

LESSON TOPIC: BACK INJURY PREVENTION

AVERAGE TIME: 30 Minutes

INSTRUCTIONAL MATERIALS:

REFERENCES:

- a. PAEC School Safety Manual
- b. Any locally produced Back Injury pamphlet

TRAINING AIDS:

- a. Handout #1 - Lift Right

OBJECTIVES:

The student should understand back injuries can result in painful strains and sprains leading to lost work time or disability. The student should know the proper lifting techniques to avoid back injuries and exercises to strengthen the back and prevent injury.

TARGET AUDIENCE:

All personnel, including supervisory personnel.

REQUIREMENT:

Initial training for all personnel. This lecture should be part of indoctrination training when discussing the occupational safety and health program. The lesson can also be presented as a separate lecture, if desired.

INTRODUCTION:

Studies show that back injuries are the cause of a many lost work days. From 1980 to 1988, hospitals admitted over 200,000 people for back injuries. Back problems can result in pain, lost work time, inconvenience (to the individual and _____School) and possible disability. The back is the most injury-prone part of the body. Almost everyone will suffer back pain at some time in their life. Preventing back injury is much easier than correcting or healing a back injury.

A. BACKGROUND

1. Your back supports your whole body.
 - a. The spine consists of 33 bones, or vertebrae. The upper 24 are separated by discs acting as cushions.
 - b. The spinal cord is a half-inch "cable" of nerves about 18 inches long. It controls all activities below the neck.
 - c. Thirty-one branches of nerves extend from the spinal cord. They send information to the brain and orders the muscles.
 - d. The 400 attached muscles produce motion in all directions, and are attached to the bones by about 1,000 tendons.
 - (1) Being overweight can put extra strain on those muscles.
 - (2) If you are out of shape, your muscles may be weak and unable to do their supporting job.
 - (3) Poor posture, such as slouching, puts pressure on the back and curvature of the back.
2. Common back problems include:
 - a. Strain and fatigue of the muscles.
 - b. Fractured vertebrae, which may injure the spinal cord and possibly cause paralysis.
 - c. Ruptured or "slipped" disc, which can press on the spinal nerve and cause pain in the lower back and legs.
 - d. Diseases such as arthritis or infection can weaken the back leading to more serious problems.

B. PREVENTING BACK INJURIES

1. There are several way to help prevent back injuries.
 - a. Exercise can strengthen the back, stomach and leg muscles. Several easy exercises include:
 - (1) Pelvic tilt - Lie on your back, knees bent, with your feet flat on the floor. Tense your stomach muscles so that the small of your back presses against the floor. Squeeze your buttocks together and lift your hips slightly off the floor. Hold for a count of 10 and relax, then repeat.
 - (2) Knee-to-chest - Lie flat on your back with your legs straight. Grasp one knee and bring it as close to your chest as possible. Hold for a count of 10 and relax, then repeat.
 - (3) Bent-leg-sit-ups - Lie flat on the floor, knees bent with the feet flat on the floor. Arms may be at your sides or folded across your chest. Raise your head, chest and shoulders off the floor. Relax and repeat.
 - b. Good posture can make a significant difference in preventing back pain.
 - (1) Sit with the knees higher than the hips; use a low stool to raise the feet slightly; cross the knees for temporary relief, and keep the lower back flat against a firm backrest.
 - (2) Stand tall, head held high, chin tucked in, abdomen flat, hips tucked under, chest slightly up and forward. When leaning forward, bend knees slightly.

Have one student demonstrate the exercises and proper posture standing and sitting.

- (3) Sleep on a firm mattress, or use a bed board between the box spring and mattress. Lie on your side with hips and knees bent, or on back with a pillow under the knees or lower legs. Avoid sleeping on your stomach, if possible.

- (4) Adjust your desk chair properly to support the back and relieve strain. Partial forward bending without a change of position, or reaching directly forward puts a strain on both sides of the back.
 - (5) Stretch frequently and readjust your posture to relieve fatigue.
2. Lifting safely can prevent many serious back injuries.
- a. Lifting heavy objects is an obvious hazard to the back; but, lifting less than one pound has caused slipped discs and back injuries. It isn't what you lift, necessarily, but HOW you lift it!

DISTRIBUTE HANDOUT #1 - LIFTING SAFELY.

- b. General rules for lifting include:
 - (1) Stand close to the object.
 - (2) Have a firm footing.
 - (3) Squat down and straddle the load, somewhat. Keep the back straight and BEND THE KNEES.
 - (4) Grasp object firmly, be sure it won't slip.
 - (5) Lift with your leg muscles. Slowly straighten your legs as you lift. After the legs are straightened, bring the back into a vertical position.
 - (6) Hold object close to the body while moving.
 - (7) Use the same motions to set the object down.
 - (8) Avoid sudden, jerky motions. Turn with the feet instead of the back.
 - (9) Do not extend the arms too far away from the body to deposit the object.

HAVE A STUDENT DEMONSTRATE PROPER LIFTING.

- c. Before you start to move an object, use your head:
 - (1) Examine the object to decide where and how to hold it. Check for grease, oil, moisture and sharp edges.
 - (2) Clear your path of trip hazards.
 - (3) Know where and how you'll let the object down.
 - (4) Get help if you have any doubts.

- d. Lifting some objects requires special precautions:
 - (1) Lifting over your head places extra strain on the back because you cannot use your legs. The load you lift overhead should be lighter. Spread your feet for firm footing, get a ladder or platform, or GET HELP.
 - (2) Lifting heavy objects may require two or more people or mechanical assistance. Break down the object into smaller loads, if possible, or one step at a time.

C. BACK-SAVING TIPS

- 1. On the job back saving tips include:
 - a. When working on your back, keep the knees bent to flatten your back.
 - b. When working low, bend your knees deeply to relieve strain.
 - c. Plant your feet firmly for all lifting jobs. Slips and jerks can injure the back.
 - d. Dismount from platforms and vehicles carefully. Lower yourself slowly - do not jump.

- e. Don't try to catch falling objects.
 - f. When driving, keep the seat forward so that your knees are bent, higher than your hips.
 - g. Use moving and lifting tools, such as hand trucks, lifts, hoists and dollies.
 - (1) In one factory, the investment in \$300 worth of hand trucks saved the company over \$10,000 the first year in back injury lost work time.
2. To protect the back while working at home:
- a. Choose lightweight tools, such as shovels and hoes, with long handles. Stand near the work instead of reaching.
 - b. When shoveling, keep the hands widely separated for good leverage. Lift with your knees, back straight. Don't twist or reach out too far to throw the dirt.
 - c. Use work saving devices, such as wheel barrows, to move heavy objects.
 - d. Stop and stretch often.

D. EMERGENCY FIRST AID FOR BACK INJURIES

- 1. A severe blow or twist to a person's head, neck, or back may cause a fracture of the spine or neck.
 - a. Signs of a fracture include severe pain across the chest, abdomen or down the legs; muscle spasms; and weakness or numbness below the area of injury.
 - b. If you even suspect a fracture call away a **MEDICAL EMERGENCY**.
 - (1) **DO NOT MOVE** the victim. Give first aid for breathing failure, bleeding and shock on the scene while awaiting help.

- (2) When moving the victim is unavoidable (fire or other hazard), with three helpers roll the victim on his or her side; keep the head, neck and back straight; slide a rigid stretcher or board under the victim and roll them back.
 - (3) Do not let the victim sit, stand or walk.
- c. For a severe back strain or sprain, obvious due to the intense pain felt by the victim:
- (1) Call for medical help.
 - (2) Assist the victim in laying flat or assuming a position of least pain.
 - (3) Avoid unnecessary movement until help arrives.
- d. If you experience a back injury or strain, report it to your supervisor as soon as possible. Usually, the pain is bothersome enough to cause you to seek medical attention. Medication and rest can help you avoid chronic back problems in the future. Back surgery can alleviate or correct many disc and bone problems.

SUMMARY:

Back injuries cost thousands of dollars and hundreds of hours lost work time each year, not to mention pain and suffering. Back injuries can affect anyone, at any age, in any line of work. A secretary busy at a desk all day can suffer back pain as readily as a rig operator. Both may lose work and effectiveness. Exercise, careful lifting techniques and good posture can prevent most back injuries and back pain.

**ADMINISTER 10 QUESTION QUIZ. REPRODUCE LOCALLY.
QUIZ KEY IS PROVIDED.**

HANDOUT #1

LIFT RIGHT

Many back injuries are the result of improper lifting.

The **general rules** for all situations are:

- ?? **Stand close** to the object. Have firm footing.
- ?? **Squat down** and straddle the object. Keep the back straight and bend the knees.
- ?? **Grasp** the object firmly. Be sure your grip will not slip.
- ?? **Lift with the legs**. Slowly straighten the legs and bring the back into a vertical position.
- ?? **Hold** the object firmly, close to the body.
- ?? Set down the object carefully, again squatting and bending the legs.

LIFTING OVERHEAD:

- ?? **Lift lighter** loads over your head to avoid strain.
- ?? **Spread your feet** for a balanced footing.
- ?? **Use a platform or ladder** for extra high lifts.
- ?? **Get help** to balance overhead loads.

LIFTING HEAVY OBJECTS:

- ?? **Get help** to lift heavy objects.
- ?? **Use mechanical aids** such as forklifts and hand trucks.
- ?? **Piece by piece** or move things in smaller parts.
- ?? **Don't try to prove anything** lifting too heavy a load.

BACK INJURY PREVENTION QUIZ

NAME:

DATE:

DIVISION:

CHECK THE APPROPRIATE BOX.

1. The spine consists of only one long bone down your back.
True False
2. Most back injuries consist of a "slipped disc" in the back.
True False
3. Poor posture contributes to back pain and muscle strains.
True False
4. Exercises for the back can prevent and relieve back pain.
True False
5. Your chair should be adjusted high, so your legs do not touch the floor, for best posture.
True False
6. To prevent back injury, when lifting an object you should:
 Keep the legs straight
 Bend over at the waist
 Reach out toward the object
 Squat down and straddle the object.
7. Only very heavy objects can cause back injury from lifting.
True False

8. You need to warm-up before exercising but not before doing physical work.

True False

9. If someone may have a fractured back, you should:

- Call away a medical emergency.
- Roll the person over to check for bruises.
- See if they can sit up on their own.
- Poke their feet to see if they are paralyzed.

10. There is no need to tell your supervisor if you are just having a few spasms in your back.

True False

BACK INJURY PREVENTION QUIZ KEY

1. B

2. B

3. A

4. A

5. B

6. D

7. B

8. B

9. A

10. B