

LABORATORY ERGONOMICS

COURSE OUTLINE

- **Every week laboratory employees perform hundreds of different tasks:**
 - At different workstations.
 - Using different instruments/materials.
 - Employing different movements.
- **Each task makes a distinct set of demands on the body.**
 - Some tasks can lead to unhealthy strain/stress.
- **Ergonomics helps us look at these demands, examining:**
 - Our job.
 - Our work areas.
 - The instruments and tools that we use.
- **Ergonomics shows us how we can work most effectively and safely based on our own physical makeup, such as our:**
 - Height.
 - Leg size.
 - Arm size.
- **People's physical size and shape are important considerations when designing work areas and equipment.**
 - To work efficiently and safely, we must minimize stress on the body.
 - But often it is hard to design workstations and equipment that are perfect for everyone.
 - Frequently equipment is designed to fit "most" people.
- **Your work area needs to be customized for you.**
 - How you do it is up to you and your supervisor.
 - It will determine how hard your muscles and joints work.
- **Instruments and materials should be arranged to minimize unhealthy movements.**
 - "Overstretching" is common.

- **Specific things to avoid include:**
 - Long sessions of repetitive motion.
 - Irregular/extreme positions.
 - Overly heavy loads.
- **Positive work techniques can help with these problems.**
 - Stretching exercises can relieve muscle tension.
 - Keeping in "neutral" positions eliminates stressful or uncomfortable movements.
- **The "neutral" position for the wrist is a straight, "shake hands", position.**
 - This involves the least amount of stress.
 - It should be used whenever possible.
 - Other wrist positions can be harmful, especially when they are used over long periods of time.
- **The arms and shoulders also have a neutral position.**
 - Keep the upper arms to the sides of the body.
 - Have the forearms out at a 90° angle.
- **There are more opportunities to use neutral positions than you would think.**
 - Arranging workstation height correctly is the key.
 - You may need to raise or lower a chair.
 - If you are standing, you may need a small stool or platform.
 - Sometimes the work surface needs to be lowered.
- **Careful positioning of tools and materials is also important.**
 - Keep them in front of your body (this encourages neutral movements).
 - Never put supplies at extreme reaches.
- **Repeating the same movement many times can also cause problems.**
 - Vary work patterns when possible.
 - Take periodic "mini-breaks" to loosen tight muscles.
- **Don't use excessive force when performing a task.**
 - Applying a lot of pressure can lead to an injury.
 - Injuries can be especially harmful if you are not in a neutral position.
- **Much lab work is performed with gloves.**
 - So having the right fit is essential.

- **Some gloves can be too large or too thick. This:**
 - Forces you to grip objects too tightly.
 - Can lead to painful swelling of the tendons.
- **Gloves can also be too tight/stiff at the wrist. This:**
 - Can press on nerves, blood vessels and the "carpal tunnel".
 - Often leads to serious injuries.
- **The back and neck are especially vulnerable areas.**
 - Both should be considered when you are working in the lab.
 - Stress to either can lead to painful problems.
- **The back can be weakened in a number of ways:**
 - By improper lifting.
 - Through a fall.
 - By bad posture.
- **You should work to keep your back and neck in a neutral, straight position.**
 - Don't do any unnecessary bending or twisting.
 - If you start to strain, adjust your work space.
 - Getting materials closer to the body also helps.
- **Sitting is one of the most stressful positions for the back. The best positioning is to:**
 - Keep the lower back (lumbar region) comfortably supported by your chair.
 - Position your feet flat on the floor.
 - Keep your knees slightly higher than your hips.
- **You may need to make positioning adjustments from time to time, to reduce stress.**
 - For good lumbar support adjust your chair or use a pillow behind your back.
 - If your feet dangle, place them on a book or platform.
- **Lab stools often lack lumbar support, so you should:**
 - Shift your hips forward.
 - Use rails as footrests.
 - Take frequent "stretches" to loosen tight muscles.

- **Standing can be just as tiring to the back as to the feet and legs. For best ergonomics:**
 - Organize tools/materials so everything is in reach.
 - Avoid bending/stooping.
 - Periodically shift your weight from one foot to the other.
 - Use a footrest to keep one foot higher than the other.
 - Wear comfortable shoes with cushioned insoles.
 - Stand on cushioned, anti-fatigue mats (if they are available).
- **Proper lifting techniques are essential to the good health of your back and neck.**
 - Before lifting, examine the object for excess weight and balance.
 - Get close to the object.
 - Keep your back straight.
 - Bend slowly at the knees, not at the waist.
 - Get a good grip on the sides of the object.
 - Lift slowly with your legs (keep your back straight).
 - Balance the load on your chest.
- **There are also proper procedures for walking with an object.**
 - Keep the object close to your body.
 - Turn with your feet, don't twist your body.
- **To set an object down, reverse the process.**
 - Keep your back straight.
 - Bend with your knees.
 - Set the object down carefully.
- **If an object is too heavy or awkward to handle alone, don't risk injury... get help.**
 - Lift the object together with someone else.
 - Counting out loud can help coordinate your efforts.
 - If the load is still too heavy for you and a helper, get a cart, dolly or other equipment.
- **Exercise can also be helpful in avoiding ergonomic injuries.**
 - The body needs to stay conditioned to perform effectively.
 - Start the day off with warm-up stretching.
 - Do limbering exercises during breaks.
 - This will keep you comfortable throughout the day.

*** * * SUMMARY * * ***

- **Remember, you can eliminate aches and pains by paying attention to your body mechanics and work environment.**
- **Rearrange the materials you work with.**
- **Raise or lower work surfaces.**
- **Practice good lifting habits.**
- **Get plenty of exercise.**
- **Practicing good ergonomics provides insurance against injury!**