

Workplace Injury Prevention Guide

This guide describes some common workplace operations known to increase injury potential if not performed correctly, and suggests interventions and best practices to help minimize injury risk.

What causes or aggravates ergonomic injuries?









Hierarchy of Controls

Controlling exposures to workplace hazards is fundamental to preventing workplace injuries. The hierarchy of controls technique is widely accepted as a strategy to implement feasible and effective solutions.



Elimination and **Substitution** are the most effective, but may be the most difficult to implement in an existing process. Examples include ordering products in smaller containers or using mechanical lifting devices to eliminate strenuous tasks.

Engineering Controls are designed to remove the hazard at the source before it can come in contact with a worker. Examples include automating a task to eliminate worker exposure or redesigning a part to eliminate a manual operation.

Administrative Controls limit exposures by implementing rules. Examples include job rotations and work-rest schedules that limit the time a worker is exposed to a hazard.

Personal Protective Equipment (PPE) includes items such as respirators, ear plugs and protective clothing (e.g., gloves, face shields, eye protection and footwear) that serve to provide a barrier between the wearer and the hazard.

PPE should never be the only method used to reduce exposure except under very specific circumstances because PPE may fail (stop protecting the worker) with little or no warning (e.g., breakthrough can occur with gloves, clothing and respirator cartridges).

Body Positions

The goal is to maintain a neutral (natural) body posture throughout the job task to reduce the strain on working muscles and joints and keep blood circulating. Any posture that requires the body to move out of the neutral posture range increases injury potential.

Keep the Load Close and Don't Twist

Keep loads close to the waist while lifting and carrying to reduce the strain on your shoulders and lower back. Create room to improve access to materials being handled. Easy access allows workers to get closer and reduces reaching, bending and twisting.



Hug load and pivot with feet



Don't twist

Push When You Can

Pulling can be hard on your back and shoulders, so push rather than pull when you can.



Shoulder strain



Pushing is easier than pulling

Tips for Pushing Heavy Objects

- Bend your knees
- Lean in toward the object you're pushing (the heavier the object, the more you should lean)
- Try not to hunch your back—keep it straight
- Use your legs and the weight of your body to move the object
- Take small steps





Keep All Tasks in Your Power Zone

Workers have fewer injuries when they keep their work in the power zone or safe zone.



Know your power zone and try to stay there



Out of the zone leads to increased injury potential



Bring the work to your safe zone





Use simple tools to minimize reaching

Turntable on a load leveler can reduce long reaches



BENT WRIST = POOR WRIST POSITION



STRAIGHT WRIST = IDEAL WRIST POSITION





Tilt containers to keep materials within easy reach







STRAIGHT WRIST = IDEAL WRIST POSITION

Use tools designed to keep wrist in alignment with hand

Heavy Force

The weight of an object being lifted or the force that a worker must exert on an object has a significant impact on injury potential. Muscles and tendons can be overloaded when a strong (high) force is applied against the object or load, leading to a sprain/strain injury.

Share the Load

Plan ahead. Use team lifts for loads that are too heavy or bulky for one person. Continue looking for improvements to reduce the physical demands of these strenuous lifts.



Two-person lift



Teamwork

Reduce the Load

Establish a policy on weight limits for manual lifting (e.g., no loads greater than 35 pounds). Evaluate lifting demands in each department and find solutions where needed to comply with the established limit, such as reducing the size/capacity of parts containers.

You should also look at push-pull forces of material handling carts and determine improvements if those forces exceed 50 pounds. Low resistance casters, smaller carts and a limited quantity of parts per cart are some possible solutions.





Smaller bins and carts mean less weight

Use Equipment and Other Aids to Your Advantage

Workers are best utilized performing value-added tasks and making decisions, not lifting heavy objects. Transfer strenuous lifting tasks to mechanical equipment whenever possible.



Portable gantry crane with electric hoist



Jib crane with electric hoist



Powered load lifter



Vacuum lifter for hard-to-grip objects



Powered stacker



Powered lift table



Use a surface to support the weight



Removable plate used to support containers

Repetition

Using the same body part repeatedly to perform a task puts a worker at increased risk of injury because it does not allow the affected muscles to rest or recover. High task repetition combined with other risks factors, such high force and/or awkward postures, can increase the risk of injury. Generally, the greater the number of repetitions, the greater the degree of risk. Although there are no specific guidelines on repetition, a task may be considered highly repetitive if the cycle time is 30 seconds or less.

Control Other Injury Risk Factors

- Reduce force and awkward postures associated with the task to reduce fatigue and allow better tolerance of repetition.
- Train workers on proper work technique. Teach them the tricks others have found to make the job easier.
- Allow time for work hardening before assigning employees to repetitive tasks full time.



Train workers how to perform a task with minimal strain

Job Rotation

Job task rotation is a way to reduce duration, frequency and severity of injury potential. Design work assignments so that employees can rotate between workstations and tasks to avoid prolonged periods of performing a single task, thereby reducing fatigue and the risk of injury.



Mopping for several hours straight increases injury risk

Allow Stretch Breaks

Stretch breaks provide an opportunity to counteract the effects of repetition, increasing circulation needed for recovery.



Stretch in the opposite direction your body has been positioned

Allow Micro Breaks

Micro breaks are recommended every 20-30 minutes for workers performing highly repetitive tasks. This 60-90 seconds of rest gives muscles a chance to recover from the repetitive stresses placed on them, by returning blood flow and relaxing muscles and tendons.



If you're sitting down, stand up; if you're standing up, sit down

Contact Stress

Contact stress results from continuous contact or rubbing between hard or sharp objects/ surfaces and sensitive body tissue, such as soft tissue of the fingers, palms, thighs and feet. This contact creates localized pressure for a small area of the body, which can inhibit blood, nerve function or movement of tendons and muscles.



Add an extra handle

Check Your Handle Options



Use boxes/bins with handholds





Add padding or clamp-on handles to reduce stress



Add specialty padding to reduce stress



Gloves can protect palms (soft tissue)



Small metal handles can dig into palms



Specify fixtures with comfort-grip handles





Use tools with comfort-grip handles

Vibration

There are two main types of vibration:

- Hand-arm vibration: Often due to operating powered handheld tools, such as angle grinders, drills, jackhammers and chain saws
- 2. Whole-body

vibration: Normally occurring while driving or traveling in vehicles Vibration affects tendons, muscles, joints and nerves. Vibration to a specific body part can decrease sensitivity and result in unnecessary increases in muscle contraction, which may lead to injury or fatigue. Localized vibration from machines and hand tools can damage the nerves and blood vessels of the hands and arms. The risk for injury depends on the duration, frequency and extent of the vibration.

Protecting workers from the effects of vibration usually requires a combination of appropriate tool selection, the use of appropriate vibration-absorbing materials (e.g., padded gloves) and work practices like job rotation.

Use Low-Vibration Tools

Tools can be designed or mounted in ways that help reduce the vibration level. For example, using anti-vibration chain saws reduces acceleration levels by a factor of about 10. Some pneumatic tool companies manufacture anti-vibration tools.



Use low-vibration tools to minimize hand-arm vibration

Try Anti-Vibration Gloves

Conventional protective gloves (e.g., cotton or leather) do not reduce the vibration that is transferred to a worker's hands when they use vibrating tools or equipment. However, gloves do provide protection from typical industrial hazards (e.g., cuts and abrasions).





Along with using anti-vibration tools and gloves, workers can reduce the risk of hand-arm vibration syndrome by following safe work practices, such as:

- Use the minimum hand grip consistent with safe operation of the tool
- Wear sufficient clothing, including gloves, to keep warm
- Take rest periods to avoid continuous exposure
- Rest the tool on the work piece whenever practical
- Avoid using faulty tools
- Maintain properly sharpened cutting tools
- Consult a doctor at the first sign of vibration disease

Pulling It All Together — Injury Risk

The more risk factors a worker is exposed to, the greater the likelihood of an injury. When both ergonomic risk factors and individual risk factors are present, the likelihood of an injury is at its greatest.



Consider All Causes of Workplace Injuries

A comprehensive risk assessment can uncover potential hazards and provide insight to enhance workplace safety.

TOP WORKPLACE INJURY CAUSES

Notes

This publication does not list every risk that may be encountered. Management of every organization should have all areas inspected for hazards and develop a safety policy specifically for the organization's needs. To access additional online resources that can help prevent workplace injuries, go to www.emcins.com and select **Loss Control**.

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