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Office Ergonomics
9 Components for a Healthy Workstation

Do you sit in front of a computer station all day?

Sitting at a computer or office workstation that is not adjusted to your body can cause unnoticeable physical stress to your back, neck and shoulders, arms and hands. This overtime leads to a costly cycle of pain, discomfort and injury.

What can go wrong? You could experience

- Upper and lower back pain
- Tendonitis in elbows and wrists
- Carpal Tunnel Syndrome
- Neck pain that radiates into the arms and hands
- Numbness and tingling in the fingers
- Eyestrain and headaches
- Muscle fatigue
- Pinched nerves
- And more ….

9 Components to Prevent Pain:

The following set-up strives for a neutral body position, which means ears, shoulders and hips line up. This puts the least stress on muscles, joints and tendons. Nine components in the workspace need to fit properly to allow neutral posture and to help prevent musculo-skeletal injuries (MSI).

1) The Office Chair:

The chair should be adjusted to allow knees and hips to be at 90 degrees with feet on floor or supported. The back support should adjust in height and depth to firmly fit against the lower back. This maintains the natural "S" curve of the spine and keeps the head in alignment. Sitting with an unsupported back produces a "C" curve of the spine and protrudes the head forward causing neck and shoulder tension. Alternatively, try reclining back slightly so that the hips are higher than the knees. This position has been

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shown to keep the spine close to its natural alignment, thus relaxing muscles and easing pressure on discs. Be aware of head position.

The armrests should be easily adjusted to not restrict movement. The purpose of the armrest is to fully support the upper body when taking a mini break, but should be removed if they get in the way.

2) Keyboard Tray:

The keyboard should be positioned on a tray to move in 3 directions. Height adjustable, tilt adjustable and swivel. The keyboard should be parallel to the forearms and have a slight negative tilt. Ideally, the keyboard tray should be installed at the side of the desk, not at the corner angle. To be placed in the corner requires a "corner maker" and the finished placement of the keyboard is further away from the desk. A tray with a swivel mouse platform that can be brought in closer to the keyboard can be installed on both sides to alter hands. Alternatively, the keyboard can be used on the desk, fully supporting the forearms but care must be taken to avoid awkward postures of head and wrists.

3) Mouse:

By far, the use of the mouse causes the most problems with the tendons in the forearm and its attachment at the elbow. As well, the shoulder is affected with the prolonged reach if the mouse is not at the same height and close to the keyboard. The forward held shoulder position, combined with the constant hold of the mouse and increased pressure to activate the mouse, create a problem.

Mousing Hints:

- Float hand when moving mouse – don't grip tightly
- Keep wrist straight – avoid twisting
- Use function keys to eliminate repetitious mouse operations
- Avoid pressure on wrist with mouse rest. Keyboard tray should lower enough for elbows to be at 90 degrees and mouse rest should lightly support palm.
- Alternate between right and left hand mousing – and adjust the mouse controls in the computer
- Adjust the speed and pressure of the control for the mouse.

Alternatively, try a mouse "tablet" with a graphics pen.

4) Computer Monitor:

The monitor should be roughly at arms length – at focal length, and in line with the keyboard. The height of the screen should be adjusted so the first line of the text is at eye level. The eyes should move without head movement. If the monitor is too low or too high, the neck will unconsciously move. Correctly adjusted, font size and background

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colours can improve eye comfort and reduce muscle tension in neck, shoulders and upper back. If a person wears bifocals, the monitor should be lowered to adjust to the vision. Monitors are getting thinner with larger screens. If there are multi users, make sure the monitor can easily be raised and lowered.

5) Lighting:

Too much or too little lighting can contribute to fatigue and eyestrain. Reduce glare from overhead light, or natural sources. Task lighting (i.e. specific lighting) may be useful. The background of the monitor can be adjusted for brightness and contrast for easier reading. Ideally the monitor works best when positioned at 90 degrees to the main light source.

6) Accessories:

Basic equipment rules also apply to auxiliary equipment.

- Position telephone within easy reach. A headset should be used to avoid tension of neck muscles while cradling the receiver with the neck and shoulder.
- Move document holders to alternate sides and at the same distance as screen, or obtain a specialized document holder that fits between the monitor and keyboard.
- A larger slant board can be used to put blueprints and drawings on to avoid head forward posture.
- Ergonomically designed pens, staplers and staple pullers put less strain on fingers.
- A plastic mat for the floor allows easier movement of the office chair and thus less strain on leg muscles.

7) Organization:

Arrange phone, reference books, documents etc. to reduce the reach requirements and avoid awkward work postures. The work area is best divided into 3 semicircle areas:

- a) Primary Zone – This is the area up to 12 inches from you. Place items used frequently and for longer periods.
- b) Secondary Zone – This is the area 12 to 20 inches from you. Place items used occasionally and for shorter periods.
- c) Tertiary Zone – This is the area over 20 inches from you. Place infrequently used items here.

Clear clutter both above and below the workstation to allow movement to work and stretch legs.

The position of the desk is important. Often, desks facing a wall, unconsciously cause twisting and turning of the head to see who has entered the room. Look at the workspace, and design it to avoid twisting and unnecessary movements. Often, breaking up the work

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area is helpful. If a change in orientation is to be made, carefully draw out the plans first to help overcome unforeseen problems.

8) <u>Micro and Mini Breaks:</u>

Breaks needn't interfere with getting the work done. A break is simply letting the muscles relax for very short periods to regenerate. Muscles will work more efficiently if given frequent rest periods.

- A micro-break is 5 seconds or less. Time to release your posture and relax from the keyboard position.
- A mini-break can be 5 to 30 seconds. Longer time to do a stretch exercise or relax the muscles.
- For moderate computer work, it is recommended to have a 15-minute break. For more intense work, consider one 10-minute break every hour or a 1 to 2 minute break every 10 to 15 minutes.
- There are computer program that interrupt your work at a set time and remind you to stretch. WorkSafe BC has a program available on line at <u>www.worksafebc.ca</u>

9) <u>Exercises:</u>

Doing exercises refresh and strengthen your body and will help to prevent musculo-skeletal injuries (MSI). Check with your doctor or physical therapist before beginning an exercise program. There are many designed for office workers that involve eyes, neck, shoulders, back, wrist and hands and lower limbs. The idea is simply to alter your activities so your body is not held in static and awkward postures.

In Summary

Musculo-skeletal injuries (MSI) are not new, but there is a lot you can do to avoid the pain and discomfort of an MSI. Be aware of your work positions to avoid tension on muscles and joints. Adjust your workstation to maintain a neutral posture, and keep your body in good physical shape.

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