

How to Make Your Computer Workstation Fit You



WorkSafe

 WORKERS'
COMPENSATION
BOARD
OF BRITISH
COLUMBIA

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Preventing on-the-job injury and disease is the first priority of the Workers' Compensation Board (WCB) of British Columbia. WCB officers inspect worksites in B.C. to make sure they comply with the Occupational Health and Safety Regulation, which sets out minimum workplace standards for health and safety. The WCB also investigates serious workplace accidents and consults with employers, supervisors, and workers to promote health and safety in the workplace.

Under the requirements of the *Workers Compensation Act*, a worker must report an injury or a disabling occupational disease as soon as possible to the employer. The employer must report work-related injuries, occupational diseases, and work-related deaths to the WCB within three days. A worker may not make an agreement with the employer to give up WCB benefits.

If a worker suffers a work-related injury or illness, the WCB provides fair compensation that may include medical costs, loss of earnings, physical rehabilitation, and pensions. The WCB also works with employers to help injured workers return to work. If a worker is killed on the job, counselling and financial help are made available to the victim's family. For more information on requirements or eligibility for WCB coverage, contact the WCB office nearest you.

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WCB 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 contains basic information on how to identify and solve problems with computer workstations and is intended primarily as a self-help guide for workers. Other users include employers, supervisors, joint health and safety committees, and health and safety specialists. This guide:

- Recommends practical and inexpensive ways to improve your workstation layout and lighting
- Explains how to ensure good posture
- Suggests ways to organize your work day and work space to reduce the likelihood of injury to muscles, tendons, nerves, joints, and other parts of the body
- Includes a checklist for assessing your computer workstation and provides exercises that you can do at your desk to reduce muscle tension and eyestrain

You can make many of the changes suggested in this guide yourself – for example, changing the height of your chair. Discuss other changes, such as purchasing a palm or wrist support or lowering overhead light levels, with your supervisor or employer. Your employer should have guidelines for the selection of equipment and furniture so that your computer workstation can be made to fit you and the type of work you do.

Signs and symptoms of injury

Do you relate to some of the aches and pains on page 3? Think about how you feel at work and after work. For example, do you have sore eyes or headaches? Do your fingers tingle? Do your wrists, arms, shoulders, back, legs, or neck feel stiff or uncomfortable? If so, you may have early signs and symptoms of an injury.

Signs and symptoms may be caused by the presence of these factors during computer work:

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

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

Activities away from work can add to, or reduce, the cumulative effects of work activities. For example, if you work all day at a computer, gardening and tennis are likely to be better counterbalancing activities than sewing or watching television.

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.

Report any sign or symptom of an injury to your supervisor, first aid, or joint health and safety committee. That way, immediate steps can be taken to improve your work area before you develop a serious health condition. Examples of possible injuries include muscle strain; carpal tunnel syndrome (an injury to a nerve in the wrist); tendinitis (swelling of the tendons) in your wrist or elbow; and tenosynovitis (swelling of the sheath around a tendon).

Aches and pains

Do you have some of the aches and pains listed in this drawing? A proper workstation layout and correct posture by the operator can prevent the signs and symptoms shown 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.

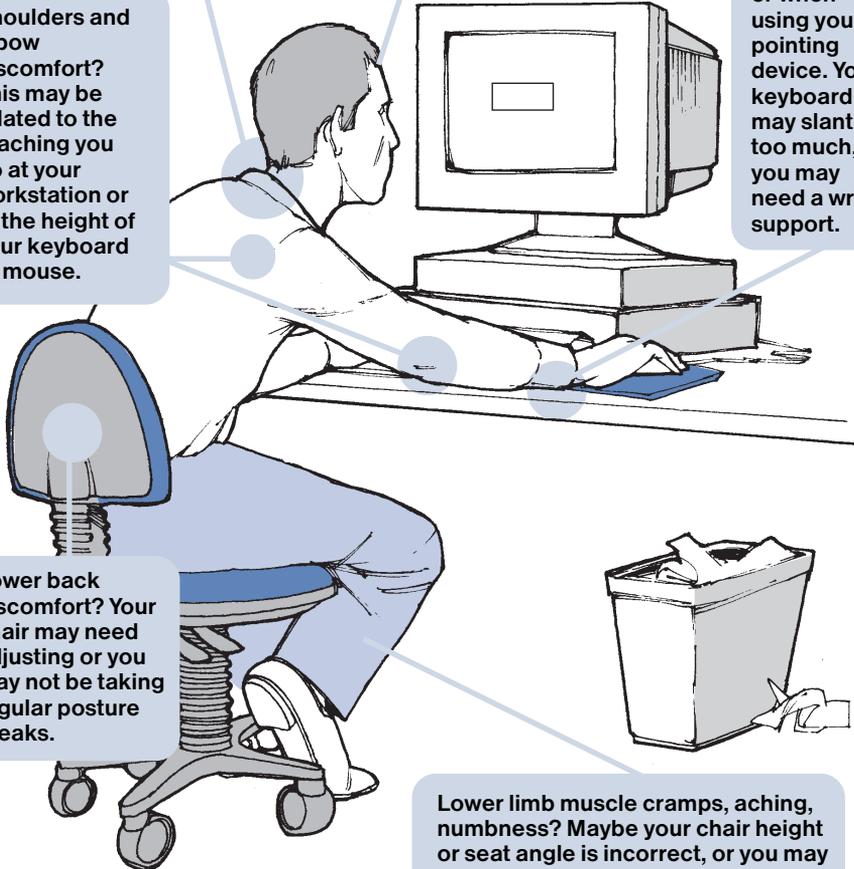
Eyestrain, burning eyes, headache? Lighting levels or your viewing distance may need improving. You may need to adjust contrast, brightness, or font size.

Wrist and hand discomfort? Your wrist posture may be incorrect when keyboarding or when using your pointing device. Your keyboard may slant too much, or you may need a wrist support.

Shoulders and elbow discomfort? This may be related to the reaching you do at your workstation or to 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, numbness? Maybe your chair height or seat angle is incorrect, or you may need a footrest or more leg space.



How to improve your workstation

Following these steps can improve your workstation:

1. Check your posture.
2. Adjust your chair.
3. Make your workstation layout fit you.
4. Check for lighting problems.
5. Organize your work and improve job design.

The steps listed above are described in the remaining sections of this guide. At the end of the guide, you will find a checklist that will help you assess your posture, workstation layout, lighting, and work organization. Exercises that help reduce muscle tension and eyestrain are also included at the end of the guide.

If you need more information after reading this guide, talk to a supervisor, to members of the joint health and safety committee or worker representative, or to 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 gives recommended practices on how to fit the workplace to the office worker and how to choose and configure office furniture and equipment.

1. Check your posture

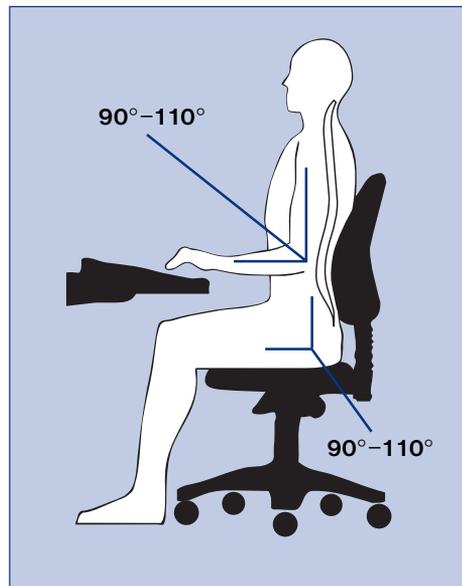
When using your computer, you should be able to sit with your:

- Forearms held horizontally at about a 90-degree or right angle at the elbow, 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- to 110-degree angle at the hips
- Feet fully supported by the floor or a footrest

The drawings on the right and the following page show this posture.

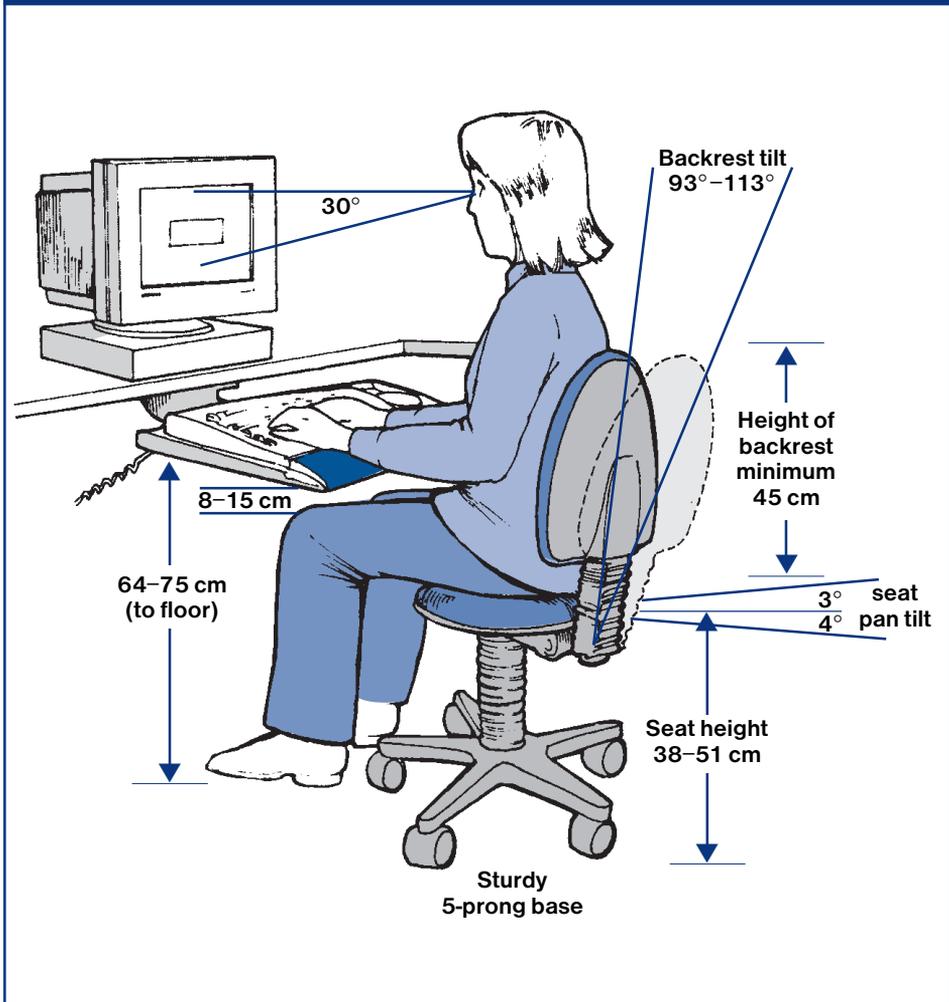
Optimal postures reduce stress on the body. However, any posture – including sitting – held for a prolonged period can lead to fatigue or discomfort. Varying your posture, while keeping it within a comfortable, supported range, can reduce fatigue and discomfort.

The remaining sections of this guide provide information on how to adjust your chair, rearrange your workstation layout, and improve lighting so that you can use the posture shown on the right and on page 6.



This silhouette shows the optimal angles and position of joints for sitting at a computer workstation. A posture that changes within a comfortable range is the best posture.

Workstation dimensions and adjustment ranges



This drawing shows the recommended dimensions and adjustment ranges for the chair, monitor, keyboard, and work surfaces. The operator in this drawing is using good posture.

2. Adjust your chair

There are a number of reasons why you should adjust your chair:

- Seating that doesn't adequately support your back increases fatigue and contributes to poor posture.
- Seating that is too high can result in awkward neck postures or pressure on the back of the thighs.
- 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 decreases circulation.

Any posture that you hold for a long time – whether you are sitting or standing – will result in fatigue and discomfort. When you begin to feel discomfort, you've held a position too long. Avoid fatigue and discomfort by varying your posture regularly throughout the work day. You can do this by adjusting your chair and by standing or walking occasionally. Your chair controls should be simple to use so that it's easy for you to adjust your chair – while seated – regularly during the work day.

Adjustable features of seating are shown on page 6.

Chair height

To adjust your chair to the proper height, raise or lower it so that:

- With your *forearms* horizontal and at right angles to your upper arms, your elbows just clear the top of the work surface you're using (desk or keyboard tray)
- Your wrists are *straight* when you place your hands on the keyboard or mouse (see page 6)

Ideally, adjusting your chair this way will leave you with 8 to 15 centimetres (three to six inches) of 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.

Footrest

A footrest supports your feet and reduces the pressure on the back of your thighs caused by your thighs contacting the seat. You should use a footrest if your feet don't rest on the floor when you adjust your chair height as described previously. The correct height of the footrest is the distance your feet are off the floor after you have adjusted the seat height.

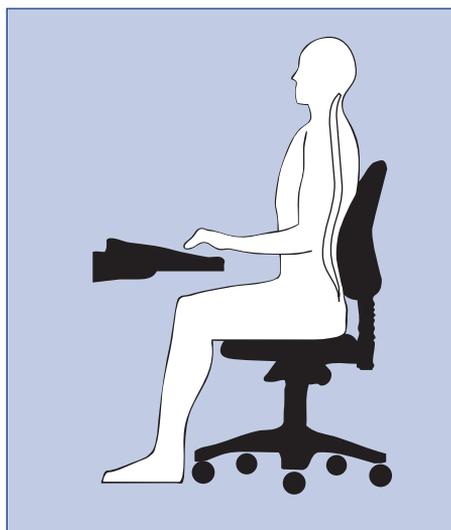
A footrest should:

- Have a non-slip surface large enough for both feet to rest comfortably (about 30 cm by 30 cm or one square foot).
- Be sloped to allow a comfortable ankle position when the feet are resting on it. You should be able to adjust the slope between 10 and 20 degrees.
- Be stable enough so it doesn't slide or move when your feet are on it.

Backrest

The lower part of the backrest (the lumbar support) of your chair 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. A small rolled-up towel or a small foam pillow placed in the curve of your back can add support, if needed.

You should also be able to adjust your backrest forward and backward so that it is at an angle of 93 to 113 degrees. This allows you to adjust your chair to suit the activities you are performing.



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

Armrests

When they help support your forearms or elbows, the armrests on your chair help take the stress off 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. You should also remove armrests if they interfere with typing or using the mouse, or if they prevent you from turning your chair at your workstation or getting up from your chair easily.

Other chair features

Your chair should also:

- Have a five-prong base. A chair with a five-point base is less likely to tip over than one with a four-point base.
- Be covered with a fairly coarse fabric that breathes. Slippery materials such as vinyl may cause you to slide away from the backrest.
- Have a front edge that is rounded. A chair with a straight front edge will cut into the back of the thighs. This can result in your legs “falling asleep” or in discomfort at the point of contact.
- Have a seat that tilts forward and backward so that you can adjust it to help maintain the natural curve of your spine.

3. Make your computer workstation layout fit you

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

Computer monitor

If you work on a computer, you should have your eyes tested about every two years, or more frequently if you are experiencing problems with your vision.

If your screen is at the correct height and viewing distance, it will help prevent or reduce eyestrain 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, you can adjust the monitor height by removing the CPU (central processing unit) or disk drive from beneath the monitor, or by placing other stackable materials underneath the monitor to bring the top line of text 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 should be about arm's length.

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 viewing the computer screen, your ophthalmologist or optometrist will need the following information:

- Measurements from your eyes to the computer screen, work documents, and keyboard. For a more accurate result, have someone else take these measurements.
- The size of the screen. Measure the diagonal of the glass and add on approximately 2–3 cm (one inch).
- 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, the screen background colours, and the type size.
- Type of lighting. Describe the lighting you work under, such as natural light, fluorescent lighting, and 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 could result in eyestrain 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, an appropriate prescription for viewing the 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 may not blink as often at the computer as people doing other reading tasks. 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 by occasionally getting up from the computer. You should also try to blink more often and perhaps use eye drops recommended by your eye doctor.

Keyboard

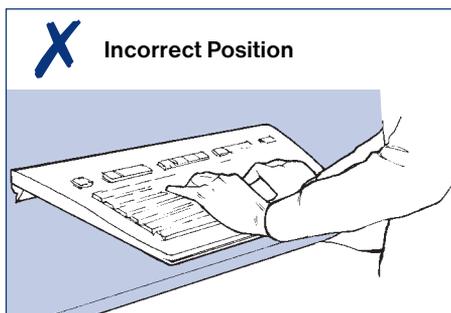
If your keyboard is at the proper height, you will be able to keep your wrists straight while keyboarding. This posture is more comfortable and decreases your risk of injury.

To obtain the correct keyboard height:

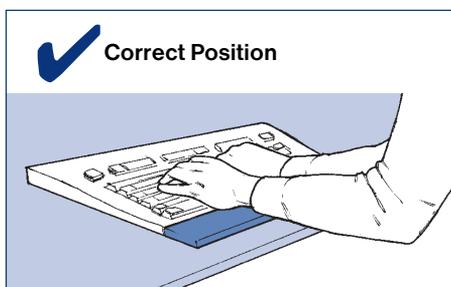
- Adjust your keyboard surface up or down so that your wrists are straight when your fingers are on the middle row of keys.
- If your keyboard surface doesn't adjust this way, raise or lower your chair until you can hold your wrists straight, while touching the middle row of keys. Remember, your work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

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.

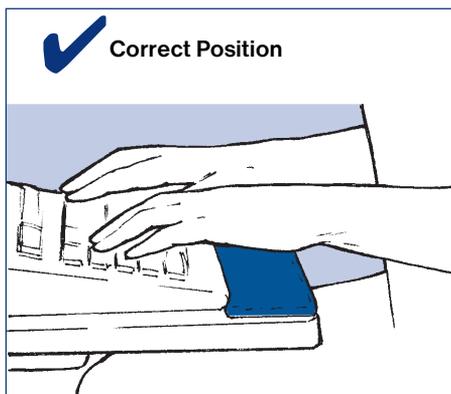
Do you tend to drop your palms or wrists while typing? If so, you could develop sore wrists. A palm or wrist support can provide support during rest periods from keying. When keying, your palms should not be resting on the support. Keep 5 to 10 centimetres (two to four inches) of space in front of the keyboard to rest your hands or to place a palm or wrist support. Make sure you place the palm or wrist support under your palms, not your wrists. The support should be similar in thickness to your keyboard. It should be made of a soft, smooth material and be free of sharp edges.



Don't bend your wrists up (shown) or down while keyboarding.

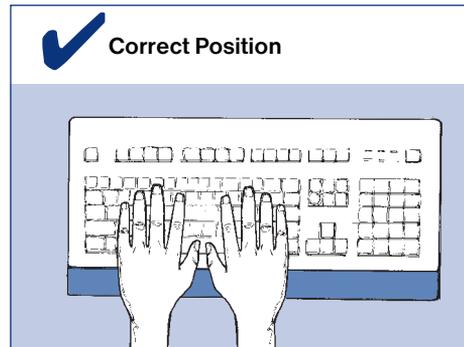


Your wrists should be straight while keyboarding.



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

Many new types of keyboards are now available, including split and angled keyboards and keyboards with alternative key arrangements. Some workers have found that these alternative keyboards help reduce signs and symptoms of injury. However, alternative keyboards shouldn't be seen 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 a new keyboard is purchased, your employer should make sure the problems at your workstation have been properly identified and assessed.



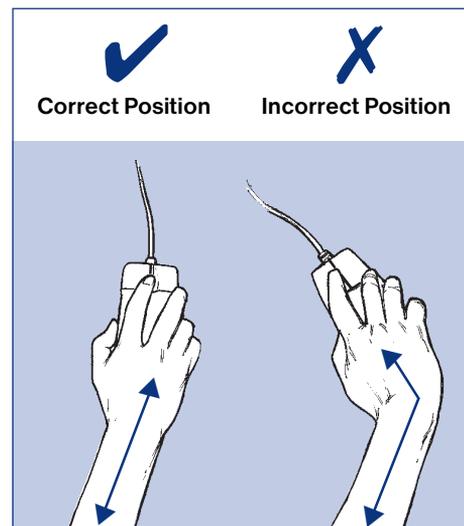
A palm or wrist support — like the one shown here — can support your palms and wrists during rest periods from keying. Make sure you place the palm or wrist support under your palms, not your wrists.

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 side while using it. This posture is more comfortable and decreases your risk of injury.

Here are guidelines for using a mouse:

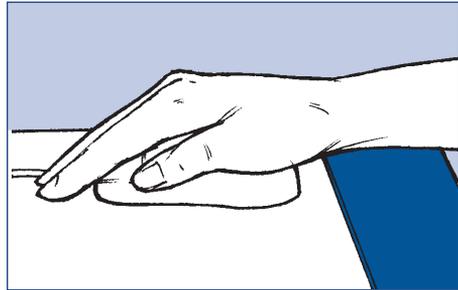
- Keep your mouse at the same height and as close to your keyboard as practical. You could develop a sore shoulder from prolonged reaching if the mouse is far from the keyboard or at a different height. You may have to obtain a rest (extension to the keyboard surface) specially for your mouse as some computer furniture doesn't have room to place the mouse in the preferred position. Make sure you have enough space to move the mouse freely.



Keep your wrist straight during mouse work. Don't bend your wrist from side to side. Try to move your whole arm instead.

- Rest your arm on an armrest or other support to support the weight of the arm and reduce the risk of shoulder problems. A mouse pad or rest may also help relieve pressure on your wrist from your work surface.

- Move your mouse so you can keep your wrist straight. Avoid bending your wrist back or to either side during mouse work. Use a full arm motion from the shoulder when guiding the mouse.



“Palming” the mouse helps keep the wrist straight and reduces the number of small wrist motions.

- Don’t hold your mouse too tightly. Relax your hand over the mouse. Take your hand off the mouse when not using it.
- If you are experiencing discomfort in your hand or wrist, try “palming” the mouse. Your hand should rest comfortably on top of the mouse without sliding back or to the side when you relax your arm.

Other pointing devices such as wands, hand-held scanners (digitizers), or tablets and trackballs should also be within a comfortable reach if they are used often or for long periods of time. (These devices are used by graphic artists, draftspersons, engineers, and others involved in specialized computer work such as computer-aided drawing.) Your wrists should be straight and your upper body relaxed when using these devices.

To obtain the correct working height for a pointing device:

- 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.

Remember, your work surface should be just below your elbows, with your forearms parallel to the floor.

Multi-user and multi-task workstations

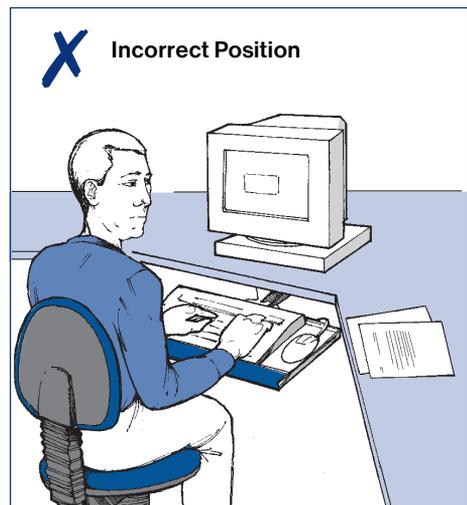
Workstations used by more than one person or for a variety of tasks should be height adjustable. If you work at a multi-user or multi-task workstation, you should be able to quickly adjust it to suit you and the task at hand. Adjustable workstation components, such as monitor stands, keyboard supports, and work surfaces, allow you to do this. An adjustable chair and footrest are key elements to a multi-user workstation. These two components will help each user obtain the correct 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 keyboarding may lead to muscle discomfort or eyestrain.

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. To reduce the need for these movements, place the document as close as possible to the screen, with the documents at the same height and viewing distance as the screen. (See drawings on page 16.)

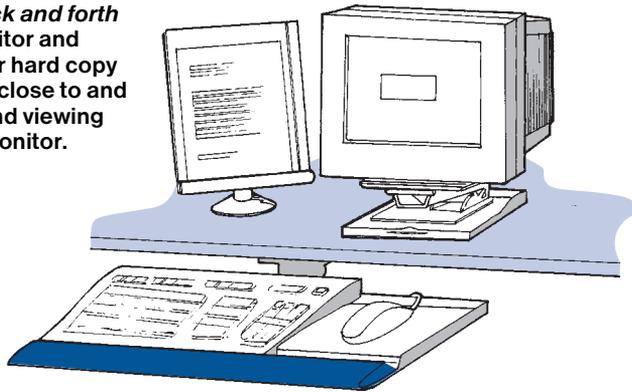
If your work is mostly data input, move the monitor to one side and place the document in front of you, at the same height and viewing distance as the monitor. (See drawing on page 16.) If the document is too heavy or large for a standard document holder, you can improve the viewing angle and distance by using a binder or some other object on your desk to prop the document up at an angle. You can also purchase stands specially designed for large documents.



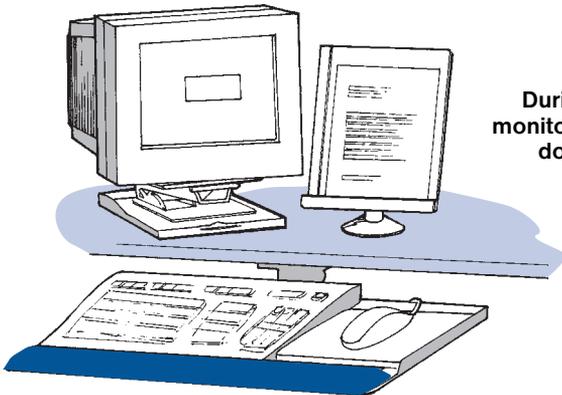
Poor placement of documents while keyboarding can lead to awkward postures.

Placement of documents

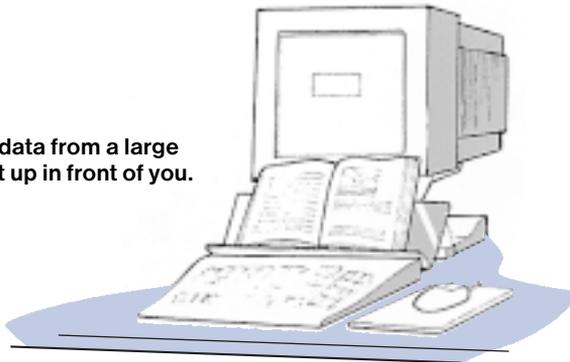
If you need to look *back and forth* between your monitor and documents, place your hard copy on a document holder, close to and at the same height and viewing distance as the monitor.



During *data input*, move your monitor to one side and place your documents in front of you.



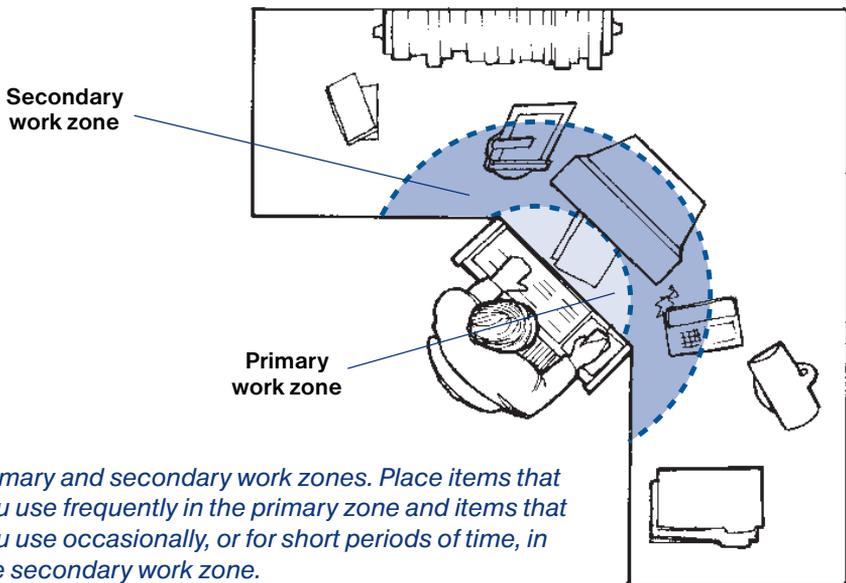
When inputting data from a large document, prop it up in front of you.



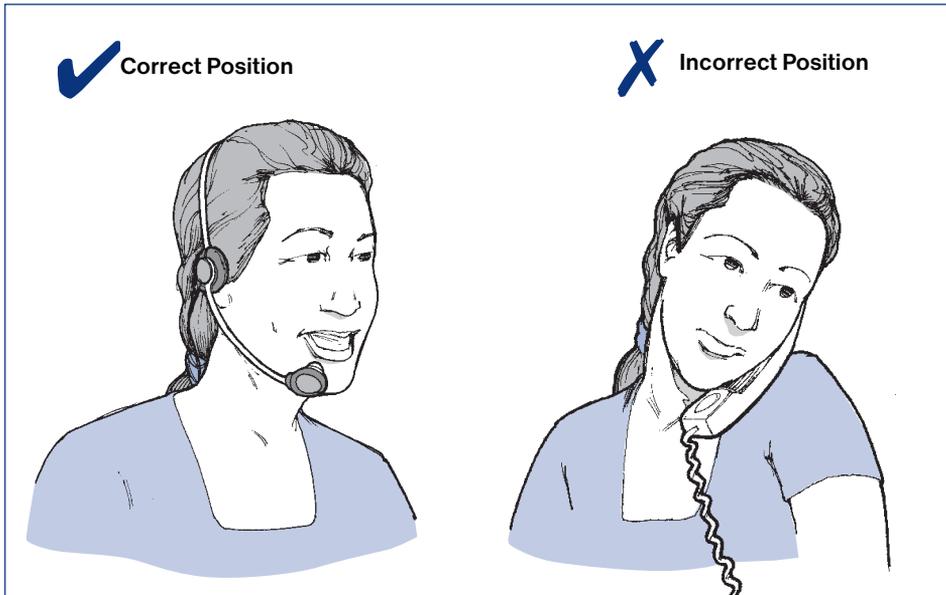
Organization of the work area

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.

In your mind, divide your work area into the primary and secondary zones shown above. The primary zone is your usual work area and is within easy reach (up to 30 centimetres or 12 inches 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 (30 to 50 centimetres or 12 to 20 inches from you). Place items in this area that you use occasionally or for short periods of time. 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. Place materials and equipment that you use very infrequently in the area beyond the secondary zone.



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 speaker phone to avoid awkward neck postures. Proper placement of your phone and the use of a headset or speaker phone makes it much easier for you to refer to files or use the computer while you're on the phone.



If you use your phone frequently, use a headset to reduce awkward neck postures.

Storage

Workstation storage areas include overhead cupboards, book shelves, 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, locate heavy objects – such as large reference manuals – near waist level. This will also allow you to 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. Because it's awkward to place materials under the desk and remove them, try to avoid this practice.

4. Check for lighting problems

Too much light. Too little light. Glare. These are factors that contribute to eyestrain.

Poor lighting can also contribute to muscle soreness and fatigue. In poor light, you 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 shines directly into your eyes or is reflected from other surfaces (such as your screen, desk top, or walls) into your eyes. Sunlight is often a source of glare from the outside. Overhead lighting and desk lamps are often sources of glare from inside the workplace.

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 document holder, and then on your work surface. You will be able to see the objects in the mirror, such as overhead and task lights, that are possible sources of glare at your workstation. For example, if you look up, you can probably see several fluorescent light fixtures in the area of 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.

Glare control

Ways of controlling glare are described in this section and are shown on page 20.

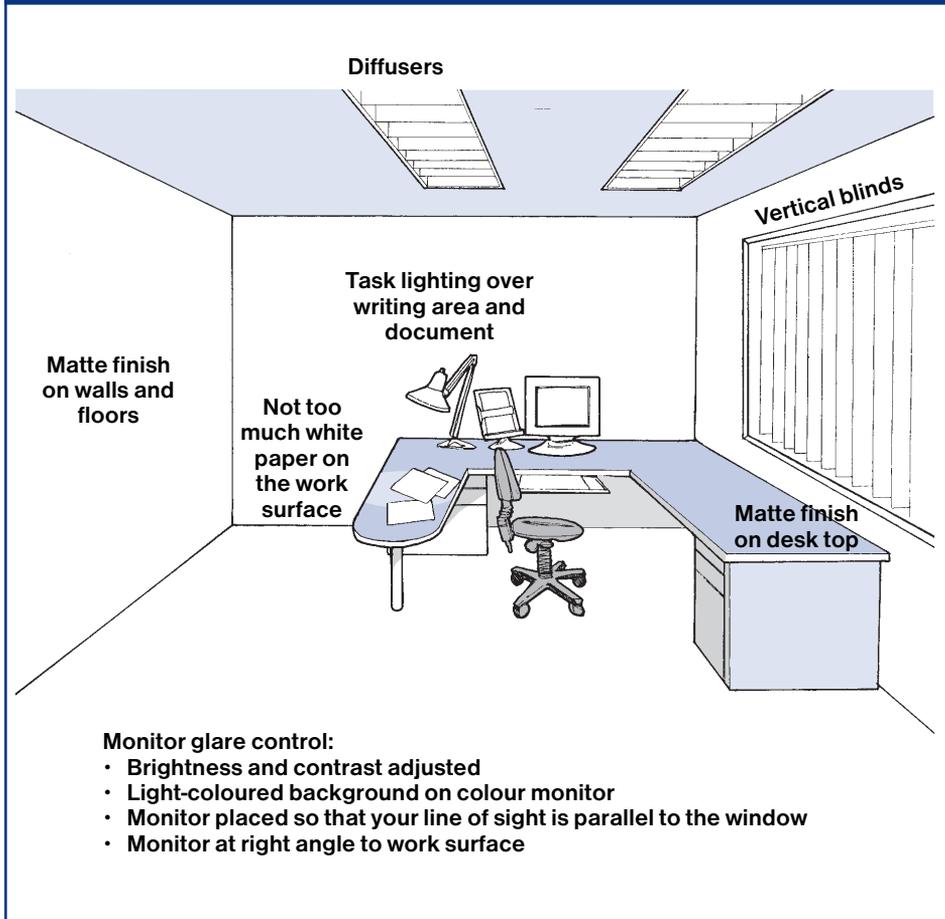
Workstation position

To avoid glare from windows, position your computer workstation so that when you face the monitor, you are sitting beside or parallel to the window.

If you face the window, light from the outside shines directly into your eyes and makes it difficult for you 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 shine directly in your eyes or reflect images onto your computer screen, making it difficult to view your screen. To avoid either of these, locate computer workstations between rows of lights. If this isn't possible, adjust the angle of your screen so that it's at right angles to the work surface. If your screen is tilted toward the ceiling, you could have a glare problem.

Glare control measures



Overhead lighting

If you still have a problem with glare 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, illuminate the hard copy you are working from at the computer if you are having difficulty reading it. Use a desk lamp to provide additional light. To illuminate your writing surface, place your 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 as this creates reflected glare from the desk or documents.

Oversized monitors

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

Monitor controls

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

Colour monitors

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

- Using several colours at one time – too many colours can be confusing
- Extreme colour contrasts such as red and blue – your eyes won't tire as quickly
- Blue for small letters or numbers – the eye can't focus on blue
- White on yellow – it's hard to read because there's little contrast
- Yellow on green – it creates a vibrating effect

Opposite colours such as red and green, or yellow and blue, are good combinations

Anti-glare screens

You can also install an anti-glare screen on your computer monitor if you can't remove the source of glare. Glass anti-glare screens or filters are preferred 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 build-up, which makes reading more difficult. Nylon mesh screens are particularly prone to dust build-up. Most newer monitors have tinted screens to control the glare.

Walls and finishes

Matte (dull) finishes should be used on walls, floors, and furniture. A light-coloured, shiny finish on the work surface or behind the monitor, or white paper scattered on top of the work surface, can contribute to glare. Overhead lighting and desk lamps reflect off these surfaces into your eyes.

5. Organize your work and improve job design

Job design involves these 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 you perform
- When breaks are taken
- The use of micro pauses for rest

Review your job with the above elements in mind. There may be changes that could be made to the way your job is organized that would increase your efficiency and reduce the risk of injury.

Discuss your ideas for reorganizing or redesigning your job with your supervisor and co-workers.

One way you can 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. Take a few minutes and 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 keyboarding.

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 two 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. You should take micro pauses more often as the intensity of your work and the time you spend keyboarding increase. If you pace yourself with micro pauses, you will likely feel better and complete the same amount of work.

Daily exercises help to reduce soreness and tension because they provide changes in posture and ensure a healthy supply of blood to your muscles. Sample exercises are described at the end of this guide.

Working overtime increases the demands on the body. Muscle tension and soreness often result. Periodic breaks and micro pauses as described previously are particularly helpful in countering the effects of long work days when you can't avoid working overtime. You should take micro pauses more often as the day progresses as this is when the effects of muscular fatigue will start to occur.

As noted earlier in the booklet, your activities outside of work can add to, or reduce, the cumulative effects of work. Activities that loosen the neck and shoulders help counterbalance the effects of computer work. Some activities, such as riding a bike with dropped handlebars, knitting, and playing a computer game, can add to neck and shoulder stiffness.

Summary

Your workstation can be made to fit you and the type of work you do. To achieve this goal, follow these steps:

- Check that you are using good posture. This will reduce the stress on your body while seated.
- Adjust your chair to support your back and minimize awkward postures that can lead to muscle tension, fatigue, and soreness.
- Make your computer workstation layout fit you. This will help you avoid repetitive, prolonged, and awkward movements when you use the monitor, keyboard, mouse, documents, and other items.
- Check for lighting problems so that you can eliminate or control the sources of glare that cause eyestrain, fatigue, and sore muscles.
- Review your job to see if there are ways to improve its design 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 prevent or reduce 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.

Checklist and exercises

Computer Workstation Checklist

Use this checklist to help assess your posture, workstation layout, lighting, and work organization. The checklist summarizes information from both the text and drawings in this guide. If you answer “no” to any of the questions, review the relevant sections in the booklet.

Yes No 1. Check your posture (pages 5–6)

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

Yes No 2. Adjust your chair (pages 7–9)

- | | | |
|--------------------------|--------------------------|---|
| <input type="checkbox"/> | <input type="checkbox"/> | Can you adjust your chair when you're sitting on it? |
| <input type="checkbox"/> | <input type="checkbox"/> | Can you adjust the height of your chair between 38–51 cm (15–20 in.) to achieve a straight wrist posture? |
| <input type="checkbox"/> | <input type="checkbox"/> | If you use a footrest, does it have a non-slip surface? |

Yes	No	2. Adjust your chair (pages 7–9) continued
<input type="checkbox"/>	<input type="checkbox"/>	Does the footrest support both your feet when your heels are 12 cm (5 in.) apart?
<input type="checkbox"/>	<input type="checkbox"/>	Can you adjust the footrest between an angle of 10–20 degrees?
<input type="checkbox"/>	<input type="checkbox"/>	Is the footrest stable when your feet are resting on it?
<input type="checkbox"/>	<input type="checkbox"/>	Can you raise or lower your chair's backrest?
<input type="checkbox"/>	<input type="checkbox"/>	Can you adjust the angle of the backrest?
<input type="checkbox"/>	<input type="checkbox"/>	If your chair has armrests, can you place your chair at a comfortable typing or viewing distance from the screen?
<input type="checkbox"/>	<input type="checkbox"/>	Does your chair have five legs with castors?
<input type="checkbox"/>	<input type="checkbox"/>	Is the upholstery on your chair made of a breathable fabric?
<input type="checkbox"/>	<input type="checkbox"/>	Does your chair seat have a rounded front edge?
<input type="checkbox"/>	<input type="checkbox"/>	Can you tilt the seat of your chair?
Yes	No	3. Make your computer workstation layout fit you (pages 10–18)
<input type="checkbox"/>	<input type="checkbox"/>	Is the top line of text on your screen (not the top of the monitor) at eye level?
<input type="checkbox"/>	<input type="checkbox"/>	Does your screen tilt?
<input type="checkbox"/>	<input type="checkbox"/>	Is the distance between your eyes and the screen 33–70 cm (13–28 in.)? Most people find a viewing distance of 50 cm (20 in.) comfortable.
<input type="checkbox"/>	<input type="checkbox"/>	Does the angle of the keyboard allow you to work with your wrists straight?
<input type="checkbox"/>	<input type="checkbox"/>	Are your mouse and keyboard on the same level?
<input type="checkbox"/>	<input type="checkbox"/>	Are your mouse and keyboard close to one another?

Yes

No

3. Make your computer workstation layout fit you (pages 10–18) continued

- | | | |
|--------------------------|--------------------------|---|
| <input type="checkbox"/> | <input type="checkbox"/> | Can you reach your mouse comfortably without stretching or reaching? |
| <input type="checkbox"/> | <input type="checkbox"/> | Do you know how to adjust your monitor, keyboard support, and work surfaces? |
| <input type="checkbox"/> | <input type="checkbox"/> | 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? |
| <input type="checkbox"/> | <input type="checkbox"/> | When you are editing on screen, is the monitor directly in front of you? |
| <input type="checkbox"/> | <input type="checkbox"/> | When you are inputting data, are your source documents placed on a document holder directly in front of you? |
| <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 easy reach (0–30 cm or 0–12 in.)? |
| <input type="checkbox"/> | <input type="checkbox"/> | Are the items you use occasionally within arm's reach (30–50 cm or 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? |

Yes	No	4. Check for lighting problems (pages 19–22)
------------	-----------	---

- | | | |
|--------------------------|--------------------------|---|
| <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 your hard copy easily? |

Yes	No	5. Organize your work and improve job design (pages 23–24)
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- | | | |
|--------------------------|--------------------------|---|
| <input type="checkbox"/> | <input type="checkbox"/> | Have you considered the elements of your job to determine if they can be improved by re-organizing, alternating, modifying, or expanding the tasks you perform? |
| <input type="checkbox"/> | <input type="checkbox"/> | Do you take regular breaks away from the computer throughout the day? |
| <input type="checkbox"/> | <input type="checkbox"/> | Do you take micro pauses when working on your computer? |
| <input type="checkbox"/> | <input type="checkbox"/> | Do you vary your work activities regularly so that you change your posture and use other muscles? |
| <input type="checkbox"/> | <input type="checkbox"/> | Do you pace your work activities over the entire shift? |
| <input type="checkbox"/> | <input type="checkbox"/> | Do you stretch and move your muscles regularly? |

Exercises to reduce muscle tension and eyestrain

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 eyestrain.

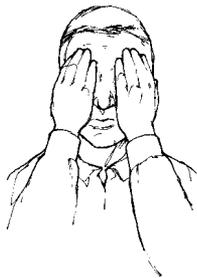
The stretches below take about five minutes to complete. Repeat each stretch three to five times. You can do all of these exercises, or select only some to relieve tension in particular muscles or areas of your body. Remember, if you select an exercise that stretches one side of the body, you should also perform it on your other side to balance your exercise routine.

Before starting to exercise, see your physician if you have a medical condition or injury to an area of the body involved in any of the exercises.

Body part

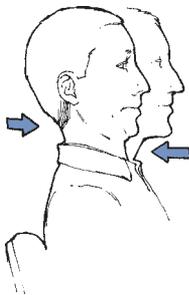
Exercise or stretch

Eyes

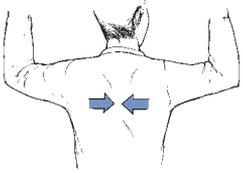
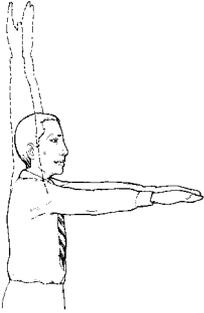
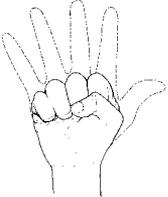
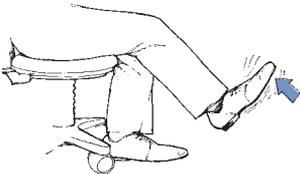


- Close your eyes, cup your hands, and place them lightly over your closed eyes. Rest your elbows on your desk and breathe deeply for one minute.
- Look away from your computer screen and focus on a distant object.
- Look up, down, and side to side without moving your head.

Neck



- Glide your head back as far as it will go, keeping your head and ears level. Next, glide your head forward. Repeat three times.
- Shrug your shoulders, raising them for a count of three, then lowering them. Rotate your shoulders backwards, arms relaxed at your sides. Repeat three times.

Body part	Exercise or stretch
<p>Shoulders</p> 	<ul style="list-style-type: none"> • 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.
<p>Back</p> 	<ul style="list-style-type: none"> • Hold your arms straight in front of you and stretch them forward. Raise your arms above your shoulders and stretch them upward. • 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, then relax. Repeat three times.
<p>Wrists and hands</p> 	<ul style="list-style-type: none"> • Clench your fists, then release them, spreading out your fingers. Hold each position for a count of three. • In a sitting or standing posture, drop your arms to your side. Gently shake out your arms and hands.
<p>Lower limbs</p> 	<ul style="list-style-type: none"> • Lift your lower leg from a seated posture, leaving your knee bent slightly. Rotate your ankles slowly. Point your toes and then pull them toward your shin. • Stand up and take a short walk.

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