World Physiotherapy
Europe region

Position Paper –
The Role of Physiotherapy in Musculoskeletal Disorders in the Age of Remote Work

Musculoskeletal Disorders Working Group (MSDs WG)

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POSITION PAPER – THE ROLE OF PHYSIOTHERAPY IN MUSCULOSKELETAL DISORDERS IN THE AGE OF REMOTE WORK

Europe Region

Musculoskeletal Disorders Working Group

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Working from home has become the new trend in the post pandemic world of work

INTRODUCTION

The Europe Region of World Physiotherapy is a non-profit, non-governmental organisation that represents the physiotherapy profession in Europe.

The organisation has a membership of 38 Physiotherapy Associations representing approximately 200.000 physiotherapists in Europe. The purpose of the Europe Region of World Physiotherapy is to lead, promote and represent the Physiotherapy profession in the Europe Region by driving excellence in education, practice and research, advocating and influencing health policy.

In its actions, the Europe Region of World Physiotherapy engages with stakeholders at international level such as the European Commission and European Agency for Safety and Health at Work, which shape the landscape of occupational safety and health. These stakeholders are engaged in different initiatives (e.g. “European Commission’s Strategic Framework on Health and Safety at Work 2021-2027” and “Safe and healthy work in the digital age campaign”) and the Musculoskeletal Disorders Working Group (MSD WG) of the Europe Region of World Physiotherapy advocates for the role of physiotherapy in the prevention of MSDs in the workplace.

Advances in information and communication technology have had a significant impact on our lives. These changes have affected the way we work and the working environment by introducing practices such as teleworking. Unfortunately, one of the consequences of these changes is the negative impact on workers' health, leading to different health problems, e.g. musculoskeletal disorders (MSDs). The aim of this position paper is to highlight these issues and how physiotherapy is key to manage them, informing future advocacy actions of Europe Region of World Physiotherapy and its member organisations.

1. MUSCULOSKELETAL DISORDERS IN THE WORKPLACE

1.1 Definition, risk factors and impact

Occupational illnesses are abnormal acute or chronic conditions, or disorders triggered by the exposure to work factors. Occupational injuries are any injuries resulting from a work-related event[1]. Musculoskeletal disorders (MSDs) develop when structures such as nerves, muscles and ligaments, are over exerted while performing occupational tasks and become painful, ranging from minor symptoms to more serious conditions that can lead to employment abandonment[1,2].

The aetiology of MSDs, which often develop over time, is multifactorial in nature, comprising a complex relationship between factors related to the work environment, such as physical risk factors, poor ergonomic setups, the psychosocial impact of the work, and personal factors related to the worker themselves[3–5].

In 2018 the incidence rate of MDS's was 27.2/10000 in full time workers, and the median days away from work was twelve. These types of disorders are very common and are often associated with loss of physical function, which can restrict participation in society and costs employers billions of euros[6,7]. MSDs are the leading cause of sickness absence in several countries[8]. In the EU-28, 60% of workers report MSDs in the back, upper and lower limbs, affecting not only their general health but also their performance at work. Performance at work may be affected in two ways, firstly, by reducing productivity and secondly by reducing the number of hours of work. Data available at the European Union (EU) level, as a measure of Disability-adjusted life years (DALYs) suggests that MSDs add up to a total of 15% of DALYs[6]. And although these figures are very large, they are not a measure of direct economic impact. National level reports suggest that for instance in Germany, MSDs and connective tissue disorders accounted for a loss of production (based on labour costs) of €17.2 billion in 2016 and a €30.4 billion in loss of labour productivity. This represents 0.5% and 1% of Germany's gross domestic product, respectively[2].

1.2 Telework: definition and impact on health

The European Framework Agreement on Telework[9] states that:

Telework is a form of organising and/or performing work, using information technology, in the context of an employment contract/relationship, where work, which could also be performed at the employer's premises, is carried out away from those premises on a regular basis.

Telework implies the usage of desktop computers, laptops, tablets, smartphones and other information and communications technology (ICT) to allow work to be undertaken from home, a satellite office or other locations[9]. Hybrid work is a combination of telework and work on the employer's premises[10].

According to the Eurofound (2022), teleworking is here to stay. Compared to 2019, the number of employees that telework across the EU in 2021 more than doubled to 41.7 million

employees[11]. This upward trend is set to resume as technological developments are increasing the number of 'teleworkable' jobs and employees and employer's preferences are leaning towards remote working.

Even before the COVID-19 pandemic the impact of telework was a concern as the negative impacts on health were already reported. These included: MSDs, isolation and depression, stress, overwork and other less obvious issues[12]. During the pandemic, studies reported an increase in the prevalence of both physical pain and mental health symptoms, e.g. pain complaints in the back, neck, shoulders, wrists and hands, and also of symptoms of stress, anxiety, sleep disorders, visual problems, weight gain, discouragement and headaches[13,14].

It has been found that voluntary participation, employer support, and appropriate workstation configurations are three crucial factors which contribute to the success of teleworking and flexible work. Moreover, research emphasises the significance of voluntary telework as the foremost aspect[15–17]. In the context of the COVID-19 crisis, the benefits of voluntary telework were highlighted and these include a better work-life balance, increased productivity, and a reduced risk of burnout[18]. Other advantages are related to a considerable reduction in commuting time and cost for employees, fewer distractions and improved technology-based collaboration[19]. In addition, proficient teleworkers possess a specific skill set that encompasses the capacity to work autonomously and maintain a good work/life balance[20]. Therefore, both the requirements of the job and the characteristics of the individual employee, must be considered when deciding on telework arrangements[21]. Moreover, research suggests that an optimal approach for part-time telework may involve a combination of office-based work and remote work, where employees spend certain days in the office and others working from home[22].

Nonetheless, higher productivity seems to be associated with better physical and mental health[23] and research from different economic sectors and parts of the world also point out that negative effects from telework must be considered.

1.3 Impact on a global scale

1.3.1 Physical health

Before the pandemic, the impact of teleworking on physical health was not extensively documented but the negative effects related to the musculoskeletal system were already reported[12,24,25]. With an increasing number of improvised home offices, there is growing concern about the potential discomfort and the risk of developing musculoskeletal disorders due to prolonged static postures during telework[26]. In comparison to working in an office, teleworking from home necessitates extended sitting times[27] which, in conjunction with uncomfortable workstations may result in a rise in MSDs[28,29]. There is a well-established consensus that utilising personal computers, especially in non-ergonomic workstations, heightens the risk of MSDs, mainly in the upper and lower extremities and back pain[30]. Awkward postures, repetitive movements and long working hours greatly contribute to this outcome. The nature of teleworking limits socialisation, leading to limited chances to take movement breaks, e.g. a walk to the printer, which

can promote musculoskeletal relaxation[31]. Teleworking has been associated with a higher prevalence of physical inactivity and sedentary behaviour, which are widely recognised as significant factors affecting health, increasing the burden of chronic diseases like diabetes, cardiovascular diseases (CVDs), obesity, and hypertension[32,33]. In addition, according to the Centre for Disease Control (CDC), inactivity increases the risk of serious outcomes from infectious diseases, such as pneumonia, COVID-19, flu and hospitalisation deaths in COVID-19[34].

1.3.2 Mental Health

The impact of teleworking on mental health among waged workers was investigated, and the results highlighted that teleworking, which leads to social isolation, had a strong association with anxiety and sleep disorders[35]. Remote work can result in longer work hours and heightened pressure, with individuals finding themselves required to stay online for a significant portion of the day. Moreover, working from home can give rise to negative effects such as technostress and a feeling of isolation[36,37]. In general, there was a polarisation of reactions into two extremes, those who are firmly in favour and those who are not, evidencing that teleworking may not always be a suitable alternative for employees, especially if they must abruptly and forcibly adopt it, as in the context of COVID-19[36]. Humans are social beings that must live and interact with others[38] and teleworking results in a lack of development of social relationships with co-workers, especially those in the office. Additionally, isolation has a negative effect on communication with external stakeholders[37,39,40].

So, to counteract the negative effects of teleworking which can put health at risk, it is necessary to design a protective strategy for this population, to promote health in the workplace, even if the workplace shifts to home. It is also important to improve communication between colleagues and managers.

2. ROLE OF PHYSIOTHERAPY

The role of Physiotherapy is crucial in enhancing workers' quality of life and in the prevention and treatment of musculoskeletal disorders. When managing the risk of MSDs in the workplace, health interventions can be categorised into three groups, (1) prevention of injuries, (2) return to work (RTW) and (3) long-term management. These may include services such as on-site or on-line Physiotherapy service, actions such as prevention of injury campaigns, or supply of anatomical supports such as wrist or back braces' which aim to change and/or improve health behaviours and awareness. With these in place, an improvement in health outcomes, health behaviours and health awareness should be facilitated[41]. Several systematic reviews have summarised this scientific evidence[41–45].

Physiotherapists should be part of a multidisciplinary team when trying to get an injured employee back to work. The role of the physiotherapist is to assess how the body functions, determine how it is affected by the occupation of the employee, and design the most appropriate care plan, taking into account any obstacles for the employee. This is particularly

important for employees with any existing impairments, limitations or restrictions on their function.

Physiotherapists are key in improving work status and in reducing the time away from work. They use patient interviews and validated instruments to screen for risk variables associated with delayed RTW or job absence throughout the episode of care. Assessing factors such as previous injury episodes, extended work absence prior to referral, high levels of perceived or self-reported disability, pain severity, pain behaviours, fear-avoidance beliefs, low recovery expectations, and low self-efficacy, allow physiotherapists to identify workers at risk and act accordingly, encouraging workers to remain on the job while managing their health issues[46].

Physiotherapists play a crucial role in promoting wellbeing and productivity of workers offering personalised ergonomic solutions for workstations, contributing to the prevention and management of musculoskeletal disorders. Their direct therapeutic interventions enable more effective injury prognosis and recovery[47,48]. In addition to these individualised interventions, physiotherapists are also instrumental in developing exercise programmes within the workplace. These programmes, designed and led by experts in the field, have shown significant benefits for employees. Incorporating physical exercise before and during the workday, these programmes not only enhance body awareness and body posture but also equip workers with effective coping mechanism to handle their workload[47–50].

Furthermore, recent guidelines state that physiotherapists can develop a therapeutic alliance by involving the worker in the RTW planning process. It is also important to encourage the development of work-centred behaviours through the care episode, documenting and responding to the workers goals, needs and concerns[46].

The goal of work rehabilitation is to enable workers to stay at work or return to work safely and productively, while mitigating the negative effects of limited work and disability. Integrated in multidisciplinary teams, physiotherapists look to optimise work participation. This involves different settings, services, and activities directed to working-age people with impairments, limitations, or restrictions on work functioning. This conceptual definition, which is based on the WHO's International Classification of Functioning, Disability and Health (ICF) model, has been investigated regarding how physiotherapists might help reduce work restrictions[51].

Research findings suggest that engaging in ergonomics and on-site physiotherapy interventions in the workplace, such as educational programmes, exercises, and manual interventions, can have a positive impact on reducing work-related musculoskeletal injuries[48]. Although research on physiotherapy interventions, specifically in the context of telework, is sparse, it is growing now as a result of the recent pandemic.

Teleworkers and office workers tend to spend more time sitting given that tasks that were normally conducted in-person, such as meetings, teaching, and collaborative research, have been transferred to screens[52,53]. This has led to insufficient physical activity, leading to the emergence and/or progression of harmful medical disorders (e.g. cardiovascular health conditions, diabetes). These trends are alarming[32,54,55].

Without adequate training, it is unlikely that teleworkers would naturally adjust their positions or move without conscious effort. However, it is important to recognise that incorporating mobility into their work routine can help reduce the risk of various musculoskeletal problems, and interventions must address this issue[56].

Ergonomic concerns during teleworking should be the same as they are in the office workplace, however, this is not always feasible[57]. Indeed, teleworkers frequently experience discomfort, including eye strain and soreness in the wrists, neck, or back, when working at their computer workstations based at home[58]. Gerding et al. (2021), reported that nearly 85% of teleworkers are using a laptop, with just 45% having an external display[26]. The primary issue with laptops is the fact that the screen is connected to the keyboard, which makes it difficult and almost impossible to maintain a neutral position with the head, neck and spinal column aligned vertically, shoulders relaxed and elbows at 90 degrees[59,60].

2.1 Ergonomic workstations

Office workstations may differ from home workstations due to differences in equipment and services, such as ergonomic consultations that may be necessary to guarantee a good setup. Even people who have had their workstations evaluated, modified, given a list of suggestions, and received office-specific training may not have the skills necessary to correctly set up their home workstation. According to McAlllister et al. (2022), It may be more beneficial to give workers general ergonomic training on setting up a home work station[56]. This would prepare them better for unforeseen situations (COVID-19 pandemic), than specific office-based workstation set up training. Providing this type of training electronically, is an important development.

Combining training on posture, ergonomics, body awareness and work practices with training on the rational for the usage of ergonomic accessories (e.g. adding an external monitor, external keyboard and mouse to a laptop computer) appear to obtain better results than either training or adjustable equipment alone[61,62].

2.2 Exercise interventions

Exercise, either resistance or strength focused, improves bone, muscle and joint function, stability, and pain[63]. Through the adoption of targeted physical exercise programmes, physiotherapy is seen as an essential and cost-effective strategy that can be useful to decrease the prevalence of work-related musculoskeletal complaints and boost productivity among employees[48,64,65].

Workplace exercise refers to the practice of performing specific physical exercises within the workspace. Sessions last between 10 to 20 minutes, targeting each worker's job functions, and aiming to improve strength and flexibility of the body structures which are most under pressure. Additionally, they contribute to fostering social integration and improving the overall quality of life for workers[65–67].

Workplace exercise programmes have been found to be accessible and to provide numerous benefits, including improved range of motion, reduced musculoskeletal issues, and enhanced quality of life in the occupational setting. This mitigates the risks associated with the use of new technologies, particularly computers, and incorporates movement into the workplace[68].

Exercise programmes can be delivered in person, or through online workplace exercise interventions, easily applied to remote workers, delivered in online meeting platforms[69,70], web-based platforms[71], or smartphone apps[72], with positive results. However, it is important to stress that core capabilities are needed to provide quality remote physiotherapy care. These core capabilities are structured in several domains, such as assessment and diagnosis, care planning and management, compliance, patient privacy and confidentiality, patient safety, technology skills and telehealth delivery[73,74].

When engaging with workers at risk of delayed RTW, combinations of condition-specific exercises, clinic-based work-focused interventions (e.g. work-task replication) and jobsite interventions may be required to improve work status and reduce the time away from work[46].

Being physically active has been shown to help all the systems in the body. Exercising during work and during the day reduces the risk of disease and helps to manage weight. Adults who engage in any level of moderate-to-vigorous exercise and spend less time sitting reap some health advantages. It has been shown that immediately after exercise, adults have less anxiety and sadness. Furthermore, being physically active might help thinking and learning. Judgement abilities may be honed and the quality of sleep may improve. Physical activity, exercise and decreasing sedentary behaviour can have a great benefit on health and should be incorporated whenever possible[75].

2.3 Education

Physiotherapists rely on education strategies involving activity pacing, problem solving, relaxation, and coping techniques when acknowledging the psychosocial barriers which are identified during the episode of care. These strategies are focused on influencing pain perception, individuals' behaviour around pain, their attitudes, beliefs, and responses to painful experiences, and often are based on graded activity, graded exposure, motivational interviewing, coaching, and education regarding pain neuroscience, activity, and body mechanics. Education targeting the worker's knowledge about physical findings, the benefits of staying active and strategies to RTW are important to reduce the time away from work and optimise work participation. Behavioural approaches to improve work status may be of particular importance when workers are considered at high risk of delayed RTW[46].

3. COST-EFFECTIVENESS OF PHYSIOTHERAPY

The economic impact of work-related MSDs, which are common in all economic sectors, has already been discussed. Back (neck and low back) and upper limb pain are the most common work-related symptoms reported in Europe[6]. In the Netherlands, repetitive strain injury shoulder/upper arm, elbow inflammation, chronic non-specific lower back pain, knee arthrosis, repetitive strain injury wrist/hand, repetitive strain injury elbow/lower arm, herniated disk of the lumbar or cervical spine, acute non-specific lower back pain, and carpal tunnel syndrome, were the most commonly reported work-related MSDs between 2013-2016[17]. Although related to a specific European country, we believe that this is a world-wide reality.

In 2020, the Australian Physiotherapy Association, and more recently, the American Physical Therapy Association[76,77], published in-depth independent reports related to the economic value of physiotherapy in several common health conditions in their respective countries. Some of the reported conditions are commonly reported work-related MSDs. According to these reports, a net benefit of physiotherapy services, which is the result of the benefits less the net costs, delivering both health and economic benefits to patients (Table 1).

Table 1:

Australian Physiotherapy Association ($AUS)	**American physical Therapy Association ($US)**
Back pain: $6,063	Carpal tunnel syndrome: $39,533
Tennis elbow: $5,610	Osteoarthritis of the knee: $13,981
Osteoarthritis of the knee and hip: $3.772	Lateral epicondylitis (tennis elbow): $10,739
Chronic neck pain: $3,416	Low back pain: $4,160

Additionally, the cost-effectiveness of occupational health services (including physiotherapy services), in general[78], and of evidence-based physiotherapeutic care, including a workplace education, for patients with neck and/or back pain[79], has been demonstrated.

4. CONCLUSION

It can be seen from the evidence shown in this position paper, that physiotherapists have a lot to offer in the telework place environment. This is through their understanding of MSDs and the ergonomic workplace setups of the employees. They can help to keep employees at work if they have an MSD, or can manage their rehabilitation and return to work effectively, if they are on sick leave from an MSD.

5. SUMMARY STATEMENTS

The burden of Musculoskeletal Disorders (MSDs) worldwide is undeniable. There is an increase in the number of disability-adjusted life years, and this in turn increases both the direct and indirect costs related to the management of these health conditions.

Telework, although a natural consequence of the advances in information and communication technology, may contribute negatively to both musculoskeletal and mental health of workers.

Physiotherapists have strong knowledge and skills to deal with health issues in the workplace, including remote work

Physiotherapists should be part of a multidisciplinary team designing health interventions aiming to prevent, manage and facilitate the RTW of workers with or at risk of developing MSDs.

Physiotherapists have an important role in encouraging good health behaviours and awareness, which is essential for lowering the risk of MSDs.

Physiotherapists can identify risk factors associated with delayed RTW or absenteeism and act to enable employees to stay in work while managing their health problems.

Physiotherapists can provide evidence-based interventions based on education, exercise, and ergonomic adjustments empowering workers, with or without health conditions, with effective coping mechanisms to handle their workload.

Physiotherapists can provide cost-effective interventions for the most commonly reported work-related MSDs, such as back and neck pain, tennis elbow, carpal tunnel syndrome.

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Adérito Seixas (Portugal) (Lead)

Tim Németh (Chair)

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