

OSHA: Ergonomics and Slips, Trips, and Falls

Ergonomics

Ergonomics can be defined simply as “the study of work.” Specifically though, ergonomics is the science of designing the job to fit the worker, rather than physically forcing the worker’s body to fit the job. Adapting tasks, work stations, tools, and equipment to fit the worker can help reduce physical stress on a worker’s body and eliminate many potentially serious, disabling work-related musculoskeletal disorders (MSDs).

MSDs are injuries and disorders of the soft tissues (muscles, tendons, ligaments, joints, and cartilage) and nervous system. They can affect nearly all tissues, including the nervous and tendon sheaths, and most frequently involve the arms and back. Occupational safety and health professionals have called these disorders a variety of names, including cumulative trauma disorders, repeated trauma, repetitive stress injuries, and occupational overexertion syndrome.

These painful and often disabling injuries generally develop gradually over weeks, months, and years. MSDs usually result from exposure to multiple risk factors that can cause or exacerbate the disorders, and **NOT** from a single event or trauma such as a fall, collision, or entanglement. Frequently, workers must lose time from work to recover; some never regain full health. MSDs can cause a number of conditions, including

- Pain
- Numbness
- Tingling
- Stiff Joints
- Difficulty Moving
- Muscle Loss
- Paralysis

When there is a mismatch between the physical requirements of the job and the physical capacity of the worker, work-related MSDs can result. Examples of MSDs include:

- Carpal Tunnel Syndrome
- Tendinitis

- Rotator Cuff Injuries (a shoulder problem)
- Epicondylitis (an elbow problem)
- Trigger Finger
- Muscle Strains and low back injuries

Ergonomics is also the practice of designing equipment and work tasks to conform to the capability of the worker. It provides a means for adjusting the work environment and work practices to prevent injuries before they occur.

Risk Factors

The risk of MSD injury depends on work positions and postures, how often the task is performed, the level of required effort and how long the task lasts. Risk factors might lead to the development of MSDs include:

- **Exerting excessive force.** Examples include lifting heavy objects or people, pushing or pulling heavy loads, manually pouring materials, or maintaining control of equipment or tools.
- **Performing the same or similar tasks repetitively.** Performing the same motion or series of motions continually or frequently for an extended period of time.
- **Working in awkward postures or being in the same posture for long periods of time.** Using positions that place stress on the body, such as prolonged or repetitive reaching above shoulder height, kneeling, squatting, leaning over a counter, using a tool, with wrists bent, or twisting the torso while lifting.
- **Localized pressure into the body part.** Pressing the body or part of the body (such as the hand) against hard or sharp edges, or using the hand as a hammer
- **Cold temperatures** in combination with any one of the above risk factors might also increase the potential for MSDs to develop
- **Combined exposure to several risk factors** might place workers at a higher risk for MSDs than does exposure to any one risk factor

In addition, observe whether workers are:

- Modifying their tools, equipment, or work area
- Shaking their arms and hands
- Rolling their shoulders
- Bringing products such as back belts or wrist braces into the workplace

These behaviors can mean that workers are experiencing ergonomic issues. Talk with them and review their work to see if any risk factors for MSDs are present. Workers can identify and provide important information about hazards in their workplaces. Suggestions for change also are valuable.

Once problem jobs are identified, conducting an in-depth ergonomic job analysis can help identify solutions to prevent MSDs. An ergonomic job hazard analysis is a technique that focuses on job tasks as a way to identify hazards before they occur. It focuses on the relationship between the worker, the task, the tool, and the work environment.

Possible Solutions

OSHA's OSH Act of 1970 strives to "assure safe and healthful working conditions for working men and women..." and mandates that "each employer shall furnish to each of his/her employees employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious physical harm to his/her employees."

Transferring Equipment:

Strains and sprains can occur if employee is transferring equipment like IV poles, wheelchairs, oxygen canisters, respiratory equipment, dialysis equipment, x-ray machines, or multiple items at the same time. To reduce the hazards of transferring equipment:

- Place equipment on a rolling device if possible to allow for easier transport, or have wheels attached to the equipment
- Push rather than pull equipment when possible. Keep arms close to your body and push with your whole body not just your arms
- Assure that passageways are unobstructed
- Attach handles to equipment to help with the transfer process
- Get help moving heavy or bulky equipment or equipment that you can't see over
- Don't transport multiple items alone for example if moving a patient/residents in a wheelchair as well as an IV pole and/or other equipment get help, don't overexert yourself

- Reaching into deep sinks or containers: If washing dishes, laundry, or working in maintenance areas and using a deep sink, limit excessive reaching and back flexion by:
 - Placing an object such as a plastic basin in the bottom of the sink to raise the surface up while washing items in the sink
 - Remove objects to be washed into a smaller container on the counter for scrubbing or soaking and then replace back in the sink for final rinse

Slips/Trips/Falls

Statistics show the majority (66%) of falls happen on the same level resulting from slips and trips. The remaining 34% are falls from a height.

Slips

Slips happen where there is too little friction or traction between the footwear and the walking surface. Common causes of slips are:

- Wet or oily surfaces
- Occasional spills
- Weather Hazards
- Loose, unanchored rugs or mats
- Flooring or other walking surfaces that do not have same degree of traction in all areas

Trips

Trips happen when your foot collides (strikes, hits) an object causing you to lose the balance and, eventually fall. Common causes of tripping are:

- Obstructed view
- Poor lighting
- Clutter in your way
- Wrinkled carpeting
- Uncovered cables
- Bottom drawers not being closed
- Uneven (steps, thresholds) walking surfaces

How to prevent falls due to slips and trips?

Both slips and trips result from some kind of unintended or unexpected change in the contact between the feet and the ground or walking surface. This shows that good housekeeping, quality of walking surfaces (flooring), selection of proper footwear, and appropriate pace of walking are critical for preventing fall accidents.

Housekeeping

Good housekeeping is the first and the most important (fundamental) level of preventing falls due to slips and trips. It includes:

- Cleaning all spills immediately
- Marking spills and wet areas
- Mopping or sweeping debris from floors
- Removing obstacles from walkways and always keeping them free of clutter
- Securing (tacking, taping, etc.) mats, rugs, and carpets that do not lay flat
- Always closing file cabinet or storage drawers
- Coverage cables that cross walkways
- Keeping working areas and walkways well lit
- Replacing used light bulbs and faulty switches

Without good housekeeping practices, any other preventive measures such as installation of sophisticated flooring, specialty footwear or training on techniques of walking and safe falling will **NEVER** be fully effective.

Flooring

Changing or modifying walking surfaces is the next level of preventing slip and trips. Recoating or replacing floors, installing mats, pressure-sensitive abrasive strips or abrasive-filled paint-on coating and metal or synthetic decking can further improve safety and reduce risk of falling. However, it is critical to remember that high-tech flooring requires good housekeeping as much as any other flooring. In addition, resilient, non-slippery flooring prevents or reduces foot fatigue and contributes to slip prevention measures.

Footwear

In workplaces where floors might be oily or wet or where workers spend considerable time outdoors, prevention of fall accidents should focus on selecting proper footwear. Since there is no footwear with anti-slip properties for every condition, consultation with manufacturers' is highly recommended. Proper fitting footwear increases comfort and prevents fatigue which, in turn, improves safety for the employees.

The mission of the Occupational Safety and Health Administration (OSHA) is to save lives, prevent injuries, and protect the health of America's workers. As part of the Department of Labor, OSHA and the states that operate OSHA-approved state plans establish guidelines and standards to promote worker safety and health that apply to every workplace in the United States, including medical and dental offices.