Workstation Ergonomics

THE "IDEAL" POSTURE *
FEET flat on floor.

KNEES bent at about a right angle.

THIGHS roughly parallel to the floor with knees slightly higher than hips.

HIPS bent at a right angle.

BACK supported by the seat back.

SHOULDERS in a relaxed position.

HEAD tilted slightly forward.

UPPER ARMS hanging loosely at the side.

ELBOWS bent at roughly a right angle.

FOREARMS parallel to the floor.

WRISTS straight - not bent either vertically or horizontally.

FINGERS cascading downward to a position just above the keyboard.

The "IDEAL" posture may not position your hands just over the keyboard. If so, you will need to make some adjustments. Check the Accommodation section.

EXPERIMENT with postures that do not deviate too much from the ideal in order to find a work position that is comfortable.

MAKE a conscious effort to move around in your chair, continually making small postural changes to relieve muscular stress and strains. Even a comfortable posture will become uncomfortable over time.

TAKE breaks. "Micro" breaks every few minutes and a 5 minute 'stand up and walk around break' every hour are absolutely necessary to allow your body to recover from the strains imposed by computer work.

IF the office furniture is adjustable, alter the settings during the day. These changes can compliment the "Micro" breaks.

THE CHAIR
The Foundation of a Good Workstation

1. Firm Base

A 5 foot (or 5 castor) base provides a stable support.

2. Castors

Suited for the flooring, "soft" castors for hard flooring and "hard" castors for soft flooring.

3. Seat Pan

Covered with a breathable fabric.

Sufficiently roomy and padded but without too much seat compression.

Tilted so the front is slightly higher than the back.

Front edge "rolled" to avoid sharp edges.

4. Seat Pan Depth

Deep enough so that, with back snugly supported by the chair back, there is room for a clenched fist between the front of the seat pan and the back of your knees.

5. Chair Back

Adjustable so lumbar support fits properly into curve of your lower back.

Contoured both horizontally and vertically to provide support.

Slightly "sprung" to follow as you move backwards and forwards in the chair.

6. Arms - may not always be needed or even desirable.

Must not interfere with drawing the chair up to the work surface.

Adjusted so they are about 1 cm below your forearms while you sit in the "IDEAL" posture.

7. Adjustability

Many chairs feature adjustability allowing you to change:

- seat height

- seat pan tilt

- arm height

- seat pan depth

- back height to provide lumbar support

NOTE: Adjustability is helpful to everyone and is essential if the workstation is used by more than one person.

THE MONITOR

Proper Placement Avoids Muscle Strain

1. Viewing Distance

Arm's length (20 to 24 inches). Longer viewing distance for larger monitors.

2. Horizontal Position

Directly in front of you for most types of computer work.

To one side and source document directly in front of you if you work mostly looking at documents.

3. Vertical Position

Top of screen level with or slightly below eye level.

Bifocal wearers may want to lower screen further to be able to look through the bottom part of the corrective lens.

4. Screen Tilt

Tilted back 10 - 20 degrees to place it at right angles to line of sight.

5. Placement

Placed to avoid locating workstation with window or bright light either behind you or behind the monitor.

6. Brightness and Contrast

Adjusted to provide comfortable viewing.

7. Document

On a holder to the left or right of the screen in the same plane as the screen, or

On an inclined holder between the keyboard and the monitor.

LIGHTING AND GLARE
The Lighting Environment Makes a Difference

1. General Illumination

Excessively bright general illumination interferes with screen viewing.

2. Task Lights

Task lamps combined with lower levels of room illumination, together can create an effective visual environment.

3. Windows and Overhead Lights

Windows and bright overhead lights can cause reflections on the screen, which make viewing difficult.

Placing your workstation so that bright lights are neither behind you nor behind the screen avoids eyestrain.

"Egg crate" diffusers reduce glare from overhead lights.

4. Workstation

Shiny reflective items around your workstation are much more likely to create glare problems than items with matte finishes.

Anti-glare filters can make the screen harder to see and are often a poor solution to glare problems.

THE KEYBOARD
Poor Design and Poor Practice Cause Injury

1. Position

Directly in front of you (for most types of computer work).

2. Tilt

A raised front of keyboard has keys "fall away" from operator avoiding the need to raise fingers and bend wrists to use keys in back rows.

3. New Designs

"Split" keyboard reduces the need to bend wrists horizontally.

"Vertically sloped" keyboard allows typing with hands in the vertical 'hand shake' position.

Touch-sensitive pad can replace mouse.

4. Rests

Padded keyboard rests can be helpful.

Place fleshy part of your palm - not your wrist - on the rest.

Use only when resting, not while you are typing.

THE KEYBOARD TRAY
1. Height and tilt should be adjustable.

NOTE: A keyboard tray is often a poor choice because it places keyboard and monitor at different levels. It may also not provide enough room to allow placement of mouse close to the keyboard.

THE MOUSE
Wrist Problems Can Be Avoided

1. Position

Best placed immediately beside the keyboard and at same level as keyboard.

2. Shape

Various shapes accommodate different shapes and sizes of hands.

3. Rests

Padded rests can be helpful.

Place fleshy part of your palm - not your wrist - on the rest.

4. Other Features
Locking drag switch avoids need to keep the switch depressed while dragging mouse.

5. Technique

Avoid mousing with wrist bent in either the horizontal or vertical planes.

6. Other Tracking Devices

Track balls (minimum diameter 7.5 cm) and touch pads are becoming popular but their safety has not yet been extensively evaluated.

THE DESK
More Than Just a Place to Put the Monitor

1. Size

Large enough - particularly deep enough - to accommodate the keyboard and monitor.

2. Height

Appropriate to your body dimensions while seated in the "ideal" posture.

3. Knee Clearance

Roomy enough to provide ample room for knees.

4. Footrest

Adjustable in both height and slope to produce a comfortable "ideal lower body posture".

NOTE: Footrest may be needed if raising your chair to place your hand over keyboard in the "ideal upper body position" lifts your feet off the floor.

ORGANIZATION

A Place for Everything

Placing often-used items close to you avoids frequent reaching.

VISION CARE
1. Fatigue

Frequently looking away from the monitor and focusing on a distant object avoids eye muscle fatigue.

Hourly breaks away from the computer are essential.

2. Contact Lenses

Contact lens wearers may find that eyes become very dry when using a computer.

Making an effort to blink often can sometimes help.

Your optometrist might be able to give you advice about using eye drops.

3. Bifocal Lenses

To focus on the screen, you may have to look through the bottom section of your bifocal lenses. To accommodate, you may find that you lift your chin and strain your neck muscles.

Lowering the height of the monitor may reduce muscle strain.

An optometrist may be able to prescribe fixed focal length glass for you to use during computer work.

DOING YOUR PART
AT WORK

TAKE frequent "micro" breaks and stretch breaks hourly.

TRAIN yourself to adopt a good posture taking advantage of the support that your workstation provides.

KEEP your work area neat and tidy.

DON'T IGNORE aches or pains you feel may be related to work. Report problems to your supervisor and seek medical advice.

AT HOME

CARE FOR your health. Get enough rest. Eat sensibly.

CONSIDER the impact on your health of after work, hobbies or activities that involve forceful, repetitive or awkward movements, particularly of the upper body. These can also contribute to muscle and ligament injury.

TECHNIQUE
How You Do Your Job Impacts Your Health

KEYBOARD lightly. Don't pound keys.

TYPE with hands gliding over the keyboard - not resting on wrist rests.

KEEP wrists straight while typing or mousing, avoid bending from side to side or up and down.

GRIP mouse lightly with finger resting on button, not hovering over mouse.

GLANCE away from monitor frequently and focus on an object at least 20 feet away to allow eye muscles to relax.

TAKE frequent "micro" breaks and longer breaks hourly.

Even the best workstation design will not support an uninterrupted day of computer work.

SEEK help from a physical therapist if pain or discomfort becomes frequent.