

Tips to Avoid Injury

By understanding the basics of ergonomics and how they relate to your job, you may be able to prevent painful injuries. There may be a lot you can do to change your work area for your own benefit.

Back strain - is a common injury caused by sitting or standing in an incorrect position for extended periods of time. You may be able to prevent back injuries by using a footrest or a multi-position work station where you can either sit or stand. By changing positions frequently, you can ease the strain on back and leg muscles.

Neck strain - can be caused by holding your arms in an incorrect position. The extra stress on the arms and hands will affect the neck muscles as well.

Shoulder strain - is common when your supplies are positioned at an awkward height. Excessive bending, stretching or lifting can put added pressure on the shoulder joint. Can you reorganize your work area to eliminate this strain?

Muscle tension - can be caused by many things including working too long in the same position and even stress. Do you incorporate some short breaks and stretching exercises into your work day to avoid strain injuries and fatigue? Simple stretching, flexing and strength-building exercises can decrease your chances of injury. Warming up with a few exercises before you begin work is also important.

Eyestrain and headaches - can be caused by glare on a monitor screen. Can the lighting be improved or re-directed in your work area? While you are thinking about eyestrain, have you had your eyes checked lately?

Risk Management Notes

Workstation Ergonomics

The term **ergonomics** comes from the Greek words *ergos* meaning "work" and *nomos*, meaning "study of" or "natural laws of." The science of ergonomics dates back to the 1940s, but only in the past decade has it become a commonly known term.

We have studied the literature on the subject and there seem to be some basic principles on which most professionals agree. The following contains some of the basics as an introduction to the subject.

These guidelines that may be helpful to avoid musculo-skeletal injury:

Monitor—Should be an arm's length or a bit more from your eyes. The monitor should be about 15° below horizontal eye level to the lower limit where the bottom of the screen is 45° below eye level.

Keyboard—Should be set at a height so that forearms, wrists, and hands are aligned when keyboarding and parallel to the floor or bent slightly down from elbow to hand. The hands should never be bent back. Preferably the stand or desk on which the keyboard sits is adjustable. Don't pound the keys, use a light touch.

Mouse pad—Should be at a height where your arm, wrist and hand are aligned and in "neutral." It is best if the stand or desk the mouse pad sits on is adjustable. **Wrists**—while you are actually typing, should not rest on anything, and should not be bent up, down or to the side. Your arms should move your hands around, and instead of resting your wrists, you should stretch to hit keys with your fingers. There are wrist-rest devices on the market that give you a place to rest your hands, but only when pausing from typing, not while you are typing.

Chair—Should be adjustable and comfortable. Set it so that your thighs are either parallel to the floor or at a slight downward angle from the hips to the knees. You should sit straight, not slouching, and not straining forward to reach the keys. Stay relaxed. Anything that creates awkward reaches or angles in the body will create problems.

Align your wrists—Wrist should not be bent to the side; instead your fingers should be in a straight line with your forearm, as viewed from above.

The proper keyboard angle—Research suggests that it may be better to tilt the back edge of your keyboard

down, away from you. Put a prop an inch or two thick under the edge of the keyboard closest to you, but make sure the whole thing is still low enough so you aren't reaching up.

Frequently change positions—Movement is important during the working day. You may want to adjust the height or angle of your chair after a few hours or to stand after sitting for a period. In fact, ergonomic studies have verified that the least stressful working position is one where the individual can "sit and stand" rather than "sit or stand."

Use two hands to perform double-key operations—Such as Command-P, Ctrl-C or Alt-F, instead of twisting one hand to do them. Move your whole hand to hit function keys with your strong fingers instead of stretching to reach them.

Hold the mouse lightly—don't grip it hard or squeeze it. Place it where you don't have to reach up or over very far to use it (close to the keyboard is best). Better yet: learn and use equivalent keyboard commands whenever possible, as no pointing device is risk-free. Even trackballs have injured users.

Rest—When you stop typing for a while, rest your hands in your lap and/or on their sides instead of leaving them on the keyboard.

Take breaks—Holding utterly still is deadly. Some experts suggest a 10-second break every three minutes, others suggest a 1-minute break every 15 minutes, a five-minute break every half hour or a 15-minute break every two hours, etc. You can stretch and/or move around during these breaks.

Eliminate unnecessary computer use—no ergonomic changes, fancy keyboards, or exercises are going to help if you are typing more than your body can handle. Ask yourself if some e-mail messages be replaced by telephone calls? How much time are you spending on the Internet? If you have other job duties intersperse them between your computer tasks.

By changing your work habits you may be able to avoid injuries associated with computer usage. We have attached an Evaluation Checklist provided by the Occupational Safety and Health Administration. For more information on this subject visit their Web site at: <http://www.osha.gov/SLTC/etools/computerworkstations/>

Evaluation Checklist

WORKING POSTURES—The workstation is designed or arranged for doing computer tasks so it allows your	Y	N
1. Head and neck to be upright, or in-line with the torso (not bent down/back). If "no" refer to Monitors, Chairs and Work Surfaces.		
2. Head, neck, and trunk to face forward (not twisted). If "no" refer to Monitors or Chairs.		
3. Trunk to be perpendicular to floor (may lean back into backrest but not forward). If "no" refer to Chairs or Monitors.		
4. Shoulders and upper arms to be in-line with the torso, generally about perpendicular to the floor and relaxed (not elevated or stretched forward). If "no" refer to Chairs.		
5. Upper arms and elbows to be close to the body (not extended outward). If "no" refer to Chairs, Work Surfaces, Keyboards, and Pointers.		
6. Forearms, wrists, and hands to be straight and in-line (forearm at about 90 degrees to the upper arm). If "no" refer to Chairs, Keyboards, Pointers.		
7. Wrists and hands to be straight (not bent up/down or sideways toward the little finger). If "no" refer to Keyboards, or Pointers		
8. Thighs to be parallel to the floor and the lower legs to be perpendicular to floor (thighs may be slightly elevated above knees). If "no" refer to Chairs or Work Surfaces.		
9. Feet rest flat on the floor or are supported by a stable footrest. If "no" refer to Chairs, Work Surfaces.		

Notes:

SEATING—Consider these points when evaluating the chair:	Y	N
10. Backrest provides support for your lower back (lumbar area).		
11. Seat width and depth accommodate the specific user (seat pan not too big/small).		
12. Seat front does not press against the back of your knees and lower legs (seat pan not too long).		
13. Seat has cushioning and is rounded with a "waterfall" front (no sharp edge).		
14. Armrests , if used, support both forearms while you perform computer tasks and they do not interfere with movement.		
"No" answers to any of these questions should prompt a review of Chairs.		

Notes:

KEYBOARD/INPUT DEVICE —Consider these points when evaluating the keyboard or pointing device. The keyboard/input device is designed or arranged for doing computer tasks so the	Y	N
15. Keyboard/input device platform(s) is stable and large enough to hold a keyboard and an input device.		
16. Input device (mouse or trackball) is located right next to your keyboard so it can be operated without reaching.		
17. Input device is easy to activate and the shape/size fits your hand (not too big/small).		
18. Wrists and hands do not rest on sharp or hard edges.		
"No" answers to any of these questions should prompt a review of Keyboards, Pointers, or Wrist Rests.		

Notes:

MONITOR —Consider these points when evaluating the monitor. The monitor is designed or arranged for computer tasks so the	Y	N
19. Top of the screen is at or below eye level so you can read it without bending your head or neck down/back.		
20. User with bifocals / trifocals can read the screen without bending the head or neck backward.		
21. Monitor distance allows you to read the screen without leaning your head, neck or trunk forward/backward.		
22. Monitor position is directly in front of you so you don't have to twist your head or neck.		
23. Glare (for example, from windows, lights) is not reflected on your screen which can cause you to assume an awkward posture to clearly see information on your screen.		
"No" answers to any of these questions should prompt a review of Monitors or Workstation Environment.		

Notes:

WORK AREA —Consider these points when evaluating the desk and workstation. The work area is designed or arranged for doing computer tasks so the	Y	N
24. Thighs have sufficient clearance space between the top of the thighs and your computer table/keyboard platform (thighs are not trapped).		
25. Legs and feet have sufficient clearance space under the work surface so you are able to get close enough to the keyboard/input device.		

Notes:

ACCESSORIES—Check to see if the	Y	N
26. Document holder , if provided, is stable and large enough to hold documents.		
27. Document holder , if provided, is placed at about the same height and distance as the monitor screen so there is little head movement, or need to re-focus, when you look from the document to the screen.		
28. Wrist/palm rest , if provided, is padded and free of sharp or square edges that push on your wrists.		
29. Wrist/palm rest , if provided, allows you to keep your forearms, wrists, and hands straight and in-line when using the keyboard/input device.		
30. Telephone can be used with your head upright (not bent) and your shoulders relaxed (not elevated) if you do computer tasks at the same time.		
"No" answers to any of these questions should prompt a review of Work Surfaces, Document Holders, Wrist Rests or Telephones.		

Notes:

GENERAL	Y	N
31. Workstation and equipment have sufficient adjustability so you are in a safe working posture and can make occasional changes in posture while performing computer tasks.		
32. Computer workstation, components and accessories are maintained in serviceable condition and function properly.		
33. Computer tasks are organized in a way that allows you to vary tasks with other work activities, or to take micro-breaks or recovery pauses while at the computer workstation.		
"No" answers to any of these questions should prompt a review of Chairs, Work Surfaces, or Work Processes.		

Notes: