

OFFICE ERGONOMICS

A Self-Assessment

Guide

Environmental Health and Safety Office
safety.dal.ca

REVISED 2013



The Dalhousie Safety Office produced this Guide to help faculty, staff and students create comfortable and safe workstations. We would like to thank the many faculty and staff who contributed to the preparation of the Guide.

Additional copies are available from the Safety Office. The Guide, along with additional information on ergonomics, is also available through the Dalhousie Safety Office website: **safety.dal.ca**

September 2013

CONTENTS

The "IDEAL" Posture	1
The Chair	3
The Monitor	5
Lighting and Glare	7
The Keyboard and Tray	9
The Mouse	11
The Desk	12
Organization	13
Vision Care	14
Doing Your Part	15
Technique	16
Making Accommodations	17

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.

* There really is no completely **"IDEAL"** posture.

- ✓ **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.

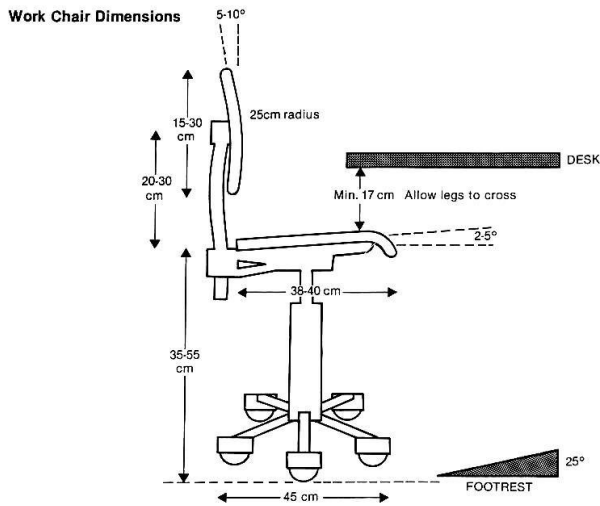
Adjusted so they are about 1 cm below your forearms while you sit in the "IDEAL" posture.

7. **Foot Rest**

An adjustable foot rest may be needed if you cannot place your feet comfortably on the floor when your hands are properly positioned over the keyboard.

8. **Adjustability**

Many chairs feature adjustability allowing you to change:



- back height to provide lumbar support
- arm height
- seat height
- seat pan tilt
- seat pan depth

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 at or slightly below eye level.

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

4. Screen Tilt

Tilted back 10 - 20 degrees to place the screen 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**

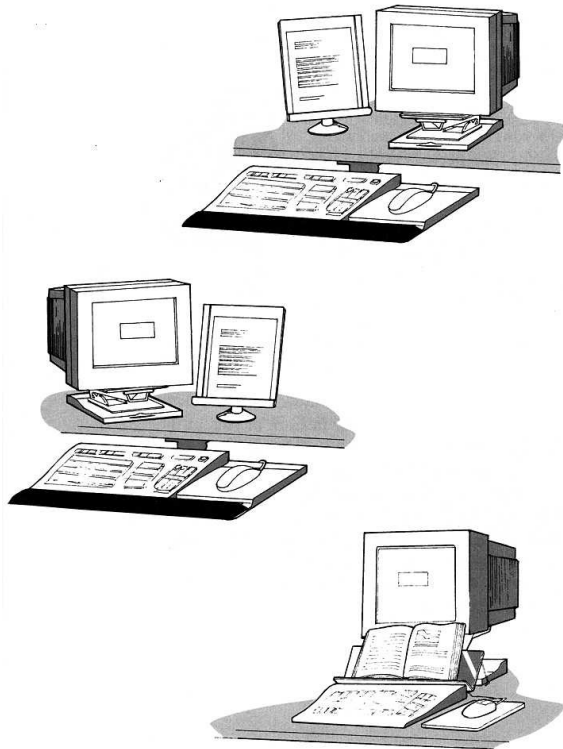
Adjusted to provide comfortable viewing.

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, or

Avoid placing the document flat on the desk.



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 together with lower levels of room illumination, 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 eye strain.

"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 AND TRAY

Poor Design and Poor Practice Cause Injury

1. Position

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

2. Tilt

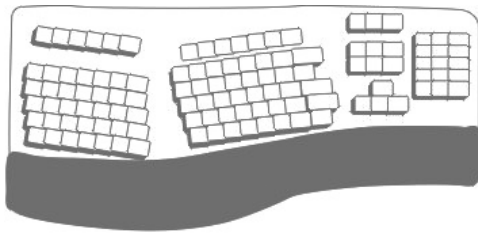
When the front of the keyboard is raised, keys "fall away" from operator avoiding the need to raise fingers and bend wrists to use keys in back rows.

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 the rest only when resting, not while you are typing.

THE KEYBOARD TRAY

Height and tilt should be adjustable.

NOTE: A keyboard tray is often choice because they place keyboard and monitor at different levels and may 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 and at same level as keyboard.

2. Shape

Various mouse shapes accommodate different shapes and sizes of hands.

3. Rests

Padded mouse rests can be helpful.

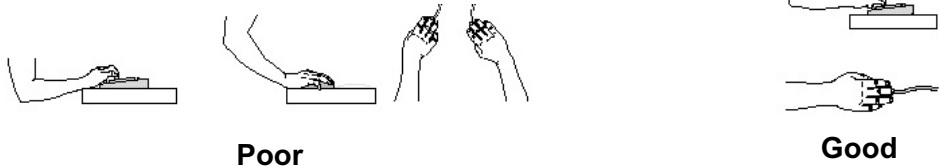
Place fleshy part of your palm - not your wrist - on the rest.

4. Other Features

Choosing a 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.



5. 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

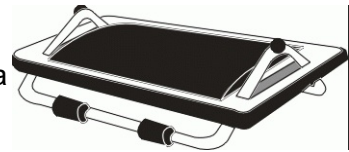
Appropriate to your body dimensions while seated in the "ideal" posture.

3. Knee Clearance

Roomy enough to provide ample room for knees.

4. Foot Rest

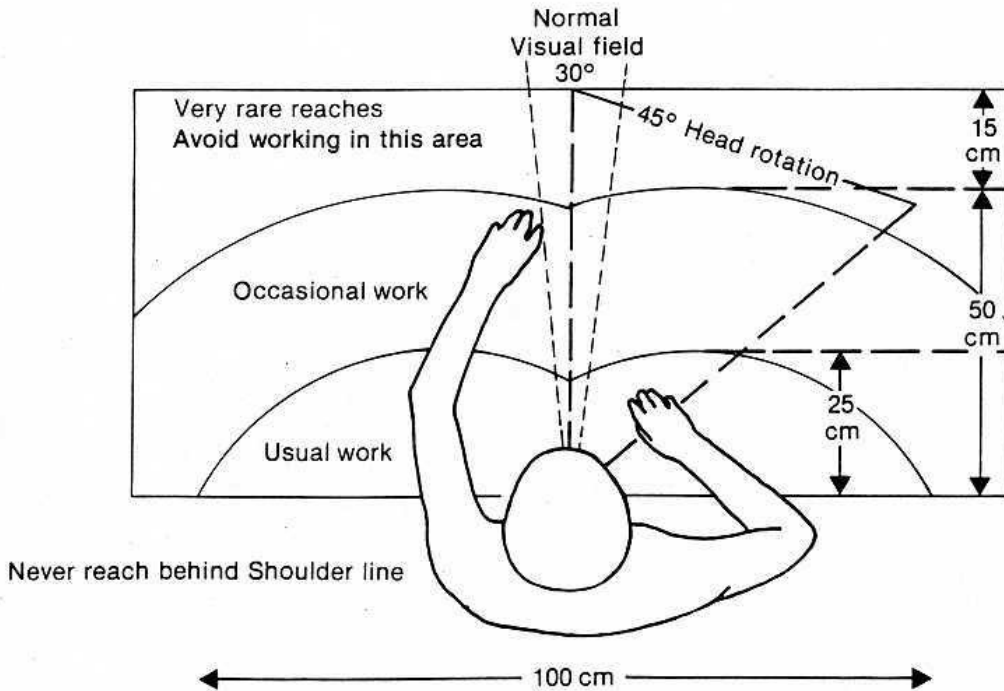
Adjustable in both height and slope to produce a comfortable "ideal lower body posture".



NOTE: may be needed if raising your chair to place your hands 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 which 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 work station design will not support an uninterrupted day of computer work.

- ✓ **SEEK** help if pain or discomfort becomes frequent.

MAKING ACCOMMODATIONS

Dealing With Workstation Design Problems

PROBLEM	ACCOMMODATION
Table too high to allow you to adapt ideal posture.	<ol style="list-style-type: none">1. Raise chair and use a sloping foot rest to lift your feet to the "IDEAL" position, returning your thighs to a near horizontal position.2. Cut desk legs to proper height.
Depressed keyboard platform or keyboard drawer will not accommodate both keyboard and mouse.	<ol style="list-style-type: none">1. Move keyboard to desk top and move monitor to rear to correct viewing distance.2. Fill in platform to raise to level of desk.3. Add an extension to keyboard drawer.4. Replace keyboard with shorter one - perhaps without the numeric keypad.5. Replace the keyboard with one which has a built-in touch-sensitive mouse pad.
Seat pan too deep to allow you to sit with back in contact with the chair back.	<ol style="list-style-type: none">1. Replace chair.2. Use an additional back support.
Keyboard has a positive slope.	<ol style="list-style-type: none">1. Buy a negative slope keyboard caddy. Consider buying one with a built-in wrist rest.