

**Lesson:** Manual Lifting

- Lesson Objectives:**
- Describe the anatomy of the back
  - Identify causes of back pain and five risk factors for back injuries
  - Demonstrate proper lifting techniques
  - State specific engineering and administrative controls that OSHA suggests

- Topics:**
- Anatomy of the Back
  - Back Injuries
  - Proper Lifting Techniques
  - Controlling Hazards

**Topic: Anatomy of the Back**

In this topic you learned about the anatomy of the back. Having completed this topic, you should be able to:

- List the components of the back: vertebrae, discs, nerves, and muscles
- Identify basic functions of the spine
- Be aware of the importance of the lower back
- Describe the ratio of pressure on the lower back to an object to be lifted

Topic summary:

Please take a moment to review these points before you continue with the next topic.

- The back is composed of vertebrae, discs, nerves, and muscles.
- The basic functions of the spine are to:
  - Provide support
  - Protect the spinal cord
  - Allow the flexibility to move forward, bend side to side, and rotate
- The lower part of the back supports most of the body's weight.
- The human back operates on a 10:1 ratio of pressure on the lower back to the weight of an object to be lifted.

**Topic: Back Injuries**

In this topic you learned about back injuries. Having completed this topic, you should be able to:

- Identify causes of back pain
- Describe five risk factors for back injuries and how to prevent them
- Match back hazards with occupations

Topic summary:

Please take a moment to review these points before you continue with the next topic.

- Back pain is caused by anything that puts pressure on your back muscles and/or nerves.
- The disc is the most likely site of a back injury.
- Improper lifting techniques exhaust the back muscles.
- There are five risk factors for back injuries:
  - Poor posture
  - Poor physical condition
  - Improper body mechanics
  - Incorrect lifting
  - Jobs that require a high level of energy (physically demanding)

### **Topic: Proper Lifting Techniques**

In this topic you learned about proper lifting techniques. Having completed this topic, you should be able to:

- Demonstrate what you should and should not do when you lift
- State the principles for reducing the risk of back injury
- Identify assisted lifting procedures when there is no way to reduce the load
- Demonstrate less stressful ways of moving loads

#### Topic summary:

Please take a moment to review these points before you continue with the next topic.

- When you lift, there are things you should and should not do. Make sure you follow all the required steps.
- When you have to move or lift a load, you must consider the following principles:
  - Assess
  - Plan
  - Prepare
  - Posture
  - Perform
  - Evaluate
- When there is no way to reduce the load, you should consider using a hoist, crane, forklift system, lifting aides, roller conveyor, or gravity-fed slides and shelves.
- Pushing/pulling using carts, trolleys, or wheelbarrows is a less stressful way of moving loads.

### **Topic: Controlling Hazards**

In this topic you learned about how to control hazards to the back. Having completed this topic, you should be able to:

- Explain OSHA recommendations for controlling common back hazards
- Demonstrate exercises to strengthen muscles

Topic summary:

Please take a moment to review these points before you continue with the next topic.

- OSHA suggests the following engineering controls:
  - A reduction in the size or weight of the object lifted
  - Adjusting the height of the pallet or shelf to bring the object to be lifted to the proper lifting level
  - Installation of mechanical aids such as pneumatic lifts, conveyors, and/or automated materials-handling equipment
  
- In some jobs, such as construction, police work, and firefighting, it is difficult to control the ergonomic environment. In these instances OSHA suggests reliance on administrative controls -- in particular, extensive training of workers so they can safely perform lifting tasks.