What is Ergonomics?
Ergonomics is defined as *fitting the job or task to the worker*. The goal of ergonomics is to reduce the risk of *musculoskeletal disorders* or MSD’s.

**MSD’s** are injuries to the muscles, tendons, and nerves that are caused by too much physical stress causing tissue break down (i.e. tendonitis, carpal tunnel, & rotator cuff syndrome).

**Phases of MSD**
- Acute
- Mild
- Moderate
- Severe

100% recovery ➔ Unable to regain normal

Risk for MSD increases with these hazards:
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- Awkward Postures- joints bent out of normal position
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- Hand-Arm Vibration- from power tools or equipment

*What can we do about it?*
*Think about tasks* that are uncomfortable or difficult to perform.
*Try solutions* (work technique, tools or equipment) to *make the task easier* to perform.
*Share your ideas* and ask others for ideas.

**WHAT IS ERGONOMICS?**

**ERGONOMICS IN CONSTRUCTION**

**Facilitator / Leader Tasks Before the Tool Box Talk (TBT):**
1. Read through this TBT guide.
2. Walk the job site to find ergonomics examples based on the TBT. If possible, take photos of “safe” and “unsafe” examples at the site to be used during the TBT.
3. Write down discussion questions to ask the group. Fill them in on page 2 “Other Questions.”

**Learning Goals:** After discussing this training topic, workers will have gained a general understanding of:
- Ergonomics
- Musculoskeletal Disorders - MSDs
- Phases of MSDs and the importance of using ergonomic solutions
- Injury Hazards that may cause MSDs.

**TRAINING CARD:**

**TRAINER’S TALKING POINTS:**

**What is Ergonomics?**
Ergonomics is the way you use your body to work and fitting the job or task to you to reduce your risk of injury. These *musculoskeletal* injuries develop slowly over time and occur in the soft tissues of your body like the nerves, tendons, muscles, ligaments and joints. Examples of these injuries are low back strain, carpal tunnel syndrome, and tendonitis. These injuries are called *musculoskeletal disorders or MSDs*.

**Why Should We Talk About Ergonomics in Construction?**
Ergonomics can help you protect your body from injuries. Using ergonomics during work activities makes the work easier on your body and often helps you find ways to do your work more efficiently.

**What are the Phases of MSDs?**
Unlike injuries from falls, electrocution, or other serious hazards, musculoskeletal disorders don’t seem very serious when they first show up. They *start with minor discomfort* in the early stages. These symptoms go away after a short break or at night when you don’t work. But returning to the same activity the next day brings back the symptoms.

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Your body can recover between these episodes of intense activity in the earlier stages when the symptoms are mild or moderate but eventually, your body won’t be able to recover to normal. Recognizing the problems in work tasks that cause these symptoms is the first step to eliminating them.

What are the risks of MSDs?
There are 5 common ergonomic hazards that may occur in work activities.

- **Repetition** - involves doing the same task repeatedly that uses the same muscles over and over.
- **High Force** - using high muscle power during activities such as heavy lifting, pushing items or gripping tools.
- **Awkward Postures** - working with your body held in a poor position for a long time.
- **Contact Stress** - when pressure from an object is pushed on the soft body tissues (i.e. tool handle).
- **Hand-Arm Vibration** - vibration that enters the body from a power tools or equipment.

One of these hazards performed over a long time can cause a problem but activities with more than one hazard can increase physical discomfort even more.

What can you do to prevent MSDs?
First you must **recognize the hazards in your work tasks**.

*Think about **tasks** that are uncomfortable or **difficult to perform**.
*Try **solutions** (work technique, tools or equipment) to **make the task easier** to perform.
*Share your **ideas** and **ask others for ideas**.

Note to the trainer: the table on the following page provides examples of several tasks, hazards, and solutions. If you have time, you can share them with the group. You may also post them for others to look at after the presentation.

**References:**

**Refer to the resources at our website: oshr.im.wustl.edu for more Tool Box TIPS.**
### ERGONOMICS IN CONSTRUCTION

**TRAINER’S TALKING POINTS**

*Training Note:* Here are examples of hazards in different construction trades. Choose your trade or one that is similar to your group’s line of work that can be used as hazard examples.

<table>
<thead>
<tr>
<th>Trade</th>
<th>Hands:</th>
<th>Whole body:</th>
<th>Hazards</th>
<th>Contact Stress</th>
<th>Hand-Arm Vibration</th>
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</thead>
<tbody>
<tr>
<td><strong>Carpenter - Drywall</strong></td>
<td>Gripping a utility knife with a dull blade to cut drywall.</td>
<td>Lifting a drywall sheet &gt; 100 lbs by yourself.</td>
<td>Operating a screw gun overhead with the arm fully extended and the wrist bent.</td>
<td>Driving screws into drywall every couple of seconds for 2 hours without brief rest periods.</td>
<td>During prep work, using a concrete saw to cut into the floor for more than 2 hours in a shift.</td>
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<td></td>
<td>Spreading adhesive using a hand trowel with the arm fully extended out to the side and the wrist bent.</td>
<td></td>
<td>Using the same arm motion repeatedly to spread floor leveler over an open floor for two hours without brief rest periods.</td>
<td>Kneeling on concrete without wearing kneepads.</td>
<td>Operating a walk-behind electric floor scraper that shakes the hands and arms for more than 2 hours in a shift.</td>
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<td><strong>Floor Layer</strong></td>
<td>During prep, gripping a hand scraper to scrape stuck VCT and glue off a concrete floor.</td>
<td>Push/pulling a pallet of ceramic tiles using a pallet jack with bad wheels.</td>
<td>Prepping duct parts on the floor while bending the back and reaching to work on them.</td>
<td>Shop work: Repeated, similar motions during deburring that occurs for 2 hours or more without brief rest periods.</td>
<td>Repeatedly using your palm to hit/assemble metal pieces together.</td>
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<td></td>
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<td></td>
<td>Operating a hand-held hammer drill to drill holes in concrete for more than 2 hours in a shift.</td>
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<tr>
<td><strong>Sheet Metal Worker</strong></td>
<td>Gripping snips to cut thick gauge metal.</td>
<td>Lifting a long piece of duct alone without the use of a handling device.</td>
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## ERGONOMICS IN CONSTRUCTION

### TRAINING ATTENDANCE SHEET

Training Topic: Ergonomics In Construction

Date:

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Directions for making laminated training cards:
1) Print out color copies of this sheet
2) Cut along the dotted lines
3) Fold each strip of cards in half (back to back)
4) Place folded cards in laminating pouch & slide through laminating machine (6 folded cards will fit in 1 pouch)
5) Cut out cards & punch a hole in the circle (top left corner)
6) Collect each week’s training card on a spring clip (small carabiner) to keep the series of cards together.