

Ergonomics good practice

Collins English dictionary defines ergonomics as the study of how equipment and furniture can be arranged in order that people can do work or other activities more efficiently and comfortably. Ergonomic hazards refer to workplace conditions that pose the risk of injury to the musculoskeletal system of the worker. Examples of musculoskeletal injuries include tennis or golfer's elbow (an inflammation of a tendon in the elbow) and carpal tunnel syndrome (a condition affecting the hand and wrist). Ergonomic hazards include repetitive and forceful movements, vibration, temperature extremes, and awkward postures that arise from improper work methods and improperly designed workstations, tools, and equipment

1. Time spent in offices has been increasing regularly. Keith Diaz from Columbia University studied and found that sitting or sedentary behaviour made up the equivalent of 12.3 hours over a 16-hour waking day, which is about 77 per cent on average. The most people do is to go to the toilet or fetch a cup of coffee. People prefer sending an email across the office to a colleague rather than to walk over and talk/discuss.
2. Mouse elbow – Mouse elbow is a common overuse injury due to the degeneration and inflammation of the tendons, outside or inside of the elbow. It is often due to repetitive stress on forearm, such as point-and-click motions from moving a computer mouse. Pain can occur over the outer or inner portion of your elbow and other areas of forearm and elbow. The tendons and muscles may hurt even at rest, resulting in a weakened handgrip.
3. Neck Pain - Neck pain is one of the most common work-related injuries. More than 87% of computer workers report pain in the neck and shoulder, ranging from acute to chronic pain. Experts suggest that the most common causes of neck pain include awkward posture, injury, disability and disease.
4. Neck and Shoulder - Common complaints among computer operators include discomfort, aches and pains in the neck and shoulder, but also eyestrain. The sheer number of such complaints indicates that the proper position of the monitor has not received enough recognition as an important factor in the arrangement of a computer workstation.
5. Back Pain - Back pain is one of the most common work-related injuries and is often caused by ordinary work activities such as sitting in an office chair. Poor body mechanics (such as slouching in an office chair), prolonged activity, repetitive motions, and fatigue are major contributors to these injuries. This may occur from sitting in an office chair working on computer for too long in one position, often under stress. Pressure of work and deadlines worsen the situation.
6. Weight gain and obesity is expected result of long hours of sedentary work and lack of exercise

Ergonomics good practice – reducing hazards and risks

A properly set-up office workstation helps workers maintain a neutral body posture. This is a comfortable working posture, in which the joints are naturally aligned, reducing stress and strain on the muscles, tendons, and skeletal system, and minimising the risk of developing Musculoskeletal Disorders. An adequate workstation also helps to prevent fatigue, eye strain,

headaches and stress by controlling environmental conditions.

A neutral body posture has the following characteristics:

- The head is level, or bent slightly forward, looking straight at the screen and generally in line with the torso
- The shoulders are relaxed and the upper arms hang normally at the side of the body
- The back is fully supported, with appropriate lumbar support when sitting vertically or leaning back slightly
- The elbows stay close to the body, bent between 90 and 120 degrees
- The hands, wrists, and forearms are straight, in line and roughly parallel to the floor
- The thighs and hips are supported by a well-padded seat, and generally parallel to the floor
- The knees are about the same height as the hips, with the feet slightly forward
- The feet are fully supported by the floor or by a footrest.

Computer screen

- The top of the screen should be at or just below the worker's eye level (bifocal wearers may need to lower the monitor)
- It should be positioned perpendicular to windows and/or below light sources
- It should be tilted back
- Laptops are subject to regulations if they are in prolonged use placed at arm's length, and aligned with the trunk

Key Board

- This should be aligned with the user (with key B in front of the belly button)
- It should be positioned at or slightly below elbow level

Mouse/other input device

- This should be positioned at or slightly below elbow level
- It should be close to the keyboard (some people use a keyboard without a numeric pad, to ensure that the mouse is in a good position to adopt a good posture)
- The hand should be taken off the device when not in use.

NB: If you have a mouse elbow give rest to your arm, stop using conventional mouse at once and change over to Touch Pad or Pen Tablet.

Chair

- This must be adjustable and have good stability
- It should allow smooth movement

- The seat pan should be adequately cushioned
- Armrests should be positioned away from the front edge of the chair, or be adjustable in height, so that the chair can be pulled into the desk

Work space

- This must provide adequate room for keyboard and mouse
- Frequently used items (telephone, documents, staplers, calculator) should be placed within easy reach inside the normal work area

Work Surface

- Arms, wrists or elbows must be kept away from sharp edges
- Adequate leg clearance must be provided under the desk
- The surface should be non-reflective

Document Holder

- This should be positioned next to the screen and at the same angle

Telephone

- This must be kept within comfortable arm's reach
- If frequently used, a hands-free headset should be considered

Environmental conditions

- Adequate lighting should be provided to avoid glare and eye strain
- Noise levels should be kept low, preventing hearing loss and stress
- Temperature, humidity and air flow should be kept at comfortable levels.

According to part 6 of ISO 9241, **workplace environmental** conditions should be kept within the following limits:

- Temperature 19 - 23°C Humidity 40 - 60%
- Ventilation 1,3 l/s/m²
- Air speed < 0.25 m/s
- Noise < 55dB(A) if the task requires concentration < 60dB(A) for other tasks
- Illumination General: 300 – 500 lux in the work area Local: this can be controlled by the operator, but any extra lighting should not adversely affect nearby workstations
- Glare, avoid excessive contrast

The safe use of a laptop as the main computer at work requires:

- Positioning the laptop on the desk in front of the user, so that the screen can be seen without bending the neck. This may require the elevation of the laptop above the desk surface using a stable support, such as a computer monitor pedestal. Laptop stands are also available
- Using a separate negative-tilt keyboard and mouse connected directly to the back of the laptop or to a docking station
- Emphasising the importance of breaks and changes in activity for laptop users.

Regardless of how good the working position is, prolonged static postures are not healthy. Thus, work activity must **allow for pauses** and micro-pauses:

- Replace 30 minutes of sedentary time with 30 minutes of light activity
- Short bursts of activity, if you get enough of them across the day, will be enough to lower your risk from sitting all day
- Change your working posture frequently by making small adjustments to the chair or backrest
- Stretch your fingers, hands, arms, and torso
- Perform different tasks, like filing
- Stand up and walk around
- Blink and focus your eyes on objects away from the screen
- You can even stand and read a document to give rest to your spine from sitting position.

Physical variety and regular breaks from the computer during the working day will help to relax muscles. Performing exercises and stretches will also help to reinvigorate the body and mind. Such procedures both increase productivity and reduce discomfort and complaints among computer users, and minimise the risks related to computer usage.

Further information

- A related article was posted on this website, “Office Worker’s Dilemma” (see Old Items > 2018 – 18 August)
- Musculoskeletal disorders <http://osha.europa.eu/topics/msds>
- 5 Tips for Using a Laptop Computer: ergo.human.cornell.edu/culaptontips.html