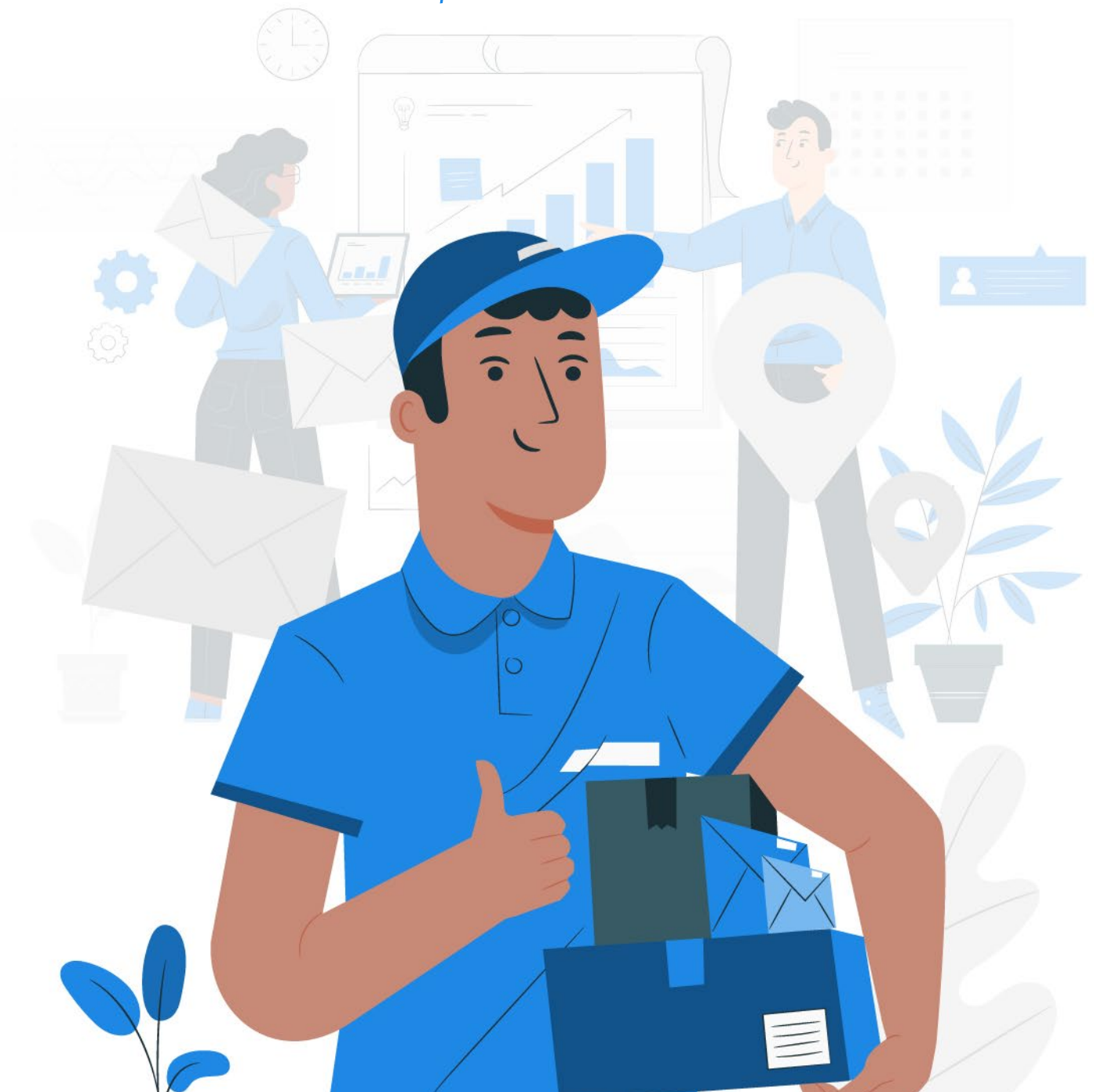


# GOOD PRACTICE GUIDELINES

*For pain and musculoskeletal disorders in  
workers and companies.*





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## Introduction

Actions to improve occupational health and safety arose from the need to protect from accidents employees working in European industries, such as nuclear power plants or large-scale chemical industries. Today, the field has evolved in many directions, with the prevention and management of musculoskeletal disorders (MSDs) being one of its main lines of action. MSDs are the main reason for workers to take time off work. Specifically, the prevalence of MSDs represents more than 1.3 billion people and a loss of more than 100 million years of life due to disability; being a common cause of disability and sick leave.

Historically, the workplace approach to MSDs has focused on adopting ergonomic measures, which has been positive in some cases. However, despite ergonomic and biomechanical measures being widely implemented in the workplace, the increasing prevalence of MSDs globally indicates that they are not sufficient measures on their own. Therefore, new holistic approaches that take biological, psychological, and social aspects are needed.

The European Prevent4Work Alliance for innovative measures to prevent MSDs in the workplace, has developed this document as a guide based on the most recent and relevant scientific knowledge. Both companies and their employees can benefit from the recommendations of this guide.

## Current knowledge and evidence on musculoskeletal disorders.

Musculoskeletal pain and disorders (hereafter referred to as MSDs) are the most common work-related health problem in the countries of the European Union. The term MSDs refers to health problems associated with structures such as muscles, ligaments, joints, tendons, nerves, etc. The most common symptom of MSDs is pain. However, inflammation, weakness, stiffness, fatigue, loss of mobility and function, as well as reduced concentration and physical and psychological endurance, may also occur. In addition, it is also common for workers suffering from MSDs to experience psychosocial disturbances such as stress or anxiety. Although in some cases of musculoskeletal pain it is associated with real damage or injury, in most situations in which pain related to the musculoskeletal system persists over time, there is no clear anatomical or biomechanical cause that justifies it. This is why the scientific community accepts that persistent pain in MSDs is a complex entity that depends on several factors.

In the vast majority of cases of MSDs, the pain resolves on its own or within a short period. However, a percentage becomes recurrent and persistent over time, making pain the main problem that limits the sufferer's daily activity. Persistent pain is therefore defined as "pain that persists beyond the theoretical healing time of an injury, which for many tissues is around 12 weeks". In these cases of long-lasting pain, it is clear that its presence is not necessarily associated with damage or with the maintenance of the injury over time, but that it has to do with the combination of more factors, such as a greater ease of feeling pain when making efforts, postures, or everyday movements that are not necessarily harmful; as well as stress, fatigue, or poor physical fitness. Likewise, erroneous beliefs about the origin of pain (for example, pain equals damage) contribute to it being more disabling and to its perpetuation over time.

MSDs, due to the disability they cause to the people that suffer from them, represent a high economic burden, both for individuals and companies, as well as for the society in general. Worldwide studies in the "Global Burden of Disease" series show that MSDs are responsible for almost 30% of the years lived with disability, being low back pain the condition with the most significant impact. Notably, reports show that MSDs affect workers of all ages and in all types of sectors. Furthermore, the number of workers living their daily lives with pain associated with MSDs continues to increase across the European Union. Similarly, long-term pain associated with MSDs is the leading cause of disability and the main reason of work absence. In this respect, according to the European Union Labour Force Surveys, MSDs account for around 60% of all work-related health problems and entail the 60% of sickness absence and permanent incapacity for work.

Therefore, one of the main consequences of MSDs is considered to be that they can adversely affect a person's ability to carry out their usual work activities normally. But, at the same time, while some workers are unable to continue working because of their condition, many prefer not to stop doing so. Therefore, increasing the number of workers who can work in healthy conditions despite the pain could be achieved by adapting the workplace to accommodate their needs. However, one of the major problems to date is that initiatives for the prevention and treatment of MSDs in the workplace have been based almost exclusively on modifying ergonomic conditions and physical demands on workers. Although the physical demands of the workplace are an important factor, all reports reveal that the prevalence of MSDs has remained equally high in recent years. This may be due to the tendency to blame a single factor for the occurrence of pain (e.g., posture) in the assessment and treatment of the working population; but the truth is that many factors can influence MSDs. Hence, it must be understood that posture and physical activities at work are part of other factors that contribute to the start and persistence of MSDs and pain. Therefore, it is necessary to carry out adaptations in the workplace, taking into account physical factors and organisational, psychosocial, socio-demographic, and individual ones. In many EU countries, the psychosocial factors of the worker are increasingly taken into account and, consequently, adaptations such as teleworking, a gradual return to work, adaptation of tasks, temporary job changes, or flexible working hours, among others, are being carried out.

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## **Prevalence:**

Throughout this section, the guide shows data and statistics about MSDs in general and their relationship with 1) the social and political environment; 2) the economic environment; 3) the work environment; and 4) socio-demographic factors.

*MSDs in general and their relationship with the social and political environment:*

60% of workers in the European Union report having had an MSD in the last year that causes pain, while 18% of workers affected by an MSD report having a chronic health problem. Low back pain is the most common MSD (43%), followed by MSDs in the neck and upper limbs (41%). However, the vast majority of workers with MSDs (62%) report that their general health status is good or very good, indicating that a large proportion of workers do not consider this type of problem to be serious.

Within the European Union, Finland is the country with the highest percentage of workers affected by one or more MSDs in the last year (79%), followed by France (75%) and Denmark (73%); while Hungary is the country with the lowest rate (40%).

*MSDs and their relation to the work environment:*

More than 60% of the working population state that their health is not negatively affected by work performance, suggesting that a large proportion of MSDs may not be related to work performance. Furthermore, there is no difference between the percentage of employed workers and unemployed people who report having an MSD.

After MSDs, psychological disorders such as stress, depression, or anxiety rank as the second most serious health problem, suggesting a potential association between these two types of disorders. In this sense, many scientific investigations have shown the coincidence of musculoskeletal pain and psychological problems, considering the presence of stress or anxiety as a risk factor for developing persistent pain in MSDs.

*MSDs and their relationship with the economic environment:*

Studies indicate that MSDs suppose a considerable negative socio-economic impact on the economy due to the loss of worker productivity. This loss of productivity amounts to 2% of the European Union's Gross Domestic Product (about 240 billion euros).

In the European Union, MSDs are most frequent in the construction sector, water supply (such as sewerage and waste management), agriculture, forestry and fishing, health activities, and social work. In addition, low back pain is more frequent in sectors related to transport, construction, and health care activities. On the other hand, neck pain is more frequent in financial activities, information and communication, real estate activities, public administration, and education. At the same time, upper limb MSDs are more frequent in the construction and water supply sectors.

*MSDs and their relationship with different socio-demographic factors:*

On the one hand, workers over 50 years are more than twice as likely to suffer from MSDs than those under 35. On the other hand, a progressive increase in the prevalence of MSDs in younger workers (16-29 years old) has been detected in the last decade, going from 11% in 2010 to 18% in 2017.

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**Impact:**

In cases where an MSD affects workers' health, work performance may be affected. On the one hand, they can reduce productivity -which is understood as the output workers produce in an hour. On the other hand, they can increase absenteeism, -understood as the reduction of the number of hours that a person can work. Both the impact on health and the impact on work activity are discussed in the following section.



### *Impact on health*

As noted above, despite having an MSD, the vast majority of workers report good or very good health. These data reinforce the idea that it is possible to work in healthy conditions despite the presence of pain. Moreover, only a tiny fraction of people are hospitalised because of their MSD-related ailments (1,295 per 100,000 people, i.e., about 1.3%). However, the presence of MSDs is frequently associated with other non-musculoskeletal problems such as headaches or sleep disturbance. In addition, there is also a strong association between higher levels of anxiety and general fatigue in workers and a higher likelihood of suffering from MSDs. Similarly, higher mental wellbeing levels are associated with a lower likelihood of suffering from MSDs.

The results of the European Working Conditions Survey divide workers into four groups: Group 1 (no health problems); Group 2 (few health problems); Group 3 (MSDs and other health problems); and Group 4 (MSDs and fatigue):

- Group 1, no health problems: This group includes about 23% of all workers, of whom the vast majority believe that their health or safety is not at risk because of their work (92%).
- Group 2, few health problems: This group includes about 33% of all workers. Most of these health problems are related to MSDs. Others frequently mentioned are headaches, sleep problems, and general fatigue.
- Group 3, MSDs and other physical health problems: This group includes approximately 23% of all workers, of which 51% report general fatigue, 49% headaches, 55% sleep problems, and 32% anxiety.
- Group 4, MSDs and fatigue. It includes about 21% of all workers. The main characteristic of this group is that it combines MSD complaints with fatigue (92%).

### *Impact on work activity.*

Although most workers with MSDs report being in good general health, another third of workers with MSDs think that they will not be able to continue working until the age of 60. It is believed that, in the long term, workers with persistent pain may not be able to continue working if no action is taken. Thus, approximately 20% of all workers in the European Union with MSDs believe that adaptations at work are necessary to help with their health problems. Among workers with chronic health problems, only 20% say that their workplace or work activity has been modified to be adapted to their health condition.

As for work presenteeism and absenteeism, the former refers to the fact that people work under a condition of pain, despite not carrying out their work in a normal way and therefore being less productive, perhaps due to social pressure or the work environment itself (e.g., fear of dismissal). However, workers with MSDs also tend to be absent more frequently than when having other health problems, and their absence lasts longer. Moreover, among workers with a MSD

and persistent pain, 26% report more than 8 days of absence in the last year, compared to a 7% of workers without any health problems. It is noteworthy that more than 50% of workers with MSDs are absent from work for at least 1 day, while around 23% are absent for at least 10 days.

It has been estimated that the costs attributed to absenteeism and presenteeism are very high. Therefore, due to the high prevalence of absenteeism caused by MSDs, it is necessary to underline the importance of actions aimed at prevention and those focused on rehabilitation and return to work once an MSD has already occurred (these measures are explained in sections 4 and 5).

## Chapter 2

# Risk factors for pain and persistent pain in work-related MSDs.

The causes of pain in MSDs are multifactorial, and the work-related risk factors for different MSDs are diverse. The main risk factors include individual, physical, psychosocial, organisational, and socio-demographic factors. These can play a crucial role in the occurrence and prevalence of persistent pain as well as other health problems/issues. Therefore, it is of vital importance that companies and their employees are aware of these risks in their workplaces.

### Individual factors:

The most likely risk factor for having an episode of pain in MSDs is a previous episode of musculoskeletal pain. Also, higher levels of pain intensity, psychological distress, and the presence of pain in multiple parts of the body are considered predictors of persistent pain and may lead to some functional limitations.

In addition, people with comorbidities (such as asthma, headache, and diabetes) or health conditions (such as inadequate mental health, psychological distress, and depression) are considered to have an increased risk of developing persistent and disabling pain, compared to those without them. Similarly, lifestyle factors such as sedentary lifestyle, smoking, and obesity are associated with both the incidence of a new pain event in MSDs and the development of persistent and disabling pain.

### Physical risk factors in the workplace:

There is a relationship between MSD pain and working in awkward and sustained positions, strenuous physical work, repetitive work, and prolonged computer work.

For example, low back and limb pain prevalence is associated with working in awkward/fatiguing/painful positions, with carrying or moving heavy loads, and with repetitive hand or arm movements. In addition, exposure to the vibration

of hand tools also increases the likelihood of having pain in any of these body regions. Finally, exposure to low temperatures is also associated with a higher prevalence of pain in the upper and lower extremities.

Scientific studies indicate that prolonged computer work may be associated with wrist and/or hand pain. In this regard, one in three workers who use computers at work regularly, report experiencing discomfort in the arm, wrist, hand, shoulder, or neck on a “regular” or “persistent” basis, in terms of pain, stiffness, tingling, or numbness. However, there is no association between prolonged sitting times and lower back or upper limb pain. Furthermore, although prolonged sitting is not dangerous for the back, it is important to remember that breaks, movement, and physical activity have positively impacted general health.

The most common risk factors are prolonged static standing, repetitive hand movements, and prolonged computer work. The most recent year for which data on the effects of prolonged standing is available is 2010. In that year, 69% of workers across the European Union had to stand at least a quarter of the time at their workstations, making it the most prevalent physical risk factor for MSD pain.

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### **Organisational and psychosocial risk factors in the workplace:**

Several organisational and psychosocial risk factors are associated with an increased likelihood of workers suffering from MSD and persistent pain, such as anxiety, general fatigue (physical and mental), low level of mental wellbeing, or being verbally abused at the workplace.

More than half of the workers report work-related stress, a fast pace of work with no margin for error, or the need to hide feelings at the workplace. To a lesser extent, other factors such as lack of mental wellbeing, harassment and bullying, or a lack of feeling that the work is well done were also observed. Apart from that, differences in organisational and psychological factors related to pain in MSDs have been observed depending on the job and the sector. For example, in most jobs, between 8% and 18% of the workers report that they cannot rest whenever they want to. This percentage is higher for operators and assemblers (30%). Another example is service and sales workers, where 82% report that their peace of mind at work depends on the immediate demands of customers. In comparison, this percentage drops to 34% in agriculture and forestry. Likewise, risk factors for work-related stress include excessive workload, lack of autonomy, and lack of support from bosses or colleagues.

These risk factors produce a feedback loop with MSDs and persistent pain. On the one hand, suffering from high anxiety or general fatigue levels can worsen an existing MSD and contribute to sustain the pain over time. On the other hand, the presence of pain and persistent pain in MSDs can increase anxiety or general fatigue levels. It should not be forgotten that people with persistent pain often worry about the future, especially about whether their condition will worsen and lead to job loss. Hence, they increase the likelihood of risk factors such as stress, anxiety, or depression, which will worsen the pain condition.

Table 1. Summary of contributing factors and consequences of persistent and disabling pain in MSDs.

RISK AND CONTRIBUTING FACTORS	CONSEQUENCES AND PERPETUATORS
<b>1. Lifestyle:</b>	<ul style="list-style-type: none"> <li>- Sedentary lifestyle</li> <li>- Smoking</li> <li>- Overweight</li> </ul>
<b>2. Comorbidities:</b>	<ul style="list-style-type: none"> <li>- Asthma</li> <li>- Headache</li> <li>- Diabetes</li> <li>- Mental health problems</li> <li>- Some diseases (e.g. ankylosing spondylitis)</li> </ul>
<b>3. Physical factors:</b>	<ul style="list-style-type: none"> <li>- Heavy or strenuous physical work</li> <li>- Prolonged and sustained postures.</li> </ul>
<b>4. Psychological factors:</b>	<ul style="list-style-type: none"> <li>- Job dissatisfaction</li> <li>- Depression</li> <li>- Anxiety</li> </ul>
<b>5. Social and organisational factors:</b>	<ul style="list-style-type: none"> <li>- Unemployment.</li> <li>- Harassment at work.</li> <li>- Lack of autonomy and support from bosses or colleagues.</li> </ul>

Chapter 3

## Musculoskeletal disorders and their relationship to the world work: a risk reduction approach.

Companies and employers should take a proactive approach to reduce MSD risk factors and help workers with pain or disability due to MSDs. The aim should be to provide a working environment that:

- 1 takes preventive action to reduce the risks of MSDs for all workers;*
- 2 encourages early intervention for any MSDs and makes reasonable adjustments so that people can work properly despite their MSD;*
- 3 promotes rehabilitation and effective return-to-work plans; and*

*4 promotes adequate musculoskeletal health and is as inclusive as possible for all workers.*

All these key elements for a comprehensive approach are explained below.

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### **Prevention of MSDs.**

The prevention and management of work-related MSDs help maintain adequate health and safety levels among workers throughout their working lives. It can also make it easier for workers with MSDs to perform their duties in an adapted or partial manner, rather than prolong unnecessary sick leaves.

Preventive measures should address the totality of the tasks performed, including work-related psychosocial factors, and not be limited to ergonomic or building changes alone. Examples of such measures could include changes in workstations, in the equipment or tools used, how tasks are performed, task rotation, increasing breaks and/or rest, improving lighting or temperature, or reducing exposure to vibrations.

If a person experiences stress or anxiety in the workplace, it will be more difficult to ignore the pain, and the MSD will have a greater negative impact on their life. Therefore, stress management should be part of preventing MSDs at work. In addition, the involvement and participation of workers are essential to identify risks and to decide on improvements. For this, workers should receive up-to-date training on pain and MSDs from experts. In addition, they should be encouraged to report any MSD risk factors of which they are aware and any work-related MSD symptoms. Workers should also receive clear instructions, information, and appropriate training on any measures taken to control the risks.

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### **Early identification and intervention:**

Early identification in the work environment means discovering the tasks that can lead to MSDs and understanding who is at risk of suffering from them. It means encouraging or having a system in place for workers to report problems at an early stage, so that timely interventions can be implemented to maintain work capacity. In addition, early intervention means taking action (such as providing professional support, ensuring prompt referral and diagnosis, and adjusting the work environment) as soon as symptoms appear. This significantly reduces the likelihood of prolonged absence from work. Early intervention can reduce absenteeism and bring real savings to national health and welfare systems.

The longer a worker is absent with an MSD, the less likely they will return to work. If a worker continues to work with persistent pain in inappropriate circumstances in the workplace, the problem may become more complex, and further supportive measures may be necessary. This is why early intervention for MSD, both in the health care setting and in the workplace, is essential. The earlier the MSD is treated, the less it impacts on the individual and their work.

Early intervention in the workplace should include the following:

- Allow early and gradual return to work. In many cases of persistent pain not associated with serious pathologies, it will be desirable to return to work, even if the pain has not entirely disappeared.
- Workplace screening with standardised questionnaires for early signs or manifestations.

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### **Principles for effective rehabilitation and return to work:**

Effective rehabilitation requires a joint approach involving all relevant actors, including the healthcare provider, the employer, the line manager, and the worker, all working together to support the worker. Most workers who develop persistent pain can continue to work, provided that some adjustments are made to continue working within their capabilities. However, in some cases, the worker may need time off work, and an effective rehabilitation and return-to-work planning will be needed to help them return to work.

The most relevant aspects for companies to ensure the successful return of workers with pain and MSDs are detailed in chapters 5 and 6.

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### **Promotion of musculoskeletal health at work and the role of healthcare:**

The healthcare goals are the correct diagnosis, effective treatment, and management of MSDs to maintain the worker's health. However, the healthcare team should also aim to support the person to continue working, and the person should consider staying at work or returning to work as part of their treatment. Unfortunately, work is not often discussed during consultations, neither in primary nor secondary care.

As noted above, in addition to physical factors, people with MSDs and persistent pain may have to deal with psychological factors related to their condition, which may affect their ability to work. Where appropriate, healthcare should include pain management support and psychological therapies, such as work-oriented cognitive behavioural therapy, to help workers with depression or anxiety to stay or return to work.

In addition, workplaces should encourage exercise activities. For example, practising yoga or learning relaxation techniques along with physical strengthening exercises and activities may be recommended. People often interpret pain as a warning to avoid movement. However, keeping moving and having an active lifestyle is often the best approach to pain management, especially persistent pain. Gradual work-focused activity exercises can also help people return to work after MSDs. However, it is essential to keep in mind that if the MSD is work-related, the health treatment and the graded exercises will be ineffective in the long term if work-related risk factors are not also addressed.

The following tips can help a worker when talking to a health professional about work:

- Explain what work you do.
- Explain that you want to find a way to continue working and that the way to do this is part of your treatment.
- Make a list of the work-related activities that you have difficulties with, when symptoms occur and worsen.
- Make a list of possible solutions you have come up with.
- Discuss strategies you could use to manage your symptoms and pain at work.

## Chapter 4

### **Good practice in the treatment of musculoskeletal disorders in the workplace.**

Contrary to common belief, work should not be perceived as an obstacle to recovery from MSDs. On the contrary, work is the primary source of social interaction for most people, and losing one's job would increase the risk of health problems. It is important to note that there is no reason to believe that work is detrimental to people with a MSD and pain. In fact, for most, the physical burden of work is less than the burden of exercise or daily activities recommended for all those suffering from pain. However, despite the benefits of returning to work, the process can be complex.

A common obstacle is the existence of erroneous beliefs about pain, such as the belief that work damages the body or that sitting incorrectly is the source of pain. These thoughts are associated with increased pain, fear, and worry. In addition, co-workers may share these thoughts, which can lead to stigmatisation and questioning whether the person in pain will be able to perform their job efficiently in the future. Therefore, the education and involvement of workers, co-workers, managers, and even employees are excellent starting points.

Nevertheless, adjustments in both ergonomics and the workload may be beneficial for some, but not for all. For example, a gradual return to work or the possibility of working from home on one's schedule may be ways of adjusting to new routines or periods of peak pain. Thus, returning to work is often a relevant goal for most people with an MSD. Some will need to adapt their working hours part-time, while others will need to have work adjusted to their current capabilities. Working, despite some pain, should be possible, to avoid the negative health effects of absence due to sick leave or unemployment. Examples of adaptations can be found below.

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#### **The Worker self-management of MSDs and their symptoms.**

Workers must be able to manage their pain. Self-management involves the person finding ways to move around without aggravating symptoms, finding

out which pain relief options work for them, and other strategies to avoid or carry out activities with tolerable pain levels, including at the workplace. These strategies may include adaptations to the pace of work, organisation of tasks to avoid fatigue, management of breaks and exercise, use of relaxation, etc. Self-management can also be used to set goals for the individual to help achieve behavioural changes that may improve symptoms or the quality of life. In addition, it also involves finding high-value treatment and therapy options (see chapter 5).

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### **Examples of pain self-management:**

It is important to maintain activity as much as possible, to learn how to control pain, and to have an understanding work environment that provides support in pain management:

- Maintaining movement, physical activity, and exercise: walking at work, using a break room in workplaces with space for stretching, exercise, etc.
- Pace yourself: Finding the right balance between activity and rest is crucial for pain management. It is important for the worker not to overdo activity on a good day, but also not to avoid activity entirely on days when there is more pain. Working for shorter periods and then taking a short break is better than working for a more extended period before taking a long break. It can be helpful for an employee to record their activities and highlight times when pain or fatigue is causing them difficulty to detect any pain patterns. However, it is also necessary to avoid hypervigilance to pain, as this can be a barrier to recovery. Workers who develop a constant vigilance to their pain but do not have a specific pathology that causes it, can record the achievement of physical activity goals rather than keeping a record of pain intensity. This can reduce their anxiety and improve their quality of life and job satisfaction.
- Relaxation and mindfulness techniques: learn relaxation and mindfulness techniques and use them in the workplace.
- Seek advice from health professionals.
- Take time off for treatments and therapies/courses to receive appropriate treatment and therapy when necessary.

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### **How to support self-management:**

- The individual: To Understand that managing MSDs at work takes time. Also, to realise that others have an important role to play in pain management. To receive information to help manage MSDs at work and share it with others.
- Government: To Increase awareness and participation in access to work programmes and provide additional assistance to employees working in small organisations. To Invest in more specialist nursing roles and ensure that health professionals see work as a clinical opportunity rather than a barrier.
- Employer: To Understand the possibilities as an employer concerning people



with disabilities and long-term health problems. To Try to help employees with MSDs to feel like a valued and integrated part of your workforce. To Invest in resources to educate employees about health.

- **Manager/Boss:** To Build a good relationship with employees suffering from MSDs. To Be proactive: to seek information about MSDs and to ask the employee how they can be helped to perform the job. To Consider both mental and physical health. To Take opportunities to praise an employee with an MSD when they have performed well.
- **Co-workers:** To Be informed about MSDs and chronic health problems. To Understand that people with MSDs need to work differently.
- **Family and friends:** To Learn about MSDs and pain. To Understand that the time following the onset of the first symptoms and diagnosis is probably the most difficult. To Be aware that friends or family members with MSDs may have to make sacrifices in their home or social life to continue working.

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### **Adjustment and adaptation of the workplace.**

Workers with an MSD that affects their ability to work and whose needs have been adapted at work have a better quality of employment than those whose needs have not been adapted. Workplace adaptations are associated with improved career prospects for people with an MSD. In addition, these adaptations lead workers affected by an MSD to report lower work intensity, lower stress levels, and a better work-life balance, all of which contribute to greater sustainability and performance at work.

Individual measures must be tailored to the person, which is an important point, as an individual's needs will vary depending on health, personal and work-related factors. Therefore, good communication with the person is essential to determine the support they need. Conversations should cover the person's symptoms and how they vary, what tasks they find difficult, what support they need, etc. Sometimes a simple conversation with the worker may be enough to identify their needs, although it is important to seek expert advice when necessary.

Collective measures to prevent MSDs across the workforce and make workplaces more inclusive can reduce the need for individual adjustments and adaptations for people with MSDs. Workplace adaptations should be planned with a focus on the person's ability to work (their capabilities, not their disabilities). Adaptations may include changing tasks, equipment, and workplace, modifying work patterns, and providing support. Often a combination of several measures will be necessary.

It is essential to review the measures and make additional changes if the worker's condition changes: more than 40% of people with persistent pain who have adapted to their workplace believe that further adaptations will be needed in the future, demonstrating that a single adaptation is unlikely to be sufficient.

***Examples of adjustments:***

- Changing or modifying the tasks that are part of the job.
- Allowing flexibility in duties and responsibilities.
- Swapping specific tasks with colleagues.
- Reducing or avoiding activities that are difficult or that worsen the symptoms: maintaining the same static position (sitting or standing) for a long time, repetitive activities, etc.

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**Design and layout of the workstation.**

It is necessary to ensure that the workstation layout is designed to be as supportive as possible. This can be done through simple changes, such as using different tools or changing the layout to ensure that people can reach the tools they need to do their job properly.

Thus, several tools or equipment can be used to enable workers with persistent pain to continue working and which do not have to be complex or expensive to implement.

***Examples of adaptations and tools:***

- Adapting the mouse and keyboard to the individual: Many types of computer mice and keyboards are available today, in different shapes and sizes. Some are adapted for the right or left hand, and others are upright or semi-vertical, which may be more comfortable. For example, suppose a low-profile keyboard is used; in that case, it will allow the hands not to be tilted at a high angle when typing, to keep the wrists in a neutral position, or if a keyboard without a number pad is used, or a compact keyboard, narrower than a standard keyboard, will allow the mouse to be used closer to the body.
- Use of ramps to help move loads or redesign work processes. These can reduce any risks identified in a manual handling risk assessment. Even more simply, trolleys or powered hand tools can be implemented.

It should be emphasised that such ergonomically oriented adaptations can be helpful in helping people to stay at work. However, programmes to prevent and manage MSDs and work-related pain should not be based on investing large amounts of financial resources in ergonomic furniture, as ergonomics-based interventions have not been shown to reduce the prevalence of work-related pain and MSDs significantly. Instead, they should be understood as part of a broader solution, including the ones addressing all factors related to MSDs.

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**Design and layout of the workstation.**

Workplace flexibility means offering people the choice of when, where, and for how long they perform work-related tasks. For example, people with persistent pain need to have a flexible start time, as people often feel more pain and stiffness in the morning and may take longer to activate than people without pain. Flexible working can be implemented in a variety of ways. However, it is

often mistakenly thought to be exclusive to maternity or paternity leave or a privilege rather than an arrangement. It can include changing working hours and adopting a more flexible approach to start and finish times, reducing working hours, or choosing different days that suit the worker better, whether permanent or fixed-term, full-time, or part-time.

It can be useful, for example, to avoid rush hour commuting to work or to be able to work fewer hours on a “bad day”. Like this, flexible working can be essential when there are periods of pain flare-ups, new treatments are being applied, or to help people get to medical or physiotherapy appointments.

Flexible working hours, where a person can choose which days to work, are also a method of increasing productivity. In this way, an employee who has scheduled treatments (medical, physiotherapy, etc.) can adapt their working hours to attend medical appointments without being absent from work.

***Examples of flexibility:***

- Part-time work: working fewer hours than usual each day (or fewer days per week).
- Job sharing: two people do a job designed for one person and split the hours.
- Flexibility in the start and finish times: choosing when to work outside the defined mandatory or core hours (this may include the possibility to accumulate hours and then take them off).
- Compressed hours: working agreed hours on fewer days.
- Staggered schedules: different start, break and finish times for employees at the same workplace.
- Teleworking.

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## **Teleworking:**

Teleworking means working remotely. The use of telework can help workers with persistent pain to manage their symptoms, treatment, and work. For example, for people with MSDs, flare-ups can be more easily managed at home, and the perception of control over fatigue or other symptoms can be increased by not having to travel or commute. In addition, workers have more freedom to take short breaks and get up to stretch and walk around than in the office.

Teleworking can be occasional or regular. If teleworking is regular, it is important that workers are not isolated and that workplaces involve their workers in normal activity, even if they are working from home. This is important, as social isolation can be a barrier to recovery for people with persistent pain, and work is the main way of socializing for many people. However, working from home can carry other risks. Any equipment used at home or in another workplace must be similar to that used in the workplace. Workers should ensure that they have a regular work routine and monitor working hours, separate work and home life by creating an office-like environment and taking regular breaks to move and

walk around. In addition, other risks, such as excessive working hours, need to be carefully managed.

Following the Covid-19 pandemic, which has led to many workplaces being forced to use telework for the first time and the necessary organisational measures being taken, more employers may see the benefits of offering telework in the future, not just for individuals but for the whole workforce.

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### **Taking breaks:**

Allowing workers to take breaks to change posture or cope with fatigue during the most demanding tasks is essential, and it is not resource-consuming as it does not involve the purchase of any equipment. For a worker with an MSD, short, regular breaks to walk or stretch are beneficial. For example, it is recommended that all workers take a break every 20 minutes from sitting. Ideally, workers should have enough control over the way they work to take breaks to rest, move or change their posture when needed. Breaks from sitting, standing, repetitive or physical work are important. Based on current scientific evidence, such recommendations based on increasing breaks are considered a better and healthier intervention than recommending a specific way of sitting for the entire workforce (e.g., straight back). Like this, the development of work-related MSDs in healthy workers can be prevented, and workers with persistent pain can continue working.

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### **Task rotation and redistribution of work:**

Rotating tasks between different workers within the same organisation is a measure that can generate positive effects. One employee can perform the tasks of another one for a short period and then return to their original tasks. Task rotation systems, where work is scheduled so that workers switch tasks, can benefit an organisation by promoting flexibility, healthy variability in movement, skills development, and employee retention. It is advisable not to let the same employee perform a repetitive manual task for prolonged periods, as this can aggravate musculoskeletal pain. However, it is important to underline that rotating tasks with another employee for a certain period does not automatically eliminate the ergonomic risk.

Redeployment involves moving a worker to a new position within the same organisation. Although additional training may be required, workers' skills and experience can often be transferred to the new job tasks. Many companies adopt the strategy of initially looking internally for employees to fill vacant positions and promoting their employees' transfer to new tasks, thus avoiding the expense of hiring someone completely new.

## **Adoption of measures in physically demanding work:**

Physically demanding work presents more difficulties in applying adaptations for people with MSDs than sedentary work. However, there is a large amount of guidance on how to balance the physical burden on workers, including concerning manual handling, exposure to vibration, and repetitive work:

- Modulate the physical demands of the job, including heavy lifting and carrying, repetitive work, forceful movements, static postures, fast-paced work, and exposure to vibration.
- Provide handling equipment for heavy loads.
- Allowing greater individual control over the performance of tasks.
- Provide more breaks and allow flexibility for taking breaks.
- Swap heavy tasks with co-workers or provide the individual with peer support for specific tasks.
- Educate about the importance of maintaining an active lifestyle and the benefits of strength and resistance training. Physical fitness is especially important in physically demanding jobs.
- Limit shift work and overtime.
- Provide measures to reduce physical work demands for all staff.

In most situations, activity and movement at work are safe despite the pain. A quality intervention to help reduce musculoskeletal disorders in employees with physically demanding jobs is considered to be facilitating access to physical exercise and muscle strengthening programmes. It should be borne in mind that the effects of these programmes start to become evident a few months after the start of it and must be sustained over time to be effective.

### **Chapter 5**

## **Evidence-based best practices for pain management in MSDs: example of low back pain.**

Among the MSDs reported annually by the working population, low back pain represents the leading cause of absenteeism and incapacity to work above neck or limb pain. Therefore, due to its impact and prevalence, scientific knowledge on low back pain is considerably more extensive, and, in many cases, its general findings can be extrapolated to other MSDs.

In this chapter, interventions that, contrary to popular belief, are considered to be of low value will be presented first, followed by interventions of high value, together with practical examples. In this sense, companies should consider high therapeutic value treatments to promote flexibility, adaptability, and understanding of their employees' situation and thus reduce the bias of absenteeism.

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## **Low-value interventions and treatments:**

Low-value care consists of health care interventions with little or no benefit to the person. In addition, low-value care prolonged over time can be detrimental, as it can mean that people with MSDs and pain are kept away from high-value care, and the health problem is exacerbated and perpetuated.

Low-value care includes excessive referral for imaging tests when there are no warning signs, unwarranted/unjustified surgery, and indiscriminate pharmacology. It also includes ergonomic messages that affirm that it exists a correct posture to avoid musculoskeletal pain.

### ***Diagnostic imaging and low back pain:***

Although both acute and degenerative tissue changes can be easily identified by imaging techniques such as magnetic resonance imaging, there is no direct relationship between tissue damage and the degree of pain. Furthermore, alterations in spinal anatomy are quite normal even in healthy people without pain, although in proportion they may be seen more frequently in those with pain. Furthermore, there is little evidence that changes in spinal anatomy should have any predictive value in relation to future pain and disability.

A study published by the American College of Radiology found that imaging scans of the lumbar spine were inappropriate in more than 50% of cases, highlighting that imaging should only be performed in cases of suspected severe pathology. Furthermore, imaging is associated with higher medical costs, higher consumption of health care resources, and more absences from work.

### ***Unwarranted/unjustified surgery:***

Spinal fusion is a frequently used surgical intervention for different spinal tissue conditions. However, there is a lack of evidence to support its use compared to more conservative non-invasive treatments such as multidisciplinary rehabilitation (discussed under high-value treatments below). In addition, it is a costly procedure associated with potentially serious side effects. In this regard, before any surgery is performed, individuals should be informed of the potential benefits and harms, and a second opinion is recommended.

As with diagnostic imaging, the assumption that there is a linear relationship between operable tissues and pain is erroneous. We now understand that disabling pain in MSDs is a much more complex condition and that surgery cannot always resolve it. In fact, most studies that have examined the effect of surgery on chronic low back pain do not show a superior effect compared to placebo. Considering that surgery sometimes aggravates the pain condition (e.g., through nerve damage), it should be avoided unless specifically indicated and having ruled out other conservative approaches.

### ***Indiscriminate pharmacology:***

While opioid-based treatments have proven to be very valuable in treating some cases of acute pain (e.g., immediately after surgery), their long-term use for persistent musculoskeletal pain is not only problematic, but it may even increase the problem, as it has been associated with increased disability. In addition, the opioid-based pharmacological treatment for persistent low back pain is no more effective than other pharmacological options. However, more severe adverse effects have been proven.

In summary, using any type of opioid-based treatment as a first-line treatment is not recommended. Even in the case of second-line treatment, opioids should only be used in specific situations with a careful selection by a pain specialist. It is important that opioids are not substituted for other pharmacological treatments in people with persistent and disabling pain, but they have to be considered high-value care treatments.

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### **High-value interventions and treatments:**

For a treatment to be considered high-value care, it must have a positive net effect on the individual (i.e., the benefits outweigh the risks). In the long term, it is believed that high-value care can reduce the currently excessive economic burden of musculoskeletal pain by preventing over-medicalisation and the use of costly and unnecessary diagnostic and interventional or surgical procedures.

High-value care includes self-management education, psychological therapies, and therapies based on exercise and an active lifestyle.

#### ***Self-management education.***

If pain persists despite advice to remain active, high-value care will focus on the person's ability to manage day-to-day living with pain.

Self-management can be defined as “the individual's ability to manage symptoms, treatment, physical and psychological consequences and lifestyle changes inherent in living with a persistent condition”. For an optimal implementation, it requires an interactive collaboration between the practitioner and the patient and can be subdivided into six components:

##### **1. Problem-solving:**

A process that begins with problem identification and continues throughout the intervention until the problem(s) is (are) solved, with patient-clinician (e.g., physiotherapist) consensus. For example, in collaboration with one or more health professionals, a person suffering from persistent low back pain may describe the problem(s) to be solved by the chosen management strategy and agree on relevant goals, which can be objectively or subjectively quantified to assess progress.

**2. Resource utilisation:**

A process of measuring and deciding how a person's available resources, such as material objects, physical, temporal and spatial conditions, or personal characteristics, could be integrated into therapeutic planning. For example, for a person suffering from chronic low back pain who is comfortable with the use of technology, it might be helpful to use mobile applications that allow the monitoring of physical activity levels throughout the day.

**3. Goal setting and 4. Action planning:**

The process of setting individual goals of relevance to learning and problem solving related to a person's condition; and the act of managing these goals over a set time frame according to their situation.

**5. Adaptation:**

the process of determining the specific content that the person with pain will receive, the contexts surrounding the content, and the channels through which the content will be delivered. For example, an office worker suffering from persistent low back pain may need to use an alarm clock that rings every hour as a reminder to get up and move around (e.g., to get a glass of water).

**6. Decision-making:**

A process based on professionals' experiences in relevant contexts, frames of reference, and individual capabilities, which recognises the preferences of the person with pain for the choice of treatment or management plan.

In addition, health professionals should be able to provide structured support (e.g., action plans and goal settings) to enable the person with pain to continue supporting self-management. Besides, self-management should aim to reduce disability, avoid the assumption that pain equates to harm and dependence on costly and ineffective treatments, and promote autonomy.

A goal for the health professional is to support people with pain to take responsibility for controlling and managing their condition. However, while self-management is essential, additional support is required in many cases. Therefore, self-management should be considered part of the overall treatment of the person with pain, but not the only intervention.

Finally, healthcare professionals should be aware that musculoskeletal pain is strongly associated with a sedentary lifestyle, as well as with poor general health (e.g., being a smoker or being obese). Therefore, and to the extent that the person with pain is motivated to change, practitioners should include education on "healthy lifestyle choices" to stay active and functional (e.g., work and other activities), as well as advice on secondary support as part of the strategy for self-management of pain and disability.



### ***Psychological therapies.***

Clinical guidelines also recommend combining physical and psychological treatments for persistent low back pain and other types of pain in MSDs. Cognitive behavioural therapy, relaxation, and stress reduction through mindfulness-based interventions are examples of psychological treatments recommended as complementary treatment options. These therapies are already offered in some countries, but they are expensive and/or rarely available to workers.

### ***Walking-based programmes.***

People with persistent low back pain may benefit from walking-based programmes associated with positive changes in metabolic parameters and the psychological state. Walking is considered a non-specific physical activity that provides general and specific aerobic activation of large muscle groups. In addition, this type of physical activity is safe and is associated by those who do it with increased satisfaction and adherence to it.

Walking as a therapeutic intervention effectively reduces pain and disability in people with low back pain in both short and long-term effects, as pharmacological treatment, but without any associated risks or adverse effects. In addition, if a walking-based programme is combined with other types of activities such as mind-body therapies (e.g., yoga or mindfulness) or strength training, it shows further beneficial effects on cognitive function, strength, balance, and flexibility.

The health benefits of walking on mortality appear to flatten out after approximately 10,000 steps per day. Since walking does not appear to have negative consequences for people with MSD pain, it is also advised that they accumulate a minimum of 10,000 steps throughout the day. People can calculate the number of steps using a pedometer, which is also helpful to increase adherence. If they do not have a pedometer, they can walk 30 minutes a day, five days a week, according to the American College of Sports Medicine (ACSM) guidelines.

### ***Mind-body therapies.***

As already mentioned, there is no evidence that shows that one specific type of exercise is better than another. Therefore, other individual or group physical activities such as Tai Chi or Yoga can also alleviate pain intensity and improve functional disability. In addition, the practice of Yoga can provide the person with pain with various physical and mental benefits, such as pain relief, improvements in flexibility and mobility, body awareness, postural stability, and mental wellbeing.

For people with persistent low back pain, practising Tai Chi or Yoga for 40-60 minutes twice a week may improve disability and functionality, as well as reduce the intensity and duration of their pain.

### ***Aerobic and strength training.***

Most people can benefit from a combination of aerobic and strength training. Depending on each person's problems, the health professional may prescribe a higher or lower dose of exercise and intensity. Training that involves large muscle groups and whole-body movement, with multi-joint exercises, offers more benefits than specific mono-joint exercises in a single plane of movement. The recommendation should focus on a combination of aerobic and strength training exercises, but always according to the preference of the person with pain, bearing in mind that the ability to do the exercises seems more important than the fact of doing them. For example, a strength training routine could be composed of 6-8 multi-joint exercises, performing 3 sets of 12 repetitions with a sensation of fatigue at the end of each set. This can be repeated 3-4 times a week and combined with 20-30 minutes of aerobic exercise, such as running, walking, cycling, elliptical, or dancing. The Borg Scale of 10 points of Perceived Exertion (10 corresponds to the highest exertion and 0 to the lowest) can be used as a reference to monitor the intensity of the exercise, both aerobic and strength. For aerobic training, we would aim for a moderate intensity of 3-4 and for strength training a moderate-high intensity of 6-7.

## **Chapter 6**

### **Return to work after a sick leave related to a musculoskeletal disorder.**

Generally, work has been negatively related to health and wellbeing. However, it is necessary to know that they can also be positively related and benefit from each other. Work is not necessarily an obstacle to a work-related pain situation. In fact, work activity can be a positive resource for most people with a MSD and persistent pain.

Over the last two decades, the understanding of the causes of pain in MSDs has changed. For example, we now know that MSD pain is more complex than previously thought, as it is likely to be influenced by a wide range of factors, including beliefs, genetic factors, lifestyle, past experiences, and expectations. Similarly, it is important to consider that pain, especially persistent pain, is not a reliable sign of damage or injury to the body. Therefore, it is unlikely that the pain will go away by changing or acting on just one factor. Hence, people with persistent musculoskeletal pain do not need to stop or avoid working but they need to find strategies, such as adapting the job and its tasks or education, to continue working.

It is crucial to understand how health and work influence each other. Research on pain shows that unemployed people are more likely to suffer from musculoskeletal pain and worsen their physical and mental health. It is taken for granted that work provides substantial needs for mental health, such as financial stability and social connection.

Although millions of people worldwide do their job with musculoskeletal pain, no way has been found to support those who cannot perform their work adequately. However, we can ensure that time off work is unlikely to reduce musculoskeletal pain or improve health. Unemployed people with MSDs often feel vulnerable or feel that they are at risk of injury in their work. While it may seem rational to avoid returning to work in these cases, it is important to understand that having persistent pain is compatible with having a functional body and musculoskeletal system. In fact, the perception of pain and the feeling of disability are more likely to decrease if the return to work is facilitated for people with long-term musculoskeletal pain. In addition, these people report better quality of life compared to those who are unemployed or on sick leave. Therefore, it should be a top priority to support and help people with musculoskeletal pain to maintain and adapt their work activity despite the presence of pain, once serious pathologies have been ruled out.

*How does unemployment affect health?*

Evidence shows that unemployment has negative effects on health. Unemployment is associated with a high incidence of musculoskeletal pain, long-term illness, and disability. It is also associated with a reduced sense of wellbeing, increased feelings of distress, higher hospital admission rates, and increased consumption of medicines. After understanding the factors influencing absenteeism, the problem of pain needs to be addressed by taking into account biological, psychological, and social aspects rather than focusing solely on biomedical factors such as a diagnostic imaging test.

Research has shown that family and social support, social capital, education, and return to work expectations are factors to consider for an early return to work.

In summary, the evidence points to the fact that, in general, unemployment is strongly associated with poorer physical and mental health, as well as a higher mortality rate, which should challenge the assumption that work is negative for patients with MSDs and pain.

*How does employment influence health?*

In our modern society, the job is a source of income and a nucleus for social relations. However, in contrast to the economic ones, the social aspects of work do not depend on wages but rather on the feeling of belonging to a group of people with shared ideas and interests. Moreover, work is an essential part of their identity and social status for many people.

However, while work activity is generally positive for health, certain aspects can suppose a risk to individuals, such as continuous exposure to stress factors. For example, in people with persistent musculoskeletal pain, sustained stress can aggravate their situation, as the presence of pain is a stressor in itself.

*How does return to work affect health?*

Returning to work after a period of inactivity improves general health levels, the sense of wellbeing, and anxiety. At a functional level, return to work should also be seen as the final part of the rehabilitation process of a person who has been off work due to an MSD. However, the benefits of returning to work also depend on job security, individual satisfaction, and the interest in keeping it. Moreover, these benefits occur approximately one year after returning to work and tend to maintain for consecutive years.

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### **Principles for facilitating the return to work:**

Return to work measures after sick leave aim to facilitate reintegration into the workplace. Supporting workers with reduced work capacity and skills due to MSDs and pain, promotes health recovery and the reduction of risks of long-term disability. Some workers may not return to 100% capacity, but with appropriate adjustments at work and focusing on the worker's abilities, a progressive return to full function can be implemented.

Return-to-work programmes should focus on three main objectives: 1) to develop and implement an effective strategy for managing illness at work (learning organisations); 2) to increase the number of workers returning to work and staying at it after an illness and sick leave (maintainability); 3) to create positive return-to-work experiences and a healthy and supportive culture for workers.

Vocational rehabilitation should be included in the return to work and is defined as the recovery process of "optimal physical, sensory, intellectual, psychological and social functional levels". This process begins with medical rehabilitation and ends with the adaptation to the workplace. It requires a joint approach involving all relevant actors, from the health care provider to the employer, the line manager, and the worker.

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# Good practice guidelines for pain and musculoskeletal disorders in workers and companies.

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