



# Fit For Work?

## Musculoskeletal Disorders and the Dutch Labour Market

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<b>1. Executive summary</b>	<b>6</b>
<b>2. Introduction</b>	<b>11</b>
2.1 Why is workforce health in the Netherlands important?	11
2.2 MSDs: The European context	13
2.3 Objectives of the study	15
2.4 A note on definition	16
2.5 Structure of the report	17
<b>3. Work and MSDs in the Netherlands</b>	<b>18</b>
3.1 Building a picture of MSD prevalence	18
3.2 The impact of MSDs on ability to work	21
3.3 The impact of the work-place on MSDs	30
3.4 The wider economic and social impact of MSDs	34
3.5 Summary	43
<b>4. Interventions</b>	<b>45</b>
4.1 The case for early intervention	45
4.2 The social security regime for the work disabled	48
4.3 Condition-specific interventions	52
4.4 The biopsychosocial model and work	59
4.5 The role of employers	61
4.6 Summary	65
<b>5. Conclusions and recommendations</b>	<b>67</b>
5.1 Recommendations for employers	67
5.2 Recommendations for employees	68
5.3 Recommendations for GPs	69
5.4 Recommendations for occupational health professionals	70
5.5 Recommendations for government	70
<b>References</b>	<b>72</b>
<b>Appendix 1: Interviews and consultation with experts</b>	<b>86</b>
<b>Appendix 2: Benchmarking grid</b>	<b>87</b>
<b>Appendix 3: Long term unemployment</b>	<b>97</b>

## List of Boxes, Figures and Tables

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Box 1: Principles of managing non-specific MSDs	63
Figure 2.1: Number of occupational diseases reported as MSDs	14
Figure 3.1: Projected population age distribution in the Netherlands	20
Figure 3.2: Per cent reporting back or neck pain by age group, 2008	23
Figure 3.3: Per cent reporting disorders of the elbow, wrist or hand by age group, 2008	24
Figure 3.4: Per cent of individuals reporting chronic arthritis by age, 2008	27
Figure 4.1: Distribution of benefits in the Netherlands	49
Figure 4.2: Employment rates for individuals with disabilities and without disabilities	50
Figure 4.3: Disability benefit spending as a percentage of GDP	51
Figure 4.2: ICF model applied to work disability in RA	60
Table 3.1: Occupational MSDs by body region, 2007	22
Table 3.2: Prevalence of specific WRULDs by gender	25
Table 3.3: Summary of intrinsic risk factors for non-specific MSDs	31
Table 3.4: Per cent exposure to risk factors by sex, 2006	33
Table 3.5: Direct costs associated with MSDs, RA, and low back pain	38
Table 3.6: National costs of AS	41

## 1. Executive summary

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Even with the economic downturn, the productivity of the Dutch workforce remains important, and with that the health of Dutch workers is a key determinant. A healthy Dutch workforce will help drive improvements in productivity which the Netherlands needs to compete in an increasingly globalised, knowledge-based economy when the up-turn comes. In recent years, the Netherlands has made good progress in reforming its social protection system. However, among countries with a low overall unemployment level, the rate of long-term unemployment is considerably higher in the Netherlands.

Reforms have focused on sickness benefits by giving the responsibilities to employers for payment of sickness benefits for the first two years. Employees also play a role, along with occupational health physicians. In addition to reforms a number of trial interventions have been researched and studied, and more research continues to ensure individuals are provided with the support they need to return to work. The evidence suggests that worklessness is, itself, bad for health and that job retention and rehabilitation back into work can positively affect physical health, psychological well-being and raise people out of poverty. Therefore, keeping people attached to the workforce will positively influence Dutch society. However, with all the reforms and interventions, a number of strands still need to come together in order to ensure workers not only return to work quickly, but also receive the health care that they need to get better. The stakeholders in the Netherlands need not only focus on solely reducing absence, but also consider the support and adjustments workers with MSDs need to remain productive whilst at work.

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### **The 'Fit for Work?' project**

This project, part of a wider programme of work across 24 European and other countries, has looked in some detail at the impact that MSDs have on the working lives of thousands of Dutch workers, the adequacy of the treatment and support they receive, their experiences at work, the effect of their condition on their family and colleagues, and the human and financial costs involved. Specifically, we have looked at back pain, work-related upper limb disorders (WRULDs) – two groups of conditions which are usually characterised by non-specific and short episodes of pain and incapacity – and rheumatoid arthritis (RA) and spondyloarthritis (SpA), specific conditions that are often progressive and increasingly incapacitating. We conducted a review of the recent academic and practitioner research on the relationship between these MSDs and labour market participation, and conducted interviews with acknowledged experts in this field.

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### **The Impact of MSDs on the Dutch workforce**

MSDs have a significant impact on people's ability to work; not only on an individual but an aggregate basis. Together, they affect the productivity and labour market participation of thousands of Dutch workers. Evidence suggests that:

- MSDs are a major contributor to occupational disorders in the Netherlands. In 2007 over 39 per cent of occupational disorders were classified as a disease of the musculoskeletal system and connective tissue – the number one reported disease group. Of workers on sick leave for more than 13 weeks, 19 per cent reported back disorders and 13 per cent reported neck, shoulder and arm problems.
- Reports of back pain among workers range between 14 per cent to around 45 per cent. In the vast majority of patients with back pain no specific diagnosis is given. Recovery often occurs within three to four weeks, but people with chronic low back pain report worse general well-being. Low back pain ranks among the top five most common reasons for consulting GPs in the Netherlands. However one study suggests that the indirect costs of low back pain comprise 84 per cent of the total costs. The annual cost of low back pain and neck pain in the Netherlands is about 7.6 billion euros. The loss of productivity due to low back pain and neck pain are suggested to be nine times the health care costs.
- 15.5 per cent of Dutch workers report muscular pain in their neck, shoulders and upper limbs. WRULDs can affect the tendons, muscles, joints, blood vessels and, or, the nerves and may include pain, discomfort, numbness, and tingling sensations in the affected area. Repetitive strain injuries (RSIs) are reported by 30 per cent of female workers and 23 per cent of male workers. These are often associated with working in uncomfortable positions, body vibrations, working in the same position and repetitive movements. Individuals with symptoms of muscular pain in their neck, shoulders or upper limbs have lower levels of productivity, which mainly results from reduced performance at work and reduced working hours. Individuals on sick-leave with RSIs reported worse mental health, reduced functional ability and reduced work-ability. Their quality of life is often worse too. RSIs are estimated to cost the Netherlands about 2.1 billion euros with the majority of costs occurring due to absence and lost productivity.
- The prevalence of chronic arthritis in the Netherlands is also high at about four per cent in the general population. For individuals with early inflammatory conditions, about 26 per cent report absence from work lasting two weeks or longer within the past six months. Pain, functional limitations and job design are all related to sick leave.
- 108,000 people in the Netherlands have RA. The prevalence rate is reported to be 0.9 per cent with an incidence rate of 0.02 to 0.03 per cent., and the average age of diagnosis is 37 years old. Over 30 per cent of individuals with RA become partially work disabled within one year, and within five years about 45 per cent become partially work disabled. Employment rates are also lower for individuals with RA. The total costs of RA are estimated to be just fewer than 12,600 euros per patient per year, or 1.4 billion euros total per year. Higher costs are generally associated with worse general well-

being, worse quality of life, higher functional disability and younger age. The direct costs of RA are estimated to be about 5,000 euros per patient per year.

- AS is a progressive and chronic rheumatic disorder that mainly affects the spine, but can also affect other joints, tendons and ligaments. The average age of diagnosis in the Netherlands is around 31. It is estimated that 11,700 people in the Netherlands have AS. Reported unemployment rates are three times higher among people with AS than in the general population. Individuals with AS on work disability often have a low quality of life as well. The average annual cost of AS in the Netherlands is 38 million euros.

The effects of incapacity and pain from these and other MSDs can impact on several aspects of an individual's performance at work, including:

- Stamina;
- Cognitive capacity or concentration;
- Rationality/mood;
- Mobility;
- Agility.

It is becoming clearer that people with MSDs are also likely to have depression or anxiety problems related to their conditions. This can affect the severity of the condition, the ability of the individual to remain in work, the length of time they spend away from work and the ease with which they can be rehabilitated. Research suggests that a significant proportion of general practitioners (GPs), employers and even individuals with MSDs do not fully appreciate the impact of 'stress' on the severity of physical incapacity. The **biopsychosocial model** of health emphasises the interplay between the **biological** (eg disease, strain, joint damage), the **psychological** (eg disposition, anxiety) and the **social** (eg work demands, family support) and represents a helpful way of assessing the causes of some MSDs, of planning treatment and management and of approaching rehabilitation into the work-place. It is not being adopted as widely as it should, however, because many GPs and employers find it difficult to look beyond the immediate physical symptoms.

Work can be both cause and cure. 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 psychosocial factors. Evidence suggests that work can help ameliorate the deterioration of many conditions and help recovery from MSDs. However, many GPs and employers mistakenly believe that workers with MSDs must be 100 per cent well before any return to work can be contemplated.

Looking to the future, with prospects for an ageing workforce, a growth in obesity, a reduction in exercise and physical activity and overall fitness in the general population, it is likely that the incidence and effects of MSDs will intensify and worsen rather than improve in the medium-to-long term. We are concerned that this will affect the quality of working life of many Dutch workers, and that the productive capacity of the Dutch workforce will be adversely affected at a time when we need it to be on top form.

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**What can  
be done?**

There are five main principles which health care professionals, employers, employees and the government should focus on if we are to improve the working lives of workers with MSDs.

- **Early intervention is essential.** The overwhelming evidence is that long periods away from work are usually bad for MSD patients – the longer they are away from work, the more difficult it is for them to return. Early action, preferably in a partnership between GPs and occupational health professionals, patients and their employers, can help those with MSDs to keep their jobs and to achieve a balance between the individual's need for respite and their need to work. For some MSD patients early access to physiotherapy or to drug therapies can reduce the severity, impact or progression of the condition – a delay in diagnosis or treatment can make recovery, job retention or rehabilitation much more difficult. Once the economic upturn arrives – which it assuredly will – the Dutch economy cannot afford for its recovery to be inhibited by a shortage of skilled, motivated and healthy workers.
- **Focus on capacity not incapacity.** Employers and employees can 'catastrophise' MSDs, imagining their effects to be far more serious or insurmountable than is strictly the case. 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 – a little lateral thinking will allow managers to give them useful work to do that supports them on their journey back to full productive capacity.
- **Imaginative job design is the key to rehabilitation.** Managers can change the ways work is organised (including simple changes to physical layout or to working time arrangements) to help prevent MSDs getting worse and to help people with MSDs to stay in, or 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.
- **Think beyond the physical symptoms.** Clinicians should bring to bear their understanding of the biopsychosocial model and the limitations of the biomedical model in their diagnosis and treatment of the patient and – most importantly – their assessment of the role that a job might play in helping someone to stay active and

avoid isolation. GPs are ideally placed to identify the early presentation of many MSDs. Where appropriate, GPs should seek to refer patients to specialist teams as early as practicable, to enable management of the condition to begin.

- **Assess the impact of MSDs and the direct *and* indirect costs of MSDs.** We need some better measures to assess the social, economic and work impact of MSDs to allow the national health insurance organisations, the Ministry of Health, Welfare and Sport (VWS), and the Ministry of Social Affairs and Employment, as well as employers to assess and monitor both the clinical and labour market impact of MSDs in a more 'joined-up' way. This would allow a better understanding of the impact interventions put in place have on reducing costs.

The evidence presented in this report illustrates that a large proportion of working age people in the Netherlands are, or will be, directly affected by MSDs in the coming years. 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 Dutch industry, and it can draw heavily on the resources of both the health system and the benefits regime.

We have found important clinical, epidemiological, psychological and economic evidence and expert opinion on the nature, extent and consequences of the MSD problem in the Netherlands. However, there still seems to be a lack of coherence or 'joined-up' thinking and action which focuses on the MSD **patient as worker**. While the number of advocates of the biopsychosocial model as it applies to all MSDs is growing, some of those who can have most impact on fulfilling the labour market participation of workers with MSDs have yet to embrace its principles as fully as they might.

## 2. Introduction

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**2.1** The Netherlands, like many developed western economies, is emerging from a long period of sustained economic and employment growth. Unemployment rates over the past few years were low. In 2005, the Netherlands had an unemployment rate of 4.4 per cent for males and 5.0 per cent for females (see Appendix 2). The rate decreased to a low of 2.8 per cent in 2008 (OECD, 2009b). As employment rates grew during this period – bringing with it many social and consumption benefits – the Netherlands was understandably keen to place emphasis on the need to maximise the productivity of its workforce in order to extract the most economic benefit. Before the economic downturn hit, labour utilisation in the Netherlands had been the main source of growth for the Dutch economy, but labour shortages due to low labour market participation by specific groups and the growth of the ageing population could have hindered further improvement (OECD, 2008a).

**Why is  
workforce  
health  
in the  
Netherlands  
important?**

Along with skills, training and qualifications, one of the most significant drivers of labour productivity is workforce health and well-being. 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 an economy and damage the competitiveness and effectiveness of private and public sector employing organisations. Of course a significant burden of ill-health or chronic disease can have a number of damaging social consequences.

Now that economic growth is slowing, and the buoyancy of the Dutch labour market is diminishing, the imperative to continue maximising 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 starts to rise again – the OECD (2009b) forecasted that unemployment will reach seven per cent in 2010 – it will be important to ensure that those with illness or long-term conditions are not disproportionately affected.

First, the competitiveness of the Dutch economy has been – and will be – substantially driven by the skills, experience and knowledge of its workforce. Indeed the Netherlands has been making good progress towards becoming a ‘knowledge economy’ as envisaged by the EU’s 2000 Lisbon Strategy (Lisbon European Council, 2000). In 2002, the Netherlands knowledge workers comprised 48 per cent of total employment, and a large proportion of the economy’s gross added value was attributable to knowledge based industries (Brinkley, 2006). The risk is that unemployment will drain the Dutch economy of the much-needed skills and knowledge it requires and makes the longer-term vision of the ‘knowledge economy’ more difficult to attain and sustain.

Second, unemployment and job loss have serious financial and health consequences for individuals. Studies have shown widespread deterioration in aspects of physical and mental well-being among those who lose their jobs which can persist for many months (Armstrong, 2006; Brinkley, Clayton, Coats, Hutton and Overell, 2008).

Third, it is essential that job loss is not concentrated in the most vulnerable parts of the workforce, especially among those with a disability or with a long-term or chronic health condition. The Netherlands already has a higher rate of long-term unemployed when compared with other countries with low overall unemployment rates (see Appendix 3) (OECD, 2008a). A potential factor that could contribute to this high rate is the generosity of unemployment benefits (OECD, 2008a). The OECD recently highlighted efforts in the Netherlands aimed at facilitating retaining and returning individuals to the workforce (OECD, 2009a), but suggests even more reforms to reduce the incidence of long-term unemployment (OECD, 2008a). Furthermore, finding ways of improving job retention for workers with a disability or chronic health conditions is vital as we know that, once they become detached from the labour market, their chances of finding meaningful work again are severely damaged.

Fourth, once the upturn arrives – which it assuredly will – the Dutch economy cannot afford for its recovery to be inhibited by a shortage of skilled, motivated and healthy workers. It is on this last point which much of this report focuses.

The health and well-being of the Dutch 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 of the ageing of the Dutch workforce. A number of indicators suggest that workforce health will remain an important priority for policy-makers and employers for the foreseeable future:

- In 2008, healthy lifestyle improvements may have reached a plateau (Statistics Netherlands, 2009a);
- About a third of the Dutch working population has at least one chronic disease (Detaille, Haafkens and van Dijk, 2003);
- In 2008, about 24 per cent of individuals reported physical limitations (Statistics Netherlands, 2009a);
- Dutch research suggests a link between obesity and absence from work, and obesity rates are growing in the Netherlands (Statistics Netherlands, 2007);
- Employment rates for individuals with disabilities have declined to 39 per cent in 2007 (Schoonheim and Smits, 2007);

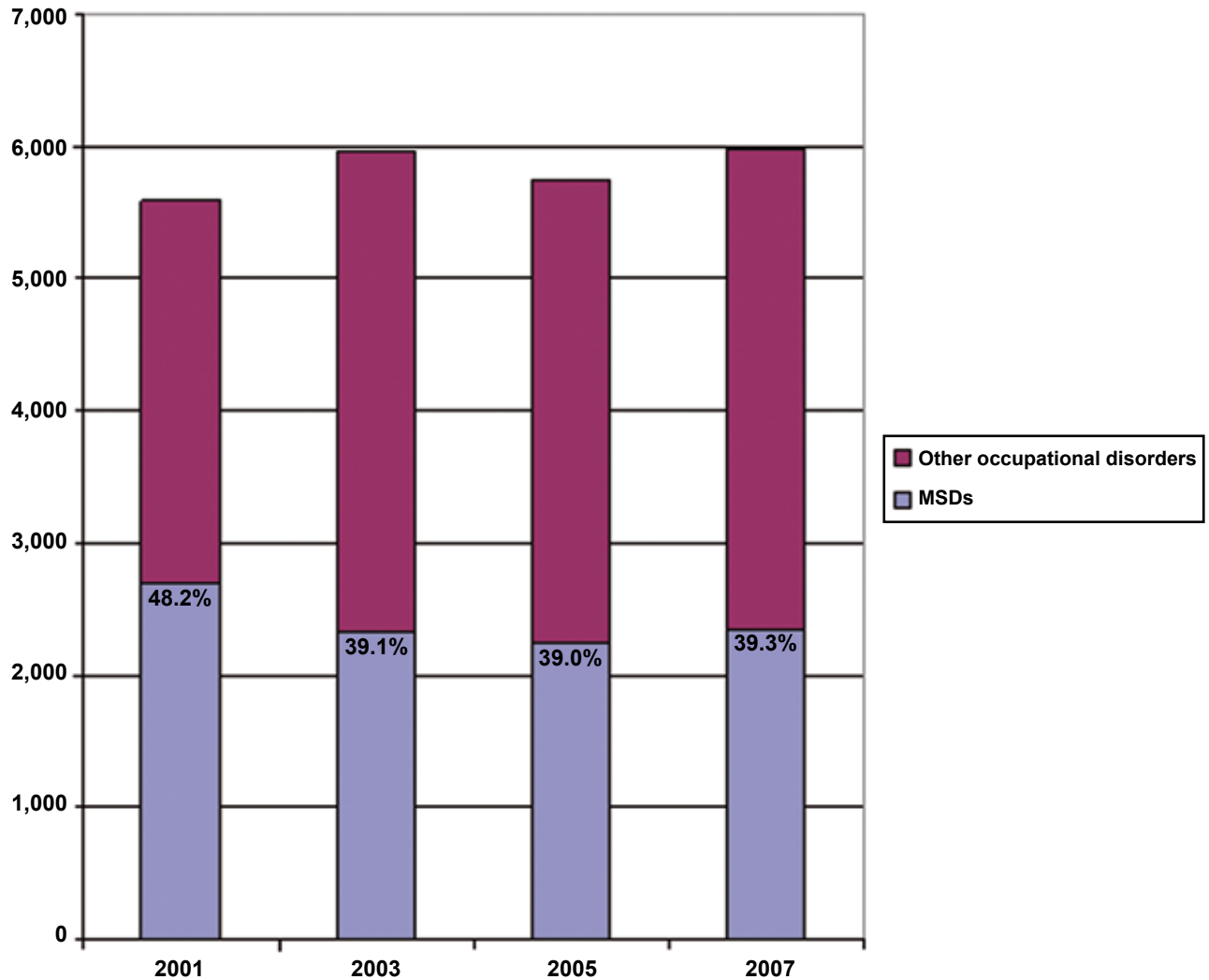
- People with chronic illnesses are less frequently employed (45 per cent) compared with the general population (60 per cent) (Baanders, Rijken and Peters, 2002);
- About seven per cent of young people report receiving disability benefits before the age of 30 (Schoonheim and Smits, 2007);
- In 2006, over 1.7 million Dutch had a work disability (Kösters and Lautenbach, 2007);
- More than 400,000 people on work disability reported mental health problems – 25 per cent of people with a disability (Kösters and Lautenbach, 2007);
- People with work disabilities reported that they were limited in their activities or getting a job due to their illness or disability (Kösters and Lautenbach, 2007);
- More than 50 per cent of individuals with work disability reported back or neck pain and another 34 per cent reported problems with their arms (Kösters and Lautenbach, 2007);
- About 41 per cent of men and 48 per cent of women from the Netherlands report at least one MSD (Picavet and Hazes, 2003);
- MSDs comprised almost 39 per cent of occupational disorders in 2004 (Eurogip, 2007);
- Annual sick leave due to work-related upper limb disorders (WRULDs) was reported by two to four per cent of all workers or four to six per cent of the total number of sick days (Bongers, Ijmker, van den Heuvel and Blatter, 2006);
- RSIs cost about 2.1 billion euros yearly, which is about 0.33 per cent of the GDP, and the cost to employers is about 960 million euros (Blatter, Houtman, van den Bossche, Kraan and van den Heuvel, 2006).

MSDs are one of biggest workforce health problem in the Netherlands and warrant further investigation. The good news is that about 90 per cent of Dutch workers report good to excellent health (European Foundation for the Improvement of Living and Working Conditions (Eurofund), 2008). Additionally, the proportion of occupational diseases related to MSDs has decreased in the Netherlands from 48 per cent in 2001 to about 39 per cent in 2007 (Eurogip, 2007; Netherlands Centre for Occupational Diseases (NCvB), 2009d). Figure 2.1 on the next page illustrates the decline.

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**2.2** 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 40 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 0.5 to 2.0 per cent of gross domestic product (GDP). The fourth European Working Conditions Survey (EWCS) published by the European Foundation (Parent-Thirion et al., 2007) has shown that

**Figure 2.1: Number of occupational diseases reported as MSDs**



*Source: Eurogip, 2007; NCvB, 2009d, 2009e*

24.7 per cent of workers across the EU 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. 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 the Netherlands in this wider EU context and assesses where the Netherlands 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 the Netherlands? 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 Dutch 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 Dutch 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 Dutch 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 Dutch and European studies and surveys to examine the prevalence and costs of MSDs in the working age population in the Netherlands.
3. Expert interviews: We have conducted interviews with Dutch experts across a number of disciplines (including labour market, rheumatic disease and back pain) 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, to focus the research, 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);
- Spondyloarthropathy (SpA).

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 SpAs 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 (GPs) and specialists, not typically within the occupational health arena. They are clinically diagnosed conditions that progress in a broadly predictable way, if left 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 over a large number Dutch workers may report at any one time. Some also report more than one condition at one time which may further reduce quality of life (Picavet and Hoeymans, 2004). 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** 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 Dutch 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 (ETUI, 2007), meaning ‘any affliction of the musculoskeletal system that appears at work and causes discomfort, difficulty or pain when performing work’.

In the Netherlands, the Netherlands Centre for Occupational Diseases (NCvB) records the incidence of occupational diseases for tracking and preventive reasons (Spreeuwers, de Boer, Verbeek, van Beurden and van Dijk, 2008). The NCvB also provides guidelines to assist with diagnosis of occupational diseases to enable early intervention and treatment (Spreeuwers et al.; NCvB, 2009f). The MSD diagnosis groups reported include the following (NCvB, 2009a):

- RSI;
- Back, including neck and pelvis, excluding repetitive strain injuries (RSIs);
- Other musculoskeletal diseases;
- Lower extremity;
- Upper extremity, excluding RSI.

For the registration of MSDs, the NCvB uses European criteria (Douwes, 2005). For WRULDs, this includes 11 specific disorders and a group on non-specific disorders (Douwes). As for an official definition of work-related MSDs, it does not exist (Douwes). A number of terms are used to describe MSDs in the Netherlands, such as RSIs, but their use depends on the user. For instance, the media, companies and occupational health services use RSI, but scientists use English terms like upper extremity disorders. In Dutch, complaints of the arm, neck and shoulder (CANS) or 'klachten van arm, nek en schouder (KANS) are often used by researchers and The Ministry. Practitioners also have difficulty in accurately diagnosing and reporting MSDs. More could be done to ensure consistent and reliable information is provided about the prevalence and impact of MSDs.

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## 2.5

### Structure of the report

This report is structured as follows:

- Section 3 examines the extent of MSDs in the Netherlands and the impact they have on productivity and attendance at work, on labour market participation and on the wider Dutch 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 Dutch government.

## 3. Work and MSDs in the Netherlands

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

1. The quality of the data on MSDs in the Netherlands;
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 the Netherlands.

We begin by looking at data quality.

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### 3.1 Building a picture of MSD prevalence

As in many countries, it is difficult to quantify precisely the extent and cost of MSDs among the working age population of the Netherlands. However, Dutch data sources are significantly more numerous than in many other countries. A number of sources provide data on MSDs in the Netherlands furnishing evidence about the impact of MSDs on the Dutch workforce. However, one problem with some of the data available in the Netherlands is that it is aggregate-level data. For example, the data reports chronic arthritis or disorders of the back or neck, rather than about the specific conditions or specific regions of the body.

With the information that is currently available, a number of researchers have looked into the economic consequences of MSDs and their impact on the productivity of Dutch workers. Based on the available data, some of the economic consequences of MSDs have been identified. Additionally, researchers in the Netherlands have conducted numerous intervention studies aimed at reducing the impact of MSDs.

However, more data, and more systematic data collection could further improve the data quality picture, as well as provide stronger evidence about the effectiveness of interventions. Continuing to improve data collection and reporting of MSDs remains important 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.
- Poor data make it difficult to make a compelling case for action to Dutch employers or to Dutch policy-makers.

- The benefits of clinical, labour market or workplace 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 Dutch workforce.

With all that said, The Work Foundation is confident that there is sufficient evidence in the Netherlands to argue strongly for MSDs to continue to be a policy priority for employers and the government in the coming years.

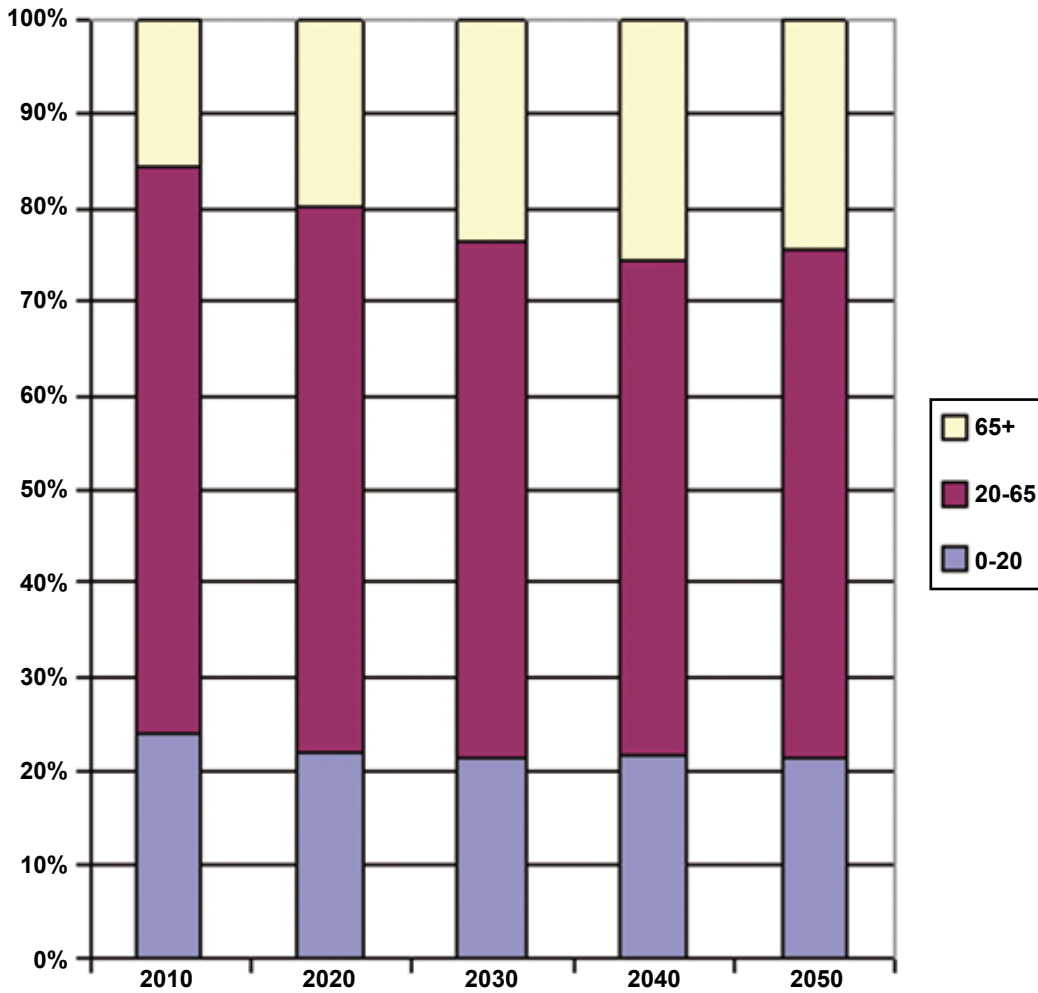
Compared with other EU member states, a relatively low proportion of the Dutch workforce currently reports having regular backache or muscular pain (EWCS, 2005). However, a few demographic considerations that could contribute the impact of MSDs on the Dutch working population need to be considered: the proportion of female and part-time workers and the ageing population.

Like many other European countries the Dutch population is ageing and with that, the working age population will age and also decline (Figure 3.1). Positively, the National Survey on Working Conditions (NEA) reports that a growing number of Dutch workers are willing to work until retirement age (Jettinghoff and Houtman, 2007; van Hooff, van den Bossche and Smulders, 2008). Additionally, Dutch policymakers have implemented reforms to encourage labour market participation of older workers by removing tax incentives for early retirement, as well as pre-pension schemes (OECD, 2008a).

An important consideration for increasing labour market participation among older workers is that those with good health are even more willing and more able to do so (Jettinghoff and Houtman, 2007; van Hooff et al., 2008). More specifically, workers who report that their health is excellent are almost one and a half times more likely to say that they are willing to work until retirement age (van Hooff et al., 2008). Jettinghof and Smulders have reported on the need for workers to continue working until retirement due to the ageing population (as cited in van Hooff et al., 2008). Figure 3.1 shows the population projection and the decline in proportion of the working age population. As workers age, keeping them healthy may increase the number of talented and skilled workers remaining in the Dutch workforce longer.

Experience from economies with older age distributions shows that the burden of MSDs can have significant economic and social consequences. Data from the National Registry of Occupational Diseases indicate the increase in reports of musculoskeletal-related problems as age increases (NCvB, 2009b). The Netherlands must stand ready to anticipate and manage

Figure 3.1: Projected population age distribution in the Netherlands



Source: Statistics Netherlands, 2009b

the almost certain growth in the coming years of what some commentators have called ‘an ill-understood pandemic’ (ETUI, 2007). However, various sources provide prevalence and incidence figures for some MSDs. For the MSDs discussed in this report, the prevalence, descriptions, and impact on the workforce are presented below.

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**3.2** The impact of MSDs on individuals 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.

**The impact of  
MSDs on ability  
to 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) and 22 per cent of workers do not tell their employers about their condition (Gignac et al., 2004). In addition to the impact on the working lives of individuals with MSDs, health related quality of life, such as pain levels, mobility and general health, is often lower for individuals with MSDs (Picavet and Hoeymans, 2004).

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 (WRULDs). 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.

MSDs are a major contributor to occupational diseases in the Netherlands. In 2007 over 39 per cent of occupational disorders were classified as a disease of the musculoskeletal system and connective tissue – the number one reported disease group (NCvB, 2009d). Diseases of the ear

and mastoid process (31 per cent) and mental and behavioural disorders (20 per cent) were the second and third ranking occupational disease groups (NCvB, 2009d). Table 3.1 provides the breakdown of the disorders by body region for MSDs.

**Table 3.1: Occupational MSDs by body region, 2007**

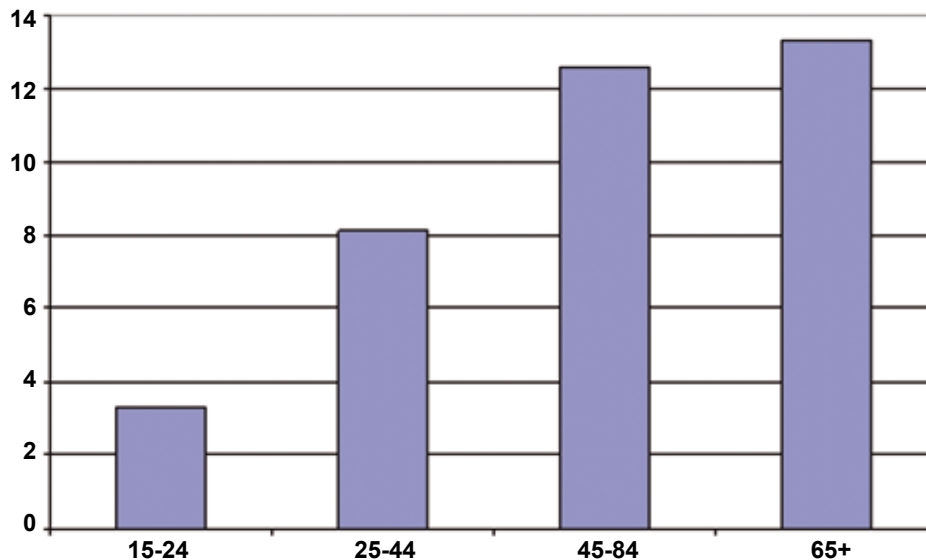
	%
RSI	45.2
Other upper extremity	2.9
Back	34.3
Lower extremity	7.9
Other MSDs	9.7

*Source: NCvB, 2009b*

However, the number of people with work-related MSDs is probably higher, as some research indicates that occupational physicians are not reporting diagnoses to the NCvB (NCvB, 2009g). As highlighted earlier, in the general population about 41 per cent of men and 48 per cent of women report an MSD, and many report more than one MSD (Picavet and Hazes, 2003).

### 3.2.1 Back pain

Back pain is a very common complaint in the Netherlands. According to Statistics Netherlands (2009d), about nine per cent of the population report disorders of the back and neck. Figure 3.2 illustrates the increase in back and neck pain that occurs with age. Another survey suggests the prevalence of low back pain in the Netherlands is about 27 per cent (Picavet and Schouten, 2003). Among the working-age population, the one year prevalence of low back pain is 44.4 per cent for men and 48.2 for women (Picavet, Schouten, Smit as cited in Driessen, Anema, Proper, Bongers and van der Beek, 2008). The fourth EWCS (Parent-Thirion et al., 2007) shows a higher number with about 14 per cent of Dutch workers reporting work-related back pain. Boonen et al. (2005) found that people with chronic low back pain reported worse general well-being, which may also influence their economic behaviour. In the vast majority of patients with back pain no specific diagnosis is given.

**Figure 3.2: Per cent reporting back or neck pain by age group, 2008**

Source: Statistics Netherlands, 2009c

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 necessitate that symptoms will worsen. For the majority of people pain will disappear of its own accord within four to six weeks. In a Dutch study of people visiting their family doctors because of back pain, 65 per cent were free of symptoms within 12 weeks (van den Hoogen et al., 1998 as cited 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). One of our interviewees indicated that often recovery occurs within three weeks from initial complaints.

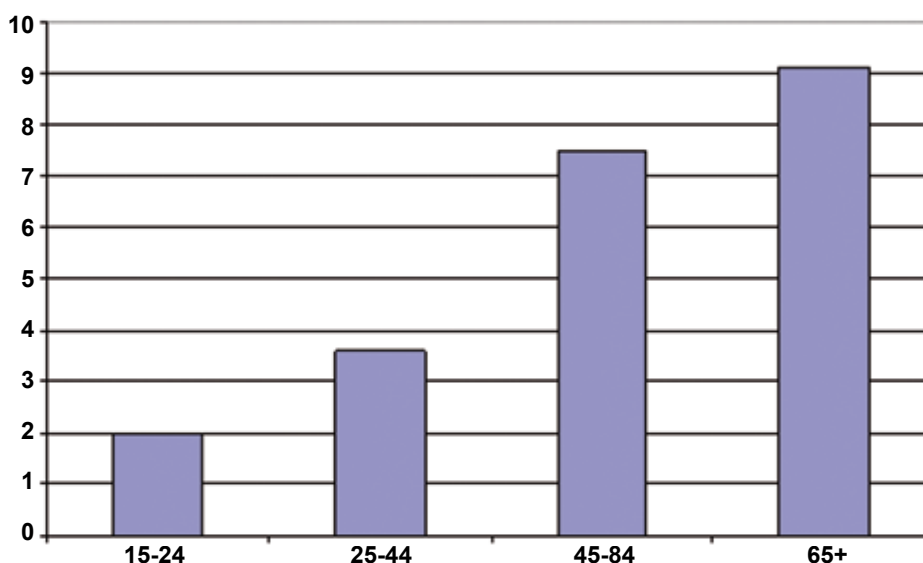
It is important to recognise that there is a difference between having symptoms, care seeking, lost productivity and disability, and the factors that contribute to them (Burton, 2005). This means that whilst individuals may experience musculoskeletal pain (in their back, for example), it is not possible 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? Hoogendoorn et al. (2002) stresses the relationship between high physical load and absence rates due to low back pain and suggests that levels of job satisfaction and social support at work may also contribute to sickness absence. There is a growing consensus that psychological factors are the differentiating factor as they are strongly associated with the progression of back pain from an acute to a chronic condition that affects two to seven per cent of people (Burton), and to disability (Burton; Bekkering et al., 2003).

### 3.2.2 Work-related upper limb disorders

As highlighted earlier, of the occupational diseases reported to the NCvB, WRULDs comprise the majority of disorders by body region. The fourth EWCS (Parent-Thirion et al., 2007) suggests that 15.5 per cent of Dutch workers have experienced muscular pain in their neck, shoulders and upper limbs. In 2006, about 30 per cent of working females and 23 per cent of working males reported RSIs (Eurofound, 2008). Of workers reporting RSIs, 46 per cent reported working in uncomfortable positions, 37 per cent reported body vibrations, 37 per cent reported prolonged working in the same position and 34 per cent reported repetitive movements (van Hooff et al., 2008). According to Statistics Netherlands about five per cent of the Dutch population report disorders of the elbow, wrist or hand (Statistics Netherlands, 2009c). Figure 3.3 provides the breakdown by age. As mentioned earlier, WRULDs are often referred to as RSIs in the Dutch literature.

**Figure 3.3: Per cent reporting disorders of the elbow, wrist or hand by age group, 2008**



Source: Statistics Netherlands, 2009c

Other research on the general population provides details for specific WRULDs (Table 3.2) (Picavet and Hazes, 2003). The prevalence of epicondylitis and tendonitis or capsulitis peaks around 45 to 64 years of age, and the prevalence of RSI remains constant throughout all age groups (Picavet and Hazes, 2003).

**Table 3.2: Prevalence of specific WRULDs by gender**

	Men %	Women %
RSI	1.9	2.0
Epicondylitis	10.4	11.6
Tendinitis or capsulitis	15.4	17.2

*Source: Picavet and Hazes, 2003*

Research by Sluiter and Frings-Dresen (2008) identifies the difficulties encountered by individuals who are on sick leave with RSIs, such as worse mental health and reduced functioning. Specifically, individuals with RSIs on sick leave often had worse perceptions of their disorders and reported that their quality of life was worse as a result of their injury. Many of the people with RSIs had the symptoms for several years, but the individuals on sick leave were more likely to report lower ability to work and higher rates of depression and burnout (Sluiter and Frings-Dresen). For individuals with neck and shoulder pain, productivity and absence also are frequently reported (van den Heuvel, Ijmker, Blatter and de Korte, 2007).

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', 'RSIs or disorders', 'cumulative trauma disorders' or conditions of the arms, neck or shoulders (CANS). 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. 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.

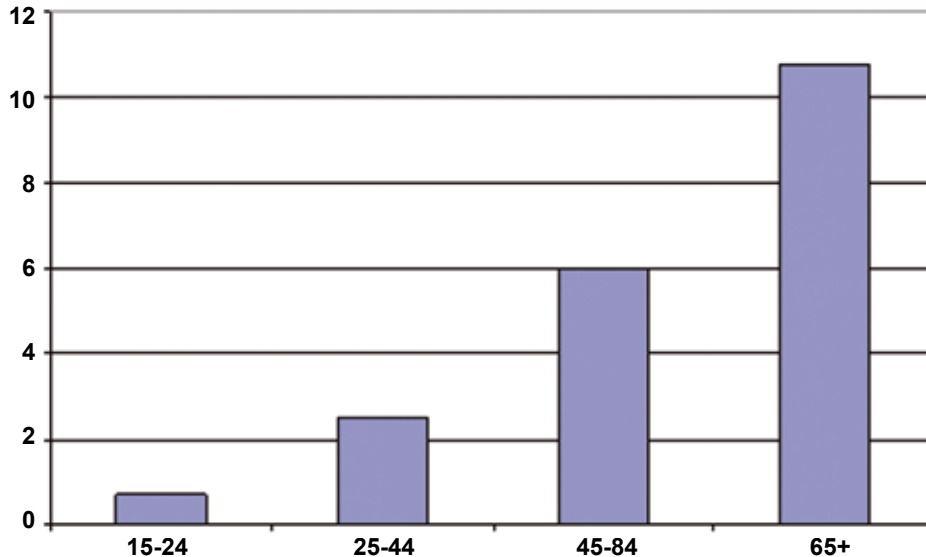
Whilst no agreed classification exists there is a common consensus that symptoms of WRULDs can present in the tendons, muscles, joints, blood vessels and/or the nerves and may include pain, discomfort, numbness, and tingling sensations in the affected area. WRULDs can be specific and non-specific conditions (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; RSI, CANS, 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

RA 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). National statistics provide information about the per cent reporting chronic arthritis, and in 2008 four per cent reported chronic arthritis (Statistics Netherlands, 2009d). One estimate suggests that the prevalence of RA in the Netherlands is 0.9 per cent, and the incidence is about 0.02 to 0.03 per cent (Alamanos, Voulgari and Drosos, 2005). However, another estimate suggests a higher prevalence of 1.6 per cent for males and 4.6 per cent for females in the general population; this higher prevalence may be due to self-report (Picavet and Hazes, 2003). One recent estimate suggests that there 108,000 people with RA in the Netherlands (Lundkvist, Kastäng and Kobelt, 2008). The disease affects people of any age, although peak incidence is in the mid age range of the working age population, between the ages of 25 and 55 years. In the Dutch population, the mean age at diagnosis is 37 years old (Chorus, Miedema, Boonen and van der Linden, 2003), and the prevalence increases with age (Picavet and Hazes). Figure 3.4 provides a breakdown by age for individuals reporting chronic arthritis, which includes other arthritic conditions in addition to RA. Epidemiological studies have shown that RA shortens life expectancy by around 6-10 years.

**Figure 3.4: Per cent of individuals reporting chronic arthritis by age, 2008**

Source: Statistics Netherlands, 2009c

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 as mentioned above 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.<sup>1</sup> Work capacity is affected in most individuals within five years (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). Research suggests that in the Netherlands, about 32 per cent of individuals with RA became (partially) work disabled within one year (Verstappen et al., 2005) and another small study suggests that about 19 per cent became permanently work disabled after two years (Zirkee, 2008). Within five years, about 45 per cent were at least partially work disabled (Verstappen et al.). After about four years of disease duration, employment rates were 16 per cent lower and work disability rates were 11 per cent higher for individuals with RA when compared with the general population (Verstappen et al.). Both functional status and job type influenced work disability, and only 18 per cent of individuals who were work disabled and without a job were willing to return to work again (Verstappen et al.). But the evidence suggests better outcomes for individuals who continue working.<sup>2</sup> Of those in employment, only 37 per cent had changed their working conditions – reduced working hours, changed work pace and received help from colleagues (Verstappen et al.).

Similarly, 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.

### 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).

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<sup>1</sup> Expert interview

<sup>2</sup> Expert interview

Recent research on the frequency of SpAs across the European population concludes that the prevalence has long been underestimated, and SpAs may have a similar prevalence rate to RA (Akkoc, 2008).

**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 0.1-0.2 per cent, with a 3:1 to 2:1 male: female ratio (Dagfinrud, Mengshoel, Hagen, Loge and Kvien, 2004). In the Netherlands, about 11,700 people are diagnosed with AS, of which only 40 to 50 per cent are under the care of a rheumatologist (Boonen et al., 2001). Research on the Dutch population indicates that the mean age of diagnosis for AS is 31 years (Chorus et al., 2003). 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.). In men, the pelvis and spine are more commonly affected, as well as the chest wall, hips, shoulders and feet. Women are supposed to have a later age of onset, milder disease course, longer asymptomatic periods but more extraspinal involvement. Accurate diagnosis can often be delayed since the early symptoms are frequently mistaken for sports injuries. Sieper, Braun, Rudwaleit, Boonen and Zink (2002) suggest an average of seven years between disease onset and diagnosis. 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.

Approximately half are severely affected whilst others report very few symptoms. 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 AS than in the general population (Boonen et al., 2001).

Recent research has provided evidence that physical health related quality of life of people with RA (Chorus et al., 2003) and AS was positively influenced by work (Gordeev et al., 2009; Chorus et al.). 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. Further evidence by Boonen et al. (2002) finds that people on work disability report lower quality of life (QoL). The extent to which the workplace 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 one per cent of the general population (Wallenius et al., 2008) and between 10 and 20 per cent of individuals with psoriasis. About two per cent of people in the Netherlands report psoriasis (Statistics Netherlands, 2009d), but no Dutch data on PsA were found. 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.).

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 PsA from RA. 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).

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### **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 also 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.

One area of concern in across Europe and in the Netherlands is the growth of obesity – a risk factor for bone and joint conditions (as well as cardio-vascular disease and diabetes). The latest data suggests that the Netherlands has a growing prevalence of overweight and obese citizens. In 2000 about 44 per cent were overweight and in 2008, 47 per cent were overweight (Statistics Netherlands, 2009c). In addition 14.5 per cent of Dutch boys and 17.5 per cent of Dutch girls

are overweight (van Hurk, van Dommelen, van Buuren, Verkerk and HiraSing, 2007). Table 3.3 summarises the intrinsic risk factors for non-specific MSDs.

**Table 3.3: 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>• Psychosocial 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, Raynaud’s syndrome or vibration white finger and carpal tunnel syndrome (Eurostat, 2004). In the Netherlands, office workers who have riskier work styles (eg working through pain and high self-imposed workloads) have a three times higher risk of upper extremity pain a year later than those who do not have a risky work style (Meijer, Sluiter and Frings-Dresen, 2008). As such, the fact that work can cause and contribute to these conditions is widely recognised and the use of assessments of workplace 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 Tempel and van der Linden, 2001; Gignac et al., 2004). Recent research in the Netherlands further confirms these relationships. Geuskens, Hazes, Barendregt and Burdorf (2008) reported that sick leave

among people with inflammatory conditions was associated with lower levels of job control, as well as passive behavioural coping.

The link between some non-specific MSDs, such as low back pain, and work is well evidenced, and some job demands that are frequently cited as risk factors for MSDs 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. In the Netherlands, physically demanding work has decreased over the past few years (Eurofound, 2008). However, among workers reporting MSDs, 47 per cent are extracting and building trade workers (NCvB, 2009c) but, in comparison, more people now work in office settings with increased exposure to psychosocial risk factors, such as high work pressure and emotionally demanding work (Eurofound, 2008). With that said, work pressure has increased from 31 per cent in 2003 to 34 per cent in 2006, as well as exposure to emotionally demanding work (Eurofound, 2008). Additionally, employees would like to see work-place measures implemented to reduce work pressure and work stress, as well as RSIs (van Hooff et al., 2008).

Many jobs involve activities that can constitute a risk factor for MSDs. According to the EWCS, 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., 2007). The statistics for the Netherlands are presented in the Table 3.4 below – showing that in the Netherlands higher exposure occurs for risk factors associated with repetitive movements, computer work and uncomfortable positions, rather than heavy physical work or vibrations (Eurofound, 2008).

**Table 3.4: Per cent exposure to risk factors by sex, 2006**

	Heavy physical work	Uncomfortable postures	Repetitive movements	Vibration	Visual display work
Female	11.2	22.2	53.9	2.7	34.8
Male	22.2	25.2	53.6	19.8	32.4

Source: Eurofound, 2008 presenting data from NEA, 2006

Much of the attention that employers pay to the issue of MSDs and the impact of the workplace 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 psychosocial 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 psychosocial 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. In the Netherlands, work factors, such as good employment conditions, a high level of autonomy and lower levels of job demand contribute to workers' willingness and ability to work until retirement (Jettinghoff and Houtman, 2007). Interviewees also acknowledged the importance of these factors in assisting individuals with MSDs to remain in work. A review by Bongers et al. (2006) suggests that evidence points to a relationship between the psychosocial factors of work and WRULDs, but that identifying the specific pieces of the relationships is not possible due to the modesty of the relationships (Bongers et al.).

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). 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 (2001) 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 psychosocial and organisational factors of work.

Psychosocial 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. Furthermore, attention paid to mental health problems and their relationship with MSDs is not fully appreciated.<sup>3</sup> 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). Additionally, individuals with RA in lower socioeconomic groups may experience worse health outcomes, particularly during the first few years of disease (Jacobi, Mol, Boshuizen, Rupp, Dinant and van den Bos, 2003). '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 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 et al., 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 MSDs based on conservative approximations show that MSDs are a significant economic burden to the Netherlands.

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

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.

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<sup>3</sup> Expert interview

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 psychosocial 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 provides 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. In the Netherlands, MSDs were among the top ten conditions affecting males and females, comprising 3.6 per cent and 5.2 per cent of total DALYS respectively (WHO, 2004). RA accounted for 0.87 per cent of all DALYs lost in the Netherlands (Lundkvist et al., 2008).

- 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.

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, the most significant direct costs are related to physical therapy, inpatient services, drugs, and primary care (Dagenais, Caro and Haldeman, 2008). 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 back pain and disability. 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; Leardini et al., 2002).

In the Netherlands, one study suggests that higher direct costs of RA are related to worse general well being, worse quality of life, higher functional disability and younger age (Verstappen et al., 2007; Verstappen et al., 2004) and, on average, the direct costs related to RA are about 5,000 euros (Verstappen et al., 2004). On average individuals with RA contacted rheumatologists about 1.4 times, GPs 0.7 times and physiotherapists 2.9 times every three months (Verstappen et al., 2004).

For AS, Boonen et al. (2005) estimated that the direct costs were 2,373 euros per patient per year, of which direct non-medical costs comprised the majority of the cost (41 per cent). Non-medical costs included aids/appliances/adaptations, formal household care, private household help, unpaid household help and personal inactivity (Boonen et al.). In the same study, AS was compared with chronic low back pain (Boonen et al.). Chronic low back pain incurred more cost than AS, which was attributed to higher direct non-medical costs (Boonen et al., 2005). Visits

to health care providers comprised 29 per cent of the direct medical costs for chronic low back pain (Boonen et al.). Other research suggests that low back pain ranks among the top five most common reasons for consulting a GP in the Netherlands (van der Linden, Westert, De Bakker and Schellevis, 2004 as cited in Jellema et al., 2005). The estimated direct costs for chronic low back pain were 5,594 euros per patient per year of which 53 per cent were attributable to direct non-medical costs, such as paid household help (Boonen et al.).

Direct costs, compared to indirect costs, for MSDs typically 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).

Table 3.5 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 employers, the social assistance scheme (WWB) 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. The OECD (2008b) reports that in the Netherlands, sickness absence decreases when unemployment rises. More specifically, when a one per cent increase in unemployment occurs, sickness absence decreases by a quarter of a percentage point (OECD). A number of reasons may contribute to this trend, such as worse working conditions during good economic times, which may lead to increased absence; an increase in employment of individuals with health problems during good economic times; or a disciplining affect occurring during tougher times (OECD).

**Table 3.5: Direct costs associated with MSDs, RA, and low back pain**

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

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

If employees fear being laid off during an economic down turn, there could also be higher rates of presenteeism. Presenteeism is extremely difficult to measure. However, the Netherlands is one of the few countries that has published research on the topic. TNO includes questions about presenteeism in its Working Situation Survey (TAS), which includes responses from about 4,000 to 5,000 employees (de Vroome, 2006). According to the survey, presenteeism was reported by about 63 per cent (de Vroome). The findings also indicate that individuals who went to work while sick took 2.3 more days of sick leave in the following years (de Vroome). As a result, focusing on just reducing absenteeism, without considering presenteeism, could increase sickness absence in future years (de Vroome). Recent research from Denmark also suggests that going to work while sick is associated with long-term sickness absence (Hansen and Andersen, 2009).

Not only does presenteeism contribute to future sickness absence, but it also reduces overall productivity while at work. One Dutch study finds that individuals with neck or shoulder pain, arm pain or both report productivity losses while at work (van den Heuvel et al., 2007). For those reporting one symptom about 20 to 24 per cent reported productivity losses, and for those reporting both symptoms, productivity losses increased to 36 per cent (van den Heuvel et al.). Further analyses revealed that the majority of productivity losses result from reduced performance at work and reduced working hours, and just about 32 per cent results from sickness absence (van den Heuvel et al.).

Absence is the most common measure used to estimate the indirect costs of MSDs. However, it is worth noting some of the limitations of data collected on absence from work. The recording of sickness absence is rarely accurate. Different organisations have different ways of recording absence: in some cases employees complete records themselves, in other cases managers must record the absence for them. Employer surveys require HR professionals to complete the survey about their organisation from their records, though we found no recent Dutch examples. Self-report surveys ask individual employees to complete the survey with respect to a particular reference time, for example, the past year (for example, the NEA). Each method has limitations, for example with the self-reported surveys, employees might report sickness on days when they were not due to work anyway. With employer surveys the responses are limited by the quality of the absence records employers keep (for example, employees do not always record absence accurately or categories for recording causes are not adequate). Employer surveys are also subject to response biases where only organisations with good methods to measure absence are likely to be able to respond quickly to the survey request. In all cases records and reports are subject to biases. Managers, for instance, tend to underreport their own absence.

According to national figures, absence rates in the Netherlands are fairly low and declined to four per cent in 2004 (Eurofound, 2008; van Hooff et al., 2008) and 2005 (Statistics Netherlands, 2009c). However, the average duration of absence (19.2 days) is quite long according to national figures (Statistics Netherlands, 2009c). Of workers on sick leave for longer periods of time (more than 13 weeks), 25 per cent reported psychological health problems, 19 per cent reported back disorders and 13 per cent reported neck, shoulder and arm problems (Eurofound, 2008). Common reasons for absence were flu or cold (37 per cent), but complaints related to back pain (11 per cent) and neck, shoulder, arm and hand complaints (7 per cent) have increased (Eurofound; van Hooff et al., 2008).

Other figures provided by the EWCS provide a slightly different picture that suggests the Netherlands has a higher level of workers reporting sickness absence due to health reasons (33 per cent) with an average length of absence being about eight and a half days (Appendix 2; EWCS, 2005; Parent-Thirion et al., 2007). Absence rates are also related to workers who report MSDs. For instance, among employees with RSIs, about seven per cent report absence (van Hooff et al., 2008). Research on low back pain suggests that the indirect costs of sickness absence and lost productivity comprised 84 per cent of the total costs (IJzelenberg, Meerding and Burdorf, 2007). Boonen et al. (2005) provides some specific estimates about loss of paid labour for individuals with chronic low back pain. Specifically, 47 per cent of people in a paid job reported an episode of sick leave with a mean length of sick leave of 79 days, and loss of paid labour only for chronic low back pain was estimated to cost 2,939 euros per patient per year using the friction cost methodology (Boonen et al.).<sup>4</sup>

Recent research on sick leave among individuals with early inflammatory conditions suggests that about 26 per cent reported absence lasting for two weeks or longer within the past six months (Geuskens, Hazes et al., 2008). Pain, functional limitations and job design were all factors that related to sick leave (Geuskens, Hazes et al.). For individuals with RA, about half report arthritis-related sick leave (Zirkee et al., 2008). For individuals with AS, 39 per cent of AS patients in a paid job reported an episode of sick leave with a mean length of 12 days (Boonen et al., 2005). Productivity losses were estimated to cost 834 euros per AS patient per year (Boonen et al., 2005). Sick leave is an important predictor for work disability (Zirkee et al., 2008; de Buck et al., 2006). Prior episodes of sickness absence are associated with future long-term absences.

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.,

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<sup>4</sup> Friction cost method limits production loss to the time when the work of the sick person is not replaced

2008; Alavinia and Burdorf, 2008). MSDs are frequently cited as a reason for early exit from the labour force. 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). The average age of withdrawal from the labour market in the Netherlands was around 60 years in 2005 (see Appendix 2). Ageing is one of the intrinsic risk factors for non-specific MSDs and RA. Therefore, in countries with an older age of withdrawal from the labour market, MSDs may have a greater impact on the productivity of the workforce. However, countries with a lower age of withdrawal from the labour market may be prematurely losing the skills and expertise of older workers.

One concern in the Netherlands is the low employment rates of individuals with disabilities. While employment rates rose for individuals without disabilities in recent years, they decreased for individuals with disabilities (OECD, 2008b). As for people with MSDs, Boonen et al. (2001) found that labour force participation among people with AS was 11 per cent lower and work disability was 15 per cent higher compared with the general population. On average, people with AS reported 10 additional AS-related sick leave days per year (8.8 days for male patients and 15.3 days for female patients). A comparative study between the Netherlands, France and Belgium found that the employment rate among people with AS was equal to 72 per cent in France and Belgium, but much lower in the Netherlands (55 per cent) (Boonen et al., 2002). Similarly, the mean number of days of sick leave due to AS was highest in the Netherlands, followed by Belgium and France (19, 9 and 6 days respectively). A proportion of this difference may be accounted for by the fact that workers in both the Netherlands and France were allowed by the social security system to work part-time while claiming disability benefits (Boonen et al., 2002).

**Table 3.6: National costs of AS**

	Number of people with AS	Yearly friction cost (million euros)	Human capital costs (million euros)
<b>Belgium</b>	7,646	2.1	52.3
<b>France</b>	43,062	14.0	151.2
<b>Netherlands</b>	11,250	6.3	103.7

*Source: Boonen et al., 2002*

Two studies looking at lost productivity among patients with AS from the Netherlands, France, and Belgium calculated friction costs (reflecting productivity losses because of sick leave only for the average period of job vacancy) as well as human capital costs (reflecting productivity losses for the whole period of sick leave and work disability) (Boonen et al., 2002). The average annual human capital costs were much higher in the Netherlands at 8,862 euros per patient compared with 3,188 euros in France, and 3,609 euros in Belgium (Boonen et al.).

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). Additionally, there are still potentially significant costs associated with lost productivity where people remain at work but in pain or distress while awaiting intervention or workplace adjustments. As discussed previously, 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). A further extension from work-related indirect costs, are additional costs associated with hiring household help (Kavanaugh, 2005) and the provision of informal care. In the Netherlands, about 51 per cent of individuals with RA report needing household help, and the majority receive help from their relatives (Verstappen et al., 2005). 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 the Netherlands, informal care amounts to just under 1,650 euros per patient – lower than the European average (Lundkvist et al., 2008). However, Verstappen et al. report that in the Netherlands the cost of informal care works out to be seven times more than the cost of lost paid productivity. In total productivity losses, including lost paid work and household work, for individuals with RA were estimated to be over 2,300 euros per patient per year (Verstappen et al.).

### 3.4.3 Total costs

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). However, research from the Netherlands has provided some understanding about the costs associated with specific MSDs. 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 the Netherlands was 12,560 euros per patient per year, or 1,354 million euros. These included medical costs, drug costs, non-medical costs, the costs of informal care and other indirect costs, but do not differentiate between those of working age and those above retirement age. These figures are lower, per patient, than those for other Western European countries (17,153 euros per patient per year). For AS, the total costs were estimated to be 3,205 euros per patient per year for AS patients (Boonen et al., 2005). The average annual cost of AS in the Netherlands is 38 million euros (Boonen et al., 2005).

For people with chronic low back pain, the total costs were 8,533 euros per patient per year, and the average annual costs of chronic low back pain in the Netherlands is 6.4 billion euros (Boonen et al., 2005). The total health care costs of low back pain and neck pain combined are estimated to be about 761 million euros (Slobbe, Kommer, Smit, Meerding and Polder as cited in Driessen et al., 2008), but the loss of productivity due to low back pain and neck pain are suggested to be nine times the health care costs (van Tulder, Koes and Bouter as cited in Driessen et al.). This suggests that the total cost of low back pain and neck pain is about 7.6 billion euros. One last estimate on costs of MSDs suggests that RSIs cost the Netherlands about 2.1 billion euros with the majority of the cost occurring due to absence (962 million) and lost productivity (808 million) and the remainder incurred from medical (119 million) and disability pensions (237 million) (Blatter et al., 2006). All of these estimates suggests, as a group, MSDs cost the Netherlands economy billions of euros and the majority of cost comes from losses in productivity and sickness absence.

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 psychosocial. Some of the well-established workplace 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 workplace 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 psychosocial 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. The Dutch estimates suggest MSDs cost billions of euros, which are mainly attributable to lost productivity. 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 for each condition the most common and appropriate interventions outside and within the workplace.

## 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, some 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.

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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). Early intervention is therefore crucial to individual recovery and self-management and may contribute to reducing the number of working days lost and reduced productivity caused by MSDs (although the evidence on the cost-effectiveness of specific return to work programmes is inconclusive).

In the Netherlands, the Early Intervention Service (Vroege Interventie), administered by the Healthcare Insurance Board (College Voor Zorgverzekeringen, CVZ) seeks to prevent long-term work absence and reduce health care and welfare costs (Eurofound, 2007b). Every year about 700 individuals are seen including labour market disadvantaged individuals and individuals with chronic health problems and low back pain. Through the programme, individuals receive a 'quickscan' that assesses the situation and identifies possibilities for labour market integration (Eurofound, 2007b). A number of people are involved in the programme: a coordinator, occupational health physician and rehabilitation specialists. Additionally, the employer and employee are included in the development and implementation of the plan (Eurofound, 2007b). A similar programme has been developed for arthritis patients and supported by the Dutch Arthritis Association (Eurofound, 2007a).

A similar intervention for subacute low back pain is highlighted below.

### **Case study**

#### *Introduction*

Low back pain affects a large number of Dutch workers and is a major cause of sick leave in the Netherlands. To reduce the impact of low back pain on productivity, an intervention was developed to provide multidisciplinary rehabilitation.

#### *What approach was taken?*

The intervention adopted the Canadian Sherbrooke model by Loisel et al. to the Dutch socioeconomic context. The workplace intervention consisted of a worksite assessment and adjustment using the principles of participatory ergonomics. The main intervention team was comprised of an ergonomist, the injured worker and the workers' supervisor. The ergonomist observed the worker completing his or her tasks. The worker and supervisor both independently ranked the obstacles to returning to work. The ergonomist then organised a meeting for all stakeholders where everyone discussed and brainstormed possible solutions. In addition to this meeting, the occupational health professional and GP provided feedback through a short communication form to prevent any conflicting advice about return to work.

Graded activity introduced at eight weeks was also examined. The graded activity intervention included a gradually increasing exercise programme that was tailored to the individual.

Participants were randomised into intervention and control groups after being on sick leave for two to six weeks due to low back pain.

#### *What were the results?*

The workplace intervention lasted on average 24 days. For individuals participating in the workplace intervention, the time off work was 77 days compared to 104 days for individuals receiving the usual care, which was a significant difference. More individuals in the usual care group (17.2 per cent) did not return to their full work for a long-lasting period during the 12 months follow-up compared with the workplace intervention group (9.4 per cent). Additionally functional status was slightly better in the workplace intervention group compared with the usual care group. The graded activity intervention was not more effective in returning individuals to work.

#### *Conclusion*

Workplace interventions that include a multidisciplinary rehabilitation programme early on in the sick leave time have the potential to reduce sick leave.

*Source: Anema, et al., 2008*

It is also in an employer's best interests to act early if they are to minimise the costs associated with the health of employees and to their business through absence. This is particularly the case for the Netherlands where the government has shifted the responsibility of minimising costs related to sick leave to the employers.<sup>5</sup> Therefore, employers and branches of industry have been active in helping people with health conditions.<sup>6</sup> Based on a review of the available evidence Breen et al. (2005) recommend that employees and employers 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 from individuals and employers. Moreover, since GPs can be a first point of call for people with MSDs, they have a vital role to play in ensuring that patients are able to manage their conditions. However, recent research based in the Netherlands suggests that discussions about work and working conditions during GP consultations for MSDs is not standard practice (Weevers et al., 2009), and an expert interviewee indicated that GPs are not entitled to discuss work with patients.

According to a survey of the general public, about 50 per cent of individuals with musculoskeletal-related pain were receiving treatment (Picavet and Hazes, 2003). Another study suggests that about 30 to 40 per cent of those with musculoskeletal pain were under the care of a GP or specialist (Picavet and Schouten, 2003). Only 20 to 30 per cent of patients with chronic widespread pain or chronic low back pain were receiving specialised care (Picavet and Schouten, 2003). These statistics suggest that a large portion of the population is not seeking or receiving treatment for musculoskeletal complaints.

The occupational health care system seeks to improve outcomes for workers with occupational diseases and plays a significant role in helping people with MSDs maintain work.<sup>7</sup> Some research suggests that communication between occupational health professionals, GPs and specialists could be improved (Zirkee et al., 2008; de Buck, van Amstel, et al. 2002).<sup>8</sup> de Buck, van Amstel et al. suggest developing an educational programme to assist with occupational rehabilitation for individuals with rheumatic diseases. It seems that some health professionals do not fully understand the role of the occupational health physician. Therefore, education about

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<sup>5</sup> Expert interview

<sup>6</sup> Expert interview

<sup>7</sup> Expert interview

<sup>8</sup> According to an expert interview, the relationships are improving

their role and the services they provide could assist with coordinating care and appropriate return to work (de Buck, van Amstel et al.). Furthermore, it is important to recognise that the goal for interventions is to not only reduce absence, but also improve health outcomes. Some specialists and health care professionals have concerns that the occupational health professionals are too focused on return to work and do not fully appreciate the needs for the overall welfare of the employee. 2009.<sup>9</sup>

Employees also play an important role in the intervention process. Varekamp et al. (2009) developed a training programme to investigate the nature of empowerment for employees with chronic diseases. Listed below are seven steps identified through the research that may assist in managing the problems employees with chronic diseases (Varekamp et al.).

1. Develop a realistic understanding of one's abilities.
2. Stand up for oneself self-confidently.
3. Maintain social relations based on mutual understanding.
4. Acquire knowledge of one's options, rights and duties.
5. Negotiate with regard to work accommodations.
6. Plan one's job so as to provide personal satisfaction.
7. Maintain a social life outside work.

A number of research studies are underway in the Netherlands that are looking at interventions for retaining individuals and returning individuals with MSDs to work. For example, Lambeek et al. (2007) are conducting a randomised clinical trial with an economic evaluation for individuals with low back pain. The trial will compare usual care to a multidisciplinary outpatient care programme, which consists of a workplace intervention and a graded activity programme that uses cognitive-behavioural principles (Lambeek et al.). Another programme under investigation is the Stay@Work programme to prevent low back pain and neck pain among workers through a participatory ergonomics intervention (Driessen, et al., 2008).

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### **4.2** **The social** **security regime** **for the work** **disabled**

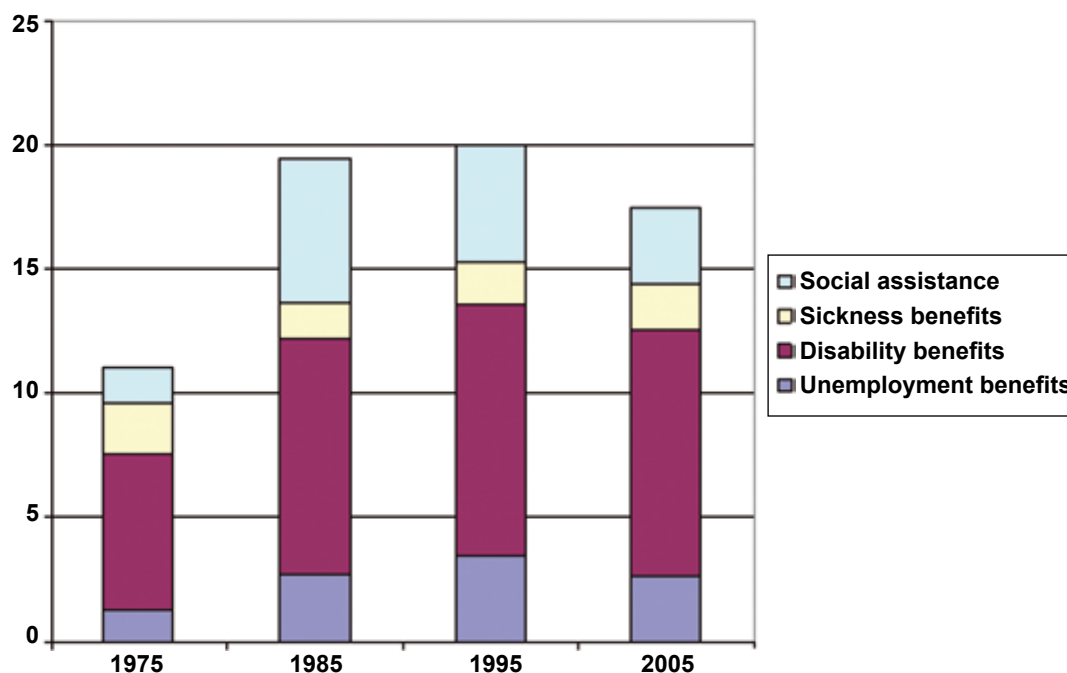
It is clear that, in most EU member states, interventions made by the social security system can make a significant difference to citizens of working age with long-term, chronic or work-disabling conditions. The OECD (2008b) reports that sickness and disability benefits represent about 4.5 per cent of GDP, which is more than twice the OECD average. Additionally, the Netherlands has one of the highest rates of individuals in the population receiving disability benefits (8.3 per cent) compared with other OECD countries (5.8 is the OECD average) (OECD, 2003). Figure 4.1 illustrates the trend in the distribution of benefits in the Netherlands as a percentage of the

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<sup>9</sup> Expert interview

working age population. The figure also shows the decline in benefits recipients from 1995 to 2005 (OECD, 2008a).

**Figure 4.1: Distribution of benefits in the Netherlands**

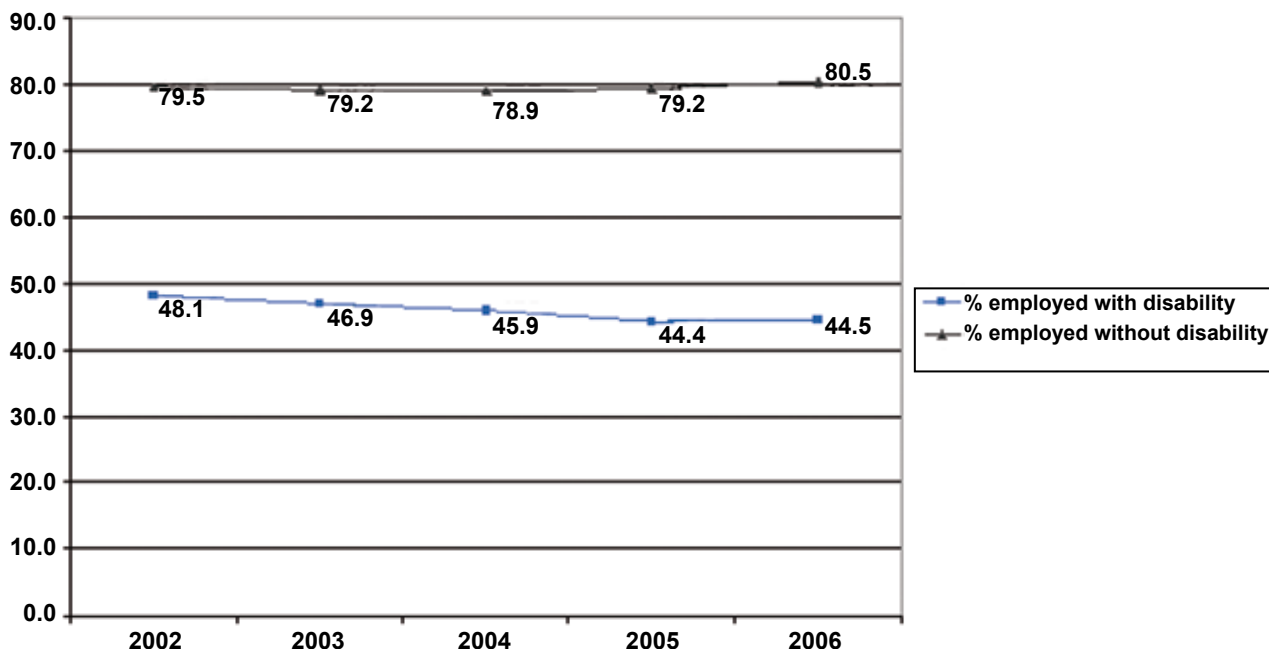


Source: OECD, 2008a

One contributing factor may be the lower rate of individuals with disabilities who are employed. Moreover, OECD (2008c) data suggest the employment rate of individuals with disabilities has decreased in recent years, even as the employment rate for individuals without disabilities has increased – as Figure 4.2 on the next page illustrates.

The Dutch benefits system was changed in 2004 when the waiting period for disability benefit assessment increased from one year to two years and the decision to grant disability benefits considered no or less money for individuals who were partly and non-permanently disabled for work – thereby focusing on ability, not disability (Eurofound, 2008). Through these reforms, more responsibility was placed on employees and employers, and as a result, sickness absence and disability inflow rates have considerably fallen (OECD, 2008b). Another important strategy adopted throughout the Netherlands is the ‘work-first’ strategy, where benefit claimants start with job or training programmes when they first apply for benefits (OECD, 2008a).

Figure 4.2: Employment rates for individuals with disabilities and without disabilities



Source: OECD, 2008c

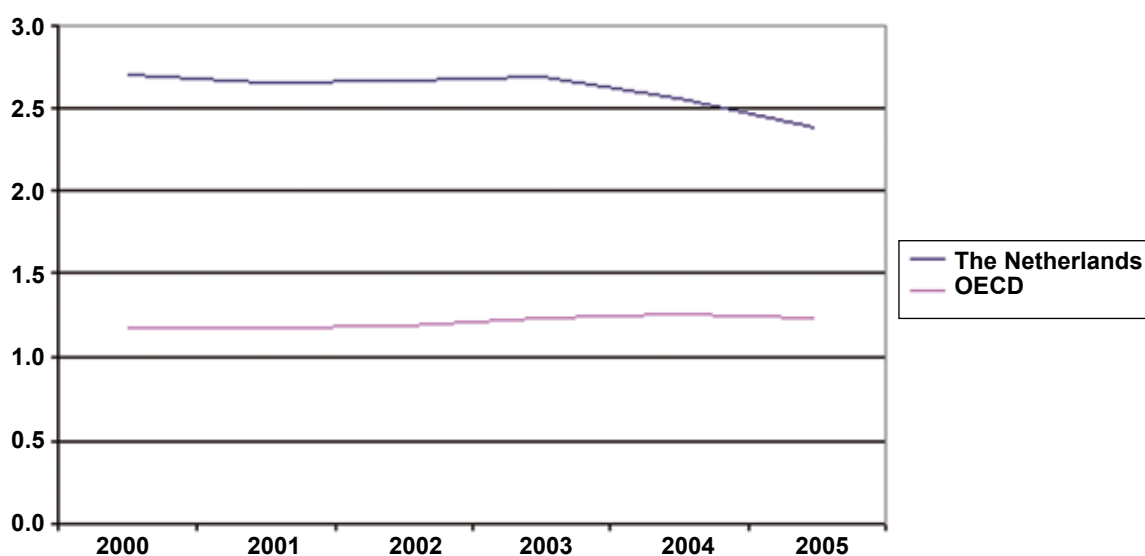
However, compared with other countries, the number of people receiving disability benefits (OECD, 2008a) and spending on disability benefits remains high in the Netherlands (see Figure 4.3 on the next page) (OECD, 2008c). Therefore, the OECD points to two challenges for the Netherlands: the employment rate for those with disabilities and the amount of spending on sickness and disability benefits (OECD, 2008b).

The Dutch social security benefit programme applies to all people below 65 years of age who are in employment. In the Netherlands, as in many other European countries, but in contrast with the situation in the United States, a distinction is made between sick leave (work incapacity but the patient has an employment contract) and work disability (employment contract stops) (Rho, Schmitt, Earle and Heymann, 2009). The Dutch social security benefit programme is administered by the employers in collaboration with occupational health and safety organisations for the first 52 weeks of sick leave and by the public social security associations for the work disability (Ministerie van Social Zaken en Werkgelegenheid (SZW), n.d.a).

Employers in the Netherlands pay sickness benefits to workers, as well as assist in reintegration efforts. For two years, the employer is responsible for provision of the sickness benefit, which is 70 per cent of daily earnings and no less than minimum wage (Rho et al., 2009; SZW, n.d.a). The 2002 Gatekeeper Improvement Act (Wet Verbetering Poortwachter, WVP) was enacted to promote reintegration efforts by employers and employees. During the first year of sickness,

both the employee and employer work together to get the employee back to work as quickly as possible with the help of a case manager (SZW, n.d.a). Reintegration companies may provide assistance (SZW, n.d.a.). If the employee and the employer do not agree on a plan independent experts may assist in reaching an agreement, or the Institute for Employee Benefit Schemes

**Figure 4.3: Disability benefit spending as a percentage of GDP**



Source: OECD, 2008c

(UWV) may provide assistance (SZW, n.d.a.). Employees are also made responsible for their return to work by possibly losing their employment protection if they do not put enough effort into vocational rehabilitation (Steenstra, Anema, Bongers, de Vet and Mechelen, 2003). The UWV also provides assistance for absence counselling and reintegration (SZW, n.d.b). The steps involved in reintegration through the Gatekeeper Act are outlined below (Brennikmeijer, Raes, Houtman, n.d.; OECD, 2007).

- Day 1: Employee reports sickness to employer and employer pays 70 to 100 per cent of salary.
- Week 1: Employer informs occupational health and safety (OHS) services about sick leave employee.
- Week 6: The occupational physician (Arbondienst) within OHS determines sickness and reports to the employer and employee about the reintegration possibilities.
- Week 8: Employer and employee create a written plan for recovery and reintegration based on advice from the OHS service. The case manager, appointed by the employer and employee, coordinates the process for the employee. The employer and employee should assess the plan after every six weeks to plan changes and subsequent actions.

- Week 12: The employer informs UWV about sickness absence, if the employee is still sick.
- Week 42-52: The employee and employer complete a reintegration evaluation report and plan for the second year of sickness.
- Week 87-91: The employee receives a WIA application form from the UWV and the employee applies for the benefit during week 91. The occupational health physician supplements the re-integration file with more information about the case and the employer completes a reintegration report based on the complete file. The employee reviews the report and submits the report along with the application for WIA (disability) benefits.
- Week 91-104: The UWV decides whether or not the reintegration efforts were sufficient and can impose sanctions if deemed insufficient, such as a reduction of the WIA-benefit or continue payment of wages for the employer.

Evaluation of the Gatekeeper Act suggests positive changes with reductions in applications for disability benefits, as well as declining sickness absence, since implementation; however, a number of factors, besides the Gatekeeper Act, could have contributed to this change (Brenninkmeijer; n.d.; OECD, 2007).

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**4.3 Condition-specific interventions** For those with specific musculoskeletal conditions, speedy referral to the appropriate specialist for investigation and treatment is usually vital. 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.

### 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 disorders (WRULDs) are not diseases to be cured, and there is 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.

In the Netherlands, over 75 per cent of individuals returning to work after being on sick leave receive modification to their working conditions (de Rijk, Nijhuis, and Alexanderson, 2009). Most of these changes are reductions in working hours and reduced pace and about 50 per cent receive different job tasks (de Rijk et al., 2009). Interventions focused on prevention and ergonomics have been implemented in many 'high-risk' sectors (Sluiter and Frings-Dresen, 2008). Accordingly, occupational health professionals begin assisting individuals with RSIs within three weeks of their absence from work due to RSIs (Sluiter and Frings-Dresen, 2008). About 35 per cent of workers report that changes have been made to their work-place to prevent RSIs, and 21 per cent received information about RSIs (van Hooff et al., 2008). For RSIs in particular, just 10 per cent reported changes of work and rest schedule to prevent RSI and four per cent reported changes in work tasks to prevent RSI (van Hooff et al., 2008).

Dutch guidelines for treating low back pain recommend individuals see an occupational health professional within two weeks of sick leave for that condition (Steenstra et al., 2003). If the assessment finds that the low back pain is not due to paresis or paralysis or sciatica, the occupational physician educates the worker about the importance of returning to normal activity and suggests work adjustments to schedule or job content. The occupational health professional may also visit the workplace. Additionally, other health care professionals should be consulted if other treatment is necessary (Steenstra et al.).

For low back pain, about 31 per cent of individuals receive work-place adaptations and almost 63 per cent receive adaptations to working hours, which are both higher compared with individuals from Denmark, Germany, Israel and Sweden (Anema et al. 2004). Overall, workplace adaptations and adaptations of job tasks and working hours improve return to work rates – particularly for workers on sick leave for three to four months (Anema et al.).

Some Dutch researchers recently published an article providing a clinical prediction rule for understanding the factors that contribute to return to work after experiencing low back pain. Their findings indicate that moderate to poor job satisfaction, higher fear avoidance, higher pain intensity, longer duration of complaints and female gender was related to longer durations of sick leave (Heymans et al., 2009). Research in the general population also finds an association between job satisfaction and physical workload and levels of sickness absence (Roelen, Koopmans, Notenbomer and Groothoff, 2008).

As with back pain, a contributing factor that may reduce long term sickness absence for workers with WRULDs is early contact with an occupational health professional. In a randomised controlled trial, researchers found that employees who received a structured early consult with

an occupational health professional, which was sometimes followed by a targeted intervention, had an average sick leave duration of about 19 days compared with 31 days for the control group (Kant, Jansen, van Amelsvoort, van Leusden and Berkouwer, 2008). Additionally, long-term sickness absence was significantly lower for the intervention group (9 per cent) compared with the control group (18 per cent) (Kant et al.). Other research suggests that work style plays a role in the level of pain experienced by workers (Meijer et al., 2008). Therefore, developing interventions that address risky working styles, such as working through pain and working under deadlines, pressures and high self-imposed workloads, could help reduce the level of pain related to upper limbs (Meijer et al.). One intervention outlined below provides an example of a work style intervention. Research on changing work style behaviours interventions needs to be continued (Meijer et al.).

### **RSI@Work: Work style intervention for recovery from neck and upper limb symptoms in computer workers**

#### *Approach*

The randomised controlled trial compared outcomes for individuals participating in two different intervention groups and a usual care group. The participants were workers from one of seven Dutch companies. After six months and 12 months, participants were assessed.

#### *Intervention*

The interventions were developed using theoretical models of behaviour change. The goal of the interventions was to change behaviours in work style and lifestyle. For work style, the intervention aimed to change body posture, workplace adjustments, breaks and coping with high work demands. For lifestyle, the intervention aimed to increase engagement in moderate to heavy intensity physical activities.

Both the work style and lifestyle plus work style interventions were similar. The participants attended six interactive group meetings that occurred about every four weeks. Four of the meetings were large group meetings focused on providing information and raising awareness. Two of the meetings were smaller and provided tailored advice for encouraging behaviour change. Each meeting lasted about an hour and a half.

#### *Outcome*

The work style intervention reduced pain outcomes at 12 month follow-up – mainly for workers with neck and shoulder symptoms. The work style and physical activity intervention was not found to be effective.

#### *Conclusion*

A group level intervention seeking to change work style behaviour reduced long term pain in computer workers with neck and upper limb symptoms.

*Source: Bernaards et al., 2007*

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' the condition. The limitations imposed by formalised return to work programmes may serve to reinforce the 'illness' of the patient and can tie employers hands. Based on evidence that psychosocial 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). Some Dutch research finds that psychosocial factors of work influence productivity losses for individuals with neck or shoulder symptoms and hand or arm symptoms (van den Heuvel et al., 2007). Additional Dutch research suggests that an individual's illness perception is related to recovery, and with this, Sluiter and Frings-Dresen (2008) suggest providing informational programmes to assist with changing illness perception among individuals who are on sick leave.

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 those with MSDs cope with their conditions. One example of successful intervention that reduced sickness absence based on the biopsychosocial model uses the cognitive behavioural theory (CBT) to address the psychological aspects related to rehabilitation, in addition to physical rehabilitation (Ektor-Andersen, Ingvarsson, Kullendorff and Ørbæk 2008). Ektor-Andersen et al. developed a tool using the CBT and identified four domains that can contribute to long-term sick leave due to

musculoskeletal symptoms: the community, the workplace, the family/spare time and the health care system. Results from the study show that assessing the impact of the four domains on MSDs through interviews and physical examinations and making recommendations for team-based rehabilitation based on the assessment was effective in significantly reducing sick leave and social security expenditure after four months of the intervention. The cost-benefit analysis presented by Ektor-Andersen et al. probably underestimates the total savings, but suggested that the costs of the intervention are balanced out by the reduced social security expenditure during the first year.

A further discussion of the biopsychosocial model and its relationship to work is presented following the interventions available for specific MSDs.

### **4.3.2 Rheumatoid arthritis**

The importance of effective and early treatment of RA in reducing joint damage and disability is now widely acknowledged (Pugner et al., 2000; Verstappen et al., 2004; Goekoop-Ruiterman et al., 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 has 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 as cited in Luqmani et al., 2006).

A recently published clinical trial in the Netherlands suggests that individuals on early combination therapy had better outcomes in terms of health-related quality of life and functional ability for recent onset RA (van der Kooij et al., 2009). Improvements were reported for activities such as housework and paid work (van der Kooij et al.). Additionally, mental health and emotional well-being outcomes improved significantly after treatment. (van Kooij et al.). The trial looked at four different treatment groups: the findings indicate that after two years, the results for health-related quality of life and functioning were similar, but the participants who received combination therapy at the start rapidly improved when compared with the groups who received initial mono-therapy, which was then step-up therapy (van Kooij et al.).

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), as well as improving clinical outcomes and slowing the progression of joint damage (Goekoop-Ruiterman et al., 2007). In fact, Verstappen et al. (2005) suggest that reducing disease activity in early RA patients could lead to improved labour force participation. Whilst access to TNFs is more widely available than before (Verstappen et al., 2007), it seems that, in the Netherlands, people with RA who can benefit from anti-TNF drug therapies may not have been able to gain ready access to them. Also it seems that there may be a delay in referral from GPs to specialists (van Aken, van Bilsen, Allaart, Huisinga and Breedveld, 2003).

One factor that may contribute to access to health care is the number of health care professionals in the country. The United Kingdom's Royal College of Physicians (RCP) (2008) suggests a ratio of one rheumatologist per 86,000 population. In the Netherlands the ratio is one per 80,000 population, which is close to the recommended number (Harrison, Deighton and Symmons, 2008). Therefore the infrastructure for the number of specialists is available to allow patients to see specialists. Other health professionals such as nurses also play a role in the treatment of RA. Research looking at the cost effectiveness of multidisciplinary care in patients with RA finds that clinical nurse specialists (200 euros) provide quality care at a lower cost when compared with inpatient (5,000 euros) and day patient (4,100 euros) team care (van den Hout, Tijhuis, Hazes, Breedveld and Vliet Vlieland, 2003).

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 (Geuskens, Burdorf, Evers and Hazes, 2008). Working conditions and external factors, such as the social, economic and political environment also play a role in reducing work-disability for individuals with RA (Verstappen et al., 2004). For instance, an intensive three-week exercise programme has been shown to improve outcomes for individuals with arthritis who have been hospitalised (Bulthuis et al., 2007). 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, chiropractors, 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.

One study suggests that in the Netherlands about 30 to 40 per cent of individuals with RA adjust their working situation (Zirkee et al., 2008). Thirty per cent also report receiving help from their employer or colleagues and between 60 and 70 per cent receive professional guidance on maintaining their job (Zirkee et al.). It seems that in the Netherlands, support from health care professionals about continuing work is growing.<sup>10</sup> About 77 per cent of rheumatologists report that they ask their patients about their working situation regularly, but only 44 per cent believe that improving work participation and quality of work was part of their role (de Buck, van Amstel, et al., 2002). Improving coordination between rheumatologists, occupational health professionals and employers could further assist individuals with RA to continue working. Employees with RA consider assistance and support from their employers as one of the most important factors in being able to continue working – particularly by providing flexible working conditions, autonomy over work and workplace adjustments (Varekamp, Haafkens, Detaille, Tak and van Dijk, 2005; Detaille et al., 2003). Additionally, receiving appropriate health care treatment and gaining knowledge and acceptance about their disease were important factors to prevent work disability (Varekamp et al., 2005; Detaille et al., 2003).

### 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 (NSAIDs) 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 workplace adjustments, flexible working arrangements, exercise regimes and physiotherapy (Boonen et al., 2001).

Chorus et al. (2002) reported that after six years, 27 per cent of people with AS withdrew from the Dutch labour force with almost 95 per cent of these people citing that they stopped working due to medical reasons. Physical limitations and fatigue at work were the two main reasons for stopping work, 86 per cent and 77 per cent respectively (Chorus et al.). Working in larger

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<sup>10</sup> Expert interview

companies and in companies that made technical or ergonomic work adjustments was associated with continued employment (Chorus et al.).<sup>11</sup> The following factors were associated with withdrawal from employment (Chorus et al.):

- Worked in physically demanding job at some time during their working career;
- Lacked job training or specialty training for their last job position;
- Experienced problems with access to the work place;
- Reported reduced transport mobility at the work place;
- Relied more on their colleagues;
- Felt attitudes of colleagues and management were negative;
- Did not receive support from colleagues and management.

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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.

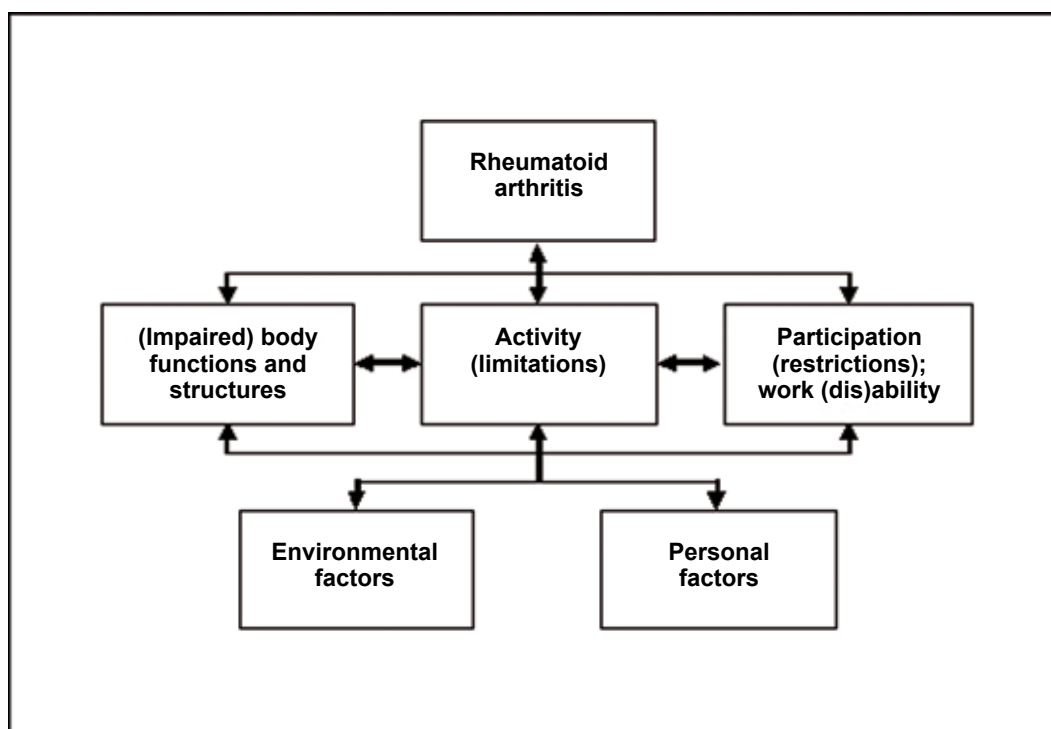
Since it was first proposed in the late 1970s, a growing body of evidence has developed to support the biopsychosocial model. For example, research has demonstrated that job dissatisfaction can be an important predictor of speedy and successful return to work (Bigos, Battie and Spengler, 1992). On the 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).

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<sup>11</sup> An expert interviewee also indicated that larger companies have more resources for workplace adaptations and rehabilitation

de Croon et al. (2004) looked at the research on work disability among people with RA and concluded that psychosocial factors were often a better predictor of work disability than standard bio-medical factors. In Figure 4.2 below, 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.

**Figure 4.2: ICF model applied to work disability in RA**



Source: de Croon et al., 2004

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).<sup>12</sup>

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.

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

##### **The role of employers**

Many employers remain unaware of the nature of MSDs, 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 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 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

<sup>12</sup> Also reiterated in expert interview

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 interventions 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>13</sup> A systematic review of multidisciplinary treatments of patients with low back pain, for example, 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). At least two Dutch interventions to assist with retention and return to work for workers with MSDs did not find improvements in outcomes (Steenstra et al., 2006; de Buck et al., 2005). For low back pain, Steenstra et al. found that a multi-stage return to work programme may have even delayed return to work. However, as highlighted above, Anema et al. (2007) recommend work-place interventions for sub-acute low back pain. For individuals with arthritis, a multidisciplinary job retention programme did not reduce risk of job loss (de Buck et al.) nor effect health care consumption, productivity or quality adjusted life years (QALYs) (van den Hout, de Buck and Vliet Vlieland, 2007). However, it did improve health outcomes for individuals with RA by reducing fatigue and improving mental health outcomes (de Buck et al.). By making some adjustments and improving vocational rehabilitation programmes based on the findings from previous research may assist in creating an effective intervention (de Buck et al.). Whilst biomechanical or ergonomic factors may be related to the onset of back pain, evidence that interventions based on these principals will

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<sup>13</sup> Findings from an evaluation of the effectiveness of return-to-work treatment programmes were inconsistent

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>14</sup>; de Buck, Schoones, Allaire and Vliet Vlieland, 2002).

There is nonetheless broad agreement on the principles for managing non-specific MSDs, particularly back pain, that are outlined in Box 1. 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) 2002, Initiative Evaluation Report: Back to Work*

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.

#### 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 making home

<sup>14</sup> Backman, 2004 found only six studies for the period 1980 to 2001

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 Equality Treatment (Disability and Chronic Illness) Act requires employers to make 'reasonable accommodation' to support employees with long-term illness or injury (Schoonheim and Smits, 2007), line managers find job re-design difficult, irritating and disruptive.

Given that MSDs are the most common work-related health problem, and the importance of psychosocial factors in determining whether employees remain in work or return 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 specific concerns with employees who have 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. In the Netherlands, every company with at least one employee needs to contract with an occupational health service, which, in theory, allows for all employees to have access to occupational health physicians (Spreeuwers et al., 2008). The occupational health physicians provide guidance to prevent and reduce sick leave, as well as improve return to work (de Buck, van Amstel, et al., 2002).

Not only does communication between GPs and occupational health professionals remain important in assisting individuals, but communication with specialists and rheumatologists is important for individuals with chronic diseases that need assistance with management. While communication has improved between rheumatologists, GPs and occupational health professionals,<sup>15</sup> more could be done to enhance cooperation among health care professionals (de Buck, van Amstel, et al., 2002). However, Faber et al. (2005) found that a slight increase of communication between GPs and occupational health professionals did not improve results for workers with low back pain and suggests that more intensive interventions that focus on more than just communication may be necessary.

As highlighted above, the clinical appreciation of most MSDs by employers can be cursory to say the least. It is often argued that most GPs, in their turn, have little or no appreciation of the vocational or occupational dimension of many MSDs. Medical students across Europe spend

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<sup>15</sup> Expert interview

a very small proportion of their time learning about occupational health, whilst musculoskeletal training for GPs has been found lacking (Akesson, Dreinhofer and Woolf, 2003). In addition, many GPs feel uncomfortable or incompetent when asked to think about the relationships between work and health (Arrelov et al., 2007; Swartling, Hagberg, Alexanderson and Wahlstrom, 2007), and as mentioned earlier, these conversations do not regularly occur during GP consultations for MSDs (Weevers et al., 2009). However, without an understanding of specific tasks undertaken by employees and the ability to adjust those tasks, health professionals may feel that a return to work would exacerbate a condition unless an individual is 100 per cent fit. To assist health professionals with conversations about how chronic health problems may impact work and vice versa, Detaille et al. (2003) developed a topic list with specific questions to ask patients. The topics include self-care, working conditions and communication with management, colleagues and health care professionals (Detaille et al., 2003). de Buck et al. (2006) and Varekamp, Verbeek and van Dijk (2006) concluded in their studies on health and sick leave and work disability that health professionals, including rheumatologists, need to be aware of their patients' levels of sick leave as it often leads to work disability and impacts their quality of life. Although, some initiatives in the Netherlands have been put in place to assist with cooperation between GPs and occupational health professionals (OECD, 2007), more can be done.

Employers also do not fully understand the positive role work can play in improving outcomes for workers with MSDs. However, 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. However, it also demonstrates that intervention should ideally begin before those experiencing

**Summary**

musculoskeletal pain visit their GP. 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 individuals live 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, and undoubtedly not common practice today, the costs of not addressing this problem were highlighted earlier.

## 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 Dutch 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 the Netherlands are, or will be, directly affected by 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 Dutch industry and it can draw heavily on the resources of both the health service and the benefits regime.

Unlike many countries, there is a fair amount of clinical, epidemiological, psychological and economic evidence on the nature, extent and consequences of the MSD problem in the Netherlands. This evidence suggests that MSDs will affect a growing proportion of the working age population in the coming years. However, the Netherlands should continue to improve upon coordination and ‘joined-up’ thinking and action by government, clinicians and employers that focuses on the MSD **patient as worker**. While the numbers advocating the application of the biopsychosocial model to MSDs are growing, we noted that some of those who can have most impact on fulfilling the labour market participation of workers with MSDs have yet to embrace its principles as fully as they might.

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 the Netherlands 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.
- 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 in pain, discomfort or have 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.

- 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 human resources 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 physicians

- Recognise 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 patients, especially if you suspect that aspects of their job make their symptoms worse.
- 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 physician 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.

## Conclusions and recommendations

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- 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 patients, the occupational health professionals 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 workplace adjustments can bring wider benefits than just compliance with the Equality Treatment (Disability and Chronic Illness) 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 Equality Treatment (Disability and Chronic Illness) 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

- Take seriously the existing evidence that the proportion of the Dutch workforce with MSDs is likely to grow over the next few decades. While the Netherlands has relatively low prevalence today – compared with the rest of the EU – this situation will not last. The Netherlands has the benefit of learning from good practice elsewhere and the government should act now to put such measures in place.

- Continue to encourage and make improvements to the collaborative working between the Ministry for Health, Welfare and Sport, the national health insurance organisations and the Ministry of Social Affairs and Employment, as well as employers on the issues of job retention, early intervention, the costs to society of people with MSDs being detached from the labour market and vocational rehabilitation. The government should also consider a national service framework for the treatment of people with MSDs. This framework should enshrine the principle that job retention or return to work are legitimate clinical outcomes.
- Help make GPs and specialists understand and recognise the role of occupational health professionals. This will require continued input into GP training, through postgraduate medical education and training. In fact, we believe that medical training at all levels, from undergraduate to continuing professional development would benefit from inclusion of health and work issues, especially if the health of the working age population is set to deteriorate.
- Consider the piloting of the allocation of trained occupational health advisors in selected GP surgeries to offer advice on the best way of supporting patients with MSDs staying in work or returning to work.
- The quality of data in the Netherlands on the health of its working age population is fairly good. However, continuing to improve data collection and reporting should remain a priority to better provide an accurate and comprehensive picture of levels of absence from work, work-related incapacity and its causes and the level of mental illness in the workforce.

## References

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- Akesson, K., Dreinhofer, K. & Woolf, A. D. (2003). Improved education in musculoskeletal disorders is necessary for all doctors. **Bulletin of the World Health Organisation**, 81, 677-683
- Akkoc, N. (2008). Are spondyloarthropathies as common as rheumatoid arthritis worldwide? A review. **Current Rheumatology Reports**, 10, 371-378
- Alamanos, Y., Voulgari, P. V. & Drosos, A. A. (2005). Rheumatoid arthritis in southern Europe: Epidemiological, clinical, radiological and genetic considerations. **Current Rheumatology Reviews**, 1, 33-36
- Alavinia, S. M. & Burdorf, A. (2008). Unemployment and retirement and ill-health: a cross-sectional analysis across European countries. **International Archives of Occupational and Environmental Health**, 82, 39-45
- Anema, J. R., Cuelenaere, B., van der Beek, A. J., Knol, D. L., de Vet, H. C. W. & van Mechelen, W. (2004). The effectiveness of ergonomic interventions on return-to-work after low back pain; a prospective two year cohort study in six countries on low back pain patients sicklisted for 3-4 months. **Occupational and Environmental Medicine**, 61, 289-294  
DOI: 10.1136/oem.2002.006460
- Anema, J. R., Steenstra, I. A., Bongers, P. M., de Vet, H. C., Knol, D. L., Loisel, P. et al. (2007). Multidisciplinary rehabilitation for subacute low back pain: graded activity or workplace intervention or both? A randomized controlled trial. **Spine**, 32 (3), 291-298
- Anema, J. R., van der Giezen, A. M., Buijs, P. C. & van Mechelen, W. (2002). Ineffective disability management by doctors in an obstacle for return-to-work: a cohort study on low back pain patients sicklisted for 3-4 months. **Occupational and Environmental Medicine**, 59, 729-733
- Aptel, M., Aublet-Cuvelier, A. & Cnockaert, J. C. (2002). Work-related musculoskeletal disorders of the upper limb, **Joint Bone Spine**, 69 (6), 546-555
- Armstrong, K. (2006). **Life After Rover**. London: The Work Foundation
- Arrelov, B., Alexanderson, K., Hagberg, J., Lofgren, A., Nilsson, G. & Ponzer, S. (2007). Dealing with sickness certification - a survey of problems and strategies among general practitioners and orthopaedic surgeons. **BMC Public Health**, 7(1), 273. Published online on 2 October. DOI: 10.1186/1471-2458-7-273
- Backman, C. L. (2004). Employment and work disability in rheumatoid arthritis. **Current Opinion in Rheumatology**, 16, 148-152
- Baanders, A., Rijken, P. M. & Peters, L. (2002). Labour participation of the chronically ill: A profile sketch. **European Journal of Public Health**, 12, 124-130
- Bekkering, G., Henriks, H., Koes, B., Oostendorp, R., Ostelo, R., Thomassen, J. & Van Tulder, M. (2003). Dutch Physiotherapy Guidelines for Low Back Pain. **Physiotherapy**, 89 (2), 82-96

- Bernaards, C. M., Ariens, G. A. M., Knol, D.L. & Hildebrandt, V. H. (2007). The effectiveness of a work style intervention and a lifestyle physical activity intervention on the recovery from neck and upper limb symptoms in computer workers. **Pain**, 132, 142-153
- Bigos, S. J., Battie, M. C. & Spengler, D. M. (1992). A longitudinal, prospective study of industrial back injury reporting. **Clinical Orthopaedic Related Research**, 279, 21-34
- Blatter, B., Houtman, I., van den Bossche, S., Kraan, K. & van den Heuvel, S. (2006). Gezondheidsschade en kosten door RSI en psychosociale arbeidsbelasting. Den Haag. Ministerie van Sociale Zaken en Werkgelegenheid
- Block, A. R., Kremer, E. F. & Gaylor, M. (1980). Behavioral treatment of chronic pain: the spouse as a discriminative cue for pain behaviour. **Pain**, 9 (2), 243-252
- The Bone & Joint Decade. (2005). **European Action Towards Better Musculoskeletal Health: A public health strategy to reduce the burden of musculoskeletal conditions**. Lund: The Bone & Joint Decade, Department of Orthopedics, University Hospital. Retrieved 15 April 2009 from [http://ec.europa.eu/health/ph\\_projects/2000/promotion/fp\\_promotion\\_2000\\_frep\\_15\\_en.pdf](http://ec.europa.eu/health/ph_projects/2000/promotion/fp_promotion_2000_frep_15_en.pdf)
- Bongers, P. M., Ijmker, S., van den Heuvel, S. & Blatter, B. M. (2006). Epidemiology of work related neck and upper limb problems: Psychosocial and personal risk factors (Part I) and effective intervention from a bio behavioural perspective (Part II). **Journal of Occupational Rehabilitation**, 16 (3), 279-302
- Boonen, A., van den Heuvel, R., van Tubergen, A., Goossens, M., Severens, J. L., van der Heijde, D., et al. (2005). Large differences in cost of illness and wellbeing between patients with fibromyalgia, chronic low back pain, or ankylosing spondylitis. **Annals of Rheumatic Disease**, 64, 396-402
- Boonen, A., van der Heijde, D., Landewe, R., Spoorenberg, A., Schouten, H., Rutten-Van Molken, M., et al. (2002). Work status and productivity costs due to Ankylosing spondylitis: comparison of three European countries. **Annals of Rheumatic Diseases**, 61, 429-437
- Boonen, A., Chorus, A., Miedema, H., van der Heijde, D., Landewé, D. R., Schouten, H., et al., (2001). Withdrawal from labour force due to work disability in patients with ankylosing spondylitis. **Annals of Rheumatic Diseases**, 60, 1033–1039
- Boonen, A., Chorus, A., Miedema, H., van der Heijde, D., van der Tempel, H., & van der Linden, S.J. (2001). Employment, work disability, and work days lost in patients with ankylosing spondylitis: A cross sectional study of Dutch Patients. **Annals of Rheumatic Disease**, 60, 353-358
- Breen, A., Langworthy, J. & Bagust, J. (2005). Improved early pain management for musculoskeletal disorders. **HSE Research report**, 399 London: Health and Safety Executive

## References

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- Brenninkmaeijr, V., Raes, A. and Houtman, I. (n.d.). Review and inventory of national systems and policy: The Netherlands. Impact of changing social structures on stress and quality of life: Individual and social perspectives. Stress Impact. Retrieved 29 September 2009 from [http://www.surrey.ac.uk/Psychology/stress-impact/publications/wp2/wp2\\_reportNetherland.pdf](http://www.surrey.ac.uk/Psychology/stress-impact/publications/wp2/wp2_reportNetherland.pdf)
- Brinkley, I. (2006), **Defining the Knowledge Economy**. London: The Work Foundation
- Brinkley I., Clayton, N., Coats D., Hutton, W. & Overell, S. (2008), **Hard Labour: Jobs, Unemployment and the Recession**. London: The Work Foundation
- Buchbinder, R., Jolley, D. & Wyatt, M. (2001). Population based intervention to change back pain beliefs and disability: three part evaluation. **British Medical Journal**, 322, 1516-1520
- Bulthuis, Y., Drossaers-Bakker, K. W., Taal, E., Rasker, J., Oostveen, J., van't Pad Bosch et al. (2007). Arthritis patients show long-term benefits from three weeks intensive exercise training directly following hospital discharge. **Rheumatology**, 46, 1712-1717
- Burton, A. K. (1997). Back injury and work loss. Biomechanical and psychosocial influences. **Spine**, 22, 2575-2580
- Burton, A. K. (2005). How to prevent low back pain. **Best Practice and Research in Clinical Rheumatology**, 19 (4), 541-555
- Burton, W., Morrison, A., Maclean., R. & Ruderman, E. (2006). Systematic review of studies of productivity loss due to rheumatoid arthritis. **Occupational Medicine**, 56, 18-27
- Carter, L. E., McNeil, D. W. & Vowles, K. E. (2002). Effects of emotion on pain reports, tolerance and physiology. **Pain Research Management**, 7(1), 21-30
- Chorus, A. M. J., Boonen, A., Miedema, H. S. & van der Linden, S. (2002). Employment perspectives of patients with ankylosing spondylitis. **Annals of the Rheumatic Diseases**, 61, 693-699
- Chorus, A. M. J., Miedema, H. S., Boonen, A. & van der Linden, S. (2003). Quality of life and work in patients with rheumatoid arthritis and ankylosing spondylitis of working age. **Annals of the Rheumatic Diseases**, 62, 1178-1184
- Chorus, A. M. J., Miedema, H. S., Wevers, C. W. J. & van der Linden, S. (2001). Work factors and behavioural coping in relation to withdrawal from the labour force in patients with rheumatoid arthritis. **Annals of the Rheumatic Diseases**, 60, 1025-1032
- Coats, D. & Lehki, R. (2008). **'Good Work': Job Quality in a Changing Economy**. London: The Work Foundation
- Coats, D. & Max, C. (2005). [Healthy Work, productive work-places: why the UK needs more good jobs](#). London: The Work Foundation.
- Cooper, N. (2000). Economic burden of rheumatoid arthritis: a systematic review. **Rheumatology**, 39 (1), 28-33
- Dagenais, S., Caro, J. & Haldeman, S. (2008). A systematic review of low back pain cost of illness studies in the United States and internationally. **The Spine Journal**, 8, 8-20

- Dagfinrud, H., Mengshoel, A. M., Hagen, K. B., Loge, J. H. & Kvien, T. K. (2004). Health status of patients with ankylosing spondylitis: a comparison with the general population. **Annals of Rheumatic Diseases**, 63, 1605-1610
- de Buck, P. D. M., de Bock, G. H., van Dijk, F., van den Hout, W. B., Vandenbroucke, J. P. & Vliet Vlieland, T. P. M. (2006). Sick leave as a predictor of job loss in patients with chronic arthritis. **International Archives of Occupational and Environmental Health**, 80, 2, 160-170
- de Buck, P. D. M., le Cessie, S., van den Hout, W. B., Peeters, A. J., Runday, H. K., Westedt, M-L. et al. (2005). Randomized comparison of a multidisciplinary job-retention vocational rehabilitation program with usual outpatient care in patients with chronic arthritis at risk for job loss. **Arthritis Care & Research**, 53 (5), 682-690
- de Buck, P., Schoones, J. W., Allaire, S. H. & Vliet Vlieland, T. P. M. (2002). Vocational rehabilitation in patients with chronic rheumatoid diseases: A systematic literature review. **Seminars in Arthritis and Rheumatism**, 32 (3), 196-203
- de Buck, P. D. M., van Amstel, R. J., Buijs, P. C., Maasen, J. H. W., van Dijk, F. J. H., Hazes, J. M. W. et al. (2002). Communication between Dutch rheumatologists and occupational physicians in the occupational rehabilitation of patients with rheumatic diseases. **Annals of Rheumatic Diseases**, 61, 62-65
- de Croon, E. M., Sluiter, J. K., Nijssen, T. F., Dijkmans, B. A. C., Lankhorst, G. J. & Frings-Dresen, M. H. W. (2004). Predictive factors of work disability in rheumatoid arthritis: a systematic literature review. **Annals of the Rheumatic Diseases**, 63, 1362-1367
- de Rijk, A., Nijhuis, F. and Alexanderson, K. (2009). Gender differences in work modifications and changed job characteristics during the return-to-work process: A prospective cohort study. **Journal of Occupational Rehabilitation**, 19, 2, 185-193
- de Vroome, E. (2006). Prevalence of sickness absence and 'presenteeism.' **Eurofound**. Retrieved 8 July 2009 from [www.eurofound.europa.eu/ewco/2006/07/NL06070191.htm](http://www.eurofound.europa.eu/ewco/2006/07/NL06070191.htm)
- der Tempel, H. & van der Linden, S. (2001). Withdrawal from labour force due to work disability in patients with ankylosing spondylitis. **Annals of the Rheumatic Diseases**, 60, 1033-1039
- Detaille, S. I., Haafkens, J. A. & van Dijk, F. J. H. (2003). What employees with rheumatoid arthritis, diabetes mellitus and hearing loss need to cope at work. **Scandinavian Journal of Work Environments and Health**, 29, 2, 134-142
- Devereux, J., Rydstedt, L., Kelly, V., Weston, P. & Buckle, P. (2004). The role of work stress and psychological factors in the development of musculoskeletal disorders. **Health and Safety Executive Research Report 273**. London: Health & Safety Executive
- Douwes, M. (2005). Managing musculoskeletal disorders – the Netherlands. Retrieved 9 February 2009 from <http://www.eurofound.europa.eu/ewco/studies/tn0611018s/nl0511019q.htm>

## References

- Driessen, M. T., Anema, J. R., Proper, K. I., Bongers, P. M. and van der Beek, A. J. (2008). Stay@Work: Participatory ergonomics to prevent low back and neck pain among workers: design of a randomised controlled trial to evaluate the (cost-) effectiveness. **BMC Musculoskeletal Disorders**, 9, 145
- Ekberg, K. (1995). Work-place changes in successful rehabilitation, **Journal of Occupational Rehabilitation**, 5, 253–269
- Ektor-Andersen, J., Ingvarsson, E., Kullendorff, M. & Ørbæk, P. (2008). High cost-benefit of early team-based biomedical and cognitive-behaviour intervention for long-term pain-related sickness absence. **Journal of Rehabilitation Medicine**, 40, 1-8
- EUROGIP (2007). Musculoskeletal disorders in Europe: Definitions and statistics. Retrieved 15 April 2009 from [http://www.eurogip.fr/docs/TMS\\_07-Eurogip-25-EN.pdf](http://www.eurogip.fr/docs/TMS_07-Eurogip-25-EN.pdf)
- European Foundation for the Improvement of Living and Working Conditions (Eurofound). (2008). Working conditions remain stable in the Netherlands. Retrieved 7 July 2009 from <http://www.eurofound.europa.eu/ewco/surveyreports/NL0707029D/NL0707029D.htm>
- Eurofound. (2007a). Arthritis project, Netherlands. Retrieved 27 August 2009 from <http://www.eurofound.europa.eu/areas/socialcohesion/egs/cases/nl005.htm>
- Eurofound. (2007b). Early intervention service, Netherlands. Retrieved 27 August 2009 from <http://www.eurofound.europa.eu/areas/socialcohesion/egs/cases/nl001.htm>
- Eurofound. (2007c). **Managing Musculoskeletal Disorders**. Retrieved 15 April 2009 from <http://www.eurofound.europa.eu/ewco/studies/tn0611018s/tn0611018s.htm>
- European Trade Union Institute (ETUI) (2007). **Musculoskeletal disorders: An ill-understood pandemic**. Brussels: ETUI
- Eurostat (2004). **Occupational Diseases in Europe in 2001**. Statistics in Focus, 15/2004. Retrieved 20 April 2009 from [http://epp.eurostat.ec.europa.eu/cache/ITY\\_OFFPUB/KS-NK-04-015/EN/KS-NK-04-015-EN.PDF](http://epp.eurostat.ec.europa.eu/cache/ITY_OFFPUB/KS-NK-04-015/EN/KS-NK-04-015-EN.PDF)
- EWCS – fourth edition. (2005). [Data file]. Dublin, Ireland: European Foundation for the Improvement of Living and Working Conditions
- Faber, E., Bierma-Zeinstra, S. M. A., Burdorf, A., Nauta, A. P., Hulshof, C. T. J., Overzier, P.M. et al. (2005). In a controlled trial training general practitioners and occupational physicians to collaborate did not influence sick leave of patients with low back pain. **Journal of Clinical Epidemiology**, 58, 75-82
- Feuerstein, M., Shaw, W. S., Lincoln, A. E., Miller, V. I. & Wood, P. M. (2003). Clinical and work-place factors associated with a return to modified duty in work-related upper extremity disorders. **Pain**, 102, 51–61

- Feuerstein, M., Shaw, W. S., Nicholas, R. A. & Huang, G. D. (2004). From confounders to suspected risk factors: psychosocial factors and work-related upper extremity disorders. **Journal of Electromyography and Kinesiology**, 14, 171-178
- Frank, A. O. & Chamberlain, M. A. (2006). Rehabilitation: an integral part of clinical practice. **Occupational Medicine**, 56, 289-293
- Frank, J., Sinclair, S., Hogg-Johnson, S., Shannon, H., Bombardier, C., Beaton, D., et al. (1998). Preventing disability from work-related low-back pain. New evidence gives new hope – if we can just get all the players onside. **Canadian Medical Association Journal**, 158 (12) 1625–1631
- Gignac, M., Cao, X., Lacaille, D., Anis, A. & Badley, E. (2008), Arthritis-related work transitions: A prospective analysis of reported productivity losses, work changes, and leaving the labour force, **Arthritis Care & Research**, 59 (12), 1805-1813
- Gignac, M. A. M., Badley, E. M., Lacaille, D., Cott, C. C., Adam, P. & Anis, A. H. (2004). Managing arthritis and employment: Making arthritis-related work changes as a means of adaptation. **Arthritis & Rheumatism**, 51 (6), 909-916
- Gordeev, V. S., Maksymowych, W. P., Evers, S. M., Ament, A., Schachna, L. & Boonen, A. (2009). The role of contextual factors on health-related quality of life in ankylosing spondylitis. **Annals of Rheumatic Diseases**, published online 11 March 2009, doi:10.1136/ard.2008.100164
- Geuskens, G. H., Burdorf, A., Evers, A. W. M. & Hazes, J. M. W. (2008a). Clear associations between demographic and psychosocial factors and health-related quality of life in patients with early inflammatory joint complaints. **The Journal of Rheumatology**, 35, 9, 1754-1761
- Geuskens, G. H., Hazes, J. M., Barendregt, P. J. & Burdorf, A. (2008b). Work and sick leave among patients with early inflammatory joint conditions. **Arthritis Care and Research**, 59, 10, 1458-1466
- Goekoop-Ruiterman, Y. P. M., de Vries-Bouwstra, J. K., Allaart, C. F., van Zeben, D., Kerstens, P. J. S. M., Hazes, M. W. et al. (2007). Comparison of treatment strategies in early rheumatoid arthritis: A randomized trial. **Annals of Internal Medicine**, 146, 406-415
- Guzman, J., Esmail, R., Karjalainen, K., Malmivaara, A., Irvin, E. & Bombardier, C. (2001). Multidisciplinary rehabilitation for chronic low back pain: systematic review. **British Medical Journal**, 322, 1511–1516
- Halpern, M., Cifaldi, M. & Kvien, T. K. (2008). Impact of adalimumab on work participation in rheumatoid arthritis: comparison of an open-label extension study and a registry-based control group, **Annals of Rheumatic Diseases**, published online 1 October 2008; doi:10.1136/ard.2008.092734
- Hamberg, K., Johansson, E., Lindgren, G. & Westman, G. (1997). The impact of marital relationship on the rehabilitation process in a group of women with long-term musculoskeletal disorders. **Scandinavian Journal of Social Medicine**, 25 (1), 17-25

## References

- Hansen, C. D. and Andersen, J. H. (2009). Sick at work-a risk factor for long-term sickness absence at a later date. **Journal of Epidemiology and Community Health**, 63, 397-402
- Harrison, M. J., Deighton, C. & Symmons, D. P. M. (2008). An update on UK rheumatology consultant workforce provision: the BSR/ARC workforce register 2005-07: assessing the impact of recent changes in NHS provision. **Rheumatology**, 47, 1065-1069
- Heymans, M. W., Anema, J. R., van Buuren, S., Knol, D., van Mechelen, W. and de Vet, H. C. W. (2009). Return to work in a cohort of low back pain patients: Developments and validation of a clinical prediction rule. **Journal of Occupational Rehabilitation**, 19 (2), 155-165
- Hoogendoorn, W. E., Bongers, P. M., de Vet, H. C. W., Ariens, G. A. M., van Mechelen, W. & Bouter, L. M. (2002). High physical work load and low job satisfaction increase the risk of sickness absence due to low back pain: results of a prospective cohort study. **Occupational and Environmental Medicine**, 59, 323-328
- Health and Safety Executive (HSE). (2002). Initiative Evaluation Report: Back to Work. Health and Safety Executive
- Huscher, D., Merkesdal, S., Thiele, K., Schneider, M. & Zink, A. (2006). Cost of illness in rheumatoid arthritis, ankylosing spondylitis, psoriatic arthritis and systemic lupus erythematosus in Germany. **Annals of the Rheumatic Diseases**, 65, 1175-1183
- Husted, J. A., Gladman, D. D., Farewell, V. T. & Cook, R. J. (2001) Health-related quality of life of patients with psoriatic arthritis: a comparison with patients with rheumatoid arthritis. **Arthritis and Rheumatism**, 45, 151-158
- Hyphantis, T. N., Bai, M., Siafaka, V., Georgiadis, A. N., Voulgari, P. V., Mavreas, V., et al., (2006). Psychological distress and personality traits in early rheumatoid arthritis: A preliminary survey. **Rheumatology International**, 26 (9), 828-836
- IJzelenberg, H., Meerding, W. J. & Burdorf, A. (2007). Effectiveness of a back pain prevention program: A cluster randomized controlled trial in an occupational setting. **Spine**, 32, 7, 711-719
- Jacobi, C. E., Mol, G. D., Boshuizen, H. C., Rupp, I., Dinant, H. J. & van den Bos, G. A. M. (2003). Impact of socioeconomic status on the course of rheumatoid arthritis and on related use of health care services. **Arthritis & Rheumatism**, 49, 4, 567-573
- Jellema, P., van der Windt, D. A. W. M., van der Horst, H. E., Twisk, J. W. R., Stalman, W. A. B. and Bouter, L. M. (2005). Should treatment of (sub)acute low back pain be aimed at psychosocial prognostic factors? Cluster randomised clinical trail in general practice. **British Medical Journal**, 331, 84; DOI:10.1136/38495.686736.E0
- Jettinghoff, K. & Houtman, I. (2007). People more willing to work until retirement age. Retrieved 7 July 2009 from <http://www.eurofound.europa.eu/ewco/2007/04/NL07040791.htm>

- Kant, I., Jansen, N. W. H., van Amelsvoort, L. G. P. M., van Leusden, R., Berkouwer, A. (2008). Structured early consultation with the occupational physician reduces sickness absence among office workers at high risk for long-term sickness absence: a randomised controlled trial. **Journal of Occupational Rehabilitation**, 18, 79-86
- Katz, W. A. (2002). Musculoskeletal Pain and its socioeconomic implications. **Clinical Rheumatology, Supplement**, 1, 2-4
- Kavanaugh, A. (2008). Health economics: implications for novel antirheumatic therapies. **Annals of the Rheumatic Diseases**, 64, 65-69
- Kemler, M. A. & Furnée, C. A. (2002). The impact of chronic pain on life in the household. **Journal of Pain Symptom Management**, 23 (5), 433-441
- Kerns, R. D., Haythornthwaite, J., Southwick, S. & Giller, E. L. (1990). The role of marital interaction in chronic pain and depressive symptom severity. **Journal of Psychosomatic Research**, 34(4), 401-408
- Kobelt, G. (2007). Thoughts on health economics in rheumatoid arthritis. **Annals of the Rheumatic Diseases**, 66, 35-39
- Kösters, L. & Lautenbach, H. (2007). People with mental health problems less likely to be in work. **Statistics Netherlands**. Retrieved 9 July 2009 from <http://www.cbs.nl/en-GB/menu/themas/arbeid-sociale-zekerheid/publicaties/artikelen/archief/2007/2007-2263-wm.htm>
- Lambeck, L. C., Anema, J., van Royen, B. J., Buijs, P. C., Wuisman, P. I., van Tulder, M. W. et al., (2007). Multidisciplinary outpatient care program for patients with chronic low back pain: design of a randomized controlled trial and cost-effectiveness study. **BMC Public Health**, 7, 254
- Leardini, G., Salaffi, F., Montanelli, R., Gerzeli, S. & Canesi, B. (2002). A multi-center cost-of-illness study on rheumatoid arthritis in Italy. **Clinical and Experimental Rheumatology**, 20, 505-515
- Lisbon European Council (2000). Presidency Conclusions. Retrieved 16 April 2009 from [www.europarl.europa.eu/summits/lis1\\_en.htm](http://www.europarl.europa.eu/summits/lis1_en.htm)
- Lundkvist, J., Kastang, F. & Kobelt, G. (2008). The burden of rheumatoid arthritis and access to treatment: health burden and costs. **European Journal of Health Economics**, 8 (Supple 2), 49-60
- Luqmani, R., Hennell, S., Estrach, C., Birrell, F., Bosworth, A., Davenport, G., Fokke, C., Goodson, N., Jeffreson, P., Lamb, E., Mohammed, R., Oliver, S., Stableford, Z., Walsh, D., Washbrook, C. & Webb, F. (2006). On behalf of the British Society for Rheumatology and British Health Professionals in Rheumatology Standards. Guidelines and Audit Working Group British Society for Rheumatology and British Health Professionals in Rheumatology Guideline for the Management of Rheumatoid Arthritis (The first two years). **Rheumatology**, 45, 1167-1169

## References

- MacGregor, E. A., Brandes, J., Eikermann, A. & Giammarco, R. (2004). Impact of migraine on patients and their families: the Migraine and Zolmitriptan Evaluation (MAZE) survey – Phase III. **Current Medical Research Opinion**, 20 (7), 1143-1150
- McLaren, N. (2006). Interactive dualism as a partial solution to the mind-brain problem for psychiatry. **Medical Hypotheses**, 66 (6), 1165-73
- Meijer, E. M., Sluiter, J. K. and Frings-Dresen, M. H. W. (2008). Is workstyle a mediating factor for pain in the upper extremity over time? **Journal of Occupational Rehabilitation**, 18, 262-266
- Meijer, E., Sluiter, J. & Frings-Dresen, M. (2005). Evaluation of effective return-to-work treatment programs for sick-listed patients with non-specific musculoskeletal complaints: a systematic review. **International Archives of Occupational and Environmental Health**, 78 (7), 523-532
- Meijer, E., Sluiter, J., Heyma, A., Sadiraj, K. & Frings-Dresen, M. (2006). Cost-effectiveness of multidisciplinary treatment in sick-listed patients with upper extremity musculoskeletal disorders: a randomised, controlled trial with one-year follow-up. **International Archives of Occupational and Environmental Health**, 79 (8), 654-664
- Ministerie van Social Zaken en Werkgelegenheid (SWZ). (n.d.a.) Continued payment of wages during illness. Retrieved 29 June 2009 from <http://english.szw.nl>
- SWZ (n.d.b.) Sickness benefit. Retrieved 29 June 2009 from <http://english.szw.nl>
- Nachemson, A., Waddell, G. & Norlund A. (2000) Epidemiology of neck and low back pain. In Nachemson, A. & Jonsson E., (eds.) **Neck and Back Pain: The scientific evidence of causes, diagnosis and treatment**, 165-188. Philadelphia: Lippincott Williams & Wilkins
- National Centre for Occupational Diseases. (NCvB). (2009a). Disorders of posture and musculoskeletal system by age group in 2007. Retrieved 7 July 2009 from <http://www.occupationaldiseases.nl/index.php?TID=58&SID=199&ShowTypeID=2>
- NCvB. (2009b). Disorders of posture and musculoskeletal system per body region in 2007. Retrieved 7 July 2009 from <http://www.occupationaldiseases.nl/index.php?TID=58&SID=199&ShowTypeID=2>
- NCvB. (2009c). Disorders of posture and musculoskeletal system per occupational group in 2007. Retrieved 7 July 2009 from <http://www.occupationaldiseases.nl/index.php?TID=58&SID=199&ShowTypeID=2>
- NCvB. (2009d). Notifications of occupational diseases per disease category in 2007. Retrieved 7 July 2009 from <http://www.occupationaldiseases.nl/index.php?TID=58&SID=199&ShowTypeID=2>
- NCvB. (2009e). Notifications of occupational diseases per disease category in 2005. Retrieved 7 July 2009 from <http://www.occupationaldiseases.nl/index.php?TID=58&SID=199&ShowTypeID=2>
- NCvB. (2009f). Occupational Diseases. Retrieved 7 July 2009 from <http://www.occupationaldiseases.nl/index.php?TID=58&SID=199&ShowTypeID=2>

- NCvB. (2009g). Relationship to work underestimated in non-specific lower back pain and mental disorders. Retrieved 7 July 2009 from <http://www.occupationaldiseases.nl/index.php?TID=58&SID=199&ShowTypeID=2>
- OECD. (2009a). Governments must do more to help most vulnerable amid rising unemployment, urges OECD. Retrieved 29 June 2009 from <http://www.oecd.org/>
- OECD. (2009b). OECD Economic Outlook: Netherlands, Preliminary Edition. Retrieved 27 August 2009 from <http://www.oecd.org/dataoecd/6/35/20213240.pdf>
- OECD. (2008a). Economic Survey of the Netherlands, 2008. **OECD Observer**
- OECD. (2008b). OECD says the Netherlands need to continue sickness and disability reform Retrieved 8 July 2009 from <http://www.oecd.org/dataoecd/9/31/41696331.pdf>
- OECD. (2008c). Sickness, Disability and Work (Vol. 3): Denmark, Finland, Ireland and the Netherlands. Data files. Retrieved 8 July 2009 from [http://www.oecd.org/document/62/0,3343,en\\_33873108\\_33873626\\_41662270\\_1\\_1\\_1\\_1,00.html](http://www.oecd.org/document/62/0,3343,en_33873108_33873626_41662270_1_1_1_1,00.html)
- OECD. (2007). Sickness and disability schemes in the Netherlands. Country memo as a background paper for the OECD Disability Review. Retrieved 28 September 2009 from <http://www.oecd.org/dataoecd/35/30/41429917.pdf>
- OECD. (2003). Transforming disability into ability: Policies to promote work and income security for disabled people. Organisation for Economic Co-operation and Development. Paris, France
- Parent-Thirion, A., Fernández Macías, E., Hurley, J. & Vermeylen, G. (2007). **Fourth European Survey on Working Conditions**. Dublin: European Foundation for the Improvement of Living Standards
- Picavet, H. S. J. & Hazes, J. M. W. (2003). Prevalence of self reported musculoskeletal diseases is high. **Annals of the Rheumatic Diseases**, 62, 644-650
- Picavet, H. S. J. & Hoeymans, N. (2004). Health related quality of life in multiple musculoskeletal diseases: SF-36 and EQ-5D in the DMC3 study. **Annals of the Rheumatic Diseases**, 63, 723-729
- Picavet, H. S. J. & Schouten, J. S. A. G. (2003). Musculoskeletal pain in the Netherlands: prevalence, consequence and risk groups, the DMC3-study. **Pain**, 102 (1-2), 167-178
- Pugner, K. M., Scott, D. I., Holmes, J. W. & Hieke, K. (2000). The costs of rheumatoid arthritis: an international long-term view. **Seminars in Arthritis and Rheumatism**, 29, 305-320
- Punnett, L. & Wegman, D. (2004). Work-related musculoskeletal disorders: the epidemiologic evidence and the debate. **Journal of Electromyography and Kinesiology**, 14 (1), 13-23
- Rho, H. J., Schmitt, J., Earle, A. & Heymann, J. (2009). A review of sickness-related leave in 22 high human development index countries. **Center for Economic and Policy Research**

## References

- Roelen, C. A. M., Koopmans, P. C., Notenbomer, A. & Groothoff, J. W. (2008). Job satisfaction and sickness absence: a questionnaire survey. **Occupational Medicine**, 58, 8, 567-571. DOI: 10.1093/occmed/kqn113
- Royal College of Physicians. (2008). Consultant Physicians Working for Patients, The duties, responsibilities and practice of physicians. 4th edition. London: The Royal College of Physicians. Retrieved 9 June 2009 from <http://www.rcplondon.ac.uk/pubs/contents/03560858-60e3-44c3-87eb-716a6d1d696c.pdf>
- Schoonheim, J. & Smits, J. (2007). Report on the employment of disabled people in European countries. **Academic Network of European Disability experts (ANED): the Netherlands**
- Schultz, I. Z., Stowell, A. W., Feuerstein, M. & Gatchel, R. J. (2007). Models of return to work for musculoskeletal disorders. **Journal of Occupational Rehabilitation**, 17 (2), 327-352
- Scottish Intercollegiate Guidelines Network (SIGN) (2000). **Management of early rheumatoid arthritis**, SIGN publication 48. Edinburgh: Scottish Intercollegiate Guidelines Network
- Sieper, J., Braun, J., Rudwaleit, M., Boonen, A. & Zink, A. (2002). Ankylosing spondylitis: an overview. **Annals of the Rheumatic Diseases**, 61 (Supplement III), 8-18
- Sluiter, J. K. & Frings-Dresen, M. H. W. (2008). Quality of life and illness perception in working and sick-listed chronic RSI patients. **International Archives of Occupational and Environmental Health**, 81, 495-501
- Smyth, M., Stone, A., Hurewitz, A. & Kaell, A. (1999). Effects of writing about stressful experiences on symptom reduction in patients with asthma or rheumatoid arthritis. **Journal of the American Medical Association**, 281, 1304-1309
- Sokka, T. & Pincus, T. (2001). Markers for work disability in rheumatoid arthritis. **Journal of Rheumatology**, 28, 1718-1722
- Spreeuwers, D., de Boer, A. G. E. M., Verbeek, J. H. A. M., van Beurden, M. M. and van Dijk, F. J. H. (2008). Diagnosing and reporting of occupational diseases: a quality improvement study. **Occupational Medicine**, 58, 115-121
- Statistics Netherlands. (2009a). Improvement in healthy lifestyle stagnating. Retrieved 9 July 2009 from <http://www.cbs.nl/en-GB/menu/themas/gezondheid-welzijn/publicaties/artikelen/archief/2009/2009-020-pb.htm>
- Statistics Netherlands. (2009b). Key figures of the population forecasts 2008-2050 Retrieved 29 June 2009 from <http://statline.cbs.nl/StatWeb/publication/?DM=SLEN&PA=03766ENG&D1=4-6&D2=0&D3=0.2,7,12,17,22,27,32,I&LA=EN&HDR=G1,G2&STB=T&VW=D>
- Statistics Netherlands. (2009c). Reported health and lifestyle. Retrieved 9 July 2009 from <http://statline.cbs.nl/StatWeb/dome/default.aspx?LA=EN>

- Statistics Netherlands. (2009d). Statistical yearbook, 2009. Retrieved 27 August 2009 from <http://www.cbs.nl/NR/rdonlyres/421A3A8C-956D-451D-89B6-D2113587F940/0/2009a3pub.pdf>
- Statistics Netherlands. (2007). Obesity leads to more sickness absence. Retrieved 9 July 2009 from <http://www.cbs.nl/en-GB/menu/themas/gezondheid-welzijn/publicaties/artikelen/archief/2007/2007-080-pb.htm>
- Steenstra, I. A., Anema, J. R., Bongers, P. M., de Vet, H. C. W. & van Mechelen, W. (2003). Cost effectiveness of a multi-stage return to work program for workers on sick leave due to low back pain, design of a population based controlled trial. **BMC Musculoskeletal Disorders**, 4, 26
- Steenstra, I. A., Anema, J. R., Bongers, J. R., de Vet, H. C. W. Knol, D. L. & van Mechelen, W. (2006). The effectiveness of graded activity for low back pain in occupational healthcare. **Occupational and Environmental Medicine**, 63 (11), 718-725
- Sullivan, M. J. & D'Eon, J. L. (1990). Relation between catastrophising and depression on chronic pain patients. **Journal of Abnormal Psychology**, 99, 260-263
- Swartling, M. S., Hagberg, J., Alexanderson, K. & Wahlstrom, R. A. (2007). Sick-listing as a psychosocial work problem: a survey of 3997 Swedish physicians. **Journal of Occupational Rehabilitation**, 17(3), 398-408
- van Aken, J., van Bilsen, J. H. M., Allaart, C. F., Huizinga, T. W. J. & Breedveld, F. C. (2003). The Leiden Early Arthritis Clinic. **Clinical and Experimental Rheumatology**, 21, Suppl. 31, S100-S105
- van den Heuvel, S. G., Ijmker, S., Blatter, B. M. and de Korte, E. M. (2007). Loss of productivity due to neck/shoulder symptoms and hand/arm symptoms: results from the PROMO-study. **Journal of Occupational Rehabilitation**, 17, 3, 370-382
- van den Hout, W. B., de Buck, P. D. M. & Vliet Vliend, T. P. M. (2007). Cost-utility analysis of a multidisciplinary job retention vocational rehabilitation program in patients with chronic arthritis at risk of job loss. **Arthritis & Rheumatism (Arthritis Care & Research)**, 57, 5, 778-786
- van den Hout, W. B., Tijhuis, G. J., Hazes, J. M. W., Breedveld, F. C. & Vliet Vlieland, T. P. M. (2003). Cost effectiveness and cost utility analysis of multidisciplinary care in patients with rheumatoid arthritis: a randomised comparison of clinical nurse specialist care, inpatient team care, and day patient team care. **Annals of the Rheumatic Diseases**, 62, 308-315
- van den Hurk, K., van Dommelen, P., van Buuren, S., Verkerk, P. H., & HiraSing, R. A. (2007). Prevalence of overweight and obesity in the Netherlands in 2003 compared to 1980 and 1997. **Archives of Disease in Childhood**, 92, 992-995

## References

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- van der Kooij, S. M., le Cessie, S., Goekoop-Ruiterman, Y. P. M., de Vries-Bouwstra, J. K., van Zeben, D., Kerstens, P. J. S. M. et al. (2009). Clinical and radiological efficacy of initial vs delayed treatment with infliximab plus methotrexate in patients with early rheumatoid arthritis. **Annals of the Rheumatic Diseases**, 68, 1153-1158
- van Duijn, M. & Burdorf, A. (2008). Influence of modified work on recurrence of sick leave due to musculoskeletal complaints. **Journal of Rehabilitation Medicine**, 40, 576-581
- Van Eerd, D., Beaton, D., Cole, D., Lucas, J., Hogg-Johnson, S. & Bombardier, C. (2003). Classification systems for upper-limb musculoskeletal disorders in workers: a review of the literature. **Journal of Clinical Epidemiology**, 56, 925-936
- van Hooff, M., van den Bossche, S. & Smulders, P. (2008). The Netherlands Working Conditions Survey. **TNO Quality of Life**
- Varekamp, I., Haafkens, J. A., Detaille, S. I., Tak, P. P., van Dijk, F. J. H. (2005). Preventing work disability among employees with rheumatoid arthritis: What medical professionals can learn from the patients' perspective. **Arthritis & Rheumatism (Arthritis Care & Research)**, 53, 965-972
- Varekamp, I., Heutink, A., Landman, S., Koning, C. E. M., Vries, G. & van Dijk, F. J. H. (2009). Facilitating empowerment in employees with chronic disease: Qualitative analysis of the process of change. **Journal of Occupational Rehabilitation**, DOI: 10.1007/s10926-009-9188-x
- Varekamp, I., Verbeek, J. H. & van Dijk, F. J. (2006). How can we help employees with chronic diseases to stay at work? A review of interventions aimed at job retention and based on an empower perspective. **International Archives of Occupational and Environmental Health**, 80 (2), 87-97
- Veale, A., Woolf, A. & Carr, A. (2008), Chronic musculoskeletal pain and arthritis: Impact, attitudes and perceptions. **Irish Medical Journal**, 101 (7), 208-210
- Verstappen, S. M. M., Jacobs, J. W. G., Kruize, A. A., Ehrlich, J. C., van Albada-Kuipers, G. A., Verkleij, H. et al. (2007). Trends in economic consequences of rheumatoid arthritis over two subsequent years. **Rheumatology**, 46, 968-974
- Verstappen, S. M. M., Boonen, A., Bijlsma, J. W. J., Buskens, E., Verkleij, H., Schenk, Y. et al. (2005). Working status among Dutch patients with rheumatoid arthritis: work disability and working conditions. **Rheumatology**, 44, 202-206
- Verstappen, S. M. M., Verkleij, H., Bijlsma, J. W. J., Buskens, E., Kruize, A. A., Heurkens, A. H. M. et al. (2004). Determinants of direct costs in Dutch rheumatoid arthritis patients. **Annals of the Rheumatic Diseases**, 63, 817-824
- Waddell, G. & Burton, A. K., (2006a). **Is work good for your health and well-being?** London: Department for Work and Pensions
- Waddell, G. & Burton, A. K. (2006b). Principles of rehabilitation for common health problems, in O'Donnell, M. **Rehabilitation: Keeping people in work**. Chief Medical Officer's Report 2006. Dorking, UnumProvident

- Wallenius, M., Skomsvoll, J. F., Koldingsnes, W., Rødevand, E., Mikkelsen, K., Kaufmann, C. et al., (2008). Work disability and health-related quality of life in males and females with psoriatic arthritis. **Annals of Rheumatic Diseases**, 68, 685-689
- Weevers, H-J. A, van der Beek, A. J., van den Brink-Muinen, A., Bensing, J., Boot, C. R. L., van Mechelen, W. (2009). Communication about work between general practitioners and patients consulting for musculoskeletal disorders. **Quality in Primary Care**, 17 (3), 197-203
- Werner, E. L., Lærum, E., Wormgoor, M. E., Lindh, E. & Indhal, A. (2007). Peer support in an occupational setting preventing LBP-related sick leave. **Occupational Medicine**. published online 4 October 2007, DOI:10.1093/occmed/kqm094
- World Health Organisation (WHO) Scientific Group (2001). **International Classification of Functioning, Disability and Health**. Geneva: WHO. Retrieved 15 April 2009 from <http://www3.who.int/icf/icftemplate/cfm>
- WHO Scientific Group (2003). **The burden of musculoskeletal conditions at the start of the new millennium**. Geneva: WHO
- WHO. (2004). Highlights on health in the Netherlands: 2004. Geneva: WHO
- Young, A., Dixey, J., Cox, N., Davis, P., Devlin, J., Emery, P., Gallivan, S., Gough, A., James, D., Prouse, P., Williams, P. & Winfield, P. (2000). How does functional disability in early rheumatoid arthritis (RA) affect patients and their lives? Results of five years of follow-up in 732 patients from the early RA study (ERAS). **Rheumatology**, 39, 603-611
- Young, A., Dixey, J., Kulinskaya, E., Cox, N., Davies, P., Devlin, J., Emery, P., Gough, A., James, D., Prouse, P., Williams, P. & Winfield, P. (2002). Which patients stop working because of rheumatoid arthritis? Results of five years' follow up in 732 patients from the early RA study (ERAS). **Annals of Rheumatic Diseases**, 61, 335-340
- Zirkee, E. J. M., Sneep, A. C., de Buck, P. D. M., Allaart, C. F., Peeters, A. J., Runday, H. K. et al. (2008). Sick leave and work disability in patients with early arthritis. **Clinical Rheumatology**, 27, 11-19
- Zampolini, M., Bernadinello, M. & Tesio, L. (2007). RTW in back conditions. **Disability and Rehabilitation**, 29 (17), 1377-1385

## 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.

Dr Birgitte Blatter	Team Leader, Research Center Physical Activity TNO
Prof Annelies Boonen	Rheumatologist Maastricht University Medical Centre
Ellen Bos	Researcher TNO
Dr Alex Burdorf	Erasmus Medical Centre Department of Public Health

## Appendix 2: Benchmarking grid

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Prof Mieke Hazes

Professor and Chair  
Erasmus Medical Centre Rotterdam  
Department of Rheumatology

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*	-	-	-
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*	-	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*	-	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*	-	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

	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	
			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/misoc/db/public/compareTables.do?lang=en">http://ec.europa.eu/employment_social/misoc/db/public/compareTables.do?lang=en</a>

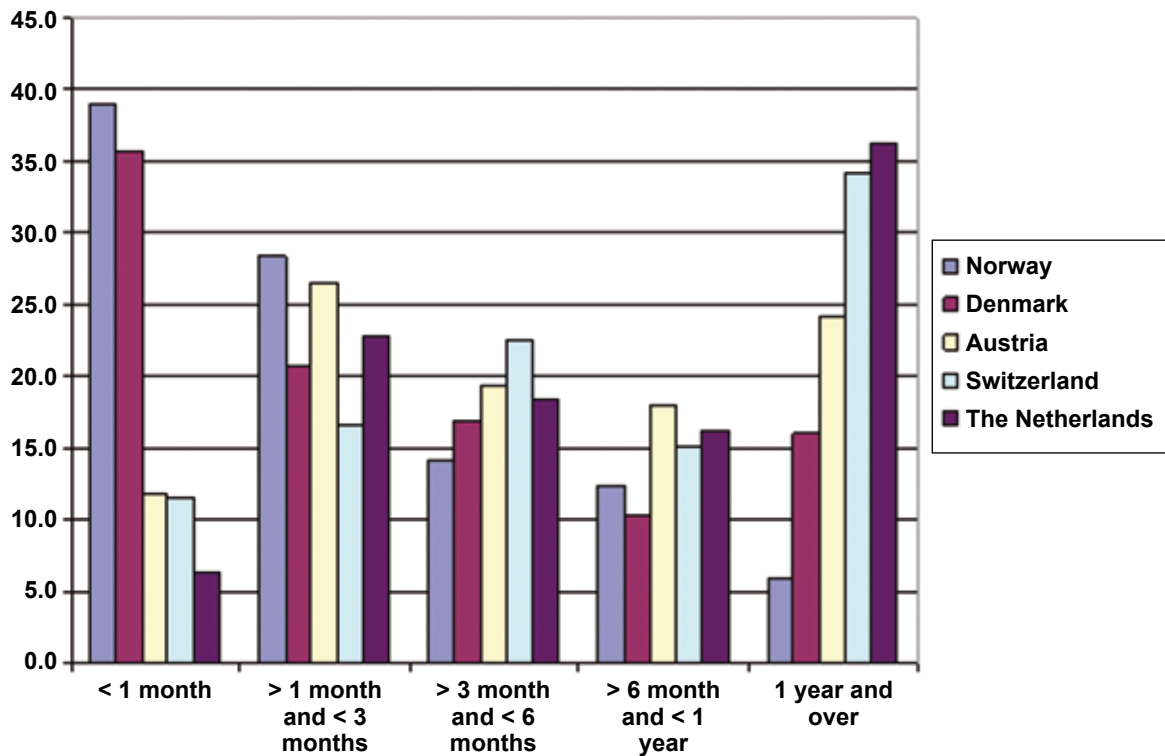
Variable	Definition – Provided by Source	Source
<i>Health outcomes</i>		
Average days absent due to health reasons	The median number of days absent because of health.	Parent-Thirion, Fernández Macías, Hurley and Vermeylen, 2007
% sickness absence due to health reasons 2005	% reporting absence caused 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
Practicing 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
Practicing general practitioners (GPs), density per 1,000 population 2005	Number of practicing GPs per 1,000 population.	OECD, 2009c

### References

- Eurostat. (2009a). **Hourly labour costs – EUR**. Retrieved on 4 June 2009 from <http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&init=1&language=en&pcode=tps00173&plugin=1>
- Eurostat. (2009b). **Labour productivity per hour worked, GDP in PPS**. Retrieved on 4 June 2009 from <http://epp.eurostat.ec.europa.eu/tgm/download.do;jsessionid=9ea7974b30e89c4d0a99af7e42a9b710fb960bc43c29.e34SbxiOchiKc40LbNmLahiKaNyMe0?tab=table&plugin=0&language=en&pcode=tsieb040>
- Eurostat. (2009c). **Social benefits by function – (per cent of total benefits)**. Retrieved on 4 June 2009 from <http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&init=1&language=en&pcode=tps00106&plugin=1>
- EWCS – fourth edition. (2005). [Data file]. Dublin, Ireland: European Foundation for the Improvement of Living and Working Conditions
- Lundkvist, J., Kastäng, F. & Kobelt, G. (2008). The burden of rheumatoid arthritis and access to treatment: health burden and costs. **European Journal of Health Economics**, 8(Supple 2), 49-60
- OECD (2009a). **Annual Labour Force Statistics: Population 15-64 as per cent of population**. Retrieved on 15 July 2009 from <http://stats.oecd.org/Index.aspx>
- OECD (2009b). **OECD Fact book 2009: Economic, Environmental and Social Statistics**. Retrieved on 15 July 2009 from <http://www.sourceoecd.org/rpsv/factbook2009/index.htm>
- OECD. (2009c). **OECD Health Data 2008 – Selected Data**. Retrieved on 4 June 2009 from <http://www.ecosante.fr/index2.php?base=OCDE&langh=ENG&langs=ENG>
- OECD (2009d). **OECD Society at a Glance**. Retrieved on 15 July 2009 from <http://oberon.sourceoecd.org/vl=646290/cl=23/nw=1/rpsv/societyataglance2009/index.htm>
- Osterkamp, R. & Rohn, O. (2007). Being on sick leave: Possible explanations for differences of sick-leave days across countries. **CESifo Economic Studies**, 53, 91-114
- Parent-Thirion, A., Fernández Macías, E., Hurley, J. & Vermeylen, G. (2007). **Fourth European Survey on Working Conditions**. Dublin: European Foundation for the Improvement of Living Standards.
- Royal College of Physicians. (2008). **Consultant Physicians Working for Patients, The duties, responsibilities and practice of physicians**. 4<sup>th</sup> edition. London: The Royal College of Physicians. Retrieved on 9 June 2009 from <http://www.rcplondon.ac.uk/pubs/contents/03560858-60e3-44c3-87eb-716a6d1d696c.pdf>
- WHO. (2006/7). **Highlights on health**. Geneva: WHO

## Appendix 3: Long term unemployment

Long term unemployment rates in countries with low overall unemployment, 2008



Sources: OECD. (2009). *Annual labour force statistics: Rate of unemployment as per cent of civilian labour force*. OECD.Stat Retrieved 27 August 2009 from <http://stats.oecd.org/index.aspx?r=325510>  
 OECD. (2009). *Incidence of unemployment by duration*. OECD.Stat. Retrieved 27 August 2009 from <http://stats.oecd.org/Index.aspx?DatasetCode=MEILABOUR>

**Note:** European countries with low unemployment rates in 2008: Norway: 2.6 per cent; Denmark: 3.4 per cent; Austria: 3.8 per cent; Switzerland: 3.3 per cent; The Netherlands: 2.8 per cent



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