Washington University in St. Louis
School of Medicine

Tool Box TIPS
Training Injury Prevention Solutions
website: oshr.im.wustl.edu

1.0 ERGONOMICS IN CONSTRUCTION

Learning Goals: After discussing this training topic, workers will have gained a general understanding of:

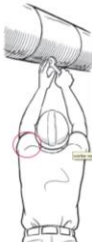
- Ergonomics
- Musculoskeletal Disorders - MSDs
- Phases of MSDs and the importance of using ergonomic solutions
- Injury Hazards that may cause MSDs.

TRAINING CARD:

◯ ***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:

Repetition- same task or muscles used repeatedly

High Force- high muscle power in lifting & gripping

Awkward Postures- joints bent out of normal position

Contact Stress- pressure pressed on small body area (examples: palm, knee, or forearm)

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*.

TRAINER'S TALKING POINTS:

What is Ergonomics?

Ergonomics is the way you use your body to work that causes injuries. These 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.

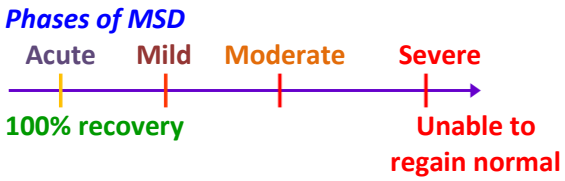
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TRAINER'S TALKING POINTS

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, 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 (ie tool handle)
- **Hand-Arm Vibration**-vibration that enters the body from a power tools or equipment

One of these performed over a long time can cause a problem but activities with more than one hazard can increase the 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:

1. Washington State Department of Labor and Industries. Caution Zone Checklist. http://www.lni.wa.gov/wisha/ergo/evaltools/CautionZones2.pdf
2. Washington State Department of Labor and Industries. Hazard Zone Checklist. http://www.lni.wa.gov/wisha/ergo/evaltools/hazardzonechecklist.pdf
3. Canadian Centre for Occupational Health and Safety. Pushing & Pulling – General. http://www.ccohs.ca/oshanswers/ergonomics/push1.html

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

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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.

Trade	*Hazards*[1,2]				
	High Force	**Awkward Postures**	**Repetition**	**Contact Stress**	**Hand-Arm Vibration**
Carpenter - Drywall	Hands: Gripping a utility knife with a dull blade to cut drywall. Whole body: Lifting a drywall sheet > 100 lbs by yourself.	Operating a screw gun overhead with the arm fully extended and the wrist bent.	Driving screws into drywall every couple of seconds for 2 hours without brief rest periods.	Repeatedly using your palm to hit the blunt edge of a metal stud into place.	During prep work, using a concrete saw to cut into the floor for more than 2 hours in a shift.
Floor Layer	Hands: During prep, gripping a hand scraper to scrape stuck VCT and glue off a concrete floor. Whole body: Push/pulling a pallet of ceramic tiles using a pallet jack with bad wheels.	Spreading adhesive using a hand trowel with the arm fully extended out to the side and the wrist bent.	Using the same arm motion repeatedly to spread floor leveler over an open floor for two hours without brief rest periods.	Kneeling on concrete without wearing kneepads.	Operating a walk-behind electric floor scraper that shakes the hands and arms for more than 2 hours in a shift.
Sheet Metal Worker	Hands: Gripping snips to cut thick gauge metal. Whole body: Lifting a long run of duct alone without the use of a handling device.	Prepping duct parts on the floor while bending the back and reaching to work on them.	Shop work: Repeated, similar motions during deburring that occurs for 2 hours or more without brief rest periods.	Repeatedly using your palm to hit/ assemble metal pieces together.	Operating a hand-held hammer drill to drill holes in concrete for more than 2 hours in a shift.

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ATTENDANCE SHEET

Training Topic: Ergonomics In Construction

Date:

ATTENDEES

NAME

NAME