

# Back Injury Prevention

HS02-014C (1-08)

## Goal

---

This program provides information on proper care of the back to help reduce the potential for back injuries in the workplace and at home.

## Objective

---

The participant will understand how to care for their back by learning about body mechanics, ways to change lifestyle, the difference between a strain and sprain, some common mistakes made when lifting, and the eight steps to proper lifting.

## Introduction

---

Everything we do affects our back. Unfortunately, the back is not very resilient. Once the back has been injured, it will never be as strong as it was before the injury. How many times a day do we lift, push, pull, stretch, and otherwise put a strain on our back? Prevention is the key to protecting our back from injury during these activities.

## Body Mechanics

---

Body mechanics is the proper way to move and position the body for different activities in order to prevent injuries. It is important to remember that our bodies do not stop functioning when we go home from work. We need to follow the same guidelines both at work and home.

The natural position of the back is an “S” curve. This is referred to as the neutral position. To keep the neutral position and for good posture, we need to learn to maintain a straight line, from midline of the ears - to the shoulders - to midline of the hips - to midline of the knees - to midline of the ankle. This means standing tall, pulling in our stomach, and tightening our buttocks. Think of it as a plumb line from the ears to the knees. This will keep our back in a natural “S” curve.

Our back needs to be maintained in the neutral position when sitting, standing, sleeping, reaching, and pushing.

Many of us spend a large part of our day sitting. Sitting increases weight on the spine. Slouching can place an additional pressure on the back. Some possible solutions for proper sitting might include:

- have a chair with maximum adjustability;
- maintain neutral position;
- move frequently (take micro breaks); and
- have adjustable work surfaces.

If your job includes long periods of standing, you should place one foot on a footrest. This technique raises the front of the pelvis and reduces the possibility of a swayback condition. Alternate from one foot to the other frequently. Adjust your work surface height to keep from bending over while working. If your work area is a cubicle, you can adjust the desk height. If you have a regular desk, and cannot find a way to correct the height, adjust your chair to fit the desk and use a footrest.

When arranging your work area or the company storage room, consider each object carefully in order to avoid reaching overhead or bending over. Think about how often the object is used as well as the weight of the object. The best lifting zone is between the shoulders and waist. Place heavy and frequently used objects near waist height to reduce bending and twisting to reach the object. Place lighter objects higher or lower. Use dollies or carts to move heavy objects rather than carrying them.

Pushing an object is much better for your back than pulling it. If you push, you can see over your load and use your legs, not your back. Keep the object in front of you and stay as close to the object as possible, as this gives you more control and direction.

Sleeping is very important to maintain physical and mental health. Most of us sleep between 6-8 hours per day. Even while asleep, you can injure your back if you do not maintain good back posture. To sleep properly you need to:

- Use a firm mattress.
- Avoid sleeping on your stomach. This can cause the back to sway.
- Place a pillow under your knees when sleeping on your back.
- When sleeping on your side, place a pillow between your knees and keep your knees bent.

## Changing Lifestyle

---

Some simple changes to your lifestyle can help protect your back from injury. When attempting to change your lifestyle, be realistic. A little bit of change is better than none at all. Try making small changes over a period of time. Make a commitment to walk around the block everyday as opposed to running five miles. Regular exercise can help you

## Eight Steps to Proper Lifting

strengthen your stomach muscles, lose a little weight, and increase your flexibility. Cut down on your food portions rather than going on a liquid or strict diet. Be willing to try something different - new recipes, new sports, meditation, or low-impact aerobics.

### Strain or Sprain?

Strain and sprain both mean something has been stretched beyond its limits. A strain refers to a muscle. When a muscle is strained, it has been forced to exceed its ability to work. Regular exercise can strengthen muscles and allow them to work harder longer, which is important considering muscles are the spine's workhorses.

A sprain can occur in ligaments (fibrous bands connecting bones together) or in tendons (bands of tissue attaching muscles to bones). A sprained ankle is a common example of a sprained ligament. The symptoms of strains and sprains are sudden, sharp, and persistent pain at the injury site, followed by swelling.

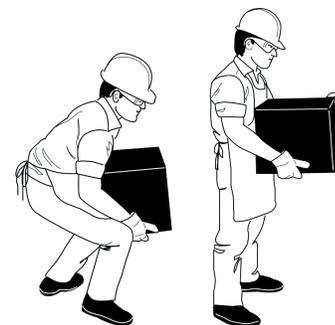
### Common Lifting Mistakes

Some common lifting mistakes are:

- Bending forward at the waist with legs straight. When you bend forward at the waist with legs straight, you require the use of the muscles in your lower back and the weight of the object being lifted will include the weight of your upper body.
- Using fast jerky motions. This puts stress on your lower back muscles and may cause sprains and strains.
- Bending and twisting when lifting forces the spine into a position of weakness and removes the natural "S" curve of strength from the lifting process.
- Handling the load too far away from the body. The back is like a lever system. The distance between the load and the fulcrum (point of support) can be considered the distance between the body and the object being lifted.
- Failure to plan the lift. You need to check the path of travel to be sure it is clear. Size up the load and if it is too heavy or bulky for you to lift alone, ask for help.



There are eight steps to follow in doing a safe lift. They may seem very simple but if you do all of them each time you lift, your chances of an injury will be greatly diminished. When you do a lift, make sure you:



1. Size up the load - check to ensure the load is stable and balanced. Test the weight. Try moving it with your foot, if you cannot, you probably need to ask for help.

2. Plan the job - consider all possibilities. Is the path clear? What is the weight of the load? How much stress will be placed on your back? Is there traffic, a tripping hazard, a doorway to go through, or a stairway to go up or down? Avoid carrying an object that requires two hands to hold, either up or especially down, a flight of stairs. Use the elevator. Plan a rest stop, if needed.

3. Establish a base of support - use a wide, balanced stance with one foot in front of the other. Make sure you have firm footing and that your feet are a shoulders-width apart. This staggered stance gives you the stability of not falling over and being able to secure the load.

4. Bend your knees, keep your heels off of the floor and get as close to the object as possible. Always lift with your legs and not your back.

5. Get a good grip with your palms and make sure you have an adequate hold on the object. Be certain you will be able to maintain a hold on the object without having to adjust your grip later. You can use gloves to help maintain an adequate grip, but don't rely on gloves because they can de-sensitize the fingers making you unable to feel the object.

6. Lift gradually with your legs without using jerky motions. By using your leg strength, your chance of lower back injury is greatly reduced.

7. Keep the load close to prevent arching your lower back. As you begin the lift, tighten your stomach muscles and keep your head and shoulders up. The closer the load is to your spine, the less force will be placed on your back.

8. Pivot - don't twist. Move your feet in the direction of the lift. This will eliminate the need to twist at the waist.

### Summary

You cannot always avoid lifting, but it is important to know your body's limitations and how to use proper techniques for protecting your back against strains and sprains. The best

way to prevent back injuries is to develop good health habits. Learn to use good body mechanics, including standing, sitting, pushing, pulling, and sleeping. Make some changes in your lifestyle, such as healthy eating habits and exercise regularly. Avoid common lifting mistakes and use proper lifting procedures.

---

## Review

---

1. Body mechanics is the proper way to move and position the body for different activities to prevent injuries. True/False
2. When storing objects, store the heaviest objects on the top shelf. True/False
3. It is important to sleep on a firm mattress. True/False
4. Sitting in the correct posture increases weight on the spine more than standing. True/False
5. The back is very resilient and repairs itself quickly. True/False

The Texas Department of Insurance,  
Division of Workers' Compensation (TDI, DWC)  
E-mail [resourcecenter@tdi.state.tx.us](mailto:resourcecenter@tdi.state.tx.us)  
or call 1-800-687-7080 for more information.

## Answers

---

1. True
2. False (near waist height)
3. True
4. True
5. False (once injured, it will not be as strong)

## Resources

---

The Texas Department of Insurance, Division of Workers' Compensation (TDI, DWC) Resource Center offers a workers' health and safety video tape library. Call (512) 804-4620 for more information or visit our web site at <http://www.tdi.state.tx.us/wc/safety/employers.html>

Disclaimer: Information contained in this training program is considered accurate at time of publication.

*Safety Violations Hotline*  
**1-800-452-9595**  
[safetyhotline@tdi.state.tx.us](mailto:safetyhotline@tdi.state.tx.us)