



# Fit For Work?

## Musculoskeletal Disorders and the Norwegian Labour Market

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<b>1. Executive summary</b>	<b>4</b>
<b>2. Introduction</b>	<b>6</b>
2.1 Why is workforce health in Norway important?	6
2.2 MSDs: The European context	8
2.3 Objectives of the study	9
2.4 A note on definition	10
2.5 Structure of the report	11
<b>3. Work and MSDs in Norway</b>	<b>12</b>
3.1 An unclear picture	12
3.2 The impact of MSDs on ability to work	15
3.3 The impact of the work-place on MSDs	24
3.4 The wider economic and social impact of MSDs	27
3.5 Summary	33
<b>4. Interventions</b>	<b>34</b>
4.1 The case for early intervention	34
4.2 The social security regime for the sick and work disabled	37
4.3 Condition-specific interventions	38
4.4 The biopsychosocial model and work	41
4.5 The role of employers	43
4.6 Summary	47
<b>5. Conclusions and recommendations</b>	<b>48</b>
5.1 Recommendations for employers	48
5.2 Recommendations for employees	49
5.3 Recommendations for GPs	50
5.4 Recommendations for occupational health professionals	51
5.5 Recommendations for government	51
<b>References</b>	<b>53</b>
<b>Appendix 1: Interviews and consultation with experts</b>	<b>62</b>
<b>Appendix 2: Benchmarking grid</b>	<b>63</b>

## List of Boxes, Figures and Tables

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Box 1: Principles of managing non-specific MSDs	45
Figure 1: Chronic illness by disease among Norwegians	13
Figure 2: Working ability among people with a long-term condition in 2005	14
Figure 3: Demographic projections in EU 27, Norway and Scandinavian countries	15
Figure 4: Norwegian workers who reported WRULDs by age and sex	19
Figure 5: Percentage of sickness absence by sex across all sectors	31
Figure 6: Number of cases of doctor-certified sickness absence by duration	31
Figure 7: Effects of early detection on productivity	35
Figure 8: ICF model applied to work disability in RA	42
Table 1: Percentage of reported musculoskeletal problems by occupational group	16
Table 2: Summary of intrinsic risk factors for non-specific MSDs	24
Table 3: Direct costs associated with MSDs, RA, and low back pain	30

## 1. Executive summary

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The global economic downturn has started to affect the solid Norwegian economy. Although Norway has a GDP that is 54 per cent above the average in the EU, the healthiest public balance, and one of the highest percentages of people in paid employment, the latest figures show that the unemployment rate has increased, and that with the fall of the GDP in the OECD area and the significant decline in oil and gas prices, the economy will not see an upward swing until 2011. As in Norway spending on disability and sickness absence as percentage of GDP is more than twice the OECD average, and recent figures show an increasing trend, the imperative to maximise labour productivity and to ensure that the workforce is equipped to take full advantage of the up-turn in the economy has intensified still further.

This report is part of a wider programme of work across 24 European and other countries. Through a review of the recent academic and practitioner research and interviews with acknowledged experts, it has looked at the social and economic impact that some non-specific (back pain and work-related upper limb disorders, WRULDs) and specific (rheumatoid arthritis and spondyloarthropathies) musculoskeletal disorders (MSDs) have on the working lives of thousands of Norwegian workers. Finally, it has presented a number of recommendations for several interested parties in order to encourage key players to take action and make sure that Norwegian workforce stays 'fit for work'.

The data presented in this report show that:

- Of all the causes of disability and sickness absence in Norway, MSDs account for about a third of them.
- MSDs are the most common cause of chronic illness among Norwegians followed respectively by diseases of the respiratory system and cardiovascular diseases.
- Back pain and rheumatoid arthritis (RA) only cost to Norwegian society about 21 billion Norwegian Kroner or 2.4 billion euros.
- About 23 per cent of Norwegian workers report work-related back pain. Back pain accounts for 13 per cent of all sickness leave lasting more than 8 weeks.
- About 31 per cent of Norwegian workers report work-related muscular pain in their neck, shoulders, and/or upper/lower limbs. WRULDs are more frequently experienced by women aged between 30 and 49 years; people over 30 years are more likely to present WRULDs compared to younger ones.
- In Norway there are about 31,000 people with RA and 40 per cent of them receive a work disability pension.
- The total cost of RA to Norwegian society has been estimated to be 6.2 billion Norwegian Kroner or 705 million euros.

Although the data above depict a worrying scenario, they also help us to draw some conclusions. As it has been proved that the social and economic impact of MSDs to individuals and society can be successfully reduced by early diagnosis and early intervention programs, Norway to focus more on these to reduce the high proportion of people with MSDs who claim disability benefits. With its relatively young population compared to other European and Scandinavian countries, Norway has a good opportunity to intervene early and to dramatically reduce the enormous direct, indirect, and intangible costs of these conditions to individuals, their families and society.

However, to make intervention successful, employers, GPs and patients themselves need to change their attitude towards MSDs and focus on capacity instead of incapacity. People with MSDs can continue to make a great contribution at work if they are allowed to. They do not need to be 100 per cent fit to return to work. With this in mind, appropriate and prompt treatment and imaginative job design will support physical and mental recovery, and help the Norwegian workforce to be fit for work.

## 2. Introduction

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**2.1** Norway has a very solid economy and public finances. In 2008 its GDP was equal to 2,538 billion Norwegian Kroner, of which 695,338 million came from petroleum activities and ocean transport (Statistics Norway). Compared to EU27 figures, the country has a GDP that is 54 per cent above the average in the EU (only Luxembourg has a higher GDP per head), the healthiest public balance<sup>1</sup>, and one of the highest percentages of people in paid employment (in 2007 according to the Labour Force Survey, 76.8 per cent of Norwegian people aged between 15 and 64 years were in paid employment versus an average of 65.4 in EU27). Favourable developments in world demand for key Norwegian exports and declining prices for many of its imports have played their part in this success. A combination of a flexible workforce and imports of labour from Poland and the Baltic region has so far covered the scarcity of labour and reduced the pressure on wage increases (Steen and Halvorsen, 2007). However, Norwegian policymakers are now facing challenging times. With the fall of the GDP in the OECD area (almost 2 per cent lower in the second half of 2008), the global financial and economic crisis and the significant decline in oil and gas prices, official statistics predicts that the economy will not see an upward swing until 2011 (Statistics Norway).

**Why is  
workforce  
health  
in Norway  
important?**

The Storting (the Norwegian Parliament) has recently approved extraordinary fiscal policy measures that, combined with lower interest rates, should partly curb the slowdown of activity in the Norwegian economy. Nevertheless, the latest figures from Statistics Norway show that the unemployment rate increased from 2.7 per cent of the labour force in October 2008 (as measured by the average of the three months from September to November) to 3.1 per cent in January 2009 (as measured by the average of the three months from December to February), and that most of the increase was among people aged 25-74.

As it has become clear that having a significant proportion of the working age population either temporarily or permanently unable to work through ill-health – even in a favourable economic climate - can reduce the aggregate level of labour productivity, in the past few years the overall aim of Norwegian policies has been to integrate a greater part of the population into the workforce. Although Norway has a high labour participation rate, it also has a mediocre labour utilisation rate due to low annual average hours worked (39.2 hours per week versus 41.8 hours in EU27), large participation on disability schemes and extensive use of sick leave arrangements. At any given time, about 25 per cent of the adult population below the pension age is out of work, receiving some form of benefits (Steen and Halvorsen, 2007). Sickness

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<sup>1</sup> Eurostat definition: net borrowing (+)/net lending (-) of general government is the difference between the revenue and the expenditure of the general government sector. The general government sector comprises the following sub-sectors: central government, state government, local government, and social security funds. GDP used as a denominator is the gross domestic product at current market prices

absence is the highest among the OECD (16.8 days in 2005 according to WHO figures), and the number of people on disability benefits is higher than in other Western European countries (320,000 in 2005 according to Statistics Norway's figures). Spending on disability and sickness absence as percentage of GDP is more than twice the OECD average, and it is greater than Norwegian spending on education (Widding, 2007).

Now that economic growth is slowing, and the buoyancy of the Norwegian labour market is diminishing, the imperative to maximise labour productivity and to ensure that the workforce is equipped to take full advantage of the up-turn in the economy has intensified still further. As unemployment continues to rise, it will be important to ensure that those with illnesses or long-term conditions are not disproportionately affected, and that measures to support those out of work pay particular attention to the needs of those with an incapacity or disability. This will be especially important if the Norwegian economy is to be 'fit for purpose' when the recession ends.

Despite the benign economic conditions, the health and well-being of the Norwegian workforce has given cause for concern for a number of years, and these concerns will continue in the light of both the economic downturn and the ageing workforce. A number of indicators suggest that workforce health will remain an important priority for policy-makers and employers for the foreseeable future:

- 13 per cent of all sickness leave lasting more than eight weeks is caused by low back pain, making it the highest single cause of absence (Indahl, Velund and Reikeraas, 1995).
- Physical workload and psychological factors contribute to 48 and 32 per cent of sickness certification cases respectively (Tellnes, Bruusgaard and Sandvik, 1990).
- Lifetime prevalence of low back pain is equal to 60.7 per cent (Ihlebaek et al., 2006).
- In the period 1996-2003 the total number of sickness absence days increased of 65 per cent. The proportion of sickness absence caused by palpitation, sleep problems, dizziness, anxiety and depression increased from 50 per cent to 180 per cent although the absolute number of individuals with sickness absence for these complaints was small (Ihlebaek, Brage and Eriksen, 2007).
- In 1999 MSDs accounted for 45 per cent of all working days lost among industrial workers. 84 per cent of total days of sickness absence due to MSDs lasted longer than 12 days (Morken et al., 2003).
- In 2004 about 33 per cent of individuals on disability pension had musculoskeletal diagnosis as their primary cause for disability. About half of them had arthritis or rheumatic diseases (Olafsson, 2008).

- In 2006 about a third of sickness absence cases were due to musculoskeletal conditions, and this amounted to 41 per cent of days lost due to sickness absence (Olafsson, 2008).
- Between 1994 and 2000, sickness absence caused by mental illness increased among women from 1.7 per cent to 4.6 per cent, and among men from 0.8 per cent to 2.2 per cent (Hensing, Andersson and Brage, 2006).
- In 2008 45.3 per cent of disabled people were in paid employment. Compared to 2007 a larger number of disabled people (30 per cent) would like to have a paid job.
- In 2007 National Insurance Scheme's total expenses were equal to 249 million NOK or 11.2 per cent of the GDP (Statistics Norway).
- Sickness and disability expenditure increased by nearly 10 per cent in 2008 compared to the previous year and more than 100 per cent compared to 2000.

The dominance of MSDs as Norwegian's biggest workforce health problem is evident from the above. This report aims at further investigating the social and economic impact of MSDs in Norwegian society, and to evaluate the extent to which early detection, prevention and early intervention may not only help those with these conditions to enjoy a full and productive working life, but also to reduce the economic burden of illness and disability benefits in order to maintain Norwegian competitiveness in the global markets.

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### **2.2 MSDs: The European context**

In the European Union (EU) context, concern in the European Commission and among the social partners over the prevalence and impact of work-related MSDs has been growing for several years. Chronic musculoskeletal pain (CMP) is estimated to affect 100 million people in Europe (Veale, Woolf and Carr, 2008), MSDs affect more than forty million workers in the EU and account for about half of all work-related disorders in EU countries (European Trade Union Institute (ETUI), 2007), representing an estimated cost to society of between 2.6 and 3.8 per cent of gross national product (GNP). The European Working Conditions Survey (EWCS) published by the European Foundation (Parent-Thirion, Fernandez Macias, Hurley and Vermeylen, 2005) has shown that 24.7 per cent of workers across the EU report experience backache and 22.8 per cent muscular pain. Indeed, the European Commission estimates that MSDs account for 49.9 per cent of all absences from work lasting three days or longer and for 60 per cent of permanent work incapacity (EC, 2007). If the European knowledge-based economy is to recover and compete against the US and the growing economies of Asia the health and productivity of the EU workforce must be a policy priority. This report looks at Norway in this wider EU context and assesses where Norway is doing well and where it has challenges to confront.

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**2.3**  
**Objectives**  
**of the study**

More specifically, this project has sought to address each of the following questions:

1. What is the impact of MSDs on employment and economic performance in Norway?  
How is this likely to change in the context of future demographic, workforce and lifestyle changes?
2. What is the relationship between work and MSDs? What impact do biological, psychological and social factors, including work-place factors, have on MSDs?
3. How well do employers, governmental bodies, general practitioners (GPs) and occupational health professionals understand and deal with MSDs as they relate to the work-place? How well equipped is the health sector to provide early intervention, rehabilitation and other support for people with these conditions?
4. What early interventions can policy-makers and employers deliver to ensure that those with MSDs a) retain their jobs b) maximise their quality of working life and their contribution to society and c) maintain access to (and routes back into) employment?

In addressing the objectives outlined above, we have used the following approaches:

1. Desk research: Here we have drawn on existing published research from the medical, occupational health and health economics literature. This has enabled us to draw together the evidence on the nature, extent, impact and costs of MSDs to the Norwegian economy, to employers and to individuals. We have examined a range of MSDs to assess the extent to which their impact varies and where policy and practice has been both strong and weak in preventing and intervening.
2. Secondary data analysis: We have used data from domestic and European studies and surveys to examine the prevalence and costs of MSDs in the working age population in Norway.
3. Expert interviews: We have conducted interviews with experts from disciplines such as rheumatic diseases, and back pain, and with representatives of patient organisations to identify the main areas of policy and practice which need to be addressed by policy-makers, health professionals and by employers.

In addition to the wider picture, we have chosen to concentrate on four categories or groups of MSDs. These are:

- Back pain;
- Work-related upper-limb disorders (WRULDs);
- Rheumatoid arthritis (RA);
- Spondyloarthropathies (SpAs).

Back pain and the majority of WRULDs are categorised as non-specific and episodic conditions which may frequently be caused by, or be made worse by, work. They manifest themselves in disparate ways and may cause periods of intense discomfort and incapacity which may affect the ability of the individual worker to carry out their work. They may also abate for long periods. Many people with these conditions, such as back pain, never seek treatment and most recover on their own but the conditions can cause significant absence from work or lost productivity. Back pain and WRULDs are often included in the occupational health and safety guidelines and literature. Occupational health practitioners typically deal with these conditions.

On the other hand, RA and SpA are specific and progressive rheumatic diseases which are not caused by work, but may be made worse by work and are often handled by general practitioners and specialists, not within the occupational health arena. They are clinically diagnosed conditions that progress in a broadly predictable way, if untreated. They can have a significant impact on functional capacity at work and, in the long-term, participation in the labour market. Most people with these conditions require clinical interventions over a prolonged period of time and the management of these conditions for those of working age should involve the frequent and active participation of clinicians, employers and occupational health professionals.

Together, these MSDs illustrate the effects of conditions from which a large number of Norwegian workers may report at any one time. Improving our understanding of the effects of these conditions, how staying in work can be beneficial, and what might be done to alleviate their impact, can yield significant social and economic benefits.

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**2.4**  
**A note**  
**on definition**

In the absence of a consensus on a clinical definition of many MSDs, navigating the literature on their prevalence, incidence, diagnoses, epidemiology, treatment and cost to Norwegian society is a difficult task. The lack of standardisation and validation of the terminology and classification of MSDs is one of the reasons for the contradictory findings in the literature regarding the diagnosis, epidemiology, treatment and rehabilitation of these conditions (WHO Scientific Group, 2003). Some clinicians differentiate between ‘musculoskeletal conditions’ and ‘musculoskeletal disorders’. The former refers to all clinical conditions affecting the musculoskeletal system and the latter, to borrow a definition from the ETUI (European Trades Union Institute, 2007), meaning ‘any affliction of the musculoskeletal system that appears at work and causes discomfort, difficulty or pain when performing work’.

In Norway occupational injury and occupational disease are understood to be injury to the body or disease covered by sections 10 and 11 of the Act no. 65 of 16 June 1989 relating to occupational injury insurance, ie, injury or disease incurred by employees while at work at the work-place during working hours when these are:

1. Injury and disease caused by an accident at work (occupational injury);
2. Injury and disease which, pursuant to section 13-4 of the National Insurance Act No. 19 of 28 February 1997, are regarded as equal to occupational injury;
3. Other injury or disease if this is due to the effects of hazardous substances or work processes.<sup>2</sup>

According to section 13-4 of the National Insurance Act, occupational diseases that are legally treated as occupational injuries are:

- Illnesses caused by poisoning or other chemical influence;
- Allergic or idiosyncratic skin and lung diseases;
- Illnesses caused by radiation energy;
- Impaired hearing due to noise from machines, tools, processes etc;
- Lung diseases caused by influence of finely distributed substances;
- Diseases of the arms and hands, including vasospastic syndrome in the hands, plus neuropathies, when the disorder is caused by vibrations transmitted from vibrating machines, compressed air tools, hammering machines, etc;
- Diseases caused by changes in barometric pressure under certain working conditions as for divers, pilots and others. Injuries to the central nervous system are also included, in addition to diseases caused by conditions arising during stays in pressure chambers;
- Diseases caused by contagion or infection;
- Illnesses following vaccination related to the occupation.

Following from above, with the exception of neuropathies caused by vibrations, MSDs are not counted as occupational injuries/diseases by the Norwegian insurance system.

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## 2.5 Structure of the report

This report is structured as follows:

- Section 3 examines the extent of MSDs in Norway and the impact they have on productivity and attendance at work, on labour market participation and on the wider Norwegian economy.
- Section 4 reviews the range of interventions, including vocational rehabilitation, which can improve job retention and labour market participation among those with MSDs.
- Section 5 sets out our recommendations for employers, employees, GPs, occupational health professionals and for the Norwegian government.
- Appendix 2 provides a benchmarking grid in which a number of indicators covering the labour market, the welfare system and the healthcare system are presented for each of the country involved in the Fit for Work project.

<sup>2</sup> [http://www.storebrand.no/site/stb.nsf/Get/getee9043e4463d3b30973b1f0457413476/\\$FILE/44489VilkaarEngelskYrkeskade.pdf](http://www.storebrand.no/site/stb.nsf/Get/getee9043e4463d3b30973b1f0457413476/$FILE/44489VilkaarEngelskYrkeskade.pdf)

### 3. Work and MSDs in Norway

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This section sets out what we know about the impact of musculoskeletal disorders (MSDs) on people of working age in Norway. It uses data, research and interview evidence from Norwegian sources where this is available, and paints a picture of the challenges faced by both current and future Norwegian workers, their families, their employers and, ultimately, state agencies. It looks at four main issues:

1. The inadequacy of the data on MSDs in Norway and the consequences of this;
2. The impact that MSDs have on people's ability to work;
3. The impact that work can have on MSDs;
4. The wider economic and social impact of MSDs in Norway.

We begin by looking at data quality.

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**3.1**  
**An unclear**  
**picture**

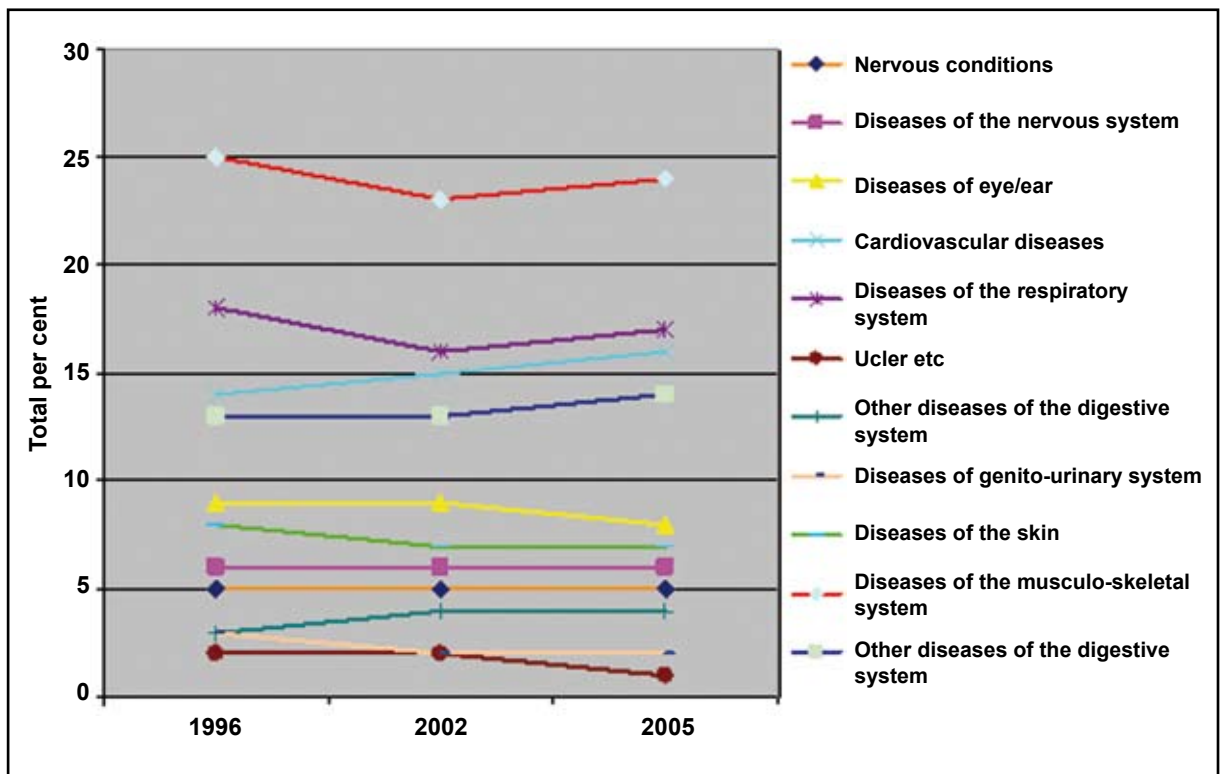
Although Norwegian national registers are very efficient, they are far from complete. According to Mehlum, Kjuus, Veiersted and Wergeland (2006) even though notification is required by law, only 3 per cent of Norwegian general practitioners and less than 25 per cent of occupational physicians reported work-related diseases to the Labour Inspection Authority in 2003. In addition, data on perceived work exposure and work-related health problems collected by Statistics Norway come from representative samples that are too small to give reliable information in subgroups of the population.

Adding the above to the fact that self-reported data on MSDs tend to be under-reported by patients compared to physicians (Bjerkedal and Bakketeig as cited in Mehlum et al., 2006) it is clear that a correct evaluation of the impact of MSDs on Norwegian society is troublesome for a number of reasons:

- It is impossible to be accurate about the economic consequences of MSDs, their productivity impact or their social costs to the nation, to its workers and to their families.
- If, as is likely, the prevalence of MSDs increases as the average age of the Norwegian workforce increases, the absence of good baseline data today makes forecasting the future impact of MSDs very difficult.
- Poor data makes it difficult to present a compelling case for action to Norwegian employers or to Norwegian policy-makers.
- The benefits of clinical, labour market or work-place interventions are made all the more difficult to quantify (or justify) if there are no reliable or comprehensive data on the extent or impact of MSDs in the Norwegian workforce.
- Despite this, The Work Foundation is confident that there is sufficient evidence in Norway to argue strongly for MSDs to be a policy priority in the coming years.

What we do know is that, compared with other EU member states, a relatively high proportion of the Norwegian workforce currently reports having regular backache or muscular pain (European Foundation for the Improvement of Living and Working Conditions, 2007). Data from Statistics Norway (see Figure 1) show that musculoskeletal conditions are the most common cause of chronic illness among Norwegians, followed respectively by diseases of the respiratory system and cardiovascular diseases. As Figure 1 shows, the number of self-reported MSDs reached its peak in 1998, decreased in 2002 and increased again in 2005.

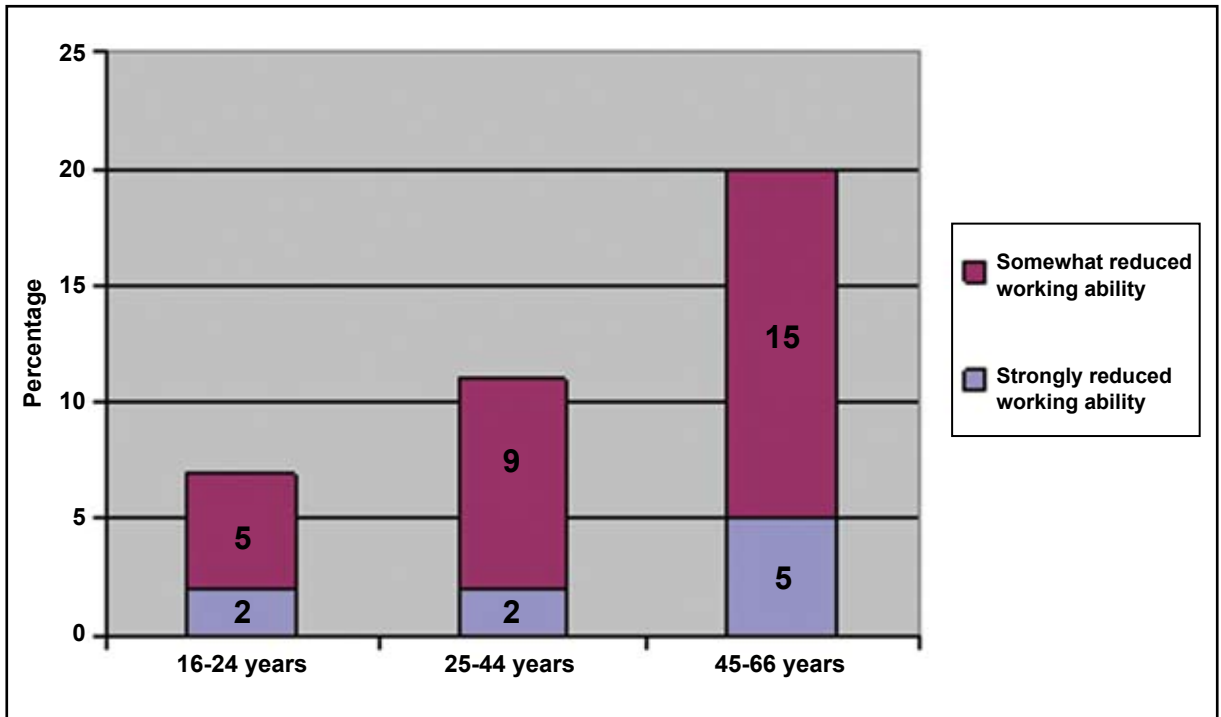
**Figure 1: Chronic illness by disease among Norwegians**



Source: StatBank, Statistics Norway

As older age is a well documented risk factor in reporting musculoskeletal pain (Ihlebaek et al., 2007; Kamaleri, Natvig, Ihlebaek, Benth and Bruusgaard, 2008; Mehlum et al., 2006), national figures show that in 2005, out of 29 per cent of Norwegians of working age with a long-term condition who reported to have a somewhat reduced working ability, more than half were aged between 45 and 66 years (see Figure 2).

**Figure 2: Working ability among people with a long-term condition in 2005**



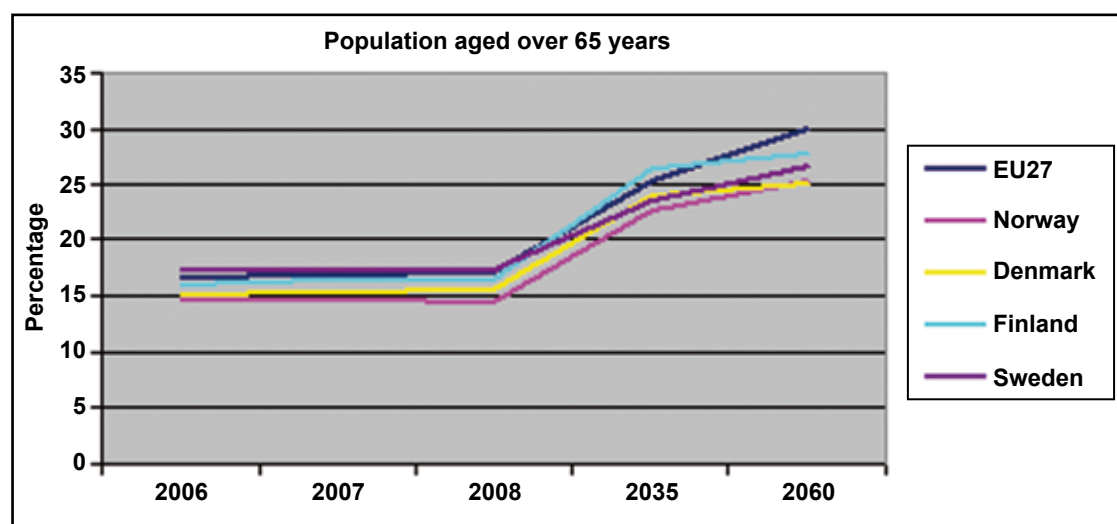
Source: StatBank, Statistics Norway

Although Norway has a younger population compared to the EU 27 and other Scandinavian countries and the trend is predicted to remain the same over the years (see Figure 3 on the next page), the Norwegian population will age. According to Eurostat' projections, in 2060 the old age dependency ratio<sup>3</sup> in Norway will reach 43.9 per cent.

Experience from economies with older age distributions shows that the burden of MSDs could become even greater in a country already badly affected by it. Norway must stand ready to anticipate and manage the almost certain growth in the coming years of what some commentators have called 'an ill-understood pandemic' (European Trade Union Institute (ETUI), 2007).

<sup>3</sup> Defined as the population aged 65 years and older divided by the working age population

Figure 3: Demographic projections in EU 27, Norway and Scandinavian countries



Source: Eurostat

### 3.2 The impact of MSDs on ability to work

Statistics Norway states that in 2005, 34 per cent of those reporting a musculoskeletal condition were economically inactive. This represents a slight decrease compared to 2002. However, more women than men were economically inactive and this difference increased between the years 2002 and 2005. A study on patients affected by rheumatoid arthritis in the Oslo area (Odegård, Finset, Kvien, Mowinckel and Uhlig, 2005) found that the prevalence of work disability among respondents was 40 per cent; while a high level of education was a predictor of reduced risk of work disability, physical disability, female gender and increased helplessness were predictors for increased risk of work disability. Widespread musculoskeletal pain is also strongly associated with work disability (Kamaleri, Natvig, Ihlebaek, and Bruusgaard, 2009). According to Kamaleri, Natvig, Ihlebaek, and Bruusgaard (2008) pain presented in multiple sites is more severe and disabling than single-site pain, which is generally found less frequently in the population. Widespread pain has a large impact on physical fitness, feelings and daily and social activities of people who are affected by it. Furthermore, the number of functional problems increases in an almost linear way with increasing number of pain sites.

As research shows that blue-collar workers are at a higher risk than white collar for both short- and long-term sickness absence due to MSDs (Morken et al., 2003; Ihlebaek and Eriksen, 2003) is not surprising that the occupational groups reporting a higher prevalence of musculoskeletal problems are agriculture and fishery workers, craft and related trades workers and plant and machine operators and assemblers (see Table 1).

**Table 1: Percentage of reported musculoskeletal problems by occupational group**

Occupational group	%
Educational work	13
Nursery	20
Legislators, senior officials and managers	10
Professionals	17
Technicians and associate professionals	16
Clerks	20
Service workers and shop and marked sales workers	20
Agriculture and fishery workers	30
Craft and related trades workers	30
Plant and machine operators and assemblers	28
Others, unidentified	33

*Source: Statistics Norway*

The impact of MSDs on the individual and their ability to work varies significantly from person to person. Attempts to measure relative work disability differ according to methods of data collection, respondent selection and definitions of work disability. Work disability usually refers to cessation of employment, reduced working hours or claiming of disability benefits. These estimates rarely include estimations of lost productivity whilst at work.

MSDs can cause work-limiting pain and fatigue which many people feel unable to disclose. Research shows that up to 30 per cent of workers with conditions such as rheumatoid arthritis (RA) are reluctant to disclose their condition to their colleagues and managers out of a fear of discrimination (Gignac, Cao, Lacaille, Anis and Badley, 2008).

MSDs, as outlined in Section 2, can be non-specific or specific. The effects of specific MSDs are discussed below with particular reference to RA and spondyloarthropaties (SpAs). Other, largely non-specific MSDs are described in relation to two main categories, back pain and work-related upper limb disorders. The effects of pain from MSDs can thus impact on the following aspects of one’s performance at work:

- Stamina and resilience;
- Cognitive capacity or concentration;
- Rationality/mood;
- Fatigue;

- Mobility;
- Agility.

An MSD can also have effects on safety aspects of work. If concentration or movement is affected by the condition or associated pain then some aspects of work may become unsafe. It must also be noted that, following diagnosis, some treatments can have significant side effects which affect an individual's ability to perform. Where particular hazards such as heavy machinery or driving are involved then safety aspects of job performance will also be of concern.

### 3.2.1 Chronic low back pain (LBP)

Back pain is a very common complaint in Norway and constitutes a major public health problem (Ihlebaek et al., 2006). In 2005, 4,779 Norwegians consulted their GP for back problems and 1,605 for general pain and muscle problems (Statistics Norway). The Fourth European Working Conditions Survey shows that about 23 per cent of Norwegian workers report work-related back pain, and research shows that in Nordic countries approximately 66 per cent of people aged between 30 and 50 years report having had LBP at least sometime during their lifetime, and approximately 50 per cent sometime during the preceding year (Leboeuf-Yde, Klougart and Lauritzen, 1996). Ihlebaek et al. (2006) found that in Norway, the lifetime prevalence was 60.7 per cent, and the one-year prevalence was 40.5 per cent. Compared to Sweden, Norway had a 40 per cent higher risk of doctor-certified sickness absence, partly explained by the economical 'disincentives' in the Swedish health compensation system.

Back pain is common, episodic, often recurrent and generally self-limiting. It is defined as recurrent if several episodes occur in one year for a duration of less than six months, acute if an episode lasts for less than six weeks, sub-acute (7-12 weeks) and chronic if it endures for over 12 weeks. Back pain is a recurrent problem for many people, although this does not imply that symptoms will worsen. Nevertheless, comorbidity has been found in people with LBP; compared to the general population, it is not uncommon that people with LBP also show neck pain, upper back pain, pain in their feet during exercise, headache, migraine, sleep problems, flush/heat sensations, anxiety, and sadness/depression (Hagen, Svensen, Eriksen, Ihlebaek and Ursin, 2006).

For the majority of people (80-90 per cent according to Indahl et al., 1995) pain will disappear of its own within four to six weeks. In a European study of people visiting their family doctors because of back pain, 65 per cent were free of symptoms within 12 weeks (van der Hoogen et al, 1998 in Bekkering et al, 2003). Recorded absence is greatest amongst the minority of individuals whose condition is chronic or recurrent. Most people who are affected by back pain

either remain in work or return to work promptly. About 85 per cent of people with back pain take less than seven days off, yet this accounts for only half of the number of working days lost. The rest is accounted for by the 15 per cent who are absent for over one month (Bekkering et al., 2003).

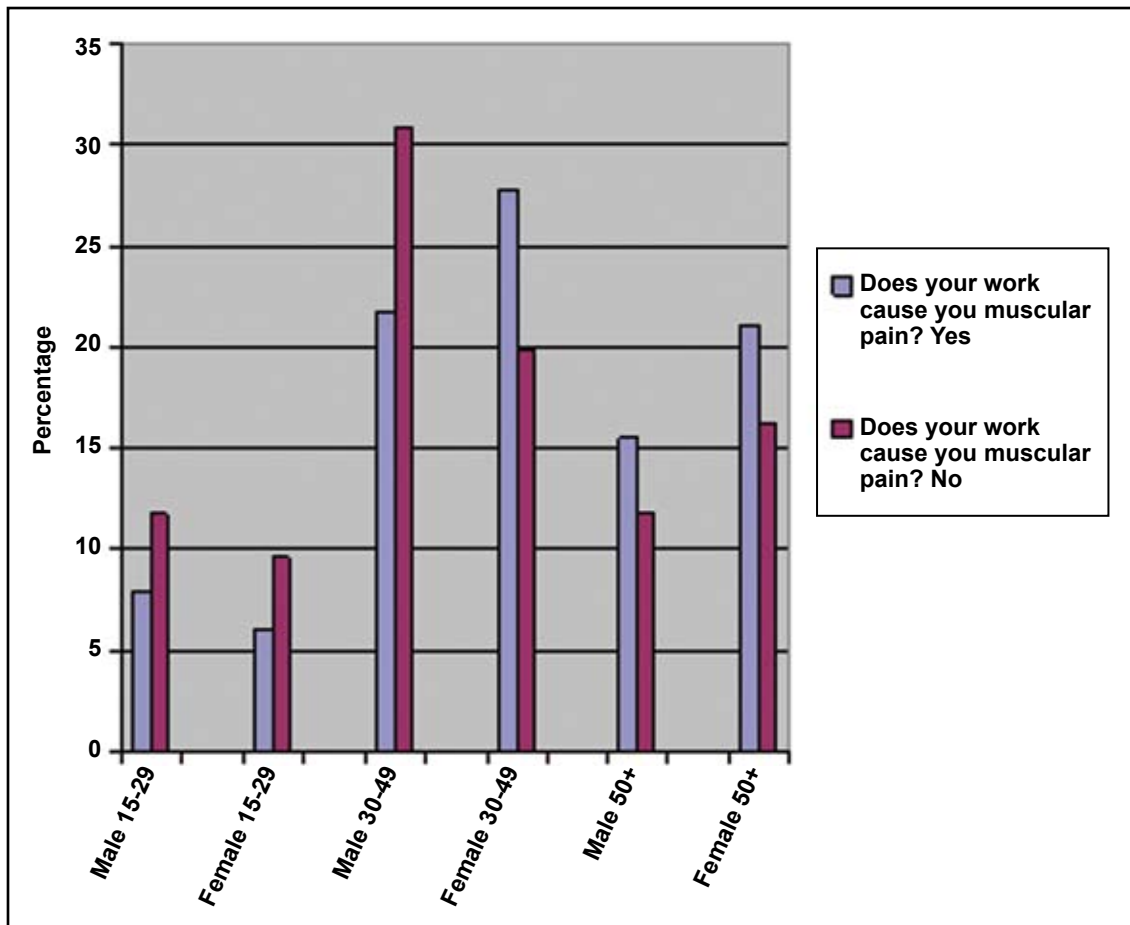
It is important to recognise that there is a difference between having symptoms, care seeking, lost productivity and disability, and the factors that contribute to them (Burton, 2005). This means that whilst an individual may experience musculoskeletal pain (in their back, for example), it is not possible to predict their strategies for dealing with illness or injury (seeking medical attention for example), how it will affect their work performance, whether they will take time off work and whether, ultimately, they will become one of the very small minority who become permanently disabled by their condition. The important question is therefore why, when so many people experience back pain, does it have such an adverse effect on some and not others? There is a growing consensus that psychological factors are the differentiating factors as they are strongly associated with the progression of back pain from an acute to a chronic condition that affects 2 to 7 per cent of people (Burton, 2005), and to disability (Burton, 2005; Bekkering et al., 2003). Of course beliefs and misconceptions about causality and therapy of LBP have a role too in increasing the risk of chronicity (Ihlebaek and Eriksen, 2005; Werner, Ihlebaek, Skouen and Laerum, 2005; Werner, Gross, Lie and Ihlebaek, 2008). According to Werner et al., 2005, myths such as pain avoidance beliefs and passive coping strategies are still alive among Norwegian population. As patients' beliefs about recovery from LBP seem to be similar to their health care providers' (Werner et al. 2005), and a media campaign directed to health care providers has proved not to be effective in changing these beliefs (Werner et al., 2008), more initiatives should be set in place to educate different health care provider groups.

### **3.2.2 Work-related upper limb disorders (WRULDs)**

According to the Fourth EWCS (Parent-Thirion et al., 2005) just under a third (31.4 per cent) of the Norwegian workers who took part in the survey reported that their work caused them muscular pain in their neck, shoulders, and/or upper/lower limbs. Breaking down this percentage by age and sex of respondents, the highest number of people reporting WRULDs were women aged between 30 to 49 years, and in general, the number of people reporting WRULDs increased among men and women over 30 years (see Figure 4 on the next page).

The Oslo Health Study 2000-2001 found that among the 8,594 participants aged 30, 40 and 45 years old who answered the questionnaire, the prevalence of neck/shoulders pain was 38 per cent while the prevalence of low back pain was 23 per cent. Among those with neck/shoulders pain, 74 per cent attributed their pain to working conditions. Working conditions were also

Figure 4: Norwegian workers who reported WRULDs by age and sex



Source Fourth European Working Condition Survey (EWCS)

considered by respondents to be the cause for arm pain (72 per cent), fatigue (51 per cent), and low back pain (50 per cent) (Melhum et al, 2006).

Work-related neck and upper limb disorders (WRULDs) are MSDs affecting the upper part of the body caused or aggravated by work and the working environment. However, there is considerable debate about the definition and diagnostic criteria for WRULDs, which are also commonly referred to as 'sprains or strains', 'repetitive strain injuries or disorders', or 'cumulative trauma disorders'. Both specific and non-specific disorders and symptoms can be covered by this category. Van Eerd et al. (2003) identified 27 different classification systems for work related MSDs, of which no two were found to be alike. The fact that a single disorder is often described in different ways only amplifies the problem. Critically, Van Eerd et al. (2003) found that the different classification systems did not agree on which disorders should be

included. This definitional problem makes it difficult to calculate the number of people with WRULDs and to develop a common understanding of the associated risk factors.

Whilst no agreed classification exists there is a common consensus that symptoms of WRULDs can present in the tendons, muscles, joints, blood vessels and/or the nerves and may include pain, discomfort, numbness, and tingling sensations in the affected area. WRULDs can be specific and non-specific conditions (Aptel, Aublet-Cuvelier and Cnockaert 2002) and attempts at classification tend to focus either on the affected body area or on the cause. Examples of WRULDs by body part include the following:

- Elbow: Epicondylitis (tennis or golfer's elbow);
- Hand, wrist and forearm: Carpal tunnel syndrome; repetitive strain injury (RSI), de Quervain's syndrome;
- Shoulder: Tendinitis of the shoulder;
- Neck: Neck pain.

Classification by occupational causes refers to actions such as vibration of the hand and arm, which can result in Raynaud's syndrome, for example. The breadth of the category of WRULDs means that almost all symptoms and impacts on work associated with MSDs are associated with WRULDs. Specific symptoms and impacts of MSDs are therefore discussed in more detail below with reference to back pain, RA and SpA conditions.

### 3.2.3 Rheumatoid arthritis

Rheumatoid arthritis is an example of a specific MSD. It is a form of inflammatory arthritis with a prevalence of between 0.3 per cent and one per cent in most industrialised countries (WHO Scientific Group, 2003). Data on the prevalence of rheumatoid arthritis derive largely from studies performed in the USA and Europe. In Norway, the prevalence rate is estimated to be 0.67 per cent, and the number of people with RA about 31,000 (Lundkvist et al., 2008). A study on the RA population in Oslo, however, found a much lower prevalence rate of 0.44 per cent among people aged between 20 and 79 years. Prevalence exceeding 1.0 per cent was only found among females over 60 years (Kvien et al., 1997). In 2005, in Norway, the number of outpatient consultations for RA and other inflammatory polyarthropathies reached 34,400 (Statistics Norway).

RA affects people of any age, however its incidence increases with age and reaches a plateau from the age of 60 years (Kvien, Uhlig, Ødegård and Heiberg, 2006). Epidemiological studies have shown that RA shortens life expectancy by around 6-10 years.

The exact cause of RA is unknown. Evidence suggests that it is an immune reaction, presenting as an inflammation affecting joints and other tissues. Risk factors include gender, family history of RA and specific leukocyte antigen (HLA) (WHO Scientific Group, 2003). Whilst at an individual level the clinical course of RA is extremely variable, its features include pain, stiffness in the joints and tiredness, particularly in the morning or after periods of inactivity, weight loss and fever or flu-like symptoms. It affects the synovial joints, producing pain and eventual deformity and disability. The disease can progress very rapidly, causing swelling and damaging cartilage and bone around the joints. It can affect any joint in the body, but it is often the hands, feet and wrists that are affected. RA can also affect the heart, eyes, lungs, blood and skin.

The course of RA varies, meaning that it can go from a mild and even self-limiting form of the disease, to being severe and destructive within a short time (Young et al., 2000). RA is usually chronic (persistent) and people with the condition often have 'flares' of intense pain frequently associated with fatigue, although the reason for these is not known. In effect, 'flares' mean that one day someone will be able to perform their duties and the next they cannot. This can be difficult for colleagues and managers to comprehend, and can make planning workloads challenging. Managing these 'flares' in employment requires close communication and understanding between employees and employers.

The effects of the disease can therefore make it difficult to complete every day tasks, often forcing many people to give up work. Work capacity is affected in most individuals within five years from initial diagnosis (WHO Scientific Group, 2003). One review of work productivity loss due to RA estimated that work loss was experienced by 36-85 per cent of people with RA in the previous year, for an average (median) of 39 days (Burton, Morrison, Maclean and Ruderman, 2006). Young et al. (2002) reported that 22 per cent of those diagnosed with RA stopped work at five years because of their RA. However, in some cases the condition itself is not the main or only cause of having to leave work. Indeed Young et al. (2002) found a further group of respondents who stopped work due to a combination of RA and other personal factors, giving an estimate of 40 per cent of those with RA withdrawing from the workforce because of their condition. It appears that, compared to other developed western economies, a lower proportion of working age people in Norway who have RA remain employed. By the same token, a higher proportion leave work because of their condition. In their cross-sectional study of RA patients, Wallenius, Skomsvoll, Koldingsnes, Rødevand, Mikkelsen, Kaufmann et al. (2009) found that females with RA had a fourfold increased risk of work disability compared to men and that work disability was also associated with low level of education, disease duration and worse mental health.

### 3.2.4 Spondyloarthropathies

Spondyloarthropathies (SpA) represent a family of chronic inflammatory conditions which include:

- Ankylosing spondylitis (AS);
- Reactive arthritis (ReA)/ Reiter syndrome (RS);
- Psoriatic arthritis (PsA);
- Spondyloarthropathy associated with inflammatory bowel disease (IBD);
- Undifferentiated spondyloarthropathy (USpA).

Recent research on the prevalence of SpAs across the European population concludes that the prevalence has long been underestimated and may have a similar prevalence rate to RA (Akkoc, 2008). In Norway, Bakland, Nossent and Gran (2005) found that the incidence of AS was relatively stable in the northern part of the country over a 34-year period. However, incidence and prevalence were higher than reported in similar studies from Finland and Minnesota.

**Ankylosing spondylitis (AS)** is a specific progressive and chronic rheumatic disorder that mainly affects the spine, but can also affect other joints, tendons and ligaments. Its prevalence in the general population is most commonly reported to be 0.1 to 0.2 per cent, with a 3:1 to 2:1 male: female ratio (Dagfinrud, Mengshoel, Hagen, Loge and Kvien, 2004).

First diagnosis is often made when people are in their teens and early twenties (the mean age of onset is 26). Research suggests that there is a strong genetic component to the cause of AS. Although anyone can get AS, it affects men, women and children in slightly different ways (Dagfinrud et al., 2004). In men, the pelvis and spine are more commonly affected, as well as the chest wall, hips, shoulders and feet. Accurate diagnosis can often be delayed – some research suggests an average of seven years between disease onset and diagnosis (Sieper, Brauen, Rundleit, Boonen and Zink, 2002) – as the early symptoms are frequently mistaken for sports injuries. In women, it commonly affects the pelvis, hips, knees, wrists and ankles. The spine is generally less severely affected in women. Typical AS symptoms include pain (particularly in the early morning); weight loss, particularly in the early stages; fatigue; fever and night sweats and improvement after exercise. Again, as with RA, the temporal aspects of the disease require good management to ensure that individuals can perform their job but do not make work impossible.

As with most MSDs, particularly specific MSDs, the effects of AS vary greatly from individual to individual and from men to women (Dagfinrud et al., 2004). Approximately half are severely

affected whilst others report very few symptoms; women are supposed to have a later age of onset, milder disease course, longer asymptomatic periods but more extraspinal involvement. AS is generally considered to be a disease in which many individuals can maintain relatively good functional capacity (Chorus, Boonen, Miedema and van der Linden, 2002), yet reported unemployment rates are three times higher among people with ankylosing spondylitis than in the general population (Boonen, Miedema, Wevers and van der Linden, 2001).

Recent research has provided evidence that physical health related quality of life of people with RA (Chorus, Miedema, Boonen and van der Linden, 2003) and AS (Gordeev et al., 2009) was positively influenced by work. Chorus et al.'s conclusion was that work '*might be an important factor in positively influencing patients' perception of their physical performance*'. This finding concurs with Waddell and Burton (2006a) that, overall, good quality work has health and recuperative benefits for workers. The extent to which the work-place can have a positive or negative effect on development of MSDs is discussed below.

**Psoriatic arthritis (PsA)** is a form of joint inflammation affecting between 0.2 and 1.0 per cent of the general population (Wallenius et al., 2008) and between 10 and 20 per cent of individuals with psoriasis. In Norway the prevalence of PsA has been estimated to 0.2 per cent; it appears that there are no sex-related difference in prevalence, and that the most affected age band is 40-59 years (Cimmino, 2007).

When joints are inflamed they become tender, swollen and painful on movement. The joints are typically stiff after resting, early in the morning or while resting in the evening. Tissues such as ligaments, tendons around the joints may also be involved. Inflammation of tendons or muscles (such as tennis elbow and pain around the heel) are also features in those with psoriatic arthropathy. In approximately 80 per cent of cases the arthritis develops after the appearance of psoriasis. Men and women are considered to be equally affected, and comparative studies have showed that patients with PsA have a burden of illness which is comparable to that of patients with RA or AS (Wallenius et al., 2008).

There are several features that distinguish PsA from other forms of arthritis: one pattern of inflammation is usually in the end of finger joints. Another pattern is involvement of the joints of the spine and sacroiliac joints which is called spondylitis (similar to AS). Neck pain and stiffness can occur or an entire toe or finger can become swollen or inflamed (dactylitis). There can also be a tendency for joints to stiffen up and sometimes to fuse together. Importantly the absence of rheumatoid factor in the blood helps distinguish psoriatic arthritis from rheumatoid arthritis. It

is usual for the condition to develop in the teenage years. In women there may be an increased incidence following pregnancy or the menopause. As PsA affects both the skin and the joints, this has a negative impact on the quality of life of people with PsA due to emotional problems, in fact, they may experience more pain and role limitations than patients with RA (Husted, Gladman, Farewell and Cook, 2001). A higher level of mortality compared to the general population has also been reported among people with PsA (Wallenius et al., 2008).

**3.3  
The impact  
of the  
work-place  
on MSDs**

The risk factors for MSDs are wide ranging. Whilst there is broad consensus among experts that work is a risk factor for MSDs, non-work activities such as sport and housework can contribute to musculoskeletal strain. Some studies, for example, have noted that a higher prevalence of musculoskeletal pain among working women may be linked to the fact that women are responsible for doing the majority of housework (Punnett and Wegman, 2004). Intrinsic risk factors also have a part to play in the onset and deterioration of MSDs. Some intrinsic factors can be altered, others, such as genetic predisposition, cannot. Table 2 summarises the intrinsic risk factors for non-specific MSDs.

**Table 2: Summary of intrinsic risk factors for non-specific MSDs**

Intrinsic factors
<ul style="list-style-type: none"> <li>• Obesity, height</li> <li>• Spinal abnormalities</li> <li>• Genetic predisposition</li> <li>• Pregnancy</li> <li>• Psycho-social stress: self-perception</li> <li>• Health beliefs: locus of control, self-efficacy, perception of disability and expectation</li> <li>• Family stress</li> <li>• Psychological stress: somatisation, anxiety and depression</li> <li>• Ageing</li> </ul>

*Source Adapted from WHO Scientific Group (2003)*

In terms of evidence and risk factors for the impact of work on MSDs a distinction needs to be made between ‘work-related’ disorders and ‘occupational’ disorders (Punnett and Wegman 2004). Certain MSDs are recognised as occupational diseases by some European governments, such as wrist tenosynovitis, epicondylitis of the elbow, Raynauld’s syndrome or vibration white finger and carpal tunnel syndrome (Eurostat, 2004). As such, the fact that work

can cause and contribute to these conditions is widely recognised and the use of assessments of work-place risk to reduce the incidence of these conditions is well established.

It is clear that work is not the cause of rheumatic diseases such as RA and SpAs, though there is evidence that physical work demands, lack of support, self-stigma and lack of flexibility over working time can each make job retention or return to work more difficult (der Temple and van der Linden, 2001; Gignac et al., 2004). The evidence linking other non-occupational MSDs and work is not conclusive and attributing cause and effect between specific aspects of work and particular parts of the body is difficult. However, many of the established risk factors that may contribute to the development of non-specific MSDs can be encountered at work; even if work does not cause a condition it may have an impact on it. Moreover, if we consider risk factors beyond the physical, then the impact of the work-place on MSDs is likely to be much greater.

The most frequently cited risk factors for MSDs encountered in the work-place include the following:

- Rapid work pace and repetitive motion patterns;
- Heavy lifting and forceful manual exertions;
- Non-neutral body postures (dynamic or static), frequent bending and twisting;
- Mechanical pressure concentrations;
- Segmental or whole body vibrations;
- Local or whole-body exposure to cold;
- Insufficient recovery time (Punnett and Wegman, 2004).

MSDs affect employees in all kinds of industries and occupations, although some are more high risk than others, and certain occupations are associated with strain on specific parts of the musculoskeletal system.

Many jobs involve activities that can constitute a risk factor for MSDs. According to the European Working Conditions Survey, 17 per cent of European workers report being exposed to vibrations from hand tools or machinery for at least half of their working time, 33 per cent are exposed to painful or tiring positions for the same period, 23 per cent to carrying or moving heavy loads, 46 per cent to repeated hand or arm movements and 31 per cent work with a computer (Parent-Thirion et al., 2005).

Much of the attention that employers pay to the issue of MSDs and the impact of the work-place on their onset or deterioration is driven by a concern to avoid or limit litigation and ensure that they are fulfilling their duty of care, by performing workstation assessments and giving

guidance on manual handling, for example. However, this neglects a wider issue that other work associated factors can also contribute to MSDs. These aspects are often missed out in the literature and advice on dealing with health and safety. Even where 'stress' is mentioned, the connection between psycho-social factors and physical conditions is omitted, reinforcing the primary focus on safety.

Generally there is an increased risk of injury when any of the physical risk factors mentioned above are combined, or adverse psycho-social factors, personal or occupational are present (Devereux, Rydstedt, Kelly, Weston and Buckle, 2004). Psychological and organisational factors can also combine with physical factors to influence the probability of an individual leaving work prematurely. Research on low back pain shows that an employee's belief that work itself produces pain precedes sickness behaviour and is a risk factor for chronic work disability (Werner, Lærum, Wormgoor, Lindh and Indhal, 2007, Lefevre-Colau, Fayad, Rannou, Fermanian, Coriat, Mace et al., 2009). Sokka and Pincus (2001) reviewed 15 studies and showed that physically demanding work, a lack of autonomy, higher levels of pain, lower functional status and lower educational levels were predictors of someone with RA leaving work early. The evidence from Sokka and Pincus highlights that it is not only the physical elements of work that can influence someone's functional work capacity and likelihood of staying in the labour market. We must also consider the psycho-social and organisational factors of work.

Psycho-social and organisational factors associated with MSDs include:

- Rapid work pace or intensified workload;
- Perceived monotonous work;
- Low job satisfaction;
- Low decision latitude/ low job control;
- Low social support;
- Job stress.

Job stress is a broad term and can result from a variety of sources such as high job demands, or a mismatch between skills and job requirements. In addition stress can result from abuse or violence at work, as well as discrimination.

Again, it is important to recognise the connection between the psychological and the physical. While job stress, including violence and discrimination at work, might lead to lost productivity due to stress or common mental health problems, it may also lead to MSDs caused by tension or strain. An increased probability of experiencing a high level of pain has also been associated

with low social support, low social anchorage or low social participation (Katz, 2002). 'Good work' and the provision of high quality jobs is therefore crucial (Coats and Max, 2005, Coats and Lehki, 2008).

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**3.4**  
**The wider**  
**economic and**  
**social impact**  
**of MSDs**

The effect that MSDs can have on an individuals' ability to work and the time they may require to be absent from work means that MSDs have significant associated costs to the individual, their family, the employer and the wider economy. Calculating the exact costs is not straightforward (Lundkvist, Kastäng and Kobelt, 2008). Several factors need to be considered and obtaining accurate, reliable and consistent figures is almost impossible. However, existing figures on the economic impact of specific MSDs based on conservative approximations show that MSDs are a significant economic burden to Norway.

To calculate the cost of MSDs (or any illness) the following factors must be estimated:

- **Direct costs** including medical expenditure, such as the cost of prevention, detection, treatment, rehabilitation, long-term care and ongoing medical and private expenditure. They are often further separated into medical costs occurring in the health care sector and non-medical costs occurring in other sectors (Lundkvist et al., 2008).
- **Indirect costs** including lost work output attributable to a reduced capacity for activity, such as lost productivity, lost earnings, lost opportunities for family members, lost earnings of family members and lost tax revenue.
- **Intangible costs** including psycho-social burden resulting in reduced quality of life, such as job stress, economic stress, family stress and suffering (WHO Scientific Group, 2003).

These costs vary considerably depending on the condition, on the severity of the symptoms, and whether these cause short or long term absence or disability. Moreover, they vary depending on the particular methods used to calculate the costs. Some factors which affect the calculations include the following:

- Severity of patient's conditions;
- Mix of patient demographics in a study;
- Calculation method for productivity;
- Definitions of work disability;
- The treatment costs or outcomes due to treatments (the year costs were calculated is also a factor not least because treatment processes can change);
- Change in health care financing systems;
- Incidence or prevalence based estimates of costs.

Intangible costs are rarely included in cost calculations as it is almost impossible to properly express the intangible costs in monetary terms (Sieper et al., 2002). However, the evaluation of intangible costs gives useful information regarding the price paid by people with MSDs in terms of quality of life (QoL), and QoL measures should be used as further indicators to measure the effectiveness of interventions (Leardini, Salaffi, Montanelli, Gerzeli and Canesi, 2002).

Presently two measures widely used are:

- 1. Disability adjusted life years (DALYs).** This is a measure of the overall disease burden which attempts to tally the complete burden that a particular disease exacts. Key elements include the age at which disease or disability occurs, how long its effects linger, and its impact on quality of life. One DALY, therefore, is equal to one year of healthy life lost. As RA strongly affects not only the physical functioning but also the social and mental life of people with it, Lundkvist et al. (2008) estimated that this disease accounts for 0.89 per cent of all DALYs lost in Norway.
- 2. Quality adjusted life years (QALYs).** The QALY is also a measure of disease burden, including both the quality and the quantity of life lived. It is used in assessing the value for money of medical interventions and is based on the number of years of life that would be added by these interventions. A QALY gives a measure of how many extra months or years of life of a reasonable quality a person might gain as a result of treatment and helps in the assessment of the cost-utility of this treatment. Comparing levels of health-related quality of life among 100 patients with RA to those of the general population, Uhlig, Loge, Kristiansen and Kvien (2007) found that RA of one year duration entails a disease burden of 14-20 QALYs.

Both measures are the subject of debate, but have become accepted as helpful in making comparative judgements across medical conditions and internationally.

### 3.4.1 Direct costs

As mentioned above, cost-of-illness estimates require input from a number of different factors, and great variation is found across different studies. For low back pain (LBP), the most significant direct costs are related to physical therapy, inpatient services, drugs and primary care (Dagenais, Caro and Haldeman, 2008). For RA, although direct health care costs have been relatively small in the past (Lundkvist et al., 2008), a number of studies indicate that direct costs increase as functional capacity decreases – making functional capacity a major cost driver (Huscher, Merkesdal, Thiele, Schneider and Zink, 2006; Kobelt, 2007).

Direct costs, compared to indirect costs, usually represent a minority of the total costs (Dagenais et al., 2008; Kavanaugh, 2005; Kobelt, 2007; Lundkvist et al., 2008). However, for RA, large cross-country variations of estimates of direct costs are found in the literature due to the different uptake of particular treatments in different countries (Lundkvist et al., 2008). Excluding drugs, annual medical costs of RA in Norway have been estimated to be equal to 4,834 euro per patient. If non-medical costs are added to medical costs, Lundkvist et al. estimate that direct costs of RA are equal to 7,585 euro per patient per year. For back pain, Nachemson, Waddell and Norlund, 2000 calculated that some 80 per cent of health care costs are generated by the 10 per cent of those with chronic pain and disability.

Table 3 on the next page shows some of the specific direct costs associated with musculoskeletal conditions (MSCs) in general, and RA and low back pain in particular, as found in the literature (Woolf, 2004 as cited in *The Bone and Joint Decade*, 2005; Kavanaugh, 2005; Dagenais et al., 2008).

Calculations of the costs of treatment tend to evaluate the clinical costs and benefits of treatments. The wider impact of people with MSDs remaining in work or returning to work early extends to the biopsychosocial and economic effects to the individual of being in work and to the reduced costs to the Norwegian Labour and Welfare Administration and other government departments. Taking a wider joined-up approach to an analysis of costs of treatments for illness in general and MSDs in particular may provide a different and perhaps more realistic assessment of the costs and benefits of treatments.

### 3.4.2 Indirect costs

There are two main types of indirect costs most commonly measured in association with ill health in employees. These are absence from work and what is termed 'presenteeism', or loss of productivity in an employee while they are at work with an illness or incapacity. Presenteeism is extremely difficult to measure and there are no Norwegian data on presenteeism costs, rather it is measured on a case by case basis in individual studies. As a result, most estimates of indirect costs are based on absence data. Official data on sickness absence show that sickness absence reached its peak in 2003 and then declined until 2005, when it gradually started to grow again (see Figure 5 on page 31). Female workers showed a higher percentage of sickness absence throughout the whole period 2002-2008.

The Norwegian workers with the highest level of sickness absence are those working in the health care and social services, followed by the ones working in transport and storage (9.7 per cent and 7.4 per cent respectively in 2008). As Figure 6 on page 31 shows, in 2008 the majority

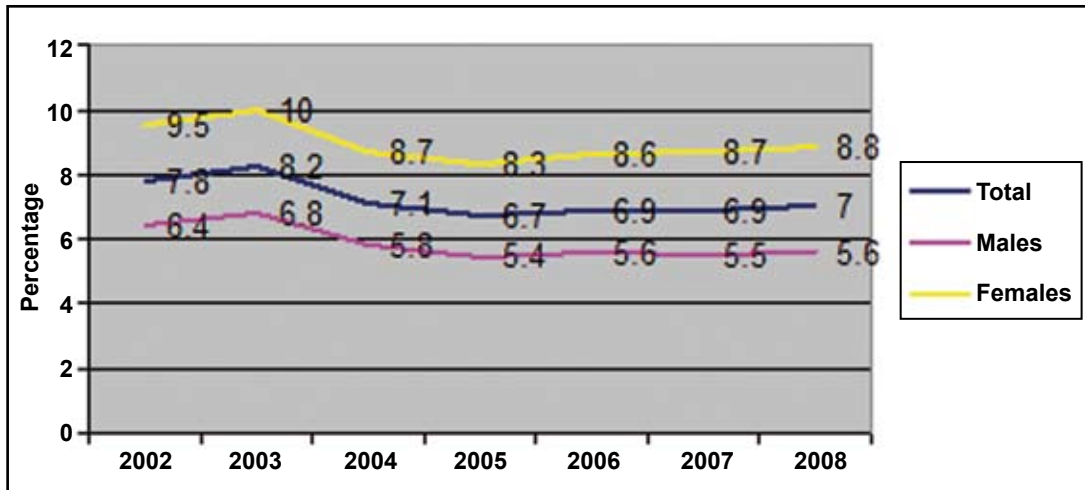
**Table 3: Direct costs associated with MSDs, RA, and low back pain**

	<b>MSDs</b>	<b>Low back pain</b>	<b>RA</b>
<b>Health care costs</b>	Physician visits  Outpatient surgery Emergency room Rehabilitation service utilisation (physiotherapist, occupational therapist, social worker)  Medications  Diagnostic/therapeutic procedures and tests  Devices and aids Acute hospital facilities (with and without surgery) Non acute hospital facilities	Physician visits Chiropractic visits  Outpatient surgery Emergency room Physical therapy and rehabilitation service utilisation Complimentary and alternative medicine  Medications  Imaging	Physician visits Other health professional visits Outpatient surgery Emergency room  Medications (including administration costs)  Imaging Laboratory monitoring Toxicity (diagnosis, treatment)  Medical assist devices  Hospitalisations (related to RA or its treatment): orthopaedic surgery, extended care/ rehabilitation facilities
<b>Personal costs</b>	Transportation Patient time Carer time		
<b>Other disease related costs</b>	Home health care services Environmental adaptations Medical equipment Non-medical practitioner, alternative therapy	Mental health services	

*Source: Woolf, 2004 as cited in The Bone and Joint Decade 2005; Kavanaugh, 2005; Dagenais et al., 2008*

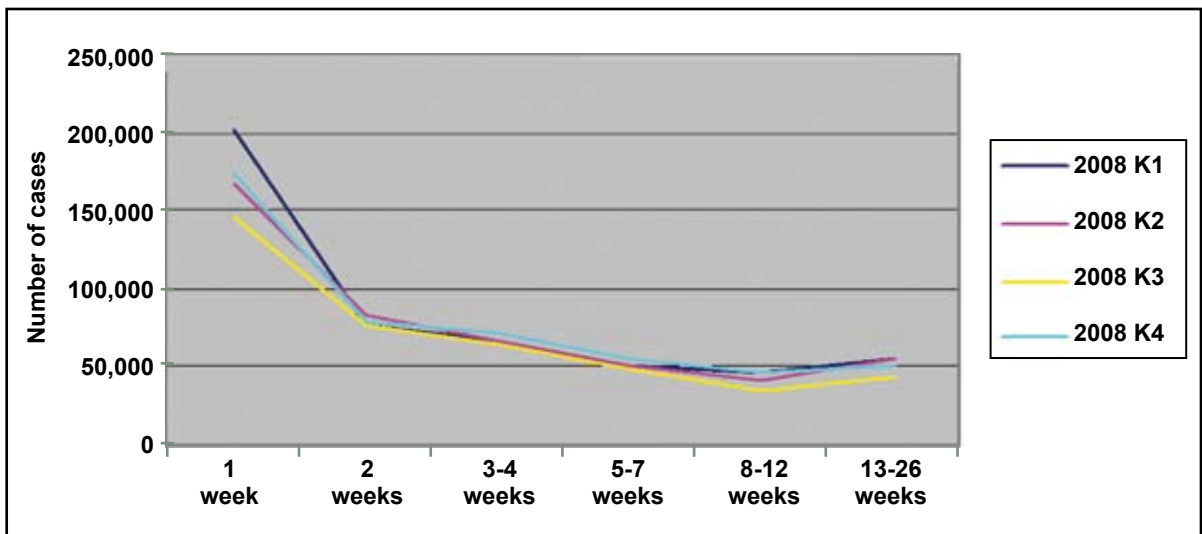
of doctor-certified sickness absence lasted for about one week. A much lower number of cases lasted longer than five weeks.

Figure 5: Percentage of sickness absence by sex across all sectors



Source: Statistics Norway

Figure 6: Number of cases of doctor-certified sickness absence by duration



Source: Statistics Norway

As sickness absence in Norway is the highest among the OECD countries, the Statutory Amendments to the Working Environment Act and the National Insurance Act of 1 March 2007 have reinforced employers' responsibility for facilitating and following up employees on sick leave. Stronger requirements are set for more activity-oriented measures early on in the sick leave period, and the potential for control and sanctions has been expanded.

Indirect annual costs for people with RA in Norway have been estimated to be equal to 7,395 euro per patient (Lundkvist et al., 2008).

Not only are indirect costs associated with sickness absence and presenteeism, but indirect costs are also associated with early retirement among people with MSDs (Dagenais et al., 2008; Alavinia and Burdorf, 2008). In the literature, high variation is found about early retirement rates depending on the country, the year of the study and the sample included. However, in most studies it varies between 30 and 50 per cent (Lundkvist et al., 2008).

However, these figures still underestimate the true cost of conditions such as MSDs. Most people with MSDs do not become disabled. In fact, whilst there is a relatively high background prevalence of MSDs, most people (even those with diagnosed conditions) continue to work (Waddell and Burton, 2006a). However, there are still potentially significant costs associated with lost productivity where people remain at work but in pain or distress while awaiting intervention or work-place adjustments. As discussed in the previous section, the indirect costs of ill health extend beyond lost productivity of the individual, often impacting on the labour participation of family members (Pugner, Scott, Holmes and Hieke, 2000). Although informal care is difficult to identify, quantify and value (what is considered 'informal care' by some people may be considered 'normal' by others), Lundkvist et al. (2008), estimated that for RA the annual cost of informal care in Europe was equal to 2,562 euros per patient. This figure varies greatly according to the services provided by the health care or social systems and the characteristics of the labour market in each country. In Norway, informal care for patients with RA has been estimated to be higher than the European average, equal to 4,626 euros per patient per year.

A further extension from work-related indirect costs, are additional costs associated with hiring household help (Kavanaugh, 2005).

### **3.4.3 Total costs**

The cost calculations for MSDs in general provide relatively good estimations of the costs of non-specific MSDs given that non-specific MSDs constitute the vast majority of cases. Calculating the costs for specific MSDs is fraught with the same difficulties as for MSDs as a whole. The majority of studies estimating the economic burden of RA have provided cost estimates specific to the US population and health care system (Cooper, 2000). The cost of AS to society is less well established (Chorus et al., 2002). More research has been done on cost in the US, Canada and other European countries, particularly the Netherlands, France and Belgium, than in Norway. However, findings across countries with respect to work disability rates are generally not directly comparable given the differences in working terms and conditions, such as the length and conditions of statutory sick pay (Sieper et al, 2002).

Lundkvist et al. (2008) estimated that the total cost of treating RA patients in Norway was 23,006 euros per patient per year, or a national annual cost of 705 million euros. These included medical costs, drug costs, non-medical costs, the costs of informal care and other indirect costs. These figures are higher, per patient, than those for other Western European countries, but do not differentiate between those of working age and those above retirement age. The total cost of back pain has been estimated to be 1.7 billion euros (Werner, Laerum and Ihlebaek, 2002).

The limitations of data collection outlined above highlight some of the difficulties encountered in trying to cost the impact of MSDs for employers and society.

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### 3.5 Summary

In this section we have considered the impact that MSDs have on a person's ability to work, both physically, as a result of the condition itself, and from the associated effects, such as loss of concentration from pain. We have also discussed the impact that the work-place can have on MSDs, both at onset and during the development of the conditions. Whilst there are many intrinsic risk factors for MSDs it is clear that the work-place has the potential to expose employees to other risk factors, both physical and psycho-social. Some of the well-established work-place risk factors such as vibrations and workstation ergonomics are already recognised by many employers and assessed in order to minimise their impact. However, the impact of other work-place risk factors, such as job quality, are not as widely understood.

We have also highlighted that it is important to distinguish between risk factors for the onset of MSDs and risk factors for chronic illness and disability. Whilst the physical conditions of work may cause or aggravate musculoskeletal symptoms, the impact or outcome on individuals (absence from work and disability) is strongly associated with psycho-social factors (Waddell and Burton, 2006a).

Finally, we have looked at the economic and social impact of MSDs and have discussed the direct, indirect and total costs of MSDs. Unfortunately, total costs estimates as found in the literature do not take into account the enormous intangible costs born by people with MSDs. This is due to the difficulty of expressing intangible costs in monetary terms. However, data for RA in particular, point out how direct and indirect costs increase with the progression of the disease. As a consequence, the development of strategies and interventions to stop this progression and ensure that those with MSDs are enabled to enjoy full and productive working lives appears necessary.

The next section will discuss the most common and appropriate interventions within and outside the work-place for each condition.

## 4. Interventions

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The impact of MSDs, as we have seen, can be significant to the people living with them, to employers and to society as a whole. Their impact on the workforce has recently started to receive greater recognition. Whilst it is widely acknowledged that early intervention is an essential part of addressing the onset of MSDs and absence caused by these conditions, there is still some way to go before people with MSDs are given the best support possible to remain in work or return to work. Long waiting times for care, certain employer's lack of capacity to deal with sickness, lack of employee awareness about conditions and their management, and mixed messages on the effectiveness of various methods of work-place interventions or return to work programmes are all barriers to making good and healthy work a reality for those with MSDs.

This section looks at the kinds of interventions which are most likely to help workers with MSDs to stay in work, to return to work, to remain productive, to derive health benefits from work and to continue to make a contribution to society. In addition, Appendix 2 provides a wide number of indicators that may help to identify both enablers and barriers to early intervention in Norway, and to compare Norway to countries with similar or different labour market, welfare and healthcare systems.

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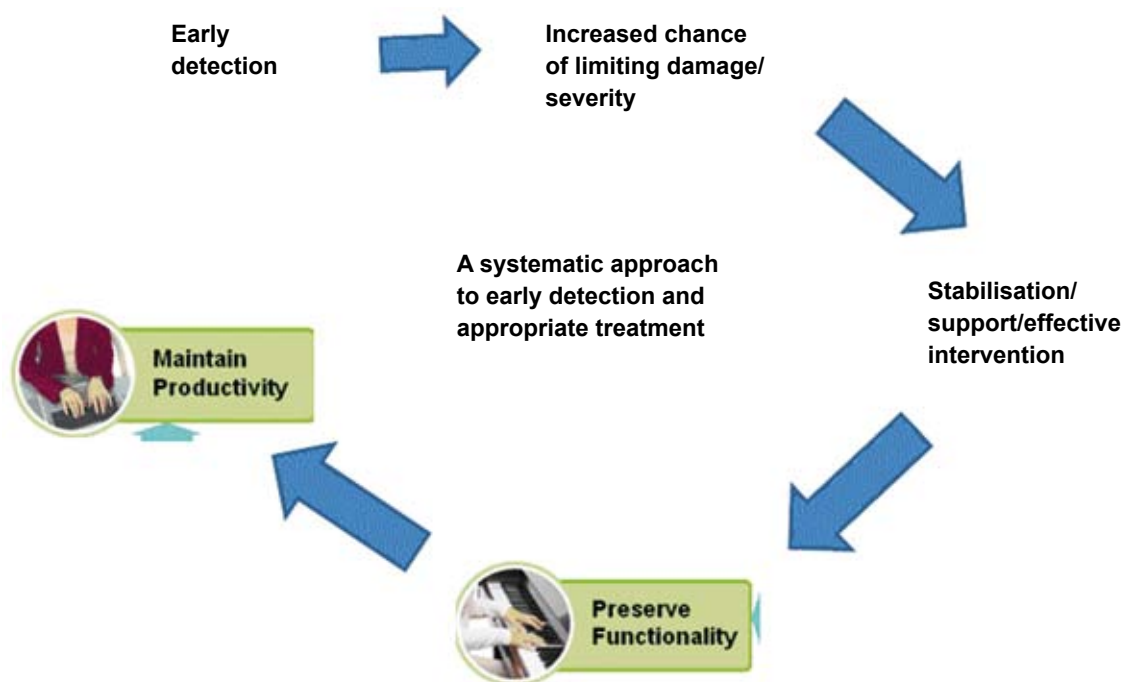
### 4.1 The case for early intervention

Ensuring that workers who have MSDs get access to the appropriate treatment and support as quickly as possible must be a top priority for employers and health care professionals. Epidemiological studies of employees whose absence is caused by low back pain have shown that the longer the sick leave, the more difficult it is to get the employee to return to work and the higher the economic cost (Frank et al., 1998; Meijer, Sluiter, Heyma, Sadiraj and Frings-Dresen, 2006). Sick leave has also been shown to have a negative psychological impact on employees (Meijer, Sluiter and Frings-Dresen, 2005). As mentioned before in this report, and summarised in Figure 7 on the next page, early detection is critical to limit physical damage and preserve functionality, in order to maintain productivity and keep people who are affected by these condition at work.

Searching the literature for examples of early interventions for MSDs in Norway, a study on a light mobilisation treatment for people with sub-acute low back pain was found among the others (Molde Hagen, Grasdal and Eriksen, 2003). Unfortunately the study on page 36 does not quantify the cost-effectiveness of the treatment; however, it does evaluate the effect of treatment on duration of sick leave.

As for RA, one of the experts that we interviewed for this study pointed out that in Norway, very early arthritis clinics are a successful example of early intervention. The objective of these clinics is to study the disease spectrum and the 24-week disease course in patients with arthritis of less than 16 weeks duration, and to plan the most appropriate treatment strategy based on

**Figure 7: Effects of early detection on productivity**



early diagnosis, use of symptom-modifying agents, early use of disease modifying therapies/ aggressive therapy, monitoring and adjustment of the disease-modifying therapy according to efficacy and patient's tolerance, and the use of biological agents.

It is also in an employer's best interests to act early if they are to minimise the costs to the health of employees and to their business through absence. Based on a review of the available evidence Breen et al. (2005) recommend that employees and employers should discuss and adjust work within the first week. If employees have concerns about their condition they should consult a health care professional and, following referral or diagnosis, advice and planned action, a review should be conducted within four weeks.

Job retention and return to work programmes are contingent on patients receiving appropriate medical care as quickly as possible. Yet the length of time that it takes to be seen by a medical professional is a complaint that is heard frequently from individuals and employers.<sup>4</sup> Moreover, since GPs are the first point of call for people with MSDs and the signatory of sick notes and are

<sup>4</sup> Expert interviews. According to one of our experts, people who want to see a rheumatologist in a Norwegian hospital could be waiting between three and 144 weeks

### **Does early intervention with a light mobilisation program reduce long-term sick leave for low back pain? A three year follow-up study**

**Background data:** 12 month follow-up results from a previous study showed that early intervention with examination at a spine clinic, giving the patients information, reassurance, and encouragement to engage in physical activity as normal as possible, had significant effect in reducing sick leave. At the 12 month follow-up, 68.4 per cent in the intervention group were not on sick leave, as compared with 56.4 per cent in the control group. Patients in this study were followed-up for a period of three years to investigate possible long-term effects.

**Materials and methods:** 457 patients placed on a sick list for 8 to 12 weeks for low back pain were randomised into two groups: an intervention group (n = 237) and a control group (n = 220). The intervention group was examined at a spine clinic and given information and advice to stay active. The control group was not examined at the clinic but was treated within the primary health care.

**Results:** Over the three years of observation, the intervention group had significantly fewer days of sickness compensation (average 125.7 d/person) than the control group (169.6 d/person). This difference is mainly caused by a more rapid return to work during the first year. There was no significant difference for the second or third year. In particular, there is no increased risk for reoccurrence of illness from early return to work. At 6 month follow-up, patients in the intervention group were less likely to use bed rest and more likely to use stretching and walking to cope with their back pain compared with the control group. This effect diminished. At the 12 month follow-up, the only significant difference between the groups was in the use of stretching. Economic returns of the intervention were calculated in terms of increases in the net present value of production for the society because of the reduction in number of days on sick leave. Net benefits accumulated over three years of treating the 237 patients in the intervention group amount to approximately 2,822 dollars per person.

**Conclusions:** For patients with sub-acute low back pain, a brief and simple early intervention with examination, information, reassurance, and encouragement to engage in physical activity as normal as possible had economic gains for the society. The effect occurred during the first year after intervention. There were no significant long-term effects of the intervention. The initial gain obtained during the first year does not lead to any increased costs or increased risks for reoccurrence of illness over the next two years.

have a vital role to play in ensuring that patients are able to manage their conditions, and are pivotal in either obstructing or facilitating an individual's return to work. In Norway, apart from GPs, other health care professionals play a role in MSDs consultations. In 2002, 15 per cent of Norwegians consulted a physiotherapist, 7 per cent a chiropractor, and 9 per cent an alternative care provider. Although communication between these groups varies, it has decreased since 2008 following a law according to which patients can seek chiropractors' and manual therapists' help without referral.<sup>5</sup>

A study on involvement and satisfaction of Norwegian health care services among patients with RA and chronic non-inflammatory musculoskeletal pain (Brekke, Hjortdahl and Kvien, 2001) found that more than half of respondents with chronic musculoskeletal pain had not seen a GP during the previous 12 months, maybe reflecting their discouragement from expecting further help from their doctor. Although patient with RA showed a more favoured position towards involvement and satisfaction of health care services received than people with musculoskeletal pain, a third of them reported no sense of influence on therapeutic decisions. As patient involvement leads to improved outcomes and better adjustments, there is a need among people with MSDs in Norway to receive a more flexible and patient-centred care model (Kjeken et al., 2006).

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**4.2**  
**The social security regime for the sick and work disabled**

It is clear that, in most EU member states, interventions made by the social security system can make a significant difference to citizens of working age with long-term, chronic or work-disabling conditions. In Norway, the number of social assistance recipients rose steeply in the 1980s, from 60,000 to a peak of 178,000 in 1994. Then followed a decline to 1999 and at present numbers have levelled off at approximately 140,000 cases, altogether 132,000 persons or 3 per cent of the population. If we include those who are dependent on social assistance recipients, almost 5 per cent of the population receive – directly or indirectly – social assistance. In 2004, the average recipient was on benefit for about five months and the average amount received was NOK 35,000. The share of social assistance recipients in the population is particularly high among young people as well as single persons and single parents (Statistics Norway).

The Norwegian system of compensation is very generous; the system covers 100 per cent of the wage loss from the first day of reported sickness. Self-certification is required for the first three days, and a medical sickness certificate from a physician is necessary from the fourth day. For the 56 per cent of the Norwegian workforce employed by a company included in the

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<sup>5</sup> Expert interview

Inclusive Working Life agreement (IWL)<sup>6</sup> however, sick-note regulation is slightly different. People on sick leave can stay at home for a period longer than three days before having to consult a GP to get a medical sickness certificate. The employer covers sickness compensation for the first 15 days, while the National Insurance Administration covers from the 16<sup>th</sup> day up to a maximum of 52 weeks. According to Bonato and Lusinyan (2004) the incentives stemming from the insurance scheme may have a strong impact on absence behaviour. According to the authors there is a large Swedish literature providing empirical evidence of strong moral hazard effects of the insurance scheme. A recent OECD's publication on Norway<sup>7</sup> states that the growing use of social benefit schemes – for the most part sickness and disability benefits and early-retirement – has depressed older-worker participation, lowered working time and brought labour utilisation towards the international average. Although the Statutory Amendments of 1 March 2007, discussed earlier in this report, have improved the situation by asking participants in long-term sickness and disability schemes to actively plan with their employers to get back to work, access to sickness and disability benefits should be further tightened notably by mandating the involvement of independent medical experts (not family doctors) in disability assessments.<sup>8</sup>

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**4.3 Condition-specific interventions** Those with MSDs can experience numerous problems associated with long term care, including long waits, failure to undertake a multidisciplinary approach, poor advice on pain management, and a lack of clear integrated pathways. Notwithstanding this, there are a number of condition-specific interventions which have been shown to be effective in improving job retention and return to work. For those with specific musculoskeletal conditions, speedy referral to the appropriate specialist for investigation and treatment is usually vital.

### 4.3.1 Non-specific MSDs

The primary focus of this report has been to examine the interventions and other factors which affect job retention, labour market participation and job quality among those with MSDs. As we have seen, there is evidence that physical impairment can represent a barrier to each of these aspects, but that many people – even those with serious and chronic incapacity – can and do lead full and fulfilling working lives. Since back pain and the majority of work-related upper limb

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<sup>6</sup> On 14 December 2005, on behalf of the government, the Minister of Labour and Social Inclusion signed a new letter of intent on a more inclusive working life (IW) with the social partners. The new agreement has been running throughout the period 2006-2009 and has replaced the letter of intent of 3 October 2001. It is an instrument aimed at preventing sick leave, increasing focus on job presence and preventing 'expulsion', and increasing recruitment to working life of persons who do not have established employment. Through the agreement, focus has been placed on reducing sickness absence and the use of disability pensions, increasing the retirement age and ensuring the recruitment of people with impaired functioning capacity and other vulnerable groups to the employment market (<http://www.regjeringen.no/en/dep/aid/Topics/Welfare-policy/inclusive-working-life.html?id=947>)

<sup>7</sup> <http://www.oecd.org/dataoecd/52/55/38001508.pdf>

<sup>8</sup> <http://www.oecd.org/dataoecd/24/23/42222223.pdf>

disorders are not diseases to be cured and there is very limited evidence that prevention is possible, it has been argued that the focus of treatment should be on returning to the highest or desired level of activity and participation, and the prevention of chronic complaints and recurrences (Burton, 2005; Bekkering et al., 2003) rather than eradicating the cause of the problem or returning to normal function.

Whilst treatment to ease or relieve the symptoms of non-specific MSDs will always be a priority, medical intervention is not necessarily the only, or the best route to recovery or helping those with non-specific MSDs to manage their condition. In fact, for non-specific conditions, an individual's recovery and chances of returning to work can be adversely affected by 'over-medicalising' their condition<sup>9</sup> (Indhal et al., 1995). The limitations imposed by sick notes, statutory sick leave and formalised return to work programmes may serve to reinforce the 'illness' of the patient and can tie employers hands. Based on evidence that psycho-social factors are a determinant of chronicity and disability in those with back pain, there is a strong argument for re-conceptualising this condition and its treatment, which has important lessons for other types of non-specific musculoskeletal pain (Burton, 2005).

Waddell and Burton (2006b) summarise the challenge neatly in their work on vocational rehabilitation. They point out that, whilst many non-specific MSDs do not have clearly defined clinical features and have a high prevalence among the working age population, most episodes resolve themselves and most people with these conditions remain at work or return to work very quickly. In their view, a focus on incapacity alone can be unhelpful:

*'..the question is not what makes some people develop long-term incapacity, but **why do some people with common health problems not recover as expected?** It is now widely accepted that biopsychosocial factors contribute to the development and maintenance of chronic pain and disability. Crucially, they may also act as obstacles to recovery and return to work. The logic of rehabilitation then shifts from dealing with residual impairment to **addressing the biopsychosocial obstacles that delay or prevent expected recovery.**' (Waddell and Burton, 2006b, p.7) [bold in original text]*

The biopsychosocial model is an explanatory framework that recognises the importance of psychological and social factors in determining how MSDs cope with their conditions. The following section provides a brief overview of the biopsychosocial model and outlines the implications that it has for the workforce.

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<sup>9</sup> Expert interviews

### 4.3.2 Rheumatoid arthritis

The importance of effective and early treatment of rheumatoid arthritis in reducing joint damage and disability is now widely acknowledged (Pugner et al., 2000; Combe, 2007). Since there is currently no 'cure' for RA, the focus of treatment is on controlling signs and symptoms, enabling the patient to manage their condition and improving quality of life. Medical treatments for RA are directed at suppressing one or other part of the joint damaging processes, the effectiveness of which have improved in recent years. Since it is well documented that the functional capabilities of RA patients will decline over time, it is critical that patients should be treated as quickly as possible with disease-modifying anti-rheumatic drugs (DMARDs) to control symptoms and disease progression (Scottish Intercollegiate Guidelines Network (SIGN), 2000). One study found that there is a 73 per cent risk of erosive damage in patients who wait over a year between symptom onset and referral to rheumatology clinics (Irvine, 1999 in Luqmani et al., 2006).

Clinical evidence is also growing which demonstrates that anti-TNF drug therapies can have a more powerful effect on RA than DMARDs, especially in improving job retention and work participation (Halpern, Cifaldi and Kvien, 2008). It seems that, in Norway, people with RA who can benefit from anti-TNF drug therapies have been able to gain ready access to them once they get to see a consultant.<sup>10</sup>

However, medical interventions in the form of drug therapy to control inflammation and disease progression, and surgery to redress structural damage are only part of managing the care of RA patients. Other important elements include patient education and empowerment, practical self-management to help deal with symptoms and specialist support to help live with the disease and its consequences. The effective management of RA has to involve not only the clinical team (including GPs, consultant rheumatologists, physiotherapists, occupational therapists, chiropodists, podiatrists, pharmacists, primary care nurses and orthopaedic surgeons), but the participation of the patient and, ideally, their employers. Social workers also have their role to play.

### 4.3.3 Spondyloarthropathies

Prompt referral to specialists for confirmation of diagnosis and the start of treatment is also essential for those with AS and other rheumatic conditions. Since (similarly to RA) there is no cure for AS, the aim of therapeutic intervention is to reduce inflammation, control pain and stiffness, alleviate systemic symptoms such as fatigue, and to slow or stop the long-term progression of the disease. The prescription of non-steroidal anti-inflammatory drugs (NSAIDs)

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<sup>10</sup> Expert interview

or anti-TNF drugs coupled with regular physiotherapy forms the current basis for the treatment of AS.

As AS typically affects relatively young people, its potential to disrupt or even curtail an individual's labour market participation may be significant. As we have discussed, there are important clinical, social and economic benefits to keeping these patients in work as long and consistently as possible. Depending on the severity of their condition, AS patients can benefit from work-place adjustments, flexible working arrangements, exercise regimes and physiotherapy (Boonen et al., 2001).

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**4.4** The biopsychosocial model advocates that clinicians, occupational health professionals and others should assess the interplay between the **biological** (eg disease, joint damage), the

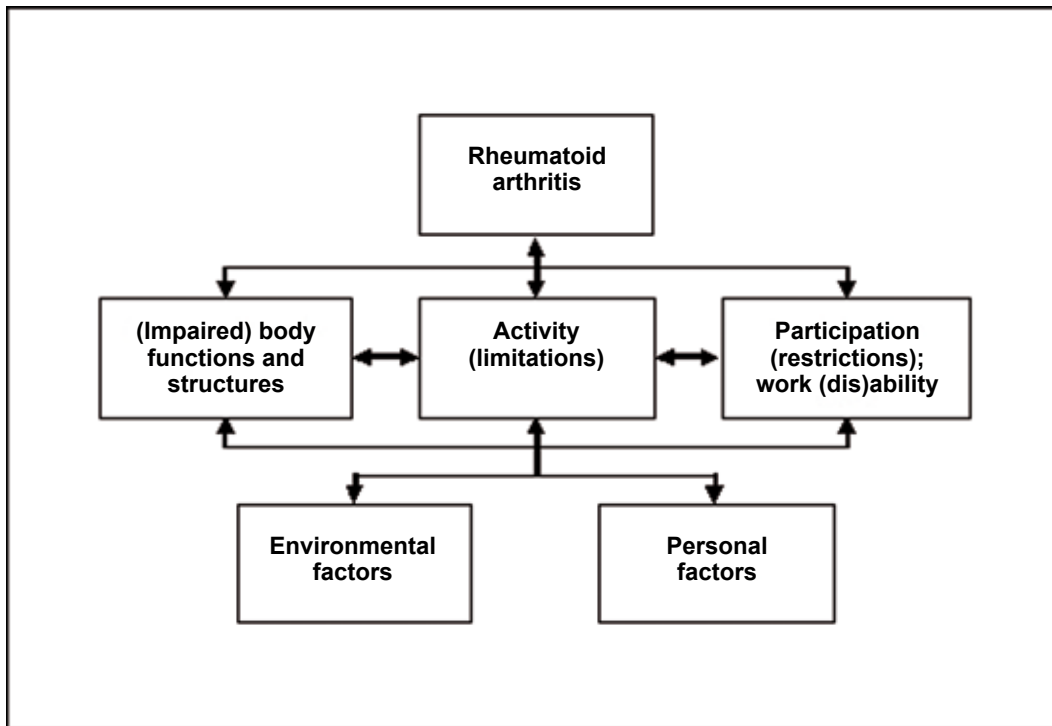
**The  
biopsychosocial  
model and work**

**psychological** (eg disposition, anxiety) and the **social** (eg work demands, family support). Clearly, the psychological disposition and behaviour of a patient can have a significant impact on the way a physical 'injury' (such as back pain) is approached by a patient. In some cases the patient risks entering a self-reinforcing cycle of incapacity, delayed recovery and even depression if their dominant response to pain is to 'catastrophise' it. Of course there may be many factors which affect an individual's disposition to 'catastrophise', including personality, previous medical history, levels of family support or job satisfaction (Sullivan and D'Eon, 1990). It is evident that the interaction of the biological, psychological and social dimensions can have a significant impact on the development, progression of, and rehabilitation from, a musculoskeletal condition.

Since it was first proposed in the late 1970s, a growing body of evidence has developed to support the biopsychosocial model. For example, research has demonstrated that job dissatisfaction can be an important predictor of speedy and successful return to work (Bigos, Battie and Spengler, 1992). On the issue of social support, studies have shown that limitations in functioning attributable to MSDs can stress family systems and lead to family conflicts if the patient is unable to perform normal family duties (Hamberg, Johansson, Lindgren and Westman, 1997; MacGregor, Brandes, Eikermann and Giammarco, 2004; Kemler and Furnée, 2002). On the other hand, an overly solicitous family (or, by extension, manager or colleague) may reinforce MSD patient passivity and encourage the patient to adopt a 'disabled' role (Kerns, Haythornthwaite, Southwick and Giller, 1990; Block, Kremer and Gaylor, 1980).

De Croon et al. (2004) looked at the research on work disability among people with RA and concluded that psycho-social factors were often a better predictor of work disability than

Figure 8: ICF model applied to work disability in RA



Source: de Croon et al., 2004

standard bio-medical factors. In Figure 8 on the next page, the authors highlight how wider environmental and personal factors enhance the explanatory power of the *International Classification of Functioning, Disability and Health* (ICF) in the case of work disability and RA.

Some critics of the biopsychosocial model (McLaren, 2006) have focused on this last point, highlighting concerns that this approach may encourage or 'permit' helplessness in some patients or that, in other circumstances, it may alienate patients who feel that they are being told that their condition is 'all in the mind'. Clearly, care must be taken in the way that clinicians and others mitigate these risks, but the balance of the literature – and of the expert opinion offered during the course of our interviews – is strongly in support of the biopsychosocial model and its role in informing the management of MSDs in both clinical and occupational settings (Smyth, Stone, Hurewitz and Kaell, 1999; Carter, McNeil and Vowles, 2002; Zampolini, Bernardinello and Tesio, 2007). Indeed, it forms the basis of the World Health Organisation's *International Classification of Functioning, Disability and Health* (ICF) which has been widely embraced as an authoritative guide for vocational rehabilitation (WHO Scientific Group, 2001).

An example of successful intervention to reduce sickness absence based on the biopsychosocial model is provided by Ektor-Andersen, Ingvarsson, Kullendorff and Ørbæk (2008). In their study Ektor-Andersen et al. developed a tool based on the cognitive behavioural theory (CBT) method of functional behaviour analysis according to which risk factors for long-term sick leave due to musculoskeletal symptoms were identified in four different domains: the community, the work-place, the family/spare time and the health care system. Care-seekers were examined by each member of the interdisciplinary team and risk factors were identified and classified as stable or dynamic. Dynamic factors were the ones the care-seekers and the team agreed to intervene on. Some of these interventions involved CBT sessions and other focused more on physiotherapy which were then administered for a year. Results from the study showed that this type of intervention was effective in significantly reducing sick leave and social security expenditure only four months after the intervention started. Although the cost-benefit analysis presented by Ektor-Andersen et al. (2008) underestimates the total savings by only taking into account social security costs, the costs of this type of intervention are balanced out by the reduced costs in sickness allowance during the first year.

As Waddell and Burton (2006b) have argued, the goals of the biomedical model are to relieve symptoms, whereas the goals of clinical management informed by the biopsychosocial model – especially in occupational settings – should be to control symptoms and to restore function. This suggests that employers contribute to the ‘social’ part of the biopsychosocial model and that their actions can make a difference to the outcome for individuals with MSDs.

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#### 4.5 4.5.1 Awareness of conditions and their management

##### The role of employers

Although the authorities in Norway have tried to encourage employers to include people with disability in the workforce through the agreement ‘Inclusive Work Life (IWL)’, the majority remains unaware of the nature of MSDs <sup>11</sup>, both in terms of the immediate impact on functional capacity at work and, where relevant, the manifestations and progression of the conditions. For example, employees with RA or SpA may be susceptible to periodic ‘flares’ of inflammation and severe pain followed by fatigue and possible depressed mood. Unless employers are aware that these symptoms are expected or ‘typical’, they can adopt an unhelpful or over-cautious approach to return to work.

Whilst the message about manual handling and work design may have got through to many employers, the fact that absence and even reduced work requirements can be counter-productive has yet to become common currency. Changing attitudes and raising awareness about the management of MSDs is an important part of reducing their burden to employers

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<sup>11</sup> Expert interview

and society. However, it is not just employers that need to know more about MSDs and their treatment. One of the most persistent (and pernicious) myths about back pain, for example, is that bed rest is the best solution. Health promotion campaigns have been shown to be effective at getting the message across that experiencing pain does not necessarily mean that the condition has worsened or that being active is bad for you (Buchbinder, Jolley and Wyatt, 2001). This demonstrates that with sufficient commitment and investment from central government, campaigns of this scale can have an impact on public perceptions of common MSDs.

### **4.5.2 Intervention and adjustment of work demands**

Not only has evidence shown that work is good for you but returning to modified work can help recovery (Feuerstein et al., 2003; van Duijn and Burdorf, 2008). Among occupational health specialists, the use of vocational rehabilitation has long been an accepted mechanism for ensuring that individuals with illness, injury or incapacity can return to work (even to perform adjusted work) as soon and as sustainably as possible. There have been concerns that rehabilitation is not well-integrated into mainstream clinical practice and that return to work is not seen by a sufficient proportion of clinicians as a valued outcome for the patient (Frank and Chamberlain, 2006). It is also important to stress that vocational rehabilitation is not the preserve of professionals. In practice effective management is as, if not more important than formal rehabilitation.

Yet, employers, if they think about this at all, invariably consider the physical job demands which need to be met by an employee with an MSD. The biopsychosocial model requires that the mental demands of the work are also considered as part of the return to work process. There is a growing body of work which shows that adjusting a variety of work demands can support successful return to work among those with a range of MSDs (Schultz, Stowell, Feuerstein and Gatchel, 2007; de Croon et al., 2004; Feuerstein, Shaw, Nicholas and Huang, 2004; Chorus, Miedema, Wevers and van der Linden, 2001). The success with which both employee and employer can manage the process of re-adjustment during return to work can also depend on the beliefs that both parties have about the extent to which the work itself is (at least in part) caused by or related to the incapacity.

There are numerous types of work-based intervention for assisting those with MSDs, ranging from ergonomic adjustments to providing access to physiotherapy, modifying work programmes to cognitive behavioural therapy, or a combination of various strategies. Evidence on the success of these interventions at tackling non-specific MSDs is mixed (Meijer et al., 2005).<sup>12</sup> A systematic review of multidisciplinary treatments of patients with low back pain, for example,

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<sup>12</sup> Findings from an evaluation of the effectiveness of return-to-work treatment programmes were inconsistent

demonstrated that whilst the treatment improved function and decreased pain in individuals, it could not be demonstrated that this was linked to employees returning to work earlier than those who had not received it (Guzman et al., 2001). Whilst biomechanical or ergonomic factors may be related to the onset of back pain, evidence that interventions based on these principals will prevent re-occurrence or progression to chronicity is thin on the ground (Burton, 1997). In fact, it has proved virtually impossible to determine whether one treatment is significantly more effective than another (Ekberg, 1995). Even for specific conditions such as RA, the evidence for the effectiveness of vocational rehabilitation is slim (Backman, 2004<sup>13</sup>; de Buck, Schoones, Allaire and Vliet Vlieland, 2004).

There is nonetheless broad agreement on the principles for managing non-specific MSDs, particularly back pain, that are outlined in Box 1 below. This includes advice and a number of relatively simple measures for employees and employers to follow on how to deal with back pain.

**Box 1: Principles of managing non-specific MSDs**

- Early treatment should be sought for back pain.
- Most back pain is not due to a serious condition.
- Simple back pain should be treated with basic pain killers and mobilisation.
- It is important to keep active both to prevent and to treat back pain.
- Getting back to work quickly helps prevent chronic back pain.
- Adopt the correct posture while working.
- All work-place equipment should be adjustable.
- Take breaks from repetitive or prolonged tasks or postures.
- Avoid manual handling and use lifting equipment where possible.
- Clear information should be provided to employees about back care.
- Health and safety policies should be implemented to cover all aspects of day-to-day work and should be reviewed regularly.

*Source Health and Safety Executive (HSE), 1999*

This requires employers to think beyond their statutory duty to address health and safety risks, and to recognise that sickness absence management, effective return to work programmes and rehabilitation are, at bottom, principles for effective management (Waddell and Burton, 2006b). Much is dependent on raising awareness about how to manage the symptoms of MSDs amongst employees and their managers, and ensuring that the latter have the skills and confidence to support employees in work.

<sup>13</sup> Backman, 2004 found only six studies for the period 1980 to 2001

### 4.5.3 Line managers

What is clear is that the role of line managers in early intervention is crucial, both in work retention and rehabilitation. Yet many line managers feel ill-equipped to manage long-term absence and incapacity. They may find aspects of mental ill-health or chronic incapacity awkward and embarrassing to talk about or confront, and are concerned about challenging or asking for more information about GP sick notes, making home visits or telephoning staff at home for fear of being accused of harassment or falling foul of the law and landing themselves and their organisation in a tribunal. They are also ignorant of, or uncomfortable with, the idea of rehabilitation. Although the Employment Equality Act requires employers to make 'reasonable accommodation' to support employees with long-term illness or injury, most line managers find job re-design difficult, irritating and disruptive.

Given that MSDs are one of the most common work-related health problem, and the importance of psycho-social factors in determining whether an employee remains in work or returns to it as soon as they can, managers need to have the skills to deal with staff who have them, or the costs to their organisation may be significant, particularly for small and medium enterprises. Small employers also have issues with employees with MSDs, as their absence from work can have, potentially, more impact on customer service, productivity and business performance.

### 4.5.4 Improved employer-clinician dialogue

On the face of it, many of the return to work challenges faced by employees with MSDs may be improved if there was an improved level of mutual understanding between employers and clinicians. As highlighted above, the clinical appreciation of most MSDs by employers can be cursory to say the least. On the other hand it is often argued that most GPs do not have adequate training in musculoskeletal disorders and injuries (Akesson, Dreinhofer, & Woolf, 2003). Some of the experts we interviewed in Norway expressed their concern about GPs' ability to diagnose rheumatic diseases promptly, which in turn delays the possibility for patients to be seen by a specialist and start the right treatment early. Although there is evidence that most misconceptions about MSDs in general and low back pain in particular have been abandoned by Norwegian GPs (Ihlebaek and Eriksen, 2004), more effort is needed in considering the demands of the job when making return to work judgements and the extent to which adjustments to the job can be made. Indeed, whether swift and appropriate return to work might have positive psychological (and economic) benefits should also be considered. Without this understanding of specific tasks undertaken by employees and the ability to adjust those tasks, GPs may feel that a return to work would exacerbate a condition unless an individual is 100 per cent fit

For their part, employers will only very rarely challenge a GP's sick note, or ask for a second opinion on the potential for a beneficial return to work for a patient. The consequence of this mutual lack of understanding and resulting dearth of dialogue can often be that the MSD patient is left stranded in the middle, with no clear pathway back to work and, more importantly, no voice. A proactive, inclusive, multi-disciplinary, capability-focused approach to vocational rehabilitation, informed by the biopsychosocial model and delivered through case management is widely regarded as the most enlightened and effective approach to take in the majority of work-related MSD cases. Quite often both employers and GPs will focus on the aspects of the job which an MSD patient cannot currently perform, rather than on those which they can.

One of the attractions of the biopsychosocial model is that it 'joins up' the three core strands of the MSD patient's experience, and management of, their condition. It offers a comprehensive framework with which to look at the diagnosis and treatment of a range of MSDs, especially when an important outcome for the individual is to stay in, or to return swiftly to, work.

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**4.6** This section has outlined the case for early intervention, first and foremost to benefit the health of those with MSDs, but also to ensure that they remain productive members of the workforce. We have illustrated an example of successful early intervention for people with low back pain, and discussed the effectiveness of 'very early arthritis clinics' for people with RA. We have then commented on the generosity and maturity of Norwegian welfare state, and pointed out how, for some commentators, the growing use of social benefit schemes among Norwegians has depressed older-worker participation, lowered working time and brought labour participation towards the international average.

#### Summary

In the context of MSDs we have stressed the idea that intervention should ideally begin before those who experience musculoskeletal pain visit their GP, and extend beyond the signing of a sick note. The biopsychosocial model clearly illustrates the need for a more comprehensive understanding of the factors that contribute to the development of non-specific MSDs, taking into account individual or psychological factors as well as the social milieu in which the individual lives their lives, in which work plays a large part. To achieve this, employers, employees and clinicians need to talk to one another more effectively. Whilst this is challenging, through the statutory amendments of 1 March 2007 the Norwegian government is trying to achieve this. However, early diagnosis, early intervention, and the right treatment still remain crucial to allow people with MSDs to fully enjoy their lives and to sensibly reduce the burden of illness to Norwegian society.

## 5. Conclusions and recommendations

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Work is, unambiguously, good for our health. It provides us with income, generates social capital and gives us purpose and meaning. Even when unwell or injured, remaining in work – at least in some capacity – is often better for recovery than long periods away from work. If the Norwegian workforce is to be productive and competitive in the global economy, and if the quality of their working lives is to be enhanced, it is important that a high proportion of the workforce is, as far as possible, fit for work.

The evidence presented in this report illustrates that a large proportion of working age people in Norway are, or will be, directly affected by musculoskeletal conditions (MSDs). This can have very significant social and economic consequences for these individuals and their families, it can impede the productive capacity of the total workforce and parts of Norwegian industry and it can draw heavily on the resources of both the health service and the benefits regime.

There is plenty of data of clinical, epidemiological, psychological and economic evidence on the nature, extent and consequences of the MSD problem in Norway. However, there seems to be a lack of coherence or ‘joined-up’ thinking and action by government, clinicians and employers which focuses on the MSD **patient as worker**. Keeping people at work means not only reducing public expenditure on social and disability benefits but also reducing the intangible costs that these conditions cause. Therefore, prevention of non-specific MSDs and early diagnosis and intervention for specific MSDs are not only fundamental to reducing the progression of the conditions but also the direct and indirect costs associated with them.

The Work Foundation has a number of recommendations for several interested parties in this field. Our intention is to encourage some of the key players to recognise that more can be done to ensure that continued active participation in the labour market is almost always a strongly positive force for health, fulfilment and for prosperity.

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### 5.1

#### Recommendations for employers

- Managerial awareness-raising and training must include a health and well-being component. Managers are in the front line of staff absence and are in a good position to spot the early warning signs of a problem and to help rehabilitate employees after a period away from work. Despite the current focus on ‘stress’, managers in Norwegian organisations need to be aware that MSDs can be even more of a problem for their staff and for the whole organisation.
- Imaginative job design will assist rehabilitation. Managers can change the ways work is organised (including simple changes to working time arrangements) to help prevent MSDs getting worse and to help people with MSDs to return to work. They need to do this in a way which preserves job quality, avoids excessive or damaging job demands and takes heed of ergonomic good practice.

- Build a dialogue with GPs. If sick notes from GPs are not providing a clear enough indication of the nature of the health problem an employee has, and its impact on their capacity to work, employers should challenge and clarify the GP's assessment, if only to help understand which tasks the employee can still perform, or what support they might need to return to work.
- Intervene early. Employers should always take action sooner rather than later because caution and delay can only make matters worse. As long as they behave compassionately and make decisions based on evidence and on expert opinion, early intervention cannot be construed as harassment and can often hasten recovery or rehabilitation.
- Use occupational health advice. Vocational rehabilitation carefully organised and tailored to the individual, can make a real difference to return to work, productivity, morale and sustainability of performance. Involve occupational health professionals as early as possible.
- Beyond legal compliance. Try to avoid a 'risk management' mentality when dealing with an employee with an MSD, this can often lead to delay and ambiguity. In almost all cases, the employee is better off at work.
- Use the biopsychosocial framework. Thinking about the physical symptoms of the MSD without considering the psychological and social dimensions can mean that the work-related *causes* of an MSD, or the work-related *benefits* of rehabilitation can be underestimated.
- Focus on capacity not incapacity. Employers can catastrophise too! Most workers with MSDs can continue to make a great contribution at work if they are allowed to. They do not need to be 100 per cent fit to return to work, and a little lateral thinking will allow you to give them useful work to do which will support them on their journey back to full productive capacity.

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### 5.2

#### Recommendations for employees

- Focus on capacity not incapacity. It's natural to be anxious or even guilty about the parts of your job which you may find difficult to perform because of your MSD. But you still have much to contribute and you should play to your strengths. Your specialist knowledge and experience doesn't disappear just because you are suffering pain, discomfort or mobility problems, you can still contribute in many ways. Work with your managers and your colleagues to find out how you can maximise your impact at work within the constraints of your condition. Be open with them and they should respond better.
- Avoid fear and negative beliefs about pain and reduced function.

- Talk early. Your line manager, despite what he or she might tell you, is not a mind-reader. If your MSD is causing you difficulty or you anticipate a period when you will need to adjust your working time, talk to your manager so that you can both plan what to do about it. The earlier the better as managers don't like last minute surprises, but they can usually find a solution to most problems if they have some notice. You might also find it useful to talk to your union representative, your HR manager or someone in occupational health. Don't delay.
- Play an active part in the management of your condition. Your MSD is bound to get you down sometimes and you will feel like it's controlling your life at home and at work. But you don't need to be a passive victim of pain or immobility. Find out more about your condition, watch for patterns in pain or fatigue and learn how you can minimise its impact on your functioning and your mood. This can sometimes be very hard to do, but persevere: people who play an active part in the management of their condition tend to get back to work more quickly.
- Know your rights. As both a patient and as a worker you should know what support and advice you are entitled to. If you are a trade union member, your union should be able to guide you on much of this.
- Family involvement in job retention and rehabilitation. Your family and friends are important sources of support. They may not realise that staying in or returning to work is both possible and desirable. You need to help them to help you by getting them involved in your rehabilitation at work. Even small adjustments to working time or travel to work arrangements can make the world of difference.

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### 5.3 Recommendations for GPs

- Identify where job retention or early return to work is *good* for the patient. It is easy to assume that work is unambiguously bad for your patient, especially if you suspect that aspects of their job make their symptoms worse. Consider carefully whether, with some adjustments, you can recommend staying at work on lighter duties or with adjusted hours might still be a better option than a prolonged absence from work.
- Think beyond the physical symptoms. Bring to bear your understanding of the biopsychosocial model and the limitations of the biomedical model in your diagnosis of the patient and – most importantly – your assessment of the role that their job might play in helping them stay active and avoid isolation. As a GP you are ideally placed to identify the early presentation of many MSDs. Where appropriate, you should seek to refer patients to specialist teams as early as practicable, to enable management of the condition to begin.
- Avoid catastrophising. A patient can hold a very negative view of the impact and likely progression of their condition if the way that clinicians present it focuses on incapacity rather than capacity.

- Encourage self-management. Try to ensure that the patient can adopt strategies to manage aspects of their own condition, especially if they are staying in or returning to work. A feeling of empowerment and control will help their mood and ensure that they can keep on top of important aspects of their incapacity while at work.
- Early intervention. The evidence suggests that long periods away from work are usually bad for MSD patients. The longer they are away from work, the more difficult it is to return. Early action, preferably in partnership with the patient and their employer, can help achieve a balance between the individual's need for respite and their need to work.

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### 5.4

#### Recommendations for occupational health professionals

- Think beyond the physical symptoms. More importantly, ensure employers, employees and GPs fully appreciate how this multi-factor perspective can contribute to constructive, active, participative and sustainable rehabilitation. Shape your interventions and advice around the three domains of the biopsychosocial model and help employers see how small work-place adjustments can bring wider benefits than just compliance with the Employment Equalities Act.
- Early intervention. Occupational health professionals, above all others, understand the benefits of early interventions with MSDs. They must play a proactive part in mediating between employer and employee, or employer and GP, to ensure that the patient can use return to work as a positive part of the way they learn to manage their condition and maintain their sense of self-worth and self esteem.
- Encourage self-management. Working with the employee, their colleagues and their manager, help the individual to find strategies to manage their own condition. This will enable them to make their own decisions about their working arrangements.
- Support managers with job design interventions. Making changes to work demands under the Employment Equalities Act is often seen by managers as a way of complying with the law. Helping managers to look at job redesign as a more constructive way of meeting the needs of a patient/worker with an MSD and meeting changing customer demands can help them to see the business benefits of more flexible working arrangements.

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### 5.5

#### Recommendations for government

- Carefully evaluate the evidence showing the direct, indirect and total costs of MSDs to Norwegian society and set up a plan of action. A national plan for early diagnosis, intervention and treatment of MSDs will dramatically reduce the cost of these conditions to Norway.
- Help make GPs more effective in handling occupational health issues. This will require an input into GP training, through postgraduate medical education and training. In fact, we believe that medical training at all levels, from undergraduate to continuing

## Conclusions and recommendations

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professional development would benefit from inclusion of health and work issues, especially if the health of the working age population is set to deteriorate.

- Keep on raising awareness among employers, employees and primary care professionals. The Inclusive Working Life concept is a good start but there is not strong evidence about its effectiveness. The messages about MSDs need to be simplified and made more consistent.
- Ensure better health care services and access to services. Evidence shows that a more patient-centred approach is necessary to improve patients' satisfaction and better health care outcomes.

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## Appendix 1: Interviews and consultation with experts

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We interviewed or consulted the following people during the course of our research and we are very grateful for the time each spent with us. We have taken their views into account in writing this report, though their participation in the study does not in any way imply endorsement of the report's conclusions.

Prof Camilla Ihlebaek	Norwegian University of Life Sciences (UMB) Oslo
Dr Aage Indahl	Hospital of Rehabilitation Stavern Norway
Prof Tore Kvien	Professor of Rheumatology University of Oslo and Head of the Department of Rheumatology Diakonhjemmet Hospital Oslo
Dr Bard Natvig	Institute of General Practice and Community Medicine University of Oslo
Gry Skalnes	Norsk Revmatikerforbund
Jack Skrolsvik	Norsk Revmatikerforbund
Prof Holger Ursin	Department of Biological and Medical Psychology University of Bergen
Dr Erik Werner	Department of Public Health and Primary Health Care University of Bergen

## Appendix 2: Benchmarking grid

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The Fit for Work Europe study has looked across 23 European countries plus Israel and Canada. This approach allows us to explore how far early intervention is implemented across Europe. It also enables us to see how far we may identify both enablers and barriers to early intervention given the different approaches to policies that affect the labour market, the welfare system and the health care system. To explore this we have looked widely at a number of indicators covering the:

- Labour market;
- Welfare system ;
- Health care system.

The data presented below come from various international data sources. We used 2005 data to allow for comparisons across countries for a number of different indicators. The data mainly come from the OECD. However, where OECD data was not available the data was supplemented with Eurostat data. We present a selection of indicators below.

## Appendix 2: Benchmarking grid

	GDP per capita in PPP	Percentage of the population working age	Unemployment rate (%)		Long term unemployment rate, % of unemployed	Average age of withdrawal from the labour market		Labour productivity per hour worked, GDP in PPS	Hourly labour costs
			Male	Female		Male	Female		
Austria	\$33,496	67.7	4.9	5.5	23.3	59.1	58.1	100.2	€26.23
Belgium	\$32,063	65.6	7.7	9.5	51.6	59.3	58.1	123.4	€30.73
Canada	\$35,002	69.3	7.0	6.5	9.6	63.3	61.5	-	-
Croatia	-	66.9*	-	-	58.4*	60.5*	60.5*	-	-
Czech Republic	\$20,366	71.0	6.5	9.8	53.6	61.5	58.4	51.7	€6.63
Denmark	\$33,196	66.1	4.4	5.3	25.9	64.1	61.4	101.6	€31.98
Finland	\$30,695	66.7	8.2	8.6	24.9	60.5	60.1	94.9	€26.70
France	\$29,759	65.1	8.4	10.2	41.4	58.6	59.4	116.2	€29.29
Germany	\$31,380	66.9	11.2	10.0	54.1	61.6	60.7	113.0	€27.20
Greece	\$24,928	67.3	6.2	15.3	53.7	62.4	61.2	71.2	-
Ireland	\$38,693	68.3	4.6	4.0	34.3	65.2	65.3	105.9	-
Israel	\$23,207	-	6.2	10.0	52.2	-	-	-	-
Italy	\$28,122	66.5	9.5	32.5	32.5	60.4	60.9	90.4	€21.39
Lithuania	-	67.8*	8.2*	8.3*	52.5*	60.0*	60.0*	43.1	€3.56
Netherlands	\$35,111	67.5	4.4	5.0	40.1	60.3	60.5	121.2	€27.41
Norway	\$47,319	65.6	4.8	4.4	9.5	63.3	61.8	159.3	-
Portugal	\$20,656	67.4	6.8	8.7	48.6	66.2	66.0	54.4	€10.60
Romania	-	69.4*	7.8*	6.4*	56.3*	63.0*	63.0*	28.8	€2.33
Slovakia	\$16,175	71.5	15.5	17.3	68.1	59.2	55.5	57.5	€4.80
Slovenia	\$23,456	70.2*	6.2	7.1	49.2	58.5*	58.5*	62.8	€10.76
Spain	\$27,377	68.8	7.1	12.2	32.6	61.2	63.6	89.9	€15.22
Sweden	\$32,298	65.3	7.3	7.3	18.9	65.4	62.5	101.6	€31.55
Switzerland	\$35,839	68.0	3.9	5.1	39.0	65.3	64.9	92.3	€32.82
Turkey	\$10,841	65.7	10.2	10.1	39.6	64.5	63.8	-	-
UK	\$32,695	66.0	5.2	4.3	22.4	63.2	61.4	91.9	€24.47
OECD	\$26,849	-	8.3	9.6	45.9	-	-	-	-
EU-27*	-	67.0	-	-	-	-	-	88.3	€20.47

Sources: GDP per capita in PPP, Unemployment rate: Long-term unemployment rate: OECD, 2009b; \*Eurostat, 2009; Working age population: OECD, 2009a; Average age of withdrawal, 2000-2005: OECD, 2009d; \*Eurostat, 2009; Labour productivity per hour worked, GDP in PPS: Eurostat, 2009b; Hourly labour costs: Eurostat, 2009a

## Appendix 2: Benchmarking grid

	Public social expenditure (% GDP)	Public expenditure on health (% GDP)	% spent of benefits spent on*:			Generosity of the welfare system	Social protection system interventions
			Sickness/health care	Disability	Unemployment		
Austria	27.2	7.9	25.5	8.6	5.8	5.46	2
Belgium	26.4	7.4	27.1	7.0	12.2	4.38	2
Canada	16.5	6.9	-	-	-	3.52	-
Croatia	-	-	-	-	-	-	-
Czech Republic	19.5	6.3	35.3	7.8	3.6	5.15	2
Denmark	26.9	7.9	20.7	14.4	8.6	5.40	2
Finland	26.1	6.2	25.9	12.9	9.3	2.60	3
France	29.2	8.9	29.8	5.9	7.5	5.24	3
Germany	26.7	8.2	28.4	6.2	7.0	6.11	2
Greece	20.5	5.6	27.8	4.9	5.1	-	1
Ireland	16.7	6.5	40.9	5.3	7.5	-	3
Israel	-	-	-	-	-	-	-
Italy	25.0	6.8	26.7	6.0	2.0	-	2
Lithuania	-	-	30.3	10.4	1.8	-	2
Netherlands	20.9	6.0	30.7	9.7	6.1	3.40	3
Norway	21.6	7.6	32.0	19.1	2.7	-	3
Portugal	-	7.3	30.1	10.0	5.8	4.75	1
Romania	-	-	36.2	6.8	3.2	-	-
Slovakia	16.6	5.3	29.6	8.1	3.4	5.00	2
Slovenia	-	6.1	32.3	8.5	3.3	-	2
Spain	21.2	5.8	30.9	7.5	12.3	4.75	2
Sweden	29.4	7.5	25.9	15.0	6.1	6.73	2
Switzerland	20.3	6.8	26.4	12.7	4.4	5.09	2
Turkey	13.7	4.1	-	-	-	-	-
UK	21.3	7.1	30.9	8.9	2.6	3.87	3
OECD	20.5	6.5	-	-	-	-	-
EU-27	-	-	28.8	7.6	6.0	-	-

Sources: Public social expenditure; Public expenditure on health: OECD, 2009d; % spent on disability benefits: Eurostat, 2009c; Generosity of the Welfare System: Osterkamp and Rohn, 2007 (higher score = more generous); Social protection system intervention ratings (1 = limited interventions to 3 = advanced interventions available)

## Appendix 2: Benchmarking grid

	Sickness absence due to health reasons (%)	Average days absent <sup>1</sup>	DALYs MSDs (% of Total)		DALYs RA (% of Total)	Prevalence work-related backache (Working population)	Number of RA Patients (General population)	Physicians per 1,000 population	
			Male	Female				(Prevalence)	Rheumatologists*
Austria	20.6	3.4	3.3	5.4	0.86	23.9	55,000 (0.67)	0.024	1.47
Belgium	28.8	7.0	3.1	5.1	0.78	19.4	69,000 (0.66)	-	2.08
Canada	-	-	-	-	0.86	-	215,000 (0.66)	0.014	1.03
Croatia	19.3	9.4	2.3	4.5	-	41.7	-	-	-
Czech Republic	28.2	5.5	-	-	0.69	22.8	68,000 (0.66)	0.014	0.73
Denmark	32.8	6.6	3.1	4.7	0.78	18.8	36,000 (0.66)	-	0.77
Finland	44.6	8.5	3.1	5.5	0.88	26.1	35,000 (0.67)	0.020	0.72
France	19.1	5.5	3.1	5.4	0.81	21.6	283,000 (0.45)	0.036	1.66
Germany	28.0	3.5	3.3	5.5	0.83	18.8	544,000 (0.66)	0.015	1.46
Greece	14.0	2.8	3.1	5.5	0.78	47.0	50,000 (0.45)	0.025	0.29
Ireland	21.1	3.9	2.7	4.6	0.77	14.4	28,000 (0.67)	0.011	0.51
Israel	-	-	-	-	-	-	-	0.014	-
Italy	25.1	3.8	3.5	6.0	0.91	24.3	264,000 (0.45)	0.029	0.94
Lithuania	21.1	4.3	2.8	6.6	0.79	37.8	22,000 (0.65)	0.024	-
Netherlands	33.7	8.6	3.6	5.2	0.87	13.9	108,000 (0.66)	0.014	0.46
Norway	27.2	7.1	3.5	5.3	0.89	22.6	31,000 (0.67)	0.044	0.81
Portugal	13.4	8.6	2.5	5.1	0.72	30.8	70,000 (0.66)	0.009	1.68
Romania	11.1	2.0	3.2	5.9	0.76	42.4	143,000 (0.66)	0.013	-
Slovakia	22.9	5.2	3.6	7.3	0.93	38.9	36,000 (0.67)	0.017	-
Slovenia	28.2	8.7	2.7	4.9	0.72	46.2	13,000 (0.65)	0.012	-
Spain	14.2	3.6	3.1	6.0	0.83	29.1	197,000 (0.45)	0.018	0.85
Sweden	28.1	-	3.9	5.9	0.97	27.9	60,000 (0.66)	0.029	0.59
Switzerland	19.2	4.0	3.9	6.2	0.96	18.1	49,000 (0.66)	0.055	0.52
Turkey	18.6	4.8	-	-	0.84	34.7	482,000 (0.66)	0.002	0.74
UK	22.6	3.7	3.2	4.9	0.81	10.8	399,000 (0.66)	0.015	0.71
EU-27	22.3	4.6	3.2	5.5	-	25.6	-	-	-
Europe	-	-	-	-	0.84	-	2,962,000	-	-

Sources: Sickness absence due to health reasons: prevalence work-related backache: EWCS 2005; Parent-Thirion et al., 2007 DALYs MSDs: WHO 2006, 2007; DALYs RA, Prevalence RA: Lundkvist et al. 2008; Rheumatologists per 1,000 population: various sources and years\*; GPs per 1,000: OECD, 2009c

Variable	Definition – Provided by source	Source
<i>Labour indicators</i>		
GDP per capita in PPP 2005	Gross domestic product is an aggregate measure of production equal to the sum of the gross value added of all resident institutional units engaged in production (plus any taxes, and minus any subsidies, on products not included in the value of their outputs). The sum of the final uses of goods and services (all uses except intermediate consumption) measured in purchasers' prices, less the value of imports of goods and services, or the sum of primary incomes distributed by resident producer units.	OECD, 2009b; Data starred (*) in the table come from Eurostat, 2009
Working age population, % 2005	Share of total population between the ages of 15 and 64, inclusive.	OECD, 2009a
Unemployment rate by gender 2005	Unemployed persons are defined as those who report that they are without work, that they are available for work and that they have taken active steps to find work in the last four weeks. The ILO Guidelines specify what actions count as active steps to find work and these include answering vacancy notices, visiting factories, construction sites and other places of work, and placing advertisements in the press as well as registering with labour offices.  The unemployment rate is defined as the number of unemployed persons as a percentage of the labour force, where the latter consists of the unemployed plus those in employment, which are defined as persons who have worked for one hour or more in the last week.	OECD, 2009b
Long-term unemployment – Annual averages by gender (%) 2005	Long-term unemployment is conventionally defined either as those unemployed for six months or more or, as here, those unemployed for 12 months or more. The ratios calculated here show the proportion of these long-term unemployed among all unemployed.	OECD, 2009b

Variable	Definition – Provided by Source	Source
<i>Labour indicators, continued</i>		
Average age of withdrawal from the labour market – retirement 2005	Retirement is associated with cessation of work and receipt of a pension. Actual retirement ages are difficult to measure directly without internationally comparable longitudinal data, so international comparisons must rely on indirect measures from cross-sectional data. Indirect measures regard persons above a specified age as 'retired' if they are not in the labour force at the time of the survey (average age at labour force exit). Net movements into retirement are proxied by the changes over time in the proportion of the older population not in the labour force. This indirect measure is used in ongoing OECD reviews of older workers. It measures the average effective age of retirement. The official age of retirement is also complex to pin down, especially when retirement is based on fixed years of pension contribution.	OECD, 2009d; Data starred (*) in the table come from Eurostat, 2009
Labour productivity per hour worked – GDP in PPS	Gross domestic product (GDP) is a measure for the economic activity in an economy. It is defined as the value of all goods and services produced less the value of any goods or services used in their creation. GDP per hour worked is intended to give a picture of the productivity of national economies expressed in relation to the European Union (EU-15) average. If the index of a country is higher than 100, this country level of GDP per hour worked is higher than the EU average and vice versa. Basic figures are expressed in PPS, ie a common currency that eliminates the differences in price levels between countries allowing meaningful volume comparisons of GDP between countries. Expressing productivity per hour worked will eliminate differences in the full-time/part-time composition of the workforce.	Eurostat, 2009b
Hourly labour costs 2005	Average hourly labour costs, defined as total labour costs divided by the corresponding number of hours worked.	Eurostat, 2009a

## Appendix 2: Benchmarking grid

Variable	Definition – Provided by Source	Source
<i>Welfare indicators</i>		
Public social expenditure (% of GDP) 2005	Social expenditure is classified as public when general government (ie central administration, local governments and social security institutions) controls the financial flows.	OECD, 2009d
Public expenditure on health care 2005	Public expenditure on health refers to expenditure on health care incurred by public funds. Public funds are state, regional and local government bodies and social security schemes. Public capital formation on health includes publicly financed investment in health facilities plus capital transfers to the private sector for hospital construction and equipment. Public funds correspond to HF. 1 in the ICHA-HF classification of health care financing.	OECD, 2009d
Sickness/healthcare benefits – % of total benefits 2005	Expenditure on social protection contain: social benefits, which consist of transfers, in cash or in kind, to households and individuals to relieve them of the burden of a defined set of risks or needs; administration costs, which represent the costs charged to the scheme for its management and administration; other expenditure, which consists of miscellaneous expenditure by social protection schemes (payment of property income and other).	Eurostat, 2009c
Disability – Social benefits by function – % of total benefits 2005	Same as above.	Eurostat, 2009c
Unemployment – Social benefits by function – % of total benefits 2005	Same as above.	Eurostat, 2009c

Variable	Definition – Provided by Source	Source
<i>Welfare indicators continued</i>		
O&R generosity index	Seven different measures of generosity were combined to construct a single measure of generosity that ranges from between zero and seven, where seven indicates the highest level of generosity. The seven variables include waiting period, self-certification, total maximum duration of payment, employer maximum duration of payment, employer amount of payment, sickness fund amount of payment and external proof.	Osterkamp, and Rohn, 2007
Social protection system interventions	The Mutual Information System on Social Protection (MISSOC) database provides a description of the social protection systems for each European country and allows for comparison between systems. Three independent reviewers reviewed the summary descriptions of the social protection topics geared toward benefits for invalidity and employment injuries and occupational diseases. The systems were scored from one to three with one meaning very limited regulations in place that could contribute to early intervention and three meaning advanced regulations in place that could contribute to early intervention.	Ratings by independent reviewers. Data from MISSOC (2009). Comparative tables on social protection – January 2005. Retrieved 27 July 2009 from <a href="http://ec.europa.eu/employment_social/missoc/db/public/compareTables.do?lang=en">http://ec.europa.eu/employment_social/missoc/db/public/compareTables.do?lang=en</a>

Variable	Definition – Provided by Source	Source
<i>Health outcomes</i>		
Average days absent due to health reasons	The median number of days absent because of health.	Parent-Thirion, Ferrández Macías, Hurley and Vermeylen, 2007
% sickness absence due to health reasons 2005	% reporting absence caused by ill-health.	EWCS, 2005
DALYs – MSDs, male and female	Disability adjusted life years (DALYs) are frequently used to assess the burden of disease. The WHO's definition of DALY – 'combines in one measure the time lived with disability and the time lost owing to premature mortality. One DALY can be thought of as one lost year of healthy life.'	WHO, 2006, 2007)
DALYs – RA	DALYs are frequently used to assess the burden of disease. The WHO's definition of DALY – 'combines in one measure the time lived with disability and the time lost owing to premature mortality. One DALY can be thought of as one lost year of healthy life.'	Lundkvist, Kastång and Kobelt, 2008
Prevalence – Backache 2005	% reporting work-related backache in the EWCS.	EWCS, 2005
Number of people with RA	Estimated number of people with RA. The percentage is calculated from the number of people with RA divided by the population numbers listed in the article.	Lundkvist, Kastång and Kobelt, 2008
Practising rheumatologists, density per 1,000 population	Number of practising rheumatologists per 1,000 population. The definition that was used to derive the ratio for rheumatologists may differ by country depending on the source, which makes comparability difficult.	Various sources
Practising general practitioners (GPs), density per 1,000 population 2005	Number of practising GPs per 1,000 population.	OECD, 2009c

## Appendix 2: Benchmarking grid

### References

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