

## Anatomy and Back Pain

Back pain is a major problem in the United States, resulting in time lost from work, lost revenue and a diminished quality of life.

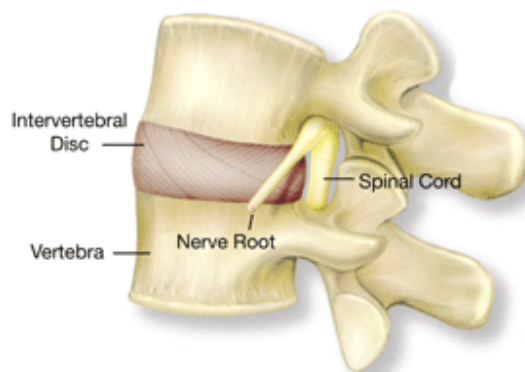
Back pain is categorized as acute or chronic. Acute pain usually lasts only six weeks. When back pain continues for more than six weeks, it is considered chronic. During this time, the individual will create new muscle patterns that compensate and circumvent the weak and painful area.

### Anatomy of the Spine

A spinal segment consists of the following:

- Two vertebrae
- An intervertebral disc between the two vertebrae
- Two nerve roots that leave the spinal cord, one on each side

#### Normal Spinal Segment



When an individual suffers from back pain, the physician's focus is on a spinal segment.

The lower back is called the lumbar spine and is made up of five vertebrae and the sacrum. The middle of the back is the thoracic spine and has 12 vertebrae, and the neck is the cervical spine, with seven vertebrae. Vertebrae are the bones of the spine. They provide both support and protection for the spinal cord. An intervertebral disc sits between vertebrae and connects the vertebrae.

An intervertebral disc is a large, round ligament. If you look at a cross-section of the intervertebral disc, you will see that it is made up of two parts. The outer ring is the

annulus, which is the strongest part and is responsible for connecting the vertebrae. The inner area is the nucleus pulposus, which is soft and has the consistency of crabmeat. The nucleus pulposus acts as the shock absorber for the spine.

The nerve roots carry information back and forth between the extremities and the brain. The nerve roots can cause pain when they are irritated or pinched by the disc or bone spurs.

## **Types of Back Pain**

Chronic back pain is divided into two main types – mechanical or compressive pain.

*Mechanical back pain* results from inflammation due to an irritation or injury to the disc, the ligaments or the muscles of the back. A normal muscle strain or lower back strain may also trigger mechanical-type symptoms. Mechanical pain usually originates near the lower spine and spreads to include the buttocks and thigh areas. This type of pain usually does not extend past the knee.

*Compressive pain* happens when the nerve roots that leave the spine are either irritated or pinched. A herniated disc is a common cause of compressive pain. For example, the sciatic nerve controls and provides sensation to the muscles of the lower leg. When the nerve roots are irritated or pinched, the individual will feel a numbness, tingling or pain in the leg muscles, but not in the back itself.

Compressive pain may also occur in the cervical spine due to herniated discs. This is often manifested in arm pain or numbness.