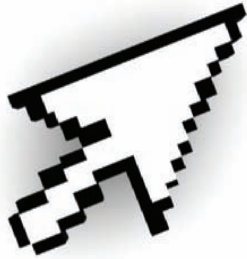


Ergonomics for Mouse-Intensive Jobs



By Chris Sorrells, OTR, CHT, CEAS

Workers such as architects, graphic designers, animators and computer-aided design (CAD) users spend countless hours in front of computers barely ever changing position. That is a recipe for injury. These types of jobs rely heavily on the mouse and have their own unique ergonomic issues. While much of their office layout looks identical to other office workers, consider the following factors to effectively help change their poor work habits and risk factors.

Preventing Forearm Overuse

Lateral epicondylitis and overuse of the forearm musculature are among the most common conditions seen in these workers. Most often this is due to resting the wrist on the desk, while the wrist extensors hold the hand up to use the mouse. Finding a mouse that fits their hand and sliding the palm up to rest on the mouse will help.

Using the whole arm to move the mouse is ideal and should be done for tasks that do not require precision. When precision is needed, consider a few techniques. First, adjust the cursor speed in the control panel. If the speed is too slow, the workers will be forced to repeatedly pinch and pick up their mouse. If it is too fast, they will grip the mouse tighter in an attempt to increase control.

In addition, avoid driving the mouse with the fingers by using the wrist for precision movements. Remove watches or bracelets if they inhibit movement. If the wrist is rested on the desk for extended periods, a soft gel pad should be used to minimize pressure on the carpal tunnel and the pisiform, which is another structure susceptible to contact pressure.

Perhaps the best solution for these types of work is a graphic tablet. The tablet allows the worker to hold a digital pen with a more relaxed and neutral position of the fingers, hand, wrist and forearm. The pen is moved over the tablet and clicks are made by touching the pen to the tablet. This more balanced position promotes whole-arm movement, reduces contact pressure on the carpal tunnel and actually allows more control than the mouse. These tablets typically come with a wireless mouse, as well, which allows the user to switch between devices, giving the different muscle groups rest. Advise patients to



A graphic tablet can provide an alternative to using the mouse.

choose the smallest tablet to allow them to do their job so as not to encourage excessive reach. Many designers and animators swear they will never go back to a standard mouse after using the tablet.

Preventing Neck Pain

Improper mouse placement can lead to neck pain. Placing the mouse too far tightens and overworks the neck and shoulder musculature, while the scapular stabilizers become overstretched and ineffective, leading to trigger points and pain. The muscle imbalances this prolonged positioning creates stay with the workers long after they leave the computer.

Teach your patients that they should be able to use the mouse with the elbow at the side and their hand directly in front of them. Reaching out to the side or forward should be minimized. One way to do this is to use a keyboard that has a



separate number pad or one that is on the left of the keyboard, which frees up space on the right side for the mouse. If changing keyboards isn't an option, change the keyboard position. For mouse-intensive tasks, suggest that your patients slide the chair over, to place the mouse directly in front of them. For extensive typing, they should slide the chair to the left, to center it in front of the keyboard.

Using a second pointing device, such as a trackball or mouse on the left of the keyboard, promotes ambidextrous use.

Right-handed patients can use the mouse on the right with graphic and other applications that require exact dexterity, while e-mail, spreadsheet and word processing applications can be navigated from the device on the left. Using a second mouse at home is also a good way to balance out the work each arm does and give the dominant arm a rest.

A Bright Idea for Eye Strain and Headaches

Many graphic designers prefer working in dark environments. This can create eye strain and headaches because of the contrast between the ambient light of the room and the brightness of the screen. Teach patients to adjust the light in the room, as well as the brightness and contrast controls on their monitor, until they are about even. Moving monitors so that they are perpendicular to windows can help.

Overhead lights can shine down onto the screen, creating glare. This should be minimized by adjusting the angle of the screen, putting filters on the lights or using a glare screen for the monitor. Another inexpensive option is to create a hood or visor over the screen with file folders to block the light.

Because of the precise nature of the work, it is common for workers to lean their head forward toward the screen to see detail. This can be helped by making sure the monitor is at the correct distance. Have the patients move a piece of paper with type back and forth to determine a comfortable focal distance. They can then place the monitor at the same distance. Screen height should be adjusted so that they are looking straight ahead while working.

Specialty Chairs

In the past few years, furniture manufacturers have recognized that mouse-intensive work requires a chair completely

different from what a secretary or manager would use. Recently, more chairs have been designed with a pear-shaped back, particularly with mouse-intensive users in mind. This type of chair supports the spine but frees the scapula to move, encouraging whole-arm use rather than motion only from the wrist. Armrests that adjust for height, width and swivel are also important to properly support the arm. Given the long hours spent sitting, memory foam seats can go a long way to improve comfort.

By keeping in mind these unique factors, you can draft a comprehensive program to reduce your patients' current strains and injuries, as well as decrease future risks. Those are the type of results patients will thank you for. ■

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A chair with a pear-shaped back supports the spine and encourages whole-arm use of the mouse.

Correction: Golf Preparation Exercises

Please note that some of the photos accompanying the "Back in the Swing" article that ran in the July *ACA News* were printed incorrectly due to a technical error. We apologize for the inconvenience. To download the article with the correct illustrations, go to www.acatoday.org/pdf/BackInTheSwing.pdf. For a four-minute video demonstrating the exercises, go to www.youtube.com and search for "State College Fitness Expert: Top 10 Golf Readiness Exercises".