a specific industrial sector, based on epidemiological evidence. This could be one of the ways to address the situation. Targeted epidemiological research could help





fundamentally in developing new concepts of addressing MSDs and adapting recognition, compensation and rehabilitation policies to the actual workplace situations. Targets for such research could be the many service occupations, such as health care, the cleaning sector, education and hospitality, and also emerging ones, such as home care, mobile messenger services and other customer services where problems are bound to arise, because they involve constantly changing workplaces.

A concept developed in France, “pénibilité au travail”, that could be translated as “strenuousness at work”, could help develop a new paradigm behind policies, that would respect the multifactorial causality of MSDs.

EU surveys provide insufficient data on lower-limb disorders.

Unfortunately, the ESWC does not provide for a trends analysis of data on muscular pains that discriminates between upper and lower limbs, as the survey questions have varied over time and only included lower-limb disorders once, in 2000. However, what can be seen from the results of the 2000–2001 survey, is that pain in the lower limbs may be as important and frequent as pain in the upper limbs, but it

hardly finds any reflection in the recognised musculoskeletal diseases. This has to be seen in connection with results of the survey on prolonged standing and walking, an important risk factor for developing lower limb disorders, besides kneeling and squatting.

National data sources provide a better insight into lower limb disorders and related risk factors, and therefore some relevant national information has been included in the report. Surveys from Germany, France and Spain, for example, allow for a detailed insight into disorders of different body parts, including lower limbs (feet, ankles, hands, wrists, knees, hips) and address some specific postures as well as whether postures are static or the respondent is moving around (e.g. standing involving walking or not, sitting, involving getting up or not).

Surveys also highlighted specific groups of workers potentially affected: women, young workers and workers in service professions.

Women more affected, but effects still underrecognised.

Beyond different recognition practices, there are indications that musculoskeletal diseases affect the female working population more than the male population, but that there is a lack of awareness on these issues. Recognition has been focusing on specific diseases linked to specific occupations or exposures such as vibrations, to a much lesser extent back pain, and upper limb and neck disorders, but as was stated before very little emphasis has been put on lower limb disorders. Recognition figures only partly reflect the results of workers surveys, and female jobs are often missed out, because they are not regarded as “heavy” or “physically strenuous” work. This can be demonstrated when looking at the sector distribution of occupational diseases. Male workers are more affected by knee disorders (reflected in occupational diseases very commonly recognised for example for construction workers), female workers are more affected by problems in the feet and hips (hardly assessed), probably due to their segregation in different sectors and jobs.



This may be enhanced by the fact that some risk factors are underestimated: as women are significantly exposed to prolonged standing and walking in service professions such as health care or cleaning, they might be strongly affected by lower limb disorders not currently recognised.

Complaints and health problems increasing in younger working populations

It is also important to look at health and diseases monitoring and recognition from an age perspective. Even though rates of reported diseases are lower for younger workers, there are indications that they are affected by musculoskeletal disorders. If 17% of the younger workers complain about back pain, although these percentages may seem low compared to the general working population, this means that millions of young people (almost 4 million in the EU-27) who have just entered working life are affected by a serious persisting health problem, with a potentially high impact on disease figures in the future. As can be observed in national diseases figures, the average age of workers with a recognised disease is decreasing, and in some countries, such as Spain, a majority of diseases concern young workers. There are also different patterns of diseases observed in different age groups, but it is difficult to assess to which extent these patterns are distorted by under- or non-assessment and recognition of some diseases.

Some professions highly affected, but occupational diseases figures do not reflect that.

There are also indications that service workers might be highly affected, a fact that is in contradiction with the number of recognised diseases. The current recognition figures do not reflect the findings from workers surveys in service professions. Still a major part of the diseases are recognised in sectors traditionally regarded as at risk, such as construction, mining or fisheries, and service sectors as health care and transport and communication have incidence rates far below average, although a high proportion of workers reports health problems. The effect is enhanced by the increasing tertiarisation of work, meaning more workers, especially women and young people, moving into service professions.



6.2. ACCIDENTS AT WORK LINKED TO MSDs RISK FACTORS (E.G. LIFTING OF LOADS)

Accident figures, for example linked to heavy lifting, tend to be much higher than related occupational diseases rates. Nevertheless underrecognition of MSDs-related accidents is also an issue for young, female and service workers.

In some countries, like Spain or the UK, accident figures address acute episodes of musculoskeletal problems, for example occurring after lifting of heavy loads. Where this is the case, the proportion of these accidents in the overall accidents rate is high. Prevalences, that is rates of workers affected, tend to be much higher than those of the related occupational diseases. Nevertheless, the underrecognition issues highlighted for specific groups (young, female and service workers) also prevail.

6.3. ABSENTEEISM LINKED TO MUSCULOSKELETAL DISORDERS

A high proportion of days lost in the Member States of the European Union is due to MSDs and absences are often long.

As can be demonstrated by national studies and the results of the European Labour Force survey module on OSH, musculoskeletal disorders have a huge impact on work-related absences. For example in the UK, in 2007/2008, on average, each person suffering from an upper-limb disorder took an estimated 13.3 days off work due to a self-reported work-related illness or workplace injury in that 12 month period, each person suffering from back pain an estimated 17.2 days, and each person suffering from a lower limb disorder an average of 21.8 days off.¹⁴⁴



This puts a high emphasis on targeted back-to-work strategies. However, as could be demonstrated in an earlier Agency report on return to work¹⁴⁵, some MSDs, such as lower limb disorders, are not addressed by return-to-work-policies. Another agency study demonstrated¹⁴⁶ that young workers are more and more concerned by MSDs, but rehabilitation does not target them.

Equally, the link to psychosocial working conditions and health problems is underestimated. If, as underlined by research, depression

⁽¹⁴⁴⁾ HSE, data available at the Website: <http://www.hse.gov.uk/statistics/lfs/0708/swit1.htm>

⁽¹⁴⁵⁾ Work-related musculoskeletal disorders: Back to work, European Agency for Safety and Health at Work, EU-OSHA, 2007. Available at: <http://osha.europa.eu/en/publications/reports/7807300/view>

⁽¹⁴⁶⁾ OSH in figures: Young workers – Facts and figures, European Agency for Safety and Health at Work, EU-OSHA, 2007. Available at: <http://osha.europa.eu/en/publications/reports/7606507/view>

has a high impact on workers with work-related back pain, it needs to be considered in prevention, rehabilitation and back-to-work policies. Psychosocial risk factors and MSDs are also known to interact and their combined effects are worse for worker's health.

There is therefore a need to enlarge the scope of return-to-work and rehabilitation policies, in terms of the diseases covered, the multifactorial nature of MSDs and the coverage of a diverse working population.

RISK FACTORS FOR MUSCULOSKELETAL DISORDERS – IMPACT OF WORKING CONDITIONS

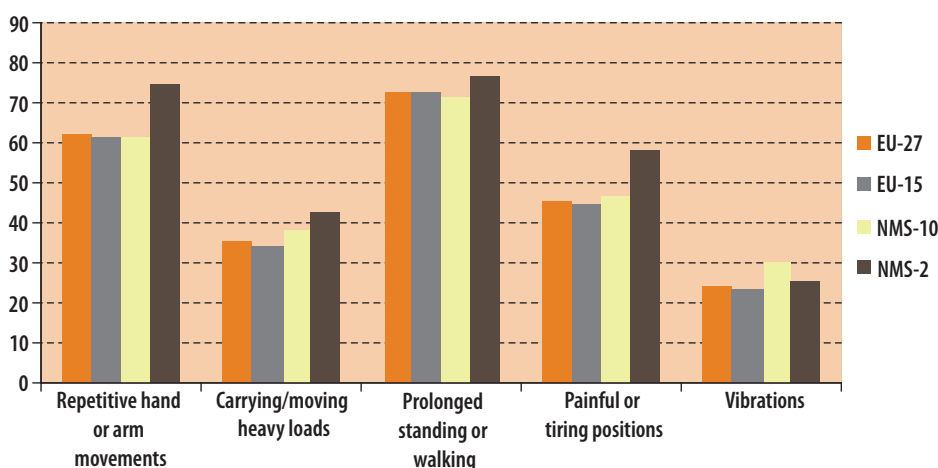
6.4.

There are numerous established work-related risk factors for the various types of musculoskeletal disorders. These include physical, ergonomic and psychosocial factors. Surveys mostly focus on physical factors:

- Repetitive work,
- Painful/ tiring positions,
- Carrying or moving heavy loads,
- Other risk factors that contribute to musculoskeletal disorders are more specific to certain professions, such as exposure to vibrations, lifting or moving people, and prolonged standing or walking.

At the European level, repetitive work is the most common and widespread risk factor for the development of MSDs, after prolonged standing and walking, followed by painful or tiring positions, carrying or moving heavy loads and exposure to vibrations. Exposures to risk factors in the development of MSDs differ widely between the Member States, with slightly higher exposures in the newer Member States (EU-12).

Figure 85: Overview: Exposure to risk factors of MSDs, at least a quarter of the working time, ESWC 2005



Source: ESWC





It is worth noting that exposure to vibration has been found to be important in the newer Member States, and for groups normally been overlooked, such as women and young workers, and in industrial professions such as manufacturing.

Workers are generally exposed to several risk factors at the same time.

A review of national statistics and monitoring tools shows that workers are generally exposed to several risk factors for MSDs at the same time, despite the differences in the level of detail that national tools show. This is an important issue for the recognition

of musculoskeletal disorders, as current recognition systems are based on an underlying principle of monocausality for many of the occupational diseases currently recognised: often the clear link between a specific exposure and the health effect without “confounding” factors is required as a prerequisite of the recognition and compensation of the occupational diseases. As mentioned before, this might be a major obstacle to the recognition of these diseases and might partly explain the very varying recognition patterns and distribution of MSDs throughout the Member States. To take the example mentioned before, bursitis of the knee in construction workers is a widely recognised disease and included in most of the countries’ occupational diseases lists, while back disorders are recognised to a much lesser extent as could be expected, although they are the health problem reported most by workers.

Women are highly affected, but their tasks are not perceived as heavy work.

There are also indications that female workers might be slightly more concerned by multiple exposures, probably linked to their segregation in specific, mostly service, professions and within sectors and occupations the tasks they perform (horizontal segregation). This is a finding from the more detailed insight provided by national monitoring tools, for example from France, a country with wide recognition of MSDs. As an example lifting and moving people is a very specific risk factor mainly concerning women in health and home care, and these risks are combined with prolonged standing, painful and tiring positions, repetitive work and work organisational risks, but these occupations are not perceived as “heavy” or “high-risk” work. Also, as mentioned before, recognition figures are low in health care professions. Also, monotonous, repetitive tasks are “classically” attributed to female workers in industry, which explains their impact on the female working population, and the finding that women might be more affected by upper-limb disorders. Industrial occupations are not perceived as typically female, although a significant proportion of women are working in them. Examples for growing industrial sectors where this is the case are the food and textile industry, both sectors with a high exposure to classical “physical” risks such as exposure to loud noise and vibrations. It is therefore not surprising that the consequences can be seen in the higher prevalence of musculoskeletal disorders.

Equally, booming sectors such as education, retail or the hospitality industry also employ more and more women, while the jobs performed imply a combination of



ergonomic risk factors such as prolonged standing and sitting, forced postures, “non-standard” working times, moving and lifting loads and repetitive work and working at high speed and under time pressure.

Young workers are highly exposed to MSDs risk factors.

As could be demonstrated in an earlier Agency report, young workers are highly exposed to MSDs risk factors. This is confirmed by the in-depth analysis of national sources performed here and the most recent European figures. It can be explained by their high concentration in service occupations and in low-skilled work, partly also due to the fact that they are at the beginning of their professional careers and unexperienced, but also working much more frequently on a temporary basis. Consequently, in some countries, MSDs are already affecting a rising number of younger workers, a fact that warrants attention and should trigger prevention efforts.

Monitoring of MSDs risk factors needs to be gender- and group-sensitive.

To address exposures of vulnerable groups, attention should be paid to the targeted extraction of data from national and European sources to better describe their OSH situation. As young, migrant and female workers tend to be concentrated in fewer sectors and occupations, and their proportion is still lower or even decreasing – this is the case for young workers, and for female workers has been to some extent in the newer Member States; their exposures tend to be “averaged out” when looking at general average figures. A good example is the factor “lifting and moving people”: average exposures are 5.8% for women and 11.1% for men, while these figures rise to 48.7% in health care. What seems obvious for health care workers and carrying and moving people, is less evident for exposure to vibration of young workers or women in manufacturing, both being highly exposed, considerably above average, a fact that is not generally known, and important to consider for targeted prevention.

Self-employed workers are also exposed above average, a particular challenge for OSH prevention, as many countries exempt self-employed workers from their OSH prevention and legislation systems.

Static work and prolonged standing and sitting on the increase

As can be seen from some more elaborate monitoring efforts in the Member States, for example from Spain, the increasing tertiarisation, new working methods but also increased use of new technologies, have given rise to an increased exposure to prolonged sitting and standing, with a trend to more static work. This goes hand in hand with an increase in specific occupational diseases, for example neurologic diseases linked to the use of computers.

These findings also add another facet to the findings of an earlier Agency study on emerging physical risks¹⁴⁷, finding that there was an increasing lack of physical activity in workers: it suggests that there may be a major contribution from changing physical working conditions, the trend to static work combined with increasing non-standard working time patterns, mobile workplaces under ergonomically varying conditions, and work intensification.

National surveys suggest that there is a trend to static work postures and prolonged standing and sitting

⁽¹⁴⁷⁾ Expert forecast on emerging physical risks related to occupational safety and health, European Agency for Safety and Health at Work, EU-OSHA, 2005, <http://osha.europa.eu/en/publications/reports/6805478/view>



A trend to more mobile workplaces, a particular challenge for OSH prevention and enforcement

Some studies from the national level also suggest that there is a trend to more and more “mobile” workplaces. The increasing level of subcontracting has a direct effect on workers’ exposure history to ergonomic factors and their “work biography”: rather than working at a defined workplace for a longer period, with the chance for adaptation and sustainable OSH interventions, they are exposed to frequently varying and partly unforeseeable working conditions. Also, emerging professions, such as home care, delivery services, or outsourced maintenance activities imply that workers have constantly changing workplaces. This poses a particular challenge to employers and OSH prevention experts at the enterprise level, as well as to labour inspections who have to enforce legislation under varying conditions. Adapted approaches to prevention are needed here.

6.5. RECOMMENDATIONS

6.5.1. Prevention and inspection:

Similar to the findings of the previous EU-OSHA reports on upper-limb disorders and low-back pain ¹⁴⁸, our research concludes that there is enough knowledge to successfully apply the risk assessment and prevention approach of the EU legislation to the prevention of all MSDs, even though knowledge continues to develop. Nevertheless, much remains to be done to address MSDs risks with a more holistic approach and with the focus on other than purely mechanistic prevention measures: in particular,

- Workers are generally exposed to several risk factors for MSDs. Prevention should therefore take a holistic approach, addressing the whole load on the body and taking into account other factors such work organisation or climatic conditions.
- Equally, prevention needs to be targeted at prolonged sitting and standing, for example by providing the possibility to vary between both postures (providing sitting aids for workers who have to stand up, sit-stand office equipment, etc.).
- Prevention also needs to address the trend towards sedentary work, more static work postures including prolonged standing and sitting and lack of variety of tasks. Besides the provision of ergonomic workstations and equipment, particular attention should be paid to work organisational measures: For example, more emphasis should be given to ensuring variation in tasks especially where repetitive and monotonous tasks are being carried out and where workers have a low influence on the pace of work and how their work is organised. Effective examples of prevention should be screened to identify successful work organisational measures.
- Prevention of MSDs needs to have an inclusive and differentiated approach to adapt it to an increasingly diverse working population, addressing the needs of young workers, older workers, migrant workers, workers with (partly work-related) physical impairments and women at work. Women and young workers may be considerably

⁽¹⁴⁸⁾ Work-related low-back disorders, available at: <http://osha.europa.eu/en/publications/reports/204/view>; Work-related neck and upper-limb disorders, available at: <http://osha.europa.eu/en/publications/reports/201/view>, U-OSHA 1999 – 2000.



exposed to risk factors normally perceived as typical for older male workers, such as vibrations in manufacturing. Also, they are increasingly moving into sectors and occupations traditionally dominated by older male workers, such as transport, or even construction.

- Sectors which are often overlooked, including many emerging service sectors, need to be targeted for prevention of MSDs; while awareness of physically strainful work is there for traditional “male” professions in construction and manufacturing, this is not the case for many service professions, for example in retail and education.
- Particular attention should be given to certain groups of workers, such as temporary, shift or part-time workers, who might be overlooked for interventions at workplaces and might not be included in workplace risk assessment.
- Young workers, ageing workers, and women may be more exposed to MSDs risks, but less targeted by prevention. Workplace risk assessment should look at their specific work situations, avoiding any assumptions about the work they do, their physical workload, and the risks they are exposed to.
- Self-employed workers seem to be more exposed to MSDs risk factors and more affected by the related health problems. A more in-depth assessment of their situation at work would help to give a better evidence base to current policy initiatives aiming at better OSH for self-employed. The Agency has commissioned a literature review to explore the risks of self-employed workers.



- It is a particular challenge for prevention to target those activities that involve mobile or changing workplaces and working conditions, such as home and elderly care, work involving customer visits or travelling, or messenger services. With a move towards occupations with varying environments, traditional prevention and inspection policies need to be refocused and adapted.
- Include findings within labour inspector training: train labour inspectors to address MSDs risks in their totality, consider organisational issues and other physical conditions, and to address a diverse working population's needs.

6.5.2. Recognition and monitoring:



Prolonged sitting and standing, static work

- The assessment of prolonged sitting and standing is still low compared to other risk factors such as lifting and moving loads. Suggestions are to address sitting and standing as a major risk factor in monitoring of musculoskeletal risk factors, for example with targeted questions in worker surveys.
- Also, health outcomes of prolonged sitting and standing, such as lower limb disorders or vascular problems in the lower limbs should be researched and monitored more extensively.
- Adapt recognition practices to these factors previously not considered. Traditional recognition practices do not cover those by the concept of heavy physical workload.
- Target sectors not in the focus of attention, including many emerging service sectors, such as home and elderly care, call centres or messenger services.

By courtesy of MEWA Textil-Service AG & Co.
Management OHG, Good practice award winner EW 2007

Lower limb disorders:

- There is a lack of recognition and monitoring of lower limb exposures and related health problems. As demonstrated by some Member States, tools and recognition practices, monitoring methods and recognition can address lower limb disorders.

**Address multiple risk factors:**

- Revise assumptions and guidance behind recognition of work-related health problems and diseases, include consideration of increasingly static work and multiplicity of exposures. Research and monitoring need to take into account the multiplicity of risk factors involved in the development of MSDs, links between physical, work organisational and psychosocial working conditions need to be further explored.
- As workers are being generally exposed to several MSDs risk factors at the same time, unilateral risk-outcome approaches (exposure by exposure instead of a holistic approach) should be avoided in assessment and recognition of diseases. Examples from Member States with wider approaches could be helpful in indicating the way forward.
- Recognition patterns and patterns of musculoskeletal disorders currently recognised in the Member States should be analysed and further harmonised to include the major diseases and provide a better picture of the actual musculoskeletal health problems.
- Annual figures of newly recognised cases of MSDs do not provide an idea of the dimension of the problem. Cumulative figures, that is the number of all (workers with a) recognised and compensated musculoskeletal disorder at a certain moment in time, give a more realistic picture of the extent of musculoskeletal disorders.

Targeted epidemiological research could help fundamentally in developing new concepts of addressing MSDs and adapting recognition, compensation and rehabilitation policies to the actual workplace situations. Targets for such research could be the many service occupations, such as health care, the cleaning sector, education and hospitality, and also emerging ones, such as home care, mobile messenger services and other customer services where problems are bound to arise, because they involve constantly changing workplaces.



6.5.3. Rehabilitation and return-to-work-strategies

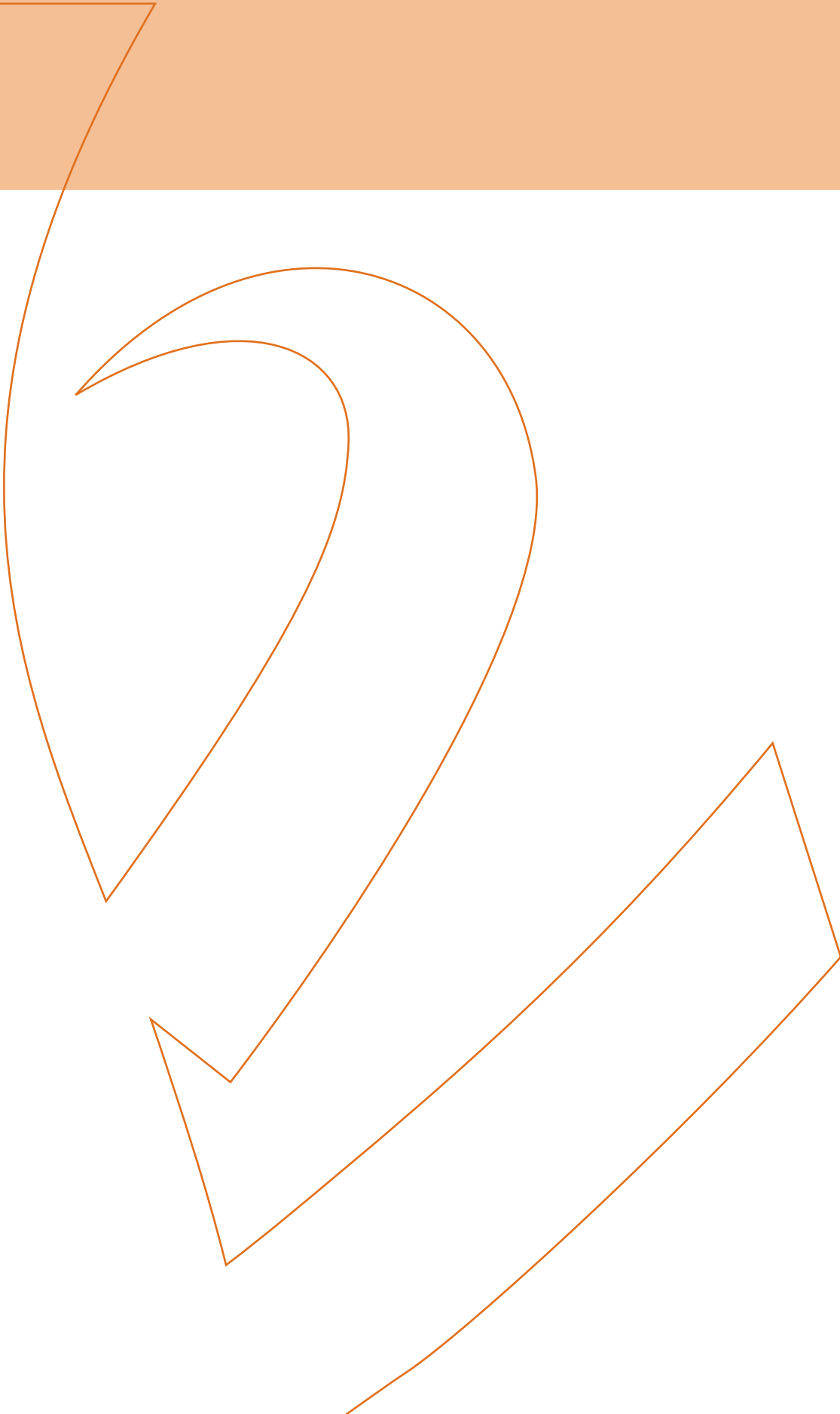
- An earlier Agency study¹⁴⁹ came to the conclusion that no information on work-related intervention strategies could be found for lower limb disorders.
- Also, some groups, such as young workers, seem to be less targeted by rehabilitation measures, because of a lacking awareness of the issues.
- Rehabilitation and return-to-work measures need to be adapted to address the issues mentioned above, the increasing trend to service professions, static work, lower-limb disorders, the increasing number of female and migrant workers, and the multifactorial nature of MSDs.
- Recent Eurostat research indicates that a fifth of long lasting health problems are work-related and that every sixth worker in the EU reports being impaired. It is therefore crucial to refocus workplace retention on these workers.
- Inform and train labour inspectors and employment agencies to enable them to support successful back-to-work measures.

⁽¹⁴⁹⁾ Work-related musculoskeletal disorders: Back to work, European Agency for Safety and Health at Work, EU-OSHA, 2008, <http://osha.europa.eu/en/publications/reports/7807300/view>



7.

LEGISLATION



The European legal requirements regarding musculoskeletal disorders include international conventions and standards, European Directives and European standards.

At the international level, the International Labour Organization (ILO) has issued several conventions that relate to MSDs. Before these conventions became legal obligations, they had to be ratified by a certain number of States. The following table presents the ILO conventions relating to MSDs.

Table 26: ILO conventions related to MSDs

Convention	Topic	Adoption date
C127	Maximum weight	28/06/1967
C148	Working environment (air pollution, noise and vibration)	20/06/1977
C155	Occupational safety and health	22/06/1981
C167	Safety and health in construction	20/06/1988
C184	Safety and health in agriculture	21/06/2001

The International Organization of Standardization (ISO) has also published international standards, which deal with ergonomic requirements at work stands, methods of risk assessment and other aspects related to MSDs. The table below presents the most important international standards.

At European level, there are several Directives related directly or indirectly to MSDs, namely the Framework Directive (89/391/EEC) and the Directives regarding the workplace (89/654/EEC), work equipment (89/655/EEC) and personal protective equipment (89/656/EEC), manual handling of loads (90/269/EEC), screen equipment (90/270/EEC), working time (93/104/EC), machinery (98/37/EC) and physical agents (vibrations) (2002/44/EC) (table).

A European Directive requires national legislation to be implemented accordingly in each Member State before it comes into effect. Generally, a Directive fixes the agreed objectives to be pursued by the EU Member States, but leaves some freedom of choice for the ways of obtaining them.



Table 27: European Directives related to MSDs

Directive	Topic
<p>89/391/EEC of 12/06/1989</p> <p>Publication date: 29/06/1989</p> <p>Available at: http://europa.eu/legislation_summaries/employment_and_social_policy/health_hygiene_safety_at_work/c11113_en.htm</p>	<p>Framework Directive</p> <p>This general Directive on the introduction of measures to encourage improvements in the safety and health of workers does not relate explicitly to MSDs. However, it does oblige the employer to take the necessary measures to ensure the safety and health of the workers in every aspect of their work.</p>
<p>89/654/EEC of 30/11/1989</p> <p>Publication date: 30/12/1989</p> <p>Available at: http://europa.eu/legislation_summaries/employment_and_social_policy/health_hygiene_safety_at_work/c11115_en.htm</p>	<p>Workplace</p> <p>This Directive concerns the minimum safety and health requirements for both workplaces in use and workplaces used for the first time. These requirements are extensively described in the annexes of the Directive. The requirements concerning the freedom of movement at the workstation are of interest for the prevention of MSDs.</p>
<p>90/269/EEC of 29/5/1990</p> <p>Publication date: 21/06/1990</p> <p>Available at: http://europa.eu/legislation_summaries/employment_and_social_policy/health_hygiene_safety_at_work/c11118_en.htm</p>	<p>Manual handling of loads</p> <p>This Directive lays down health and safety requirements for the manual handling of loads where there is a risk particularly of back injury to workers. According to the Directive, employers should avoid the need for manual handling of loads by workers, take the appropriate organisational measures to reduce the risk if manual handling cannot be avoided, ensure that workers receive adequate information and training.</p>
<p>90/270/EEC of 29/5/1990</p> <p>Publication date: 21/06/1990</p> <p>Available at: http://europa.eu/legislation_summaries/employment_and_social_policy/health_hygiene_safety_at_work/c11119_en.htm</p>	<p>Display screen equipment</p> <p>This Directive lays down minimum safety and health requirements for work with display screen equipment. Employers must evaluate the safety and health conditions of the workstations and take appropriate measures to remedy the risks found. They must also inform and train their workers.</p> <p>The general goal of this Directive is to make sure that the use of display screen equipment is not a source of risk for workers.</p> <p>The annex contains minimum requirements for the equipment (display screen, keyboard, work desk, work chair), the environment (space, lighting, reflections and glare, noise, heat, radiation, humidity), and the operator/computer interface.</p>



Directive	Topic
<p>2003/88/EC of 4 November 2003</p> <p>Publication date: 18.11.2003</p> <p>Available at: http://europa.eu/legislation_summaries/employment_and_social_policy/health_hygiene_safety_at_work/c10418_en.htm</p>	<p>Working time</p> <p>This Directive concerns the organisation of working time. Factors like repetitive work, monotonous work, fatigue, time patterns, can increase the risk of MSDs. The requirements on these factors are laid down in this Directive (e.g. breaks, weekly rest, annual leave, night work, shift work, patterns of work).</p>
<p>89/655/EEC of 30/11/1989</p> <p>Available at: http://europa.eu/legislation_summaries/employment_and_social_policy/health_hygiene_safety_at_work/c11116_en.htm</p> <p>89/656/EEC of 30/11/1989</p> <p>Available at: http://europa.eu/legislation_summaries/employment_and_social_policy/health_hygiene_safety_at_work/c11117_en.htm</p> <p>Publication date: 30/12/1989</p>	<p>Work equipment and Personal Protective Equipment (PPE)</p> <p>Directives 89/655/EEC and 89/656/EEC cover the suitability of work equipment and personal protective equipment. This suitability influences the risk of musculoskeletal disorders. All personal protective equipment must take account of ergonomic requirements and the worker's state of health and fit the wearer correctly after any necessary adjustment.</p> <p>Use of work equipment</p> <p>Outlines employers' obligations:</p> <ul style="list-style-type: none"> ■ to base the choice of work equipment on the specific working conditions and hazards existing for workers in order to eliminate or at least minimise those hazards. Use, maintenance or repair of work equipment involving a specific risk may only be carried out by the workers who have been specifically designated to the task; ■ to provide workers with adequate information and written instructions on work equipment, and with adequate training and to ensure that workers are aware of the potential dangers to which they are exposed; ■ to ensure that specific equipment will be subject to an initial inspection and inspection after each time it is reassembled; ■ to ensure that the work equipment is subject to periodic inspections and special inspections after any occurrence; ■ to take fully into account the work station and position of workers while using work equipment, as well as the ergonomic principles, when applying the minimum safety requirements; ■ to provide for the consultation and participation of workers.



Directive	Topic
<p>98/37/EC of 22/06/1998</p> <p>Publication date: 23/07/1998</p> <p>Available at: http://europa.eu/legislation_summaries/other/121006a_en.htm</p>	<p>Machinery</p> <p>The machinery Directive contains also information with regard to MSDs. Machinery must be designed taking into account ergonomic principles so that the discomfort, fatigue and psychological stress of the operator is reduced to a minimum. Ergonomic principles must also be applied on control devices, personal protective equipment, driving position and driving seats. Machinery must be so designed that risks resulting from vibrations are reduced to the lowest level. The Directive also includes important information about protection against mechanical hazards: uncontrolled movements, risk of break-up during operation, rollover, falling objects, means of access, towing devices and moving transmission parts.</p>
<p>2002/44/EC of 25/06/2002</p> <p>Publication date: 06/07/2002</p> <p>Available at: http://europa.eu/legislation_summaries/employment_and_social_policy/health_hygiene_safety_at_work/c11145_en.htm</p>	<p>Physical agents (vibrations)</p> <p>This Directive lays down exposure limit and action values for hand-arm and whole-body vibrations. Employers must assess the risks, avoid or reduce exposure and inform and train their workers. The Directive also contains some requirements concerning the health surveillance of workers.</p>

These Directives are supplemented by a series of European EN standards, which fill out the details or enable them to be implemented (see Table 28).



Table 28: International (ISO) and European (EN) standards related to MSDs⁽¹⁵⁰⁾

Topic	Standard
General design principles	Ergonomic design principles EN 614-1, EN 614-2, EN ISO 6385, Human-centred design processes for interactive systems EN ISO 13407, ENV 26385, Ergonomics – Principles, concepts and terminology prEN ISO 6385-1
Safety of machinery	Human body measurements EN 547, EN 547-1, EN 547-2, EN 547-3, EN 563, Two-hand control devices EN 574, Ergonomic design principles EN 614-1, EN 641-2, Visual danger signals - General requirements, design and testing EN 842, Ergonomics requirements for the design of displays and control actuators EN 894-1, EN 894-2, EN 894-3, System of auditory and visual danger and information signals EN 981, Human physical performance (Risk assessment for repetitive handling, recommended force limits for machinery operation, manual handling of machinery, evaluation of working postures and movements EN 1005-1, EN 1005-2, EN 1005-3, EN 1005-4, EN 1005-5, Guidance for the application of ergonomics standards in the design of machinery EN 13861, Anthropometric requirements for the design of workstations at machinery EN ISO 14738



⁽¹⁵⁰⁾ Gauthy R. Musculoskeletal disorders: where we are, and where we could be. HESA Newsletter, June 2005. Available at: <http://hesa.eu/rehs.org/uk/dossiers/files/Newsletter27p22-27-en.pdf>

Topic	Standard
Physical environment	<ul style="list-style-type: none"> ■ Noise/speech: Ergonomics - Assessment of speech communication EN ISO 9921 ■ Climate: <ul style="list-style-type: none"> Hot environments -- Estimation of the heat stress on working man ISO 7243, Ergonomics of the thermal environment - Instruments for measuring physical quantities EN ISO 7726, Analytical determination and interpretation of thermal comfort using calculation EN ISO 7730, prEN ISO 7933, Determination of metabolic rate prEN ISO 8996, Ergonomic requirements for office work with visual display terminals (VDTs) - Part 6: Guidance on the work environment EN ISO 9241-6, Evaluation of thermal strain by physiological measurements EN ISO 9886, Estimation of thermal insulation and water vapour resistance of a clothing ensemble EN ISO 9920, Assessment of the influence of the thermal environment using subjective judgement scales EN ISO 10551, Determination and interpretation of cold stress when using required clothing insulation ENV ISO 11079, Principles and application of relevant International Standards EN ISO 11399, EN 12515, Medical supervision of individuals exposed to extreme hot or cold environments EN ISO 12894, EN 13202, Ergonomics of the thermal environment - Vocabulary and symbols EN ISO 13731, pr EN ISO 13732-2, Methods for the assessment of human responses to contact with surfaces prEN ISO 13732-3, Evaluation of thermal environments in vehicles prEN ISO 14505-1, prEN ISO 14505-2, EN ISO 27243, EN 28996
Physical work load	<p>Human physical performance (Risk assessment for repetitive handling, recommended force limits for machinery operation, manual handling of machinery, evaluation of working postures and movements EN 1005-1, EN 1005-2, EN 1005-3, EN 1005-4, EN 1005-5</p>
Mental work load	<p>Interactions between the design of machinery and work tasks EN 614-2, Ergonomic requirements for office work with visual display terminals (VDTs) EN 9241-2,</p> <p>Ergonomic principles related to mental work-load EN ISO 10075-1, EN ISO 10075-2, EN ISO 10075-3</p>



Topic	Standard
Workplace and equipment design	<ul style="list-style-type: none"> ■ General: EN ISO 9241-5, EN ISO 9241-6, EN ISO 11064-1, EN ISO 11064-2, EN ISO 11064-3, EN ISO 11064-4, prEN ISO 11064-6, prEN 14386 ■ Anthropometry: EN 547-1, EN 547-2, EN 547-3, EN ISO 7250, EN ISO 14738, EN ISO 15535, EN ISO 15536-1, EN ISO 15537, prEN ISO 20685
Visual information, visual display terminals and software	<ul style="list-style-type: none"> ■ General: EN ISO 9241-1, EN ISO 9241-2, EN ISO 9241-3, EN ISO 9241-4, EN ISO 9241-5, EN ISO 9241-6, EN ISO 9241-7, EN ISO 9241-8, EN ISO 9241-9, EN ISO 13406-1, EN ISO 13406-2 ■ Software: EN ISO 9241-10, EN ISO 9241-11, EN ISO 9241-12, EN ISO 9241-13, EN ISO 9241-14, EN ISO 9241-15, EN ISO 9241-16, EN ISO 9241-17, EN ISO 13407, EN ISO 14915-1, EN ISO 14915-2, EN ISO 14915-3, prEN ISO 23973
Displays and controls	EN ISO 9241-4, ISO 9355-1, ISO 9355-2
Personal protective equipment	Personal protective equipment - Ergonomic principles EN 13921, prEN 13921-1, prEN 13921-3, prEN 13921-4, prEN 13921-6



8.

METHODOLOGY



The data collection is based on existing and available sources. All data have been collected from published and online available statistical sources. Existing tables and graphics have been used in this presentation. Not all sources present the data in a similar way or combine the same breakdown criteria, as a result of which the data are difficult to compare.

Statistics from these sources were complemented by analytical studies. The aim of the studies is to give some interpretation and background information on the statistical data. A number of research studies have been used to complement the European survey data, mainly originating from the European Foundation for the Improvement of Living and Working Conditions and the European Agency for Health and Safety at Work.

Where available, efforts have been made to use the raw data sources, which are then treated according to the expected output. This is, for example, the case for the data from the European working conditions survey (with regard to European and Belgian and Austrian data).

The sources are both statistical and analytical background documents. The statistical sources are a combination of administrative registers and statistics (occupational disease registers, exposure registers), surveys, voluntary reporting systems and inspection reports. A global risk picture can thus be presented by combining different sources.

The data collection mainly depends upon the availability of harmonised administrative data (occupational accident and disease registers) and self-reported data from worker surveys. These data sources are available both at European level and in most of the European countries.

A study on national and EU monitoring systems¹⁵¹ was commissioned by the Agency and is available for download from the Agency website. The Agency has also prepared detailed descriptions of national OSH monitoring systems on its website¹⁵².

8.1. ADMINISTRATIVE DATA SOURCES

8.1.1. Occupational diseases

Both the European statistics on occupational diseases (EODS) and the national data sources have been used to collect statistical data on occupational diseases. The project on European statistics on occupational diseases (EODS) started with a pilot data collection for the reference year 1995 and the first data according to the Phase 1 methodology was collected for the year 2001.

The Phase 1 methodology of EODS includes detailed information on the causative agent of the occupational diseases and collection of information on the use and purpose of these causative agents is planned as well. The main drawback of both of these data

⁽¹⁵¹⁾ 'A review and analysis of a selection of OSH monitoring systems' (working paper), European Agency for Safety and Health at Work, EU-OSHA. Available at: <http://osha.europa.eu/en/publications/reports/406/view>

⁽¹⁵²⁾ OSH Monitoring Systems. Available at <http://osha.europa.eu/en/riskobservatory/osm>



collection systems is that not all workers are covered by the national data collection systems in all the Member States. For occupational diseases, problems arise also from under-reporting and differences between the national social security systems.

8.1.2. Occupational accidents

Some Member States include in their accidents data accidents that lead to MSDs. Where this is the case, such data have been included in this report. Data from accidents tend to be higher than related occupational diseases data, even in this specific case, for example data on back injuries linked to heavy lifting vs. back pain as an occupational disease.

8.1.3. Inspections

In some countries, the medical inspections carried out by the labour inspectorate play an essential role in ensuring that laws and regulations governing workers' health surveillance are properly applied. As described in the report, labour inspections have also carried out a two-stage Europe-wide targeted inspection campaign (see section 5.4.1.) targeted at specific industrial sectors (transport and health care) of particular concern for the development of MSDs.

SURVEYS

8.2.

8.2.1. Labour Force Survey

The European Labour Force Survey (LFS) has been used to collect data on employment and related variables in Europe. Information has been obtained with regard to the labour market in the EU, the employment status, demographical characteristics and company size and turnover. Data are available since 1983.

Epidemiological surveys, as well as studies and research in occupational health and safety, are very useful approaches in the surveillance of diseases due to work. European data have been collected from two major sources: The European Working Conditions Survey and The Labour Force Survey.

8.2.2. Surveys on work-related diseases and working conditions

The European Working Conditions Survey, by the European Foundation for the Improvement of Living and Working Conditions, monitors trends in working conditions for employees and self-employed throughout the European Union. The survey provides information on the occurrence of exposure to risk factors and on perceived work-related health risks.

The 1999 European Labour Force Survey included an ad hoc module on accidents at work and work-related health problems. Eleven questions were added to the LFS questionnaires, asking the respondents about the occurrence of occupational accidents or suffering of work-related health problems within the previous 12 months. The detailed methodology of the 1999 LFS ad hoc module is described in 'European social



statistics — accidents at work and work-related health problems', European Commission, ISBN 92-894-3601-8.

A new OSH-related module was included in the 2007 edition of the EU Labour Force Survey. Unfortunately, results were not yet available to be included in this report. It is intended to include such modules on a regular basis, to provide a complementary source of information to the ESAW, EODS and ESWC and make it possible to identify trends over time.

8.2.3. European Survey of Enterprises on New and Emerging Risks (ESENER)

The European Agency for Safety and Health at Work (EU-OSHA) is carrying out a Europe-wide establishment survey on health and safety at the workplace. The responsible actors (managers and workers' health and safety representatives) are asked about how health and safety risks are managed at their workplace, with a particular focus on psychosocial risks; i.e. on phenomena such as work-related stress, violence and harassment. The survey aims to assist workplaces across Europe to deal more effectively with health and safety and to promote the health and well-being of employees. It will provide policy makers with cross-nationally comparable information relevant for the design and implementation of new policies in this field.

The survey, which involves approximately 40,000 interviews and covers 31 countries, has the support of governments and social partners at European level. For EU-OSHA, this €2.3 million project represents one of its most important initiatives to date and is expected to provide valuable information for use over several years.

First results of the survey are expected to be available at the beginning of 2010. The results of the survey are also intended to feed into future updates of this report.

8.2.4. Additional sources

Statistics from the above sources were complemented by analytical studies. The aim of the studies is to give some interpretation and background information on the statistical data. A number of research studies have been used to complement the European survey data, mainly originating from the European Foundation for the Improvement of Living and Working Conditions and the European Agency for Health and Safety at Work.

8.3. COMPARABILITY OF DATA

A summary on comparability of EODS can be found in 'Work and health in the EU: a statistical portrait, 1994–2002'¹⁵³. The comparability of national working conditions surveys has been studied in the 'Working conditions surveys: a comparative analysis'¹⁵⁴. Despite the differences one of the main interests lies in the frequency with which certain aspects or characteristics are repeated in the surveys.

⁽¹⁵³⁾ European Communities, Eurostat. Catalogue No KS-57-04-807-EN-N. Available at http://epp.eurostat.ec.europa.eu/cache/ITY_OFFPUB/KS-57-04-807/EN/KS-57-04-807-EN.PDF

⁽¹⁵⁴⁾ European Foundation for the Improvement of Living and Working Conditions, 2003. Available at <http://www.eurofound.europa.eu/publications/htmlfiles/ef0371.htm>



9.

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In order to improve the working environment, as regards the protection of the safety and health of workers as provided for in the Treaty and successive Community strategies and action programmes concerning health and safety at the workplace, the aim of the Agency shall be to provide the Community bodies, the Member States, the social partners and those involved in the field with the technical, scientific and economic information of use in the field of safety and health at work.

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