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ERGONOMICS

MODULE DESCRIPTION

This module explains the science of ergonomics and how to prevent ergonomic-related injuries and illnesses.

OBJECTIVES

After completing this module, students will be able to:

- Define ergonomics and explain its importance
- Explain risk factors affecting ergonomics
- Identify proper lifting techniques
- Discuss ways to apply ergonomics in everyday situations

MODULE OUTLINE

1. What is Ergonomics?
    - Ergonomics is the science of adjusting environments, tasks, or procedures to fit you, the individual.
    - When tasks or environments are not ergonomically designed, a hazard can be created. These hazards can have a negative effect on your body.
    - Poor ergonomics can result in many different types of injuries, including Muscoskeletal Disorders (MSDs)
    - MSDs are injuries or illnesses that affect your muscles, tendons, nerves, joints, ligaments, cartilage, and nervous system.
        - Cumulative trauma disorders, repetitive stress injuries, and repetitive motion injuries are common types of MSDs.
        - MSDs can impact almost any part of your body arms, wrists, hands, fingers, neck, shoulders, back, legs, and feet.
        - Symptoms of a developing MSD include: pain, swelling, numbness, stiff joints, tingling, or difficulty moving.
        - Two common MSDs are:
            - **Tendonitis** - inflammation of the tendons that connect bones to muscles.
            - **Carpal Tunnel Syndrome** a condition that occurs when the median nerve in the wrist is compressed.

2. Why Ergonomics Matters
    - The Department of Labor reports that nearly 600,000 workers miss work every year because of an MSD, accounting for more than one-third of all lost-workday injuries.

- The collective cost to employers, insurance companies, individuals, and the government is estimated at $50 billion each year.
- Understanding and practicing ergonomics allows you to:
  - Make your job less physically stressful.
  - Increase your safety and productivity.
  - Create a more comfortable environment.
  - Prevent injuries and illnesses.

3. Risk Factors Affecting Ergonomics
   - There are personal risk factors and task-related risk factors that can contribute to these hazards.
   - **Personal risk factors** may include physical condition, psychological stressors, gender, age, body size, or medical condition. These personal risk factors may make certain types of work more difficult and lead to an increased risk of injury.
   - **Task-related risk factors** are those specific to a job or task that increase the risk of injury to any person who may perform the job or task. Two general types of task-related risk factors are posture and biomechanics.
     - **Posture** refers to your body position. A safe posture is one that places the least amount of stress on your muscles and joints. This may also be referred to as a *neutral posture*.
     - When sitting, the best position for your forearms is parallel to the floor, keeping your elbows by your sides at a 90 angle. Your shoulders should be relaxed. Your wrists should not be bent. Your thighs should be parallel to the ground and your feet should be touching the ground or a foot rest with your ankles at a 90 angle.
     - Static and awkward positions are two of the most common types of unsafe postures putting a person at risk for injury.
     - To maintain good posture and reduce your risk of injury:
       - Adjust the height of your work surface.
       - Use a telephone headset.
       - Use a cushioned floor mat.
       - Place supplies and equipment within easy reach.
       - Use an ergonomically-designed chair.
       - Adjust the position of your computer components.
     - **Biomechanics** focuses on *body movements*. The human body is intended to work in a certain way, so when actions or movements cause stress on your body, you are at risk for developing injuries and illnesses.
     - You can reduce your risk by minimizing your exposure to the following specific task-related risk factors:
       - Force
       - Repetition
       - Compression or contact stress
       - Vibration
       - Quick motions
       - Cold temperatures
     - To protect yourself from injury related to biomechanics, you should:
       - Reduce the weight and size of items you lift.

- Use power tools when possible to avoid repetitive motions.
- Find ways to vary your tasks.
- Use personal protective equipment, like anti-vibration gloves, when needed.
- Avoid sudden movements, especially bending or twisting.
- Take short breaks from physical tasks so your body can recover.

4. Proper Lifting Techniques
    - The most common work-related medical problem is lower back pain, which is often a result of poor lifting techniques.
    - Safe lifting requires that you apply ergonomic practices for both posture and biomechanics.
    - To properly lift something:
        - Maintain an upright position (Dont bend or twist your back and keep your head up.)
        - Squat so that your body is bent at your knees, not your waist.
        - Get a good grip with both hands, holding the object close to your body.
        - Lift smoothly using your legs, not your back.
        - If you need to turn, move your feet, and dont twist your back.
    - To safely set the load down, simply reverse the lifting procedure.

5. Applying Ergonomics
    - Applying ergonomics to your everyday situations is usually simple. Pay attention to your body, understand the risk factors that affect ergonomics, and eliminate the hazards that could lead to an injury or illness.
    - Apply the following ergonomic solutions to relieve each upper torso discomfort:
        - **Back pain:** Use a safe lifting technique. Adjust your chairs lumbar support. Avoid awkward, twisting postures, excessive force, quick movements, and repetitive motions.
        - **Stiff neck:** Change position to avoid awkward or static postures.
        - **Shoulder pain:** Reduce excessive reaching or overhead tasks and avoid repetitive shoulder movements.
    - Apply the following ergonomic solutions to relieve each upper extremity discomfort:
        - **Sore or stiff arms:** Improve posture, avoid excessive force, and eliminate repetitive motions.
        - **Sore or cramped fingers:** Eliminate repetitive motions, excessive force, vibration, and intense gripping. Take breaks to give your fingers and hands time to recover from strenuous tasks.
        - **Hand pain:** Make sure you are using the right tool for the job and that the handle is the right size for your hand. Eliminate contact stress and excessive force activities.
        - **Wrist pain:** Maintain neutral postures and avoid repetitive motions. Adjust the height or angle of your work surface to help keep your wrists in the proper position.
        - **Elbow pain:** Dont rest your elbows on hard or sharp surfaces and avoid repetitive motions.
    - Apply the following ergonomic solutions to relieve each lower extremity discomfort:
        - **Cramped legs:** Take short breaks to stretch your legs or use an anti-fatigue mat if you are required to stand for long periods of time.
        - **Cold feet:** Walk around to increase circulation in your legs. Adjust the height of your chair

so your feet rest in a neutral position on the floor or foot rest.