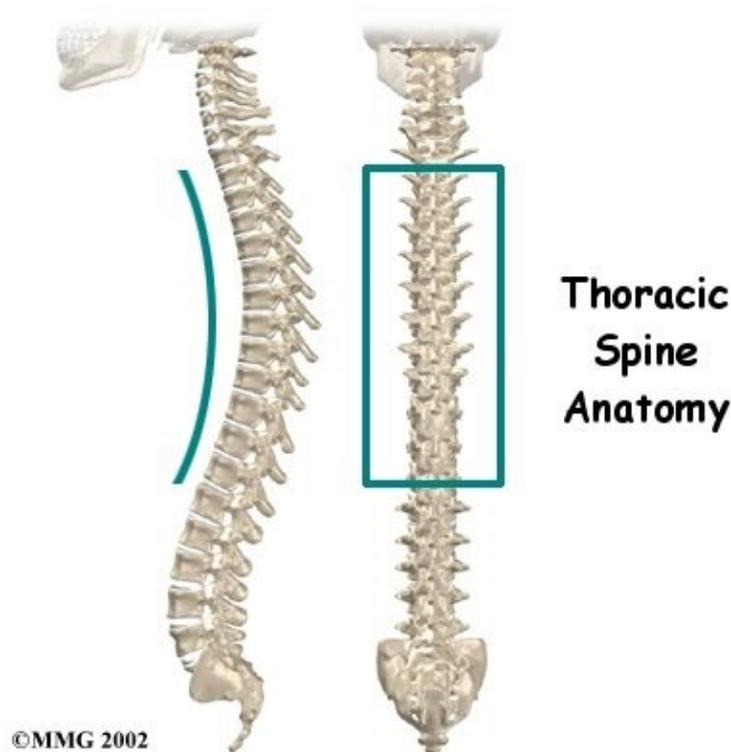


Thoracic Spine Anatomy

Introduction

Physiotherapy in Calgary for Mid Back



Welcome to Momentum Health's patient resource about Thoracic Spine problems.

The section of the spine found in the upper back is called the *thoracic spine*. It goes from the base of the neck to the bottom of the rib cage. Knowing the main parts of the thoracic spine 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 thoracic spine. The term *anterior* refers to the front of the spine. The term *posterior* refers to the back of the spine. The front of the thoracic spine is therefore called the *anterior thoracic area*. The back of the thoracic spine is called the *posterior thoracic area*.

This guide gives a general overview of the anatomy of the thoracic spine. It should help you understand:

- what parts make up the thoracic spine
- how these parts work

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

“ I was in chronic hip pain for 3.5 long years. I tried every treatment known to man including chiropractic, physio, massage, acupuncture, and even spinal decompression. Everyone who treated me came to... ”

“ I was in chronic hip pain for 3.5 long years. I tried every treatment known to man including chiropractic, physio, massage, acupuncture, and even spinal decompression. Everyone who treated me came to quick conclusions as to what my issue was with no formal assessment, and everyone claimed they could help me. Needless to say they were unsuccessful. Thank God for Jocelyn! I went to see her for a massage one day and she genuinely cared about my pain and she did a casual assessment to try to locate the cause of my pain. She is the strongest and best massage therapist I have ever got. She urged me to try chiropractic care again with Dr Brad. In my first session with him he did a full assessment with proper diagnostic testing and he confirmed what Jocelyn thought it was. With regular appointments with Dr Brad my pain was close to gone in 3 weeks. I have continued to see the physiotherapy team which includes Alexis and Ankit. With trying diligently to do my exercises, I am pain free. Thank you momentum health creekside! I will forever refer to you as my dream team! Oh, and the reception team is excellent! ”

Irene L

Calgary, AB

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“ I had been attending this location since January for a bad lower back injury and Mark had been phenomenal. I was fortunate it was not a more severe injury but it was very quick before I was walking... ”

“ I had been attending this location since January for a bad lower back injury and Mark had been phenomenal. I was fortunate it was not a more severe injury but it was very quick before I was walking without pain again. Highly recommended! ”

Terence C

Calgary, AB

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“ I can't say enough good things about Dr. Simons. I injured my back again and had trouble sleeping and my movement was quite impaired. Immediately after the adjustment I already felt a massive... ”

“ I can't say enough good things about Dr. Simons. I injured my back again and had trouble sleeping and my movement was quite impaired. Immediately after the adjustment I already felt a massive improvement. never will I ever go to another Chiropractor, he is the reason why I drive all across town to see him ”

Patrick B

Calgary, AB

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“ I don't know why I waited so long. Finally have relief for my back and neck. Competent and through care ”

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Charlene T

Calgary, AB

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“ I recently had the pleasure of visiting Dr Carpino and Physiotherapist Russ Gothard for some back and hip pain I was experiencing. I can't say enough good things about the care I received. Both professionals were incredibly knowledgeable, attentive, and skilled. They took the time to listen to my concerns and tailored their treatments to my specific needs which also included the GLAD Back program. After just a few sessions, I felt a significant improvement in my pain levels, overall mobility and pain management. I highly recommend Dr Carpino and Pysiotherapist Russ Gothard to anyone in need of chiropractic or physiotherapy services at Momentum Health. Also a big thanks to massage therapist Meagan Fishly who also played an important role in dealing with my injuries. ”

Geordie S

Calgary, AB

[View all google reviews](#)

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“ Excellent experience! The front desk staff are are always very friendly and ready to help. I worked with Nmeshivi and Leah to recover from a back injury. They listened to what I had to say and... ”

“ Excellent experience! The front desk staff are are always very friendly and ready to help. I worked with Nmeshivi and Leah to recover from a back injury. They listened to what I had to say and customized a recovery program for me, modifying it as I progressed. Overall very happy with the treatment and care throughout the process. ”

Rene R

Calgary, AB

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“ First I want to say Anthony at the desk is an absolute super star! I ended up pinching a nerve in my lower back in December and calling in pain and he got me in to see Adam right away and Adam helped... ”

“ First I want to say Anthony at the desk is an absolute super star! I ended up pinching a nerve in my lower back in December and calling in pain and he got me in to see Adam right away and Adam helped with so much relief and support right away. Then recently I hurt my neck and I called and need more help but explained to Anthony I struggled to sit for a long period of time (or at all in that moment) without being in pain and was dealing with dizziness as well. I arrived 15 mins early due to my ride being early and Anthony helped accommodate me by letting Adam know and getting me an empty bed in the back so I could lay down (that helped me the most) and Anthony walked me to the back so I could lay down and be comfortable before my initial appointment even started and offering me a heat pack. Just absolutely amazing and dealing with me awkwardness because I am someone who would just deal with pain probably as well haha. So thank you so so much. I will recommend to everyone I know. And thankyou to Adam to helping me so much and dealing with my sass. Without these two, I donâ€ t think I would even have progressed as much I have with these aches and pains. ”

Jakki G
Calgary, AB
[View all google reviews](#)

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“ Iâ€ˆve been seeing Heather for just over two months now and she has made a HUGE difference in my life. I have chronic pain in my back and hip that has been plaguing me for over 10 years. Iâ€ˆve been... ”
“ Iâ€ˆve been seeing Heather for just over two months now and she has made a HUGE difference in my life. I have chronic pain in my back and hip that has been plaguing me for over 10 years. Iâ€ˆve been countless doctor, physios and trainers for my pain and for the first time I feel like I have someone who is determined to get to the bottom of my issue, teamed up with the knowledge and experience to do so. The red cord/ dry needle system that she uses is so smart I honestly canâ€ˆt understand why Iâ€ˆve never heard of it before, it doesnâ€ˆt make sense why more physios arenâ€ˆt using it! If youâ€ˆre like me and have feel like you have tried everything for you pain and nothing is making a real difference I cannot recommend Heather enough, she has over 35 years of experience and genuinely cares about helping you get better. ”
Michelle M
Calgary, AB
[View all google reviews](#)

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“ I'd like to express my appreciation to Momentum Health Physiotherapy. I had been suffering from lower back pain for three months until I received 3 times treatment (once per week) provided by Jason,... ”
“ I'd like to express my appreciation to Momentum Health Physiotherapy. I had been suffering from lower back pain for three months until I received 3 times treatment (once per week) provided by Jason, then I recovered. Jason is very nice person and very professional. The exercise therapy is helpful for strengthen the muscle of my lower back. I would highly recommend Momentum Health West Springs. ”
Heng
Calgary, AB
[View all google reviews](#)

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“ I had back pain for 2 weeks, and after massage, chiropractic and medication a friend indicated Eli. I was there for an hour, He did different types of methodology, showing knowledge and skills, and... ”
“ I had back pain for 2 weeks, and after massage, chiropractic and medication a friend indicated Eli. I was there for an hour, He did different types of methodology, showing knowledge and skills, and the pain was gone. Today, if the pain show up, Eli is my first option. Thanks for the great service! ”
Junior L
Calgary, AB
[View all google reviews](#)

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“ Over the past few years I have suffered from back, neck, arm and hand ailments. I sought treatment by going to Momentum Health at Deerfoot City and have done so for some time now. All the staff have... ”

“ Over the past few years I have suffered from back, neck, arm and hand ailments. I sought treatment by going to Momentum Health at Deerfoot City and have done so for some time now. All the staff have been welcoming, courteous and professional. Mark Taylor has been my physiotherapist for the past year. He is very professional, friendly and skilled at his job. He has been successful at treating a number of my physical ailments and relieving the pain. I would highly recommend him to anyone seeking a physiotherapist. ”

Beth R

Calgary, AB

[View all google reviews](#)

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“ Thank you so much for your excellent acupuncturist service Dr. Adam and receptionists for accommodating my last minute appointment. To my lower back and glutes. Great suggestion for the exercise too. ”

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Minou S

Calgary, AB

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“ I seen Carlee and her team for direction to help with my piriformis muscle and back disc issues. They were helpful, friendly and got me on track to manage my symptoms. I would highly recommend this team to help you out. Thanks ladies! ”

Shauna H

Calgary, AB

[View all google reviews](#)

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“ My first visit was excellent (following all of my other visits remained a good experience). My physiotherapist, Anne, helped me understand what was happening with my lower back. She educated me on... ”

“ My first visit was excellent (following all of my other visits remained a good experience). My physiotherapist, Anne, helped me understand what was happening with my lower back. She educated me on what causes the pain, and we did some exercises during my first visit, which I found helpful. I like my physiotherapist, Anne, who makes me feel respected. ”

JennH

Calgary, AB

[View all google reviews](#)

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Jenn H

Calgary, AB

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Important Structures



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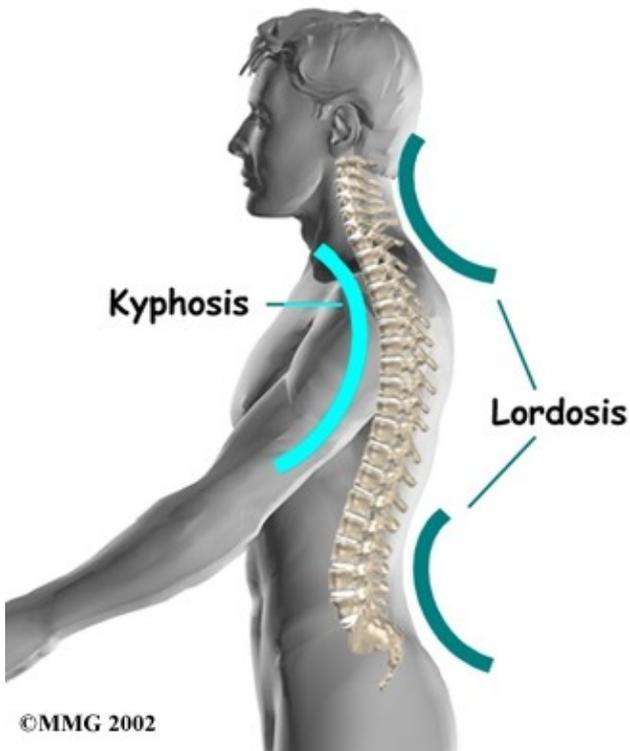
The important parts of the thoracic spine include:

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

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 create 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 thoracic spine curves outward. The low back, also called the *lumbar spine*, curves slightly inward. An inward curve in the spine is called *lordosis*. An outward curve, as in the thoracic spine, is called *kyphosis*. The kyphosis is shaped like a C with the opening in front.

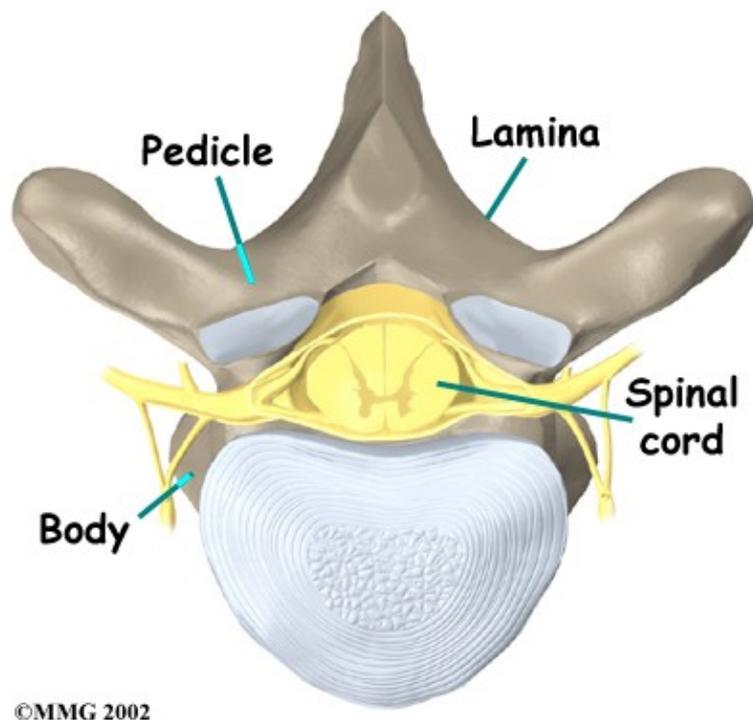


The middle 12 vertebrae make up the thoracic spine. Doctors often refer to these vertebrae as T1 to T12. The large bump on the back of the lower part of the neck is the seventh cervical vertebra, called C7. It connects on top of T1. The lowest vertebra of

the thoracic spine, T12, connects below the bottom of the rib cage to the first vertebra of the lumbar spine, called L1.

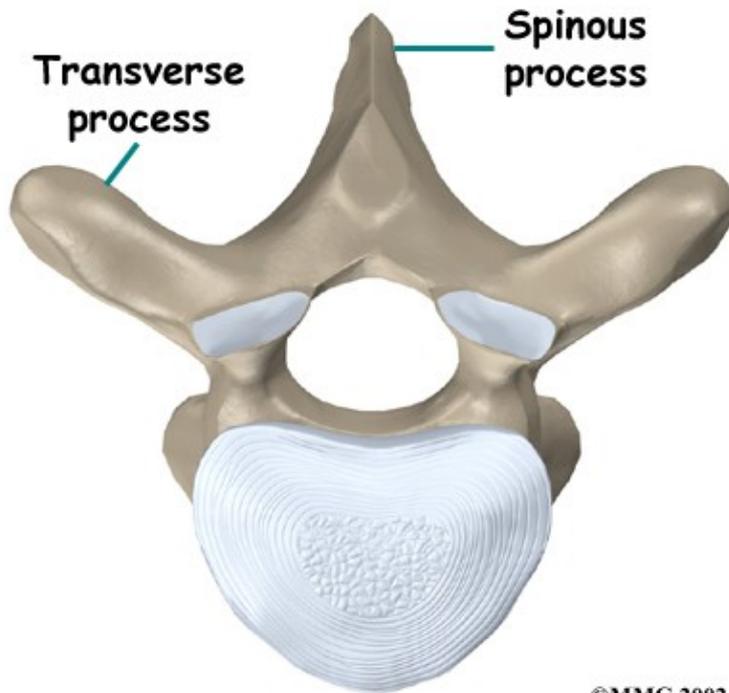
Each vertebra is made of the same parts. The main section of each thoracic vertebra from T1 to T12 is formed by a round block of bone, called the *vertebral body*. Each vertebra increases slightly in size from the neck down. The increased size helps balance and support the larger muscles that connect to the lower parts of the spine.

A bony ring attaches to the back of each vertebral body. This protective ring of bone surrounds the spinal cord, forming the spinal canal. 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.



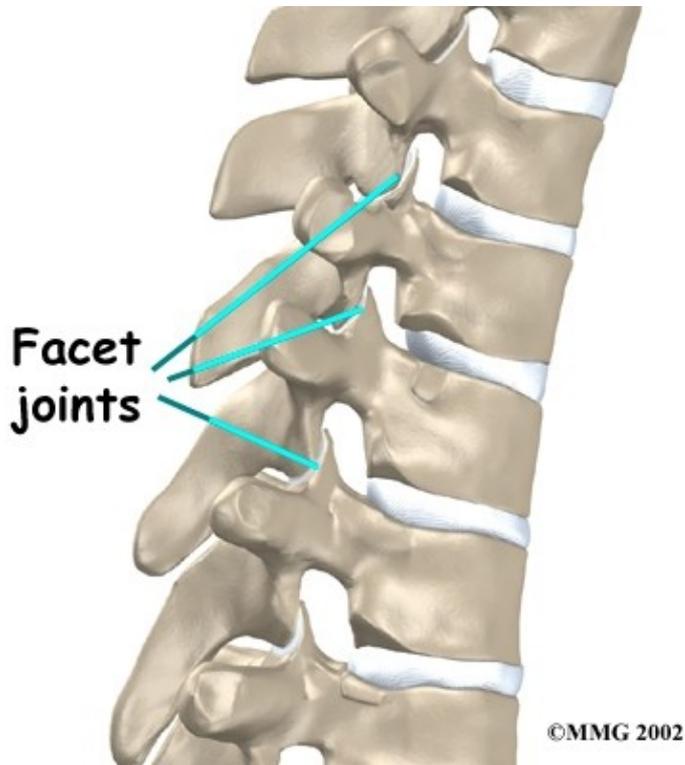
A bony knob projects out at the point where the two lamina bones join together at the back of the spine. You can feel these projections, called *spinous processes*, as you rub your fingers up and down the middle of your back. Bony knobs also point out from the side of the bony ring, one on the left and one on the right. These projections are called *transverse processes*.

Projections



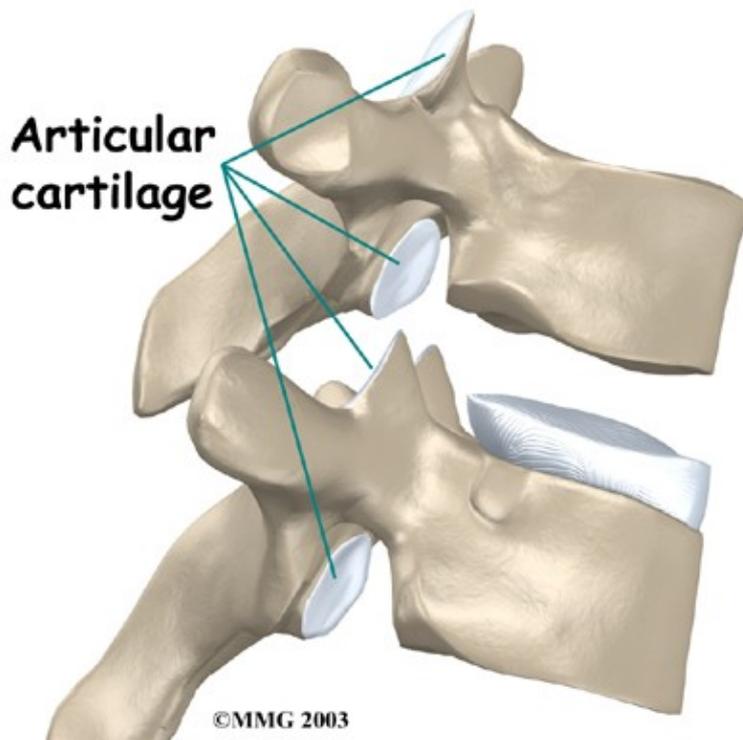
©MMG 2002 Between the vertebrae of each spinal segment are two *facet joints*. The facet joints are located on the back of the spinal column. There are two facet joints between each pair of vertebrae, one on each side of the spine. A facet joint is made of small, bony knobs that line up along the back of the spine. Where these knobs meet, they form a joint that connects the two vertebrae. The alignment of the facet joints of the thoracic spine allows freedom of movement as you twist back and forth or lean side to side.

Facet Joints



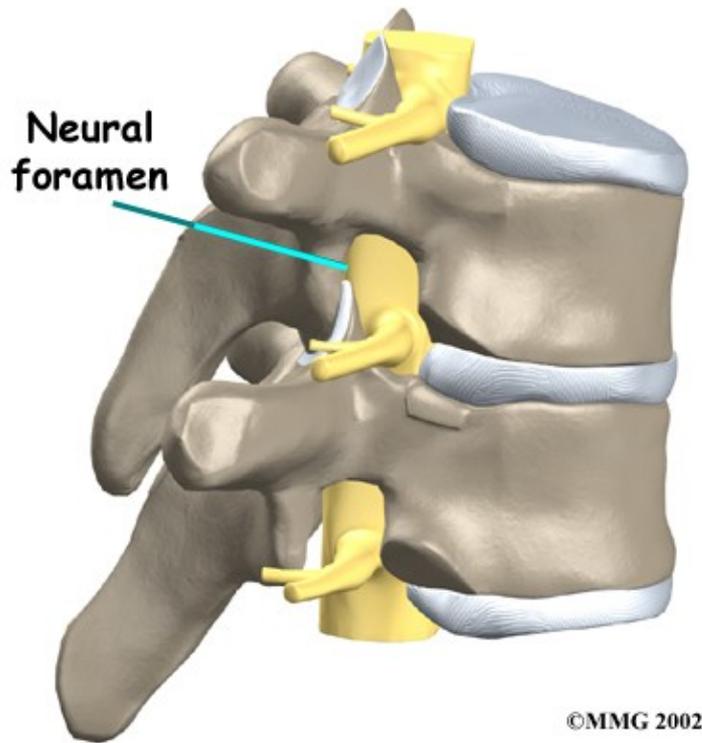
The surfaces of the facet joints are covered by articular cartilage. Articular cartilage is a slick, rubbery material that covers the ends of most joints. It allows the ends of bones to move against each other smoothly, without friction.

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



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.

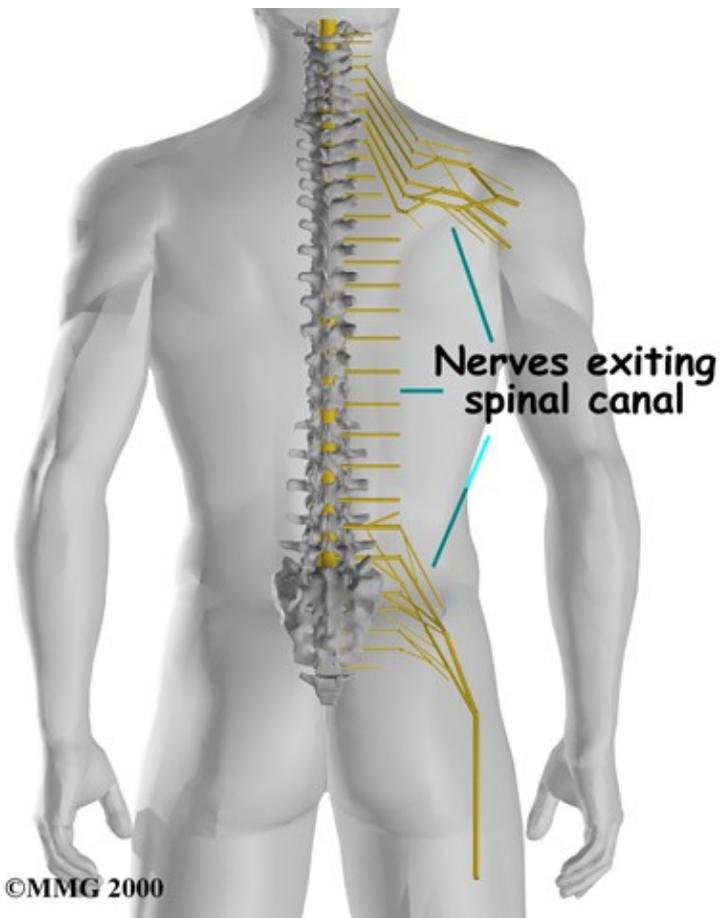
The spinal cord travels down from the brain through the spinal column. In the thoracic spine, the spinal canal is narrower than in the rest of the spine, giving very little extra space for the spinal cord as it passes through the thoracic spine.

Narrow Spinal Canal



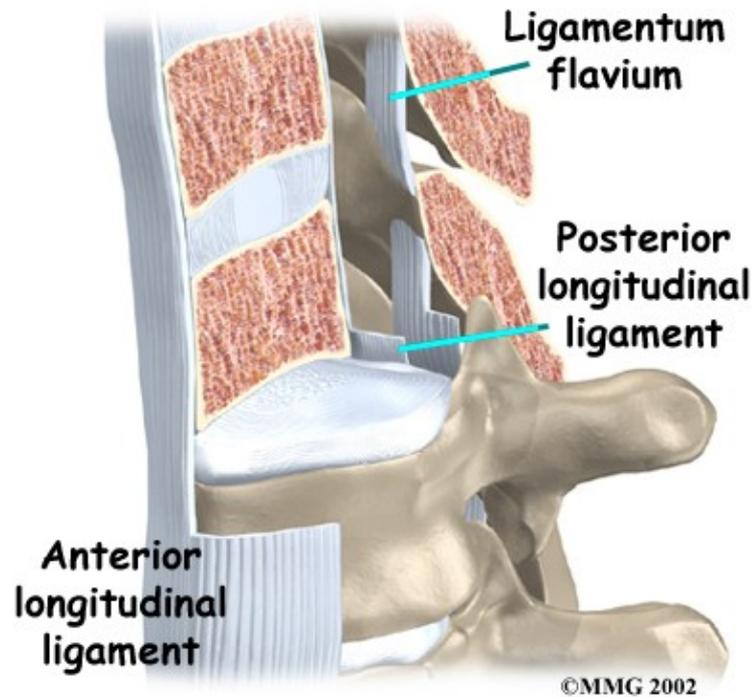
Between the vertebrae, two large nerves branch off the spinal cord, one on the left and one on the right. The nerves pass through the neural foramina of each vertebra. These spinal nerves group together to form the main nerves that go to the organs and limbs. The nerves of the thoracic spine mainly control the muscles and organs of the chest and abdomen.

Nerves in Spinal Canal



Connective Tissues

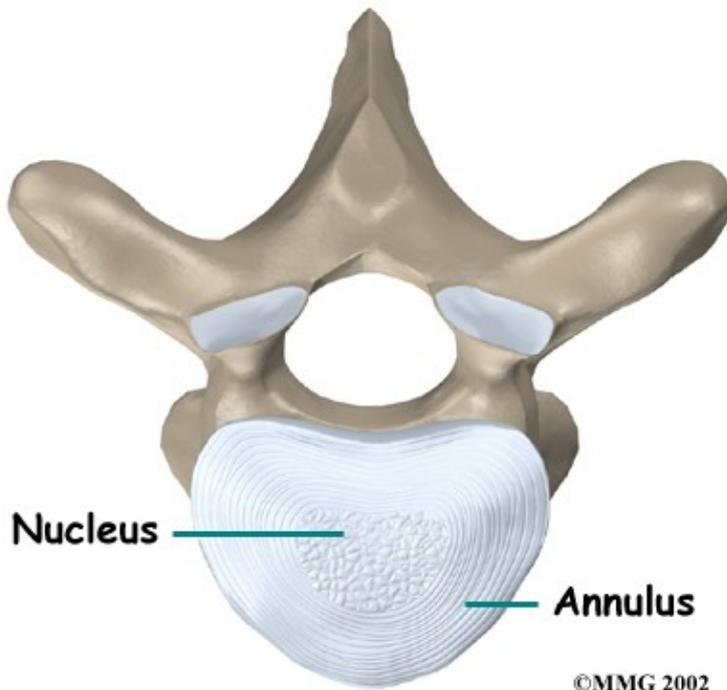
Connective tissues are networks of fiber that hold the cells of the body together. *Ligaments* are strong connective tissues that attach bones to other bones. Several long ligaments connect on the front and back sections of the vertebrae. The *anterior longitudinal ligament* runs lengthwise down the 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. Thick ligaments also connect the ribs to the transverse processes of the thoracic spine.



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

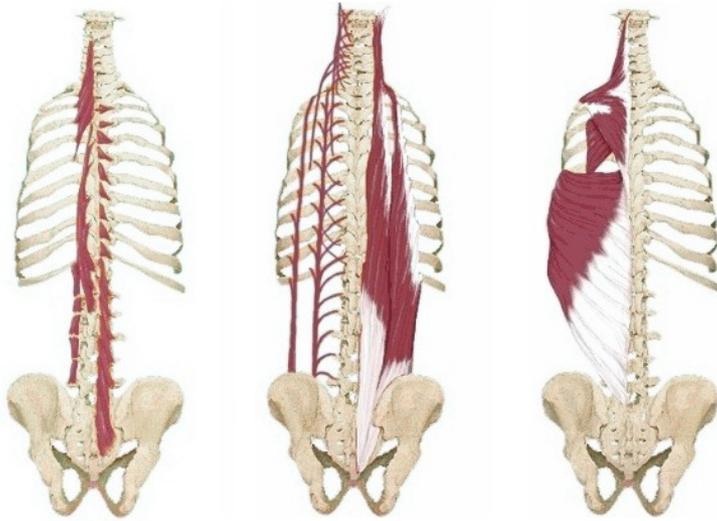


Discs in the thoracic spine are much thinner than in the cervical and lumbar spine. As a result, there is generally less movement between the vertebrae of the thoracic spine.

Muscles

The muscles of the thoracic spine are arranged in layers. Those closest to the skin's surface run from the back of the vertebrae to the shoulder blades. Others wrap around the rib cage and connect to the shoulders. Strap-shaped muscles called *erector spinae* make up the middle layer of muscles. These muscles run up and down over the lower ribs and *thorax* (the rib cage), and cross to the low back. The deepest layer of muscles attaches along the back of the spine bones, connecting the vertebrae. Muscles also connect from one rib to the next.

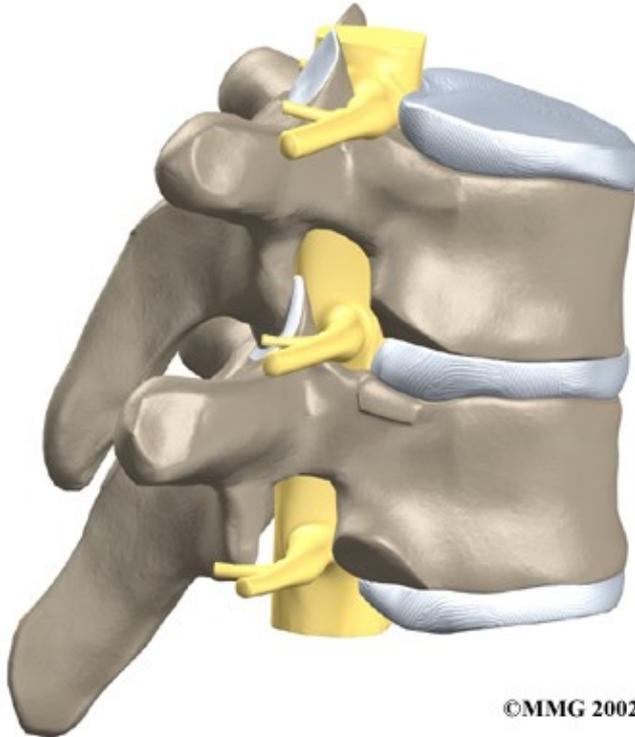
Muscles



Spinal Segment

A good way to understand the anatomy of the thoracic spine is by looking at a spinal segment.

Spinal Segment



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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.

Summary

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

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