How is your computer workstation treating you?

How do you feel after spending a day working in front of a computer? Do you have sore eyes or headaches? Do your wrists, arms, shoulders, back, legs, or neck feel stiff or uncomfortable? You probably suspect computer work as the culprit but don't know how to prevent the discomfort — or you just accept it as part of the job.

The aches and pains that can result from working at a computer take days, weeks, or months to develop. They may eventually fade away or they may develop into chronic conditions such as carpal tunnel syndrome (injury to nerves in the wrist); tendinitis (swelling of the tendons) in the wrist or elbow; or tenosynovitis (swelling of the sheath around a tendon). Computer work that makes you feel sore, stiff, or uncomfortable has one or more of the following causes:

- **Repetitive movements** — for example, you type for long periods without rest.
- **Awkward postures** — for example, your neck is bent too far forward or your wrists are bent too far back.
- **Static posture** — you sit for long periods without getting up or stretching.

Working at a computer may not always be exciting, but it doesn’t have to be uncomfortable.

This guide helps you set up and use a computer workstation so that you’re comfortable and productive.

**Chair**

The chair is your foundation for comfortable computer work. It must fit you and be appropriate for your tasks. What to consider when selecting a chair:

- **Stability.** Select a chair that has a five-point base.

- **Seat pan.** The ideal seat pan allows two to three fingers' width (3-3.5 inches) from the front edge of the seat pan to the back of your lower leg at the knee when your back touches the backrest. The seat pan should allow your lower back to contact the backrest.

- **Seat-pan padding and fabric.** Hard, unpadded seat pans are uncomfortable to sit on for more than an hour. Soft, deeply padded seat pans cause you to sink in too far, shifting pressure from the buttocks to surrounding tissues. The result is tension in the hip muscles.

The front edge of the seat pan should have a softly padded, rounded front edge (called a waterfall edge). Straight, unpadded edges compress thigh tissues and restrict blood circulation, which can cause pain and numbness in the legs. Seat-cover fabric should be porous and breathable. A slippery seat pan will cause you to slide away from the backrest and provide little back support.
**Seat-pan angle.** The seat pan should adjust to reclining, flat, or forward angles – the three basic angles for seated work – so that you can achieve a comfortable posture.

**Backrest.** The backrest should be large enough to support your entire back, including the lumbar (lower back) region, but not so large that it interferes with your arms: *15 to 20 inches high and 13 inches wide* is preferable. It should be adjustable for height and tilt and contour to the curve of your lower back. Most computer users tend to sit in an upright or slightly forward posture. Adjust the tilt angle so that the backrest touches your back.

**Armrests.** Armrests should be adjustable and should not interfere with the work surface. You should be able to move close to your work without losing support from the backrest. Your forearms should rest comfortably on the armrests, with your shoulders relaxed. If the armrests are too high, they will elevate your shoulders and cause stiffness or pain in the shoulders and neck; if they’re too low, they promote slumping and leaning to one side. Remove armrests if you don’t use them, if they interfere with your tasks, or if they can’t be properly adjusted.

**Chair height.** You should be able to adjust the height of the seat pan so that your legs are at right angles and your feet rest flat on the floor. Your forearms should be horizontal and at right angles to your upper arms and your elbows should just clear the top of the work surface.

**Monitor**
The topmost active line of the monitor screen should be at or slightly below eye level. The topmost active line is the first line that you typically look at, not the top line of the status bar. The area of the screen that you look at most often should be about *15 degrees* below eye level. The distance between your eyes and the screen should be about an arm’s length (*16-29 inches*) when your neck is straight.

If you wear bifocal, trifocal, or progressive lenses, you may want to position the monitor lower to avoid tilting your head back to read through the bottom portion of the lens. Monitors that swivel horizontally and tilt vertically enable you to achieve the best viewing angle. If you need more workstation space or if others will use the workstation, consider mounting the monitor on an adjustable arm.

The monitor should have brightness and contrast controls that are easy to adjust. Text characters should be easy to see, distinct, and not have a perceptible flicker or waiver. Regular screen cleaning also helps keep text and images clear.

**Keyboard**
The keyboard should be thin to help keep your wrists straight while you’re typing. If you use a keyboard platform, choose one with adjustable height and angle.
Wrists and forearms should be relatively straight, slightly above the keyboard: your hands should be at or just below elbow height. Shoulders should be relaxed, elbows close to your body.

Matte-finished keyboard surfaces reduce reflection and eye strain.

Keyboards can be fitted with palm rests that support your hands, minimize contact with table edges, and help keep your wrists straight. Make sure the palm rest supports your palms, not your wrists. The top of the palm rest should not be higher than the first row of keys on the keyboard.

Alternative keyboard designs are also available, including split and angled keyboards and keyboards with different key arrangements. Some computer users feel that these alternative keyboards reduce typing fatigue; they’re not successful for all users, however. Proper chair height and work surface adjustments are more important than an alternative keyboard.

Mice and other pointing devices
Your mouse or pointing device should be at the same height as the keyboard, to either side of it. Your arm should be close to your body for support. Your hand, wrist, and forearm should be reasonably straight and slightly above the mouse. (A palm rest can help support your hands and keep your wrists straight.) Other types of pointing devices include touchpads, mouse pens, glide points, mice that reorient the hand and wrist, and mice designed for either hand.

Laptop computers
Laptop computers are not designed for prolonged use. The display, keyboard, and pointing device are close together, which creates awkward wrist, arm, shoulder, and neck postures. If you use a laptop for prolonged periods, make yourself comfortable by doing the following:

- Plug a standard-sized keyboard and mouse into the laptop.
- Place the keyboard and mouse at a comfortable height on a desk or work surface. (Your hands should be at or just below elbow height; wrists and forearms relatively straight, slightly above the keyboard.)
- Place the laptop on a platform or riser so that the display is at a comfortable height (the area of the screen that you look at most often should be about 15 degrees below eye level).
Footrests
When you sit in a properly adjusted chair, your feet should be flat on the floor. If not, support them with an angled (no more than 30 degrees) footrest that doesn’t restrict leg movement. Don’t use your chair base as a footrest.

What to look for when selecting a footrest:
- Stable, portable, incline-adjustable.
- Large enough to support the soles of both feet.
- Covered with nonslip material.

Computer Workstation Setup Checklist

Chair:
- Are your feet supported on the floor or on a footrest?
- Are your hips against the back of the chair?
- Is the backrest adjusted to support your back?
- Is your seat long enough and wide enough to support your hips and thighs?
- If you have armrests, do they allow you to rest your arms comfortably?
- Can you pull up close to your desk or keyboard without hitting your armrest?

Keyboard/Pointing Device:
- Is the keyboard within easy reach?
- Is your pointing device within easy reach and close to the keyboard?
- Is the most frequently used section of the keyboard positioned directly in front of you?

Computer Screen/Documents:
- Are you sitting directly in front of your screen?
- Can you view the screen using a slight downward gaze without raising or lowering your chin?
- Is the screen at least an arm's length distance from you?
- Are your source documents positioned on a stand between the monitor and keyboard, or on a stand close to the monitor?
- Can you view the monitor without seeing glare on the screen?

Resources:
Handout Guidelines provided by: (Department of Consumer & Business Services Oregon OSHA, 2009)

For more information:
Ergoweb www.ergoweb.com
Occupational Safety and Health Administration (OSHA) www.osha.gov
Office ergonomics training www.office-ergo.com
The National Institute for Occupational Safety and Health Ergonomics and musculoskeletal disorders: www.cdc.gov/niosh

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