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## **Anatomy of the Spine:**

The spine is made up of 24 vertebrae. Ligaments and muscles connect these bones together to form the spinal column. The spinal column holds and protects the spinal cord that consists of a bundle of nerves that sends signals to other parts of the body.

The spine is divided into 3 sections:

1. **Cervical spine:** consists of seven bones that are separated by intervertebral discs. These discs allow the spine to move freely and act as shock absorbers during activity. The cervical spine has a lordotic curve (backwards "C"). There are special openings in each vertebra in the cervical spine for arteries. The arteries carry blood to the brain. Two of the vertebrae in the cervical spine differ from the rest because they are made specifically for rotation. They are called the atlas and the axis.
2. **Thoracic spine:** is made up of the middle 12 vertebrae. These vertebrae connect to your ribs and form part of the back wall of the thorax. This section of the spine is kyphotic ("C" shaped curve with the opening of the "C" in the front). The intervertebral discs in this section are very thin.
3. **Lumbar spine:** usually has 5 vertebrae, but some people may have 6. This section of the spine has a lordotic curve (backwards "C"). The vertebrae in this section are larger than the rest, the spinal canal is also larger in this region. The size of the lumbar spine allows for more space for nerves to move about.

**Intervertebral Disc:** soft, gel-like cushion between each vertebra. These discs act as shock absorbers by absorbing pressure. They also prevent the bones from rubbing on each other. The nucleus of the disc is made up of tissue that is very moist and high in water content.

**Facet Joints:** these are the joints of the spinal column (just like joints in knees, elbow, fingers etc). These joints link the vertebrae together and give them the flexibility to move against each other. These joints are synovial joints that allow movement between 2 bones.

**Neural Foraminae:** The spinal cord branches off into 31 pairs of nerve roots, which exit the spine through small openings on each side of the vertebra called neural foraminae. One exits the right foramina and the other the left side. The nerve root allows for transmission of signals to and from your brain from the rest of the body.

**Spinal cord:** consists of a column of millions of nerve fibers that carries messages from your brain to the rest of your body. It extends from the brain to the area between L1 and L2. Below this level, the spinal canal contains a group of nerve fibers, called the cauda equina. This group of nerves goes to the pelvis and lower limbs. The spinal cord and the

nerves are protected by a watertight sac called the dura mater and are bathed continuously by cerebral spinal fluid.

**Nerve Roots:** Nerves of the cervical spine go to the upper chest and arms, the nerves of the thoracic spine go to the chest and abdomen and the nerves of the lumbar spine go to the legs, pelvis, bowel and bladder.

**Paraspinal muscles:** these muscles support the spine and provide motor movement of the spine. A muscle spasm occurs when muscles tighten up and cannot relax.

Source: <http://www.spineuniversity.com/public/spineschool.asp>