

MUSCULO-SKELETAL DISORDERS DUE TO HARMFUL WORKING POSITIONS IN THE CONSTRUCTION FIELD

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Abstract: In this paper, the musculoskeletal conditions faced by construction workers will be presented, but especially a series of measures to prevent them. Both a Prevention and Protection Plan and an adequate training of the workers play a very important role in carrying out activities in the field of construction, as well as the awareness of the adoption of some preventive measures to carry out the works under normal conditions according to the prevention and protection norms in force.

Key words: risk factors, risk assessment, preventive measures, employees, ergonomic conditions

1. INTRODUCTION

Musculoskeletal disorders represent a common problem among workers in Romania, being one of the most frequently reported causes for occupational diseases. These conditions affect the musculoskeletal system, including the back, neck, shoulders, upper limbs, as well as the lower limbs. Back pain and muscular disorders are common symptoms, and prevention and management of these issues are essential for the health and well-being of workers.

Both excessive physical work and total lack of activity are equally harmful. Musculoskeletal disorders, including injuries and pains in the joints, ligaments, muscles, and structures supporting the limbs, neck, and back, pose a complex problem. These conditions can cause symptoms such as pain, discomfort, and reduced ability to perform usual activities. Carpal tunnel syndrome, tendonitis, and white finger syndrome are specific examples of work-related musculoskeletal disorders affecting the neck and upper extremities. These can be caused or aggravated by work and the environment in which they develop.

Key risk factors include intense force application, working in awkward positions, and repetitive motions, especially if they involve the same muscle groups and joints.

2. WHAT ARE MUSCULO-SKELETAL DISORDERS (MSDs) OF PROFESSIONAL ORIGIN?

Repeated exposure to demands of varying intensity over a prolonged period of time is the main cause of most work-related musculoskeletal disorders, which can manifest as acute injuries such as fractures resulting from accidents.

The parts of the body mainly affected by MSDs are the neck, shoulders, back, and upper limbs, but the lower limbs can also be equally affected, as illustrated in Figure 1.



Figure 1. The connection between the spine and the internal organs

There are cases where minor discomfort and pains can escalate into serious medical conditions that require sick leave or long-term treatment. Musculoskeletal disorders are currently a cause for concern not only because they deteriorate workers' health but also due to the enormous economic impact they have on companies. The most prevalent musculoskeletal conditions are hand or wrist tenosynovitis and elbow epicondylitis.

In most cases, the onset of these conditions stems from incorrect handling of loads (weights) used in the workplace. Manual handling of loads (MHL) encompasses any type of carrying out by one or more performers, including lifting, pushing, pulling, moving, or placing a weight that, due to its characteristics or inadequate ergonomic conditions, poses risks to the performers, especially in terms of dors-lumbar disorders.

3. HOW ROMANIANS ARE AFFECTED BY AMS?

Approximately 22% of work absences in Romania are caused by musculoskeletal disorders (MSDs), such as rheumatoid arthritis and lower back problems. These have become a significant issue for the country's workforce health. Each year, 42% of Romanian employees report back pain caused by working conditions, while nearly 30% of them indicate muscle pain in the neck, shoulders, and upper limbs. These are some of the findings of the report prepared by the Work Foundation as part of the "Fit for Work Romania" project. In Romania, musculoskeletal disorders are frequently cited as one of the main causes of work-related illnesses.

A significant cause of limited access to work for a large number of European Union citizens is chronic conditions. Lower back pain and rheumatoid arthritis are some of the reasons why thousands of Romanians cannot maintain their jobs. Approximately 42% of Romanian employees annually report experiencing back pain caused by working conditions, which is one of the highest rates among European countries. Although most patients with back pain have not received a specific diagnosis, it is important to raise awareness of this issue and pay attention to spinal health.[3]

- approximately 42% of Romanian employees annually report experiencing back pain as a result of working conditions, one of the highest rates among European countries.
- approximately 30% of Romanian employees annually report muscle pain in the neck, shoulders, and upper limbs.
- approximately 143,000 Romanians suffer from rheumatoid arthritis, a condition whose annual costs are estimated at around 619 million euros, according to the Romanian League Against Rheumatism.

It is possible that an increasing number of people with musculoskeletal disorders also have certain imbalances leading to depression or anxiety associated with the existing conditions. Studies highlight the fact that a high percentage of general practitioners, employers, and even individuals with MSDs do not fully appreciate the impact of stress on the severity of physical incapacity, as stated in the report prepared by the Work Foundation.

It is important for these factors to be taken into consideration to improve the management and treatment of MSDs, as well as to adequately support affected individuals.

4. MANUAL HANDLING OF MASSES - RISK ASSESSMENT - PREVENTIVE MEASURES

The construction sector is the focus of this study for several reasons, such as:

- the majority of health issues reported by construction workers are related to back and muscle pains.
- the minimum level of job autonomy is characterized by the fact that the worker cannot influence the organization of work, the selection or modification of tasks performed, the pace of work and intervals of time, as well as the methods of carrying out activities.
- decreased work capacity.
- the diversity of medically arisen conditions.

The definitions stem from Council Directive 90/269/EEC on the minimum health and safety requirements for the manual handling of loads presenting risks to workers, particularly those of a dorsolumbar nature, a directive transposed into national law through Government Decision no. 1051/2006.

This frequency of MSDs can be reduced through the organization and fulfillment of work tasks in accordance with the law. The main directions for improving the safety and health protection of workers at work are included in Framework Directive 89/391/EEC.

This directive draws attention to the fact that better security, improved hygiene, and the health protection of workers at work represent an objective that should not be approached solely from economic considerations. Employers must be informed about the latest scientific and technological advances regarding the design of workplaces, equipment, and work systems, depending on the levels of associated risks.

The directive implements 9 principles for preventing occupational risks. evitarea riscurilor:

- risk assessment that cannot be avoided;
- combating risks at the source;
- adapting work to the individual;
- adapting to technical progress;
- replacing hazards with non-hazards or lesser hazards;
- developing a consistent prevention policy that includes technologies;
- organizing work, working conditions, social relationships, and the influence of factors in the work environment;
- prioritizing collective protection measures over individual protection measures;
- providing appropriate instructions to workers.

Council Directive 89/391/EEC on the introduction of measures to promote improvements in the safety and health of workers at the workplace has been transposed into Law 319/2006. According to the law, employers have a duty to assess risks in the workplace and take measures to protect the safety and health of workers, as well as other persons who may be exposed to hazards.

A rigorous risk assessment contributes to reducing the costs that enterprises incur for production losses, compensation, and increases in insurance contributions. [4]

A phased approach to risk assessment involves:

- Identifying hazards or combinations of hazards;
- Identifying persons who may be harmed;
- Assessing risks and making decisions regarding actions to be taken to see if:
 - The hazard can be completely eliminated;
 - The risk can be controlled;
 - Protective measures can be taken to protect the entire workforce;
 - Individual protective equipment is necessary;
- Monitoring risks and reviewing preventive measures.

Risk factors generated by the way a task is performed refer to hazards or risks that may arise from how a person performs their responsibilities or work tasks. These may include body posture, handling weights, repetitive movements, use of equipment or machinery, and others such as:

- Bending forward;
- Twisting sideways while bending forward;
- Carrying weight on the shoulder and simultaneously leaning the body backward;
- Squatting position (with a bent back).

Risk factors associated with the type of load being handled refer to hazards or risks that may arise depending on the type of objects or materials a person manipulates during work, such as: excessive weight of the load/task, instability of the load, volume of the manipulated load.

Additionally, risk factors related to the nature of the work environment include: Insufficient space for carrying out activities (vertically and horizontally), slippery or uneven surfaces, excessively high or low temperature of the work environment, inadequate lighting, and other inappropriate environmental conditions.

After carefully identifying the risks, it is crucial to decide and implement improvements to avoid or minimize these risks. Implementing effective measures will reduce the musculoskeletal disorders of workers. A series of preventive measures may include: worker training, promoting health in the workplace, periodic risk assessment, as specified in detail in Figure 2.

The introduction of mechanical equipment (ex: motorized wheelbarrow with thermal engine)	
Ensuring adequate support equipment for manual handling activities (lifting and handling devices)	
Organizing the work process, so that optimal work periods and rest periods are ensured	
Training workers in the proper use of lifting devices and manual handling techniques	

Figure 2. Preventive measures - protective equipment

After completing the risk assessment, it is necessary to compile a list of priority measures that include both workers and their representatives involved in implementing these measures, as highlighted in Table 1.

Table 1. Preventive measures - classification

Nomination of the preventive	Proposed measures
Administrative and organizational measures	Reducing daily working hours could reduce AMS The introduction of additional breaks in repetitive work is possible without loss of productivity
Technical measures	Technical ergonomic measures can help reduce stress on the back and upper limbs, for example by using ergonomic hand tools. These measures can prevent the onset of chronic fatigue syndrome without affecting productivity.
Individually protective equipment (EIP)	There is no conclusive evidence that the use of lap belts helps prevent occupational back disorders. It is important to address other methods and strategies to promote back health and prevent problems related to posture and exercise.

5. CONCLUSIONS

Risk assessment contributing to the development of musculoskeletal disorders represents the first and perhaps the most crucial step in improving the health and comfort of employees. This assessment brings significant benefits to both the physical and mental health of workers, contributing to the prevention and management of musculoskeletal system issues and reducing the risk of workplace injuries.

To prevent musculoskeletal disorders, general measures are needed to improve the working conditions of employees:

Configuration adaptation: Workplaces should be configured to improve the working positions of employees. This may include adjusting the height of chairs, desks, or other equipment to fit individual needs.

Use of ergonomic equipment: Workers should be equipped with ergonomic devices and equipment tailored to specific work tasks. For example, using ergonomic chairs or specially designed mice can help reduce stress on muscles and joints.

Worker training: Employers should provide adequate training to workers on correct work methods and associated risks. This may include proper lifting techniques, the use of protective equipment, and other relevant aspects.

Work planning: Work should be planned to avoid repetitive or prolonged work in improper positions. Additionally, it's essential to schedule regular rest breaks and alternate tasks to reduce strain on certain muscle groups.

These measures will contribute to maintaining the health of workers and reducing the risk of musculoskeletal disorders.

6. REFERENCES

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