



Safety and Risk Management

Ergonomics

Ergonomics is the design of the workplace, equipment, machine, tool, product, environment, and system, taking into consideration human physical, physiological, biomechanical, and psychological capabilities. Ergonomics covers all aspects of a job, from the physical stresses it places on joints, muscles, nerves, tendons, bones, to environmental factors which can effect hearing, vision, and general comfort and health. Physical stressors include repetitive motions such as those caused by keying data or continual use of a manual screwdriver. Other physical stressors could be tasks involving vibration such as using a jackhammer, or tasks which involve using excessive force, such as lifting boxes of heavy books. Working in an awkward position, such as holding a telephone to your ear with your shoulder, can also cause problems. Repetitive motions, vibration, excessive force, and awkward positions are frequently linked to ergonomic disorders; however, the majority of "Cumulative Trauma Disorders "(CTDs) or "Repetitive Strain Injuries" (RSIs), are caused by repetitive motions that would not result in undue stress or harm if only performed once.

Occupational Safety provides assistance in the application of simple ergonomic principles. The ultimate goals of implementing these ergonomic principles, besides healthy and happy employees, are increased productivity, improved health and safety, increased job satisfaction, increased work quality, lower employee turnover, fewer lost work hours, and decreasing workers' compensation claims.

1. Back Safety and Lifting Techniques

Proper lifting technique is critical to back safety, but perhaps more important is proper planning. Before you lift that box, or tool, or piece of equipment, take a moment to consider your action:

- Do you need to lift the item manually?
- How heavy is it?
- Where are you moving the item from?
- Where does it need to go?
- What route do you have to follow?

Many times the item you are moving could be moved with a piece of equipment - a dolly, a hand cart, a forklift. Consider using mechanical help wherever possible. If the item needs to be moved manually, and it is heavy or ungainly, ask for help. When using mechanical help, remember to push, not pull - you'll have more control, and greater leverage. Fasten the load to the equipment, so sudden stops or vibration don't jar it off.

When moving an item from a hard-to-reach place, be sure to position yourself as close to the load as possible. Slide it out to get it closer, and be sure that you have adequate room for your hands and arms. Be aware of adjacent obstructions, on either side or above the load. Think about where the item will be placed once you've lifted it - will it be overhead? Under an overhang? In a narrow spot? Try to allow yourself as much room as possible to set the load down. You can always shift it slightly later. Check



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your path from place to place - remove tripping hazards, protect openings, set up a “well wheel” or a “bucket and line” if you need to get materials up a ladder. Make sure lighting is sufficient to see where you are going. Stabilize uneven or loose ground, or choose an alternate route. The shortest way isn't always the fastest, or the safest.

Moderation and balance are important considerations in the care and maintenance of your back. Risk factors for back injuries include:



- Lifting with your back bowed out.
- Bending and reaching with your back bowed out.
- Slouched sitting.
- Twisting or jerking movements.
- Lack of proper rest.
- Obesity and poor nutrition.
- Stressful work and living habits.

Not coincidentally, most back injuries can be attributed to one of these 5 causes.

- Posture
- Body Mechanics / Work Habits
- Stressful Living
- Loss of Flexibility
- Poor Conditioning

You need the correct proportions of strength, flexibility, and overall quality of life to eliminate or minimize back injuries. You need to exercise, eat right, and stretch as often as possible to help prevent injuries, and to recover more quickly if injured. In addition, a reduction in stress levels can help to relieve the muscle tension that can contribute to injuries.

Not all back injuries are a result of sudden trauma - most are of a cumulative type, where a repeated minor injury has flared up, or continued use of a heavy tool in the same position has caused pain, or a great deal of time is spent in the same position. Familiarize yourself with and practice proper lifting techniques whether on the job or at home.

 <p>Right way to lift</p>  <p>Wrong way to lift</p>	<ul style="list-style-type: none"> • Squat to lift and lower. Do not bend at the waist. • Keep your low back bowed in while bending over. • Keep the weight as close to you as possible. • Bow your back in and raise up with your head first. • If you must turn, turn with your feet, not your body. • Never jerk or twist. • Put the weight down by keeping your low back bowed in. • Keep your feet apart, staggered if possible. • Wear shoes with non-slip soles.
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2. Ergonomic Work Station

Set Up an Ergonomic Workspace

These tips come courtesy of Steve Meagher, from ergonomics consulting firm Site Solutions.



Maintain good posture
Keep your back straight—remember, no slouching!—with your head balanced above your neck, and arms resting at your sides comfortably.

Adjust seat
Position your hips a bit higher than your knees, with your feet on the floor/footrest and your lower back supported.

Position monitor
Raise or lower it so you can clearly see the whole screen without tilting your neck up or down.

Place keyboard and mouse
Keep them close to each other on the same level, with the home row of keys easy to reach with your elbows positioned at 90°. As you type, your wrists should be straight.

Rest regularly
Every 20 minutes or so, take short, 15- to 30-second breaks. Take a few longer breaks during the day.
—Jason Cross



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Healthy Computing

- Adjust the tilt of the monitor, its contrast and brightness settings, and the lighting around you.
- Keep your forearms horizontal with your wrists in a neutral, comfortable position while using the keyboard or mouse.
- Always leave space to rest your hands while using the keyboard or mouse.
- Let your upper arms hang naturally at your sides.
- Sit erect, with your feet resting on the floor and your thighs level.
- When sitting, make sure the weight of your legs is on your feet and not on the front of your chair seat. Adjust your chair's height or use a footrest, if necessary, to maintain proper posture.
- Vary your work activities.
- Try to organize your work so that you do not have to key for extended periods of time. When you stop keying, try to do things that use both hands. TAKE AGGRESSIVE BREAKS!!

3. Computer Work Stations

Occupational Safety staff can assist with purchasing decisions or in designing of the workstation using ergonomic principles. Keep in mind there are alternatives to buying new equipment, and simple modifications to the current space may help achieve the ideal setup.

<i>Component</i>	<i>Description</i>
Chair	The chair is the focal point of an ergonomic workstation, and all other aspects of design should be adjusted around it. Chairs should have an adjustable back to provide support for the lumbar region of the back and trunk. High-back chairs provide extra upper back support. Select a chair with easily adjustable height to permit the feet to rest flat on the ground with the upper legs parallel to the floor. Your feet should rest flat on the floor! A footrest may be needed by some people to achieve this position. Chairs should have a five-star base and casters compatible with the floor surface. T-armrests with adjustable height and width are recommended for intensive computer users. When seated, the seat pan should not hit the back of knee.
Work Surface	Work surfaces should be large enough to accommodate all the computer equipment, including a wrist rest in front of the keyboard and adequate viewing distance between the monitor and operator's eyes. A keyboard tray can be used to increase depth and to provide proper keying level. There should also be enough room under the work surface to allow free leg movement. The height of the work surface should allow the forearms to be parallel with the floor when working at the computer, while not forcing the shoulders to be elevated. A footrest can assist in supporting the feet as well, allowing the employee to sit back in his/her chair.



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Keyboard	The keyboard and input device (mouse or trackball) should be at the same level (or slight negative tilt) and in front of the operator. The height of the keyboard and input device should allow the operator to position their forearms and hands parallel to the floor. Achieve this by adjusting or articulating the keyboard tray. A padded wrist rest for the keyboard and input device should be used to prevent the operator's wrists from coming in contact with the work surface when the arms are at rest. Avoid overreaching by keeping the input device close to the body.
Monitor	Position the monitor directly in front of the operator with the screen at or below eye level. One exception is bifocal wearers who may prefer a slightly lower monitor level. Monitors should have good contrast, sharp focus, and be free from flickering and glare to minimize eye strain.
Document Holder	Position the document holder at eye level and close to the monitor.
Phone Head Set	The use of a head set reduces awkward neck and shoulder postures, notably by eliminating the habit of cradling the phone between the shoulder and chin. Head sets are particularly beneficial for people who work on the phone and computer simultaneously.
Lighting	Excessive overhead lighting can cause glare and eye discomfort. Dimming overhead lights and use of a task lamp can reduce eye fatigue. Monitor shades and glare screens also reduce glare. Adjust monitor contrast and brightness for maximum personal comfort.