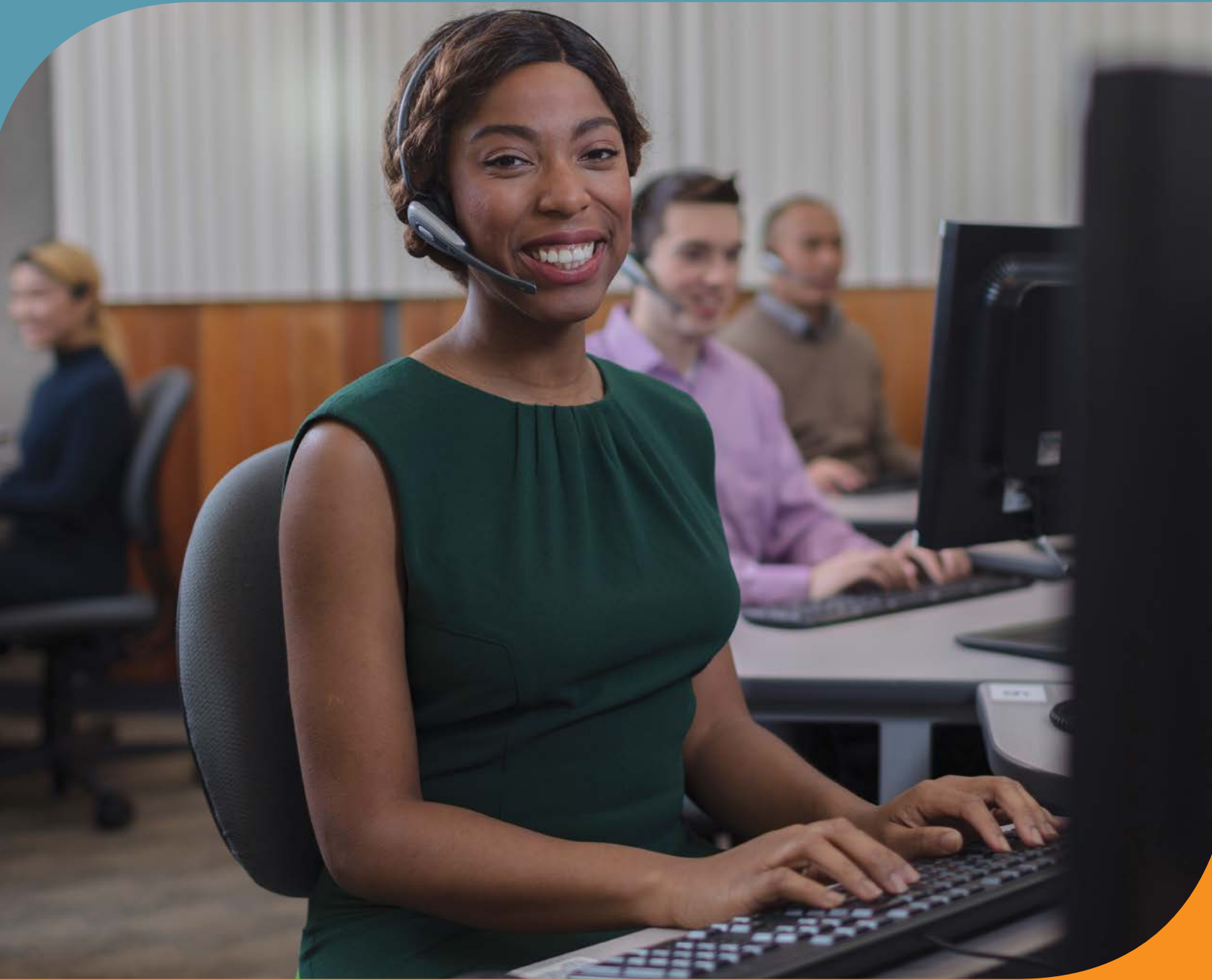


# How to Make Your Computer Workstation Fit You



## About WorkSafeBC

At WorkSafeBC, we're dedicated to promoting safe and healthy workplaces across B.C. We partner with workers and employers to save lives and prevent injury, disease, and disability. When work-related injuries or diseases occur, we provide compensation and support injured workers in their recovery, rehabilitation, and safe return to work. We also provide no-fault insurance and work diligently to sustain our workers' compensation system for today and future generations. We're honoured to serve the workers and employers in our province.

## Prevention Information Line and contact information

We provide information and assistance with health and safety issues in the workplace.

Call the information line 24 hours a day, 7 days a week to report unsafe working conditions, a serious incident, or a major chemical release. Your call can be made anonymously. We can provide assistance in almost any language.

If you have questions about workplace health and safety or the Occupational Health and Safety Regulation, call during our office hours (Monday to Friday, 8:05 a.m. to 4:30 p.m.) to speak to a WorkSafeBC officer.

If you're in the Lower Mainland, call 604.276.3100, or toll-free at 1.888.621.7233 (621.SAFE) in Canada.

## Health and safety resources

You can find our health and safety resources at [worksafebc.com/forms-resources](https://www.worksafebc.com/forms-resources). Printed copies are available for some resources and can be ordered from [worksafebcstore.com](https://www.worksafebcstore.com).

# How to Make Your Computer Workstation Fit You

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# Does your computer workstation fit you and the type of work you do?

This guide describes how to identify and solve problems you may have with your computer workstation so it fits you and the type of work you do.

The focus is on computer set-ups with a separate monitor, keyboard, and mouse (or other input device). It's not possible to achieve a comfortable position on a regular basis using a laptop alone.

While intended primarily as a self-help guide for workers, this guide 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 and the position of your screen. Discuss other changes with your supervisor or employer. Your employer should have guidelines for selecting equipment and furniture that can help ensure your computer workstation will fit you and be appropriate for the type of work you do.

## How this guide is organized

The guide begins with an overview of the signs and symptoms of possible injury. Knowing these signs and symptoms will help you identify potential problems early on. It will also allow you to take steps to prevent an injury from developing or getting worse.

Following the overview are five sections, each focusing on a specific topic on work routines and workstations. Each of these sections offers:

- Prevention tips to avoid discomfort and possible injury
- Changes you can make to help you work comfortably and efficiently

The five sections are:

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

At the end of this guide, after the five sections, you will find a one-page summary of the information presented. There is also a checklist for assessing your computer workstation, a list of stretches that can help reduce muscle tension, and an action to help reduce 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 publication Office Ergonomics — An Application Standard for Workplace Ergonomics (CSA Standard Z412, as amended from time to time). It recommends how to fit workplaces to office workers, and how to choose, arrange, and adjust office furniture and equipment.



# Signs and symptoms of possible injury

Do you notice pain, numbness, tingling, or weakness while working on a computer? These sensations may be part of the normal human condition, but they also may be signs or symptoms of musculoskeletal injury (MSI). (See the illustration on page 5.)

## 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.”

A *sign* is something that can be observed. A *symptom* is something that can be felt but not observed.

Possible signs of an MSI include swelling, redness, and/or difficulty moving a particular body part. Possible symptoms of an MSI include numbness, tingling, and/or pain.

These signs and symptoms can be caused by:

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

The risk of injury increases the longer you perform repetitive movements or work in awkward or static postures. The risk of injury also increases if two or more of these factors are present at the same time.

In some cases, signs and symptoms of injury may appear suddenly. In other cases, they may appear gradually over a period of weeks, months, or even years.

If you experience any of these signs or symptoms, it may indicate certain conditions that affect muscles, nerves, and tendons. Consider the following examples:

- Overworked muscles are prone to fatigue and strain.
- Inflamed tissue surrounding a nerve can compress the nerve and cause numbness and tingling.
- Recurring irritation of tendons can lead to tendinitis (inflammation of a tendon, typically from overuse) or tenosynovitis (inflammation of the sheath that surrounds a tendon, often from repetitive movements).

You may notice signs or symptoms when you move in certain ways at work or at home. We all experience discomfort in our lives at work and at home at some time. Some discomfort may be relieved by adjusting your workstation, as described in this guide.

**If you experience any signs or symptoms of possible injury related to your work, report them 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.**



Do you have any of the aches and pains described in this illustration? Adjusting your workstation and being in the correct posture can ease the signs and symptoms described here.

- 1** Wrist and hand discomfort? Your wrist posture may be incorrect when typing or when using your input device (e.g., a mouse). Your keyboard may be at the wrong angle.
- 2** Eye strain, 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 or zoom level on your monitor. Take regular breaks from the screen to help relax your eyes.
- 3** Upper back and neck discomfort? You may need to adjust your chair, monitor, or the position of your documents, or you may need to use a phone headset.
- 4** Shoulder discomfort? This may be related to the reaching you do at your workstation or the height of your keyboard or mouse.
- 5** Lower back discomfort? Your chair may need adjusting, or you may not be taking regular breaks.
- 6** Tingling in your hands, wrists, or arms? Avoid resting your hands, wrists, or arms on sharp edges.
- 7** 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.

## Sit-stand desks can help

Sit-stand desks, or adjustable-height desks, allow you to decrease the amount of time you work in one position. They can be easily raised or lowered to the appropriate height for working on a computer while either sitting or standing.

Sit-stand desks are:

- **Adaptable.** You can change from one correct posture to another throughout your workday.
- **Flexible.** You do not have to stay in a static posture throughout the day.
- **Versatile.** Some of the work tasks you perform may be more appropriate to do when standing, while others are better when seated.
- **Accommodating.** Often the discomfort from ongoing back pain can be controlled by alternating frequently between a seated and a standing position.

Sit-stand desk converters are platforms placed on top of a traditional desk where your computer sits. The platform can be raised to allow work from a standing position.

Before using a converter, consider the placement of the keyboard and mouse. Because a converter adds height to the desk, you may find that your keyboard and mouse are too high for comfortable use when you are sitting, regardless of how high you raise your chair. There may also be stability concerns, especially if large or multiple monitors are placed on the converter.

# 1. Check your posture

## When sitting

When using your computer, follow these guidelines for sitting:

- Forearms held horizontally, elbows bent about 90 degrees (right angle) or slightly greater, with your shoulders and upper arms relaxed at your side.
- Wrists in a neutral (straight) position. The tips of your fingers should be at the same height as the home row of keys on the keyboard.
- Head upright over your shoulders in a relaxed position. Keep your eyes level with the top of the screen so the text is in your field of vision.
- Backrest supporting your lower back and pelvis, and the natural inward 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 firm footrest.



Recommended position for chair, keyboard, and work surface with worker using good posture.

The illustration on this page shows optimal sitting posture, which reduces stress on the body.

Any posture held for a long time can lead to fatigue or discomfort. When you begin to feel discomfort, it may indicate you have been in the same position for too long. Reduce fatigue and discomfort by varying your posture regularly throughout the workday while keeping it within a comfortable, supported range. You can do this by taking breaks regularly to get up, walk around, or stretch. (See page 24.)

## When standing

When standing (for example, at a sit-stand desk), the position of your forearms, wrists, and head should be similar to your sitting posture. (See the previous section.)

Even if you do not have a sit-stand desk, you may be able to do some of your work while standing. For example, you can stand while talking on the phone or watching a webinar.

How long you stand and work is up to you. Some people find standing for 20 minutes or less every hour helps; others may want to stand and work for longer stretches. If you wish to stand for long periods, consider using a low stepstool so you can raise one foot from time to time. Be sure to regularly alternate the foot that is on the stepstool.

Alternating between standing and sitting throughout the workday helps reduce fatigue and discomfort.

If you have a sit-stand desk, consider raising it to a standing position when you leave on a break or at the end of the day. This can help remind you that you can stand while working.



Use a low stepstool so you can raise one foot from time to time when standing.

## 2. Adjust your chair

If your chair is uncomfortable, it may be for one or more of the following reasons:

- The chair doesn't adequately support your back, which may increase fatigue and contribute to poor posture.
- The seat is too high or too low, resulting in symptoms in your neck, shoulders, back, or legs. (See page 5.)

For a better fit, follow the guidelines below. Your chair controls should be simple to use so you can make adjustments while seated.

Recommended workstation positions and adjustment ranges when seated are shown below.

Recommended angles and heights for sitting at a computer workstation. A posture that changes within these ranges is optimal.

- ① 35°
- ② Height of backrest minimum 35 cm
- ③ Backrest tilt 90°–110°
- ④ Seat pan tilt 0° horizontal to 4° down
- ⑤ Seat height 38–51 cm
- ⑥ 8–15 cm
- ⑦ 64–75 cm to floor



## Chair height

Raise or lower your chair to the optimal height so when seated, your:

- Forearms are horizontal and your elbows are bent about 90 degrees (a right angle) or slightly more. Your elbows should be just clear of the top of the work surface (desk or keyboard tray).
- Wrists are straight when you place your hands on the keyboard or mouse. (See page 15.)
- Thighs are horizontal at an angle of 90 to 110 degrees to the hips and knees. There should be space between the top of your thighs and the bottom of your desk or work surface.

## Footrests

With your chair height adjusted as described above, you may find you need a footrest to support your feet. A footrest reduces the pressure on the back of your thighs that can occur when your feet do not rest firmly on the floor. The correct height for 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 to 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 your chair does not provide support for your lower back, as a temporary solution, 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 can be set at an angle of 90 to 110 degrees.



The backrest should support the curve of your lower back.



## Armrests

Armrests provide stability when you get into or out of a chair. They can also support your forearms and elbows, decreasing the stress on your shoulders and back when you are seated. If you use armrests, ensure that your forearms rest comfortably on them and that your shoulders are relaxed.

Adjust the height of the armrests or remove them if they:

- Result in you leaning to one side to support your upper body
- Result in you raising your arms or upper body when using the keyboard and mouse
- 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 a five-point base is less likely to tip over than a chair with a four-point base.
- Casters that are appropriate for the type of flooring (hard surfaces vs. carpet).
- 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.

# 3. Arrange and adjust your workstation

Your computer workstation should be arranged so that you are in a comfortable posture when working with the monitor, keyboard, mouse, documents, and other items.

## Monitors

Keep your screen at the optimal height and viewing distance to help prevent or reduce eye strain and muscle tension in your neck, shoulders, and upper back. There are specific considerations if you wear contacts or glasses, and if you work on more than one screen at your workstation.

### Screen height

The top of your screen should be level with your eyes when your head is upright. This way, the text on the screen is in your field of view since your eyes look slightly downward. If the height of your screen is not adjustable, you can raise the monitor by stacking stable materials under it (for example, large books). If you use a larger screen, you may need to change the position of the information displayed on the screen so you don't have to look up.

If you use a shared workstation, having the monitor on an adjustable arm can be helpful. The arm allows users to adjust the monitor's height quickly and easily.

### Viewing distance

The optimal distance between your screen and your eyes depends on your visual abilities and preference. A general rule is that the screen should be about a straight arm's length away. If you use a larger screen, you may need to place it farther away from you (if the depth of your desk allows this). You can also increase the font size or zoom level if needed.

Place the screen directly in front of you. If you use two screens an equal amount of time, position them so the edges where they come together are directly in front of you. This will allow you to view both screens by moving your eyes, not by turning your head, neck, and upper body. (See "Dual monitors" on page 13.)

### Prescription eyewear

If you wear prescription eyeglasses or contact lenses for general use, they may not be suitable for computer work. Even if you wear bifocal or multifocal lenses, they may not be optimal, as most people place their computer screens farther from their eyes than they would place a book or other printed material. As a result, you may find your head is positioned awkwardly while viewing the screen. For example, if you wear bifocals or progressive lenses when you work on your screen, you may be raising or lowering your head to look through your lenses. This can result in poor neck and upper back posture.

You may be able to eliminate these awkward postures by doing one or more of the following:

- Lowering the height of your computer screen if possible
- Tilting the screen upward slightly
- Changing the font size or zoom level

If these adjustments don't work, consider buying a separate pair of glasses specifically for your workstation. Prescription lenses can be made to match the middle-distance requirements typically required for working at a computer.

Other eye-care tips include the following:

- Have your eyes tested about every two years, or more frequently if you are experiencing problems with your vision.
- Keep your eyes well lubricated. The natural lubrication of your eyes affects the level of your visual comfort when using a computer. This may be an issue if you wear contact lenses. You do not blink as often when you are sitting upright to view a computer screen as you do when you are looking down to read documents on a desk. To keep your eyes lubricated, try to blink more often, and perhaps use eye drops recommended by your eye doctor.
- Relax your eyes by focusing on distant objects from time to time and occasionally getting up from your workstation.

## Dual monitors

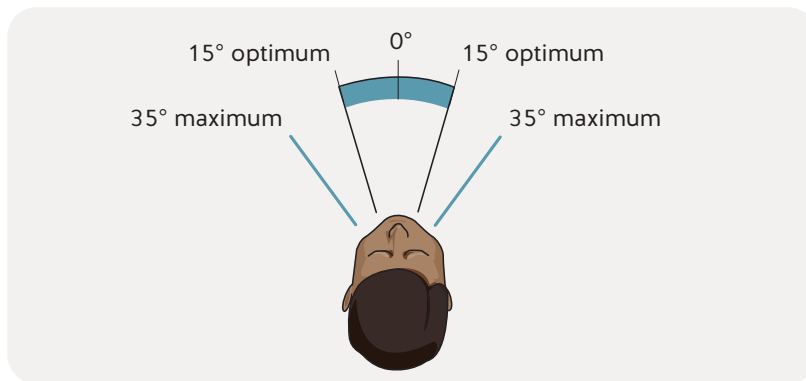
Many workers find it helpful — and sometimes essential — to have two monitors at their workstation. Sometimes the screens are used equally; sometimes the second screen is used only occasionally. (Note that it is possible, but not ideal, to use a laptop screen as a second monitor.) In both cases, consider the following guidelines when setting up a workstation with two monitors.

**If you use one monitor as your main screen** and only occasionally look at a second monitor:

- Position your main monitor directly in front of you and in a straight line with your keyboard and chair.
- Position the second monitor or laptop on either side of the main monitor and immediately next to it. This way, you will not have to twist your head or neck to view it.
- Place both screens at an appropriate height. (See “Screen height” on page 12.) The best arrangement is when both monitors are the same size.
- Make sure both screens are at a comfortable viewing distance from you. (See “Viewing distance” on page 12.) If necessary, adjust the font size or zoom level so you can view the screen comfortably when it is an arm's length from you.

### If you use two monitors equally:

- Position the screens so the edges where the two screens come together are centred and directly in front of you. This lets you see both screens by moving your eyes, not by turning your head, neck, and upper body.
- Ensure that the maximum line of sight without turning your head or neck is 35 degrees to either side, as shown in the image below. Displayed text viewed frequently on either of the two monitors should be within that field of view.



Ensure that the maximum line of sight without turning your head or neck is 35 degrees to either side.

- Place both screens at the same height as recommended for a single monitor. (See “Screen height” on page 12.)
- Make sure both screens are at a comfortable viewing distance (See “Viewing distance” on page 12.) If necessary, adjust the font size or zoom level.
- Place the keyboard so its centre is in a straight line with the point where the two screens come together. Carefully consider which side of the keyboard you will place your mouse. (See “Mouse” on page 16.)
- Consider increasing the sensitivity setting of your mouse to reduce the movement needed to move the cursor across both screens.

#### Note

The guidelines for viewing two monitors equally also apply when using a single oversized monitor (for example, 34-inch or larger).

## Keyboard

You may decrease the risk of injury by keeping your keyboard adjusted so your wrists are straight when typing. For the optimal keyboard height, follow these guidelines:

- Adjust the surface your keyboard is placed on up or down so that your wrists are straight when your fingers are on the middle (home) row of keys.

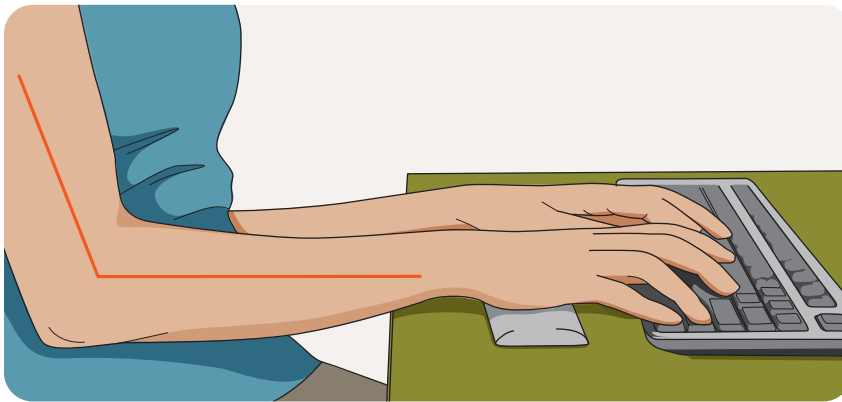
- If the surface your keyboard is placed on is not adjustable, try raising or lowering the height of your chair to keep your wrists straight. Your work surface should be just below your elbows. Your forearms should be parallel to the floor, with your elbows at your sides.

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 so you do not bend your wrists.

## Palm supports

If you tend to drop your palms or wrists while typing, you could develop sore wrists. Using a palm support can help.

A palm support is not intended to be used when you are actively typing or using your mouse. Instead, use it to rest your hands occasionally when you stop typing or using the mouse. Let your palms (the padded part of the hands), not your wrists, sit on the support, or turn your hands so you rest their outer edges.



Keep your wrists straight while typing to reduce the risk of injury. Use a palm support during rest periods from typing.

The support should be similar in thickness to your keyboard and narrow in depth so that it only touches the palm, not the wrist. (See the illustration above.) Remember that the palm support should sit in front of the keyboard. If it is placed in front of a mouse, the point of contact will be the soft tissue in the wrist rather than the palm.

Using a palm support in front of a keyboard has the added benefit of being a simple and effective way to prevent your hand or wrist from coming in contact with the sharp or square edge of a keyboard platform or a desk. (For the same reason, computer workstations and keyboard platforms should have rounded edges.)

## Alternative keyboards

Many alternative styles of keyboards are available, including split and angled models, and those with different key arrangements from the standard QWERTY layout. 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. Making other improvements to your workstation may 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 corrected.

## Mouse and other input devices

As with your keyboard, make sure your mouse or other input device is at the proper height. Your wrists should be straight, your shoulders relaxed, and your elbows by your sides. This is the position recommended for your comfort and to decrease the risk of MSI.

### Mouse

Follow these guidelines for using a mouse:

- Keep your mouse at the same height and as close to your keyboard as is practical. If your furniture doesn't provide enough space for the mouse to be placed in this optimal position (for example, the keyboard is on a platform and the mouse is on the main desk), you may experience discomfort in the shoulder and upper arm. One solution is to add an extension for your mouse to the keyboard platform. Another is to use a keyboard without a numeric keypad. Either way, make sure you have enough space to move the mouse freely.
- Don't reach to use your mouse. Keep it close to you. This can be difficult if your keyboard has a numeric keypad on its right side (called an extended keyboard). The extended keyboard forces you to either increase the reach to the mouse or position yourself off centre. If you place the mouse to the left of the keyboard, it will be closer, giving you a much more balanced and centred position. However, for right-hand dominant users, using the left hand may not be an option. An alternative is to use a keyboard with the numeric keypad on the left side or one without a numeric keypad.
- Keep your wrist straight while using the mouse. Avoid moving your wrist from side to side. Instead, use a full-arm motion from the shoulder.
- Relax your hand over the mouse; don't hold it too tightly. Avoid squeezing the mouse between your thumb and your baby finger.
- Take your hand off the mouse when you are not using it.
- Adjust the control features for the mouse. Make sure they meet your needs for:
  - How much movement is required
  - The desired accuracy of the movements
  - The best speed of travel

If using a mouse causes discomfort, consider using a different type of input device.



Use your whole arm and keep your wrist straight when using a mouse. Avoid bending your wrist from side to side.

## Other input devices

Examples of other input devices include styluses, tablets, and trackpads. These devices are often used by graphic artists, drafting technicians, engineers, and others doing specialized computer work such as computer-aided drawing. As with a mouse, these input devices should be within a comfortable reach. Keep your wrists straight and your upper body relaxed when using these devices.

To obtain the optimal working posture for using an input device, follow these guidelines:

- Adjust the work surface up or down so that your wrists are straight.
- If your work surface isn't adjustable, raise or lower your chair until you can hold your wrists straight.

## Portable computers and tablets

Portable computers (such as laptops) and tablets are convenient because they take up less space and are easier to transport than conventional desktop computers. However, these devices are more difficult to adjust for good working posture.

It helps to use separate components (peripherals) when you are using one of these devices at your workstation. For example, you can use the laptop or tablet screen as your monitor and connect an external keyboard and input device. Using separate components lets you adjust each one independently. If you have difficulty viewing a small screen, you may want to plug the device into a larger external monitor.

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

- 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.
  - Your wrists are straight.
- Take breaks. It is better to take several short breaks, when you can change your posture, rather than one long break. Consider doing other tasks that don't involve working on a screen.

## Placement of documents

If you work with hard-copy documents nearby when you are on your computer and keyboard, they too need to be placed to avoid muscle discomfort and eye strain. When papers and other documents are placed flat on the work surface or far to the left or right of your screen, you may hold your head in an awkward posture for long periods to read them. Or you may repeatedly move your head up, down, or sideways looking between the documents and the screen.

To reduce these movements and avoid strain, use a document holder to place the documents as close as possible to the screen. The holder should be close to and at the same viewing distance as the monitor.

If you are using one screen, you can place the document and the holder in front of you. For documents that are too heavy or large for a standard document holder, stands designed for large documents are available. These can be placed behind the keyboard and in front of the monitor, directly in front of you. (See the illustration below.)



Place documents close to and at the same viewing distance as the monitor.

## Organization of your work area

How you arrange your work materials — your phone, reference books, pens, documents, and other items — can affect your comfort. If materials you use often are placed too far away, repetitive reaching can cause neck, shoulder, and upper-back discomfort.

### Work zones

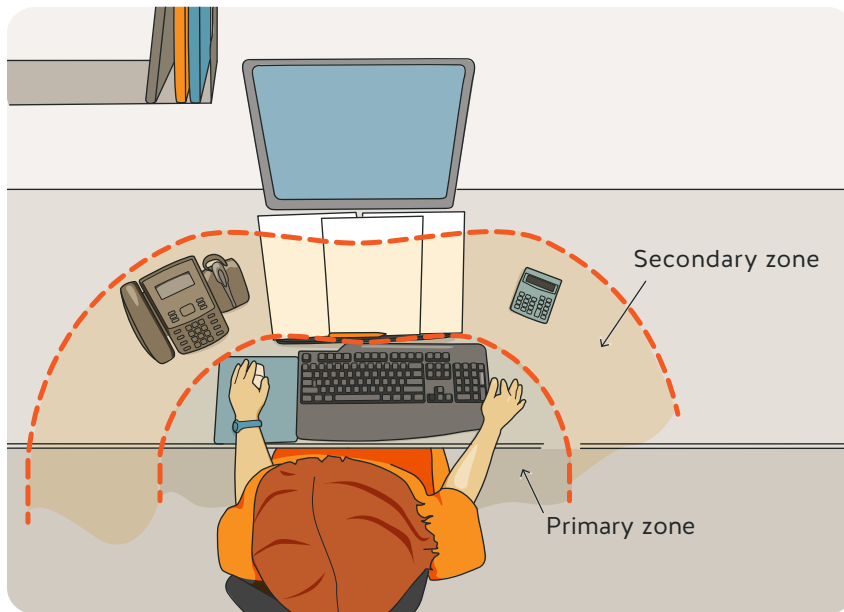
Organize your work materials and accessories into two work zones — primary and secondary. This will improve efficiency and create more working space.

The **primary work zone** is your usual work area where everything is within easy reach — up to 30 cm (12 in.). Place items you use frequently or for long periods in this area. Arrange them around you in a semicircle.



The **secondary work zone** is the area for items you use for short periods or occasionally and is 30 to 50 cm (12 to 20 in.) from you.

Anything you use very infrequently should be placed in the area beyond the secondary zone.



Place items you use frequently or for long periods in the primary work zone. Place items you use occasionally or for short periods in the secondary work 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. These devices can help prevent 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.



Using a headset will help prevent awkward neck postures.

## Multi-user and multi-task workstations

Workstations that are used by more than one person or for a variety of tasks should be easily adjustable to the optimal working position for each user and the tasks they perform. This includes the various workstation components such as monitor stands, keyboard supports, work surfaces, chairs, and footrests. You should receive training in how to adjust the equipment and how to determine the correct posture for different tasks.

## Storage

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

When getting materials from your storage areas, avoid twisting, stretching, or lifting heavy objects. To minimize lifting, store heavy objects such as large reference manuals near waist level.

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 and glare can cause you to adopt awkward postures to see your screen or documents. These postures can contribute to muscle soreness and fatigue. For example, you might lean forward in low light to see your screen better. Or you might lean sideways to avoid glare from a bright light overhead.

Sources of glare include sunlight, overhead lights, and desk lamps. Glare can shine directly into your eyes. It can also be reflected from other surfaces (for example, your screen, desktop, or walls).

This section describes ways to control glare and improve your lighting at your workstation.

### Workstation position

You may need to change the position of your computer workstation if you have glare from windows. Ideally, you should be sitting beside or parallel to the window when you face the monitor. If you face a window, outside light will shine 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 reflection or high light levels. In either situation, adjust the window coverings or blinds to reduce the amount of light on your screen.

Glare can also come from overhead lights shining directly into your eyes or reflecting from your computer screen. This makes viewing the screen difficult. Try to locate your computer workstation between rows of lights. If this isn't possible, adjust the angle of your screen to be 90 degrees (a right angle) to the work surface.

#### Tips to control glare

- 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.

Ways to prevent glare.

- 1 Diffusers
- 2 Vertical blinds
- 3 Matte finish on desktop
- 4 Matte finish on walls and floors



## Overhead lighting

You may still have glare from overhead lights after adjusting your workstation. If so, consider adding diffusers. Diffusers are a series of square cells in a grid that fits into a fluorescent light fixture. They direct light vertically, reducing the angled light rays that shine directly into your eyes.

If it's not possible to install diffusers, ask your supervisor if the amount of overhead lighting can be reduced by turning off specific fluorescent light tubes.

## 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 prevent glare, avoid placing task lighting directly in front of you. Instead, to illuminate your writing surface, place the lamp to your left if you are right-handed. That way, the light shines in front of you from left to right, which prevents shadows of your hand and pen on the paper. If you are left-handed, place the lamp to your right.

## Monitor controls and screen colours

Learn how to use the brightness and contrast controls on your monitor. Adjusting brightness and contrast can improve your viewing comfort. For example, setting your screen colours with a light background (for example, light grey) and darker lettering will reduce 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.

## Wall and furniture finishes

Matte (dull) finishes should be used on walls, floors, and furniture. Glare is made worse by the following:

- Light-coloured, shiny finishes on work surfaces or behind monitors
- 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. In particular, be sure to work into your job design enough time for breaks, micro-pauses, and exercise.

### Breaks

You can improve your job design by taking breaks from computer work. A break allows you to rest and to vary your posture. It doesn't have to be as formal as 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 to get a break from typing.

### Micro-pauses

If you work on lengthy computer tasks, you can reduce tension in your muscles by taking regular micro-pauses. Pauses of 20 seconds to 2 minutes, combined with stretches, will help combat muscle soreness.

How often you should take micro-pauses 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 working on a computer increase. If you pace yourself with micro-pauses, you will likely feel better. And you can still complete the same amount of work as you would without taking micro-pauses.

## Exercise

Making time for daily exercise helps reduce soreness and tension. Exercise provides an opportunity to change your 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.

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 help to counter the effects of long workdays when you can't avoid working overtime. Take micro-pauses more often as the day progresses. Later in the workday is when the effects of muscular fatigue will be most noticeable.

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 your posture. Good posture reduces the stress on your body while sitting or standing. Ask a co-worker who works near you to observe your posture as you work.
- Adjust your chair to support your back and prevent awkward postures that can lead to muscle tension, fatigue, and soreness.
- Arrange and adjust your workstation to avoid repetitive, prolonged, and awkward movements when you use the following:
  - The monitor
  - The keyboard
  - The mouse or another type of input device
  - Documents
  - 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 as well as breaks. This allows you to vary your posture, rest your muscles, and reduce muscle tension and soreness.
- Talk to your supervisor, a joint 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. These activities help to offset the effects of computer work.



# Computer workstation checklist

Use this checklist to help assess your posture, chair, workstation, lighting, and job design. The checklist summarizes information found in 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 7–8)

Yes	No	
<input type="checkbox"/>	<input type="checkbox"/>	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?
<input type="checkbox"/>	<input type="checkbox"/>	Are your wrists straight when using your keyboard or mouse?
<input type="checkbox"/>	<input type="checkbox"/>	When you look at the screen, is your head upright (not bent forward or backward)?
<input type="checkbox"/>	<input type="checkbox"/>	When you are seated, is your lower back supported by the curved part of the chair’s 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 your feet supported by the floor or a firm footrest?

## 2. Adjust your chair (pages 9–11)

Yes	No	
<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 seat to achieve a straight wrist posture?
<input type="checkbox"/>	<input type="checkbox"/>	Can you raise or lower the 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 a five-point base?
<input type="checkbox"/>	<input type="checkbox"/>	Are the chair’s casters appropriate for the type of flooring?
<input type="checkbox"/>	<input type="checkbox"/>	Is the upholstery made of a breathable fabric?
<input type="checkbox"/>	<input type="checkbox"/>	Does the chair’s seat have a rounded front edge?
<input type="checkbox"/>	<input type="checkbox"/>	Are you able to sit without feeling pressure from the chair’s seat on the back of your thighs or knees?
<input type="checkbox"/>	<input type="checkbox"/>	If you use a footrest, does it have a non-slip surface?
<input type="checkbox"/>	<input type="checkbox"/>	Is the footrest wide and deep enough to support both your feet?
<input type="checkbox"/>	<input type="checkbox"/>	Can you adjust the height and the angle of the footrest?
<input type="checkbox"/>	<input type="checkbox"/>	Is the footrest stable when your feet are resting on it?

### 3. Arrange and adjust your workstation (pages 12–20)

Yes	No	
<input type="checkbox"/>	<input type="checkbox"/>	Is the top of your screen 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 about arm's length?
<input type="checkbox"/>	<input type="checkbox"/>	When you are working on a screen, is the monitor directly in front of you?
<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 input device (for example, a mouse) and keyboard on the same level?
<input type="checkbox"/>	<input type="checkbox"/>	Are your input device and keyboard close to one another?
<input type="checkbox"/>	<input type="checkbox"/>	Can you reach your input device 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 viewing distance as your monitor?
<input type="checkbox"/>	<input type="checkbox"/>	Is your document holder positioned so that you move your head very little when you look from document to screen?
<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 placed in the primary work zone (within 0 to 30 cm [0 to 12 in.]?)
<input type="checkbox"/>	<input type="checkbox"/>	Are the items you use occasionally placed in the secondary work zone (within 30 to 50 cm [12 to 20 in.]?)
<input type="checkbox"/>	<input type="checkbox"/>	Are the items you seldom use stored outside the secondary work zone (more than 50 cm [20 in.] from you or off the desk surface)?
<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 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 21–23)

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 prevent 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 24–25)

Yes	No	
<input type="checkbox"/>	<input type="checkbox"/>	Can the elements of your job be improved by reorganizing, alternating, or modifying 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 at the computer?
<input type="checkbox"/>	<input type="checkbox"/>	Do you vary your work activities regularly so that you change your posture?
<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?



# Stretches to reduce muscle tension

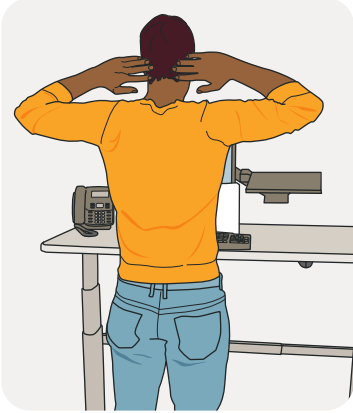
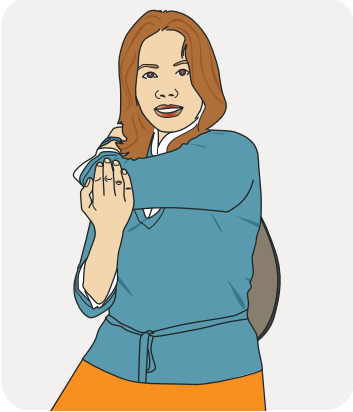
Stretching is not a substitute for a proper workstation set-up. And it isn't a cure for persistent pain or discomfort. However, taking breaks to stretch and move your body throughout the day helps reduce muscle tension.

This section covers some stretches for people who work at a computer. Before doing these stretches, see your health care provider if either of the following apply:


- You have a medical condition or injury in a part of the body involved in any of the stretches.
- You are unsure how to perform the stretches properly.

Not all stretches are suitable for everyone.

Stretch	Steps to take
<b>Neck stretch</b> 	<ol style="list-style-type: none"><li>1. Drop your head and bring your chin to your chest.</li><li>2. Hold for 10 seconds.</li><li>3. Raise your head and look at the ceiling.</li><li>4. Hold for 10 seconds.</li></ol>
<b>Back extension</b> 	<ol style="list-style-type: none"><li>1. Place your hands on the back of your hips, and point your elbows back.</li><li>2. Bend backward slightly.</li><li>3. Hold for 10 to 20 seconds.</li></ol>

Stretch	Steps to take
<p><b>Chest stretch</b></p> 	<ol style="list-style-type: none"> <li>1. With your fingers on the sides of your head, squeeze your shoulder blades together. Feel the stretch across your chest.</li> <li>2. Hold for 10 to 20 seconds.</li> </ol>
<p><b>Shoulder stretch</b></p> 	<ol style="list-style-type: none"> <li>1. Reach one arm across your body at shoulder level.</li> <li>2. Using your other hand, gently pull your elbow toward your body. You should feel the stretch in your shoulder. Keep both shoulders relaxed.</li> <li>3. Hold the stretch for five breaths.</li> <li>4. Switch arms and repeat.</li> </ol>

# An action to help reduce eye strain

Action	Steps to take
<b>Eye rest</b> 	<ol style="list-style-type: none"><li>1. Cup your eyes with your palms (with your eyes closed).</li><li>2. Breathe slowly and deeply for 30 seconds.</li><li>3. Remove your hands from your eyes and focus on an object at a distance.</li></ol>



