

 ROSS UNIVERSITY SCHOOL OF VETERINARY MEDICINE	Keyboard and Mouse Use	Effective:	February 07, 2006
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1. Purpose:

To familiarize people with the effects and precautions to protect their wrists and hands from repetitive motion injury.

2. Scope:

These guidelines apply to all faculty, staff and students on campus.

3. Procedure

There appears to be a relationship between typing style and onset of hand and wrist symptoms for some computer users. *Preventing Computer Injury: The Hand Book* by Stephanie Brown is an excellent resource with numerous illustrations of correct and incorrect hand and finger positions as well as down-to-earth tips on how to make corrections in typing style.

This procedure will review some key components of typing style; offer tips on how to achieve improved arm and hand positions when typing; review some important information on mouse use, alternative keyboards and input devices; and the importance of breaks and warm-ups.

Typing Style

When reviewing typing style, the posture of the entire arm becomes important. This includes shoulder, upper arm, lower arm, wrist, and finger positions. A typical position is one in which the arms are reaching forward, the wrists are resting on the desk or wrist rest, and the fingers are reaching up to the keys (Figure 1).



Figure 1

When the upper arm is reaching forward it is natural to want to rest your wrists on something in order to take stress off the shoulder area. When wrists are in a fixed position, the hand flattens and fingers reach excessively to strike the keys (Figure 2). This awkward position results in marked increased stress to the structures of the hand and fingers and can result in discomfort.



Figure 2

Instead, the upper arm should remain vertical, forearms horizontal, and wrists floating in a straight position (Figure 3).



Figure 3

This allows the hands and fingers to maintain a rounded position with the fingers pointing down to the keys (Figure 4).



Figure 4

Movement to the keys should occur through small movements at the shoulder instead of excessive reaching with the fingers.

There are several common reasons why individuals adopt the position shown in Figure 1 including:

- Inadequate distance between the monitor and individual. A common solution is to pull the computer table out away from the wall and move the monitor back on the table. The monitor will extend slightly off the back of the table.

- Slumping in the chair. As the buttock slides forward in the chair, the upper back leans backward resulting in the need to reach forward for the keyboard. If you prefer not to change your sitting position, place the keyboard in your lap rather than reach forward to a computer table.
- Poor shoulder posture. Many individuals have severely rounded shoulders resulting in constant stress to the shoulder/neck area as a result of postural deviations. Relief comes from any type of support to help reduce the preexisting stress to the shoulder/neck area. These individuals would fare better supporting the weight of their arms through the use of arm rests on the chair rather than through use of a wrist rest.

NOTE: Wrist rests should not be used to rest the wrists when typing. They can serve as a surface to rest the wrist on when not typing.

Another positional problem is excessive side-to-side deviation of the wrist that occurs when the individual tries to keep his/her fingers aligned with the 'home row' of keys (Figure 5). This is a common result of learning to type on a typewriter.



Figure 5

It is not necessary to stay aligned with the "home row." Let your hands move away from the "home row" to allow the wrists to remain straight (Figure 6). Move to the keys through small movements at the shoulder instead of reaching excessively with the fingers or deviating the wrist.



Figure 6

Correcting Hand Position

Correcting poor hand position is difficult and often requires more than simple awareness. For individuals who have never learned the preferred rounded hand position, it is useful to apply a simple taping method to help practice good hand positions. First cup your hand as if holding a tennis ball in your palm. Then use small strips of scotch tape to tape each finger from the middle of the finger to the palm as shown in Figure 7.



Figure 7

Practice typing without letting the tape pull off the fingers. One will quickly learn to make small movements at the shoulder instead of excessively reaching with the fingers to strike the keys. At first, typing speed will be significantly slower, but with practice, speed will increase. Notice that striking the keys with a lighter touch is another stress reducer. Practice for just 10 minutes with the tape on, then remove the tape and concentrate on maintaining good hand and finger positions for the next 10 minutes. Use the tape as noted above three to four times/day. Within two weeks you will learn to use the new method. Thereafter, use the tape only if needed as a reminder of the proper position. Periodically, assess hand position when typing to assure that you have not drifted back into old habits.

Mouse Problems

Postural problems resulting from mouse use are not unlike those previously discussed for keyboard use. Figure 8 shows reaching for the mouse can result in increased stress to the shoulder/neck and severe deviation of the wrist.



Figure 8



Figure 9

When the wrist fixates on the table or mouse pad, movement of the mouse occurs through deviation at the wrist (Figure 9) or excessive reaching with the fingers.



Figure 10

Other mouse solutions include:

- Ease up on your grip and hold the mouse lightly. It is not necessary to hold the mouse tightly. This will markedly reduce stress to the hand.
- Relax your hand and let go of the mouse when it is not being used.

Use of Alternative Input Devices

Manufacturers are creating an ever-increasing number of alternative keyboard and input devices (mouse, track ball, input pens) faster than ergonomic impact studies can evaluate them. Therefore, it is advisable to use good judgment as a consumer of any ergonomic product.

The use of alternative keyboards and track balls has met with mixed success on campus. If possible, try the product before ordering it.

A number of individuals have found the track ball to be a more comfortable alternative to a mouse. However, reaching for a track ball creates the same shoulder/neck stresses as reaching for a mouse. A track ball should also be positioned next to and at the same level as the keyboard. Keyboards with built-in trackballs are popular solutions to eliminating the problem of reaching. They are also useful in workstations that are not designed to accommodate a mouse.

Frequent Breaks

The body was not meant to stay in one position for an extended period of time or to perform the same task repeatedly. It is advisable to stand and move about the office for several minutes at least every hour. This is a good time to do some stretching.

If time is a factor, at least standing while continuing to read or think will be helpful. Very often finding an answer or solution to a tough problem will occur outside the office. Using break time to walk outside around the building may be more productive than you would think!!!

Warming Up

Especially during cooler seasons, taking time to warm your hands prior to beginning your computer work is advisable. If your hands get cold when typing, it is probable that you are holding your shoulders tightly. Slightly adjust your height relative to the keyboard to allow your shoulders to relax. You can also do shoulder circles to increase the circulation to your hands.