

DISEASES & CONDITIONS

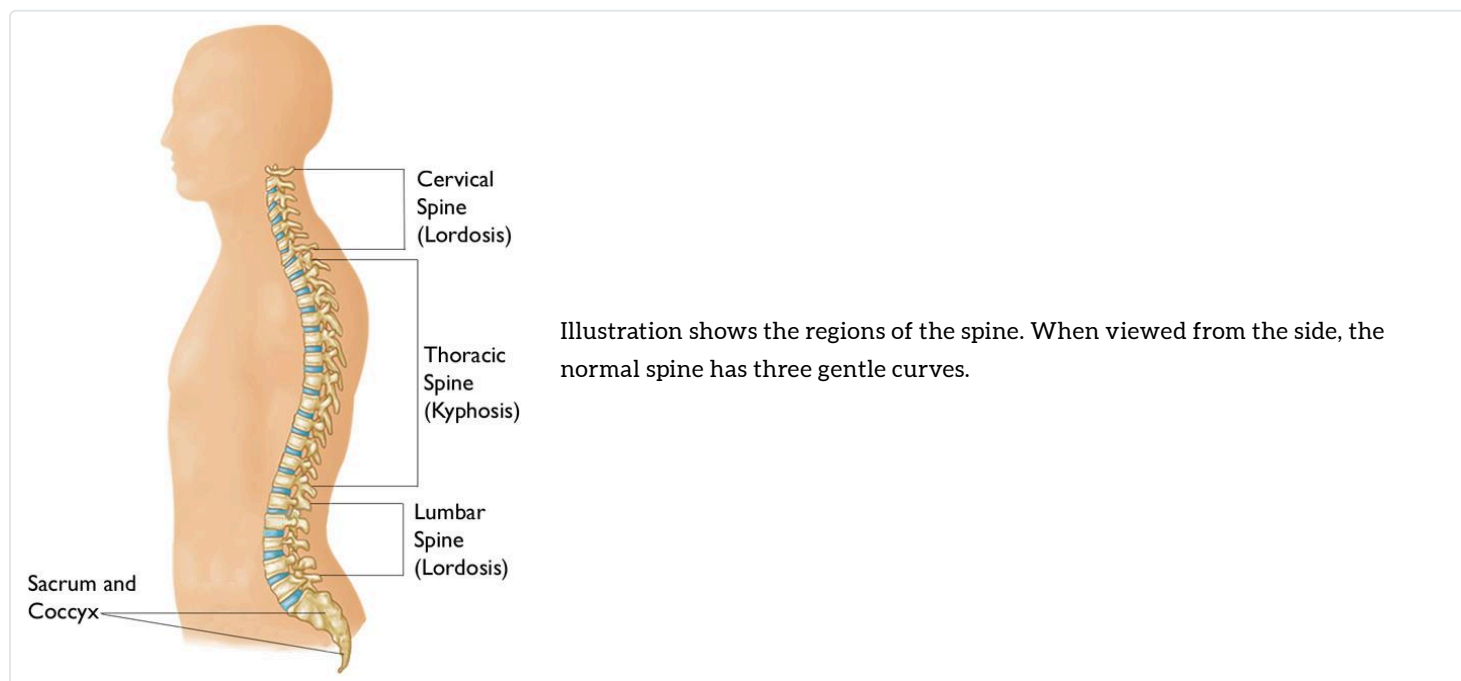
Spine Basics

Understanding your spine and how it works can help you better understand some of the problems that occur from aging or injury.

Many demands are placed on your spine. It holds up your head, shoulders, and upper body. It gives you support to stand up straight, and gives you flexibility to bend and twist. It also protects your spinal cord.

Spinal Curves

Your spine is made up of three segments. When viewed from the side, these segments form three natural curves. The "c-shaped" curves of the neck (cervical spine) and lower back (lumbar spine) are called lordosis. The "reverse c-shaped" curve of the chest (thoracic spine) is called kyphosis.



These curves are important for balance and they help us to stand upright. If any one of the curves becomes too large or small, it becomes difficult to stand up straight and our posture appears abnormal.

Abnormal curvatures of the spine are also referred to as spinal deformity. These types of conditions include kyphosis of the thoracic spine ("hunchback"), lordosis of the lumbar spine ("swayback"), and "flatback syndrome," a condition in which there is too little curvature of the spine.

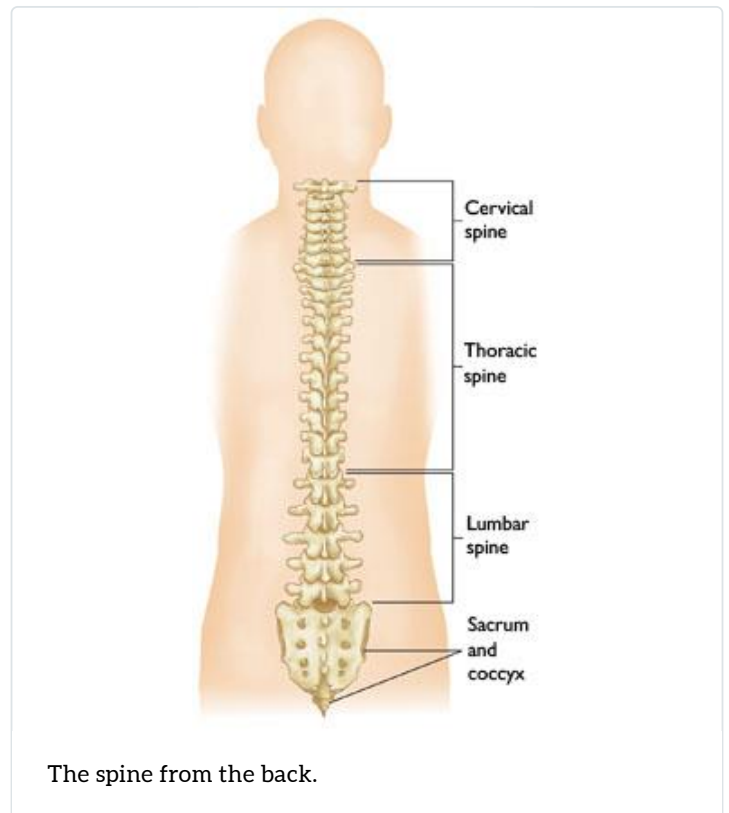
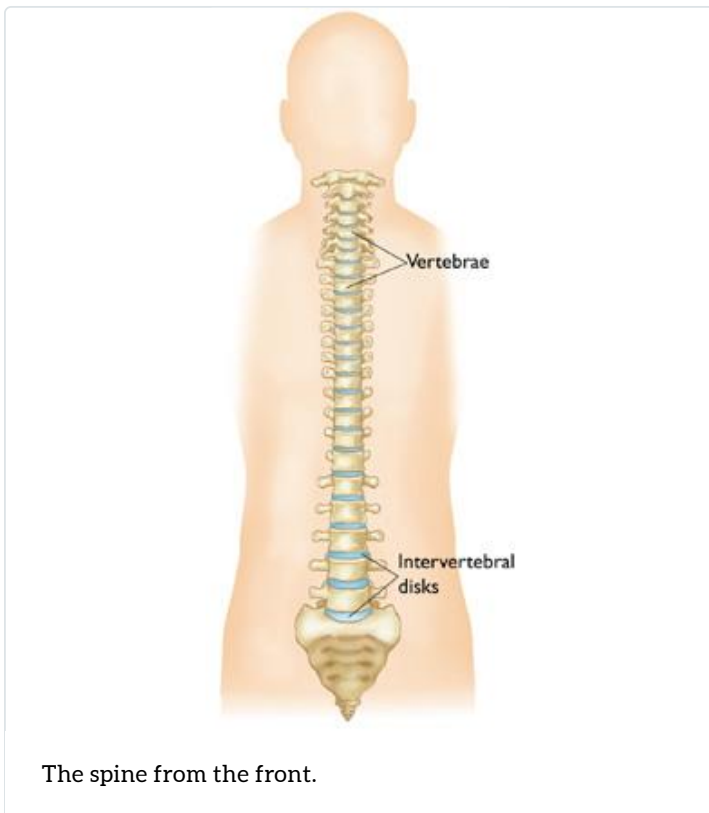
Scoliosis is another type of spinal deformity. When viewing the spine from the front or back, scoliosis is a sideways curvature that makes the spine look more like an "S" or a "C" than a straight "I."

Parts of the Spine

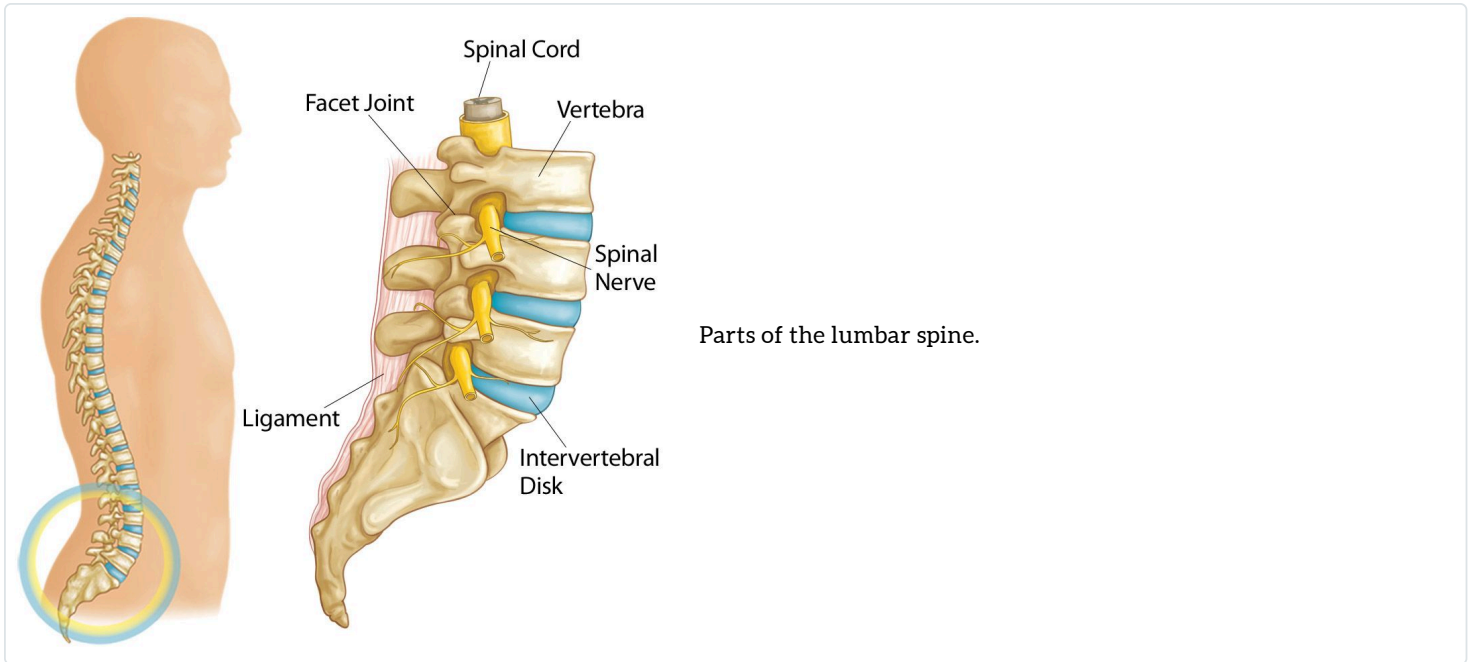
Vertebrae

Your spine is made up of small bones, called vertebrae, which are stacked on top of one another and create the natural curves of your back.

These bones connect to create a canal that protects the spinal cord and nerve roots.



The cervical spine is made up of seven small vertebrae that begin at the base of the skull and end at the upper chest. The thoracic spine is made up of 12 vertebrae that start from the upper chest to the middle back and connect to the rib cage. The lumbar vertebra consists of five larger vertebrae. These vertebrae are larger because they carry more of your body's weight.

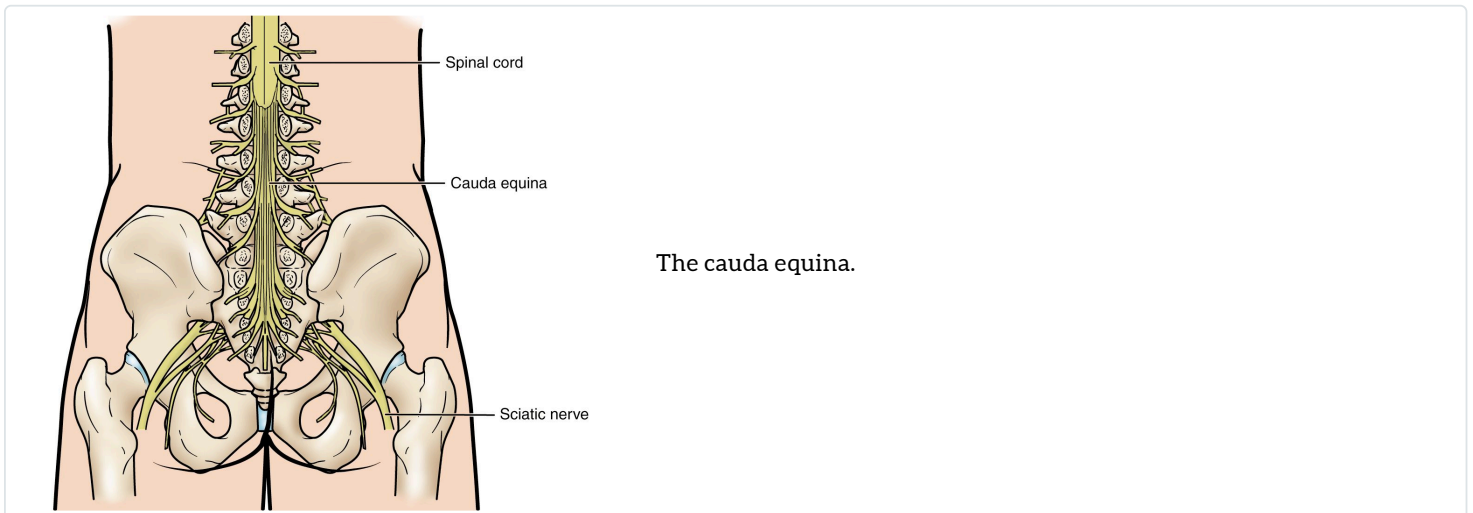


Parts of the lumbar spine.

Spinal Cord and Nerves

The spinal cord extends from the skull to your lower back and travels through the middle part of each stacked vertebra, called the central canal. Nerves branch out from the spinal cord through openings in the vertebrae and carry messages between the brain and muscles.

The spinal cord ends around the first and second lumbar vertebrae in the lower back and continues as nerve roots. This bundle of nerve roots is called the cauda equina. They exit the spinal canal through openings in the vertebrae (foramen), just like other nerve roots. In the pelvis, some of the nerves group into the sciatic nerve, which extends down the leg.



The cauda equina.

Muscles and Ligaments

These provide support and stability for your spine and upper body. Strong ligaments connect your vertebrae and help keep the spinal column in position.

Intervertebral Disks

Intervertebral disks sit in between the vertebrae. They are flat and round, and about a half inch thick.

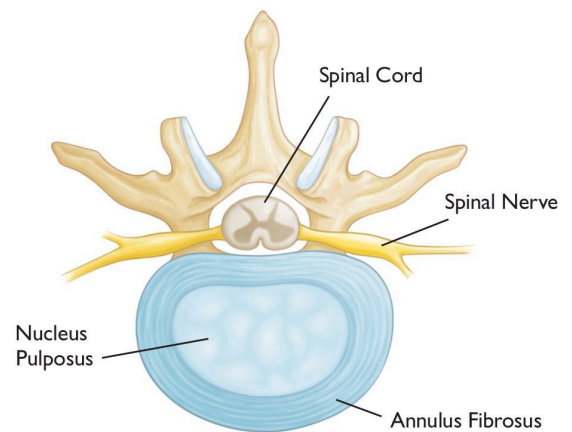
Intervertebral disks are made up of two components:

- **Nucleus pulposus.** The nucleus pulposus is jelly-like and makes up the center of the disk. The jelly is partly made of water and gives the disk flexibility and strength.
- **Annulus fibrosus.** This is the flexible outer ring of the disk. It is made up of several layers, similar to elastic bands.

When you are standing or moving, weight is put onto the nucleus. In response, the nucleus expands. The annulus holds the nucleus in place. This allows movement to take place, yet maintains the strength of the spine. In effect, disks act as shock absorbers for the spine.

The intervertebral disk is a very important structure. Many nerve endings supply the annulus and, as a result, an injured annulus can cause pain.

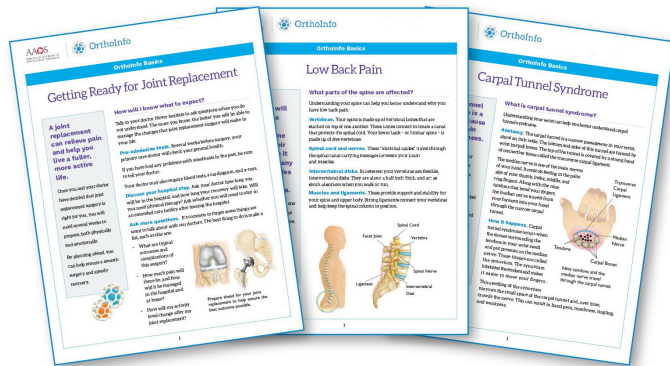
Healthy intervertebral disk (cross-section view).



Facet Joints

Between the back of the vertebrae are small joints that also help your spine move. These facet joints have a cartilage surface, very much like a hip or a knee joint does. The facet joints are important for allowing rotation of the spine but may develop arthritis and become a source for low back or neck pain.

Watch: [Spine Anatomy Animation](https://orthoinfo.aaos.org/en/diseases--conditions/spine-basics/)



Information on this topic is also available as an **OrthoInfo Basics PDF Handout.**

For more information:

Basics Handouts

Last Reviewed

June 2020

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