Office Ergonomics

Controlling Stressors to Prevent Musculoskeletal Injuries
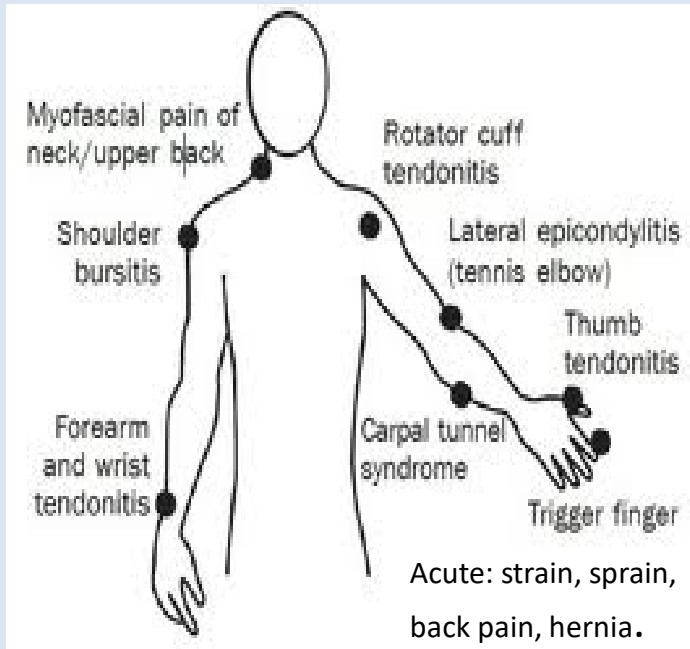
Andreea Minea

Accident Prevention Specialist
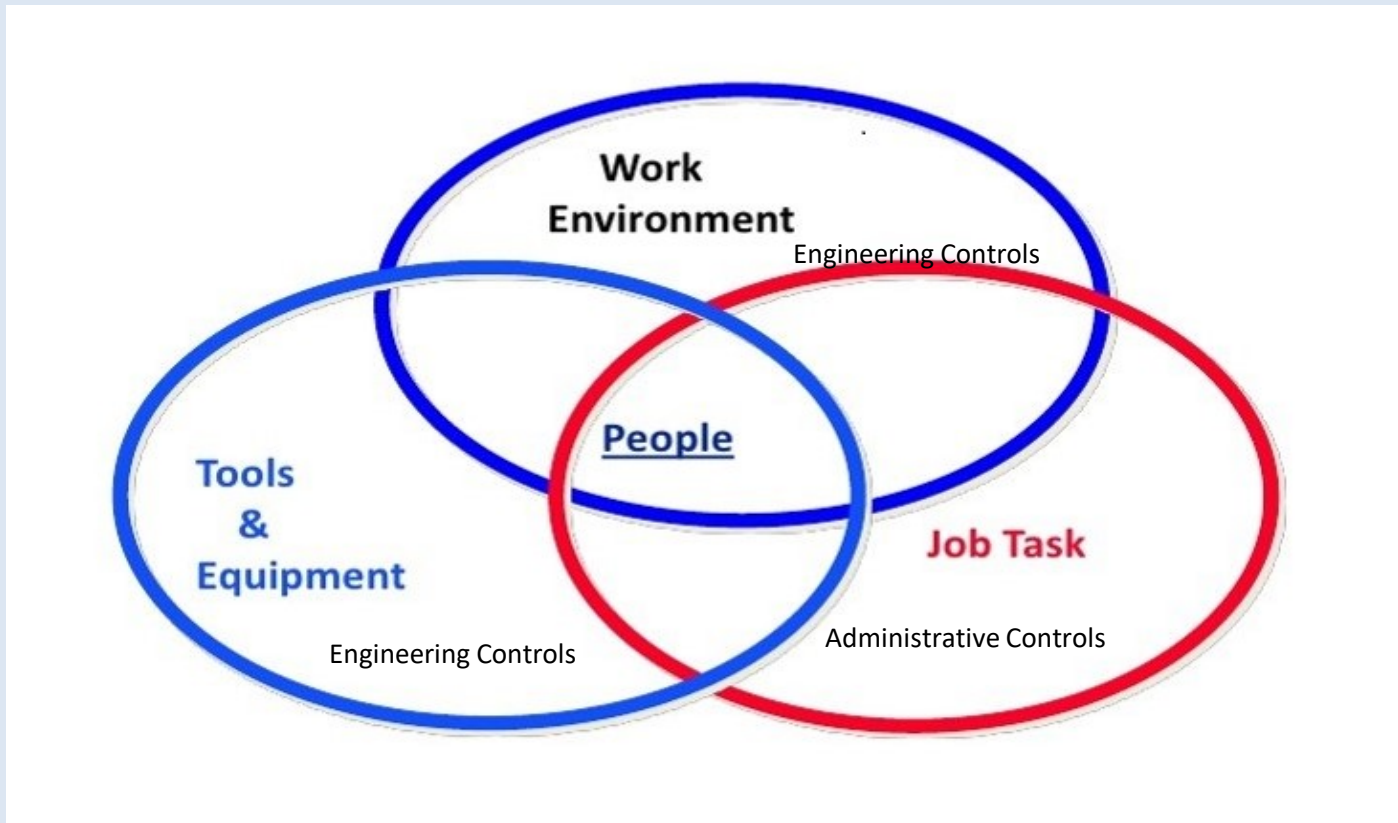
June 2020

What is a **musculoskeletal disorder?**

Myofascial pain of neck/upper back

Shoulder bursitis

Forearm and wrist tendonitis

Rotator cuff tendonitis

Lateral epicondylitis (tennis elbow)

Thumb tendonitis

Carpal tunnel syndrome

Trigger finger
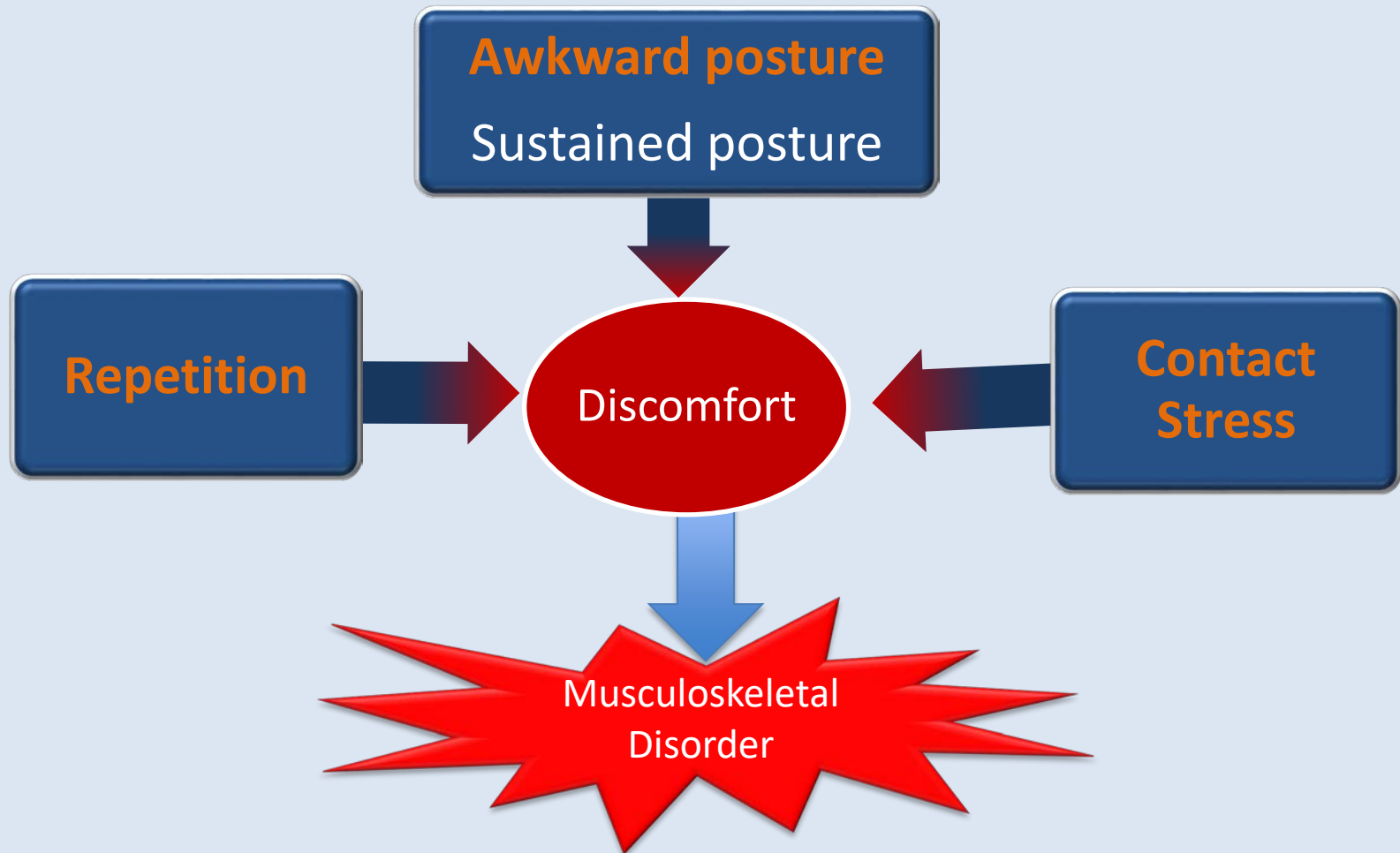
Acute: strain, sprain, back pain, hernia.

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

Discomfort

Contact Stress

Musculoskeletal Disorder

Adapted from University of Michigan EHS Ergonomics Training

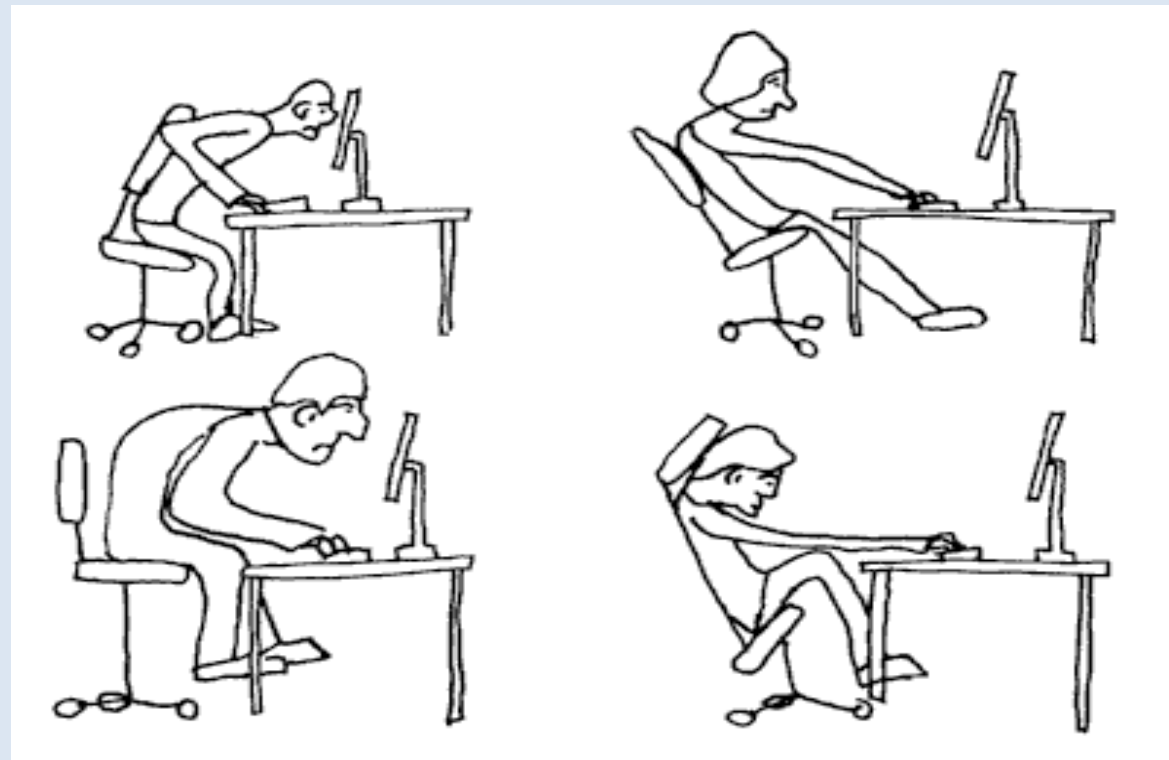# Workstation design and layout considerations

Work Zones

1. **Primary** (Frequent reaches): w/in or close to same area/level as typing

2. **Secondary** (Infrequent reaches)

3. **Tertiary Zone** (Occasional reaches)
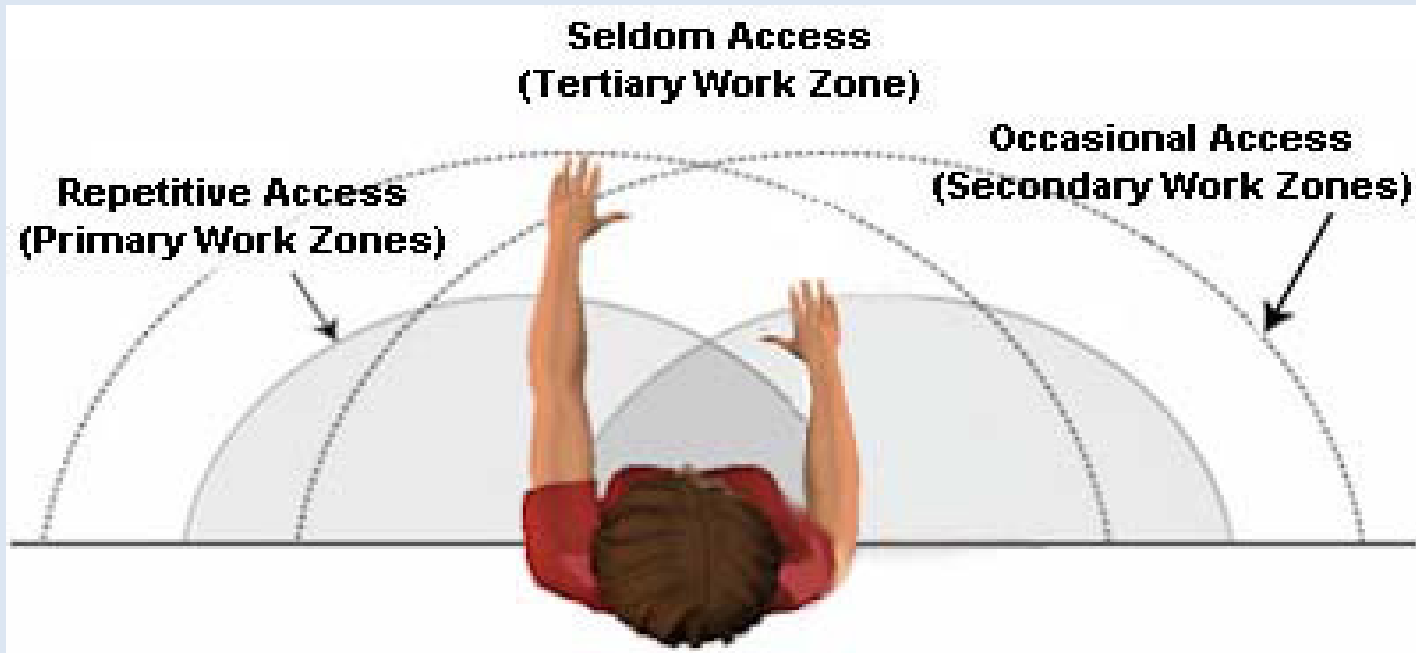
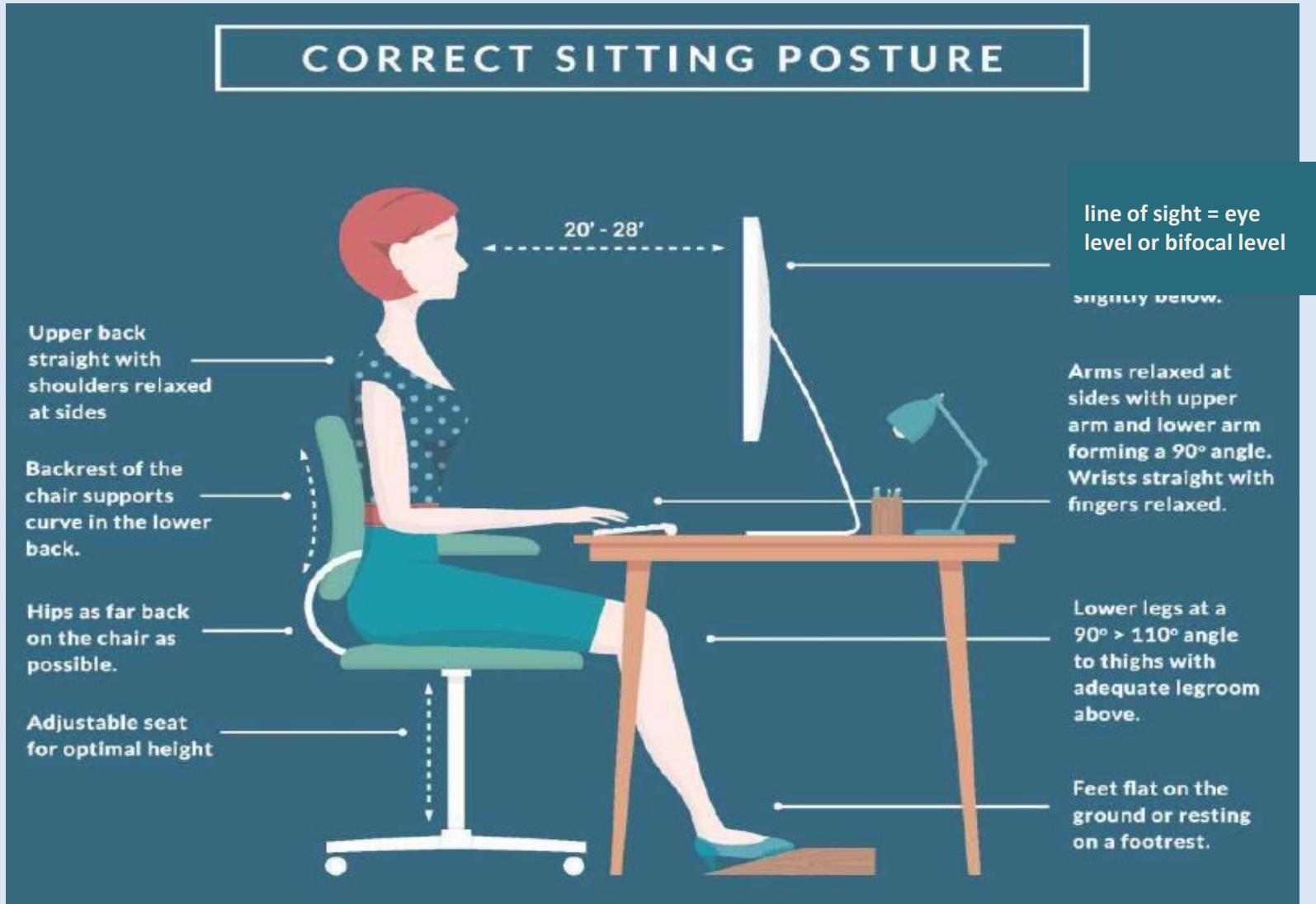# P O S T U R E

There are many ways people position themselves to use their computer,
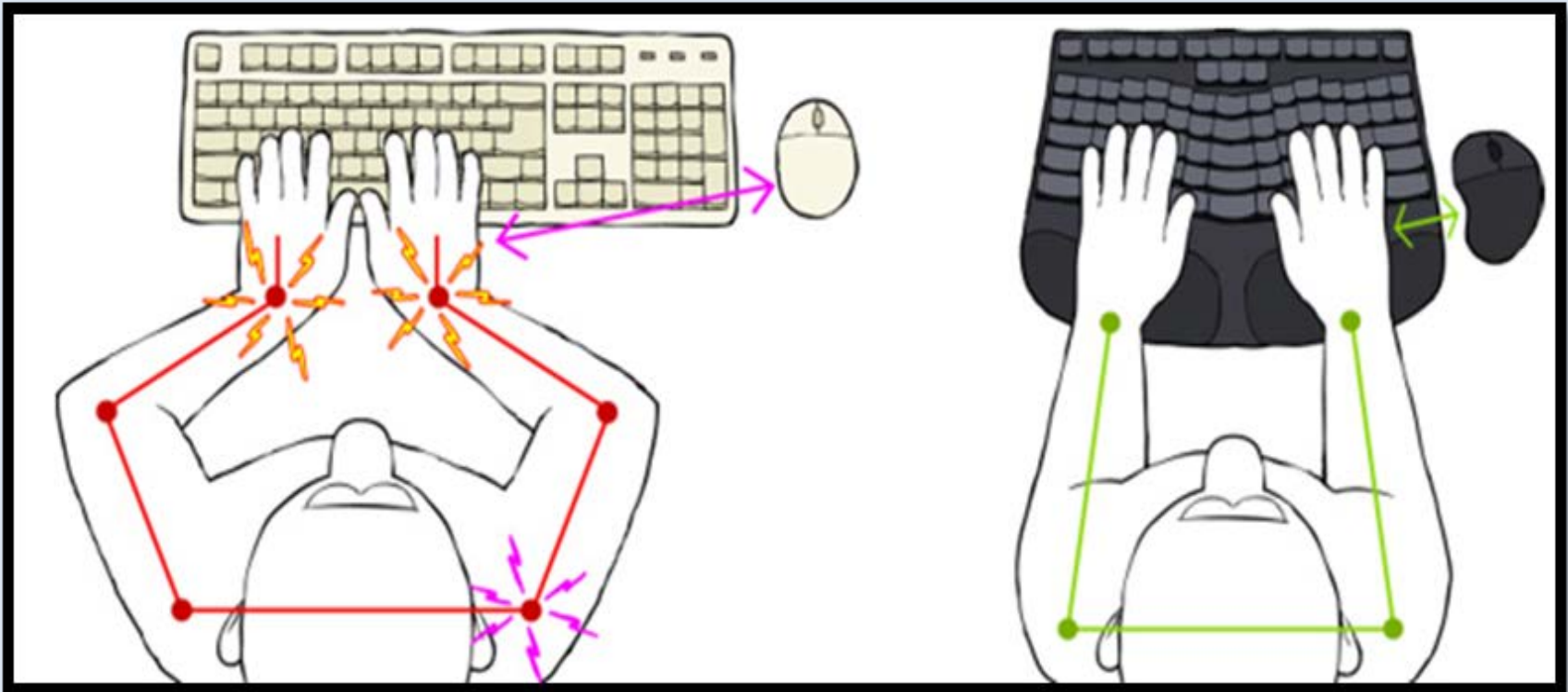
So let's learn about the ideal way!

Adapted from University of Michigan EHS Ergonomics Training

POSTURE

CORRECT SITTING POSTURE

line of sight = eye level or bifocal level

slightly below.

20' - 28'

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

Arms relaxed at sides with upper arm and lower arm forming a 90° angle. Wrists straight with fingers relaxed.

Lower legs at a 90° > 110° angle to thighs with adequate legroom above.

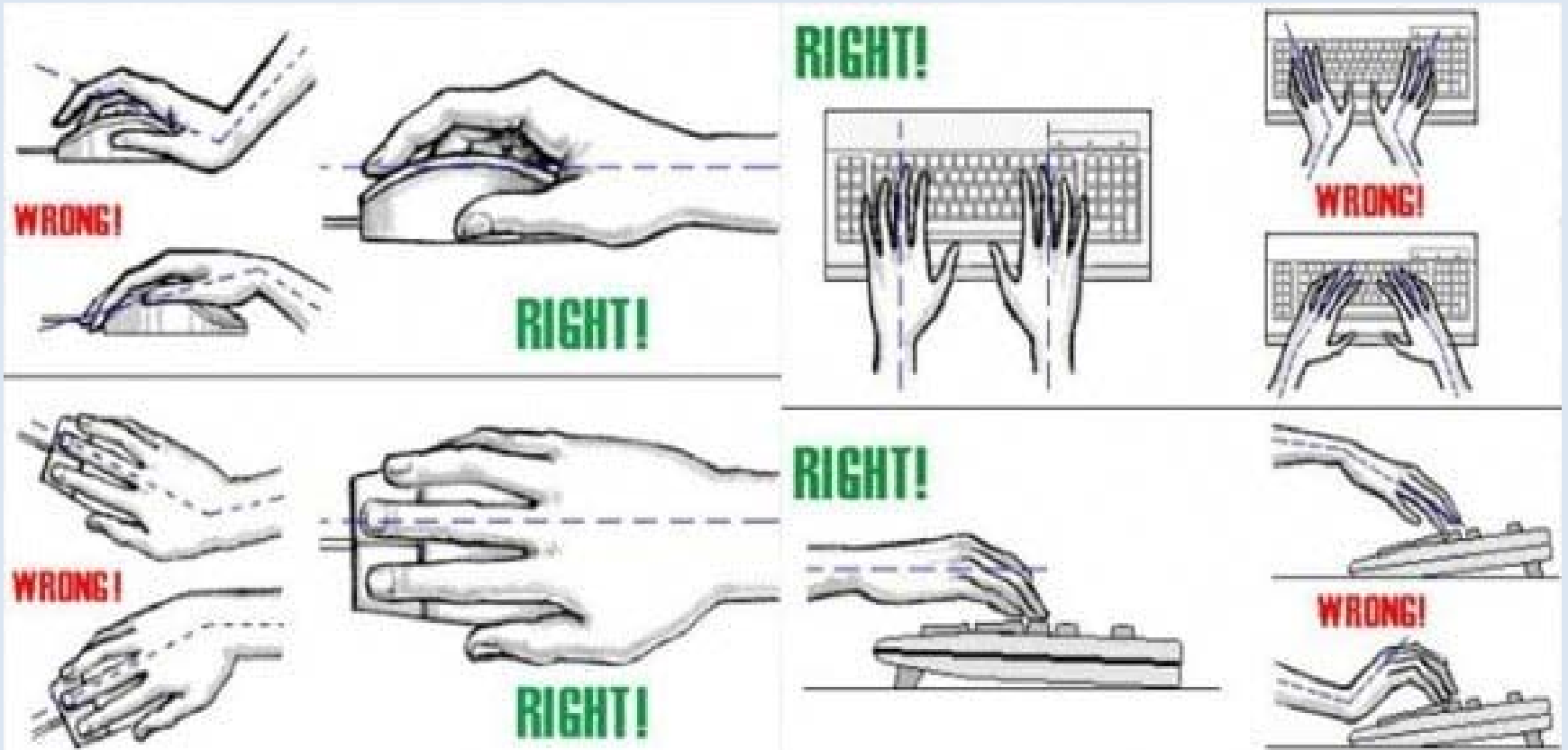Feet flat on the ground or resting on a footrest.

POSTURE
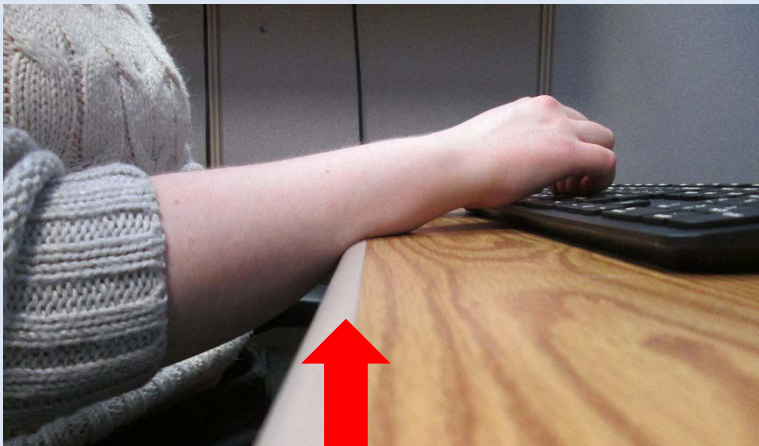
Awkward Posture   Neutral Posture

P O S T U R E

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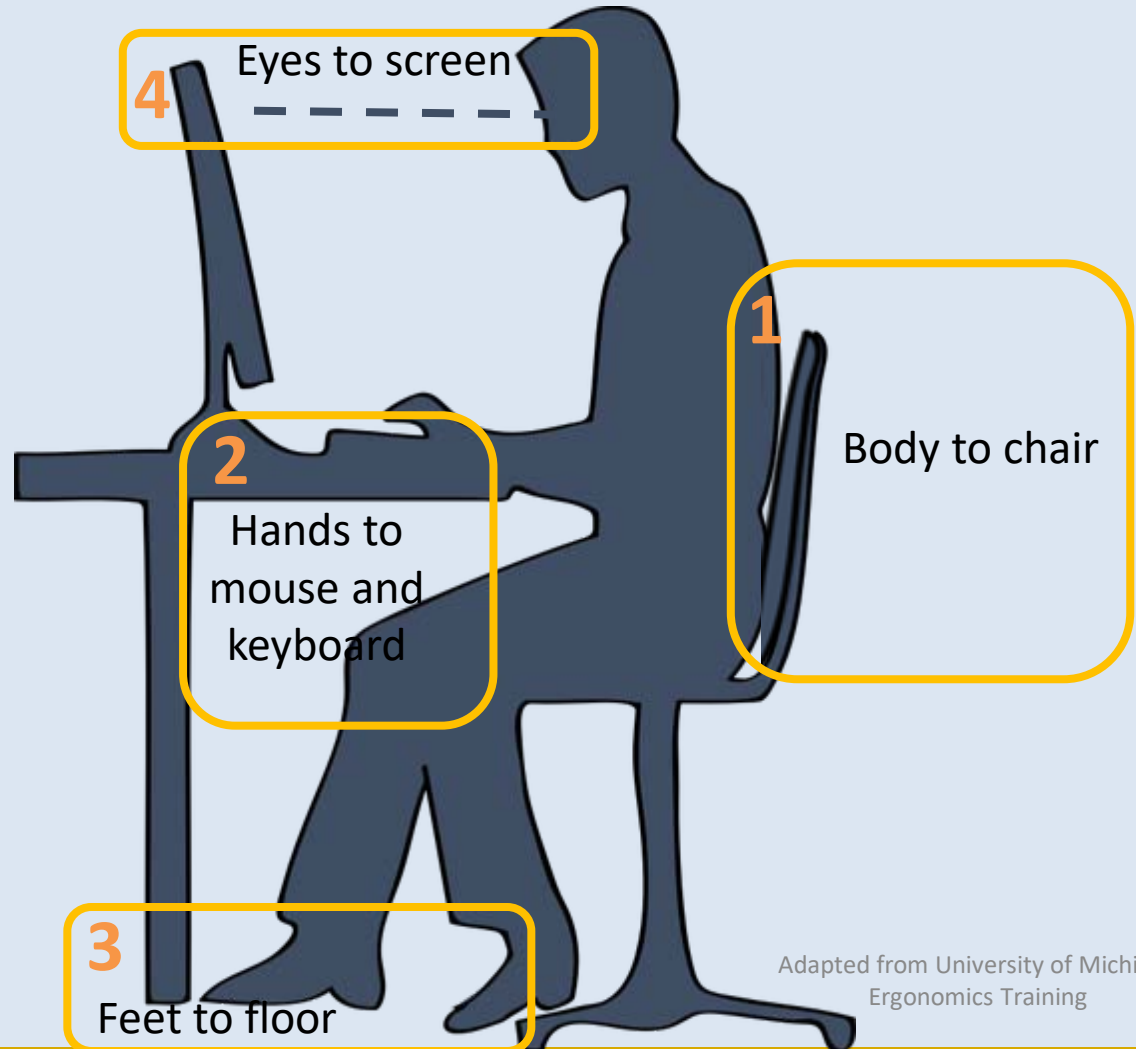
2. **Keyboard and mouse**
   - Together on same surface
   - Height and angle to maintain neutral posture @ elbow/wrist
   - Raise chair if keyboard cannot lower to elbow height
   - Raise desk if typing surface low

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

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

6/11/2020

4 Eyes to screen

1 Body to chair

2 Hands to mouse and keyboard

3 Feet to floor

Adapted from University of Michigan Ergonomics Training

Wrist **Posture** and **Contact Stress**

BEST HAND POSITIONS FOR TYPING

GOOD

Keep your wrists hovering just a few inches above the keyboard.

GOOD

Keep your arms at an almost 90% angle from your elbow to your wrists and palm.
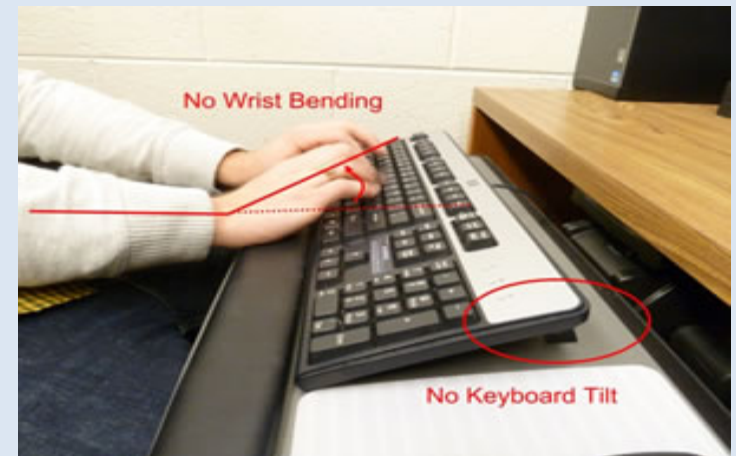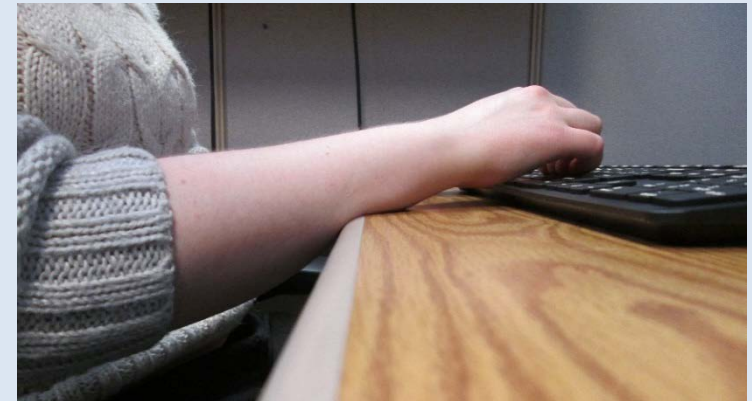
BAD

Do not bend your wrists. Keep your arms, wrists, and palms parallel to the floor. Let your fingers bend to type.

BAD

Do not fray your hands outwards; it will cause wrist pain.

BAD

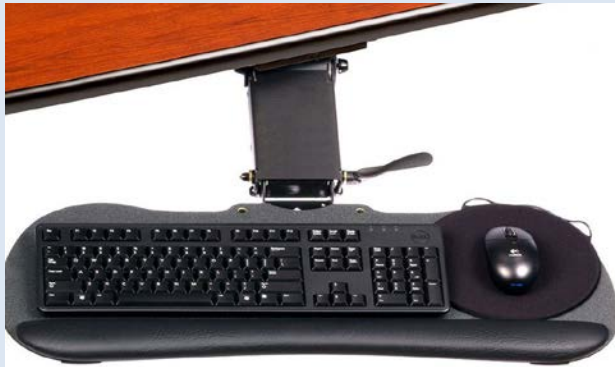Do not fray your hands inwards; it will cause shoulder and neck pain.

No Wrist Bending

No Keyboard Tilt

P O S T U R E

Keyboard Trays

GOOD

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

BAD

POSTURE
Do I need an ergonomic keyboard?

Ergonomic keyboards do one thing:
Prevent ulnar deviation

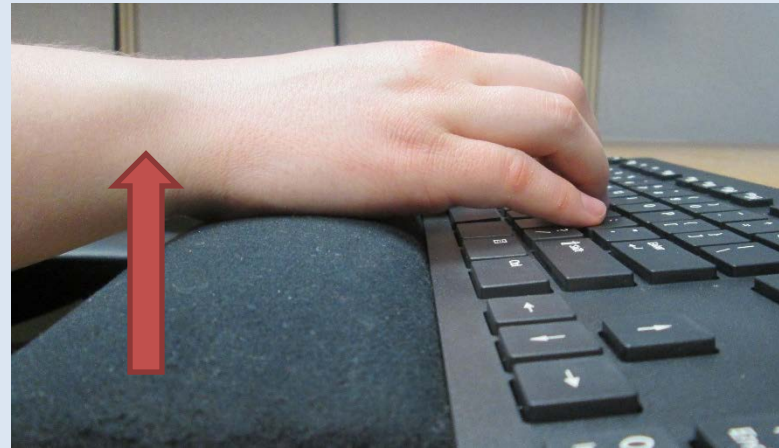One size/shape fits all is not the ergonomic solution

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

Adapted from University of Michigan Ergonomics Training
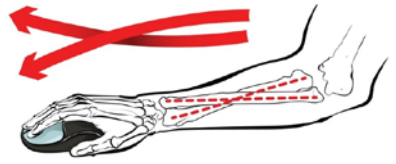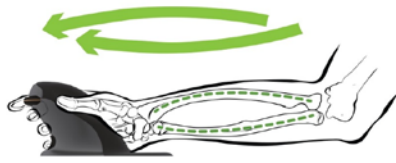
P O S T U R E
Or a Mouse?

VERTICAL

HORIZONTAL

One size DOES NOT fit all

MONITOR POSITIONING
Height and Glare Considerations

P
O
S
T
U
R
E

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

20"–30" to Screen

Screen Height

10°–20° Tilt
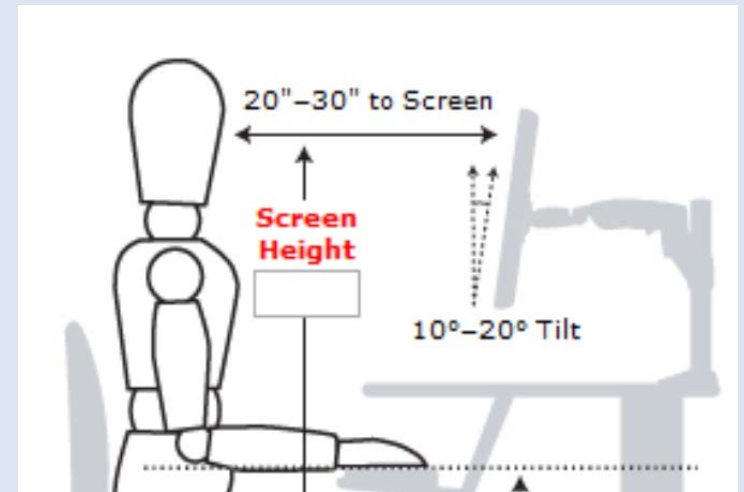
LINE OF SIGHT, not straight viewing

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.

Adapted from University of Michigan Ergonomics Training

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**
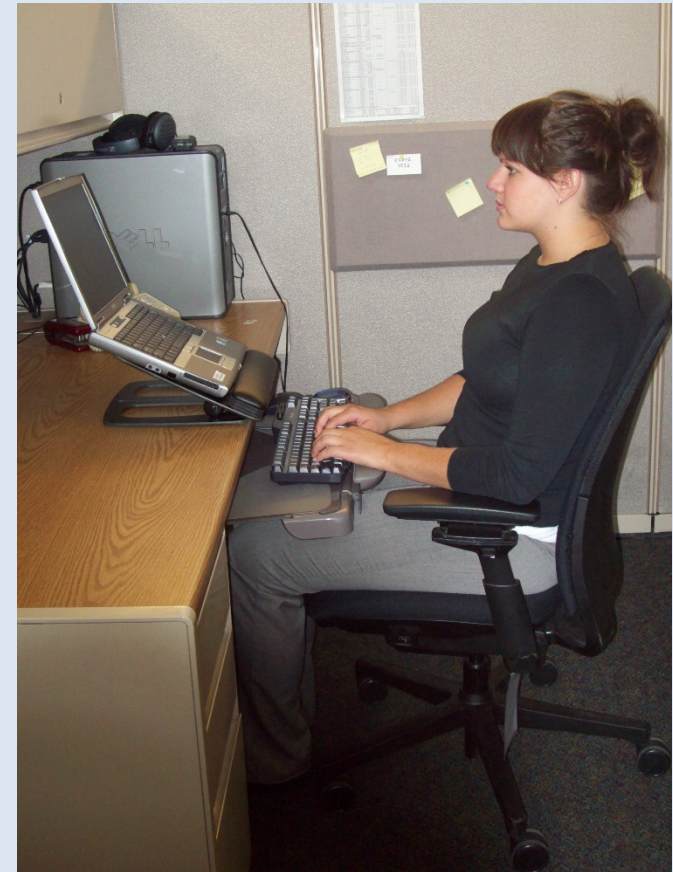
Controlling **Repetition** (and **sustained posture**)
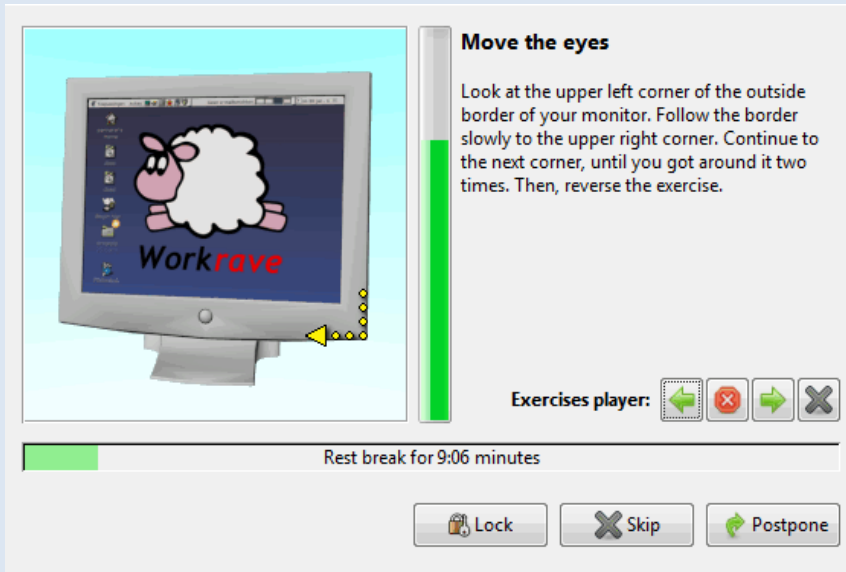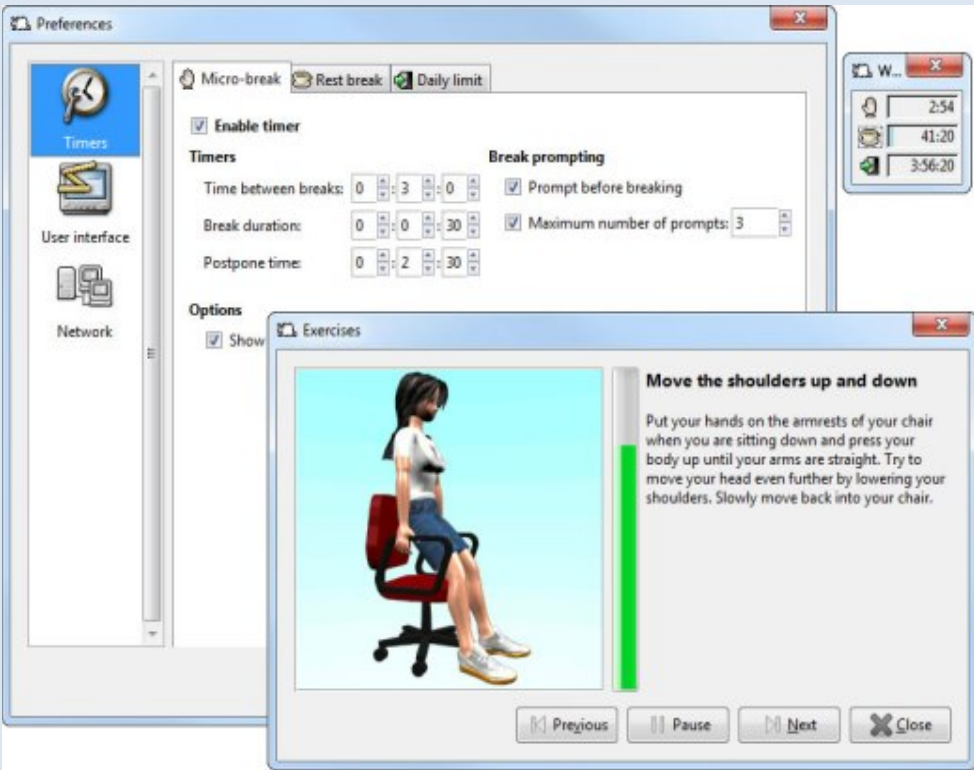
BREAKS

- 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

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

RESOURCES

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

https://ergo-plus.com/infographic-office-stretches-prevent-reduce-desk-life-pain/

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