

Materials Handling: Pushing, Pulling & Carrying

Most work involves moving materials around the facility. Commonly, there is a central staging area from where supplies are distributed to separate work areas. This can involve pushing, pulling, and lifting materials, sometimes with the help of a hand truck or utility cart.



The following hazards may exist when workers transport materials around the worksite:

- [Awkward Postures](#)

[Forceful Exertion](#)

Awkward Postures

As:

Awkward postures such as reaching above the body, bending forward and to the side, and twisting when pushing and pulling materials may lead to muscle strain and spinal

injury. Arcs that are too high or too low require extra effort.

As:

Workers should know the [correct postures](#) to use when using these tools.

When using transport devices with appropriate handles, these handles should be in the [power zone](#) (see Figure 2) when pushing and large enough to support the entire hand. There should be no sharp edges or rough spots that could cut or pinch a worker's hands.

Pushing when possible. Pushing takes less effort than pulling. Your body weight is used to assist in pushing. Also, pulling a load often tends to run into the shins or ankles. Pulling tends to misalign your spine, bow your back, and open yourself up to strains and sprains.

Use vertical handles instead of horizontal handles



Figure 1
Worker twisting in an awkward posture



Figure 2
Pushing in the power zone

to allow workers of different heights to maintain neutral postures.

- Do not stack materials on a cart higher than eye level so that you do not have to bend to the side to see around the load. Workers should be able to easily see over the top of the load.
- Use [stair-climbing hand trucks](#) to transport materials up and down stairs.
- Limit the weight of loads to limit the necessary pushing force. For example, the [IEC](#) recommends limiting the weight of loads so that the required pushing force remains less than 50 pounds. The greater the force that is necessary to push the load, the greater the risk of injury.

Forceful Exertion

Is:

transport devices with
y functioning wheels (Figure 3)
wing materials more difficult
ssary.

more force to guide a hand cart
r-inflated or unevenly
d tires may put stress on a
rms, back, and legs.

rts or hand trucks over bumpy,
ain or up and down stairs may
orkers to abrupt, jarring impacts
cause shoulder and back



Figure 3
Uneven, thinning wheels
on a hand truck

tions:

heels when they become
uneven.

[d trucks or carts](#) with
t wheels (Figure 4) for moving
er bumpy, uneven terrain or up
stairs.

air pressure of pneumatic tires
em to the recommended



Figure 4
Pneumatic tires

[port devices](#), such as hand trucks and pallet jacks, and know the
[stures](#) to maintain when using these tools.

- Provide workers with access to elevators or ramps so they can avoid stairs and bumpy ground.
- Use [powered hand trucks](#) with stair-climbing and self-leveling abilities when stairs can not be avoided.
- Develop good housekeeping practices to ensure that floors are clean so there is minimal resistance.
- Wear shoes with good soles to maintain firm footing.
- Reduce the size of the load you carry when going up and down stairs to reduce the force required to transport loads.
- Use curb ramps that allow the worker to easily push the transport device over curbs.