

## Ergonomics Tips: Pushing and Pulling Safely

Poorly designed materials-handling tasks include those that most workers cannot perform without overexertion. These tasks may also include excessive bending, reaching or twisting of parts of the body. The Department of Defense Ergonomics Working Group offers these tips on how to properly push and pull various objects to avoid injury.

### To eliminate the need to push or pull, use:

- Conveyors (powered and non-powered)
- Powered trucks
- Lift tables
- Slides or chutes

### To reduce the force required to push or pull:

- Improve the handhold or grip on the handle
- Reduce the size or weight of the load
- Use four-wheel trucks or dollies
- Use non-powered conveyors.
- Require that wheels or casters on hand trucks and dollies have periodic lubrication of bearings, adequate maintenance and proper sizing (e.g., provide larger diameter wheels and casters)
- Maintain floors to eliminate holes and bumps
- Improve the sole of the shoe to increase the shoe's grip on the floor surface

### To reduce the distance of the push or pull:

- Relocate receiving, storage, production or shipping areas
- Improve production process to eliminate unnecessary material handling steps

### To optimize the technique of the push or pull:

- Eliminate one-handed pushing or pulling tasks
- Provide variable-height handles so that both short and tall people can maintain an elbow bend of 80 degrees to 100 degrees
- Make sure wrists are not fully pronated (palm down) when pulling
- Replace a pull with a push whenever possible
- Use ramps with a slope of less than 10 percent
- Keep the load within shoulder to mid-thigh (standing) vertical range