U.S. ARMY PUBLIC HEALTH CENTER

FS No. 88-029-0821

# PROPER USE OF HAND TOOLS

Hand tools, in one form or another, are used in all occupations, and are designed to extend and reinforce the range, strength, and effectiveness of a person's upper limbs. However, poorly designed tools can result in exposure to risk factors, such as nonneutral positions, mechanical compression, vibration, and forceful exertions, which can lead to injuries, accidents, and work-related musculoskeletal system disorders. The duration of exposure to these risk factors may also affect the worker by increasing local and generalized fatigue and tissue stress.

**SHORTCOMINGS IN HAND TOOL DESIGN ARE GENERALLY EASY TO IDENTIFY AND CORRECT:**

- Use tools designed for the task.
- Use lightweight, well balanced, or counter-balanced tools.
- Use a tool balancer, holder, or jig if prolonged use or holding is required.
- Use powered hand tools whenever possible.
- Use the best grip for the task. For example, use the power grip to generate force and a pinch grip for precision tasks.
- Use only tools that have the appropriate handle thickness, shape, and length for the job.

Source: U.S. Navy photo by Canadian Forces CPO 2 David Hooper. Cleared for Public Release.

- Use tools with compressible, nonconductive handles without sharp edges.
- Select tools that minimize stress on muscles and tendons. You should be able to keep the wrist in a neutral or relaxed position during tool use.
- Allow for adequate finger clearance if trigger use is required, or increase the size of the trigger so more than one finger can be used.
- Properly calibrate and maintain all tools.

Tool handles should—

- Distribute the hand force over the entire handle.
- Be comfortable to hold with rounded edges.
- Reduce compression on the hands.
- Be long enough so the handle extends past the palm of the hand.

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If a tool is used with gloves, choose a handle thickness, shape, and material to allow safe comfortable use with the gloves.

**Correct size:** If gloves are too big, it will reduce your grip strength and you have to use more effort to keep the glove from slipping off the tool handle. If they are too small, the gloves will restrict movement.

**Flexibility:** Stiff gloves require extra effort and energy to flex and bend the hand.

**Grip Surface:** Gloves should have a grip surface so items will not slip or shift in your hand.

**FINDING OUT MORE:**

APHC FS No. 88-037-0821, Work Related Musculoskeletal Disorders
APHC FS No. 88-001-0820, Carpal Tunnel Syndrome