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# **LIFTING AND YOUR BACK**

## **PREVENTING BACK INJURY**



# Back Injury

Low back pain is the most common work-related medical problem in the United States and the second most common reason for doctor visits among U.S. citizens, according to the National Center for Health Statistics. It affects more than 20 million Americans and is the leading cause of disability among people ages 19-45. It hits the bottom line fairly hard, too: low back is the o. 1 leading cause of missed work days, costing Americans \$60 billion per year in treatments and American businesses about \$15 billion annually. It's estimated that at least 80 percent of all Americans will experience some form of low back pain at some point in their lives.

# Back Injuries

Last year, about 500,000 back and neck surgeries were performed in the United States. Since there are many non-surgical treatments for low back pain some experts believe that many of these operation we unnecessary.

For a comparison there are about 600,000 Cardiac Artery Bypass procedures performed in the United States each year. Other "open heart" surgeries include 80,000 valve surgeries, and 2,300 heart transplants annually for a total of 682,300.

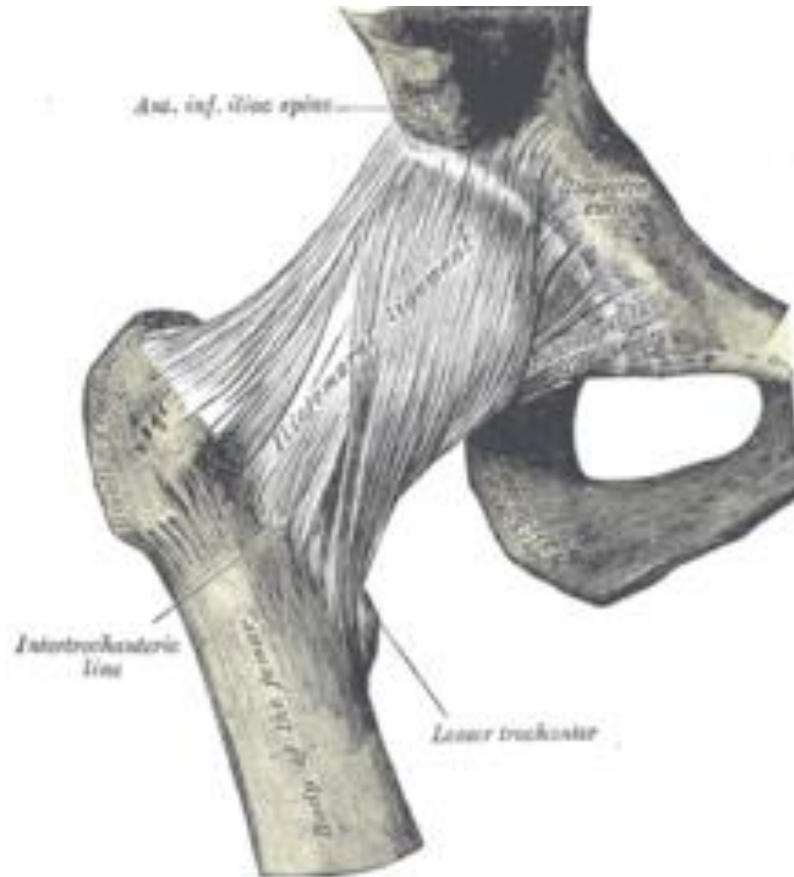
Approximately 200,000 appendectomies are performed annually in the US.

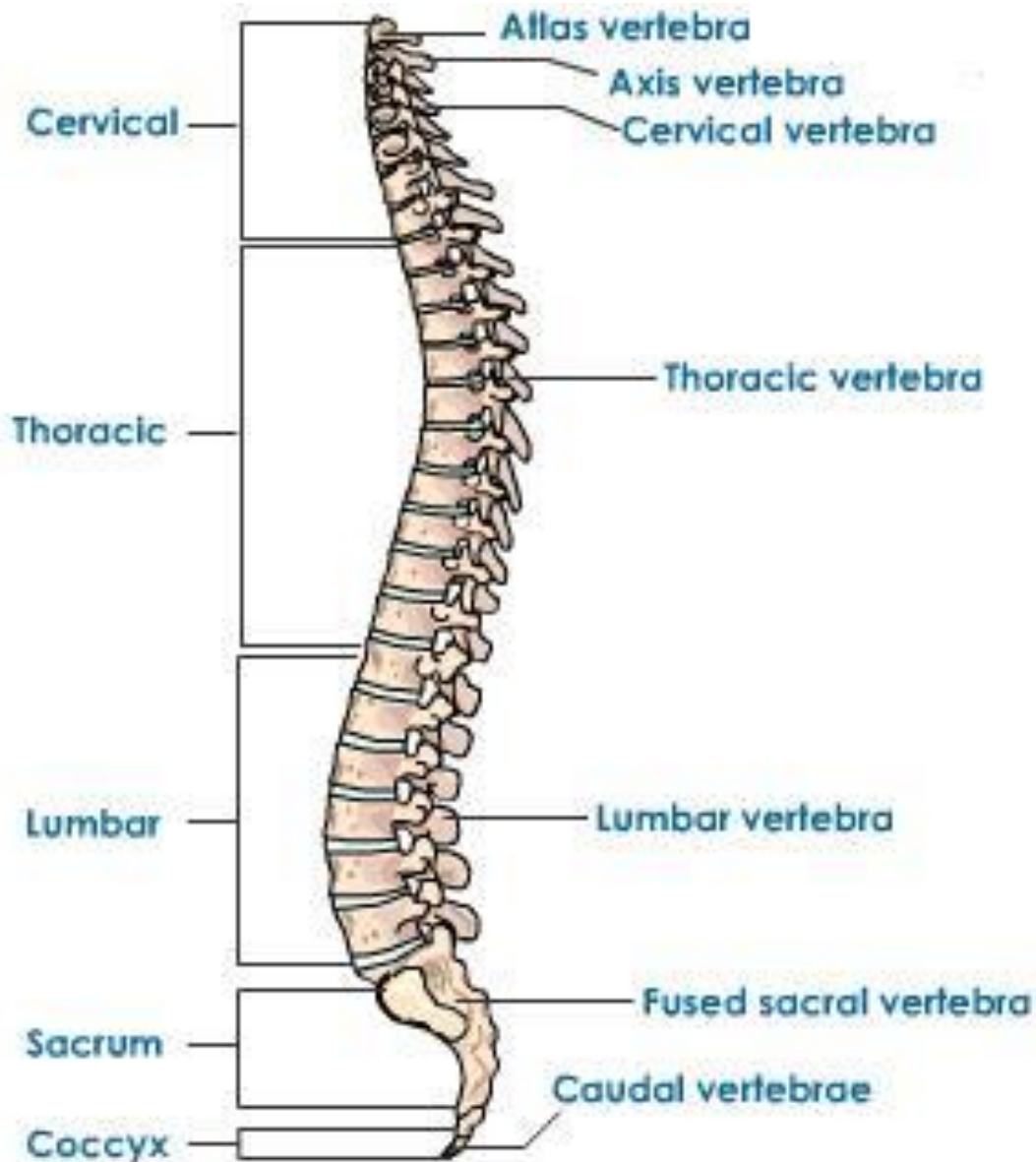
Interestingly, while many Americans know the role cholesterol, diet and exercise play in preventing a heart attack; few Americans know how to prevent spine problems, or a "back attack." While everyone understands that chest pain is a signal from the body that something is wrong, random bouts of back pain are largely ignored until the problem becomes more serious, and a disc is herniated.

- **Some back injuries involve the "soft tissue" that is the muscle, ligament type injury.**
  - **A more serious injury occurs when the discs of the spine are involved.**

# Your Spine

The spine includes vertebrae (bones), discs (cartilaginous pads or shock absorbers), the spinal cord and nerve roots (neurological wiring system), and blood vessels (nourishment). Ligaments line bones together, and tendons connect muscles to bones and discs. The ligaments, muscles, and tendons work together to handle the external forces the spine encounters during movement, such as bending forward and lifting.





## This is a normal spine

The normal anatomy of the spine is usually described by dividing up the spine into 3 major sections:

- The cervical
- The thoracic, and
- The lumbar spine.

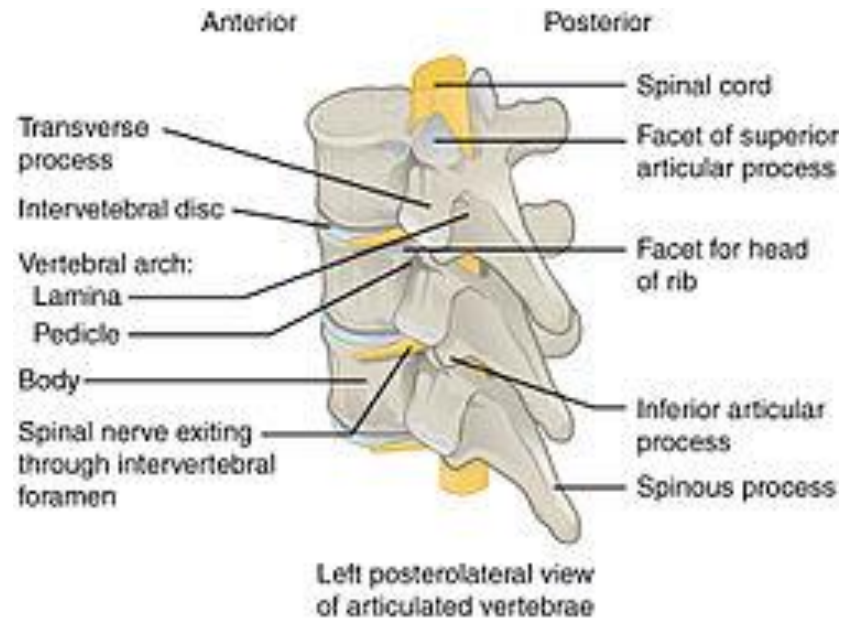
Below the lumbar spine is a bone called the sacrum, which is part of the pelvis. Each section is made up of individual bones called vertebrae.

There are 7 cervical vertebrae, 12 thoracic vertebrae, and 5 lumbar vertebrae.

# Your Spine

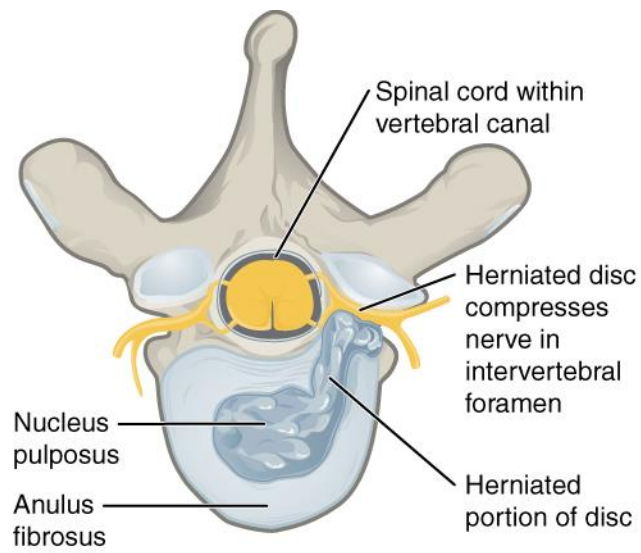
The spine is composed of:

- **Vertebra** – The vertebrae are separated by intervertebral discs which act as cushions between the bones.
- **Discs** – Each disc is made up of two parts. The hard, tough outer layer called the **annulus** surrounds a mushy, moist center termed the **nucleus**.
- Spinal Cord and Nerves



# Disc Problem

- In between each of the five lumbar Vertebrae (bones) is a disc, a tough fibrous shock-absorbing pad. Endplates line the ends of each vertebra and help hold individual discs in place.
- Excess spinal pressure can cause these discs to be compressed until they rupture.
- Disc herniation occurs when the annulus breaks open or cracks, allowing the nucleus to escape. This is called a Herniated Disc.



Superior view

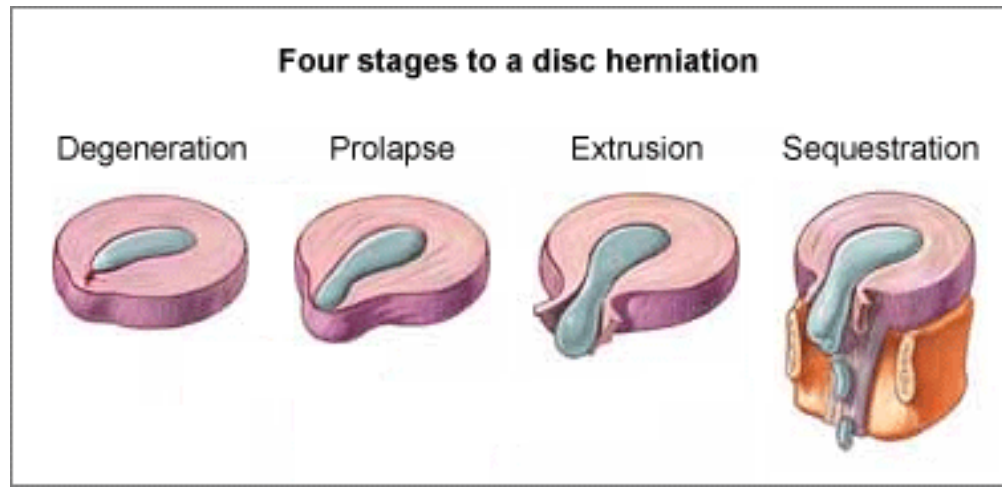


## Disc Herniation Factors

- **Many factors increase the risk for disc herniation:**
  - (1) Lifestyle choices such as tobacco use, lack of regular exercise, and inadequate nutrition substantially contribute to poor disc health.
  - (2) As the body ages, natural biochemical changes cause discs to gradually dry out affecting disc strength and resiliency.
  - (3) **Poor posture combined with the habitual use of incorrect body mechanics stresses the lumbar spine and affects its normal ability to carry the bulk of the body's weight.**

## Disc Degeneration

- Disc Degeneration: chemical changes associated with aging causes discs to weaken, but without **herniation**.
- Prolapse: the form or position of the disc changes with some slight impingement onto the spinal canal. Also called a bulge or protrusion.
- Extrusion: the gel-like nucleus pulposus breaks through the tire-like wall (annulus fibrosus) but remains within the disc.
- Sequestration or Sequestered Disc: the nucleus pulposus breaks through the annulus fibrosus and lies outside the disc in the spinal canal (HNP)



## Disc Problems

- Combine these factors with the affects from daily wear and tear, injury, **incorrect lifting, or twisting** and it is easy to understand why a disc may herniate. For example, **lifting something incorrectly can cause disc pressure to rise to several hundred pounds per square inch!**
- **A herniation may develop suddenly or gradually over weeks or months.**



# RULES FOR LIFTING

- Never bend, lift and twist at the same time!
- Use mechanical aids or assistance when possible.
- Bend your knees and use your legs to lift!



# Proper Lifting

- **Plan the lift.**

Before attempting to lift or move something heavy, it is important to step back and analyze what needs to be accomplished. Think about how heavy the object is, how far it has to be moved, where it is going to end up? What is the shape of the object? Is it cumbersome, will it be easily manipulated? Is it a two-person job? Is there anything in the way that needs to be moved prior to lifting? Stand directly in front of the load, with feet and shoulder width apart. One foot should be in front of the other for balance.

- **Correct Positioning.**

**Get Help if Needed.** If the load is too heavy, **DON'T TRY TO LIFT IT ALONE.** Find someone who can help carry it, or if possible, break the load into two smaller, more manageable loads. Bend the knees and tighten the stomach muscles. Using both hands, grasp the object firmly and pull it as close as possible to your body.

- **Lift with the legs – NOT THE BACK.**

Since leg muscles are stronger than back muscles, lift with the legs, until they are straightened. Avoid jerky movements. Keep the natural curve in the spine; don't bend at the waist. To turn, move the feet around by pivoting on the toes, not by twisting at the stomach.

- **Setting down the load.**

When it is time to set the load down, it is very important that it is done correctly. Reverse the procedures for lifting to minimize the strain on the back. If the load is going to set on the floor, bend the knees and position the load in front of you. If the load is to go at table height, set it down and keep in contact with the load until it is secure on the table.

- There is one final important rule: **“THINK BEFORE YOU LIFT”**

It is better for workers to use their own common sense than to teach them specific lifting, pushing, pulling, walking, climbing or jumping procedures. This is not to imply that unsafe behaviors should not be pointed out to others and corrected. For example, “common sense” may tell certain people to jump down from heights of several feet. Certainly, when people exhibit this type of behavior or when they attempt to carry two hundred pound, the errors of their behavior should be brought to their attention. Remember, in lifting, you are the major cause of your injuries; therefore, you have the major responsibility for preventing them.

PLEASE COMPLETE THE FOLLOWING:

## LIFTING AND YOUR BACK TEST

1. Back injuries account for one of every five work place injuries or illnesses.  
TRUE OR FALSE
  
2. Once you have injured your back, you are very likely to re-injure it at some time in the future.  
TRUE OR FALSE
  
3. Which of the following might be considered a contributing factor for back injuries?
  - A. Poor physical condition
  - B. Stress
  - C. Poor posture
  - D. All of the above
  
4. Sitting in one position for long periods of time does not place any stress on the back.  
TRUE OR FALSE
  
5. Which are generally recommended as the best sleeping positions for your back?
  - A. On your stomach or back (with legs elevated)
  - B. On your side (with knees slightly bent) or back (with pillow under the knees)
  
6. The “safe lifting zone” is
  - A. Between the floor and your knees
  - B. Above your head
  - C. Between your shoulders and waist
  - D. At arm’s length from your body

7. Rather than using your back like a crane, it is better to allow your legs to do the work by bending at the knees while lifting.

TRUE OR FALSE

8. It is best to avoid twisting at the waist when carrying or lifting a heavy load.

TRUE OR FALSE

9. When carrying an awkward load you want the heaviest part of the load to be furthest from your body.

TRUE OR FALSE

10. Taking frequent, short (micro) breaks can be beneficial to your back, particularly when working in awkward positions.

TRUE OR FALSE

Name: \_\_\_\_\_ Date: \_\_\_\_\_

Signature: \_\_\_\_\_ Title: \_\_\_\_\_