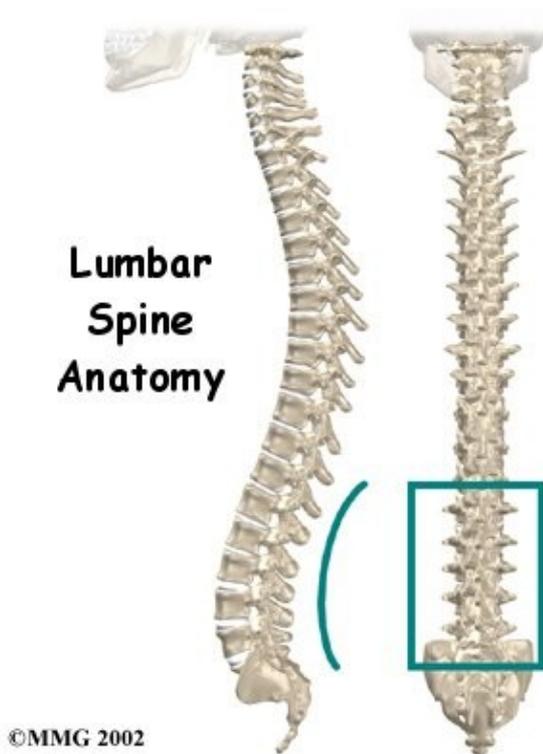


Lumbar Spine Anatomy

Introduction

Physical Therapy in Congress Park, Denver Downtown, Central Park, and Highlands Area for Lower Back



Welcome to Atlas Physical Therapy's patient resource about Lumbar Spine problems.

Knowing the main parts of your low back and how these parts work is important as you learn to care for your back problem.

Two common anatomic terms are useful as they relate to the low back. The term anterior refers to the front of the spine. The term posterior refers to the back of the spine. The section of the spine that makes up the low back is called the lumbar spine. The front of the low back is therefore called the anterior lumbar area. The back of the lower spine is called the posterior lumbar area.

This article gives a general overview of the anatomy of the low back. It should help you understand:

- what parts make up the low back
- how these parts work

Hear from some of our patients who we treated for **Back Pain**

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“ Extremely satisfied with Atlas PT. Have been several times and have always had great results. I recently had a back injury with several sprained ribs and Alex had me back in action almost immediately. ”

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Andrew Q

Denver, CO

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“ I canâ€ t say enough positive things about Atlas Physical Therapy. From the minute you enter you are greeted by Â very conscientious and friendly receptionists. I started going last year after a torn... ”

“ I canâ€ t say enough positive things about Atlas Physical Therapy. From the minute you enter you are greeted by Â very conscientious and friendly receptionists. I started going last year after a torn bicep operation. I had the pleasure of working with Andrea G. Andrea is a true professional in every sense of the word. Her calm demeanor puts you at ease from the onset of your sessions. Before I knew it I had a full range of motion once again. Fast forward to this year when I developed sciatica. When my Doctor recommended PT it is no wonder I made an appointment with Andrea. Happy to report that my sciatica is at bay thanks to Andrea and my exercise therapist, Nate. They are a great team. ”

Phyllis R

Denver, CO

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“ Glad I found this place! I have been going a few months for lower back pain. Brett and his team are very professional and provide a very clean and welcoming space. This location is a great option for... ”

“ Glad I found this place! I have been going a few months for lower back pain. Brett and his team are very professional and provide a very clean and welcoming space. This location is a great option for folks who work downtown! ”

Eduardo R

Denver, CO

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“ Iâ€ ve been going to Atlas PT for a shoulder injury and to resolve some back pain. Brett and Angela are fantastic at their craft and very personable. Brett helped me understand how certain movements irritated my biceps tendon causing shoulder pain and how to work around this issue. Iâ€ ve been impressed with his insight into what has caused my shoulder pain and back pain. Angela is thorough in showing me PT

exercises and is really encouraging. I definitely recommend them! ”

Bruce S

Denver, CO

[View all yelp reviews](#)

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“ I strongly recommend the downtown office of Atlas Physical Therapy. Special shout outs to Brett and Will, who got me back to normal function after a debilitating back/sciatica problem. They used... ”

“ I strongly recommend the downtown office of Atlas Physical Therapy. Special shout outs to Brett and Will, who got me back to normal function after a debilitating back/sciatica problem. They used in-office and at-home programs that worked FOR ME (not just one-size-fits-all programs). Very knowledgeable about anatomy, physiology, movement, etc. Thanks, guys. ”

Jeffrey B

Denver, CO

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“ Highly recommend Atlas PT! Restored my back to full health (after several years of persistent lower back pain and limited mobility from a sports injury)! Brett and Angela are the best, super... ”

“ Highly recommend Atlas PT! Restored my back to full health (after several years of persistent lower back pain and limited mobility from a sports injury)! Brett and Angela are the best, super personable and knowledgeable, and I always look forward to seeing them. Since I tore a muscle in my lower back playing basketball four years ago, I was never able to fully recover and get back to my active lifestyle of working out and playing sports. I was always in some degree of discomfort and was constantly terrified of re-injuring my back. I would see some slow recovery and then just a slight mis-movement would undo all of my progress. I had worked with chiropractors and massage therapists for a few years and would have short-term benefits but would eventually end up re-injuring myself doing the slightest things. I had never worked with a physical therapist before because honestly I just didn’t know what they would do besides have me do things I already know (do some stretches and lift some light weights). I ultimately went to Atlas because I was starting to lose hope and was thinking back surgery may be inevitable. I could not be MORE GRATEFUL for coming to Atlas! It has been life-changing, and that isn’t an exaggeration. My back is PAIN-FREE for the first time in YEARS and my lower back mobility and strength is probably better than when I got injured. I have had a couple small setbacks over the last few months but my body recovered so much quicker and it has never gone back to where it was before. Today, I feel great and can’t believe that I’m only going in every other week and typically show up without any pain. I’m fully on the path to recovery and have full confidence - for the first time in years - that I will get my life back and have a stronger, more flexible, back than before. It’s possible & I highly encourage going to Atlas if you are in the same boat that I was. Thanks Brett and Angela! See you in a couple weeks! ”

Eric L

Denver, CO

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“ After weeks of dealing with a stiff, sore back from slipping on stairs, I finally decided to schedule a physical therapy appointment. ^ Atlas was in-network with my insurance and was able to get me in... ”
“ After weeks of dealing with a stiff, sore back from slipping on stairs, I finally decided to schedule a physical therapy appointment. ^ Atlas was in-network with my insurance and was able to get me in within a couple days. ^ After a full evaluation, Gabriel did some manual work on my back and did some dry needling where it was super stiff. ^ He had me do some exercises after that. ^ Gabriel sent me home with a home exercise program to work on between visits. ^ I only needed a couple appointments to feel much better. ^ When discharged, he gave me additional exercises to progress to, if needed. ^ Great experience! ”
Dina P
Denver, CO
[View all yelp reviews](#)

•
“ My experience at Atlas in Stapleton with Kate Diffily and the other PT specialists for my back pain was fantastic. The entire staff is warm, friendly, and professional, and they clearly know their... ”
“ My experience at Atlas in Stapleton with Kate Diffily and the other PT specialists for my back pain was fantastic. The entire staff is warm, friendly, and professional, and they clearly know their craft. I never felt like they were overextending my therapy, and they ended treatment right when it felt right to me, too. Plus, the building view is quite nice. I hope I donâ t have to go back, but I would in a second. ”
Scott D
Denver, CO
[View all yelp reviews](#)

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“ I could hardly move from back problems when I went there a few months ago. This group helped me immensely with my pain and recovery as well as encouraged me mentally. I have so much to thank them for.... ”
“ I could hardly move from back problems when I went there a few months ago. This group helped me immensely with my pain and recovery as well as encouraged me mentally. I have so much to thank them for. I am walking 3 miles a day and looking forward to riding my bike and jogging soon. It is a fun place to go to and a great group to work with. ”
Geraldine G
Denver, CO
[View all facebook reviews](#)

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“ Amanda was great! ^ She helped me with my lower back pain with various types of treatments (dry needling really helped my back). ^ I didnâ t think my back could get better having a toddler climb all... ”
“ Amanda was great! ^ She helped me with my lower back pain with various types of treatments (dry needling really helped my back). ^ I didnâ t think my back could get better having a toddler climb all over me all the time, but it turned out some exercises targeted to my hips and back were the trick. Hopefully I donâ t have to go back, but if I do, I will definitely come back to Amanda. ”
Alex N

Denver, CO
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“ Amazing. I was rear-ended in a car accident in May 2017. I spent a year going to a chiropractor and acupuncture with relief only lasting a day or two after each session. I was icing my back 2-3... ”
“ Amazing. I was rear-ended in a car accident in May 2017. I spent a year going to a chiropractor and acupuncture with relief only lasting a day or two after each session. I was icing my back 2-3 times a day and was in significant pain. I finally had my back xrayed and it was suggested that I try some PT and was recommended by my doctor to Body in Balance PT. After learning new stretches and only 2 sessions I started to have less back pain and within following instructions and additional exercises I have been pain free since. I still do a certain stretch every morning. The staff knows what they are doing. I just wish I would have been sent there first instead of wasting an entire year in pain. Iâ€™m back running and exercising and have my life back! ”

Tammy M
Denver, CO
[View all yelp reviews](#)

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“ Alex and Lexy are amazing; I canâ€™t recommend them enough! I had a severe, sudden onset lower back spasm and was in so much pain I went to the ER. They gave me some muscle relaxants and told me to... ”
“ Alex and Lexy are amazing; I canâ€™t recommend them enough! I had a severe, sudden onset lower back spasm and was in so much pain I went to the ER. They gave me some muscle relaxants and told me to take some ibuprofen. Three days later I found Atlas on Yelp because I could hardly walk. In one session, Alex had me about 75% better, and in a second session I am feeling almost back to normal. Theyâ€™ve shown me some stretches and exercises that will get me back to 100% and improve things for me long term to prevent this from happening again. I am so grateful that I found Atlas!! ”

Heather M
Denver, CO
[View all yelp reviews](#)

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“ I was pretty broken by the time I arrived at my first appointment. I worked the most with Kate over the 12 weeks that I needed fixing. This included a period of time during which my symptoms... ”
“ I was pretty broken by the time I arrived at my first appointment. I worked the most with Kate over the 12 weeks that I needed fixing. This included a period of time during which my symptoms were not improving, at which point Kate referred me for an MRI that completed the diagnosis of my lower spine as the root cause. And with the complete diagnosis, the PT attention and guidance adapted to speed my recovery. I will not hesitate to return for treatment, should my body call for help again. ”

Victor T
Denver, CO
[View all yelp reviews](#)

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“ Atlas Physical Therapy is a great place for your physical therapy. With my lower back problems over the years I've seen a few physical therapists in Denver, but I've ultimately settled on Nikhil &...”

“ Atlas Physical Therapy is a great place for your physical therapy. With my lower back problems over the years I've seen a few physical therapists in Denver, but I've ultimately settled on Nikhil & Frank. Both are phenomenal working together, and I got the help I needed to recover after my surgery. Both were very professional, knowledgeable and patient with me. All the guided exercises were available for me with their phone app, which made everything much easier when doing my exercises at home. Sophie at the front desk was also fantastic, on top of things, very friendly and very accommodating. Absolutely highly recommended. Thank you all for your help! ”

Jose V

Denver, CO

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•

“ Had a great experience, I was dealing with a herniated disc and they knew just what exercises I could do to help. Nikhil also performed some dry needling which helped in the short term. Frank worked...”

“ Had a great experience, I was dealing with a herniated disc and they knew just what exercises I could do to help. Nikhil also performed some dry needling which helped in the short term. Frank worked great with me on my exercises and I am happy to say after continuing what I learned at home I am completely pain free. ”

Adam R

Denver, CO

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Important Structures



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The important parts of the lumbar spine

include:

- bones and joints
- nerves
- connective tissues
- muscles
- spinal segments

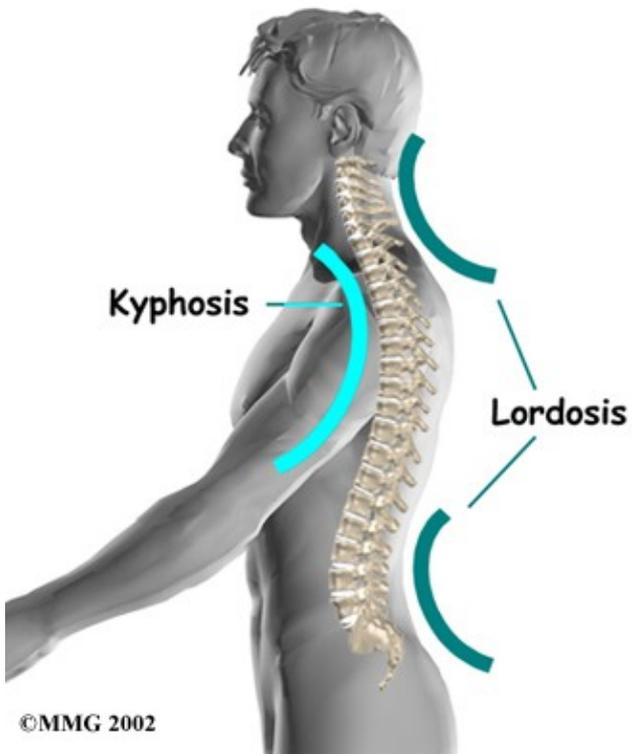
This section highlights important structures in each category.

Bones and Joints

The human spine is made up of 24 spinal bones, called *vertebrae*. Vertebrae are stacked on top of one another to form the spinal column. The spinal column is the body's main upright support.

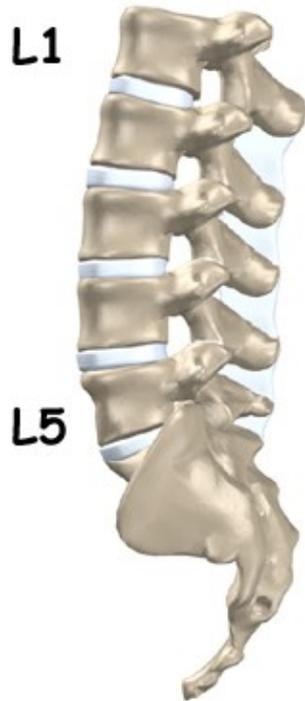
From the side, the spine forms three curves. The neck, called the *cervical spine*, curves slightly inward. The middle back, or *thoracic spine*, curves outward. The outward curve of the thoracic spine is called *kyphosis*. The low back, also called the *lumbar spine*, curves slightly inward. An inward curve of the spine is called *lordosis*.

Three Curves in Spine



The lumbar spine is made up of the lower five vertebrae. Doctors often refer to these vertebrae as L1 to L5. The lowest vertebra of the lumbar spine, L5, connects to the top of the *sacrum*, a triangular bone at the base of the spine that fits between the two pelvic bones. Some people have an extra, or sixth, lumbar vertebra. This condition doesn't usually cause any particular problems.

Lower Vertebrae

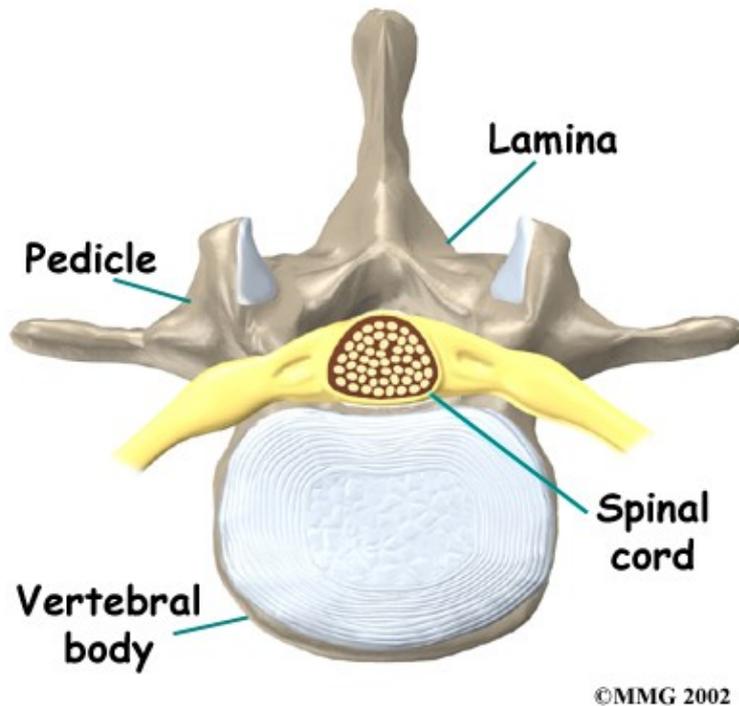
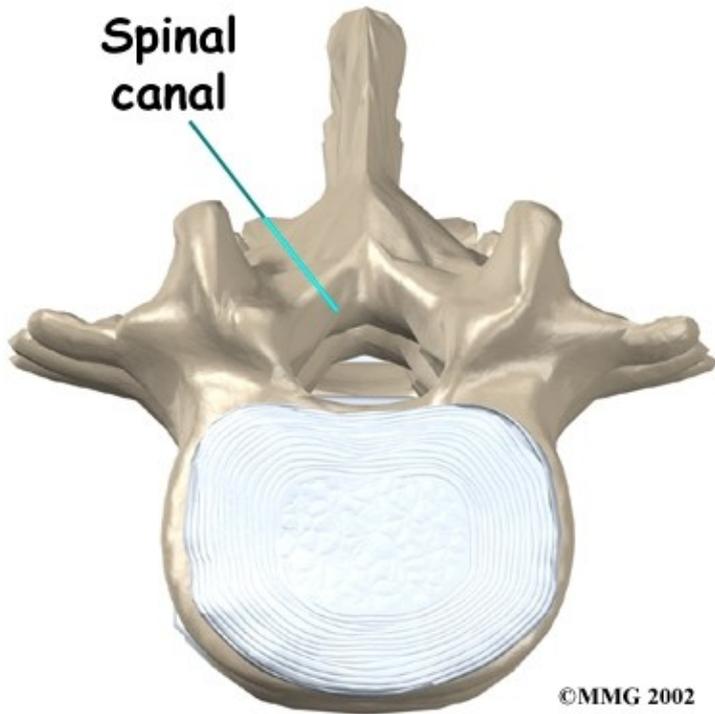


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Each vertebra is formed by a round block of bone, called a *vertebral body*. The lumbar vertebral bodies are taller and bulkier compared to the rest of the spine. This is partly because the low back has to withstand pressure from body weight and from movements such as lifting, carrying, and twisting. Also, large and powerful muscles attaching on or near the lumbar spine place extra force on the lumbar vertebral bodies.

A bony ring attaches to the back of each vertebral body. This ring has two parts. Two *pedicle bones* connect directly to the back of the vertebral body. Two *lamina bones* join the pedicles to complete the ring. The lamina bones form the outer rim of the bony ring. When the vertebrae are stacked on top of each other, the bony rings form a hollow tube that surrounds the spinal cord and nerves. The laminae provide a protective roof over these nerve tissues.

Bony Ring

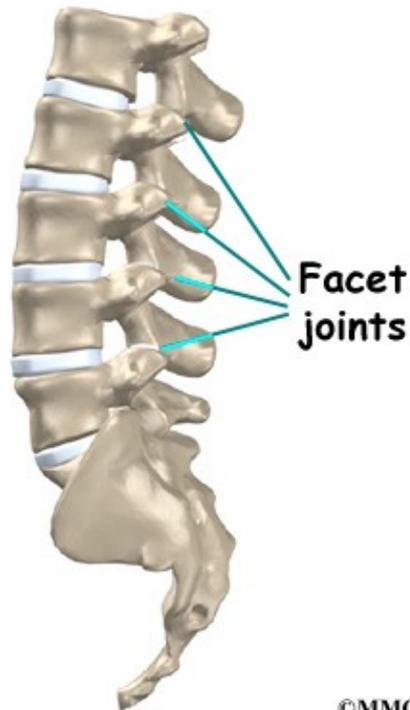


A bony knob projects out at the point where the two lamina bones join together at the back of the spine. These projections, called *spinous processes*, can be felt as you rub your fingers up and down the back of your spine. Each vertebra also has two bony knobs that point out to the side, one on the left and one on the right. These bony projections are called *transverse processes*. The projections in the low back are broader than in other areas of the spine because many large back muscles attach and impart powerful forces on

them.

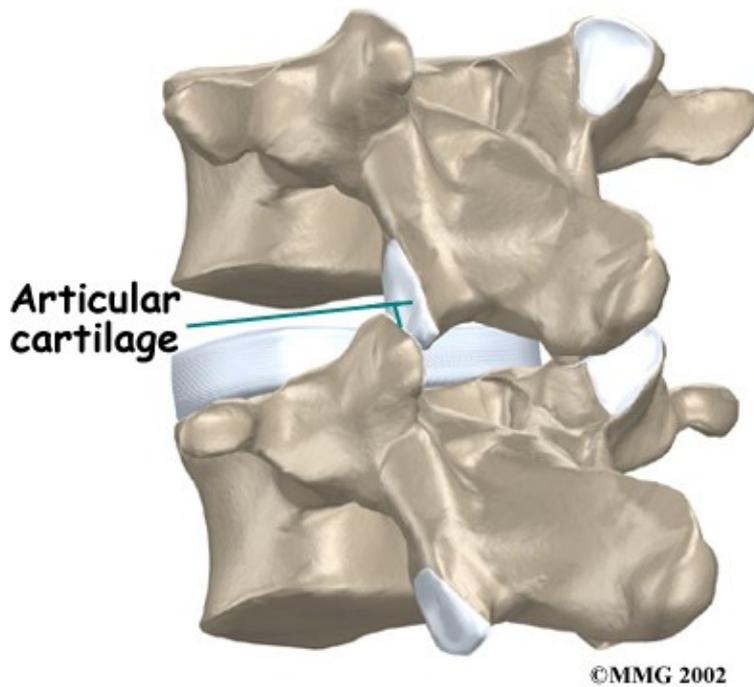
Between the vertebrae of each spinal segment are two facet joints. The facet joints are located on the back of the spinal column. There are two facet joints between each pair of vertebrae, one on each side of the spine. A facet joint is made of small, bony knobs that line up along the back of the spine. Where these knobs meet, they form a joint that connects the two vertebrae. The alignment of the facet joints of the lumbar spine allows freedom of movement as you bend forward and back.

Facet Joints



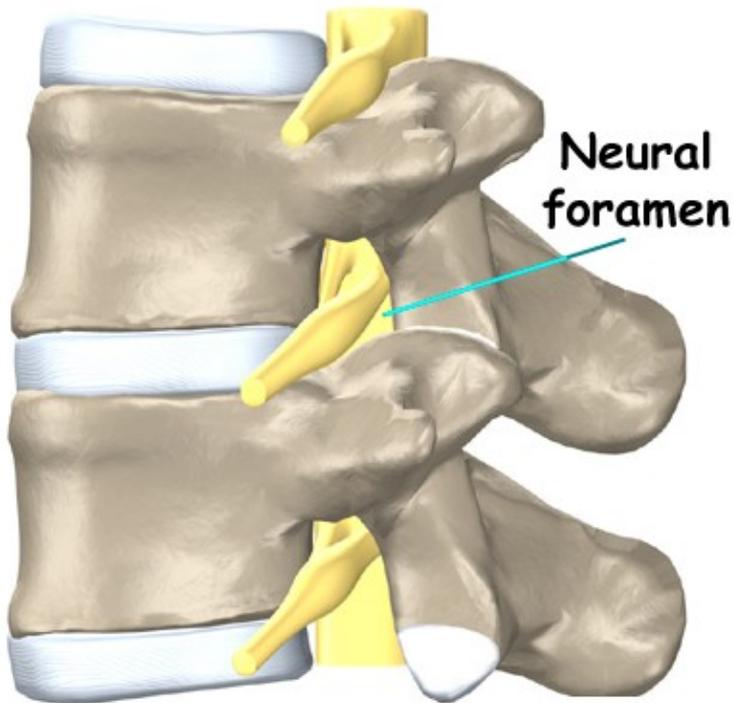
The surfaces of the facet joints are covered by articular cartilage. Articular cartilage is a smooth, rubbery material that covers the ends of most joints. It allows the ends of bones to move against each other smoothly, without friction.

Articular Cartilage



On the left and right side of each vertebra is a small tunnel called a neural foramen. (*Foramina* is the plural term.) The two nerves that leave the spine at each vertebra go through the foramina, one on the left and one on the right. The intervertebral disc (described later) sits directly in front of the opening. A bulged or herniated disc can narrow the opening and put pressure on the nerve. A facet joint sits in back of the foramen. Bone spurs that form on the facet joint can project into the tunnel, narrowing the hole and pinching the nerve.

Neural Foramen

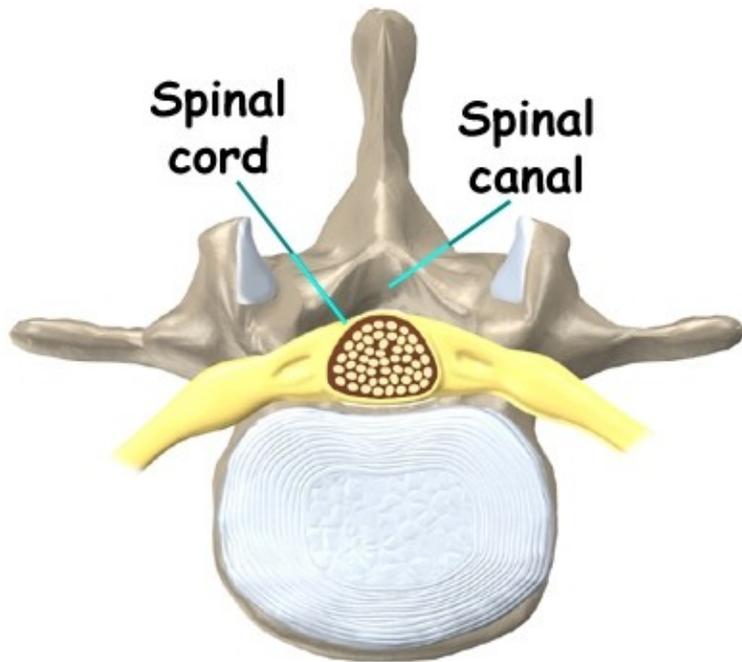


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Nerves

The hollow tube formed by the bony rings on the back of the spinal column surrounds the spinal cord. The spinal cord is like a long wire made up of millions of nerve fibers. Just as the skull protects the brain, the bones of the spinal column protect the spinal cord.

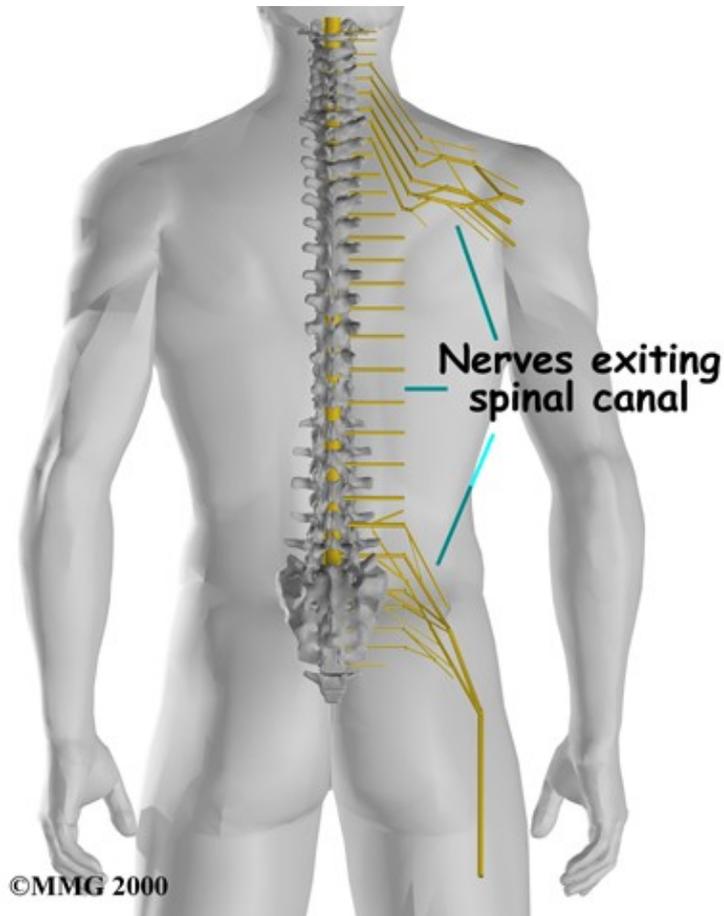
Spinal Cord



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The spinal cord extends down to the L2 vertebra. Below this level, the spinal canal encloses a bundle of nerves that goes to the lower limbs and pelvic organs. The Latin term for this bundle of nerves is *cauda equina*, meaning *horse's tail*.

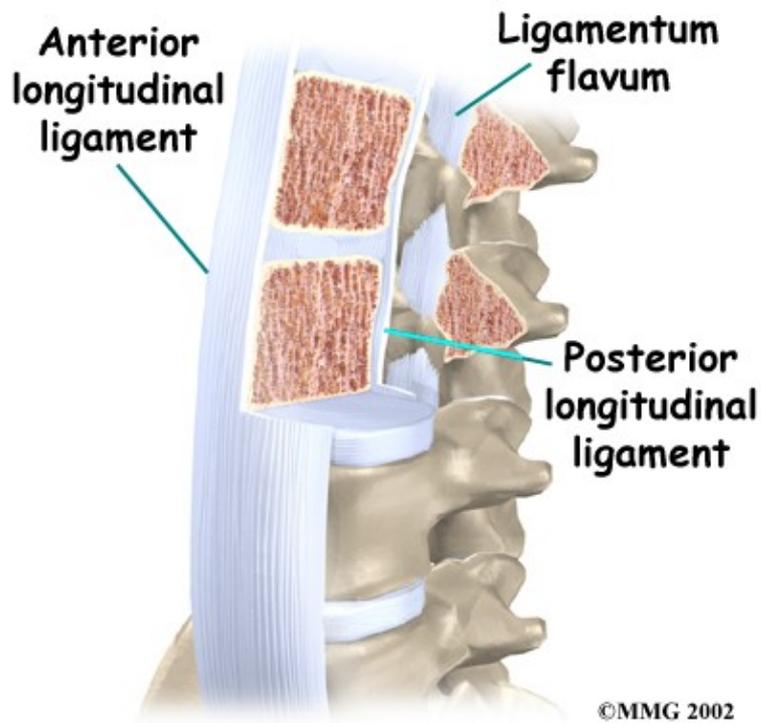
Between vertebrae, two large nerves branch off the spinal cord, one on the left and one on the right. The nerves pass through the neural foramina of each vertebra. These spinal nerves group together to form the main nerves that go to the organs and limbs. The nerves of the lumbar spine (*cauda equina*) go to the pelvic organs and lower limbs.



Connective Tissues

Connective tissues are networks of fiber that hold the cells of the body together. *Ligaments* are strong connective tissues that attach bones to other bones. Several long ligaments connect on the front and back sections of the vertebrae. The *anterior longitudinal ligament* runs lengthwise down the front of the vertebral bodies. Two other ligaments run full-length within the spinal canal. The *posterior longitudinal ligament* attaches on the back of the vertebral bodies. The *ligamentum flavum* is a long elastic band that connects to the front surface of the lamina bones (just behind the spinal cord). Thick ligaments also connect the bones of the lumbar spine to the sacrum (the bone below L5) and pelvis.

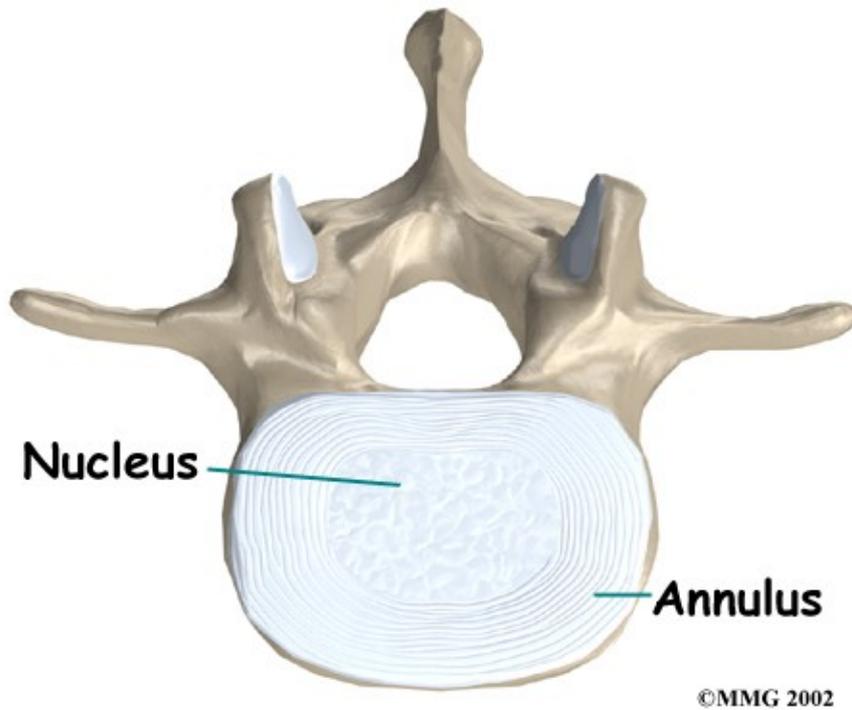
Ligaments



A special type of structure in the spine called an *intervertebral disc* is also made of connective tissue. The fibers of the disc are formed by special cells, called *collagen cells*. The fibers may be lined up like strands of nylon rope or crisscrossed like a net.

An intervertebral disc is made of two parts. The center, called the *nucleus*, is spongy. It provides most of the shock absorption in the spine. The nucleus is held in place by the *annulus*, a series of strong ligament rings surrounding it.

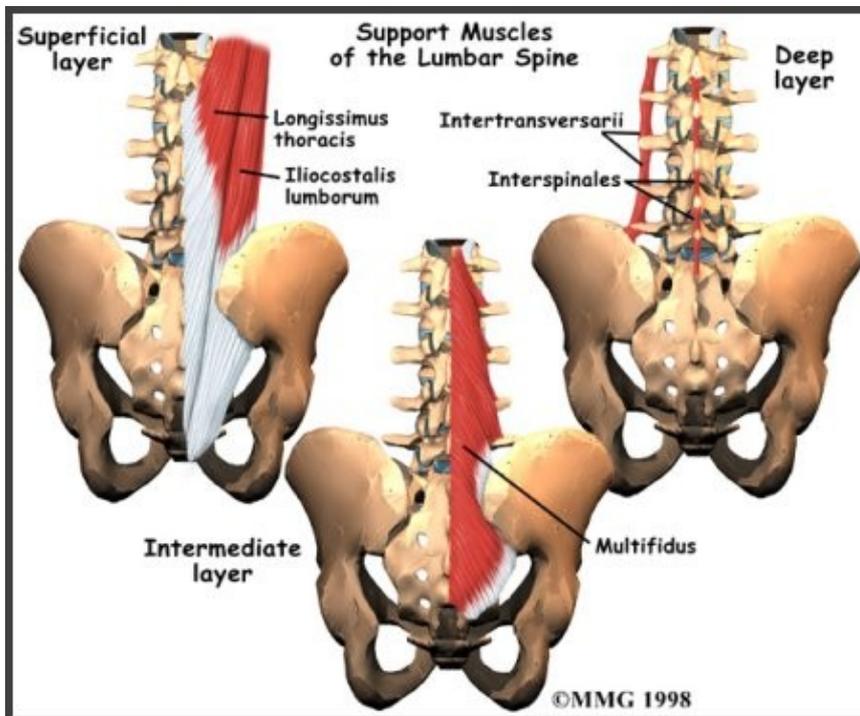
Two Parts of Intervertebral Disc



Muscles

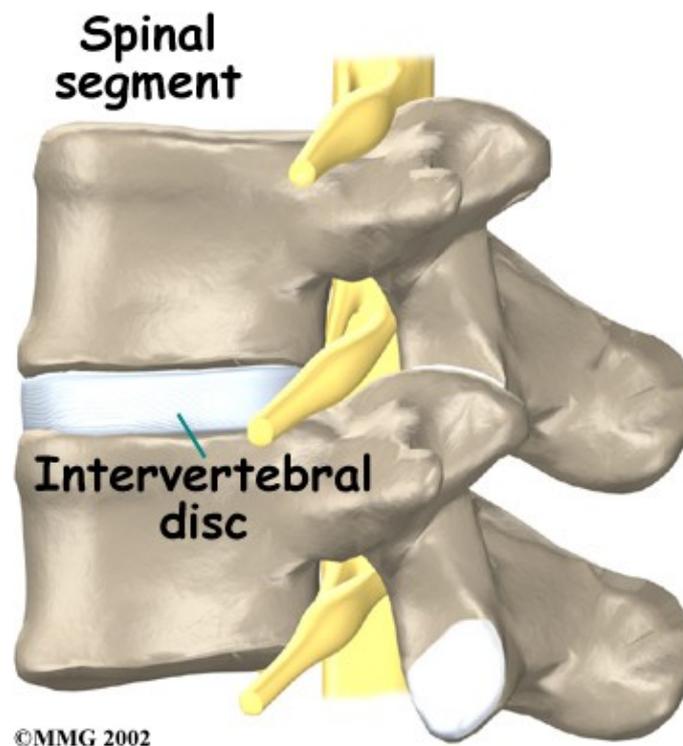
The muscles of the low back are arranged in layers. Those closest to the skin's surface, the superficial layer, are covered by a thick tissue called *fascia*. The middle layer, called the *erector spinae*, has strap-shaped muscles that run up and down over the lower ribs, chest, and low back. They join in the lumbar spine to form a thick tendon that binds the bones of the low back, pelvis, and sacrum. The deepest layer of muscles attaches along the back surface of the spine bones, connecting the low back, pelvis, and sacrum. These deepest muscles coordinate their actions with the muscles of the abdomen to help hold the spine steady during activity.

Low Back Muscles



Spinal Segment

A good way to understand the anatomy of the lumbar spine is by looking at a *spinal segment*. Each spinal segment includes two vertebrae separated by an intervertebral disc, the nerves that leave the spinal column at each vertebra, and the small facet joints that link each level of the spinal column.



The intervertebral disc separates the two vertebral bodies of the spinal segment. The disc normally works like a shock absorber. It protects the spine against the daily pull of gravity. It also protects the spine during heavy activities that put strong force on the spine, such as jumping, running, and lifting.

The spinal segment is connected by two facet joints, described earlier. When the facet joints of the lumbar spine move together, they bend and turn the low back.

Summary

Many important parts make up the anatomy of the back. Understanding the regions and structures of the lumbar spine can help you be more involved in your health care and better able to care for your back problem.

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