ErgOffice Onomics

Manual

UNIVERSITÉ Concordia UNIVERSITY

ENVIRONMENTAL
HEALTH AND SAFETY

This booklet has been prepared by the Environmental Health & Safety Office. For more information regarding ergonomics, stretches and other programmes please visit our website at *http://ehs.concordia.ca/ih/ergo.html*

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1 Introduction

Computerization has resulted in increased job demands and mental stress, which can be associated with muscle tension and physical strain that can eventually lead to a Cumulative Trauma Disorder (CTD) complaint. Computers, while increasing productivity in the office have resulted in ergonomic stressors that can be directly linked to increased CTDs including tendonitis, carpal tunnel syndrome, and some forms of back pain.

Ergonomics is the study of the way in which we work and interact with the characteristics of the environment; it includes finding ways to be more efficient, as well as ways to protect people from sustaining injury. The purpose is to design the job to fit the worker rather than physically forcing the worker's body to fit the job by creating a comfortable environment with the application of ergonomic principles, such as:

- avoiding overreaching, repetition, awkward posture, direct pressure, fatigue and force;
- understanding how to adjust our work environment to accommodate our individual needs;
- applying principles of good posture and habits.

Common injuries associated with poor office ergonomic habits include the following:

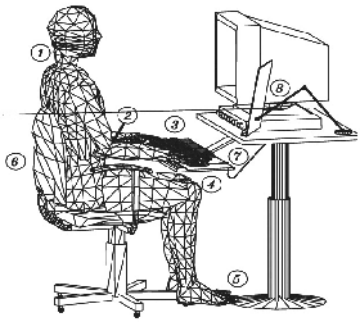
Injury	Cause
Tendonitis	Repetitive movements
Carpal tunnel syndrome	Repetitive work with a bent wrist
Back strain	Slumped positions, bending, lifting
Neck/shoulder tension	Forward head posture, swayed back position
Circulatory problems	Static posture

The afore-mentioned injuries are a result of risk factors/abnormal body motions such as:

- Non-ergonomic workstation design.
- Repetitive movements – e.g. typing for long periods without rest.
- Awkward postures – e.g. neck bent too far forward or wrists bent too far back.
- Static postures – e.g. sitting for long periods without getting up or stretching.
    - Restricts blood flow to working tissues
- Reaching- e.g. reaching awkwardly such as down into a side drawer or behind chair, multiple times a day.

The purpose of this manual is to highlight risk factors/ abnormal body motions related to office work tasks and work environment, solutions to common physical problems related to computer use and presentation of health issues. This will in turn attempt to facilitate employee behavioural modifications and injury prevention through instruction on proper ergonomic computer workstation set up, proper posture, identification of risk factors and exercise/stretching instructions.

2 Setting Up Your Workstation



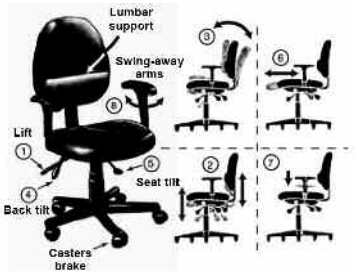
It's important to be aware of how the design and arrangement of your equipment can impact your comfort, health, and productivity. Your computer workstation is the environment around your computer which includes furniture (chair and desk), computer equipment (computer, monitor, keyboard, and mouse), accessories (document holder, footrest, telephone, palm rest) and ambient factors (noise, lighting, temperature, etc.).

2.1 Chair

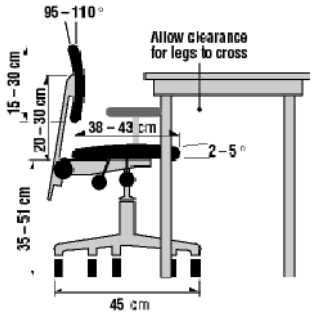
It all begins with the chair as the chair may be the most important part of the workstation. The chair must fit you and be appropriate for your tasks. Sitting properly in a well-fitted chair helps to limit back strain and discomfort. Since more than one person may be using the computer, it's important to know how to select a chair with several ergonomic features.

The features of a "good" ergonomic chair are as follows:

- **Adjustability**
  - Seat height range: Seat height should be adjustable to the height recommended for the worker(s) who will use it.
  - Backrest: The backrest should be adjustable both vertically and in the frontward and backward direction.
- **Seat depth**
  - Seat selection should be based on that which suits the tallest and the shortest users.
- **Stability**
  - A five-point base is recommended for stability of the chair.

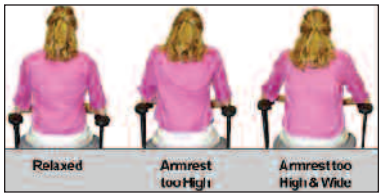


In setting up your chair you should be able to:



- Adjust the seat height so your feet rest flat on the floor or use a supportive footrest.
  - Sit upright in the chair with the lower back against the backrest and the shoulders touching the backrest.
  - Thighs should be parallel to the floor and knees at about the same level as the hips (equal to or slightly lower).
  - Back of knees should not come in direct contact with the edge of the seat pan. There should be 5.08-10.16 cm (2-3 fingers) between the edge of the seat and the back of the knee.
  - Use a footrest when attempts to adjust your chair and the rest of the workstation fail to keep your feet on the ground.

  - Ensure that you have some space (5-7 cm) between the top of your thighs and the underside of your workstation.
  - Have enough space under your work surface so that you can pull yourself all the way up to the edge of the desk with room for your legs and knees to fit comfortably.
- Check that the seat pan depth is such that the user can maintain contact with the back rest in the lumbar area and avoid increased pressure on the back of legs and behind the knees.
  - Sit in the chair and push your hips back as far as they can go against the chair back.
- Check that the adjustable arm rests do not impede access to the work station or arm movement. The arm rests should be removable and the distance between the arm rests should be adjustable.
  - Adjust the height and/or width of the armrests so they allow the user to rest arms at their sides and relax/drop their shoulders while keyboarding.
    - If the armrests are too high, they will elevate the shoulders which can cause stiffness or pain in the shoulders and neck.



  - Don't use the armrests to slouch.
    - If the armrests are too low, they promote slumping and leaning to one side.
  - Elbows and lower arms should rest lightly on armrests so as not to cause circulatory or nerve problems.
  - If your armrests are in the way, remove them.
- Adjust the height of the backrest to support the natural inward curve of the lower back (100-119 degree reclined angle). The upper and lower back must be supported.
  - A chair that maintains the normal alignment of the spine (S-curve) will relieve fatigue and discomfort.

A back rest should provide good low-back support.

Tips and recommendations:

- The ability to swivel 3600 and move the chair around improves access to work materials, eases sitting down and standing up and reduces twisting stresses on the spine.
- Avoid static positions; don't stay in one position (sitting or standing) for extended periods of time.
- When performing daily tasks, alternate between sitting and standing or take small walking breaks throughout the day.
- The chair back should have lumbar support. It may be useful to use a rolled towel, lumbar roll or cushion to support the low back. Be sure it fits properly and fits the size of your curve. Improperly fitted pillows or cushions may be worse than no cushion at all.
- A foot rest should be provided if your feet cannot rest comfortably on the floor while seated at the workstation.

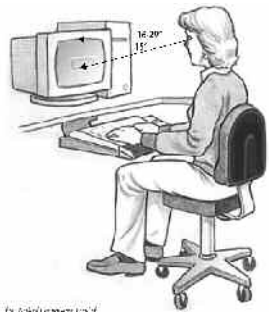
Health Notes:

- Sitting properly in a well-fitted chair helps to limit back strain and discomfort. Chairs that have an adjustable seat, backrest and armrest are preferable.
- Sitting for long periods of time can cause increased pressure on the intervertebral discs (spongy discs between the vertebra).
- Sitting is also hard on the feet and legs. Gravity tends to pool blood down into the legs and feet and create a sluggish return of blood to the heart.
- Change your position every 20-30 minutes to increase blood circulation, and avoid muscle fatigue.
- Footrests raise the knees and take much of the strain off the pelvis. Each time you adjust your chair, you should adjust your footrest as well. This allows you to shift to another position, which will prevent fatigue caused from sitting for long periods of time.
- Avoid using the base of your chair as a footrest, as doing so can cause your knees and trunk to bend down and forward, forcing you to hyperextend your back in order to stay erect and see the computer screen.

2.2 Monitor

The monitor is an integral part of a computer workstation. When placed in the wrong position the user is forced to work in a variety of awkward positions which may lead to discomfort and injury such as eye irritation, blurred vision, dry burning eyes and headaches. Common complaints include discomfort, aches and pains in the neck and shoulder, and eye strain.

- Sit directly in front of the monitor and keyboard/mouse to avoid excessive twisting or bending of the neck.
- Once the chair and work surface height are properly adjusted, the computer monitor should be placed so the top of the screen is at or just below eye level (approximately 5-7 cm below seated eye level) when seated in an upright position.
  - If the monitor is too low, use monitor risers or unused binders or books to elevate.
  - Individuals who wear bifocals and trifocals may need to place the monitor lower than this to maintain comfortable (neutral) neck posture. (See Health Notes)
- Monitor viewing distance should be about one arm's length away from the screen (46-76 cm from user) when seated comfortably in front of the keyboard.

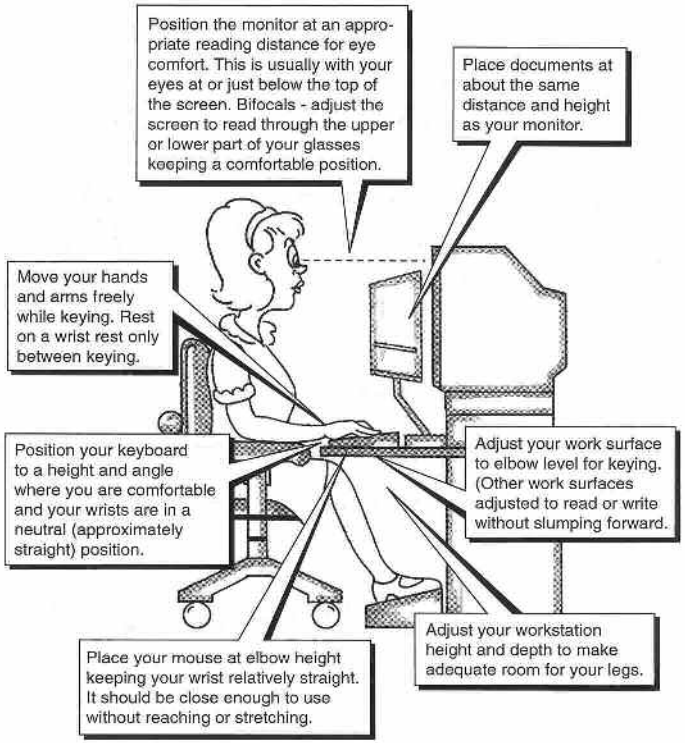


Tips and recommendations:

The following suggestions can help prevent the development of eye strain, neck pain and shoulder fatigue while using your computer workstation:

- Make sure the surface of the screen is clean. Dust buildup can make distinguishing characters difficult and may also contribute to glare and reflection problems.
- Adjust brightness and contrast to optimum comfort.
- Reduce glare by careful positioning of the screen.
  - Place screen at right angles to windows.
  - Adjust curtains or blinds as needed.
  - Adjust the vertical screen angle and screen controls to minimize glare from over head lights.
  - Other techniques to reduce glare include use of optical glass glare filters, light filters, or secondary task lights.
- Use screen scroll bars to ensure that what is being viewed most is in the center of the monitor rather than at the top or bottom of the screen.

Adjusting Your Workstation



Maintain Neutral Posture