

Manual Material Handling

Definition

- ✦ Any transportation or supporting of a load by hand or bodily force
- ✦ Any activity or sequence of activities that requires a person to use their physical body to perform a work.
- ✦ Include: Lifting, lowering, pulling, pushing, carrying, moving, sliding or stacking (things, animal or person)

Facts

- ✦ Manual Material Handling is the most common cause of occupational fatigue and low back pain.
- ✦ About 3 of every 4 employees whose jobs includes MMH suffer pain due to back injury at some time.
- ✦ Such back injuries account for about one third of all lost work and even more than one third of all compensation costs.
- ✦ Every year several thousand workers are permanently disabled by back injuries. Many others are unable to return to their former jobs. Their lives are disrupted.

Health effects on MMH

- ✦ **Immediate effects:** include accidental injuries and fatigue. Fatigue is a common and expected effect of MMH. Where the pace of work is not too high, workers can find enough time between tasks to recover their energy, but when working at fast pace the time between the task is short and does not allow the workers to restore energy. As a result workers who try to maintain such a fast pace may become increasingly tired as the shift progresses. Fatigue not only causes instant and obvious discomfort, but its effects add up over time. These injuries can later develop into chronic conditions that can become difficult to treat effectively. Additionally, fatigue decreases worker's alertness, making them more likely to act without due caution. This, in turn, increases their risk for accidents.

Health effects on MMH

- ✦ **Long term effects:** one of the most common is “chronic back pain” and can result from various causes. The most common causes are strains and cramps in the back muscle. A worker can sustain a back injury from a single episode such as lifting too heavy load, slipping and falling, or receiving a blow to the back. However, most often is not the single episode that causes back injuries, it is the repetition, as in manual handling, that contributes most to the occurrence of injuries. Recovery from back injuries can take long time and further injury may occur, making the problem worse.

Statistics on lifting injuries

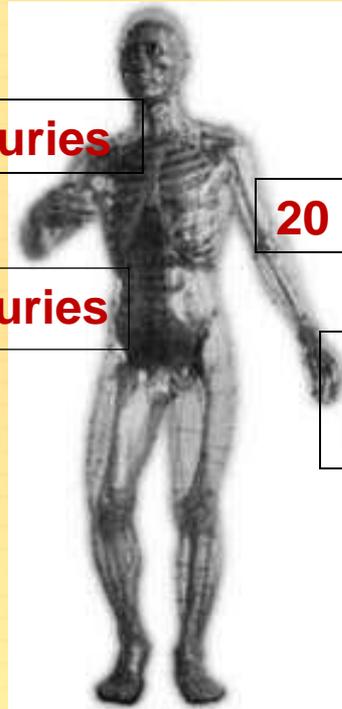
✦ Lifting injuries are not just back injuries

30 % Shoulder Injuries

20 % Elbow Injuries

43 % Lower Back Injuries

13 % Hand/Wrist Injuries



Back injures

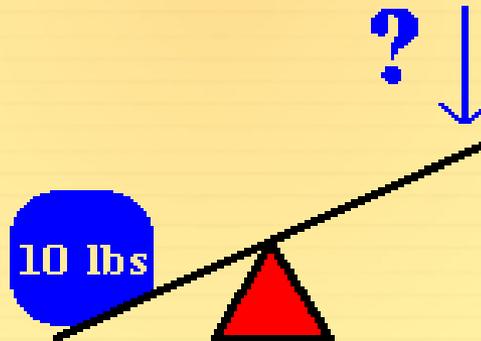
- ✦ The force involved: Every time you bend or lean to pick up something up, you put tremendous pressure on your lower back....



Why do they occur?

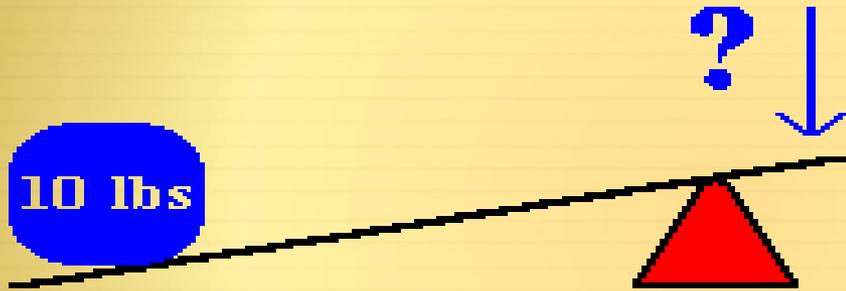
- ✦ The forces involved: Think of your back as a lever. With the fulcrum in the center of the lever, how many pound would it take to lift a 10 pounds object:

5 pounds
10 pounds
15 pounds



It takes 10 pounds of pressure to lift a 10 pounds object

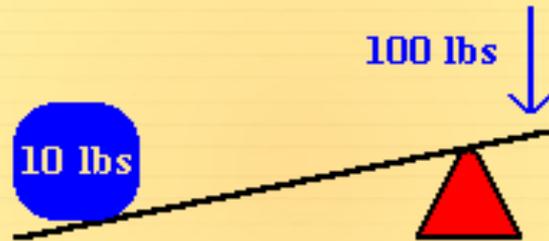
Will it take more or less force to lift the same 10 pound object with the fulcrum shifted to one side?



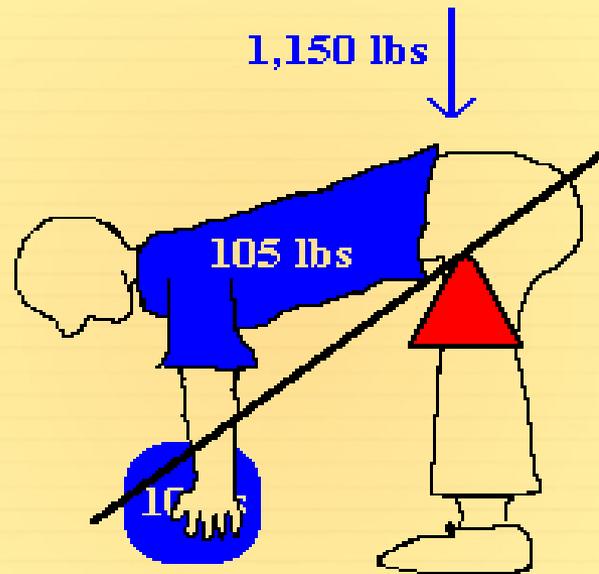
✦ You're right!!!

With the fulcrum shifted away from the object, it takes more force to lift the object.

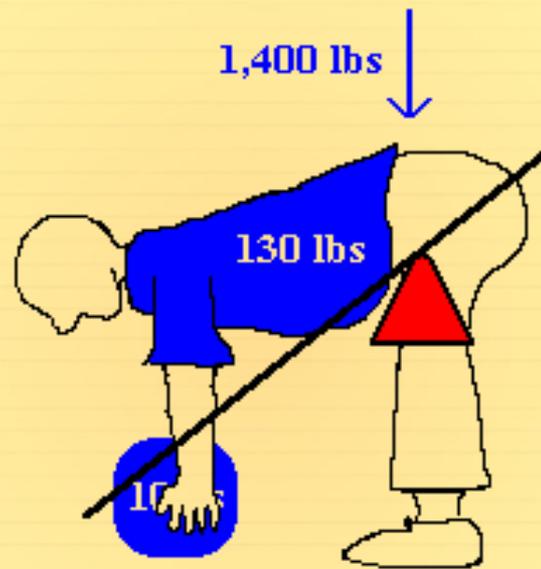
The human back operated on a 10:1 ration with the waist acting as the fulcrum



- ✦ When you add in the 105 pounds of the average human upper torso, lifting a 10 pound object puts 1150 pounds of pressure on the human back

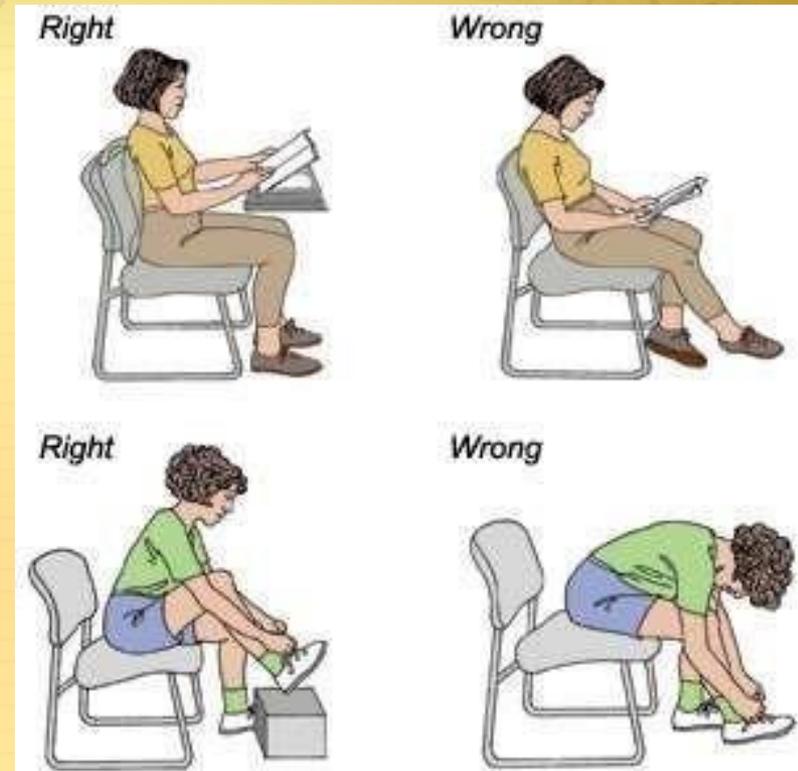


- ✦ If you were 25 pounds overweight, it would add an additional 250 pounds of pressure on your back every time you bend over.



✦ Now it's easy to see how repetitive bending and lifting can quickly cause back problems

✦ Even leaning forward while sitting at a desk or table can eventually cause damage and pain



Poor Physical Condition

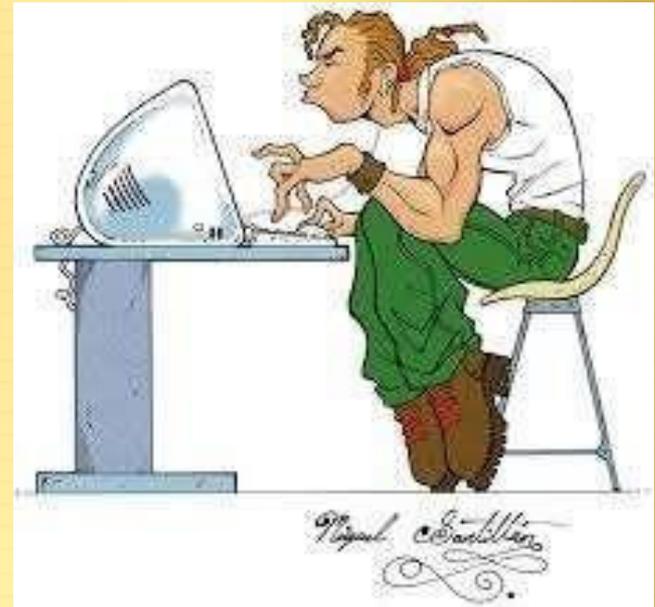
Your stomach muscles provide a lot of the support needed by your back. If you have weak, flabby stomach muscles, your back may not get all the support it needs, especially when you're lifting or carrying heavy objects.

Good physical condition in general is important for preventing strains, sprains and other injuries.

Injuries

Poor posture

Is another contributing factor. When your mother told you to sit and stand up straight, she was giving you good advise. It is best to try to maintain the back on its natural “S” shape curve. You want to avoid leaning forward (unsupported) when you sit, or hunching over while you’re standing

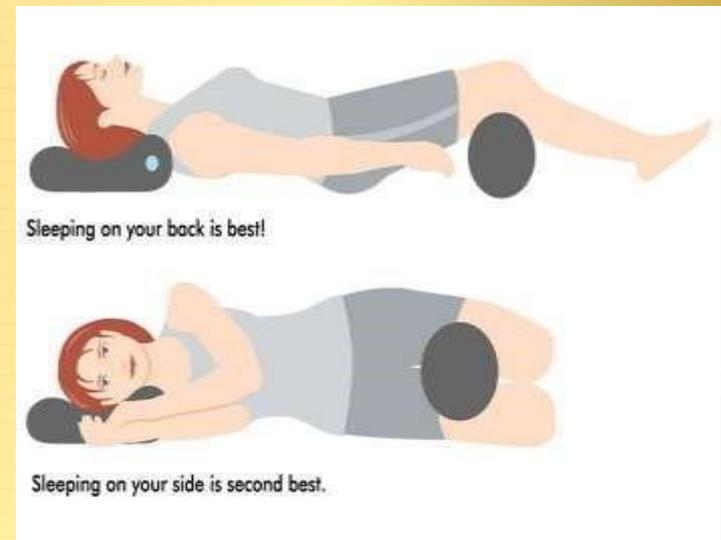


Injuries

Bad position when sleeping

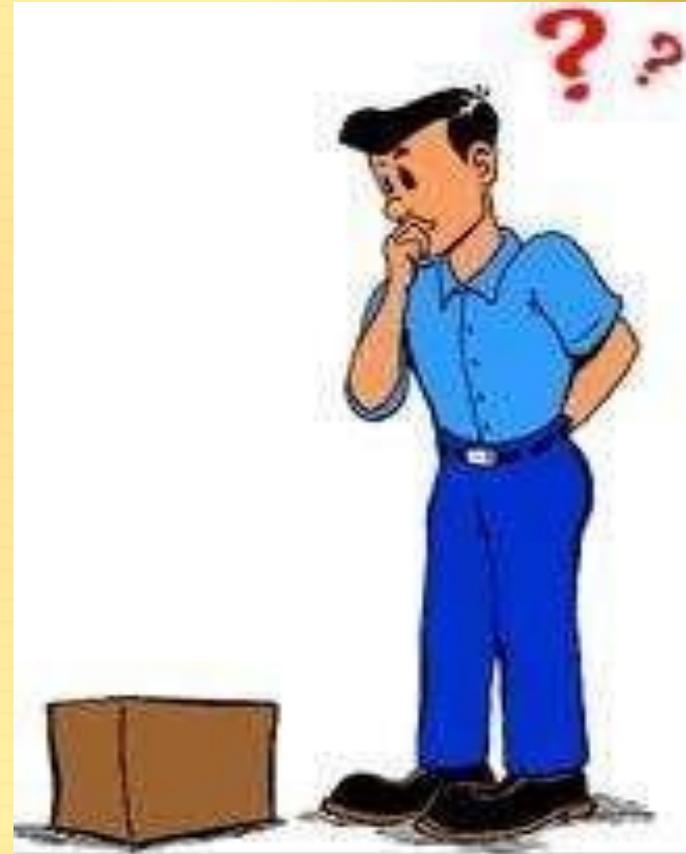
Some people suffer back pain because they sleep in a bad position, or because their mattress is too soft. When is generally recommended as the best position for your back?

- On your stomach or back (with legs level)
- On your side (with knees slightly bent) or on your back (with pillow under your knees)



Material Handling Tips

- ✦ Check the object before you attempt to lift
- ✦ Pushing object lightly with hands or feet to see how easily moves
- ✦ Remember, a small size does not always mean a light load.
- ✦ Think about the weight, size and shape of the object and the distance you will be moving it
- ✦ Think about the route you'll be taking: any stairs, doors, obstacles?



Material Handling Tips

- ✦ If the load is too heavy for you to lift or move get assistance
- ✦ Ask another employee for help
- ✦ Use an appropriate mechanical aid (pallet jack, forklift, hand cart, dolly, etc.)



Lifting Properly

Get close to the load as

Have feet shoulder width apart, with the load between them

One foot slightly in front of the other for balance

Have the object close to the body and put less force on the low back

Avoid rapid, jerky movements

Lifting Properly

Keep yourself in an upright position while

squatting to pick up.

Squat down, bending at
the knees (not your waist)



Lifting Properly

Tightening the stomach helps support the spine



Do not hold your breath

Get a firm grasp of the object before beginning the lift

Use both hands, the whole hand, no just fingers Use gloves as needed to prevent “pinched” grips or to protect the hands during lift.

Lifting Properly



Legs are the strongest muscles in the body

Avoid back flexion

Hold objects close to the body

Flex the knees and hips, not the back

Avoid bending and twisting at the waist

Try to keep the back straight during the lift

Never bend, lift and twist at the same time

Lifting Properly



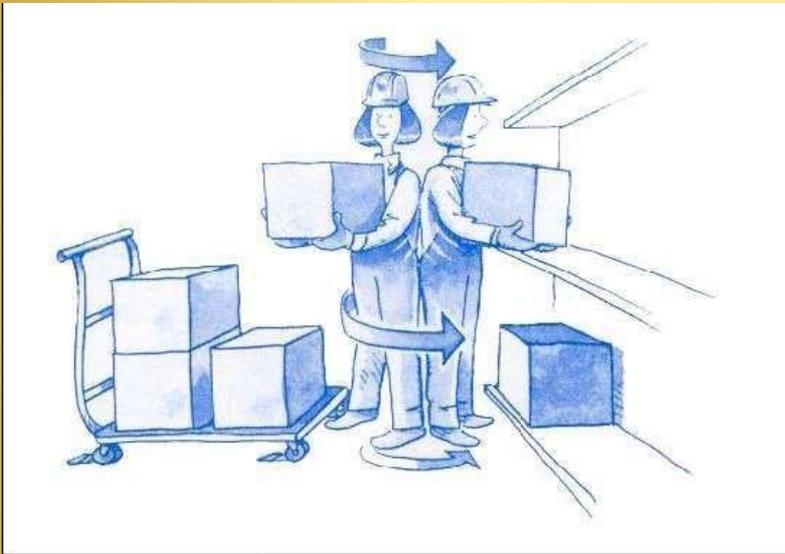
Once lift is complete, keep object as close to your body as possible. As the load's center of gravity moves away from the body, there is a dramatic increase in stress to the lumbar region of the back.

Set load down if you're losing your grip.

Keep back as straight as possible.

Lifting Properly

Pivot with your feet, not your back



Avoid twisting, your feet, knees and torso should always be in the same direction

When twisting you add strain to the back's disc, muscles, ligaments and tendons.

Two person Loads

Both people should be about the same height



One person should charge of the lift, so that you are working together not against each other

Lift together, walk in step and lower the load together

Make sure you lift at the same time and keep the load level

Lifting Do's and Don'ts

DO:

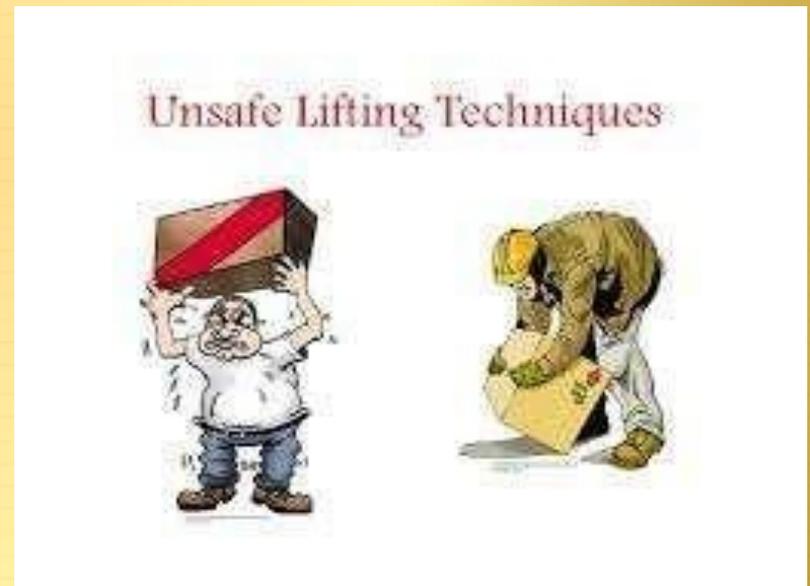
- Know or test the object weight
- Use ergonomic lift to assist when possible
- Plan the lift and clear your path
- Get help for heavy or awkward loads
- **Keep the object in the power zone**
- Use a wide stance for balance
- Use your legs to lift
- Pivot your feet to avoid twisting



Lifting Do's and Don'ts

Don'ts:

- Don't hold your breath
- Don't bend or twist at the waist
- Don't use a partial grip
- Don't obstruct your vision when carrying
- Don't jerk or lift quickly
- Don't pinch your fingers or toes
- Don't pull a load if you can pushing
- Don't forget to wear proper PPE



Tips

- ✦ Stretch first
- ✦ Maintain back posture and conditioning
- ✦ Use available lifting equipment
- ✦ Have a lifting plan
- ✦ Use your legs
- ✦ Always think about your back
- ✦ Know your body's limitation



**Questions or
Comments?**