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Ergonomics

Body Strain and Stress

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What is Ergonomics?

- The study of peoples efficiency in their working environment
- (how a body might react to its working conditions or repetitive motion)

- Can include the study of
  - Lifting and material handling
  - Musculoskeletal disorders
  - Workplace ergonomics
  - Mechanical injury

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What Does Ergonomics Involve?

- Using special design and evaluation techniques to make tasks, objects, and environments more compatible with human abilities and limitations

- Seeking to improve productivity and quality by reducing workplace stressors, reducing risk of injury and illnesses, and increasing efficiency

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Why Use Ergonomics?

- Ergonomical practices were developed to help prevent soft tissue injury and musculoskeletal disorders (physical stress) caused by sudden or sustained exposure to force, vibration, repetitive motion and awkward posture

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What are MSD's

- MSDs or muscular skeletal disorders are chronic injuries of soft tissue muscles, tendons, ligaments, nerves, joints and blood vessels

- Your body has limits, its important to understand the signs and symptoms of a developing MSD to prevent it from getting worse!

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Examples of Musculoskeletal Disorders (MSD's)

- Carpal Tunnel Syndrome
- Tendinitis
- Rotator Cuff Injury (shoulder)
- Epicondylitis (elbow)
- Trigger Finger
- Muscle Strains
- Lower Back Injury

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Why Use Ergonomics?

- Using ergonomic techniques has lead to:
  - Improved health and safety of workers
  - Higher morale in the workplace
  - Improved quality
  - Improved productivity
  - Improved competitiveness
  - Decreased absenteeism and turnover
  - Fewer workplace injuries and health problems

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The “Human Factor”

Combines research with human data

If something is uncomfortable, embarrassing or cumbersome to use, humans tend to not use it. It is important to design equipment that people want to utilize. There are a few factors that can affect use

1. Design
2. Workplace culture
3. Communication
4. Resources
5. Employee attitudes and personalities

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Factors for Developing MSD's

- Force
- Heavy Lifting
- Repetitive lifting
- Pushing or Pulling
- Carrying
- Gripping
- Awkward or prolonged postures
- Repetitive activities
- Overhead work
- Contact stress
- Vibration

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How to Mitigate Ergonomical Issues

1. Provide Management Support
2. Involve Workers
3. Provide Training
4. Identify Problems
5. Encourage Reporting
6. Implement Solutions to Control Hazards
7. Evaluate

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OSHA's Voluntary Ergonomics Guidelines

- There are different guidelines for different industries and are voluntary, but it is in the employers best interest to follow these guidelines to prevent missed days of work

- OSHA will frequently use general guidelines to enforce ergonomic safety

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Worksite Analysis

- Often your workplace will have a “professional ergonomist” or a team that can perform a worksite analysis and identify stressors
- They can provide solutions such as new equipment to help prevent repetitive motion injury

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How to Identify an Ergonomic Hazard

- Tasks that involve potentially hazardous movements
- Tasks that involve frequent manual lifting
- Tasks that involve excessive wasted motion or energy
- Tasks that are part of a poor operations flow
- Tasks that require unnatural or uncomfortable posture
- Tasks with high potential for psychological stress
- Tasks with high fatigue factor
- Tasks that could or should be automated
- Tasks that involve or lead to quality control problems

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Knowledge Check 1

What is an example of a bad ergonomic design?

A. Non Adjustable Work Surfaces
B. Hard standing surfaces
C. Repeatedly bending over to lift equipment
D. Crawling into a hole to fix equipment but needing to sit at a weird angle to reach
E. All of the above

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Knowledge Check 1

- What is an example of a bad ergonomic design?

A. Non Adjustable Work Surfaces

B. Hard standing surfaces

C. Repeatedly bending over to lift equipment

D. Crawling into a hole to fix equipment but needing to sit at a weird angle to reach

E. All of the above

Every one of these is a bad ergonomic design

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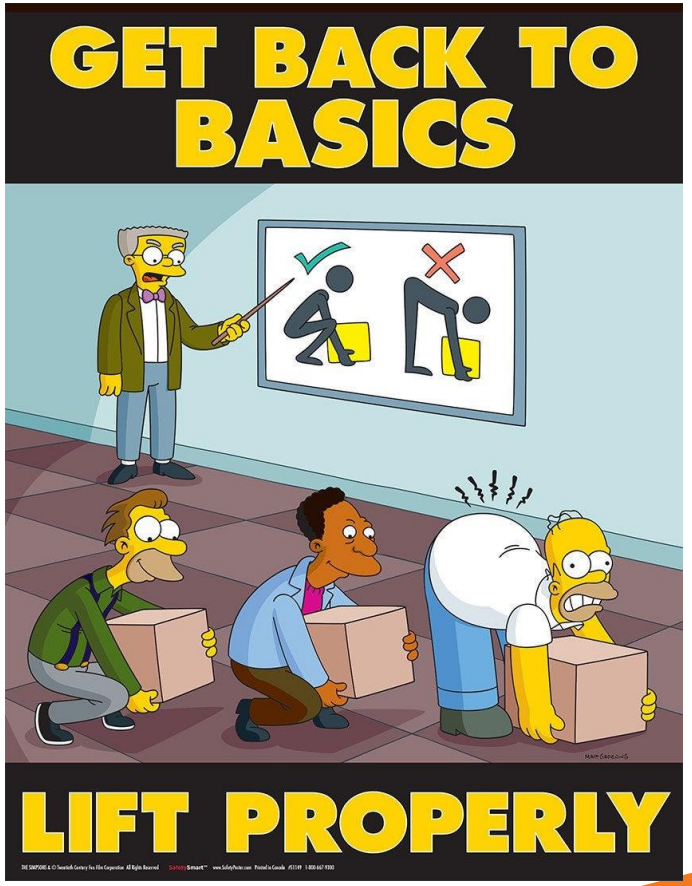
Lifting Hazards

- Back injury from improper lifting are the most common type of ergonomic injury
- Lower back injuries account for 20 to 25 percent of all workers comp claims
- This costs employers a lot of money



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Lifting Hazards

- Lifting should be limited, and usually employers have a single person weight limit of 50 lbs
- Carts and other lifting equipment should be utilized where appropriate
- Use team lifts for heavier items
- Use a lifting belt when appropriate
- ALWAYS LIFT WITH YOUR LEGS!

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Types of Ergonomic Solutions

- Anti-fatigue mats
- Specialized keyboards
- Specialized computer mice
- Office chairs
- Standing/ sitting desks

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Vibration Hazards

- Excessive and repetitive vibration (such as a hand tool) can cause “white fingers” or hand arm vibration syndrome (HAVS) where the exposure to vibration causes the blood vessels in hands to collapse

- It can also cause many other disorders that affect the nerves, blood vessels, muscles and joints and even can cause spinal injury

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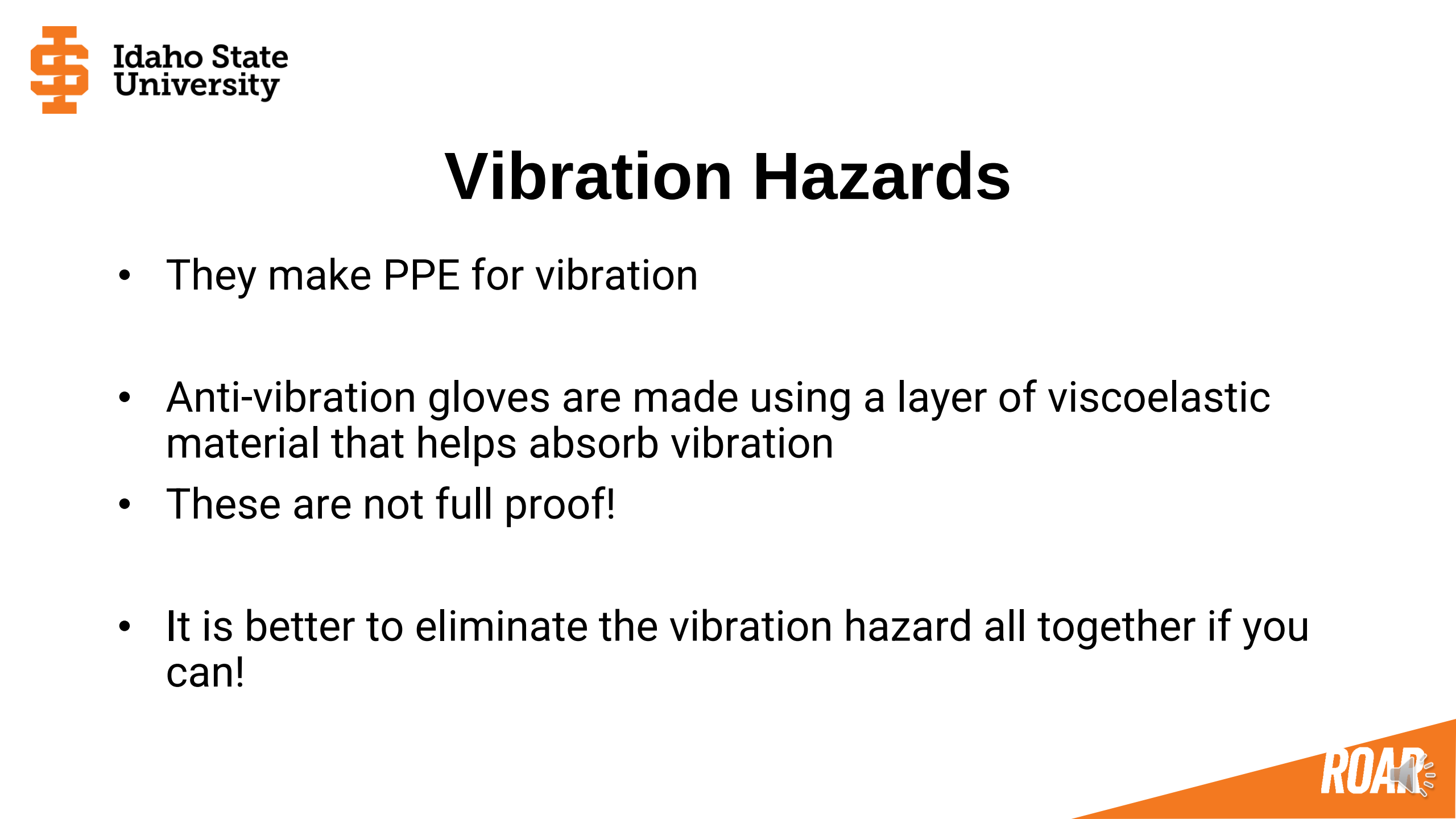
Vibration Hazards

- They make PPE for vibration

- Anti-vibration gloves are made using a layer of viscoelastic material that helps absorb vibration
- These are not full proof!

- It is better to eliminate the vibration hazard all together if you can!



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Noise Hazards

- Its no secret that repetitive exposure to noise at or above 85 dB for 8 hours can cause permanent tinnitus and/ or hearing loss

But

- It can also cause physical and psychological stress, reduce productivity, interfere with communication and concentration

- Excessive noise can also affect workplace safety as it can be easy to miss warning alarms or announcements

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You Might Have a Problem If…

- You hear ringing or humming in your ears when you leave work
- Experience temporary hearing loss while leaving work
- Have to shout to be heard while having a conversation with a coworker that is only an arms length
  - You should be able to have a conversation without raising your voice

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OSHA Standards

- OSHA requires employers to implement a hearing conservation program when noise exposure is at or above 85 dB averaged over 8 working hours
  - This should include a plan to measure current hearing loss, protect remaining hearing, and equip workers with training and PPE

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Noise Surveys

- If you suspect that your hearing might be at risk, ask for a noise survey

- A safety rep will take a noise measurement at different locations or you might wear a dosimeter to measure the average noise of your workplace over time

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End of Show

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