June 12, 2014
Wellness Lunch and Learn
University of Wisconsin-Green Bay
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**What is ergonomics?**

Ergonomics: arranging and adjusting the work environment to fit the employee’s body

- Fitting the job to the person who works in it

**Goal of Ergonomics**

- Finding ways to prevent musculoskeletal disorders (muscle & joint injuries) by surveying the workplace and taking preventive actions and/or addressing problems
GOALS OF THIS SESSION

• Identify ergonomic risk factors in the office that can cause musculoskeletal disorders

• Provide information so you can reduce or eliminate risk factors at your workstation that can lead to musculoskeletal disorders:
  o How to arrange your workstation
  o Self-assessment
  o Go over some office exercises
Occupational Risk Factors...

- **Awkward or Sustained Postures** - reaching, twisting, bending, holding fixed positions
  - *Static postures*
- **Forceful Exertions** - amount of physical effort required to complete task
- **Contact Stress** – continuous contact between a hard object and soft tissues
- **Repetition** – task or series of motions performed over & over
EXAMPLES

- Working in awkward postures like this
- Prolonged sitting and standing
- Working overhead
- Using a computer keyboard for several hours/day
- Driving for extended periods of time
- Heavy lifting
- Improper workstation arrangement
- Lifting in combination with twisting
- Pushing, pulling, carrying
- Resting wrists on desk edges for extended time
SITTING DISEASE

Sitting Disease by the numbers

Our modern sedentary lifestyles, both at home and in the workplace, are costly for us and for our employers.

Average hours of seated commute + average hours of seated homelife = too much sitting!

\[ \text{Average hours} + \text{Average hours} = 7.7 \text{ hours} \]
SITTING vs. STANDING
A Few Ergonomic Guidelines:

1. Work in neutral positions
   • Maintain s-curve of the spine
   • Keep the neck aligned
   • Keep elbows at sides & shoulders relaxed
   • Keep wrists neutral - keep hand in same plane as forearm

2. Work activities should permit worker to adopt several different healthy and safe postures

3. Avoid static positions for prolonged time
Neural Posture

- Fingers: curved
- Wrists: neutral
- Forearm: not rotated
- Elbows: at sides @ ~90+°
- Upper arm: relaxed at sides
- Shoulders: relaxed
- Neck: aligned
- Back: S-curve of spine
- Lower body
**GOOD WORKING POSITIONS**

**Upright sitting posture:** torso and neck are approximately vertical and in-line, thighs are approximately horizontal and lower legs are vertical.

**Reclined sitting posture:** torso and neck are straight and recline between 105 and 120 degrees from the thighs.

**Standing posture:** legs, torso, neck and head are approximately in-line and vertical.

**Declined sitting posture:** thighs are inclined with the buttocks higher than the knee and the angle between thighs and torso is greater than 90 degrees; torso is vertical or slightly reclined and legs are vertical.
Components of a Work Station

- Chair
- Monitor
- Keyboard/Mouse
- Work surface
- Phone/Accessories
USE A GOOD CHAIR

Backrest provides good lower back support

Arms adjustable or no armrests

Height and tilt adjustable back and seat

Front edge of seat pan curves down

Lumbar support

Seat pan adjustable horizontally and tilts

Height adjustable

Padded arms, adjustable and removable

On rollers

Five feet for base-most stable

Waterfall front edge

Easy to reach controls

5-caster base

University of Wisconsin
GREEN BAY
MY CHAIR

Backrest not fully adjustable

Armrests not fully adjustable
**Workstation Adjustments**

**Neck and Head**

- Eye level should be at top 1/3 of the monitor
- Monitor should be approximately arm’s length away
- Head & neck should be upright, relaxed and balanced between the shoulders
- If you use a **document holder**, it should be as close to the monitor as possible (beside or below)
Workstation Adjustments

Back

• Arrange your work so that you are looking straight ahead most of the time
  o Make sure keyboard & monitor are aligned and parallel with front of desk
• Sit back in your chair and rest your upper body against the backrest
• Change sitting positions often by leaning slightly forward and then slightly backward
Shoulders and Elbows

- Adjust your **chair** height or **keyboard** height so that your shoulders are relaxed and your elbows hang comfortably at your sides.
ELBOW & WRIST POSTURE

Typical desk top typing posture that increases muscle fatigue and injury risks.

Ideal Typing Position
WORKSTATION ADJUSTMENTS

Forearms, Wrists, and Hands

- Don't deploy rear keyboard feet
- Make sure that your hands are in line with your forearms
WORKSTATION ADJUSTMENTS

Forearms, Wrists, and Hands

• Use your whole arm and shoulder to move the mouse, not just your wrist
  o Don't rest or anchor your wrist while using your mouse
  o Keep your wrist, arm and shoulder free to move

RIGHT
Keep your wrist in a straight neutral position when using your mouse

WRONG
Don't angle your wrist when using your mouse
WORKSTATION ADJUSTMENTS

Forearms, Wrists, and Hands

• Move or exercise your hands often to relieve tension in the fingers, hands, wrists and forearms
• Sit close to the desk
• Do not put things between you and the keyboard except a gel wrist rest
WORKSTATION ADJUSTMENTS

Feet, Knees and Legs

- Knees should be about hip level and form a 90° angle between the thighs and lower leg

- Adjust chair or workstation height so that your feet rest firmly on the floor, or use a footrest

- If you use a footrest, be sure it is wide enough to accommodate different leg positions
**Workstation Adjustments**

**Desks**

- Work surface depth
- Location of frequently used items should be located in repetitive access zone

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*Recommended Zones for Workplace Components*
WORKSTATION ADJUSTMENTS

Eyes

• Your eyes should be at a comfortable viewing distance from the monitor (about arms’ length)
• Clean your monitor and glasses
• Use blinds or curtains to reduce the glare from windows
• Rest your eyes
• Look away from the screen every few minutes at a distant object
“Ergonomic” Equipment

Wrist Rests

• Pros
  o Maintain neutral wrist positioning
  o Reduce weight throughout shoulders
  o Softens the surface under the wrists

• Cons
  o Promotes anchoring at the wrist
  o Contact point on the wrist
WRIST RESTS VS. PALM SUPPORTS
“Ergonomic” Equipment

Keyboard Trays

• Pros
  - May adjust the keyboard height and angle to custom fit the user's needs
  - Allows for more posture changes

• Cons
  - May decrease knee clearance
  - May force longer reaches for other things
SITTING COMPUTER WORK STATION

- Use a good chair with a dynamic chair back; sit back in this
- Top of monitor casing 2-3” above eye level
- No glare on screen, use anti-glare filter where needed
- Sit at arms length from monitor
- Feet on floor or stable footrest
- Use a document holder, preferably in line with computer screen
- Wrists flat and straight in relation to forearms
- Arms and elbows relaxed and close to body
- Center monitor and keyboard in front of you
- Use a flat or negative tilt keyboard tray
- Use a stable work surface and stable (no bounce) keyboard tray
- Take frequent short breaks (micro-breaks)
**Standing Workstation**

**Standing Desk Ergonomics**
- **20° monitor tilt**
- **20-28” to screen**
- Table height should be at or slightly below elbow height

**Shoulders and Arms**
- Keep the shoulders relaxed – not “shrugged-up” or “slumped-down”.
- Keep your elbows close to your body.
- Keep work at about elbow height.

**Back**
- Stand straight – avoid situations that require bending (forward or backward), leaning to the side or twisting.
- A sit/stand stool will allow for changes in posture.
- For work performed while sitting, a backrest will help maintain proper posture.

**Head and Neck**
- Avoid situations that require twisting the neck or bending it forward, backward or to the side.

**Hands and Wrists**
- Keep the hands straight and in line with the forearms – avoid twisting hands.
- Avoid working with wrists pressed against sharp or hard edges.

**Feet and Legs**
- Placing a foot on a footrest or other support will promote comfort.
- Provide toe space to allow workers to stand closer to counters. This can reduce reaching.
- Good quality anti-fatigue mats reduce back and leg fatigue.

**The Basics of Neutral Working Postures**
Laptop Computers

Good ergonomic postures are difficult with a laptop

**Full-time users:**
- Use separate keyboard and mouse
- Position screen for optimal viewing

**Occasional users:**
- Position laptop for neutral wrist position
- Angle screen to minimize bending at the back & neck
- Modify your position regularly, especially if feeling discomfort
- Limit time spent on a laptop computer if you can’t relieve awkward postures
WHAT TO DO ??

PREVENT, PREVENT, PREVENT !!!

• Take frequent breaks from ANY sustained posture every 20-30 minutes = “micro-breaks”
  o Move
  o Stretch

• Change positions frequently

• Respect discomfort: change positions or stop painful activity

• Take a look at your workstation set-up
**What is a micro-break?**

- lasts from 30 seconds to a few minutes
- any activity that involves moving or walking; can do stretches too

**Why take a micro-break?**

- even with ergonomic workstation & proper work techniques, you cannot work 8-10 hours per day on your computer without exposing yourself to ergonomic risk and potential injury

**What are the benefits of micro-breaks?**

- releases built up tension and stress & helps combat fatigue and discomfort
- have a positive effect on productivity, problem solving and creativity
- several short breaks throughout the day are much more effective in reducing tension and stress than taking a few long breaks
- research has shown that frequent micro-breaks improves levels of comfort, work performance, and reduces the risks of musculoskeletal injuries
  - increases blood circulation
  - lowers blood sugars
  - stimulates metabolism
HELP YOURSELF
IT’S UP TO YOU

• Micro-Breaks
  o Every 20 - 30 minutes

• Walk/move

• Also important to stretch
  o Hip flexors
  o Hamstrings
  o Shoulders
  o Neck
  o Lower back
Tight Hip Flexors

Kneeling hip flexor stretch

Leg swings
Tight Lower Back

Opposite knee–opposite elbow

Torso rotation

Sitting lower back stretch
DESK STRETCHES

1. 3 sec., 3 times
2. 5 sec.
3. 5 sec., 2 times
4. 10 sec., 3 times
5. 15 sec.
6. 3 sec., each side
7. 3 sec.
8. 10 sec., each arm
9. 10 sec., 3 times
10. 3 sec., each leg
11. 9 sec., each leg
12. 15 sec.

These are stretches to do at your desk. This program will take 2 1/2 – 3 min.

ON THE JOB

Stretches
3 min.
- Always stretch and warm up before you exercise.
- Do not force.
- Do not hold.
- Get comfortable.
- See Stretching Instructions, pp. 77-84

Lift
5 min.
- Use a bar of weight.
- See Barbell Instructions, pp. 80-106

Move
10-20 min.
- Do anything that gets your heart rate up.
- See Aerobic Instructions, pp. 64-70

Bus in Place
20 min.

Walk during lunch
20 min.

Walk with weights
15 min.

Or
Climb stairs
3 times a day
My Work Stretches

Quad stretch

Lower back stretch

Hip flexor stretch

Hamstring stretch

Shoulder stretch

Chest stretch
WORKSTATION SELF-ASSESSMENT

Computer Workstation
Ergonomic Self-Assessment

Take a few minutes to look at your workstation. By answering a few questions, you can self-assess your workstation and help improve your working posture. If you indicate any adjustments or concerns that cannot be self-corrected with the information provided below, contact the UW-Green Bay Safety Manager.

To understand the best way to set up a computer workstation, it is helpful to understand the concept of neutral body positioning. This is a comfortable working position in which your joints are naturally aligned. Working with the body in a neutral position reduces stress and strain on the muscles, tendons, and skeletal system and reduces your risk of developing a musculoskeletal disorder.

- Hands, wrists, and forearms are straight, in line and roughly parallel to the floor
- Head is level, or bent slightly forward, forward facing, and in line with the torso
- Elbows stay in close to the body and are bent between 90° - 120°
- Back is fully supported with appropriate lumbar support when sitting upright or leaning back slightly

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UW – Green Bay Workstation Self-Assessment  Pg. 1  2014
Ergonomic Break

REMINDERS

Workrave
Free Download

EyeLeo

Short break!
Blink your eyes.

Big Stretch Reminder

(4:54 PM) RSI Tip: Position the monitor about arms length away and just below your line of sight.
Take Home Message

- Maintain neutral positions as much as possible
- Minimize extreme (awkward) postures
- Avoid contact stress
- Movement is critical; change positions
- Take breaks… MOVE and STRETCH!!

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MOVE

STRETCH

BREATHE
CORRECT & INCORRECT TECHNIQUES

Correct lifting technique
Incorrect lifting technique

The wrong way!
The right way!
Body Mechanics

- Use the largest joints & muscles to do the job
- Use 2 hands to lift rather than one, even with light objects and tasks.
- Avoid lifting w/ the forearm in full pronation (palm down) or supination (palm up)
- Slide or push & pull objects instead of lifting
- Keep reaching to a minimum
- Carry objects close to body at waist level
Quick tips to a healthier back

Following any period of prolonged inactivity, begin a program of regular low-impact exercises. Speed walking, swimming, or stationary bike riding 30 minutes a day can increase muscle strength and flexibility. Yoga can also help stretch and strengthen muscles and improve posture. Ask your physician or orthopedist for a list of low-impact exercises appropriate for your age and designed to strengthen lower back and abdominal muscles.

Always stretch before exercise or other strenuous physical activity.

Don’t slouch when standing or sitting. When standing, keep your weight balanced on your feet. Your back supports weight most easily when curvature is reduced.

At home or work, make sure your work surface is at a comfortable height for you.

Sit in a chair with good lumbar support and proper position and height for the task. Keep your shoulders back. Switch sitting positions often and periodically walk around the office or gently stretch muscles to relieve tension. A pillow or rolled-up towel placed behind the small of your back can provide some lumbar support. If you must sit for a long period of time, rest your feet on a low stool or a stack of books.

Wear comfortable, low-heeled shoes.

Sleep on your side to reduce any curve in your spine. Always sleep on a firm surface.

Ask for help when transferring an ill or injured family member from a reclining to a sitting position or when moving the patient from a chair to a bed.

Don’t try to lift objects too heavy for you. Lift with your knees, pull in your stomach muscles, and keep your head down and in line with your straight back. Keep the object close to your body. Do not twist when lifting.

Maintain proper nutrition and diet to reduce and prevent excessive weight, especially weight around the waistline that taxes lower back muscles. A diet with sufficient daily intake of calcium, phosphorus, and vitamin D helps to promote new bone growth.

If you smoke, quit. Smoking reduces blood flow to the lower spine and causes the spinal discs to degenerate.
Mayo Clinic

- Use proper body mechanics:
- **Stand smart.** Maintain a neutral pelvic position. If you must stand for long periods of time, alternate placing your feet on a low footstool to take some of the load off your lower back. Good posture can reduce the amount of stress placed on back muscles.
- **Sit smart.** Choose a seat with good lower back support, arm rests and a swivel base. Consider placing a pillow or rolled towel in the small of your back to maintain its normal curve. Keep your knees and hips level. Change your position frequently, ideally at least once every half hour.
- **Lift smart.** Let your legs do the work. Move straight up and down. Keep your back straight and bend only at the knees. Hold the load close to your body. Avoid lifting and twisting simultaneously. Find a lifting partner if the object is heavy or awkward. Learning to lift properly may be more effective at preventing a recurrence of back pain than a first episode.
Why Ergonomics?

To Prevent disorders of the soft-tissues such as muscles, tendons, nerves, blood vessels, & joints.

Common Office Environment Disorders:

- Carpal Tunnel Syndrome
- Tendonitis
- Back Strain/Sprain
- ...and others
Practice Wellness at Work and Home!

- **Exercise**
- **Nutrition**
- **Relaxation**

**Body**

**Mind**

**Spirit**