

## What is Ergonomics? Does this apply to Construction?

Simply put, Ergonomics is fitting the task to the person. Too often employees perform job tasks that expose them to potential injuries due to poor design of workspace or tools they are using. Ergonomics involves the assessment of job tasks to identify ergonomic risk factors and appropriate controls to reduce or eliminate the identified risk factors. Generally, ergonomic changes are made to improve the fit between the demands of the job tasks and the capabilities of the employees.

## What are Ergonomic Risk Factors?

Ergonomic risk factors are characteristics of a job that contribute to the creation of ergonomic stress on the body. Risk factors are present at varying levels for different jobs and tasks. Generally, the greater the exposure to a single risk factor or combination of risk factors, the greater the probability of an ergonomic injury or illness or Work-Related Musculoskeletal Disorders (WMSD). The big three ergonomic risk factors are Force (how much you lift/push/pull), Repetition (how often you perform the task), and Posture (body position). Other potential ergonomic risk factors include vibration, contact stress, sustained exertions, and cold temperatures.

The construction trades have many risk factors that may cause WMSDs that are not always easy to identify. Some examples are masons with back problems due to the repeated lifting of cement block, and carpenters with wrist problems due to repeated use of a hammer.

## What Can Employers Do?

Much like overall health and safety programs, effective ergonomic programs utilize a systematic approach involving the following:

*Management Commitment and Employee Involvement* – Successful ergonomic programs have everyone moving in the same direction working towards a common set of goals. The full backing of management is necessary which includes allocating resources and time resolving identified issues.

*Worksite Hazard Assessments* – Establish an ergonomic committee comprised of management and employees to devote time to ergonomic issues. Conduct assessments of job tasks to identify risk factors, and identify jobs that are showing early signs of, or are actually causing WMSDs.

*Hazard Prevention and Control* – Pursue equipment purchases, workstation design, modified work practices, and other tools that are designed to reduce or eliminate ergonomic risk factors.

*Education and Training* – Provide ergonomic training for employees on how to recognize the primary ergonomic risk factors of Force, Repetition, and Posture. Educate personnel on the early symptoms of WMSDs and the proper procedures for reporting and/or recording them. Encourage early reporting of symptoms.

## How Do I Control Ergonomic Hazards?

There are simple things that employers can implement and workers can do to reduce ergonomic stress, such as:

- Use a buddy system or the proper lifting device to carry heavy loads. To the extent feasible, use your legs to push up and lift the load, not the upper body or back. Do not twist the body during a lift.
- Design work activities so employees do not have to work on their knees. If the job requires it, use knee pads.
- Avoid repeatedly twisting the hands and wrists. Provide proper hand tools that are designed to keep the hand and wrist in a comfortable, neutral position.
- Avoid stretching or unnecessary stress to do overhead work where possible. Adjust scaffolds to the appropriate working height and use a lifting device to hold drywall or other material in place for overhead work.
- Use vibrating tools such as a jack-hammer or abrasive wheel saw that are equipped with built-in vibration dampers. Wear gloves to help absorb energy.
- Use the appropriate tools such as hammers that are designed to absorb shock and tools with handles that aid in maintaining a neutral wrist position when used.
- Rotate job tasks to reduce repetitiveness.

## Additional Resources:

The Center for Construction Research and Training - <http://www.cpwr.com/research/construction-ergonomic-research-solutions>

NIOSH- Simple Solutions Ergonomics for Construction Workers-

<http://www.cdc.gov/niosh/docs/2007-122>



## Preventing Sprains And Strains

*Tool Box Talk Source: OSHA Alliance Program Construction Roundtable*

Sprains and strains account for about a third of injuries in construction. A **sprain** is an injury to a ligament, the tough, fibrous tissue that connects bones to other bones. Sprain injuries involve a stretching or a tearing of this tissue. Ankle, knee and wrist injuries account for the majority of sprains. A **strain** is an injury to either a muscle or a tendon, the tissue that connects muscles to bones. Back injuries are the most prevalent in regard to strains. Depending on the severity of the injury, a strain may be a simple overstretch of the muscle or tendon, or it can result in a partial or complete tear.

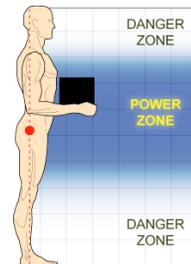
These soft tissue injuries occur frequently, and are painful, disabling and often accompanied by lengthy recovery periods. **Maintaining good physical fitness is essential in avoiding sprains and strains.**

To minimize the chances of sprains, observe the following practices:

1. Practice safety measures to help prevent falls. For example, practice safe housekeeping by keeping work areas clear of clutter.
2. Avoid strenuous activity on the job when tired or in pain.
3. Use extra caution when working on slippery surfaces such as ice or wet floors.
4. Always wear appropriate and proper fitting footwear for your job.
5. Use extra caution when walking across uneven surfaces. These are areas where you could easily turn or twist an ankle or knee.
6. When stepping off ladders, always look where you are placing your feet, before you put your full weight on them.

To minimize the possibility of incurring strains, observe the following practices:

1. Be certain that you understand your employer's Material Handling Safety program.
2. Whenever possible, arrange your work areas to minimize the amount of heavy lifting required.
3. Before any heavy lifting activity, always warm up, using moderate stretching exercises. Do not stretch aggressively as you may over-stretch and injure yourself.
4. Always plan the lift. Consider the weight of the object; how far you must carry it and your route of travel. When you approach an object on the floor, try to get an idea of how heavy it may be by moving it with your foot or cautiously lifting it off the ground. If the object is too heavy, seek additional help or use a mechanical lifting device such as a forklift, hand truck or winch.
5. Lift objects in the "power zone". This is the area between mid-thigh and mid-chest height. Avoid lifting objects outside this zone. Use your best judgment when lifting heavy objects. Do not attempt to lift an object that exceeds your strength, and use extreme caution when lifting objects exceeding 50 lbs.
6. Always carry objects close to your body.
7. Always lift slowly and smoothly.
8. Avoid twisting. Always turn the whole body as one unit when changing direction while carrying a heavy object.
9. Move heavy objects by pushing or pulling, whenever possible. Pushing is always preferable.
10. Always stand close to the object that you are lifting and be certain that fingers and toes are clear when setting it down.
11. Always lift with your legs and not your back.



Follow these helpful rules and you will greatly reduce the chance that you will experience a painful sprain or strain.

