Office Ergonomic Guidelines

Ergonomic Requirements for Moderate and Intensive Computer Users

These are best practice guidelines that are intended to help all staff make the necessary adjustments to their workstation. These guidelines can be used to assist workers and managers with accepted computer workstation equipment/setup ergonomic practices in keeping with legislated requirements under WS&H Act/Regulations Part 8; Musculoskeletal Injuries.

Scope:
This office ergonomic guidelines applies to the region's sites/programs in which workers perform moderate and intensive computer work.

Definitions:
Moderate computer user: a worker who regularly uses a computer between 4 and 6 hours per day
Intensive computer user: a worker who regularly uses a computer for more than 6 hours per day.

Responsibilities:

Manager/Supervisor:
- identify all moderate and intensive computer users
- ensure that the above computer user's workstations meet the guideline requirements
- ensure all computer users are informed on the office ergonomic guidelines
- encourage all computer users to discuss ergonomic concerns

Worker:
- use and adjust all workstations and accessories to accommodate individual needs
- apply principles of good working posture and work habits
- discuss ergonomic concerns with the manager/supervisor

There are nine sections that describe prevention tips you can use to help avoid discomfort and potential injury.
These sections are as follows:
1. Check your posture.
2. Adjust your chair.
3. Your Work Surface
4. Input Devices
5. Glare and Lighting
6. Laptops
7. Specialty equipment (adjustable workstations)
8. Other Accessories
9. Education/ergonomic tips

Signs and symptoms of injury (MSI)

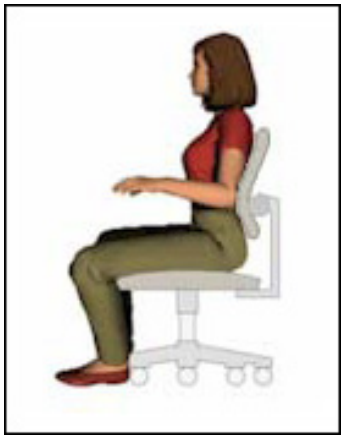
Workers may develop pain, numbness, tingling, or weakness while on the job, sometimes these sensations may be signs and symptoms of musculoskeletal injury (MSI).

Signs and symptoms may be associated with:
• Repetitive movements
• Awkward postures (for example, neck bent forward or wrist bent backward)
• Static postures (holding body parts in one position for extended periods of time)

The risk of injury increases the longer the worker performs repetitive movements or work with awkward or static postures. The risk of injury also increases if more than one of these factors is present while performing tasks at work.

Signs and symptoms of injuries may appear suddenly, or they may re-appear gradually over time. Report any signs or symptoms of MSI in the early stages to your supervisor, and review this guide periodically to ensure proper body mechanics are used when performing repetitive tasks.

1. Check your posture.



- Hands, wrists, and forearms should be straight, in line with the keyboard and parallel to the floor.
- Keep head level or slightly bent forward.
  Guide Tip: Maintain head in neutral position; Keeping ears over your shoulders.
- Shoulders are relaxed and arms hang at the side of the body.
- Keep elbows in close to the body and are bent at a 90 degree angle
- Feet are fully supported by the floor. An approved footrest may be used for smaller workers (generally 5 foot 5 inches and lower).
- Back is supported by the lumbar support of the chair
- Thighs and hips are supported by the chair's seatpan and parallel to the floor.
- Knees are equal to or slightly lower than the hips with feet slightly positioned forward.

Guide Tip: Allow 2-4 finger width between seatpan and back of knees.

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

2. Adjust your chair.

Chair height

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

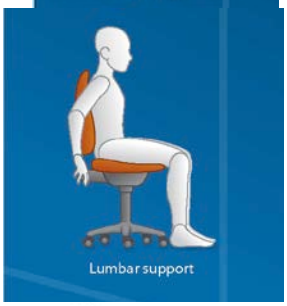
• Forearms held horizontally, elbows bent about 90 degrees with your elbows just clear of the top of the work surface (desk or keyboard tray)
• Wrists straight when you place your hands on the keyboard or mouse
• Thighs resting horizontally with a 90 degree angle at the hips
Ideally, adjusting your chair this way will leave you with sufficient space between the top of your thighs and the bottom of your desk or keyboard tray.

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.

Guide Tip:
While standing facing your chair, adjust the height of the chair so the highest point of the seat is just below your kneecap. This should allow your feet to rest firmly on the floor when seated. If you feel pressure near the back of the seat, raise your chair. If you feel pressure near the front of the chair, lower the chair. The above method would ensure distribution of weight evenly while seated.

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.



Guide Tip:
If necessary, you can place a foam pillow in the curve of your back to add support

Armrests

Armrests help support your forearms or elbows, decreasing the stress on your shoulders and back.
Your forearms should rest comfortably on the armrests, with your shoulders relaxed.
Armrests are out of the way while typing but provide support when needed during other activities.
Arm rests should be fully height adjustable and raise even with desk or keyboard tray

Other chair features

Your chair should also have the following features:
• A five-point base — A chair with five casters is less likely to tip over a chair with four casters.
• Fairly coarse Grade 3 fabric that breathes — Slippery materials such as vinyl may cause you to slide away from the backrest. Grade 4 healthcare fabrics are geared towards use in patient areas.
• A rounded front edge (waterfall feature) — A straight front edge will cut into the back of your thighs causing lack of blood circulation to your legs.

• A seat that tilts forward and backward — This will allow you to make adjustments to help maintain the natural curve of your spine.

Footrests

An approved footrest supports your feet and reduces the pressure on the back of your thighs that can occur when your thighs contact the seat.
The correct height of the footrest is the distance your feet are off the floor after you have adjusted the seat height.

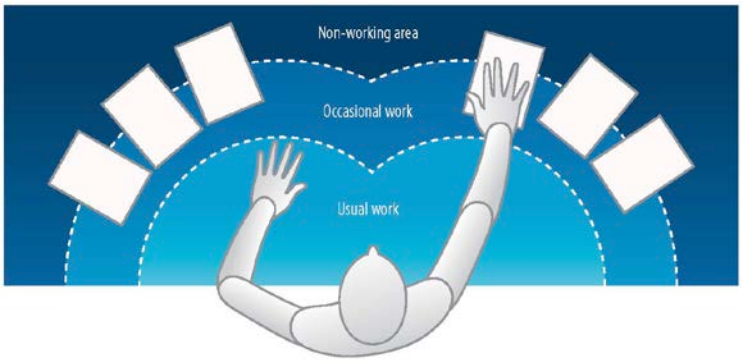
A footrest should have:
• A surface large enough for both feet to rest comfortably (about 30 cm by 30 cm or 1 sq. ft.)
• An adjustable slope (10–20 degrees) to allow a comfortable ankle position when your feet are resting on it.
• Enough stability so it doesn't slide or move when your feet are on it.

Guide tip:
Periodically, move feet up/down on adjustable footrest to provide blood flow to the feet/legs during long periods of typing.

3. Your Work Surface.

As with the chair, the work surface should complement the task being performed to accommodate the required space and tools. Moderate and intensive computer users should position themselves directly in front of the keyboard and monitor. The top of the work surface should be at elbow level. Elbow level is based on having the arms at a relaxed position and are bent at a 90 degree angle. To ensure the elbow height is achieved, raise or lower the work surface or chair. If work surface cannot be altered, raise and lower your chair to fit or use a footrest.

Materials used more frequently should be located within easy arm's reach. Arrange the material in a semi-circle shape along the work surface that is easily accessible leaving less frequent objects out of reach. These items should be obtained by getting up from the chair for them. This will promote good blood circulation when at the computer for extended periods of time.

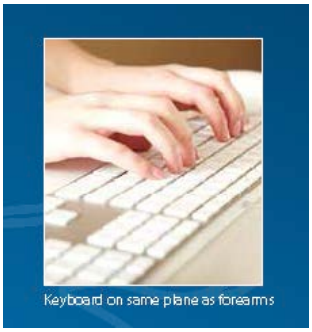


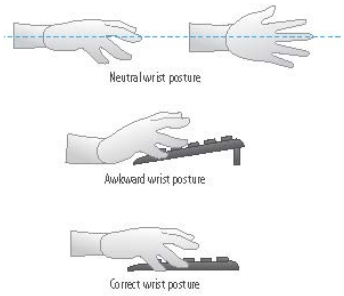
4. Input Devices

Keyboard and mouse are the most widely used devices used and in order to access these devices the arms should be in a relaxed position, keeping the elbows close to the body, kept at a 90 degree angle, and maintaining a neutral (straight) wrist.

Keyboard

There are many styles of keyboards to choose from in preventing musculoskeletal injuries. The effectiveness of the keyboard depends on the user and the type of work being performed. General rule of thumb is to maintain a neutral wrist and hand postures regardless of which keyboard is best suited for the job. The keyboard should on the same plane as the forearms.





Guide tip: Keep the wrist in a neutral position by leaving the "keyboard feet" down when in use. The use of keyboard/mouse wrist rests are recommended to reduce resting wrist on hard surfaces.

Keyboard/Mouse Tray

Dependant of the workstation, the use of a height/tilt adjustable keyboard/ mouse tray is recommended. The use of a keyboard/mouse tray will ensure the distance from the monitor is maintained at a 16-28" distance as well as opens up available work surface desk space. The keyboard/mouse tray should be able to store under the desk when not in use and allow adequate leg room when seated.

Guide tip: When selecting a mouse tray select one that has the ability to be used for either a dominant right or left handed worker so no further alterations to the workstation is necessary due to change in workers.

Mouse

The mouse should be at the same levels as the keyboard and within easy reach. As with the keyboards, there are many styles and shapes of mice to choose from and the effectiveness of the mouse depends on the user and the type of work being performed. General rule of thumb is to maintain a neutral wrist and hand postures regardless of which mouse is best suited for the job. The mouse should on the same plane as the forearms.

Carpal Tunnel Syndrome

The median nerve gives feeling and movement to the palm side of the hand. This includes the palm side of the thumb, index finger, middle finger, and ring finger. The area in the wrist where the nerve enters the hand is called the **carpal tunnel.** This tunnel is narrow and any swelling can pinch the nerve and cause pain, numbness, tingling, or weakness is called carpal tunnel syndrome. Increased mouse activity is the main source for this pain.

Guide tip: To further reduce the risk and limit the use of the mouse; use the keyboard functions instead. Below are examples of keyboard shortcuts that can be used.

BASIC FUNCTIONS	
YOU PRESS	IT DOES
Ctrl+Esc	Activate Start Menu
Shift+F10	Right- click/ context
Tab	Next field
Ctrl+Tab	Previous field
Ctrl+F4	Close sub-window
Alt+Tab	Next program
Alt+F4	Close program

EDITING AND FORMATTING	
YOU PRESS	IT DOES
Ctrl+B	Bold selected area
Ctrl+I	Italicize selected area
Ctrl+U	Underline selected area
Ctrl+Enter	New page
Ctrl+Z	Undo
Ctrl+A	Select all

CLIPBOARD RELATED COMMANDS	
YOU PRESS	IT DOES
Ctrl+X	Cut selected area
Ctrl+C	Copy selected area
Ctrl+V	Paste selected area

Other guide tips: If worker uses the mouse for long periods of time, the worker can switch the side of the keyboard the mouse is located. By changing hands, the worker is using different muscles and reduces potential for injury. Changing mouse activity from one hand to another takes time and patience but will reduce the potential for injury. The buttons on the mouse can be changed in the Windows Control Panel to accommodate the use if left handed.

Monitors

General rule of thumb indicates monitor should be positioned 16- 28 inches from where the workers sits. Due to the worker's age, vision challenges, screen size and resolution, play a large role in determining the correct distance. A good way to see if the monitor is far enough away, is to sit in a neutral position and straighten the arm in front towards the monitor. If the hand touches the monitor screen, then the monitor is too close. Re-position the monitor so it is slightly beyond reach. The monitor should be positioned directly in front just below eye level. The monitor should be height adjustable so it can be positioned correctly. If the monitor needs to be higher, place text books/phone books or purchase a computer riser to raise the monitor to the correct height.

Prescription glasses/bifocals

If prescription glasses are required, the monitor may need to be lowered. Progressive lens wearers should adjust the height, depth and angle of their monitor to see the screen clearly without adjusting their neck angle. This usually means (a) lowering the monitor so the top of the screen is well below their seated eye height- sometimes the worker will need to increase the height of the chair and use a foot rest to achieve this or; (b) pushing the monitor back slightly – just over the arm's reach and (c) tilting the bottom of the monitor up. Dependant on vision levels and the work that is required, an option of prescription "computer glasses" may be required. An optometrist will be able to best determine the worker's vision requirement.

5. Glare and Lighting

For computer work, general illumination of approximately 300-500 lux is required. It is best to position the monitor so that the line of sight is parallel to the window. Other solutions is to ensure curtains/blinds are used, direct overhead florescent lighting (turn off additional sets of lights or removal of some bulbs). Based on the required work, a desk lamp is useful in providing additional light without glare to the monitor.

Guide tip: To test for glare on the monitor, turn off monitor. If screen provides reflections then glare is apparent. Follow the above solutions to reduce the glare. If glare continues, use an anti-glare screen as a last resort.

6. Laptops

Laptops offer a convenient way to transport work from location to location. The laptop design unfortunately compromises good posture for portability. Laptops should follow the same principles listed previously if used as the main computer workstation.

Docking Stations:

When used as a main computer workstation, a docking station with an external keyboard, mouse and monitor should be in place. If a docking station is not available, the external keyboard, mouse and monitor will still provide good posture to the worker.

Guide tip: As with all computer use, regular micro breaks should be taken. If using a laptop only without external components, breaks should be more frequently as more awkward positions are used in this process.

7. Specialty Equipment (adjustable workstations)

Sit/Stand workstations

Sit/stand workstations provide the worker with the freedom to change postures throughout the day. This can increase blood circulation and productivity as well as decrease the risk of developing a musculoskeletal injury (MSI). If using an adjustable workstation, the same ergonomic principles apply as referenced throughout the guide. The keyboard and mouse should be at elbow height/level, the monitor should be directly in front of the worker, just beyond arm's length away, and the top of the monitor just below the eye level or lower.

Sit/stand workstations are new to the workplace environment and provide a better ergonomic solution to the worker's overall wellness but these do come with a cost. For most workers, the best ergonomic solutions comes with utilizing best practices outlined within the guide as well as tips to help the worker change body postures throughout their workday. Therefore, the application of sit/stand workstation should be based on a worker's medical requirement as directed by their physician. The regional WS&H program will assist the managers and workers in choosing the correct style and type of adjustable workstation that best fits the worker, their work requirements, and their workstation environment.

8. Other Accessories

Palm rest/Support (Wrist rest)

Palm/wrist rests are used to maintain the wrists in a neutral position. These are not meant to be used positioned under the wrists while typing, but only while resting or during short breaks. The hands should be afloat over the keys while typing. This also applies to the mouse and other input devises which have a rest.

Document holders

Depending on the task, utilizing a document holder minimizes neck rotation when transcribing n formation from paper to computer (ie: data entry). There are two types document holders; in-front and side view document holders. If the worker spend the majority of the time reading from a paper copy, the placement of the paper copy directly in from or at the side of the monitor is recommend.

In-front document holder

Side view document holder

Phone

Keep the phone with easy reach and on the non-dominant side of the workstation (ie: left side of desk for right handed users). If the worker uses the phone while keying or writing, recommend using speakerphone option or for confidential or noisy environment; a wireless headset should be used. This would eliminate the work cradling the phone between the neck and shoulder.

9. Education (checklists)/ Ergonomic tips

The regional WS&H program has a great number of resources to assist managers and workers in achieving workstation ergonomic best practices. Please contact our department for more information at wsh@southernhealth.ca .

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