Workstation Safety

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☰ WHAT'S COVERED

In comparison to other activities, using a computer is not very dangerous. It is, however, possible to sustain bodily injuries while using a computer, either instantly or over a long period of time. In fact, failure to consider the ergonomics of a computer workstation can lead to issues such as minor backaches, neck pains, and joint pains or even more major injuries, such as Carpal Tunnel Syndrome and computer vision syndrome (CVS). Considering that I.T. professionals tend to spend large amounts of time at computer workstations, ergonomics has been an important area of consideration for many businesses and organizations. In this tutorial, we will discuss some of the health and safety hazards associated with personal computer use and how to mitigate these risks.

Our discussion will break down as follows:

1. Computer Safety Hazards

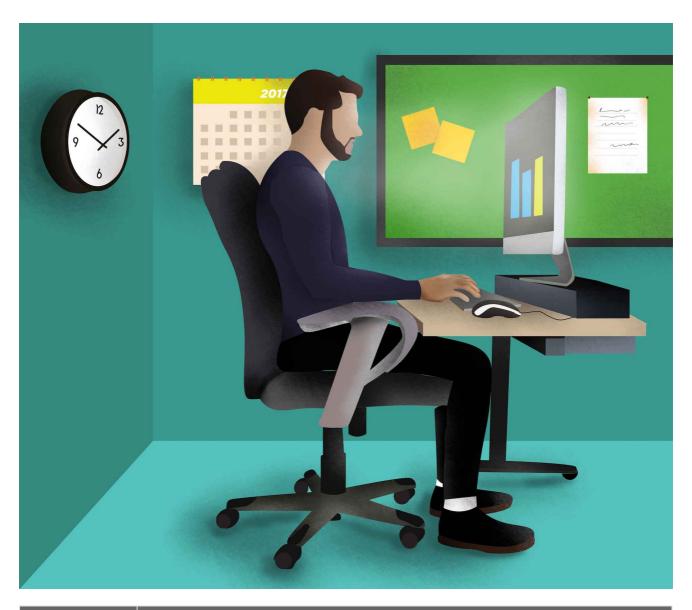While computers are not very dangerous to use, there are some issues to be aware of to keep yourself and others safe.

- **Carpal Tunnel Syndrome**: Carpal Tunnel Syndrome is a computer-related injury resulting in swollen blood vessels in the hands and wrist. The swelling of the blood vessels causes pressure on the hand and wrist nerves causing pain, swelling, numbness, and potential loss of wrist function. Carpal Tunnel Syndrome is also known as Repetitive Strain Injury (RSI) and comes from repetitive movements, such as using a keyboard or mouse. Carpal Tunnel symptoms can be treated by taking breaks, performing hand and wrist exercises, wrist braces, and in some cases surgery. Some best practices for avoiding Carpal Tunnel Syndrome are to use an ergonomic keyboard and mouse, stretch hands frequently, take frequent breaks from keyboard and mouse, and to sit straight.
- **Computer Vision Syndrome (CVS)**: Computer Vision Syndrome (CVS) is an eye injury that occurs due to prolonged focusing of the eyes on a computer screen. It is characterized by symptoms such as eye strain, dizziness, and blurred vision. CVS can ultimately lead to chronic headaches, fatigue, back strain, neck pain, and double vision. Its symptoms can be treated by resting the eyes, using eye drops to lubricate dry eyes, wearing special glasses to assist with double vision, and, in some cases, prescription medicine. Some best practices for avoiding CVS are to take frequent breaks, get up from workstation, stretch, walk around, blinking the eyes, and generally anything to take a break from looking at the screen.
- **Other Safety Considerations**: While making use of a computer, you should be mindful of the following computer safety hazards.

Safety Hazard	Description
Awkward Posture	Refers to the position of your hands and wrists while using the computer keyboard or mouse. May also refer to inappropriate body position while lifting, bending, or twisting. Carpal Tunnel Syndrome can result from awkward posture.
Repetition	Refers to continual performance of the same task(s) involving the same motion (or group of motions) i.e. moving the mouse or keyboarding. Carpal Tunnel Syndrome can result from repetition.
Uncomfortable Environment	Refers to the overall comfort of the environment in which computing takes place; poor lighting, glare, noise, air quality, and temperature are some factors that can contribute to an uncomfortable environment.
Fatigue with Lack of Recovery Time	Refers to using the computer for extended periods of time with no break or change in bodily position.
Back Strain/Ache	Back strain can occur when lifting heavy objects such as a monitor or printer. Lifting should be done in such a way that the knees do most of the lifting. Do not lift with your back. Backache can occur from sitting in the same position for extended periods of time, such as sitting at a desk for eight hours straight.
Eye Strain	Eye strain can occur due to prolonged viewing of a computer screen with no rest or break for the eyes. Eye strain can be a symptom of CVS.

2. Computer Workstation Ergonomics

Using a keyboard for extended periods every day can lead to inflammation in the wrists due to poor wrist positioning. People sitting at desks for long periods of time may develop backaches. To avoid these health problems associated with computer use, businesses rely on the science of ergonomics. Ergonomics is the study of designing and positioning equipment and devices to ensure their usefulness and safety to human bodies. When setting up a computer workstation, it is important to think ergonomically in order to make it safe and pleasant for users.

Let's examine some basic ergonomic considerations for a safe workstation. Below is a person at a typical workstation. The table that follows discusses positions of the monitor, chair, desk, and wrist, and how they should be positioned to prevent injury.

Ergonomic Consideration	Best Practice
Monitor Position	Eyestrain can be avoided by keeping the monitor 16 to 24 inches from the face. The top of the monitor should be in straight line with your eyes when looking ahead.
Chair Position	To avoid back strain, the chair should be adjusted so that your thighs are parallel to the floor when the calves are perpendicular to the floor. Chairs should support the lower back and the back should be perpendicular to the ground. The seat should be positioned so that your feet firmly touch the ground.
Desk Position	Keyboard should be at a height where your upper arms are perpendicular to the floor while typing.
Wrist Position	User's hand should extend straight out from the wrist without the wrist bending to the left or right.
Using a Telephone/Mobile Phone	User should try to avoid having to bend neck for prolonged periods. User should use speakerphone or headset versus holding the phone between head and shoulders.

📄 TERM TO KNOW

Ergonomics

Study of designing and positioning equipment and devices to ensure their usefulness and safety to human bodies.

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3. Evaluating a Workstation

Next, let's examine the workstation pictured below, and determine if the set-up follows best practices for a safe and healthy work environment. We will look for the best practices outlined above.

- **Monitor Position**: Notice that the distance between the person's face and the monitor is six inches. This is too close, and can cause eye strain from the light given off by the screen. However, the height of the monitor is good for the neck, because the person does not need to bend his head up or down in order to see the screen.
- **Chair Position**: Although the person is sitting upright, his back is not well supported by the chair because the chair is slightly bent backwards. If the man sits back in his chair, this will cause him to slouch, which is not ideal. This poor posture while sitting can lead to back and neck pain. The worker should adjust the chair so that the back of the chair supports his back sitting upright, perpendicular to the floor.
- **Keyboard/Wrist**: The upper arms are perpendicular to the floor, and the forearms are parallel to the floor.

This is a good position for your arms while typing. There does not appear to be any sharp bending of the wrists. In this regard, there is no issue with the keyboard or wrist.

Overall, the workstation is not ideal. While this follows best practices for the keyboard and wrist positions, there are health and safety risks due to the close position of the monitor and the chair that does not support good posture.

SUMMARY

While computers are not extremely dangerous to use, there are still some risks associated with using a computer. Knowing the safety risks as well as how to design an ergonomically considerate workstation, will ensure that the user's health remains well. In this tutorial, we discussed **computer safety hazards** and how to mitigate these habits, as well as **ergonomically-designed computing environments/workstations**.

TERMS TO KNOW

Ergonomics
Study of designing and positioning equipment and devices to ensure their usefulness and safety to human bodies.