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Office Ergonomics - Working Comfortably

Introduction
Office ergonomics involves the application of basic workplace principles to address a worker’s discomfort, chronic pain or repetitive motion injuries. Good ergonomics does not always mean obtaining new furniture and equipment. A large part of ergonomics and comfort involves workstation arrangement, equipment orientation and work habits. This bulletin reviews equipment and materials that typically are used in a computer workstation and provides suggestions to minimize the risk of injuries.

Musculoskeletal disorders such as tendonitis and carpal tunnel syndrome can result from improperly positioned equipment that creates poor working postures. Symptoms can include pain and swelling, numbness and tingling (hands “falling asleep”), loss of muscle strength, and reduced range of joint motion. If you have any of these symptoms, report them to your employer as soon as possible. If these symptoms are not treated early, they may result in discomfort in the affected area, chronic pain or injury.

Chair
Chairs can be crucial in preventing back pain, as well as in improving employee performance in office work. As the majority of office workers spend most of their time sitting, a properly designed and adjustable chair is critical. All adjustments should be easily made from the seated position.

Features of a good chair:
1. Seat pan adjusts up and down quickly and easily. The chair height is correct when the entire sole of the foot can rest on the floor or footrest and the back of the knee is slightly higher than the seat of the chair.
2. Seat pan should be slightly concave with a softly padded, rounded or "waterfall" front edge. Select alternate seat pan and seat back sizes for large or small employees.
3. Seat back easily adjusts forward and back and up and down, with full lumbar contour. The fullest part of the contour should be positioned in the small of the back, near the waistline.
4. Chair arms adjust up and down and in and out from body. Position chair arms so they support forearms in and near the sides, with elbows only slightly forward from the hipbones. If both features are not an option, eliminate armrests.
5. Five legs or casters for stable support.

Sit back in the chair so that your low back is supported, and ensure that your feet are flat on the floor or on a footrest. Chair arms should not prevent you from getting close to the keyboard. Also, you should not cross your legs at the knee when sitting. This puts a tilt in the hips and spine and reduces leg circulation.

Keyboard and Mouse
Keyboarding and mouse use require constant repetition in the fingers, and a static position in the wrists and arms. Improperly positioned keyboards and mice contribute to shoulder and neck pain due to elevated arms or reaching
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forward. Frequent breaks also are needed to maintain strength, flexibility and circulation in the upper body while keying, even when keyboards are properly positioned.

The keyboard and mouse should be positioned at seated elbow height or slightly below. A negative angle (away from the user) can help keep a straight line in the wrists while keying. Even if there is a wrist rest, float your hands while keying, resting them periodically on a wrist rest. The keyboard and mouse should be close enough that the elbows are only slightly in front of the hips. If you are reaching out as far as your knees, you are too far away. Additionally, elbows should rest naturally at your side rather than on armrests that are away from the body. To minimize the reach to the side to operate the mouse, try placing the mouse on the left side of the keyboard. The 10-key pad, arrow keys, etc., typically force the mouse to be farther away if positioned on the right.

Monitor/Reference Material/Copy

Monitors and reference materials that are positioned improperly can force you to turn, twist or tilt your head, or cause you to lean forward or squint your eyes. Even if you feel you can see the text on the screen well, you might be too close or too far away. Any time you refer to a document momentarily or infrequently can add up to time spent in an awkward position. Position the monitor so the top of the screen is at seated eye level and about arm’s length away. If the monitor needs to be lowered, put it on the desktop rather than on top of the central processing unit. Due to glare potential (discussed below), monitors should not be placed so that a window is behind the monitor or behind you. If light sources are reflected on the screen, the monitor can sometimes be tilted to eliminate that reflection – tilting slightly downward reduces glare compared to tiling up.

If workers use bi- or tri-focal lenses, the monitor may need to be positioned lower or closer to avoid tilting back to look through the appropriate part of the lens. Others may prefer the monitor to be farther away or higher to use the top portion of the lens. Tell your eye doctor about your computer use, any symptoms experienced, and distance and angle of your monitor. The doctor may want you to have a separate pair of prescription glasses for times when you are using a computer.

When referring to hard copy materials, documents, books, binders, etc., those items should be positioned upright or on an angle beside the monitor or between the keyboard and monitor. This reduces the need to tilt or turn your head or lean forward to see documents.

Lighting

Visual work can cause eyestrain for some people. Common complaints include headaches, blurred vision, itching and burning, irritation, flickering sensations, and double vision. These visual symptoms can result from improper lighting, glare from the screen, poor positioning of the screen, or copy material that is difficult to read or improperly placed. Sleepiness, general fatigue, stress, aging, or improperly corrected vision can also contribute.

Lighting has a noticeable affect on eye comfort. High illumination "washes out" images on the display screen, so illumination levels should be somewhat low (28 to 50 foot-candles). Diffuse (indirect) lighting is typically best, as it results in less glare. The result is a more uniform visual field. Where direct lighting is provided, parabolic louvers on overhead lights can help diffuse light. Glare may result from direct light sources, such as windows, or from reflected light from polished or light-colored surfaces (e.g., paper, light-colored desktops).

To limit reflection from walls and work surfaces visible around the screen, these areas should be painted a medium color and have non-reflective finishes. The face of the display screen should be at right angles to windows and light sources. Glare filters that attach directly to the surface of a monitor can help reduce glare, but should be used as a last resort and be cleaned often.
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Computer users can reduce eyestrain by taking rest breaks each hour, looking across the room or out the window from time to time at objects at least 20 feet away.

Work Habits
Even someone with the best computer workstation and properly positioned equipment can end up with discomfort or repetitive motion injuries. Good work habits and a healthy lifestyle are still essential to avoiding injuries from computer use. Since we seldom have the opportunity to observe ourselves working, we might be unaware of some bad habits we have at our desk.

Some good habits to try:
- Change your work position, chair height and angle, and keyboard position throughout the day
- Look away from the screen periodically to focus on distant objects.
- Using the Alt Functions where possible to reduce mouse use. Example: Alt-Tab moves from one window to another.
- Hold the phone with your non-writing hand or use a headset. Do NOT hold the phone handset with your chin and shoulder. Raising your shoulder leads to neck tension, headaches and pinched nerves.
- Stand to reach items on shelves above your desk, rather than reaching from your chair.
- Squat or go to one knee while getting materials from bottom drawers and shelves.
- Make physical fitness a part of your day, such as a brisk 15-minute walk at lunch.

Remember that changing work habits takes time and dedication. Even a slight keyboard height change can initially feel awkward. If a change feels awkward, work with the modified arrangement for at least a week to give it a chance to become natural. Armed with this information, you can increase employee safety and comfort through education and workstation modifications, rather than making costly purchases.

Conclusion
Because computers have become a permanent part of our lives, it is important to arrange workstations and work habits to reduce the risk of injury and discomfort. As with anything, exposing our body to repeated and prolonged stress will eventually have an adverse affect on our health. Taking time to ensure we are doing the best thing for our body at work can help prevent chronic health issues.

References
Working Safely with Video Display Terminals
U.S. Department of Labor, Occupational Safety and Health Administration, OSHA 3092

For more information, visit our website at travelers.com/riskcontrol, contact your Risk Control consultant or email Ask-Risk-Control@travelers.com.