

Musculoskeletal Disorders 101

MSD Solutions Lab



What Are MSDs?

Musculoskeletal disorders (MSDs) are injuries or disorders of the muscles, nerves, tendons, joints, cartilage and spinal discs.

Work-related musculoskeletal disorders are conditions in which:

- The work environment and performance of work contribute significantly to the condition; and/or
- The condition is made worse or persists longer due to work-related factors.

Note that musculoskeletal injuries caused by slips, trips, falls, or similar incidents are excluded from this definition of MSDs.

Both work-related and non-work-related MSDs impact workers' well-being on the job and away from the workplace. Preventing MSDs is part of creating a healthy workplace as well as improving quality of life for all workers.

MSDs Cost Your Business

MSDs are the largest category of workplace injuries and the leading cause of disability worldwide.

#1 Cause of Disability

The World Health Organization reports that MSDs are the leading cause of disability worldwide.

Approximately **1.7 billion people** have musculoskeletal conditions across the globe.

#1 Workplace Injury

According to the NSC Injury Facts®, **247,620 MSD injuries** were severe enough to require days away from work in 2020 alone.

The median absence period from these injuries was **14 days**.

Billions of Dollars Lost

According to Liberty Mutual's 2021 Workplace Safety Index, MSD injuries cost U.S. employers billions each year in worker compensation, lost productivity and absenteeism.

Overexertion injuries, such as lifting, pushing or carrying heavy boxes, are the most expensive injury at **\$13.3 billion per year**.

Injuries from awkward postures total **\$4.71 billion**, while injuries from repetitive motions cost **\$1.66 billion**.

MSD Signs & Symptoms

MSDs range in severity from mild, periodic symptoms to severe, chronic and debilitating conditions.

The most common signs and symptoms associated with MSDs include:

- Pain
- Burning
- Reduced Range of Motion
- Tenderness
- Cramping
- Tingling
- Swelling
- Stiffness
- Numbness
- Redness
- Loss of Strength

Common MSDs

Sprain

An injury resulting in the stretching or tearing of ligaments within a joint.

Strain

Injury to a muscle or a tendon, through varying degrees of stretching or tearing. Note: Tendons are the fibrous tissue that connect muscles to bones.

Muscle Rupture

A complete tear of a muscle and/or its attaching tendons.

Tendonitis

Irritation or inflammation of a tendon. Often caused by repetitive movements of a joint, especially if high forces are required to accomplish a task.

Tennis Elbow/ Golfer's Elbow

Tendonitis afflicting the tendons of the forearm muscles that attach to the elbow. Often caused by repeated bending of the wrist and rotations of the forearm, especially when high forces are required.

De Quervain's Tenosynovitis

The swelling of the tendons at the base of the thumb near the wrist. Often caused by activities that require repetitive, forceful thumb movements, such as texting or grasping.

Trigger Finger

A condition where a finger gets stuck in a bent position and the finger may bend or straighten with a snap. Often caused by repeated, forceful movements of the finger(s), such as a single finger trigger on a hand tool, or tight grasping or gripping of hand tools.

Rotator Cuff Strain

An injury to the muscles and tendons surrounding the shoulder joint. Often seen in jobs that require repetitive reaching overhead, to the side or behind the back.

Common MSDs (continued)

Nerve Entrapment Syndrome

Develops when a nerve becomes compressed or entrapped and restricted by surrounding tissues. Most often result from the repeated, forceful movements of a joint.

Carpal Tunnel Syndrome

A nerve entrapment syndrome of the median nerve as it runs through the wrist. Caused by activities such as repetitive use of a computer mouse, assembling small parts, grasping or handling objects on conveyor belts.

Thoracic Outlet Syndrome

A group of disorders that occur when blood vessels or nerves in the space between the collarbone and the first rib (thoracic outlet) are compressed. Often develops from repeated or sustained overhead reaching.

Back Pain

Pain resulting from a strain or a sprain of the various structures that surround the spine. Activities such as heavy lifting, pushing, pulling or exposure to whole-body vibration can lead to back pain. Most commonly affects the lower back. Low back pain is most common MSD injury.

Herniated Disc

Spinal discs provide cushioning between the vertebrae, the bony structures of the spine. In a herniated disc, the outer layer begins to break down and the jellylike center pushes outward causing the disc to bulge, which can press against the surrounding nerve structures. Most commonly affects the low back.

Hand-Arm Vibration Syndrome

A disorder that impacts the circulation and limits the blood flow to the hand and fingers. Prolonged use of hand-held vibrating tools is the most common work-related cause of this condition. Also called Raynaud's Syndrome.

Hernia

Inguinal hernias occur in the lower abdomen and are the most common work-related hernias. They occur when the intestines push through the weakened muscles in the lower abdomen and appear as a bulge under the skin. Commonly caused by heavy physical exertion such as lifting heavy objects.

Work-Related Risk Factors

Job attributes, workplace conditions or exposures on the job that increase the likelihood of experiencing an MSD.

Primary Risk Factors

High Force

Examples: lifting heavy objects, pushing or pulling heavy loads, or forceful gripping or pinching

Awkward or Sustained Posture

Example: overhead reaching

Excessive Repetition

Example: performing the same task or movement over and over, such as a wrench rotation

Secondary Risk Factors

Contact Stress

Example: holding a tool where the handle is pressed into parts of the hand

Vibration

Examples: road vibrations experienced by tractor and truck drivers or those caused by hand-held power tools

Extreme Temperature

Example: working in a refrigerated work environment



Factors that Increase the Risk



Combining risk factors in a job task, such as high force of exertion *and* excessive repetition



Longer exposure to a risk factor



Long durations of task performance



Lack or limited frequency of rest breaks in a repetitive or sustained task

Additional Risk Factors



Organizational and Psychosocial Factors

Work environment-related factors such as job demands (e.g., high workload), job control (e.g., control over timing and frequency of rest breaks) and social support at work contribute to the development of MSDs. These factors can be positive or negative, and can either increase or moderate the risk of developing an MSD.



Individual or Personal Factors

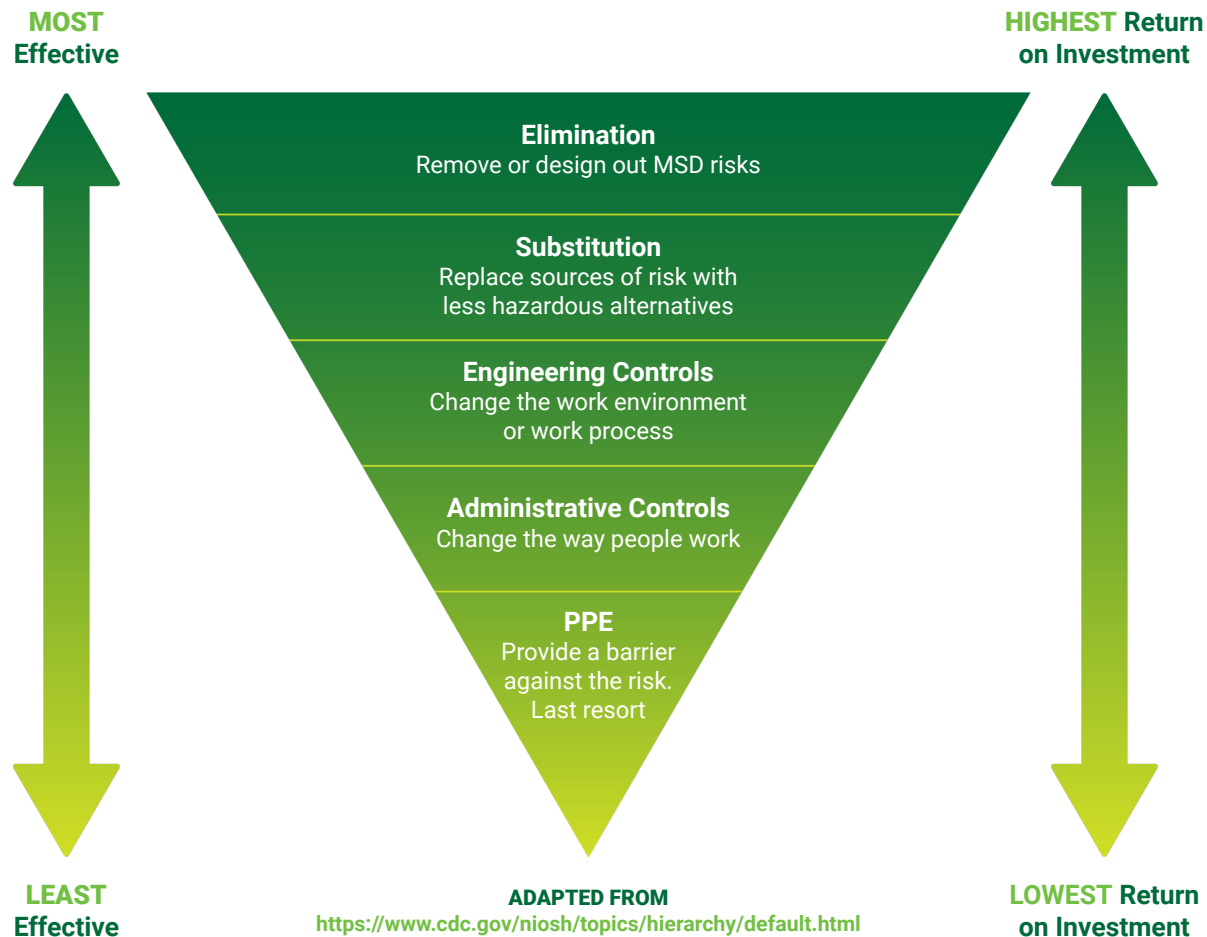
Personal characteristics can influence the risk for developing an MSD. Examples include physical conditioning, age, gender, previous MSDs and activities outside work. Worker wellness and resiliency programs that address personal risk factors are part of a comprehensive MSD Solutions plan.

MSD Risk Assessment and Elimination

Preventing MSDs involves identifying risk factors, then removing or reducing exposures to these risk factors.

Strategies to reduce MSD risks should be prioritized in the following order whenever and wherever possible:

1. **Elimination**
2. **Substitution**
3. **Engineering controls**
4. **Administrative controls**
5. **Personal protective equipment (PPE)**



Management of MSDs

A medical management program addressing MSDs is an essential part of an overall MSD Solution Program.

The goal of medical management is to prevent pain, physical impairment and disability, and ensure a safe return to work for all workers who experience an MSD.

An effective MSD medical management program requires collaboration between your organization, the worker and the health care provider(s) (HCPs).

Early Reporting & Detection

Create systems to encourage all employees to report early signs and symptoms of MSDs. Early detection reduces overall pain and chances of disability for the injured worker. Include this information in ongoing employee trainings and communications.

Diagnosis & Treatment

Collaboration with an HCP is critical for proper diagnosis and treatment of MSDs. Keep an open line of communication and provide the HCP with information about the work performed by the injured worker.

Intervention

Following the report of an MSD or signs and symptoms of an MSD, the employer should take steps to identify and reduce exposure to risk factors in the employee's job. This will prevent future MSDs injuries among other employees performing the same job.

Return to Work

Employers may need to accommodate temporary job restrictions to safely return an injured employee to work. A successful return to work plan requires collaboration between your organization and the HCP.

References & Resources

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