



ERGONOMICS FOR THE PREVENTION OF MUSKULOSKELETAL DISORDERS

Ergonomics is the science of fitting workplace conditions and job demands to the capabilities of the working population. Effective and successful "fits" assure high productivity, avoidance of illness and injury risks, and increased satisfaction among the workforce.

Common examples of ergonomic risk factors are found in jobs requiring repetitive, forceful, or prolonged exertions of the hands; frequent or heavy lifting, pushing, pulling, or carrying of heavy objects; and prolonged awkward postures. Vibration and cold may add risk to these work conditions. Jobs or working conditions presenting multiple risk factors will have a higher probability of causing a musculoskeletal problem. The level of risk depends on the intensity, frequency, and duration of the exposure. Environmental work conditions that affect risk include intensity, frequency and duration of activities.

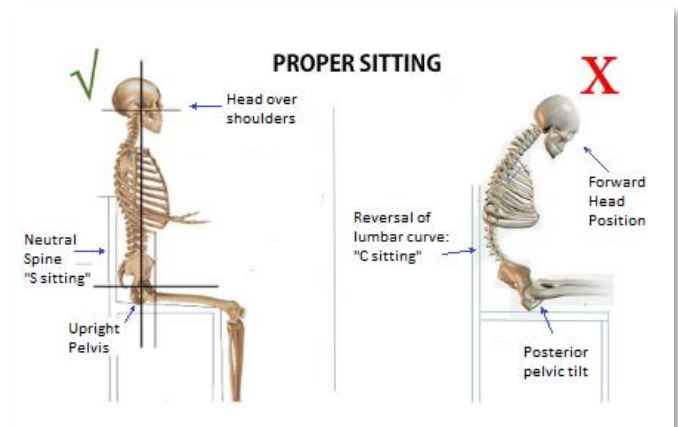
Manufacturing workers are at risk for repetitive motion injuries. Repetitive motion injuries develop over time and occur when muscles and joints are stressed, tendons are inflamed, and nerves are pinched and blood flow is restricted.

Working in awkward positions present ergonomic problems. Minimize occupational injuries and simultaneously improve worker comfort, productivity, and job satisfaction by becoming familiar with ways to control ergonomics-related risk factors.

BE AWARE OF YOUR POSTURE

Your back is composed of three natural curves that form an S-shape. When the three natural curves are properly aligned, ears, shoulders and hips are in the same plane. Poor posture may lead to pain and serious injury. To avoid ergonomic-related risk factors:

- Use a chair that provides good back support and sit against the back of the chair.
- Lower the chair or adjust the foot ring or get a footrest, if their feet dangle.
- Tilt the seat forward or use a seat wedge when working in a forward posture
- Adjust the position of the work, the work surface, or the chair so that you sit in an upright, supported position.



FOR ENQUIRIES:

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- Always try to work at a bench cut out; cut outs can help workers get close to their work while sitting against the back of their chair.
- Use supportive shoes and cushioned mats if required to stand for long periods.
- Keep frequently used trays and supplies within close reach.

KEEP ARMS AND HANDS RELAXED

Be aware of tensions that may occur as you perform different tasks. To avoid ergonomic-related risk factors:

- Keep your shoulders relaxed and elbows close to your sides when working. Avoid reaching to use instruments and work materials.
- Maintain neutral wrist and arm postures when working; work with your wrists in a neutral or straight position as if you were shaking hands with someone.
- Avoid repetitive or forceful twisting and turning motions.
- Select equipment and tools that are the right size for your hands.
- Use padding and tubing to reduce pressure and force when working. For example, use rubber tubing or forceps to increase diameter and reduce pinch force.
- Use thin, flexible gloves that fit properly. Lifting and poorly designed gloves increase pinch and grip forces when working.

AVOID STATIC POSITIONS

Vary your activities, change your position, and take short breaks every 20 minutes to rest muscles and increase blood circulation. To avoid ergonomic-related risk factors:

- Shift your weight often when standing to work. Use a stool or shelf to prop up a foot to relieve pressure on your back.
- Alternate how you hold objects like forceps. To vary the task, workers can alternate holding with the thumb and index finger, and with the index and middle finger.

AVOID ERGONOMIC-RELATED RISK FACTORS WHEN USING COMPUTERS

To avoid ergonomic-related risk factors when using computers:

- Use adjustable keyboard platforms under lab benches that accommodate use of the mouse beside the keyboard.
- Place monitor so your viewing distance is between 18 and 24 inches, or 46 and 76 centimeters.
- Place monitor so the top of the screen is approximately at eye level. This allows the eyes to gravitate naturally toward the center of the screen.
- Use footrests, where possible, to allow you to change leg positions throughout the day.
- Take mini-breaks of two minutes for every 20 minutes of key-boarding or mouse work.

Your goal is to work in a way that minimizes stress on your bodies. There are two main things to consider when doing this: (1) we should work in “neutral postures,” and (2) we should move and change positions frequently.

The first concept is “neutral postures.” A “neutral” sitting position is sitting with a “neutral spine,” which is when the low back (or lumbar spine) maintains its natural “S” curve. Also, the head should be over the shoulders and the elbows are resting at the sides.

A second very important concept is to keep moving. Even if you are maintaining a good posture, staying in one position for a long time puts prolonged stress on the same tissue in your body. Altering your position changes how your body is loaded and distributes stress evenly.

Some quick fixes for some of the common problems:

- **Slouched Sitting:** When sitting we need to maintain an “S” curve in the spine. If you are sitting in a chair with a flat backrest, add a pillow or a commercial lumbar support that supports the low back. Deep seats like a couch will cause you to slouch and should be avoided. In general, sitting puts increased pressure on the low back, so even with good support you shouldn’t sit all day. Alternate between sitting and standing or try sitting semi-reclined which is less stressful on the low back than sitting upright.
- **Forward Head Posture:** The top of your computer screen should be at the same height as your forehead. Don’t work directly off your laptop because you will have to lean over to see it. Instead, try using a laptop stand to elevate your laptop screen to the right height. If you can’t see the screen without leaning forward, make the



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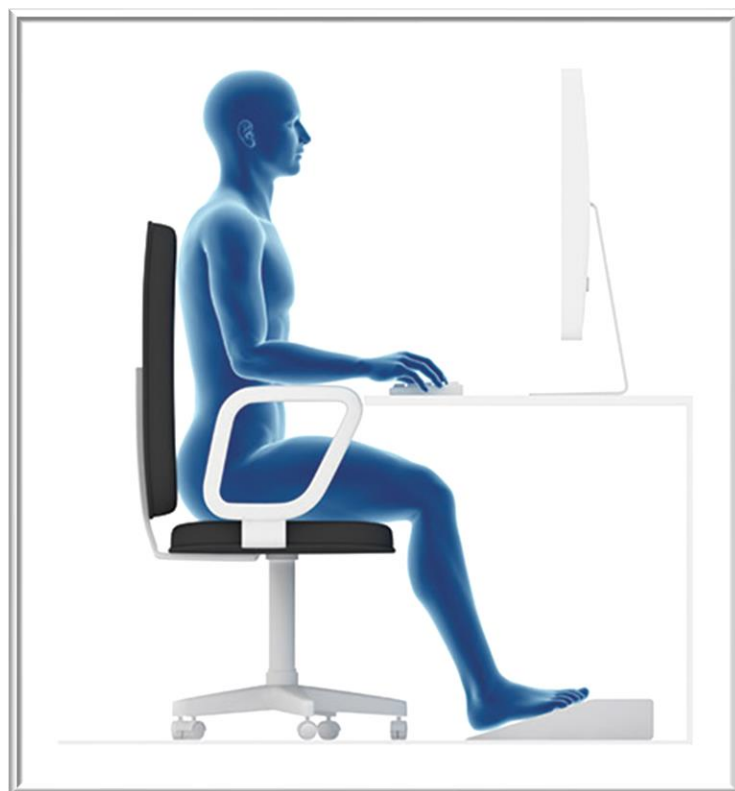
font bigger or use glasses so that you can see easily.

- **Reaching:** When you are using the keyboard and mouse, your elbows should be relaxed at your sides with a 90-degree bend. If you use a laptop stand, you will also need to get a wireless keyboard as well to keep your elbows at your sides. If you work at a desk and still reach for your keyboard, you may need to install a keyboard tray to bring the keyboard and mouse closer to you.
- **Move Frequently:** This is the most important point for your home office. If you stay in the same position all the time it will put stress on the same tissue in your body, and eventually something will break down. Move every 20-30 minutes. Try to switch between sitting, standing, and semi-reclined positions to do your work.

MAKING CHANGES

See if you can tell what is causing you to sit poorly and start making some changes to your office. Make the cheap changes first and see if they help. You may eventually want to invest in a better workstation. Here are some suggestions to the recommended ergonomic items which include:

- Laptop Stand
- Wireless Keyboard
- Lumbar Support
- Adjustable Standing Desk Converter





MINUTES OF MEETING

Date: _____ Person Conducting Meeting: _____

Topic: _____

Branch: _____ Division: _____

Attendees:

NAME	INITIAL	DATE

NAME	INITIAL	DATE

Additional Items Discussed:

Problem Areas or Concerns:

Comments:

FOR ENQUIRIES:

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