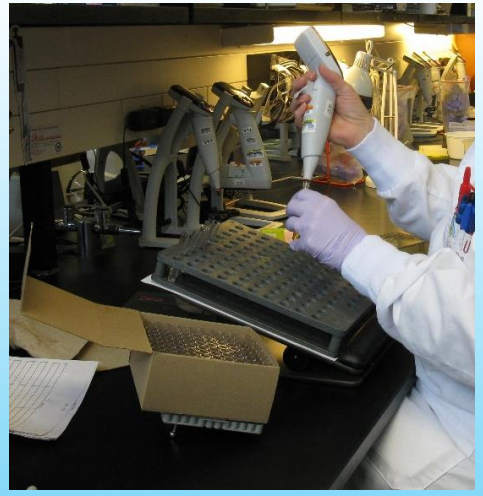
Laboratory Ergonomics Training



Presented by

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Outline

- What is Ergonomics?
- Muscular-skeletal Disorders (MSDs) and Symptoms of MSDs
- Ergonomic Risk Factors and Solutions
  - Force
  - Awkward Postures
  - Repetitive/Duration

Outline

- Review Workstation Setup
- Group Participation (identify hazards and propose solutions)
- Ergonomic Laboratory Tips
- Questions

What is Ergonomics???

- "an applied science concerned with designing and arranging things people use so that the people and things interact most efficiently and safely —called also *biotechnology, human engineering, human factors" (Merriam-Webster Dictionary)*

- Fitting the job to the worker

Musculoskeletal Disorders (MSD's)…




- Sprains and Strains
- Repetitive Strain Injuries (RSIs)
  - Cumulative Trauma Disorders
  - Overuse Injuries
  - Repetitive Motion Disorders

Symptoms of MSD's

- Muscle weakness and fatigue
- Pain, dull ache
- Swelling
- Loss of sensation (numbness)
- Tingling and burning sensations
- 'Pins and needles' discomfort
- Clumsiness
- Joint restriction/loss of movement

Risk Factors (FAR)

Force

Awkward Posture

Repetition

Secondary Risk Factors

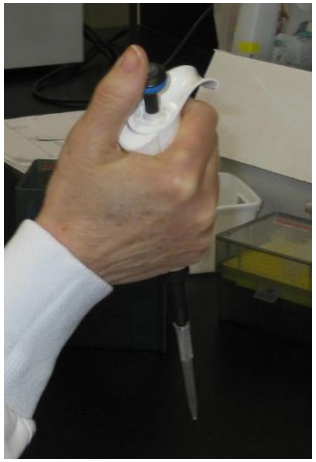
Temperature

Contact Stress

Vibration

Force (FAR)

- Amount of effort required to perform a task
- Lifting, pushing, pulling, and gripping a tool



Force required increases when:

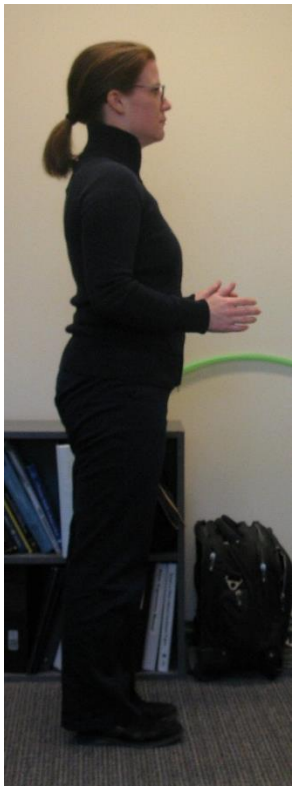
- Poor grasp on object
- Reaching for the object
- Unbalanced or awkward load
- Poor posture when exerting force

Solutions - Force

- Use carts (large wheels) that are well maintained
- Use two hands
- Push rather than pull
- Break-up load
- Keep the item close
- Get help

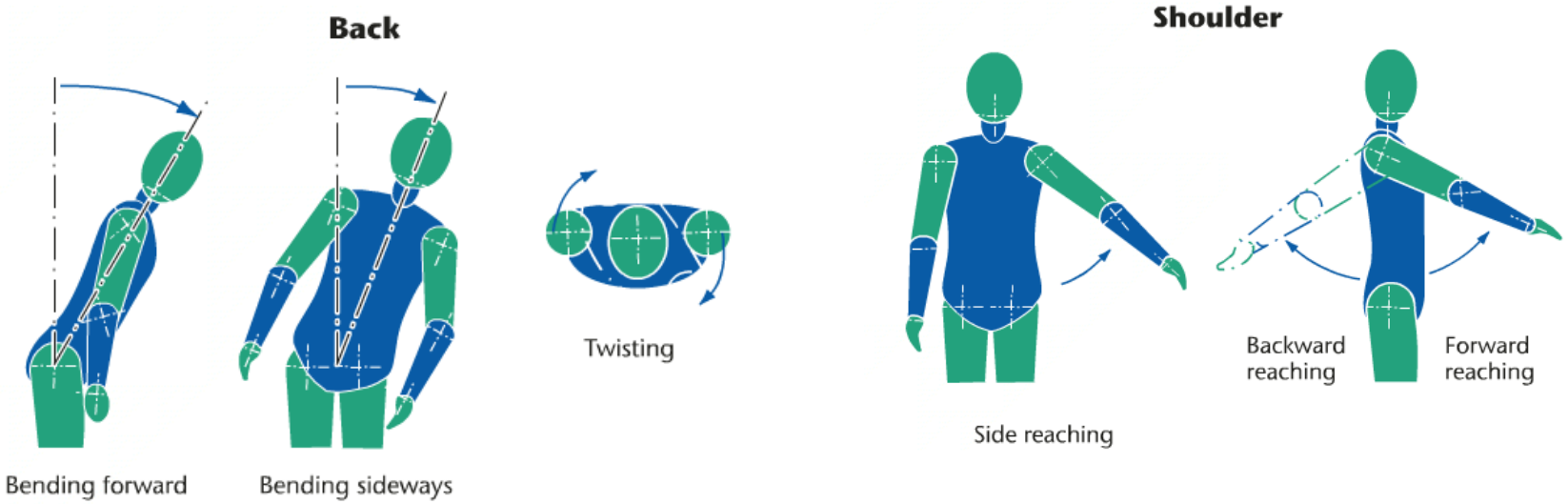
Awkward Posture (FAR)

- Maintain neutral working posture - least amount of stress



Awkward Posture (FAR)

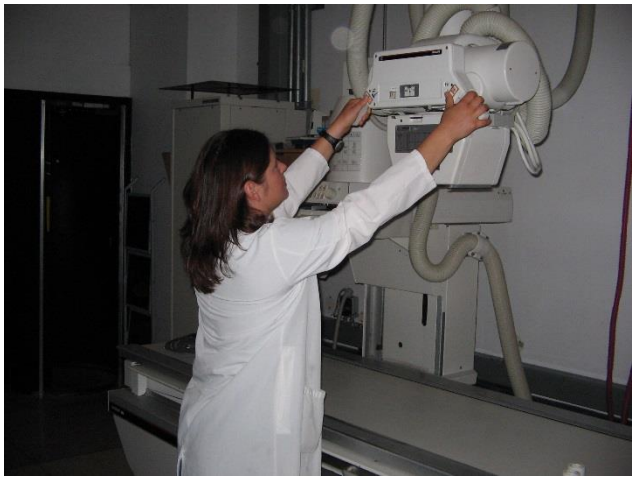
- Want to try to avoid or limit these postures

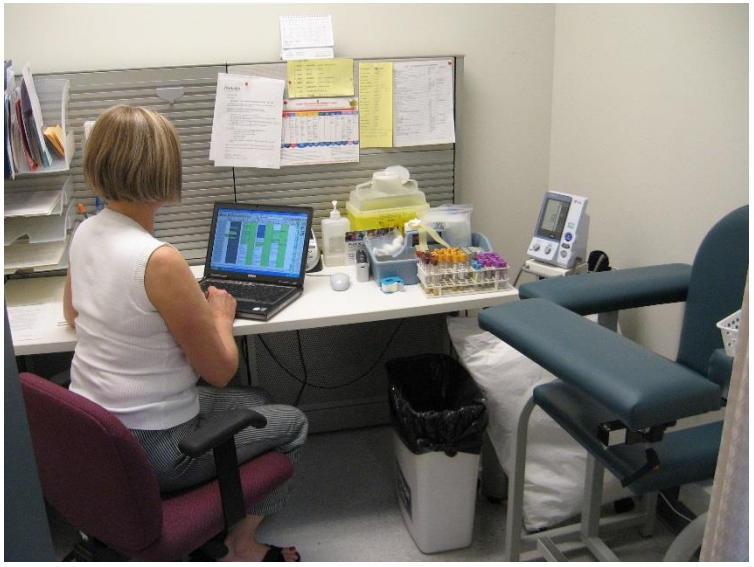


Solutions - Awkward posture

- Adjust workstation
- Bring frequently used items close to you to limit reaching
- Move your feet to avoid twisting (pivot)
- Nose in-line with toes to keep back straight
- Utilize tools to eliminate awkward postures

Awkward posture examples at work?





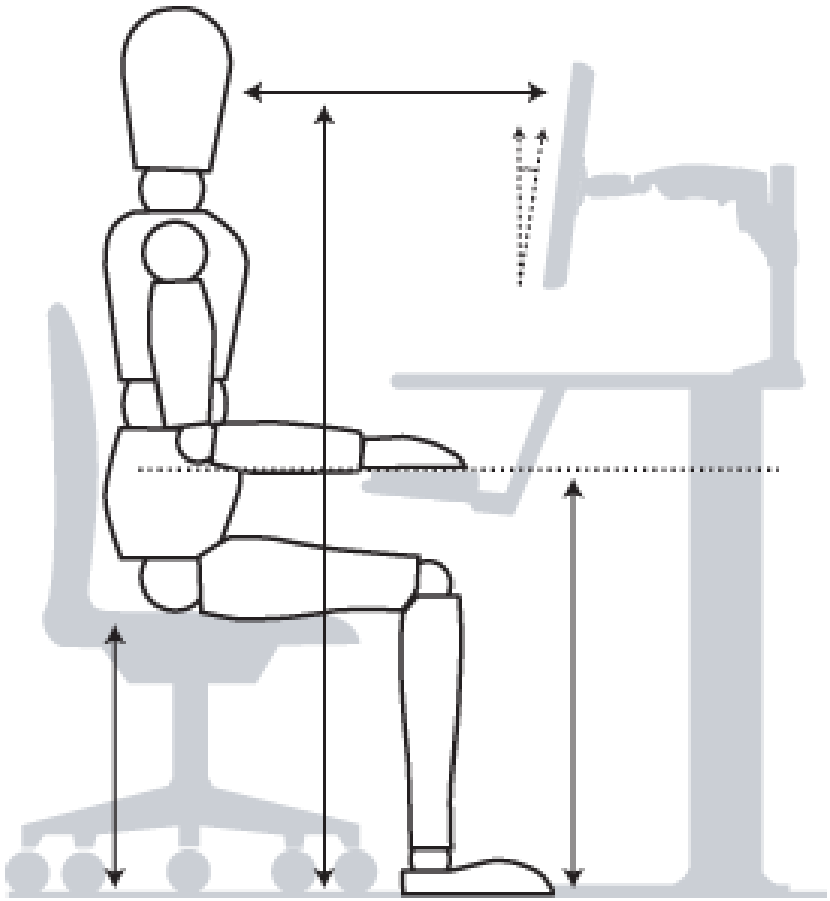
Repetition/Duration (FAR)

- Repetition - Task or series of tasks performed over and over again for a period of time
- Duration - Length of time a posture is held for
- Fatigue and soft tissue strain accumulate
- Tissues can recover if enough time between exertions

Solutions – Repetitive/Duration

- Switch hands
- Variety of tasks
- Take micro-breaks
- Shift weight often when standing
- Use proper body mechanics and come back to neutral postures
- Stretch!

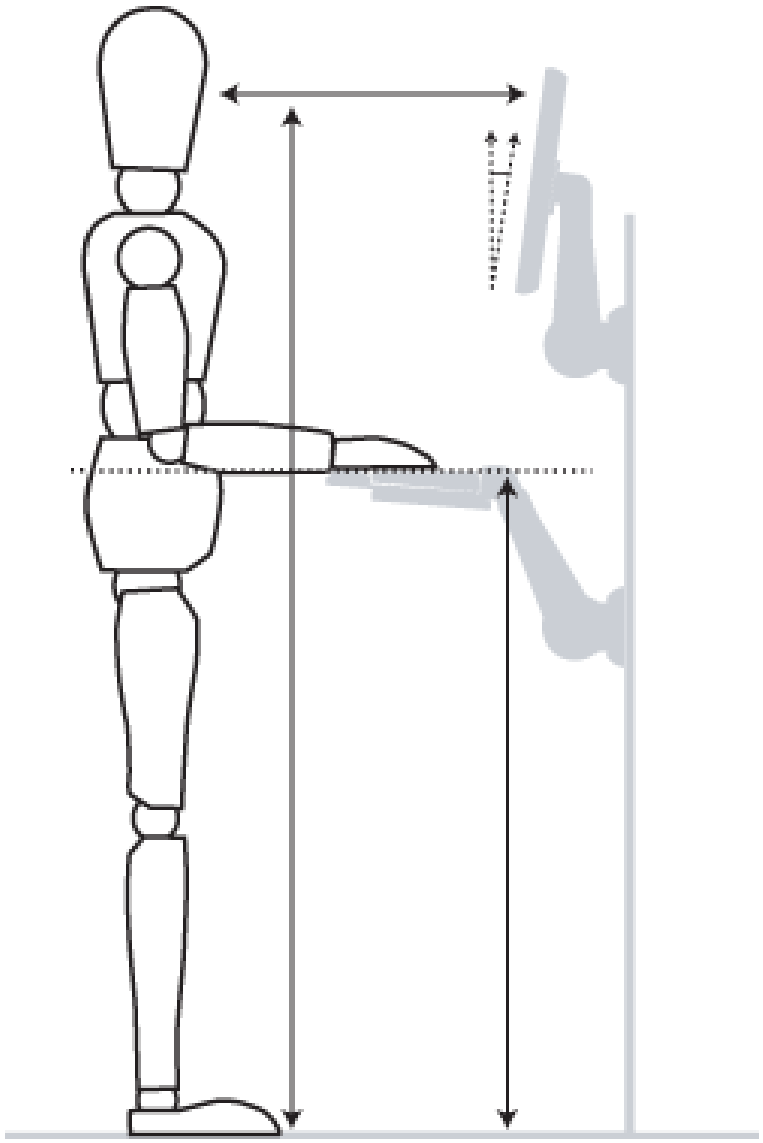
Seated Workstation



- Monitor directly in front neutral neck

Adjust Chair:

- 1-2 fingers between seat pan and back of knees
- Hip and knee angle: 90 degree or greater
- Elbows angle: 90 degrees

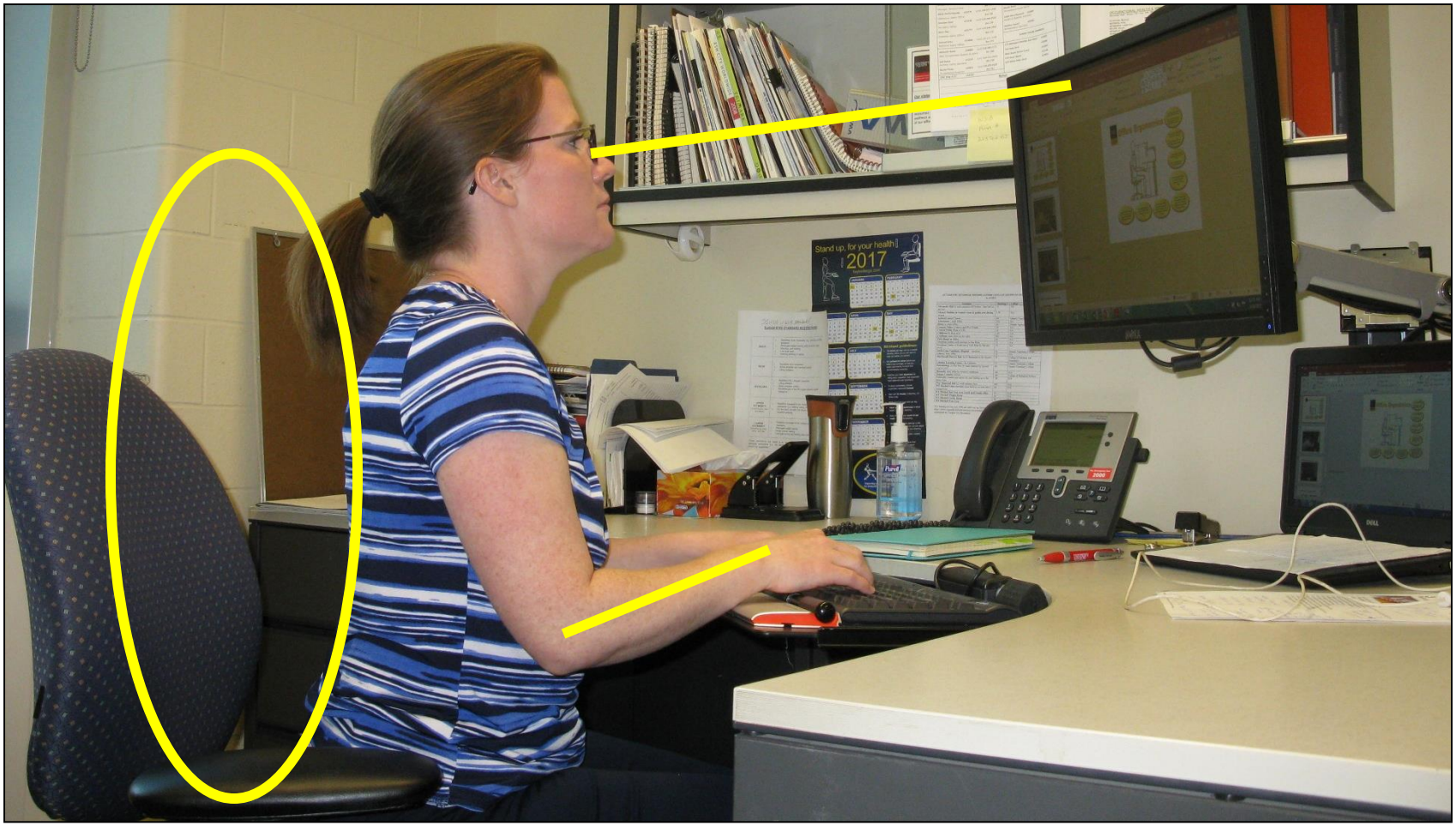


Standing Workstation

- Stand upright
- Monitor directly in front
- Neutral neck posture
- Elbows angle: 90 degrees

Vary between sitting and standing

Identify the hazard, propose a solution…



Solution…

Identify the hazard, propose a solution…

Solution…

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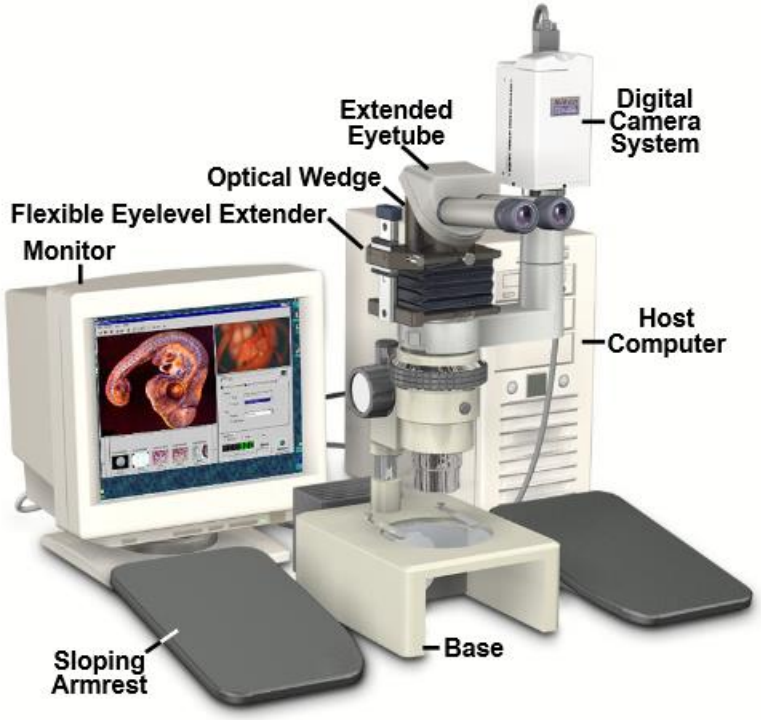
Solution…



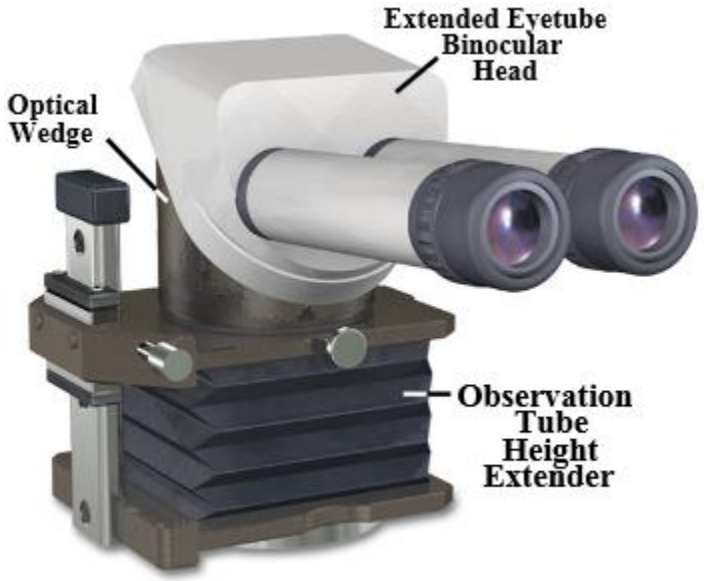


Image Source: https://www.microscopyu.com/microscopy-basics/basic-microscope-ergonomics

Tips for Laboratory Work - Microscope

- Adjust the height and angle of microscope
- Bring microscope to the edge of the table
- Work at an area with adequate space of legs
- Enlarge small hand tools (i.e. foam around them)
- Take breaks between utilizing microscope
- Focus on distant objects every 15 minutes

Tips for Laboratory Work - Pipetting

- Hold the pipette with a relaxed grip
- Use thin, flexible gloves that fit properly
- Use de-capping devices to open the micro-tubes
- Keep wrists straight

Tips for Ergonomics Everyday

- Take micro-breaks from sitting every 30-45 minutes
- Task rotation/variation
- Keep frequently used tools and supplies within close reach
- Review your workstation to see what can be modified to eliminate ergonomic concerns

Thank you!

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University of Guelph - Occupational Heath and Wellness

????? QUESTIONS?????