



## 6.0 POWER TOOLS

### 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:

- Hand injuries related to power tool use.
- Principles of choosing comfortable hand tools.

### TRAINING CARD:

○ *W.U. Ergonomics – TIPS* **POWER TOOLS:**  
**Reducing Forceful Gripping & Hand-Arm Vibration**  
**1. Minimize Force:** Choose tools that will do the job easier than the alternative.

*Which tool is better for the task at hand?*



**Let the tool do the work for you.**  
Maintain a firm grip, not too tight.

**Work in a comfortable position.**  
Adjust your position or task height.  
Use a drill bit extension as needed.



### 2. Minimize Vibration

Choose power tools with **low vibration levels**  $\leq 5\text{m/s}^2$   
Reduce time using the tool by **alternating tasks**.  
Wear vibration **dampening gloves** or wrap handles.  
When possible, **attach tool to a fixture** or suspend it.

*Vibration dampening gloves*



*Over-head Drill Press*



### 3. Maintain Tools

**Change blades** before they become too dull.  
**Wipe & oil blades** and oil joints to prevent rusting.

### TRAINER'S TALKING POINTS:

#### Why should we talk about power tools?

*Minimizing forceful gripping and hand-arm vibration from operating power tools reduces your risk of musculoskeletal disorders (MSD) like carpal tunnel syndrome and tennis elbow.*

*Reduce your risk of MSD injury by following these 3 guidelines as best you can.*

**1. Minimize Force:** Choose tools that will do the job easier than the alternative.

**Choose the tool that is better for the task at hand** when you have a choice between using one tool or the other.

**Let the tool do the work for you.**

Maintain a firm grip, not too tight.

**Work in a comfortable position.**

Adjust your position or task height.

Use a drill bit extension as needed.

**2. Minimize Vibration:** Choose power tools with **low vibration levels** (Less than  $5\text{m/s}^2$ ).

Reduce time using the tool by **alternating tasks**.  
Wear vibration **dampening gloves** or wrap handles.  
When possible, **attach tool to a fixture** or suspend it.

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## TRAINER'S TALKING POINTS

Print a copy of this sheet for your workers to use a discussion guide for this portion of the talk. Bring 2 power tools to the talk to discuss their design qualities for use during the current job.

### Discussion Questions:

Tool Design Quality	If Yes, See Solutions	Solutions
For rotary based tools:  <i>Does the tool jerk the hand or wrist / over-torque it?</i>	Yes or No	When possible, use power tools <u>with a built in ratcheting system</u> that does not jerk/twist the hand/wrist.  <b><i>Do you have other solution ideas?</i></b> _____
<i>Does the tool weigh more than 2 lbs?</i>	Yes or No	When possible, operate the tool with 2 hands.  <b><i>Do you have other solution ideas?</i></b> _____
<i>Does the tool vibrate so much that the hand and arm shake when using it?</i>	Yes or No	Ways to reduce your exposure to vibration in tools include: 1. Purchase tools with built-in vibration dampening. 2. Use a jig or fixture to hold the tool in place when operating it. 3. Wrap the tool hand with vibration dampening materials.   4. Wear anti-vibration gloves.  
<p><b><u>Full finger gel</u></b> is helpful for high impact and gripping power tools with full finger contact.  <b><u>Half finger gloves</u></b> are good for moving between power tool use and fine dexterity tasks (Ex. drilling and threading fasteners).            Glove Examples: <a href="http://www.impacto.ca">www.impacto.ca</a>            See Construction Solutions for examples:  <a href="http://www.cpwconstructionolutions.org/">http://www.cpwconstructionolutions.org/</a></p>		

### • **Other Discussion Questions:** \_\_\_\_\_

**References:** 1. Canadian Centre for Occupational Health and Safety. Hand Tool Ergonomics – Health Hazards. <http://www.ccohs.ca/oshanswers/ergonomics/handtools/hazards.html>. 2. Rempel D, et al. 2010. Field Evaluation of a Modified Intervention for Overhead Drilling. *Journal of Occupational and Environmental Hygiene*, 7: 194–202. 3. Cal/OSHA. Ergonomic Survival Guide for Carpenters and Framers. [http://www.dir.ca.gov/dosh/dosh\\_publications/erg\\_CarpFramer.pdf](http://www.dir.ca.gov/dosh/dosh_publications/erg_CarpFramer.pdf).

Refer to the resources at our website: [oshr.im.wustl.edu](http://oshr.im.wustl.edu) for more Tool Box TIPS.



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.

○ W.U. Ergonomics – TIPS **POWER TOOLS:**

**Reducing Forceful Gripping & Hand-Arm Vibration**

**1. Minimize Force:** Choose tools that will do the job easier than the alternative.

*Which tool is better for the task at hand?*



Let the tool do the **work for you**. Maintain a firm grip, not too tight.

Work in a **comfortable position**. Adjust your position or task height. Use a drill bit extension as needed.



**2. Minimize Vibration**

Choose power tools with **low vibration levels**  $\leq 5m/s^2$

Reduce time using the tool by **alternating tasks**. Wear vibration **dampening gloves** or wrap handles. When possible, **attach tool to a fixture** or suspend it.

*Vibration dampening gloves*



*Over-head Drill Press*



**3. Maintain Tools**

**Change blades** before they become too dull. **Wipe & oil blades** and oil joints to prevent rusting.

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