Ergonomics Tricks for the Office

Seating
In the easily adjustable chair, the controls that influence chair height, seat pan tilt and lumbar support should all be accessible from an upright seated position. If with arm rests, these should also require minimal effort to adjust. Ideally, the armrest should be padded, soft and feature lateral, horizontal and vertical adjustments.

The top three chairs on Campus are all manufactured by the same company and these are Steelcase’s: Gesture, Leap & Criterion. A trial with one of these chairs can be had by contacting the University’s Ergonomist. The University Ergonomist does not endorse the use of large inflatable balls as chairs in Ohio University Offices.

Worktables
During entry work the hands and wrists often come to rest on a worktable’s edge. A table with a hard square leading edge against which the hands and wrists are supported can contribute to muscle, circulatory, and nerve resistance or compression. Routine exposure to this form of regional tissue pressure is considered a musculoskeletal disorder risk factor and should be avoided. Ideally, table edges at the keyboard/mouse interface should be rounded, padded or both.

Height adjustable worktables may permit work performance in seated or standing alignments and are becoming increasingly common on Campus. Standing requires more effort than sitting and therefore these height adjustable table applications are not recommended for all employees.

Headsets
Inefficient head & neck alignments are commonly recruited when computer work and telephone conversations are conducted simultaneously. Telephone headsets free the hands for entry work, aka multi-tasking, and eliminate inefficient ear to shoulder phone conversation alignments.
Monitor Location

The ideal location for the monitor is central to the seated position and at a viewing distance of 20 - 30 inches. From seated, this distance equates to approximately arms-length away. When properly situated the screen should dictate a slight forward head tilt of 15º. If you find you are tilting your head back to see the display the screen is too high and needs lowered until this chin up recruitment is eliminated. From a height perspective, the top of the screen should align with the seated level of the nose. Use of a monitor arm to support the screen(s) is recommended as these applications permit greater ease of screen movement and additionally free up table top space that would otherwise be occupied by the display(s). Twin screens should be aligned in a broadened-inverted-V configuration. Such an arrangement helps reduce back and forth head movements and should permit screen viewing through simple eye scanning.

Keyboard

The proper height of the keyboard is dependent on stature. The keyboard should be situated central to the seated or standing position and at a height that encourages relaxed, close to the body arm placement in which the forearms are perpendicular to the upper arms as illustrated above.

A 2009 study evaluated the influence of 5 alternative keyboards on typing speed and accuracy when stacked against a traditional keyboard. In the study none of the alternatives yielded better results than the traditional keyboard. That said our QWERTY keyboard, named for the left most 6 letters in the keyboards upper row, was developed in 1873 as an antidote to typing speed and efficiency. Apparently, early keyboard design flaws caused sticking keys when the simultaneous striking of adjacent keys in speedy succession occurred. The scattered layout of keys as we know it today was employed nearly a century and a half ago to reduce speed and to compensate for typewriter design flaws. Improvements in keyboard layout evolved and trials with alternate arrangements were conducted in 1932 that conclusive demonstrated overwhelming improvements in typing speed and efficiency. However, by this time, so entrenched was the QWERTY keyboard that efforts to introduce keyboards of a more efficient layout were summarily squashed. Suffice to say that an ergonomic tag hung on a keyboard today is nothing more than a tag.

Keyboard Tray (KBT)

Many of our Campus worktables do not adjust and if entry work is the principal task being performed and the table seems too high, most frequent finding of the Ergonomist’s Office, then the simplest approach for adjusting a work level is introduction of a height adjustable keyboard tray. Unfortunately, like our chairs, keyboards and the mouse not all are created equally and in the case of the keyboard tray most are downright lousy. The adjustable, retractable, or sliding keyboard tray can assist in centering the keyboard and may promote efficient entry duty recruitments. These movable trays also allow the keyboard to be recessed or located out of the workspace when not in use. The best designed trays are those with a single surface and ample area for side by side keyboard and mouse placement. Those trays that have a separate mouse surface should come with a Send to Surplus designation. The office of the University Ergonomist recommends and installs only one species of KBT. If considering acquisition or introduction of a KBT please consider contacting the University Ergonomist for a consult.
**The Mouse**

The ideal location for the mouse is to the immediate left or right of the keyboard. Positioning the mouse in this fashion can minimize the necessity to reach for the pointing device. Appropriate positioning of the mouse should always be attempted but is imperative at workstations where repeated pointing device manipulations occur.

Many functions that are mouse controlled can also be performed using keystrokes. In a Windows operating system finding keyboard shortcuts that reduce mouse reliance can be accomplished by following the pathway described below:

1. Find and click on the Macros drop down in a word document under View.
2. Click the Macros drop down and then click View Macros.
3. In the Macro in: field highlight and click Word Commands.
4. In the Macros name: field scroll down to List Commands, highlight and click Run.

Following the above steps should yield multiple pages of keyboard supported shortcuts.

Ultimately the mouse should be trapped, disposed of and replaced by the Pro2 Roller Mouse. The Roller Mouse is an application that resides under the keyboard and situates the controls for the mouse behind the space bar. The Roller Mouse eliminates the peripherally situated pointing device, mouse reaching, often at the root of many office musculoskeletal disorders and in the opinion of the University Ergonomist should be the designated default pointing device in Ohio University Offices.

**Viewing Comfort**

Contrary to conventional thinking, a brightly lit workplace is not always best. In fact, in the electronic office environment low light is recommended. To determine if there is too much light or glare in the office shade the eyes using a hand as a visor. If while scanning the work environment the eyes relax the present level of light is likely excessive. When possible, all illumination sources in the electronic office should be perpendicular to the location of the computer screen(s). Direct glare, a contributor to eye-strain, results when the computer workstation faces a source(s) of illumination and indirect glare occurs when illumination sources are behind the computer workstation.

Whenever possible try and inure that the work environment's large surfaces offer little contrast, or are color homogenous and that work surfaces in the office have non-reflective or matte finishes. Don't forget to minimize clutter in and around the computer screen as viewing distractions challenge the eye for attention potentially increasing viewing demands and the risk for eye fatigue/strain.

**Document Support**

The document holder can be a valuable piece of equipment in the computer environment. Ideally, the document holder should be centrally placed between the keyboard and monitor. Studies have demonstrated that vertical eye scanning movements, as opposed to horizontal, require less external ocular muscle activity and, therefore exact a lower work effort from the muscles that move the eyes. This finding supports the recommended document placement in which referenced materials are tilted toward vertical and situated between the KB and screen. Such an arrangement is depicted in the workstation illustrated above.

If placement of a holder between the keyboard and monitor is not possible, a document holder should be located as close to the monitor as possible and at the same level. In offices with windows, the holder should be placed on the side of the monitor opposite an office window.