Office Ergonomics

Controlling Stressors to Prevent Musculoskeletal Injuries

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**What is a musculoskeletal disorder?**

MSDs are soft-tissue injuries caused by sudden or sustained exposure to repetitive motion, force, vibration, and awkward positions. These disorders can affect the muscles, nerves, tendons, joints and cartilage.

Musculoskeletal discomfort can occur anywhere in the body and typically is not caused by a single traumatic event, but is due to **micro trauma to tissues that does not heal during rest.**
ERGONOMICS = Controlling the Exposure to those Stressors = Fitting the Task to the Worker
Common Ergonomic Risk Factors

- Awkward posture
- Sustained posture
- Repetition
- Contact Stress

Discomfort

Musculoskeletal Disorder

Adapted from University of Michigan EHS Ergonomics Training
Workstation design and layout considerations

Work Zones

1. **Primary** (Frequent reaches): within or close to same area/level as typing
2. **Secondary** (Infrequent reaches)
3. **Tertiary Zone** (Occasional reaches)
POSTURE

There are many ways people position themselves to use their computer,

So let’s learn about the ideal way!
POSTURE

CORRECT SITTING POSTURE

- Upper back straight with shoulders relaxed at sides
- Backrest of the chair supports curve in the lower back
- Hips as far back on the chair as possible
- Adjustable seat for optimal height
- 20'-28'

- Line of sight = eye level or bifocal level slightly below
- Arms relaxed at sides with upper arm and lower arm forming a 90° angle. Wrist straight with fingers relaxed
- Lower legs at a 90° > 110° angle to thighs with adequate legroom above
- Feet flat on the ground or resting on a footrest
Awkward Posture  Neutral Posture
POSTURE

Awkward Posture

Neutral Posture

Awkward Posture
Contact Stress

Contact stress is pressure on the body by a hard edge/surface. This can reduce circulation and obstruct nerve signals leading to swelling, tingling or discomfort.

Hard desk edge against forearm.

Front edge of seat against calf.
Controlling **Posture and Contact Stress**

- Four areas of focus -

1. **Start with the chair**
   - Back and legs supported
   - 2-3 finger width between the front edge of the chair and your calf.
   - Arm rests just below elbow

2. **Keyboard and mouse**
   - Together on same surface
   - Height and angle to maintain neutral posture @ elbow/wrist
   - Raise chair if keyboard cannot lower to elbow height
   - Raise desk if typing surface low

3. **If feet not flat of the floor**
   - Elevate with a footrest (or books, box)

4. **Monitor height**
   - Top in line of sight

Adapted from University of Michigan Ergonomics Training

6/11/2020
Wrist **Posture** and **Contact Stress**

**BEST HAND POSITIONS FOR TYPING**

**GOOD**

- Keep your wrists hovering just a few inches above the keyboard.
- Keep your arms at an almost 90° angle from your elbow to your wrists and palm.

**BAD**

- Do not bend your wrists. Keep your arms, wrists, and palms parallel to the floor. Let your fingers bend to type.
- Do not fray your hands outwards; it will cause wrist pain.
- Do not fray your hands inwards; it will cause shoulder and neck pain.

*No Wrist Bending*
*No Keyboard Tilt*
Keyboard Trays

GOOD

• Shared workstation,
• Typing surface too low or too far from body

BAD
Do I need an ergonomic keyboard?

Ergonomic keyboards do one thing: Prevent ulnar deviation

One size/shape fits all is not the ergonomic solution
Contact Stress

Or a wrist-rest?

Wrist resting and putting pressure on the nerve

Wrist free. Meaty part of the hand resting with no pressure on the nerve. This is a PALM SUPPORT

Studies have shown an increase in pressures within the carpal canal when keyboarding with anchored wrists. There should be no pressure on the wrists, ever, including watchbands, hair ties, or rubberbands. If you learned to type with anchored wrists, then use of a palm support may reduce your risk.
OR a Mouse?

One size DOES NOT fit all

VERTICAL

HORIZONTAL
MONITOR POSITIONING
Height and Glare Considerations

DUAL MONITORS

HEIGHT OF MONITOR IS THE SAME, WHETHER SINGLE OR DOUBLE

Use if monitors are used nearly equally

Use if the in-line monitor is used majority of the time

LINE OF SIGHT, not straight viewing
Common discomfort producing postures when using a laptop as a primary computer

Head down to view screen which is too low: Headache, neck and shoulder discomfort.

Arms reaching forward: Middle and upper back discomfort, especially between the shoulder blades.

Lack of back support: Low back and hip discomfort.
Controlling **Posture** and **Contact Stress** with Laptop Use

- Peripheral keyboard and mouse
- Raise laptop screen to line of sight
- Adjust chair and working surface as before
Controlling **Repetition** (and **sustained posture**)  

**BREAKS**  
- Get out of your chair and **walk**.  
- **Alternate** typing tasks with other tasks.  
- Take **stretch** breaks every 20-30 minutes.

**EYE BREAKS**  
- **Lubricate**: blink, yawn, close  
- **Exercise**: rotate  
- **20-20-20 focus change**: Every **20 minutes**, take a **20-second break** and focus your eyes on something at least **20 feet away**.
REST BREAK SOFTWARE

WorkRave Break Software
# Computer user discomfort reports

<table>
<thead>
<tr>
<th>Discomfort</th>
<th>Commonly caused by</th>
</tr>
</thead>
<tbody>
<tr>
<td>Headache</td>
<td>Monitor height/distance not ideal</td>
</tr>
<tr>
<td>Neck Pain</td>
<td>Incorrect monitor height</td>
</tr>
<tr>
<td>Arm/Shoulder Pain</td>
<td>Extended reach to keyboard/mouse/other</td>
</tr>
<tr>
<td>Shoulder tension</td>
<td>Keyboard and mouse too high</td>
</tr>
<tr>
<td>Forearm/elbow</td>
<td>Clawing of the scroll wheel</td>
</tr>
<tr>
<td>Wrist</td>
<td>Awkward posture during typing, contact pressure</td>
</tr>
<tr>
<td>Low back</td>
<td>Unsupported feet, chair not adjusted to fit, incorrect tilt</td>
</tr>
</tbody>
</table>
RESOURCES

https://www.ehs.washington.edu/workplace/ergonomics


Office Ergonomics Evaluation Form

Instructions: Complete this form to request an ergonomics evaluation of an office workstation. For other types of ergonomics evaluations, please contact ehsergo@uw.edu.

Note: UWMC and HMC employees do not complete this form. They are to contact their human resources department (UWMC) or Employee Health Services (HMC) to request an evaluation. These (*) fields are required:

Person Requesting Evaluation

Name *

Job Title *

• Sample Ergonomic Equipment in the Access Technology Center (ATC) located at Mary Gates Hall Room 064