Back Injury Prevention Program
# Back Injury Prevention Program

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OVERVIEW

The Occupational Safety and Health Administration reports over 1 million workers each year are affected by back pain. Back pain is second to the common cold in causing days away from work. Economically, low back disorders in the United States cost between 50 and 100 billion dollars each year. An estimated 11 billion dollars of those costs are covered by Workers’ Compensation, with an average claim costing $8,250. That is more than twice the average of all other types of compensable claims combined. Most of these back problems can be prevented by using proper lifting techniques.

OSHA does not have any specific training requirements that cover safe lifting practices. However, OSHA is able to cite employers under its General Duty Clause when workers have excessive back problems.

The General Duty Clause reads:

(a) Each employer-

(a) (1) shall furnish to each of his employees employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious physical harm to his employees;
(a) (2) shall comply with occupational safety and health standards promulgate under this Act.
(b) Each employee shall comply with occupational safety and health standards and all rules, regulations, and orders issued pursuant to this Act which are applicable to his own actions and conduct.
Lifting Techniques

Here are some basic lifting techniques that should be followed at all times. These techniques are:

- Size up the load before you lift. Test by lifting one of the corners or pushing. If it's heavy or feels too clumsy, get a mechanical aid or help from another worker. When in doubt, do not lift alone!

- Bend the knees. *This item is the single, most important aspect of lifting.*

- Place your feet close to the object and center yourself over the load.

- Get a good hand hold.

- Lift straight up, smoothly and let your legs do the work, not your back!

- Do not twist or turn your body once you have made the lift.

- Make sure beforehand that you have a clear path to carry the load, and a place to set it down.

- Set the load down properly.

- Always push a load on a cart or dolly, do not pull it.

- If it's a long load, get some help.

- Split the load into several smaller ones when you can.

**Note:** After these techniques are presented to the employees, the trainer should have someone demonstrate the proper method of knee bend and lifting. This is an easy exercise to do and it assures that all employees understand the proper lifting techniques.
Back Pain

A few things can be done if back trouble is experienced. Obviously, rest is one of them. However, pain that does not go away after a few days or a feeling of numbness in an employee’s lower limbs could indicate a serious problem, and then it’s best to seek medical attention.

For on-the-job relief, try these techniques:

- If employees are sitting for extended periods, they can get up and stretch periodically.
- When standing, employees can shift their foot position often, and avoid leaning to one side.

Note: Now would be an important time to discuss accident reporting. Instruct employees on how and to whom injuries should be reported. Also, reinforce to employees that feedback on workplace safety is important. If there is any input they can give to improve the ergonomics in the workplace it would be appreciated.

Work Site Policies

If you have specific company policy on back pain or injury, this would be the time to present it in detail to your employees.

- If your company has specific ergonomic practices or mechanical lifting aids, this is a good time to explain and demonstrate their use.
- Let the trainees know if you have a limit on the weight that they are allowed to lift manually.
- Remember, employees that operate fork trucks need to be trained and certified in fork truck operation.
Causes of Back Pain

There are several causes of back pain. These include strains, sprains, and ruptured, herniated or slipped disks. It is important to explain these injuries to the employees. Injury descriptions:

**Back Sprain**- This is when the ligaments which hold the bones together are stretched too much or torn. Pain and tenderness is felt in the affected area and movement increases the pain. The joint will swell up and bruising may develop.

**Back Strain**- This is when a muscle in the back is torn or pulled. The affected area may gradually become stiff and movement makes it worse. Their may also be swelling and bruising.

**Ruptured Disc/Slipped Disc/Herniated Disc**- These are three commonly used names for one type of injury. The disc is a jelly-like substance that is located between the vertebrae of the spine. This substance acts as a shock absorber for the spinal bones. If employees do not lift properly they put indirect pressure on this disc. This causes the disc to degenerate and eventually rupture. Occasionally a single excessive strain will cause the disc to rupture. Once ruptured, the disc will apply pressure to nearby nerves. This will result in pain. It will also result in numbness and/or weakness in the neck, hand, shoulder, buttocks, legs or feet.

Contributing Factors

There are several factors that contribute to the risk of sustaining a back injury. These factors are:

**Poor Physical Condition**- A persons abdominal muscles provide most of the support needed by the back. If employees are overweight and have weak stomach muscles, their back will not get the support needed when lifting heavy objects. This will result in strains, sprains and other injuries.

**Smoking**- Smoking limits the amount of oxygen and nutrients available to spinal discs. Oxygen and nutrients are needed for the discs to remain healthy and heal when injured.

**Stress**- When muscles are tense, they are more susceptible to strains and spasms. It is important to take time to relax.
Aging- As a person ages their back can be affected by: osteoporosis or decreased amount of bone, decrease in strength and elasticity of muscles, and decrease in elasticity and strength of ligaments. These effects cannot be halted but their progress can be slowed by regular exercise, knowing the proper way to lift and move objects, proper nutrition, and avoidance of smoking. Aging also effects a persons discs. Discs have a high water content. As people age the water content decreases, so the disc begins to shrink and the spaces between the vertebrae come narrower. In addition, the disc itself becomes less flexible.

Postures while sleeping, standing, and sitting- Employees should know that the proper way to sleep is on one's side with knees bent or on one's back. Sit with knees higher than hips, and hips located near the rear of the chair. Employees should stand with their shoulders back and the S curve over the pelvis. Employees should avoid leaning forward when they sit or hunching over while standing.

Twisting or Turning

Twisting and turning while lifting adds strain to the back's discs, muscles, ligaments, and tendons.

- Employees should plan their lift so they don't have to place themselves in awkward positions as they lift and carry a load.

- If employees lose their grip while carrying something, they should set down the load instead of trying to twist and turn or juggle the load to regain their grip.

- When employees keep their back as straight as possible it, stays properly aligned so it can work as it was intended to.

Grip

Discuss the proper grip employees should take while lifting.

- Employees need to be able to get a good grip.

- Is there a clean, dry place for employees to get a full grip on the load with both hands?

- Is the load obviously too heavy for one person?
• Company's lifting weight restrictions should be followed.

• If employees do not know how much the load weighs, they can test the weight by carefully pushing or lifting at one of the corners.

• If the load is too heavy, employees may be able to break it up into smaller loads, use mechanical handling equipment, or get someone to help them.

• Employees should never try to lift something that is too heavy. If an employee is working with a partner, have a procedure so they both know to lift at the same time to keep the load balanced.

• Before an employee makes a lift, he/she need to make sure they have a clear path and a place to set down the load. If they will not be able to see over the load while carrying it, they'll need help to move it.

Lifting Posture

Employees should know the proper lifting posture.

• Bend the knees. This causes the legs to do the lifting instead of the back.

• Center the body over the load.

• Lift straight up.

Lowering the Load

Explain to employees that when lowering the load, bend the knees and slowly lower it. Do not drop the load to the floor.

• Avoiding sudden movements is one way to prevent back injuries while carrying a load. When employees are ready to set down the load, they need to let their leg muscles support the weight by bending at the knees as the load is lowered.

• It's just as heavy on the way down as it is on the way up.

• If employees are working with a partner, they both need to lower the load at the same time to keep the weight balanced.
Pushing vs. Pulling

Discuss pushing the load versus pulling the load.

- If employees are moving something on a cart or hand truck, it's easier on their back to push the load.
- This also makes the load easier to control as it rolls along.

Planning Ahead

When lifting on the job site employees need to understand that before they make a lift they should plan ahead.

- This includes placement of loads on racks. Avoid using the lower racks for moderately heavy to heavy items or awkward items.
- Cover the need for a partner when lifting heavy, awkward, or long items.
- Go over sizing up the load. Can it be split into multiple loads? Smaller loads will cause less strain on the back.
- Discuss the material handling equipment available, such as forklifts, hoists, dollies, and any other equipment for material handling in your facility.
Lifting Mechanics

The amount of force that can be placed on an employee's back can be somewhat surprising. Any time an employee bends over to lift something tremendous pressure is put on their back.

An employee’s back acts as a lever. With the fulcrum located in the middle of the lever it only takes 10 lbs of force to lift a ten pound object. (see picture above)

But, an employee’s waist is not centered when they bend over to lift something. So it takes much more force to lift the object. The human body acts on a 7:1 ratio. Lifting a ten pound object actually puts 70 pounds of pressure on an employee's lower back.
But, the weight of the human torso must also be taken into account. The average human torso weighs approximately 100 lbs. So when lifting a 10 lb object a person actually puts 770 lbs of pressure on their lower back. (see picture above)

If a person were 25 lbs overweight, it would add an additional 175 lbs of pressure on their back every time they bent over. (see picture above)
Quiz - Lifting Techniques

1. When lifting a load, you want to:
   a. Turn at the waist.
   b. Bend your knees.
   c. Lift at an angle.
   d. None of the above.

2. Which of the following is a guideline for proper lifting?
   a. Size up the load before trying to lift.
   b. Always pull a load on a cart, do not push it.
   c. Set the load down by using your back.
   d. Grip with just your fingertips.

3. When back pain doesn’t go away and/or you have numbness in your lower limbs; you should:
   a. Ignore it and continue with normal activities.
   b. Seek medical attention.
   c. Self-treat with hot or cold packs.
   d. None of the above.

4. When lifting an object, you should:
   a. Use straight legs.
   b. Use your back.
   c. Bend your knees.
   d. Move your feet away from the object.

5. Injuries to the muscles and ligaments can be:
   a. Sprains.
   b. A cause of back pain.
   c. Strains.
   d. All of the above.
6. Proper lifting techniques include:

a. Bending knees, not twisting at the waist, and having a clear path.
b. Bending knees, jerk the load up, and drop the load when setting it down.
c. Getting a helper, straight legs, and twisting at the waist.
d. Bending the knees, getting a helper, and pulling the load across the floor.

7. You should get a helper when the load is:

a. Awkward.
b. Very long.
c. Heavy.
d. All of the above.

8. The part of the body which absorbs the weight of the object when lifting is the:

a. Arms.
b. Back.
c. Legs.
d. Neck.

9. You can size up a load before you lift it by:

a. Testing the weight by lifting at one of the corners.
b. Carrying the load to a scale to weigh it.
c. Asking someone else if they think it is too heavy for you to lift.
d. Looking at the size of the load.

10. Relatively minor strains over time or repeated injuries:

a. Heal rapidly.
b. Can accumulate to result in a more serious injury.
c. Strengthen the back muscles.
d. Both a and c.

11. Before you lift:

a. Clear your path.
b. Clear an area to set down the load.
c. Have a good grip on the load.
d. All of the above.

12. Stress and tension:
   a. Increase the amount of weight you can lift.
   b. Can contribute to back pain.
   c. Cause almost all back injuries.
   d. Improve productivity.

13. Following a regular exercise program:
   a. Makes it safe to twist while you lift.
   b. Makes it safe to lift a long, awkward load by yourself.
   c. Can stretch and strengthen your back muscles.
   d. Is a leading cause of back injury.

14. Company guidelines for weight limits:
   a. Let you know when you should use mechanical lifting equipment.
   b. Only apply to loads that are lifted on a regular basis.
   c. Can be ignored if you have someone to help you lift the load.
   d. Any of the above.

15. Forklifts and hoists:
   a. Should be used for loads that are unsafe to lift manually
   b. Should be operated by people who have had appropriate training.
   c. Are designed to safely lift and move heavy loads.
   d. All of the above.

16. Poor posture:
   a. Can put stress on back muscles.
   b. Moves the spine into a more comfortable position.
   c. Does not contribute to back injuries.
   d. All of the above.

17. Bend your knees when you pick up and set down a load:
   a. To get the best grip with your hands.
b. To get your large leg muscles ready to support the load.
c. So you can keep the load low to the ground.
d. To keep from dropping the load on your feet.

18. When you work with a partner to lift a load:

a. Use signals to lift and lower the load at the same time.
b. Put your partner at the heavy end of the load.
c. Have the strongest partner set down the load first.
d. Both a. and b.

19. Dividing a heavy load into several smaller ones:

a. Is always unsafe because you have to lift more often.
b. Takes too much time.
c. Is a safer way to move a heavy load.
d. None of the above.

20. Sudden twisting motions while lifting:

a. Can keep you from dropping the load.
b. Can cause an injury.
c. Help you work faster.
d. Won’t injure your back if you exercise.
Answers

1. B
2. A
3. B
4. C
5. D
6. A
7. D
8. C
9. A
10. B
11. D
12. B
13. C
14. A
15. D
16. A
17. B
18. A
19. C
20. B