

Ergonomics Self Help Guide

This guide is intended to help computer users increase comfort and reduce the risk of injury while working at the computer. In addition to using this guide, it is strongly recommended that you attend a group ergonomics training session for additional preventive strategies. These trainings are usually offered once per semester. To learn more, please visit <http://www.sonoma.edu/ehs/ergo/> or contact Craig Dawson.

If you are experiencing discomfort, please contact Craig Dawson at 42932 or craig.dawson@sonoma.edu for personal ergonomic evaluation. It is important that you get help right away before discomfort becomes more severe.

A more neutral body position is safer.

A neutral body posture is one that reduces the risk of injury by minimizing strain on the joints, bones, muscles, nerves, and tendons. In computer work, this is achieved, in part, by an appropriate set up of the computer workstation. A workstation that is set up properly will:

- Increase comfort
- Reduce or eliminate flexion or extension (forward or backward bending) of the neck
- Allow the wrists to remain straight without forcing them to curl forward or bend back
- Prevent radial or ulnar deviation of the wrists (movement of wrists from thumb to pinky)
- Maintain an elbow bend of 90° or wider
- Allow the feet to rest firmly on the floor, with the hips at a 90° angle or slightly wider
- Provide adequate support for the lower back.

1. Start with the chair.

First, make sure you have enough leg room. You should have enough room to be comfortable and shift positions throughout the day. Move boxes and other materials that are stored under the desk directly in front of you, as this can restrict your movement and interfere with proper ergonomics.

Adjust the chair so that your feet are firmly planted on the floor (no dangling toes or feet on the casters of the chair). If the chair doesn't allow the feet to reach the floor, use a footrest so that the feet can rest in front of the body, rather than on a chair pedestal. Your thighs and torso should be aligned at a 90° angle or slightly wider.

If you can adjust the seat pan depth, it should be about one to three inches from the back of your knees when you are sitting against the backrest deep in the seat. The seat front should not press against the back of the knees.

Next, find the most pronounced part of back cushion (should be in bottom third of chair). Adjust the height so the most raised portion of the cushion supports the curve in your lower back.

Finally adjust the armrests. Armrests should not interfere with movement, should be adjustable so they do not interfere with the work surface, and should be contoured and comfortable. If possible, adjust the armrests so they are close to the sides of your body. Then adjust the height of the armrests so that your arms float just over the armrests when typing.

2. Adjust your keyboard.

The keyboard and mouse or other input device should be at the same height and close enough to your body that your upper arms are able to hang straight down by your sides. The keyboard should be at or lower than elbow height. The forearms should be parallel to the floor, with an elbow angle of about 90°. Most touch typists prefer the keyboard lower than elbow height, creating wider angle than 90°. The shoulders should be relaxed.

It is very important to keep your wrists **flat**. Wrist extension (backward bending) has been associated with pain in some studies (Serina, Tal, & Rempel, 1999). If your wrists bend backwards or forwards when typing or using the mouse, your keyboard needs to be adjusted. It is also important to minimize ulnar or radial deviation (i.e. side bending) of the wrists as much as possible. Split or alternative keyboard designs can minimize or prevent ulnar deviation of the hands when you type.

If you look at the keys when typing, the keyboard should be at elbow height. If you are a touch typist, it is usually most comfortable if the keyboard is lower than your elbows (often almost sitting on your lap).

If your keyboard is lower than your elbows, then the keyboard should have a negative tilt (the function key side of the keyboard will be lower than the space key).

3. Adjust your mouse.

Position the mouse so that you can avoid reaching for it. Get creative. Try mousing with the left hand. Or, if you seldom use the numeric keypad, you may wish to place the mouse over the keypad.

4. Adjust your monitor.

Determine where you position your body in front of the keyboard (most touch typists align themselves in front of the “G” and the “H” keys). Look straight ahead.

Are you looking in the vertical center of your monitor? If not, you could be creating tremendous neck strain over a short time. Adjust the monitor so that you're not turning your head to the right or left.

The monitor should be far enough away so that you can comfortably scan the whole screen with just your eyes (no head movement). This distance is typically 18-24 inches, but should be farther with some of the bigger studio monitors.

The monitor height is also very important to reduce neck strain. When you look straight out at the horizon you should be looking at the top menu bar on your computer. This means that the rest of the monitor should be lower than your eyes.

If possible, position the monitor so that it is perpendicular to windows or other bright light sources. Make sure that task lighting is also placed to the side, avoiding a position that is behind or over the monitor.

5. Other essentials:

Never cradle the telephone under your shoulder. If you need to be hands-free while you're on the phone, you need a headset. Old-fashioned receiver supports are not the solution. The reason is that any type of stationary hold of the phone using your neck and shoulder can cause tremendous strain over time.

Use slant boards or document holders. If you're working on the computer and referencing other documents, they should be propped up and close to the monitor. One easy solution is to prop up the document against the front of your monitor. To make it stand up straight, staple the document to a rigid folder. Or, if that's not possible, use an empty 4" binder and place it length-wise in front of the monitor with the spine facing away. These small adjustments can keep your neck from being constantly over stretched and overused.

Keep frequently used or referenced items close to you. If you need to reach for something more than three or four times per day, it should be placed on the work surface with an arm's reach. It should not be placed in the overhead compartments. You should be able to reach it without moving your torso. Move it closer for easier access.

Take breaks. Vary your tasks between computer work and non-computer work. Get up and walk down the hall to talk to someone, rather than sending an email. Take breaks at intervals throughout the day and give your body an opportunity to recover. After every 20 minutes of continuous work, take a vision break as well. Gaze at least 20 feet away for 20 seconds or more.