

OFFICE

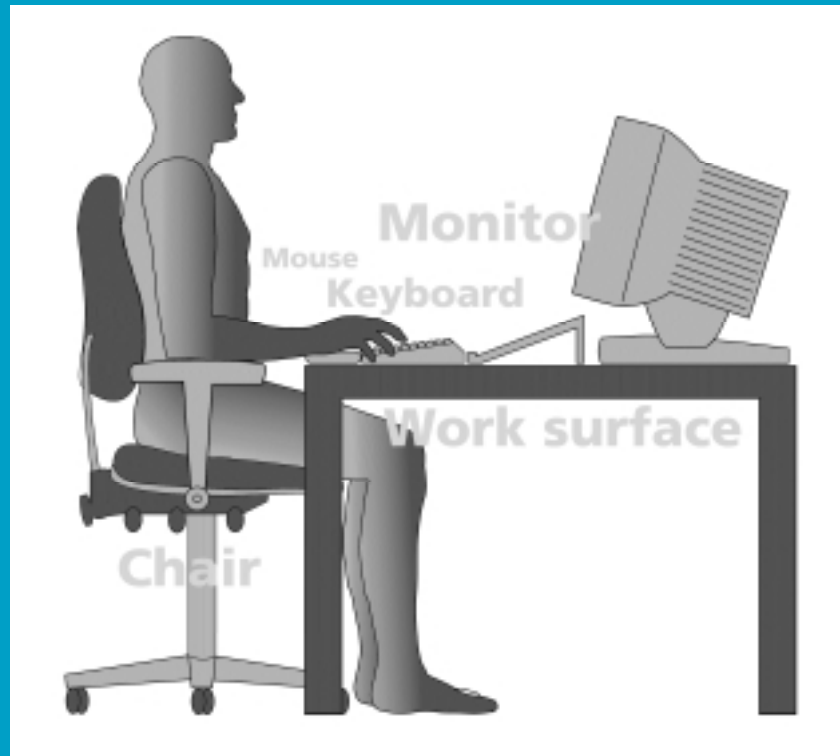


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Acknowledgment

Special thanks to the *Canadian Centre for Occupational Health and Safety* and to *Worksafe Western Australia* for granting permission to use their graphic images.

Also, we thank all the New Brunswick employers and their employees who provided feedback during the pilot phase of this document.

Disclaimer

This document represents best practices to prevent injuries arising from computer related work. However, there are many other tasks and issues that are not addressed by this document. This document is not designed to replace a professional ergonomics analysis. Information may change over time as new research and studies are done in the field of ergonomics.



**Workplace Health, Safety and Compensation
Commission of New Brunswick**

December 1999

INTRODUCTION

As part of its ergonomics strategy, the Workplace Health, Safety and Compensation Commission has developed *Ergonomics guidelines for the office*. This document enables New Brunswick workplaces to identify the risks of injury and to move toward reducing or eliminating these risks.

Just a short time ago, very few of us had even heard of “ergonomics”. Today, ergonomics, or the relationship between people and their work, is a science with a growing body of evidence. Applying ergonomics by adjusting your chair, work surface, monitor, keyboard, mouse, lighting and modifying your work habits make working with a computer more comfortable. Furthermore, it also prevents injuries and increases productivity.

This document provides you with a quick, easy way to access the information you may need. The checklist in appendix B helps you identify the changes you can make to obtain a healthy, comfortable work environment. This document represents best practices to prevent soft tissue injuries (STI) and other business losses.

Note: We suggest reviewing the entire document before implementing any changes.

Key questions

1. Can the height, seat and back of your chair be adjusted?
2. Are your feet fully supported by the floor when you are seated?
3. Are you able to sit without feeling pressure from the chair seat on the back of your knees?
4. Does your chair provide support for your lower back?
5. Do your armrests allow you to get close to your workstation?
6. Do you take stretch breaks every 30 minutes?

YOUR CHAIR

Having good posture and an adjustable chair are the most important aspects of a comfortable office environment. Learn how to adjust your chair to ensure you are sitting with good posture.

The following is an easy guide to help you adjust your chair to suit your needs.

Height - While standing, adjust the height of the chair so that the highest point of the seat is just below your knee cap. This should allow your feet to rest firmly on the floor when seated. If you feel pressure near the back of the seat, raise your chair. If you feel pressure near the front of the seat, lower your chair. The goal is to evenly distribute your weight.

Seat tilt - Seat tilt can be adjusted to improve your comfort. This will also affect your weight distribution.

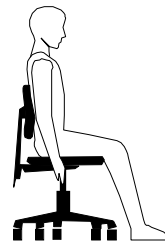
Depth - When sitting, the seat pan should allow you to use the back support without the front of the seat compressing against the back of your knees. If the seat is too deep, try a back support (lumbar roll or Obus Forme) to reduce the size of the seat.

Back support - When sitting, adjust the backrest so it supports the natural curve of your lower back (lumbar curve). The tilt of the back support should allow you to seat with your upper body slightly recline.

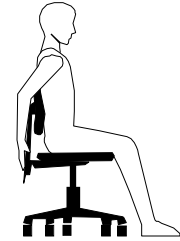
Width - The seat pan should be wide enough so that it does not apply pressure to the sides of your thighs.



Knee height



Depth of seat



Lumbar support

Armrests - Armrests can provide support for the upper part of your forearms, thereby reducing stress on your shoulders and back. However, armrests should not prevent the chair from being drawn close to the desk nor restrict natural movements. If your armrests cannot be adjusted to allow for this, consider removing or replacing them. Also, keep in mind that soft armrests will eliminate contact stresses on your elbows.

Adjust your chair frequently throughout the day and get up at regular intervals. Adjusting the chair allows the joints to change position and reduces muscle tension and tissue compression from some areas of the chair. Despite attempts to find the "ideal posture", no posture is good for a long period of time.

Regular stretch breaks of about 30 to 60 seconds every half hour will:

- improve blood circulation;
- significantly decrease the level of discomfort associated with sitting in one position;

- increase productivity and decrease errors.

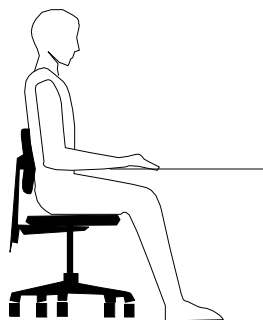
For more information on specific stretching exercises tailored to your needs, consult an exercise specialist.

Remember, when purchasing a chair, be sure it can be used for a trial period and can be returned if it doesn't fit your needs.

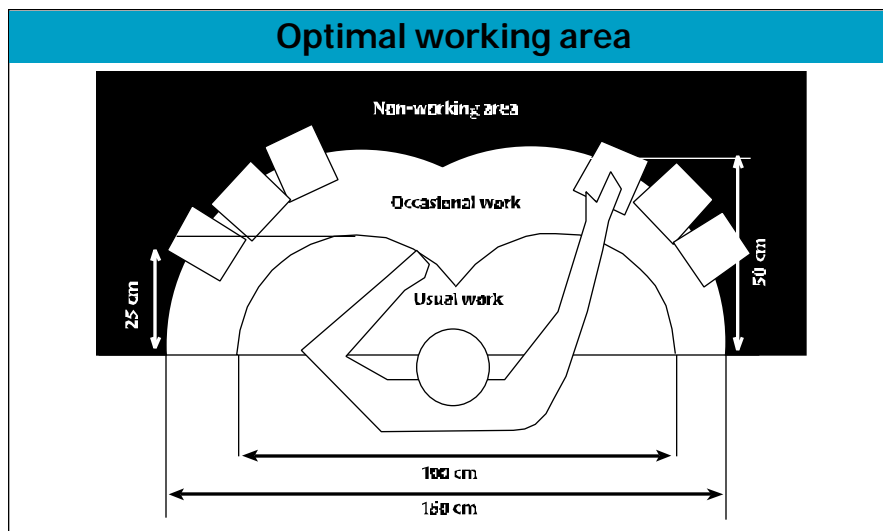
YOUR WORK SURFACE

Like your chair, your work surface should fit you. Once you have adjusted your chair, you can determine the appropriate height for your work surface. The top of your work surface should be at your elbow height. Elbow height is measured while your upper arms are hanging relaxed by your sides and your lower arms bent at a right angle. Make any necessary adjustments by raising/lowering your work surface or chair. If your work surface cannot be lowered to accommodate your elbow height, you can raise your chair and use a footrest. The footrest should be large enough for both feet.

Materials you use frequently should be located within easy reach. A good way to arrange work materials is in a semi-circle shape. By keeping materials you do not use frequently out of reach, you will have to get out of your chair for them. This will promote blood circulation and reduce overall discomfort.



Elbow height



Key Questions

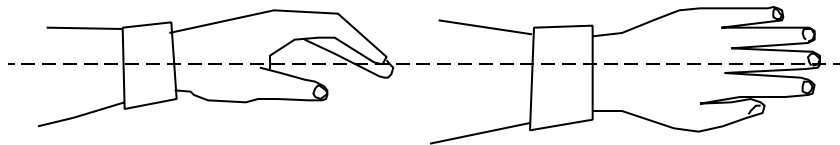
7. Are your keyboard, mouse and work surface at your elbow height?
8. Are frequently used objects within easy reach?

Key questions

9. When using your keyboard and mouse, are your wrists straight and your upper arms relaxed by your sides?
10. Is your mouse at the same level and as close as possible to your keyboard?

YOUR KEYBOARD AND MOUSE

When using a keyboard and mouse, your upper arms should be relaxed by your sides, your elbows bent at a right angle and your wrists straight.



Neutral wrist posture

There are many types of keyboards designed to help prevent soft tissue injuries (STI) by placing the hands in a more natural position. An example is a split keyboard design. The effectiveness of these keyboards depends on the user and the type of work being performed. Since purchasing an alternate keyboard is a matter of preference, you should ensure that it can be used for a trial period first.



Awkward wrist posture

Your keyboard should lie flat (not propped up on keyboard “legs”) or negatively inclined (tilted slightly away from you), if a tilting keyboard tray is used. This should place the keyboard in the same plane as your forearms.

The mouse should be at the same level as the keyboard and within easy reach. One way to bring your keyboard and mouse to elbow height is a keyboard tray, if it does not compromise leg room. Ensure that any keyboard tray is wide enough to hold your mouse.

Occasionally, you may want to switch the side of the keyboard on which your mouse is located. By alternating hands, you are using different muscles, thereby reducing the risk of injury.

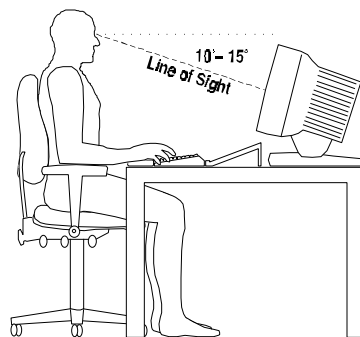
If you use a palm rest, it should be soft, of equal length to the keyboard, and no higher than the keyboard. Use it to rest the base of your palms when you are not keying.

YOUR MONITOR

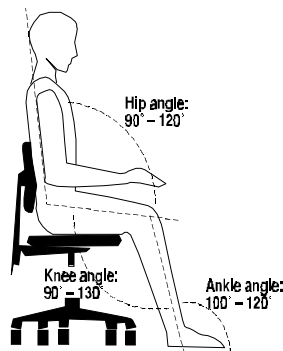
Distance – How far you sit from the monitor will depend on your vision, your age, and the size and resolution of your monitor. As a general rule, it is best to move the monitor as far away as possible and increase the size of the font. Studies have found that monitor distance should be between 60 and 90 cm (24 and 36 inches). This is why it is difficult to recommend one specific distance. A large monitor will need to be placed farther away than a small monitor. If your desk or workstation is not deep enough to give you more distance from your monitor, move the desk away from a wall and push the monitor back. If it is an L-shaped desk, place the monitor in the corner. It may be possible to add an insert to your desk to increase its depth.

Height – Your monitor should be positioned directly in front of you with the top of the screen just below eye level (10 to 15 degrees). The top of your monitor should be slightly tilted back. A common practice is to place monitors on top of the CPU; however, this usually places the monitor too high and causes neck discomfort and pain.

The screen will probably need to be lower if you wear bifocals. Depending on their vision and tasks, some people have found that a second pair of glasses for computer-use only works better. Another alternative is to have the computer prescription in the upper part of the lens. For more information, consult your optometrist.



Suggested height for monitor



Suggested seated angles

Key questions

11. Is your monitor positioned directly in front of you and at least an arm's length away?
12. Is the height of your monitor slightly below eye level?

Key questions

13. Are your monitor and work surface free from glare?
14. Do you have a desk lamp for reading or writing documents?
15. Do you take regular eye breaks from looking at your monitor?
16. Is your document ramp or vertical holder positioned directly in front of you?
17. Are you using a headset or a speaker phone, if you are writing or keying while talking on the phone?

LIGHTING

To test for glare, turn your monitor off. If the screen provides reflection as a mirror, you have glare. Since this glare is caused by light shining directly onto your screen, check its source. If it is a window, this can be corrected by positioning your monitor so that your line of sight is parallel to the window. If this is not practical, cover the window with vertical blinds. If the glare is caused by lighting, these lights should be shaded or removed. A desk lamp will provide extra lighting to see paper documents, while avoiding excessive light near the monitor. If you are right-handed, the lamp should be on the left (and vice versa) to reduce shadows.

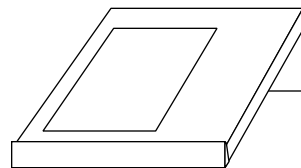
It is best to control glare with proper positioning of your monitor or by shading or removing light sources. If it is not possible to eliminate your lighting problem at its source, consider using an anti-glare screen. Anti-glare screens collect dust and should be cleaned frequently.

Get in the habit of taking your eyes off the screen every few minutes and focusing on something far away. Another helpful eye exercise is to look up, down and side to side without moving your head. These few exercises will help reduce eye strain.

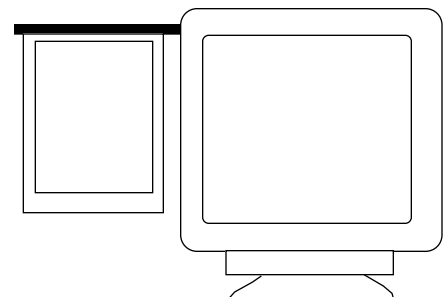
OTHER ACCESSORIES

Document holder – When using a document ramp, place it between your keyboard and monitor and on your work surface. This will minimize refocusing when your eyes go from one to the other. A vertical document holder should be positioned next to the monitor for the same reason. If you spend the majority of your time reading from your paper copy, you may want to position your vertical holder directly in front of you and place your monitor to the side.

Phone – Keep your phone within easy reach. If you use it while keying or writing, consider using a headset or a speaker phone to avoid awkward positioning of your neck.



Document ramp



Vertical holder

OTHER RESOURCES

The following sources provide more information on office ergonomics:

Ankrum, R. Dennis. *Viewing Angle and Distance in Computer Workstations*.
www.combo.com/ergo/vangle.htm

Canadian Centre for Occupational Health and Safety,
www.ccohs.ca/oshanswers/ergonomics/office/office.htm

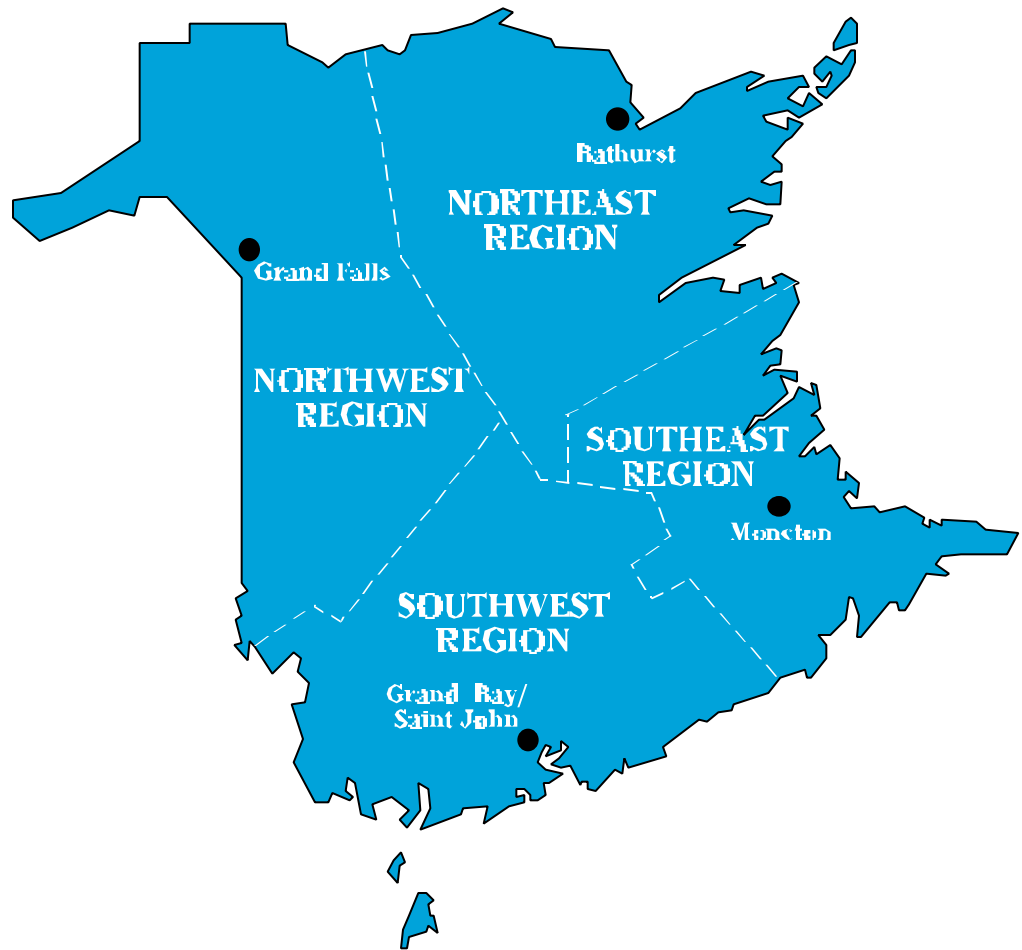
Canadian Centre for Occupational Health and Safety. *Ergonomics for workplaces with visual display terminals*.

Canadian Centre for Occupational Health and Safety. *Office ergonomics Safety Guide*, Second edition, Hamilton, 1999.

F-one Ergonomics, www.ur-net.com/office-ergo

Imrhan, N. Sheik. *Help! My Computer Is Killing Me: Preventing Aches and Pains in the Computer Workplace*, Taylor Publishing Company, 1996.

Appendix A: WHSCC Regional Offices



For more information, contact the ergonomics consultant in your region.

Grand Falls
Tel.: (506) 475-2550
Fax: (506) 475-2568
Toll Free: 1 800 222-9775

Bathurst
Tel.: (506) 547-7300
Fax: (506) 547-7311
Toll Free: 1 800 561-2524

Grand Bay / Saint John
Tel.: (506) 738-4069
Fax: (506) 738-4099
Toll Free: 1 800 282-8080

Moncton
Tel.: (506) 867-0525
Fax: (506) 859-6911
Toll Free: 1 800 222-9775

You can find more information on WHSCC's programs and services on the internet at www.whsc.nb.ca.

APPENDIX B: Office Ergonomics Checklist

Office Ergonomics Checklist		Yes	No
Chair	1. Can the height, seat and back of your chair be adjusted?		
	2. Are your feet fully supported by the floor when you are seated?		
	3. Are you able to sit without feeling pressure from the chair seat on the back of your knees?		
	4. Does your chair provide support for your lower back?		
	5. Do your armrests allow you to get close to your workstation?		
	6. Do you take stretch breaks every 30 minutes?		
Work Surface	7. Are your keyboard, mouse and work surface at your elbow height?		
	8. Are frequently used objects within easy reach?		
Keyboard & mouse	9. When using your keyboard and mouse, are your wrists straight and your upper arms relaxed by your sides?		
	10. Is your mouse at the same level and as close as possible to your keyboard?		
Monitor	11. Is your monitor positioned directly in front of you and at least an arm's length away?		
	12. Is your monitor height slightly below eye level?		
Office lighting	13. Are your monitor and work surface free from glare?		
	14. Do you have a desk lamp for reading or writing documents?		
	15. Do you take regular eye breaks from looking at your monitor?		
Accessories	16. Is your document ramp or vertical holder positioned directly in front of you?		
	17. Are you using a headset or a speaker phone, if you are writing or keying while talking on the phone?		

