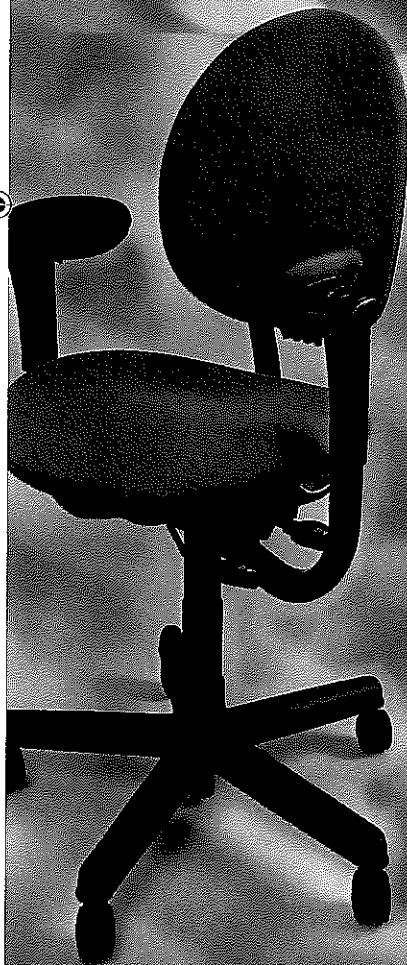


# HOW TO MAKE YOUR COMPUTER WORKSTATION FIT YOU



**WORK SAFE BC**

WORKING TO MAKE A DIFFERENCE  
[worksafebc.com](http://worksafebc.com)




## About WorkSafeBC


WorkSafeBC (the Workers' Compensation Board) is an independent provincial statutory agency governed by a Board of Directors. It is funded by insurance premiums paid by registered employers and by investment returns. In administering the *Workers Compensation Act*, WorkSafeBC remains separate and distinct from government; however, it is accountable to the public through government in its role of protecting and maintaining the overall well-being of the workers' compensation system.

WorkSafeBC was born out of a compromise between B.C.'s workers and employers in 1917 where workers gave up the right to sue their employers or fellow workers for injuries on the job in return for a no-fault insurance program fully paid for by employers. WorkSafeBC is committed to a safe and healthy workplace, and to providing return-to-work rehabilitation and legislated compensation benefits to workers injured as a result of their employment.

## WorkSafeBC Prevention Information Line



The WorkSafeBC Prevention Information Line can answer your questions about workplace health and safety, worker and employer responsibilities, and reporting a workplace accident or incident. The Prevention Information Line accepts anonymous calls.



Phone 604 276-3100 in the Lower Mainland, or call 1 888 621-7233 (621-SAFE) toll-free in British Columbia.

To report after-hours and weekend accidents and emergencies, call 604 273-7711 in the Lower Mainland, or call 1 866 922-4357 (WCB-HELP) toll-free in British Columbia.



# HOW TO MAKE YOUR COMPUTER WORKSTATION FIT YOU



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## WorkSafeBC publications

Many publications are available on the WorkSafeBC web site. The Occupational Health and Safety Regulation and associated policies and guidelines, as well as excerpts and summaries of the Workers Compensation Act, are also available on the web site: WorkSafeBC.com

Some publications are also available for purchase in print:

Phone: 604 232-9704

Toll-free phone: 1 866 319-9704

Fax: 604 232-9703

Toll-free fax: 1 888 232-9714

Online ordering: WorkSafeBC.com and click on Publications;  
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## **Does your computer workstation fit you and the type of work you do?**

This guide will help you answer this question. It describes how to identify and solve problems with computer workstations. This booklet is intended primarily as a self-help guide for workers, but it may also be useful to employers, supervisors, joint health and safety committees, and health and safety specialists.

You can make many of the changes suggested in this guide yourself — for example, changing the height of your chair. Discuss other changes with your supervisor or employer. Your employer should have guidelines for the selection of equipment and furniture so that your computer workstation will fit you and the type of work you do.

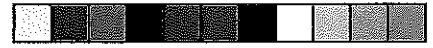
### **How this guide is organized**

The first section of this guide describes the signs and symptoms of injury, so you will be able to identify potential problems early on, and take steps to prevent an injury from developing or getting worse.

Then, there are five sections that describe prevention tips you can use to help avoid discomfort and potential injury. Each section focuses on one area where you can make changes that will help you work comfortably and efficiently. These sections are as follows:

1. Check your posture.
2. Adjust your chair.
3. Rearrange your workstation layout.
4. Improve your lighting and minimize glare.
5. Improve your job design.

At the back of this guide you will find a brief one-page summary of the information covered in these five sections. There is also a checklist for assessing your computer workstation and a list of exercises that help reduce muscle tension and eye strain.



## **For more information**

If you need more information after reading this guide, talk to your supervisor, joint health and safety committee (or worker representative), or a health and safety specialist. More detailed information on office ergonomics is available in the Canadian Standards Association's Guideline on Office Ergonomics (CSA-Z412-00). It recommends how to fit workplaces to office workers, and how to choose and configure office furniture and equipment.





## Signs and symptoms of injury

You may notice pain, numbness, tingling, or weakness while on the job (see the illustration on page 4). Sometimes these sensations are signs and symptoms of musculoskeletal injury (MSI). Other times, they are just part of the normal human condition, and can be ignored.

Signs and symptoms may be associated with:

- Repetitive movements
- Awkward postures (for example, neck bent forward or wrist bent backward)
- Static postures (holding body parts in one position for extended periods of time)

The risk of injury increases the longer you perform repetitive movements or work with awkward or static postures. The risk of injury also increases if more than one of these factors is present while you are working.

Signs and symptoms of injury may appear suddenly, or they may appear gradually over a period of weeks, months, or years. Sometimes signs or symptoms are worse when you move in certain ways at work or at home. We all experience discomfort in our lives at work and at home. Some discomfort may be relieved by adjusting your workstations, as described in this booklet.

Report any sign or symptom to your supervisor, first aid attendant, or joint health and safety committee. That way, immediate steps can be taken to ease your symptoms and reduce the risk of injury.

Symptoms may indicate certain conditions such as those affecting muscles, nerves, and tendons. Consider the following examples:

- Muscles are prone to fatigue and strain when overworked.
- Compression of a nerve by inflamed surrounding tissue can cause irritation.
- Recurring irritation of tendons can lead to tendinitis or tenosynovitis.

### What is MSI?

According to the Occupational Health and Safety Regulation, musculoskeletal injury (MSI) "means an injury or disorder of the muscles, tendons, ligaments, joints, nerves, blood vessels or related soft tissue including a sprain, strain and inflammation, that may be caused or aggravated by work."



## Aches and pains

*Do you have any of the aches and pains described in this illustration? Attention to workstation layout and correct posture may ease the signs and symptoms described here.*

Upper back and neck discomfort? You may need to adjust your chair, monitor, or the position of your documents, or may need to use a phone headset.

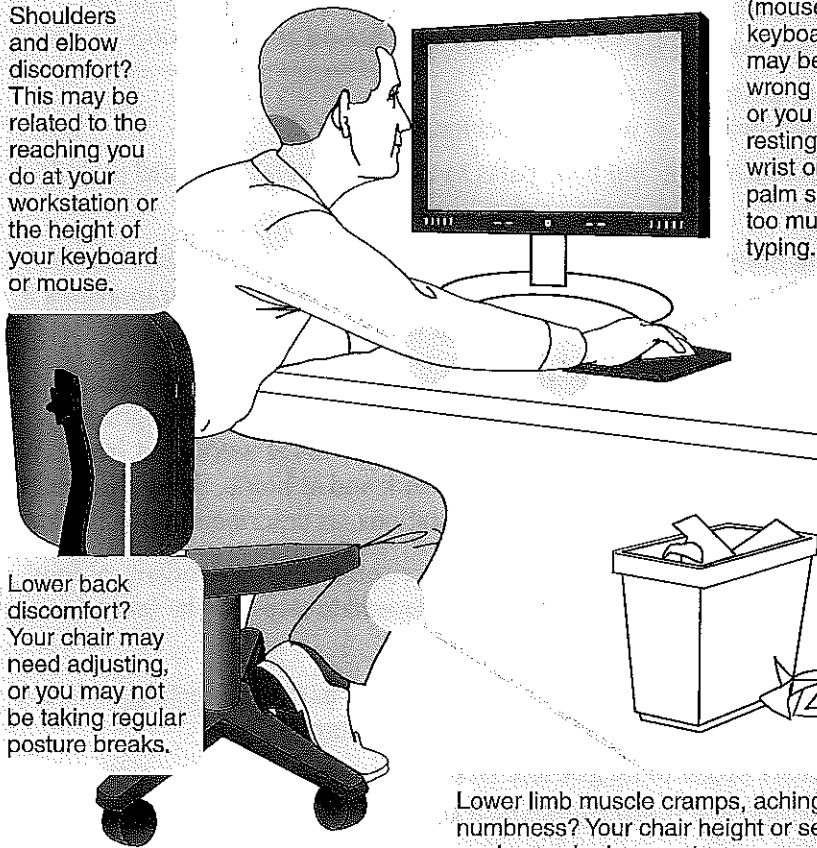
Eyestrain, burning eyes, or headache? You may need to change lighting levels or your viewing distance. You may need to adjust contrast, brightness, or font size on your monitor.

Wrist and hand discomfort? Your wrist posture may be incorrect when typing or when using your pointing device (mouse). Your keyboard may be at the wrong angle, or you may be resting your wrist on the palm support too much while typing.

Shoulders and elbow discomfort? This may be related to the reaching you do at your workstation or the height of your keyboard or mouse.

Lower back discomfort? Your chair may need adjusting, or you may not be taking regular posture breaks.

Lower limb muscle cramps, aching, or numbness? Your chair height or seat angle may be incorrect, or you may need a footrest or more leg space.



### 4 How to make your computer workstation fit you



## 1. Check your posture.

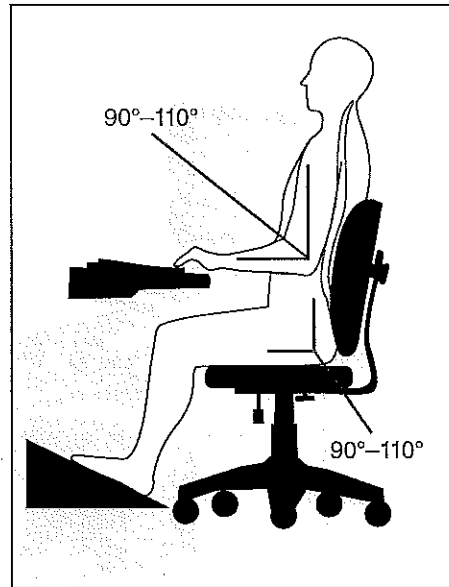
When using your computer, sit with your:

- Forearms held horizontally, elbows bent about 90 degrees (right angle) or slightly greater, with your shoulders and upper arms relaxed
- Wrists in a neutral (straight) posture
- Head upright over your shoulders in a relaxed position, with your eyes looking slightly downward
- Backrest supporting your lower back, pelvis, and the natural curve of your spine
- Thighs resting horizontally with a 90–110 degree angle at the hips
- Feet fully supported by the floor or a footrest

The illustrations on this page and page 6 show this optimal posture. Optimal postures reduce stress on the body, but any posture, including sitting, can lead to fatigue or discomfort if held for a prolonged period.

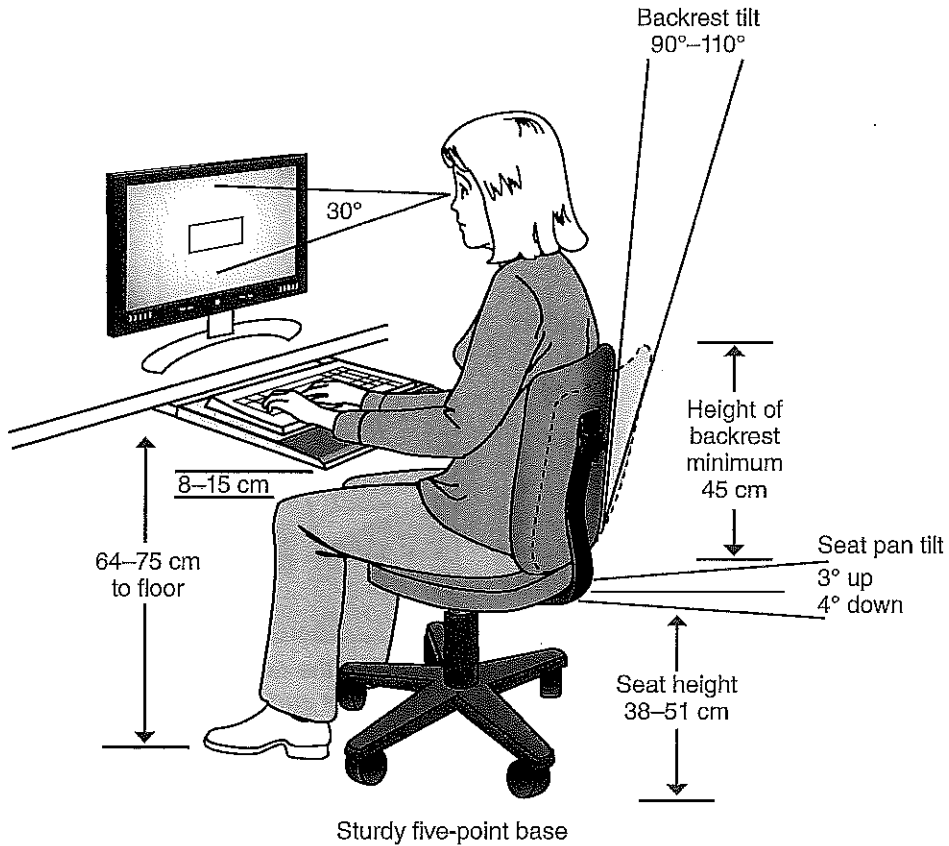
Varying your posture, while keeping it within a comfortable, supported range, can reduce fatigue and discomfort.

The remaining sections of this guide describe how to adjust your chair, rearrange your workstation layout, and improve lighting so you can work in an optimal posture.



*These are the recommended dimensions and adjustment ranges for the chair, monitor, keyboard, and work surfaces. This worker is using good posture.*

## Suggested workstation dimensions and adjustment ranges



*These are the recommended angles and positions of joints for sitting at a computer workstation. A posture that changes within a comfortable range is an optimal posture.*

### 6 How to make your computer workstation fit you

## 2. Adjust your chair.

The chair position may be uncomfortable for you as a result of one or more of the following:

- Seating that doesn't adequately support your back may increase fatigue and contribute to poor posture.
- Seating that is too high or too low may result in symptoms in your neck, shoulders, back, or legs.
- Seating that is too low may require you to use awkward arm postures to reach up to the work surface, or may cause you to sit with your knees raised, increasing the stress on your lower back.
- Sitting for long periods without varying your posture increases fatigue.

When you begin to feel discomfort, you may have held a position too long. Avoid fatigue and discomfort by varying your posture regularly throughout the workday. You can do this by adjusting your chair and standing or walking occasionally. Your chair controls should be simple to use so it's easy for you to adjust your chair, while seated, regularly during the workday. Adjustable features of seating are shown on page 6.

### Chair height

To adjust your chair to the optimal height, raise or lower it so you are sitting with your:

- Forearms held horizontally, elbows bent about 90 degrees (right angle) or slightly greater, with your elbows just clear of the top of the work surface (desk or keyboard tray)
- Wrists straight when you place your hands on the keyboard or mouse (see page 12)
- Thighs resting horizontally with a 90–110 degree angle at the hips

Ideally, adjusting your chair this way will leave you with sufficient space between the top of your thighs and the bottom of your desk or work surface. If you can't rest your feet firmly on the floor when your elbows just clear the top of your work surface, use a footrest to support your feet.

## Footrests

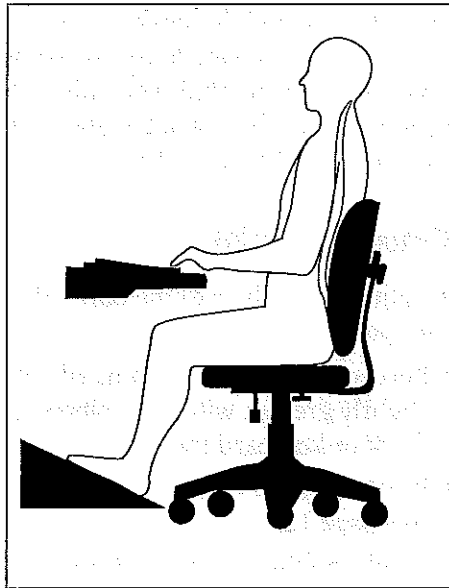
A footrest supports your feet and reduces the pressure on the back of your thighs that can occur when your thighs contact the seat. Use a footrest if your feet are not flat on the floor when you adjust your chair height as described on page 6. The correct height of the footrest is the distance your feet are off the floor after you have adjusted the seat height.

A footrest should have:

- A non-slip surface large enough for both feet to rest comfortably (about 30 cm by 30 cm or 1 sq. ft.)
- An adjustable slope (10–20 degrees) to allow a comfortable ankle position when your feet are resting on it
- Enough stability so it doesn't slide or move when your feet are on it

## Backrests

The lower part of your chair's backrest (the lumbar support) should support the curve of your lower back. If your backrest is adjustable, raise or lower it so the lumbar support fits snugly against your lower back. If necessary, you can place a small rolled-up towel or small foam pillow in the curve of your back to add support. You should also be able to adjust your backrest forward and backward so it is at an angle of 90–110 degrees, depending on the activities you are performing.



*The lower part of the backrest should support the curve of your lower back.*

## Armrests

Armrests help support your forearms or elbows, decreasing the stress on your shoulders and back. Your forearms should rest comfortably on the armrests, with your shoulders relaxed. Remove armrests if they:

- Prevent you from placing your chair at a comfortable typing or viewing distance from the screen
- Interfere with typing or using the mouse
- Prevent you from turning your chair or getting up from your chair easily

## Other chair features

Your chair should also have the following features:

- A five-point base — A chair with five casters is less likely to tip over than one with four casters.
- Fairly coarse fabric that breathes — Slippery materials such as vinyl may cause you to slide away from the backrest.
- A rounded front edge — A straight front edge will cut into the back of your thighs, making your legs “fall asleep” or causing discomfort at the point of contact.
- A seat that tilts forward and backward — This will allow you to make adjustments to help maintain the natural curve of your spine.



### 3. Rearrange your workstation layout.

Your computer workstation should be arranged so that you can use comfortable postures when working with the monitor, keyboard, mouse, documents, and other items.

#### Monitors

If you work with a computer, you should have your eyes tested about every two years, or more frequently if you are experiencing problems with your vision. Keeping your screen at the optimal height and viewing distance will help prevent or reduce eye strain and muscle tension in your neck, shoulders, and upper back.

#### Screen height

The top line of text on your computer screen (not the top of the monitor) should be at eye level, as shown on page 6. Most of the screen will be slightly below eye level. If you don't have an adjustable monitor support, adjust the monitor height by placing stable, stackable materials underneath the monitor to bring the top of the screen to eye level. An adjustable monitor support is handy if you share a workstation because it makes adjusting the height of the monitor quick and easy.

#### Viewing distance

The distance between your eyes and the screen when sitting in a typing position should be about arm's length. Your ears should be in line with your shoulders when you view the monitor.


#### Prescription eyewear

Eyeglasses or contact lenses prescribed for general use may not be adequate for computer work. Prescription lenses can be made to maximize vision and comfort when working at a computer, either as glasses specifically for computer use or as bifocal or multifocal glasses. To determine your visual needs for working with a monitor, your ophthalmologist or optometrist will need the following information:

- Measurements from your eyes to the monitor screen, work documents, and keyboard — For more accuracy, have someone else take these measurements.
- The size of the screen — Measure diagonally across the screen, and add on approximately 2–3 cm (1 in.).

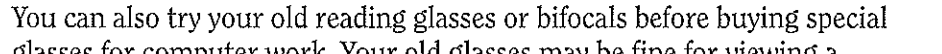
#### 10 How to make your computer workstation fit you



- 
- A description of your job tasks — Describe your daily routine at the computer and how much time you spend each day at different tasks.
  - A description of the programs used — Mention whether you use text or graphics programs, and describe typical type sizes and screen background colours.
  - Type of lighting — Describe the lighting you work under (for example, natural light, fluorescent light, or lights under a cupboard or shelf).

If you are wearing glasses that were not specifically corrected for computer use, there are still ways to improve your vision and comfort at the computer. For example, bifocals are made for regular reading distances. However, most people place their computer screens farther from their eyes than they would place a book or other printed materials. When you view the screen through bifocals, you are likely tilting your head back to look through the bottom of your lenses. This can result in eye strain and awkward neck and upper back postures.

You could try lowering your screen so that you can hold your neck in a more comfortable posture. You can also tilt the screen upward slightly, but watch for glare on the screen. If you continue to be uncomfortable after lowering your screen, prescription eyewear specifically for using your computer may help.



You can also try your old reading glasses or bifocals before buying special glasses for computer work. Your old glasses may be fine for viewing a computer screen, even though you may not be able to thread a needle or read a book with them.

Eye lubrication affects your comfort when using a computer and is especially important if you wear contact lenses. You do not blink as often at the computer as you do when reading items on paper. A dry office environment and the air quality can increase eye discomfort from this staring effect. You can help relax your eyes by focusing on distant objects and occasionally getting up from your workstation. You should also try to blink more often, and perhaps use eye drops recommended by your eye doctor.

### **Dual monitors**

Consider the following when setting up a dual-monitor workstation:

- Place both monitors at the same optimal height as for a single monitor.
- Make sure both monitors are no closer than arm's length away to avoid excess neck rotation. If necessary, increase the font size so you can place each monitor at least an arm's length away from you.
- Position your main monitor so it is straight in front of you and in line with your keyboard and chair. Position your second monitor right next to the main monitor.

- If you use both monitors equally, place them side by side and adjust your body, keyboard, and mouse so your body and neck are straight.
- Increase your mouse speed to reduce the amount of movement required to move the cursor across both screens.

## Keyboards

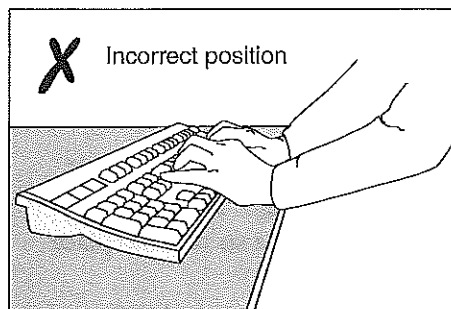
If your keyboard is adjusted properly, you will be able to keep your wrists straight while typing. This is a posture that may decrease the potential for injury. To obtain the optimal keyboard height, follow these guidelines:

- Adjust the keyboard surface up or down so that your wrists are straight when your fingers are on the middle row of keys.
- If your keyboard surface doesn't adjust this way, raise or lower your chair until you can hold your wrists straight while touching the middle row of keys. Your work surface should be just below your elbows, and your forearms should be parallel to the floor, with your elbows at your sides.

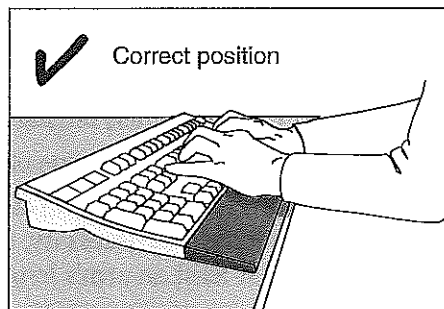
You can also make a slight adjustment to the keyboard angle and height by folding the small legs, found on the underside of most keyboards, in or out. In most cases, you will need to keep the legs folded in to keep the keyboard flat and prevent bending of your wrists.

### Palm or wrist supports

Do you tend to drop your palms or wrists while typing? If so, you could develop sore wrists. A palm or wrist support can provide support during rest periods from typing. When typing, do not rest on the support. Rest your wrists occasionally when you stop typing or mousing, by placing your palms (not your wrists) on the support. The support should be similar in thickness to your keyboard and narrow in depth so that it only touches the palm, not the wrist. It should be made of a soft, smooth, rounded material.



*Don't bend your wrists up (as illustrated) or down while typing.*

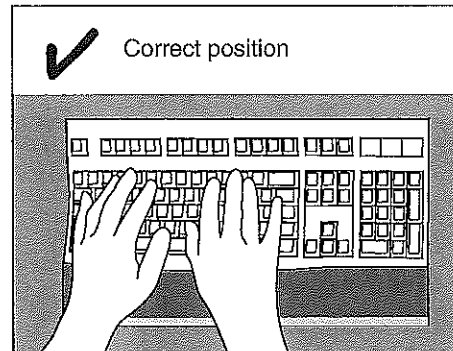


*If your wrists are straight while typing, you decrease the risk of injury.*

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## Alternative keyboards

Many new types of keyboards are available, including split and angled keyboards, and keyboards with alternative key arrangements. Some workers have found that these alternative keyboards help reduce discomfort. However, don't turn to alternative keyboards as a quick fix to workstation problems. There may be other improvements to your workstation that would be more effective than replacing your keyboard. Before purchasing a new keyboard, your employer should make sure the problems at your workstation have been identified and assessed.



*A palm or wrist support can support your palms and wrists during rest periods from typing. Make sure you place the palm or wrist support under your palms, not your wrists.*

## The mouse and other pointing devices

Like your keyboard, if your mouse or other pointing device is at the proper height, you will be able to keep your wrists straight, shoulders relaxed, and elbows by your sides. This is typically a comfortable position that may decrease your risk of injury.

### The mouse

Consider the following guidelines for using a mouse:

- Keep your mouse at the same height and as close to your keyboard as is practical. Don't reach further than necessary to use your mouse. Move it closer, if possible, or use the mouse in your opposite hand.
- Some computer furniture doesn't provide enough room to place the mouse in the preferred position — you may have to get an extension to the keyboard surface for your mouse. Make sure you have enough space to move the mouse freely.
- Keep your wrist straight while using the mouse. Avoid bending your wrist back or to either side. Use a full arm motion from the shoulder when guiding the mouse.
- Relax your hand over the mouse. Don't hold it too tightly.
- Take your hand off the mouse when you are not using it.
- If you are experiencing discomfort in your hand or wrist, try increasing the mouse's pointer speed.

**Rearrange your workstation layout 13**



If you are having difficulties with your mouse, consider these options:

- Use the mouse with your non-dominant hand.
- Move the mouse closer to you.
- Use a keyboard that has the number pad on the left side, or one without a number pad.
- Use a different type of pointing device.

Talk to your employer about these options.

### Other pointing devices

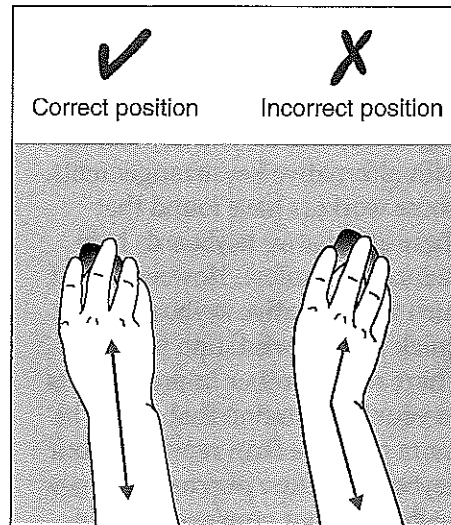
Other pointing devices such as styluses, tablets, and trackballs should also be within a comfortable reach if you use them often or for long periods of time. These devices are often used by graphic artists, draftsmen, engineers, and others involved in specialized computer work such as computer-aided drawing. Keep your wrists straight and your upper body relaxed when using these devices.

To obtain the optimal working posture for using a pointing device, follow these guidelines:

- Adjust the work surface up or down so that your wrists are straight when you are using it.
- If your work surface doesn't adjust this way, raise or lower your chair until you can hold your wrists straight.

## Laptops or notebook computers

Laptop or notebook computers can be very convenient because they can take up less room and are easier to transport than conventional desktop computers. However, laptops can be more difficult to adjust to allow for good working postures. Consider using separate components (peripherals) when you are using your laptop computer at your workstation. For example, you can use the laptop screen as your monitor, and attach an external keyboard



*Don't bend your wrist from side to side while using the mouse. Instead, try to move your whole arm to keep your wrist straight.*



and mouse. Using separate components allows each one to be independently adjusted. If you have visual difficulties, plugging the laptop in to a larger external monitor may be helpful.

If you are unable to use external components, consider the tasks you will be working on, and adjust your laptop accordingly:

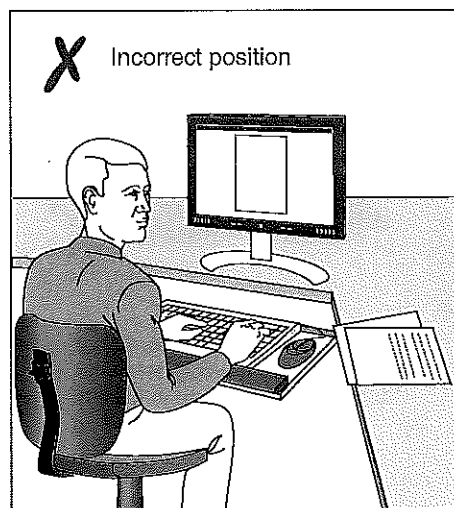
- When reading lengthy documents, raise the screen to eye level to avoid bending your head downward.
- When typing intensively, lower the keyboard so that your elbows just clear the top of the work surface, your arms are by your sides with about a 90-degree angle at the elbow, and your wrists are straight.
- Take a break from your laptop. Do other jobs that don't involve using a computer. It is better to take several short breaks, where you can change your posture, rather than one long break.

## Multi-user and multi-task workstations

Workstations used by more than one person or for a variety of tasks should be height adjustable. If you work at a multi-user or multi-task workstation, you should be able to adjust it quickly to suit you and the task at hand. Adjustable workstation components such as monitor stands, keyboard supports, and work surfaces allow you to do this. Adjustable chairs and footrests are key components for multi-user workstations — they help each user obtain the optimal working height. You should also receive training in how to adjust the equipment and how to determine the correct posture for different tasks.

## Documents

Poor placement of the documents you look at while typing may lead to muscle discomfort or eye strain. If your documents are flat on the work surface or far to the left or right of your screen, you may have to hold your head in an awkward posture for long periods to read the document; or you may have to repeatedly move your head up, down, or sideways between the document and screen.



*Poor placement of documents while typing can lead to awkward postures.*

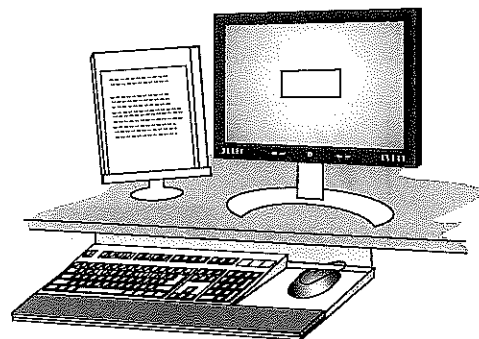
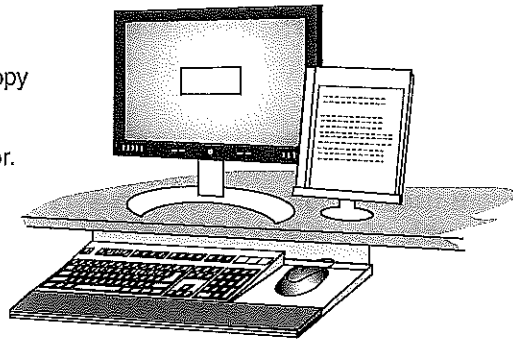
**Rearrange your workstation layout 15**

To reduce the need for these movements, place the documents as close as possible to the screen, with the documents at the same height and viewing distance as the screen. See “Placement of documents.”

If your work is mostly data input, move the monitor to one side and place the document in front of you, at the same height and viewing distance as the monitor. (See “Placement of documents.”) If the document is too heavy or large for a standard document holder, you can improve the viewing angle and distance by using a binder or some other object on your desk to prop the document up. You can also purchase stands designed for large documents.

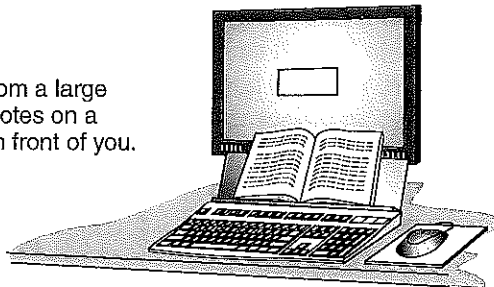
### Placement of documents

If you need to look back and forth from the screen to the documents, place your hard copy on a document holder, close to and at the same height and viewing distance as the monitor.



For data input, move the monitor to one side and place the documents in front of you.

When inputting data from a large document or making notes on a document, prop it up in front of you.



## Organization of the work area

How you arrange your phone, reference books, pens, documents, and other work materials at your workstation can affect your comfort. If materials that you use often are too far away, repetitive reaching can add to neck, shoulder, and upper back discomfort.

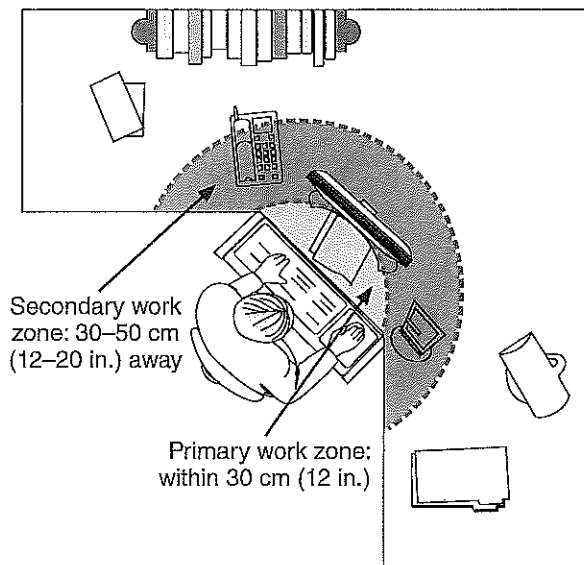
### Work zones

Organizing your work materials and accessories into primary and secondary work zones improves efficiency, creates more working space, and reduces the distance and frequency of reaches. The primary work zone is your usual work area, and is within easy reach — up to 30 cm (12 in.) from you. Place items that you use frequently or for long periods in this area. Arrange them around you in a semicircle.

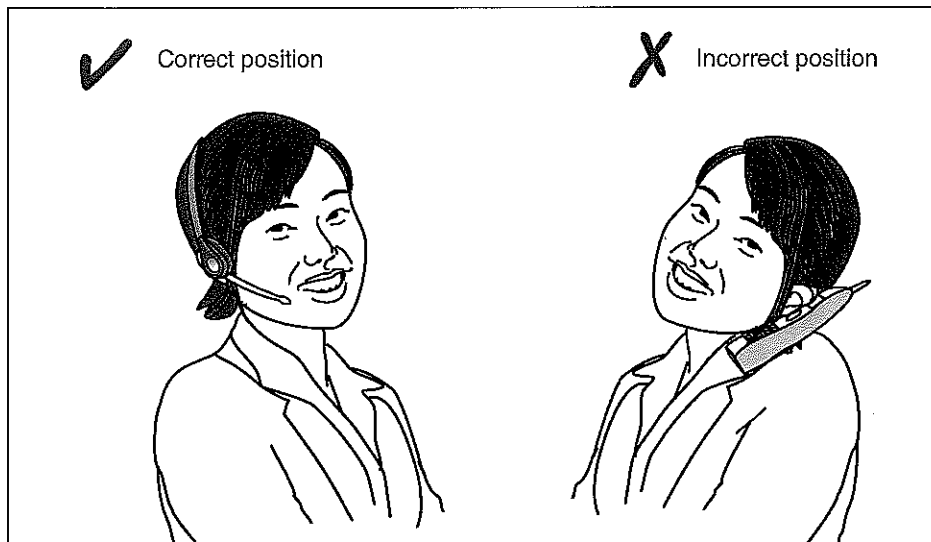
The secondary work zone is the area of occasional use that is 30–50 cm (12–20 in.) from you. Place items that you use occasionally or for short periods in this area. Place materials and equipment that you use very infrequently in the area beyond the secondary zone.

### Telephones

If you use your phone frequently, place it close to you to reduce repetitive reaching. If you often cradle the phone between your ear and shoulder, consider using a headset or speakerphone to avoid awkward neck postures. Proper placement of your phone and the use of a headset or speakerphone will make it much easier for you to refer to files or use the computer while you're on the phone.



*Place items that you use frequently or for long periods in the primary work zone. Place items that you use occasionally or for short periods in the secondary work zone.*



*If you use your phone frequently, a headset will help you reduce awkward neck postures.*

## **Storage**

Workstation storage areas include overhead cupboards, bookshelves, filing cabinets, and desk drawers. Use storage areas for items that you use very infrequently — not for items that you use regularly.

Getting materials from your storage areas shouldn't involve undue twisting, stretching, heaving, or lifting of heavy objects. To minimize lifting, store heavy objects such as large reference manuals near waist level. This will also help you avoid excessive reaching and twisting to get objects from overhead shelves or cupboards.

If you store materials under your desk, don't clutter your leg space. You need room under your desk to vary your leg posture throughout the day. It's awkward to place materials under a desk and remove them, so try to avoid this practice.






## 4. Improve your lighting and minimize glare.

Too much light. Too little light. Glare. These are factors that contribute to eye strain. Poor lighting can also contribute to muscle soreness and fatigue by causing you to adopt awkward postures to see your screen or documents. For example, you might lean forward in low light to see your screen better, or lean sideways to avoid glare from a bright light overhead.


### Glare

Glare can shine directly into your eyes or be reflected from other surfaces (for example, your screen, desktop, or walls) into your eyes. Sources of glare include sunlight, overhead lighting, and desk lamps. This section describes ways to control glare at your workstation.

#### Testing for glare



You can perform a quick test with a mirror to help identify possible sources of glare. Sitting in your normal position, place a mirror — with the reflective side facing you — against your screen, then your document holder, and then on your work surface. In the mirror, you will be able to see possible sources of glare such as overhead lights and task lights. For example, if you look up, you can probably see several fluorescent light fixtures near your workstation. When you look in the mirror, you will only be able to see reflections of those fixtures that could be sources of glare.



### Workstation position

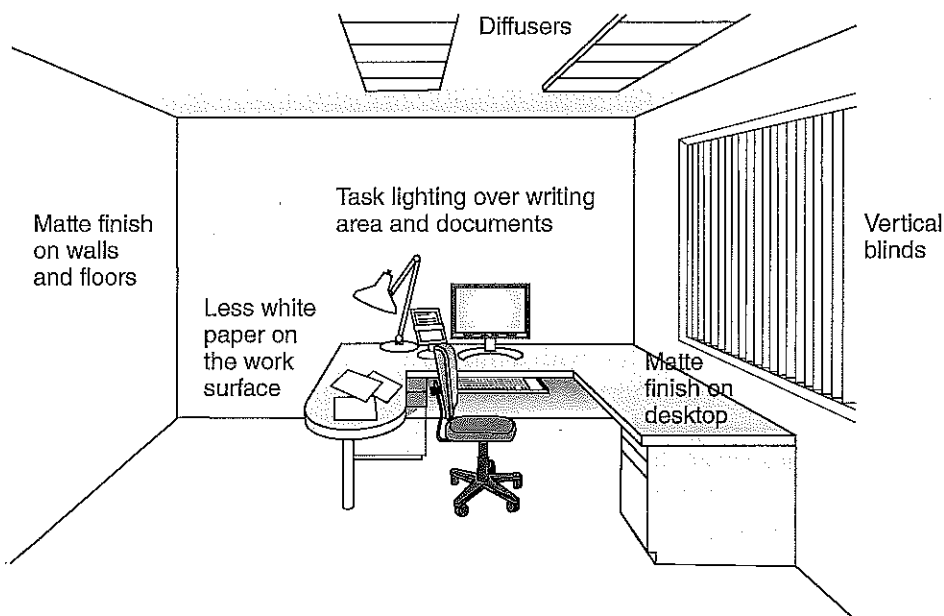
To avoid glare from windows, position your computer workstation so when facing the monitor you are sitting beside or parallel to the window. If you face a window, outside light shines directly into your eyes, making it difficult to focus on the screen. If you sit with your back to a window, you may have problems with reflections or high light levels. In either situation, adjust the blinds to reduce the amount of light on your screen.

Overhead lights can also shine directly into your eyes or reflect images onto your computer screen, making it difficult to view the screen. Try to locate computer workstations between rows of lights. If this isn't possible, adjust the angle of your screen so that it's 90 degrees (a right angle) to the work surface. If your screen is tilted toward the ceiling, you could have a glare problem.

## Ways to control glare

Consider these tips for controlling glare on your monitor screen:

- Adjust brightness and contrast.
- Use a light-coloured background on the screen.
- Place the monitor so that your line of sight is parallel to the window.
- Adjust the monitor to a vertical position, if possible.




## Overhead lighting

If you still have glare problems after making adjustments to your workstation, ask your supervisor if the amount of overhead lighting can be reduced. Light levels can be lowered and glare prevented by installing a dimmer switch or diffusers. Diffusers are a series of square cells in a grid that fits over a fluorescent fixture. They direct light vertically, reducing the angled light rays.

## Task lighting

When light levels are low, use a desk lamp to illuminate documents you are working with at the computer if you are having difficulty reading them. To illuminate your writing surface, place the lamp to your left if you are right handed so that the light shines in front of you from left to right. This stops



the lamp from casting shadows of your hand and pen on the paper. If you are left handed, place the lamp to your right. Avoid placing task lighting directly in front of you because this creates reflected glare from the desk or documents.

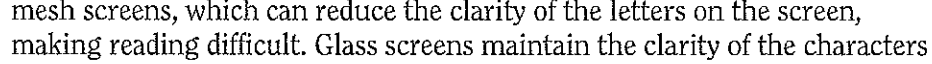
## **Oversized monitors**

Oversized monitors may increase the likelihood of problems with reflected glare because of their large surface area. Take care in placing these monitors in your work area.

## **Monitor controls**

Familiarize yourself with the brightness and contrast controls on your monitor. Adjusting brightness and contrast can improve your viewing comfort. If you don't know how to use these controls, ask your supervisor.

## **Anti-glare screens**



If you can't remove the source of glare, you can install an anti-glare screen on your monitor. Glass anti-glare screens or filters are preferable to nylon mesh screens, which can reduce the clarity of the letters on the screen, making reading difficult. Glass screens maintain the clarity of the characters on your screen and enhance the colours. If you install an anti-glare screen, clean it regularly. This prevents dust buildup, which makes reading more difficult. Nylon mesh screens are particularly prone to dust buildup. Most new monitors are designed to control glare.

## **Screen colours**

A light background (for example, light grey) with darker lettering helps minimize the effects of reflected glare on the monitor. To make the best use of your monitor, avoid the following:

- Several colours at once — Too many colours can be confusing.
- Extreme colour contrasts such as red and blue — Eyes tire quicker with extreme contrasts.
- Blue for small letters or numbers — It's difficult to focus on blue.
- White on yellow — This is difficult to read because there is little contrast.
- Yellow on green — This creates a vibrating effect.



## **Walls and finishes**

Matte (dull) finishes should be used on walls, floors, and furniture. Glare is made worse by light-coloured, shiny finishes on work surfaces or behind monitors, or by white paper scattered on top of a work surface. Overhead lighting and desk lamps reflect off these surfaces into your eyes.



## 5. Improve your job design.

Job design includes the following elements:

- The types and variety of tasks you do
- How you do these tasks
- How many tasks you do
- The order and rotation of the tasks
- When you take breaks
- The use of micro-pauses for rest

Review your job with the above elements in mind. You may be able to reorganize your job to increase your efficiency and reduce the risk of injury. Discuss ideas for reorganizing or redesigning your job with your supervisor and co-workers.

### Breaks

One way to improve your job design is to take breaks from computer work. Breaks allow you to vary your posture and rest your tired muscles. You don't have to take a coffee break to get a rest from computer work. Just take a few minutes to do something that uses different muscles or a different posture. For example, make a few phone calls or pick up the mail to get a break from typing.

### Micro-pauses

If you work on lengthy computer tasks from start to finish without a break, you can reduce tension in your muscles by taking regular micro-pauses. Pauses of 20 seconds to 2 minutes, combined with exercises, will help combat muscle soreness.

How often should you take micro-pauses? That depends on the type and intensity of your work, but if your muscles begin to feel sore, you've waited too long to take a break. Take micro-pauses more often as the intensity of your work and the time you spend typing increase. If you pace yourself with micro-pauses, you will likely feel better and still complete the same amount of work as you would without taking micro-pauses.




## Exercises

Daily exercises help reduce soreness and tension because they provide changes in posture and ensure a healthy supply of blood to your muscles. Maintaining fitness and strength conditions the body and reduces strain. It may also allow you to more easily adjust to work tasks. Sample exercises are described on pages 30–31.

Working overtime reduces your opportunity to exercise and relax. If you have to work overtime, take extra care to continue your usual exercise routine and take micro-pauses. Periodic breaks and micro-pauses are particularly helpful in countering the effects of long workdays when you can't avoid working overtime. You should take micro-pauses more often as the day progresses because this is when the effects of muscular fatigue will start to occur.

Your activities outside of work can add to or reduce the cumulative effects of work. Activities that keep you fit can help counterbalance the effects of computer work.





## Summary

Your workstation can be made to fit you and the type of work you do. Follow these guidelines:

- Check that you are using good posture. This will reduce the stress on your body while seated. Ask a co-worker who works near you to observe your posture as you work.
- Adjust your chair to support your back and minimize awkward postures that can lead to muscle tension, fatigue, and soreness.
- Rearrange your workstation layout to avoid repetitive, prolonged, and awkward movements when you use the monitor, keyboard, mouse, documents, and other items.
- Improve your lighting, and eliminate or control the sources of glare that cause eye strain, fatigue, and sore muscles.
- Review your job to see if there are ways to improve its design, increase your comfort level, and reduce your risk of injury. Discuss your ideas with your supervisor.
- Organize your workday to include a variety of tasks, breaks, and exercises. These allow you to vary your posture, rest your muscles, and minimize muscle tension and soreness.
- Talk to your supervisor, a health and safety committee member, or your worker health and safety representative about changes to your workstation that you can't make yourself.
- Exercise regularly and maintain your fitness to help counterbalance the effects of computer work.

## Computer workstation checklist

Use this checklist to help assess your posture, chair, workstation layout, lighting, and job design. The checklist summarizes information found throughout this guide. If you answer “No” to any of the questions, review the relevant sections in the guide (page numbers are noted in parentheses).

### 1. Check your posture (pages 5–6).

Yes No

- When using your keyboard or mouse, are your forearms horizontal, at about a 90 degree (right) angle at the elbow, with shoulders and upper arms relaxed?
- Are your wrists in a straight position when using your keyboard or mouse?
- When you look at the screen, is your head upright (not bent forward or backward)?
- Is your lower back supported by the curved part of the chair backrest?
- When you are seated, are your thighs resting horizontally with a 90–110 degree angle at the hips?
- Are you able to sit without feeling pressure from the chair seat on the back of your thighs or knees?
- Are your feet fully supported by the floor or a footrest?

### 2. Adjust your chair (pages 7–9).

Yes No

- Can you adjust your chair when you’re sitting on it?
- Can you adjust the height of your chair 38–51 cm (15–20 in.) to achieve a straight wrist posture?
- If you use a footrest, does it have a non-slip surface?
- Does the footrest support both your feet when your heels are 12 cm (5 in.) apart?
- Can you adjust the footrest 10–20 degrees?
- Is the footrest stable when your feet are resting on it?



- Can you raise or lower the chair backrest?
- Can you adjust the angle of the backrest?
- If your chair has armrests, can you place your chair at a comfortable typing or viewing distance from the screen?
- Does your chair have five legs with casters?
- Is the upholstery made of a breathable fabric?
- Does the chair seat have a rounded front edge?
- Can you tilt the seat?

**3. Rearrange your workstation layout (pages 10–18).**

Yes No

- Is the top line of text on your screen (not the top of the monitor) at eye level?
- Does your screen tilt?
- Is the distance between your eyes and the screen about arm's length? Most people find a viewing distance of 50 cm (20 in.) comfortable.
- Does the angle of the keyboard allow you to work with your wrists straight?
- Are your mouse and keyboard on the same level?
- Are your mouse and keyboard close to one another?
- Can you reach your mouse comfortably without stretching or reaching?
- Do you know how to adjust your monitor, keyboard support, and work surfaces?
- Is your document holder at the same height and viewing distance as your monitor so that you move your head very little when you look from document to screen?
- When you are editing on screen, is the monitor directly in front of you?
- When you are inputting data, are your source documents placed on a document holder directly in front of you?

- | Yes                      | No                       |   |
|--------------------------|--------------------------|---|
| <input type="checkbox"/> | <input type="checkbox"/> | Is your document holder able to hold binders, books, computer paper, or other documents that you work with? |
| <input type="checkbox"/> | <input type="checkbox"/> | Are the items you use frequently within 0–30 cm (0–12 in.)?   |
| <input type="checkbox"/> | <input type="checkbox"/> | Are the items you use occasionally within 30–50 cm (12–20 in.)?   |
| <input type="checkbox"/> | <input type="checkbox"/> | Can you maintain a comfortable, upright head posture when using the phone?                                  |
| <input type="checkbox"/> | <input type="checkbox"/> | Are the items you seldom use stored more than 50 cm (20 in.) from you or off the desk surface?              |
| <input type="checkbox"/> | <input type="checkbox"/> | Are large reference materials located near waist level?   |
| <input type="checkbox"/> | <input type="checkbox"/> | Do you have enough space beneath your work surface to move your legs?                                       |

#### 4. Improve your lighting and minimize glare (pages 19–22).

- | Yes                      | No                       |  |
|--------------------------|--------------------------|--|
| <input type="checkbox"/> | <input type="checkbox"/> | Does the level of light make it easy for you to see the screen without squinting or straining?   |
| <input type="checkbox"/> | <input type="checkbox"/> | Is your screen free of reflected glare?  |
| <input type="checkbox"/> | <input type="checkbox"/> | Is your monitor positioned so that your line of sight is parallel to the window?   |
| <input type="checkbox"/> | <input type="checkbox"/> | Have you adjusted the brightness and contrast controls on your monitor to make it easier to see the screen?  |
| <input type="checkbox"/> | <input type="checkbox"/> | Are walls, floors, and work surfaces a matte (dull) finish and free of distracting images or lights?   |
| <input type="checkbox"/> | <input type="checkbox"/> | Is the task lighting on your writing surface to your left (if you are right handed) or to your right (if you are left handed), to avoid shadows on your documents and reflected glare? |
| <input type="checkbox"/> | <input type="checkbox"/> | When working at your computer, do you have enough light to read hard copy documents easily?  |

**5. Improve your job design (pages 23–24).**

Yes    No


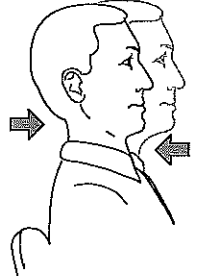
- Have you considered the elements of your job to determine if they can be improved by reorganizing, alternating, modifying, or expanding the tasks you perform?
- Do you take regular breaks away from the computer throughout the day?
- Do you take micro-pauses when working at the computer?
- Do you vary your work activities regularly so that you change your posture and use other muscles?
- Do you pace your work activities over the entire shift?
- Do you stretch and move your muscles regularly?

## Exercises to reduce muscle tension and eye strain

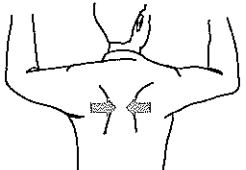
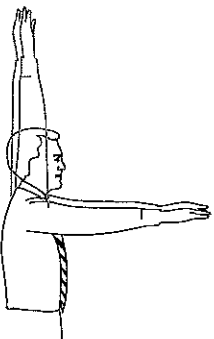

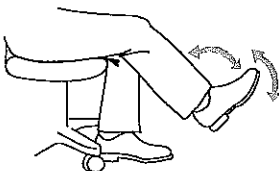
Daily stretching exercises aren't a substitute for a proper workstation or equipment, or a cure for persistent pain or discomfort. However, they can help reduce muscle tension and eye strain.

The stretches described in this section take about five minutes to complete. Repeat each stretch three to five times. You can do all of these exercises or select specific ones to relieve tension in particular muscles or areas of your body. If you do an exercise that stretches one side of the body, you should also do it on your other side to balance your exercise routine.

Before starting to exercise, see your health care provider if you have a medical condition or injury in a part of the body involved in any of the exercises.

Body part	Exercise or stretch
<b>Eyes</b> 	<ul style="list-style-type: none"><li>• Close your eyes, cup your hands, and place them lightly over your closed eyes. Rest your elbows on your desk and breathe deeply for one minute.</li><li>• Look away from your computer screen and focus on a distant object.</li><li>• Look up, down, and side to side without moving your head.</li></ul>
<b>Neck</b> 	<ul style="list-style-type: none"><li>• Glide your head back as far as it will go, keeping your head and ears level. Then, glide your head forward. Repeat three times.</li><li>• Shrug your shoulders, raising them for a count of three, and then lower them. Rotate your shoulders backwards, arms relaxed at your sides. Repeat three times.</li></ul>



Body part	Exercise or stretch
<b>Shoulders</b> 	<ul style="list-style-type: none"><li>• Squeeze your shoulder blades together with your elbows lifted away from your body. Imagine you have a pencil between your shoulder blades and you are trying to trap it and then release it.</li></ul>
<b>Back</b> 	<ul style="list-style-type: none"><li>• Hold your arms straight in front of you, and stretch them forward. Raise your arms above your shoulders, and stretch them upward.</li><li>• Sit relaxed, feet flat on the floor. Imagine a cable attached to the top of your head pulling you up. Hold for a count of three, and then relax. Repeat three times.</li></ul>
<b>Wrists and hands</b> 	<ul style="list-style-type: none"><li>• Clench your fists, then release them, spreading out your fingers. Hold each position for a count of three.</li><li>• In a sitting or standing posture, drop your arms to your side. Gently shake out your arms and hands.</li></ul>
<b>Lower limbs</b> 	<ul style="list-style-type: none"><li>• Lift your lower leg from a seated posture, leaving your knee bent slightly. Rotate your ankle slowly. Point your toes and then pull them toward your shin.</li><li>• Stand up and take a short walk.</li></ul>



## Notes



## WorkSafeBC offices

Visit our web site at [WorkSafeBC.com](http://WorkSafeBC.com).

### Abbotsford

2774 Trethewey Street V2T 3R1  
Phone 604 276-3100  
1 800 292-2219  
Fax 604 556-2077

### Burnaby

450 – 6450 Roberts Street V5G 4E1  
Phone 604 276-3100  
1 888 621-7233  
Fax 604 232-5950

### Coquitlam

104 – 3020 Lincoln Avenue V3B 6B4  
Phone 604 276-3100  
1 888 967-5377  
Fax 604 232-1946

### Courtenay

801 30th Street V9N 8G6  
Phone 250 334-8765  
1 800 663-7921  
Fax 250 334-8757

### Kamloops

321 Battle Street V2C 6P1  
Phone 250 371-6003  
1 800 663-3935  
Fax 250 371-6031

### Kelowna

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1 888 922-4466  
Fax 250 717-4380

### Nanaimo

4980 Wills Road V9T 6C6  
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1 800 663-7382  
Fax 250 751-8046

### Nelson

524 Kootenay Street VIL 6B4  
Phone 250 352-2824  
1 800 663-4962  
Fax 250 352-1816

### North Vancouver

400 – 224 Esplanade Ave. W. V7M 1A4  
Phone 604 276-3100  
1 888 875-6999  
Fax 604 232-1558

### Prince George

1066 Vancouver Street V2L 5M4  
Phone 250 561-3700  
1 800 663-6623  
Fax 250 561-3710

### Surrey

100 – 5500 152 Street V3S 5J9  
Phone 604 276-3100  
1 888 621-7233  
Fax 604 232-7077

### Terrace

4450 Lakelse Avenue V8G 1P2  
Phone 250 615-6605  
1 800 663-3871  
Fax 250 615-6633

### Victoria

4514 Chatterton Way V8X 5H2  
Phone 250 881-3418  
1 800 663-7593  
Fax 250 881-3482

### Head Office / Richmond

*Prevention Information Line:*  
Phone 604 276-3100  
1 888 621-7233 (621-SAFE)

#### *Administration:*

6951 Westminster Highway  
Phone 604 273-2266

#### *Mailing Address:*

PO Box 5350 Stn Terminal  
Vancouver BC V6B 5L5

### After Hours

**Health & Safety Emergency**  
604 273-7711  
1 866 922-4357 (WCB-HELP)

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