

MedFit Classroom

Orthopedic Fitness Specialist Course

Module 8: Thoracic Spine

Authors:

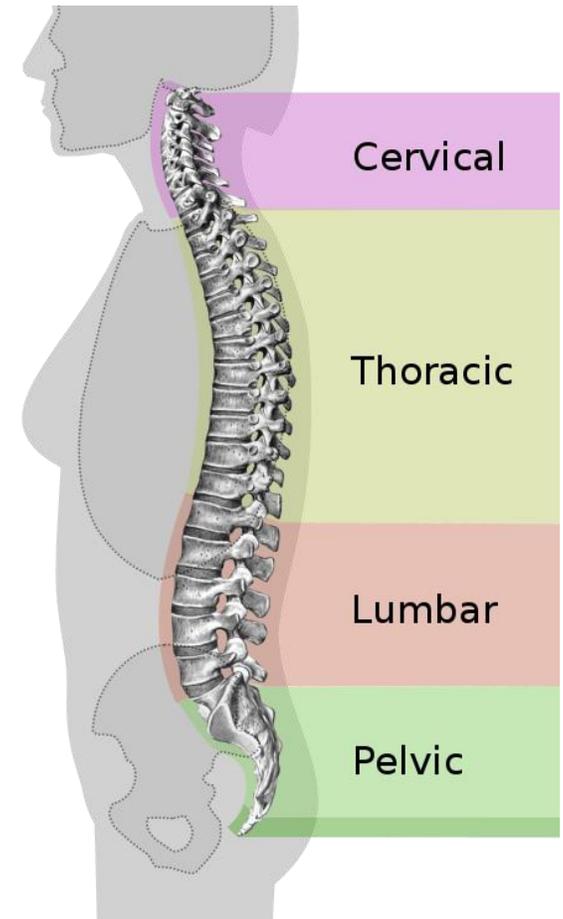
Dr. Irv Rubenstein & Christine Conti, M.Ed.

Learning Objectives

Thoracic Spine

Thoracic Spine

- **Identify and Define**
 - **The Thoracic Spine**
 - **A Healthy Thoracic Spine**
- **Assess and Identify**
 - **Common Conditions/Issues**
 - **Osteoarthritis**
 - **Stenosis**
 - **Cervicalgia**
 - **Structural: Disk disease**
 - **Mechanical: Postural/Common Injuries**
- **Exercise Selection**
 - **Strengthening Thoracic Spine and Stabilizing Muscles**



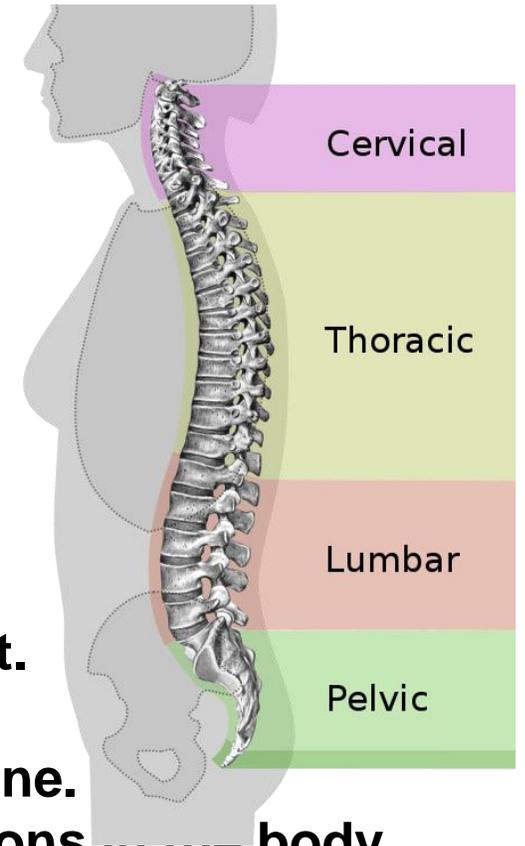
Learning Objectives

Thoracic Spine

Thoracic Spine:

An area in the upper middle of the spine that contains 12 vertebrae known as the thoracic vertebrae.

- Referred to with the initial “T” and a number reflecting their position in the spine
 - T-1 being the highest thoracic vertebra and T-12 being the lowest.
 - Size of the vertebrae increases down the back
 - Lower thoracic spine being wider than the upper thoracic spine.
 - This area of the spine performs a number of important functions in the body.

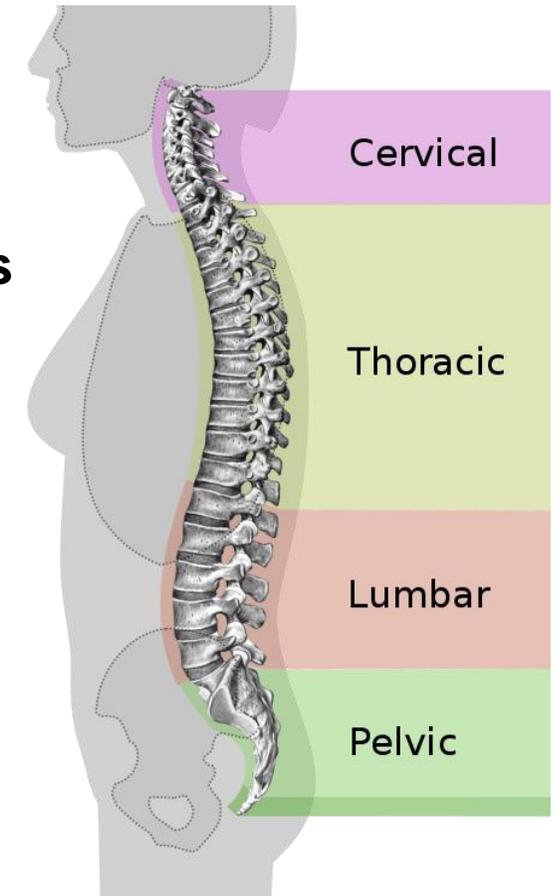


Learning Objectives

Thoracic Spine

The spinal column as a whole provides support to the body, as well as a protective casing for the spinal cord that carries nerve impulses so they can be transmitted to the extremities.

In the case of the thoracic spine, the vertebrae provide points of articulation for the ribs. The spinal cord, ribs, and sternum together create a solid cage that protects the contents of the chest. When people fall, are compressed, or are otherwise put in danger, these bones are designed to limit damage to the contents of the chest, keeping the heart and lungs functioning.



Osteoarthritis/Thoracic Degenerative Joint Disease

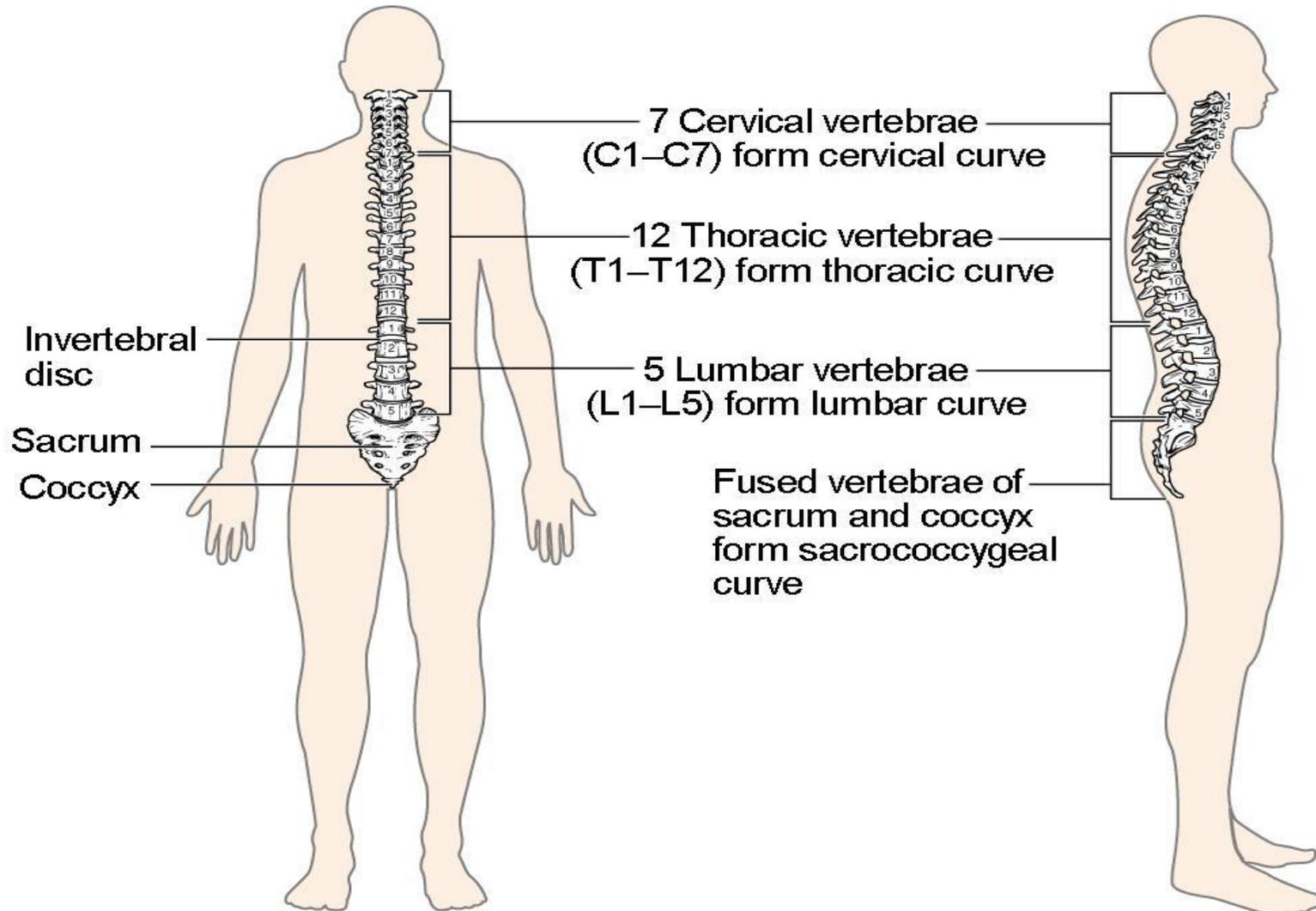
TREATMENT OPTIONS:

Treatment of thoracic degenerative joint disease will depend on the extent of your symptoms and how long you have had them. Conservative treatment options for thoracic degenerative joint disease include:

- Rest, ice and/or moist heat
- Anti-inflammatory and pain medications
- Steroid injections, facet joint injections
- Braces to support the spine
- Physical therapy
- Surgery may be recommended for patients with persistent pain, spinal instability or nerve root entrapment

[Thoracic Degenerative Joint Disease | Lancaster Orthopedic Group, Lancaster County, PA](#)

What is a healthy thoracic spine?



Common Conditions

OSTEOARTHRITIS /THORACIC DEGENERATIVE JOINT DISEASE

- » Thoracic degenerative joint disease, also known as osteoarthritis, is a term used to describe a degenerative condition in the middle of the back (thoracic spine).
- » Although the thoracic spine is less likely to deteriorate compared to the cervical (neck) or lumbar (lower back) regions, it is not immune to degeneration and damage from arthritic changes, general wear and tear of the joints over time, repetitive stress injuries (e.g., lifting or carrying heavy loads), or a sudden fall or trauma, such as a motor vehicle accident.

Osteoarthritis/Thoracic Degenerative Joint Disease

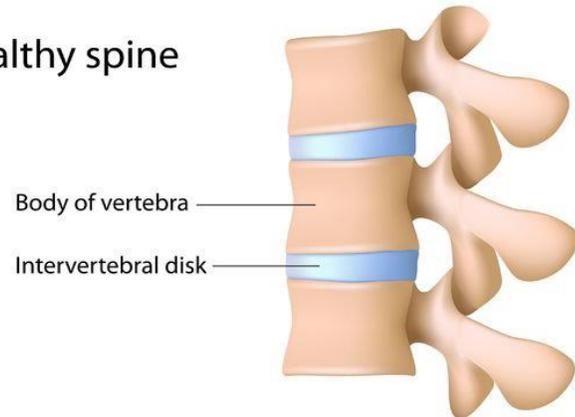
Individuals who suffer from thoracic degenerative joint disease may experience these symptoms:

- **Back pain at the location of the affected joint**
- **Pain that radiates to the rib cage or trunk of the body**
- **Localized swelling, redness and tenderness**
- **Muscle spasms**
- **Difficulty bending backward, standing or walking**
- **Difficulty sitting for extended periods**
- **Stiffness in the joints after a period of rest**

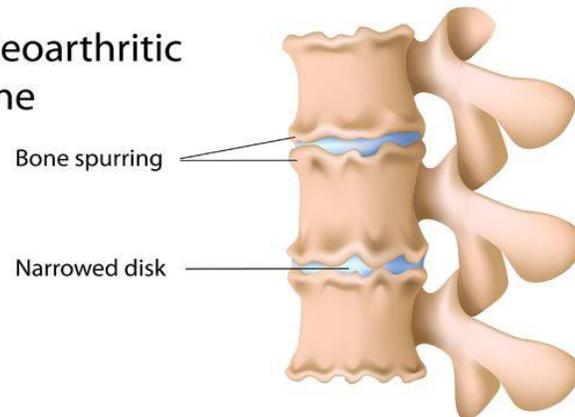
Common Conditions

Arthritis

Healthy spine



Osteoarthritic spine



Spondylosis

Normal spine



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Early ankylosing spondylitis



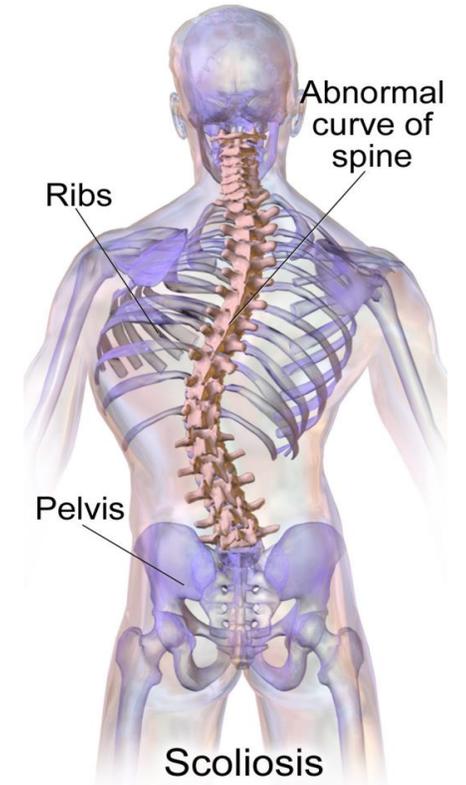
Inflammation

Advanced ankylosing spondylitis



Fusion

Scoliosis



Common Conditions

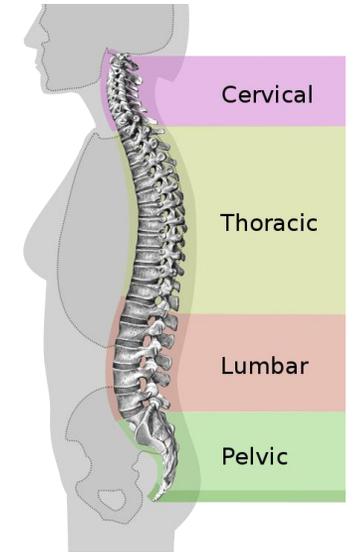
Thoracic Spinal Stenosis

Thoracic spinal stenosis, or a narrowing of the spinal canal in the mid to upper back, is **one of the least common forms of spinal stenosis**.

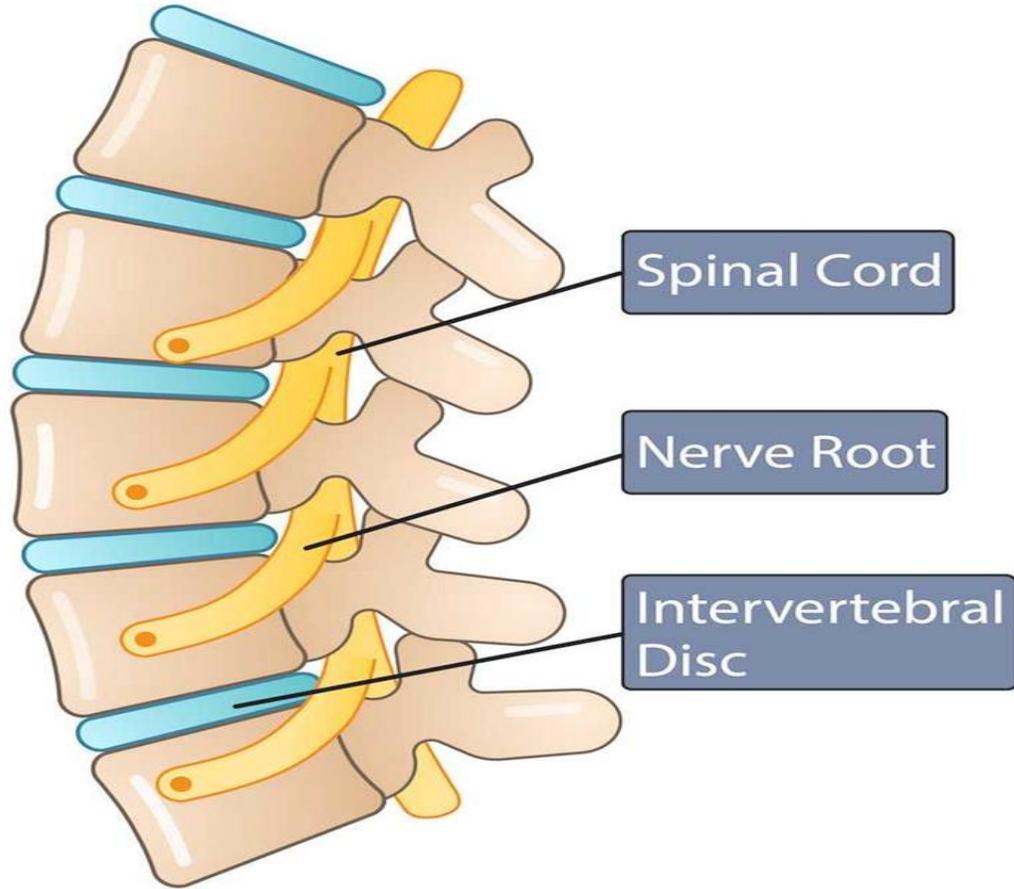
About Thoracic Spinal Stenosis:

Thoracic spinal stenosis is a narrowing of the space that runs up the center of your spine, known as the spinal canal. It stretches the length of 12 vertebrae, numbered T1 – T12. The symptoms experienced due to this condition is typically from bone tissue of the vertebrae, bone spurs, ligaments or discs pushing into and narrowing the spinal canal, placing pressure on your nerve roots and spinal cord.

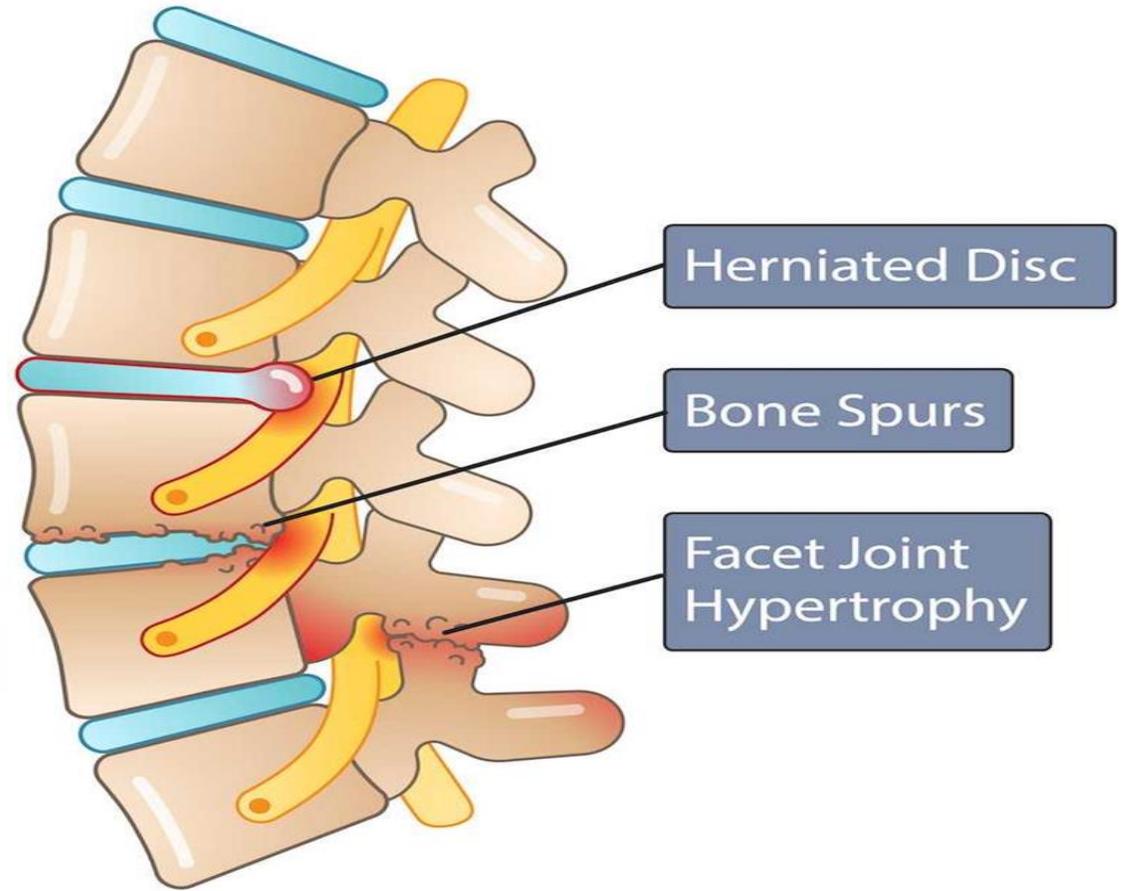
This condition differs from spinal stenosis which affects the cervical (neck) region or the lumbar (lower back) region in that the thoracic vertebrae are attached to the ribs. This makes the thoracic part of your spine less flexible than the other areas. Despite this, the thoracic spine is important in that it provides support that allows the body to rotate and move side-to-side.



Healthy Spine



Spinal Stenosis



Thoracic Spinal Stenosis

Common Symptoms

Symptoms of thoracic spinal stenosis can vary from person to person. The most common symptoms experienced are:

- Numbness in the legs and/or feet and unsteadiness, in some instances, making it difficult to walk.
- Pain in the thoracic region of your back, ribs, and sometimes in the legs. Pain as a symptom, however, is often absent.

Diagnosis

Diagnosing thoracic spinal stenosis includes a full health history and physical exam. Your doctor will ask you questions that will help him or her pinpoint symptoms, how long they have been present and potential problems. Once it's determined that you may be suffering from thoracic spinal stenosis, you will be sent for imaging. This can include X-rays and an MRI or CT scan to view the inner part of your spinal canal.

Treatment Options

Treatment for thoracic spinal stenosis usually requires surgery because symptoms are usually due to spinal cord compression. **Although physical therapy has an important role in recovery, it is not a substitute for surgery.** Usually, surgical treatment consists of a removal of the bone, ligament, and/or disc material that is compressing the spinal cord and a stabilization/fusion procedure

The Thoracic Spine & Cervicalgia

Cervicalgia:

The neck, also known as the cervical spine, is tasked with both protecting the spinal cord and supporting the head while allowing for a good range of movement..

Causes:

Poor posture or lengthy periods with the neck at an awkward angle, such as when sleeping or working at a desk.

- Injuries that involve a sudden neck movement, such as **whiplash** from a car crash or an impact sport.
- Long-term **stress** that causes clenching of neck and shoulder muscles, leading to a strain on the neck.
- Bone conditions, such as **arthritis** or **osteoporosis**. As these conditions are more common in older people, age is a risk factor for cervicalgia.
- Diseases or conditions that affect the spine, such as spinal infections or **meningitis**.
- Certain sports can cause kyphosis, a condition affecting posture in a way that strains the neck. Kyphosis can also lead to cervicalgia. (cycling, body building the chest more than back muscles, wrestling, hockey/field hockey, tennis, etc...)

The shoulders can be pushed forward and become rounded, putting pressure on the neck. This pressure can occur from sports that promote this posture, such as cycling, or certain bodybuilding programs that build up chest muscles more than the back muscles.

Cervical Spine and Cervicalgia



How does the thoracic spine affect the cervical spine?

Improve Cervicalgia Health

Maintaining a good posture when seated or standing is an effective method of preventing cervicalgia and supporting the neck!

- **For example, when working at a desk, good posture can be maintained through keeping the knees bent at 90-degree angle, with both feet flat on the floor and the neck in a neutral position.**

Improving posture throughout the night

- **The body is inactive for a long time when someone is sleeping, so it is beneficial to maintain a good posture during sleep. People should avoid sleeping on the stomach or in a position whereby the neck is twisted or bent. Use a supportive pillow on your neck and between the knees for side sleeping.**

Stress Management:

- **Stress reduction techniques, such as meditation or physical exercise, can reduce the strain placed on the shoulders and neck, which often occurs unconsciously.**

Physical activity

- **Staying active can help to reduce the risk of cervicalgia developing. It can also be useful to engage in certain types of physical exercise, such as those that target the upper back muscles to help prevent shoulders from rounding.**

Structural: Disk Disease

Degenerative disk disease occurs when your spinal disks wear down.

Spinal disks are rubbery cushions between your vertebrae (bones in your spinal column).

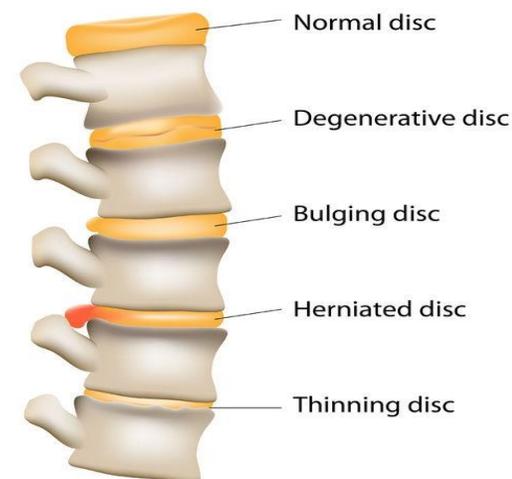
They act as shock absorbers and help you move, bend and twist comfortably. Everyone's spinal disks degenerate over time and is a normal part of aging.

When the cushions wear away, the bones can start to rub together.

This contact can cause pain and other problems, such as:

- [Adult scoliosis](#), where the spine curves.
- [Herniated disk](#), also called a bulged, slipped or ruptured disk.
- [Spinal stenosis](#), when the spaces around your spine narrow.
- [Spondylolisthesis](#), when vertebrae move in and out of place.

DISC DEGENERATION



Structural: Disk Disease

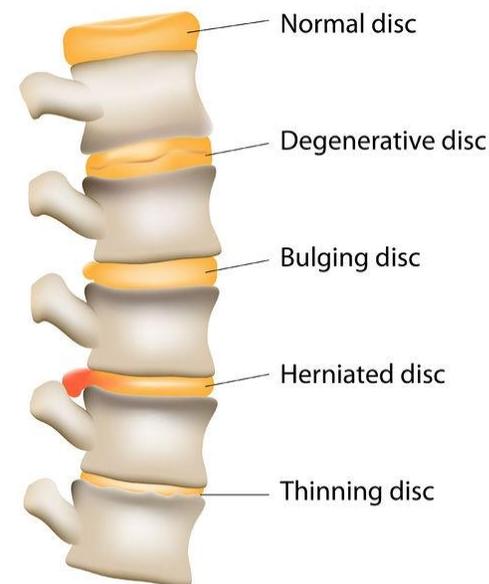
How common is intervertebral disk degeneration?

Almost everyone has some disk degeneration after age 40, even if they don't develop symptoms. It can lead to back pain in about 5% of adults. Degenerative disk disease is most common in older adults.

Factors that increase risk of developing degenerative disk disease include:

- Acute injuries, such as falling.
- Obesity.
- Biologically (women being more likely to experience symptoms)
- Smoking
- Working a physically demanding job.

DISC DEGENERATION



Structural: Disk Disease

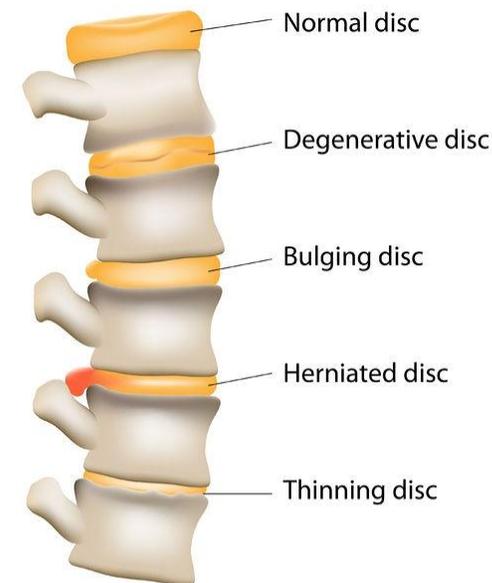
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DISC DEGENERATION



Disk Disease Treatments

How is degenerative disk disease treated?

- **Physical therapy:** Participating in strengthening and stretching exercises with a trained healthcare provider.
- **Medications:** Taking **nonsteroidal anti-inflammatory drugs (NSAIDs)**, muscle relaxers or steroids.
- **Steroid injections:** Injecting medicine near your spinal nerves, disk or joints to reduce inflammation and pain.
- **Radiofrequency neurotomy:** Using electric currents to burn sensory nerves and prevent pain signals from reaching your brain.

Other forms of treatment:

- **Exercise:** Low-impact activities. Walking or swimming can strengthen back muscles and relieve some pain.
- **Hot and cold therapy:** Alternating ice packs and heating pads every 10 to 15 min for 3-5x per day to reduce soreness and inflammation.
- **Stretching:** Gentle yoga and stretching throughout the day may improve posture and relieve tension

Disk Disease Surgical Options

Many patients do not need surgery for degenerative disk disease. But if you have tried multiple nonsurgical treatments and have persistent pain and/or weakness, surgery may be a good option.

Or your surgeon may use one of a few types of spinal decompression surgery:

- **Discectomy:** Removing part of a spinal disk to relieve pressure on your nerves.
- **Foraminotomy:** Expanding the opening for your nerve roots by removing tissue and bone.
- **Laminectomy:** Taking out a small portion of bone from your lower spine (lamina).
- **Osteophyte removal:** Removing bone spurs (osteophytes).
- **Spinal fusion:** During this procedure, your surgeon connects two or more vertebrae to improve stability.

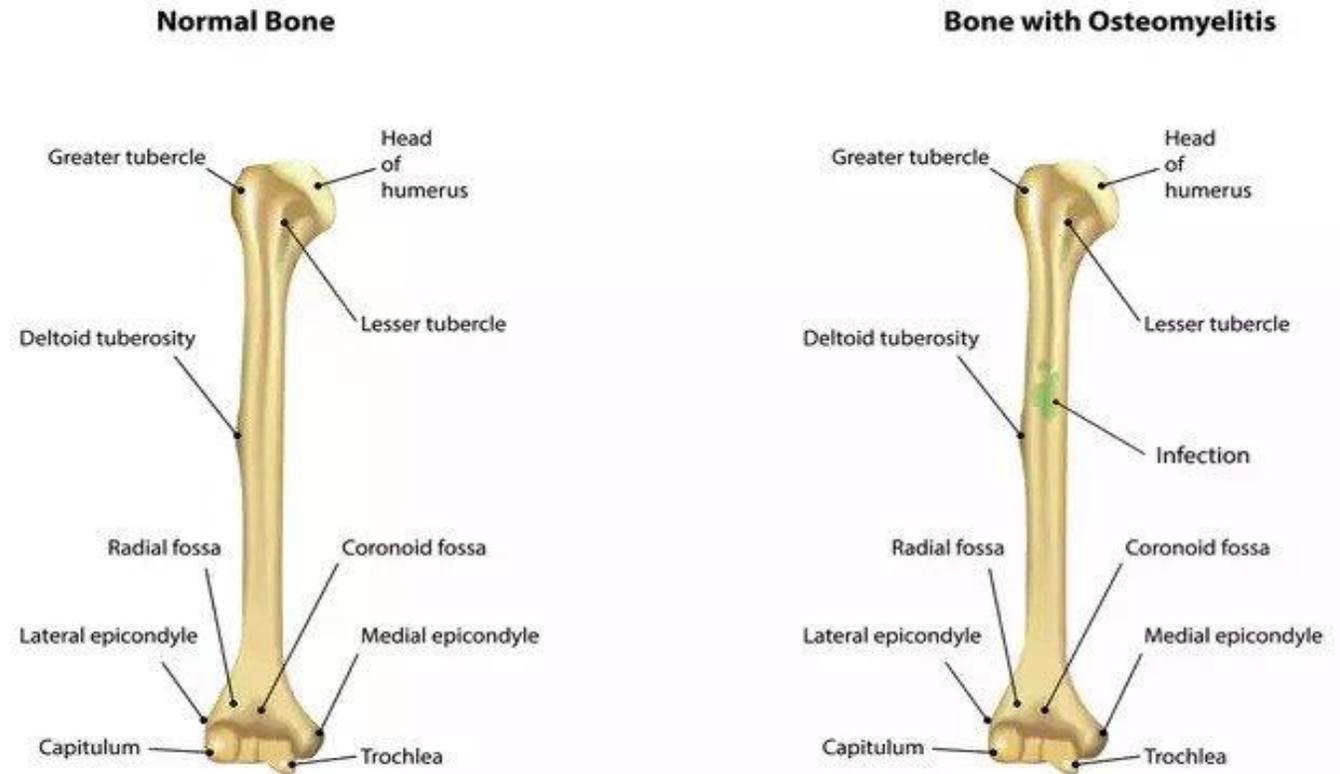


Mechanical: Postural/Common Injuries

1. Sprains and Strains
2. Injuries
3. Bone Infections (Osteomyelitis)
4. Sciatica
5. Arthritis
6. Degenerative Disk Disease
7. Spondylolisthesis
8. Lordosis
9. Kyphosis

Additional Resources:
[Thoracic Spine Injuries - Bing video](#)

Osteomyelitis



Exercise for Thoracic Spine Health



**What is the role of an
Orthopedic Fitness Specialist?**

Sample Exercises for Thoracic Spine Health

- **Posture and scapula stability against wall** Start in a standing position against a wall. Flatten your back against the wall, attempting to get the back of your head on the wall. Flatten your shoulder blades against the wall and hold your arms by your side touching the wall. Lift your arms out to the side and upwards, maintaining contact with the wall as much as possible. Return to the start position and repeat. 1 Set / 1 Rep
- **Lateral trunk stretch** Stand with your feet shoulder width apart and place one hand on your hip. Extend the other hand into the air, leaning over to the side while you increase the stretch by pushing your hips in the opposite direction. Hold this position before you repeat on the other side. 1 Set / 1 Rep / 1 s hold
- **Overhead stretch** Start in a seated position and interlock your fingers. Raise your arms above your head and rotate your hands so they are facing palm up. Push your arms upwards, feeling the stretch through your sides and shoulders. Hold this position before you relax and repeat the movement again. 1 Set / 1 Rep / 1 s hold
- **Standing thoracic reaching and twisting** Stand with your back straight, feet hips width apart and knees slightly bent. Reach one arm forwards and the other back to shoulder height. Keep your hips and lower body square by activating your core stability muscles but allow your upper body and shoulders to rotate with the arms. Keep your gaze directly ahead. Swing your arms to change positions, rotating your upper body with the movement. Ensure your gaze remains directly ahead. Continue this movement, increasing the speed at which you swing your arms. Hips, and lower trunk remain square. 1 Set / 1 Rep / 10 sec duration

[Exercise program \(terrykane.ca\)](http://terrykane.ca)

Thoracic Spine ROM Exercise PDF



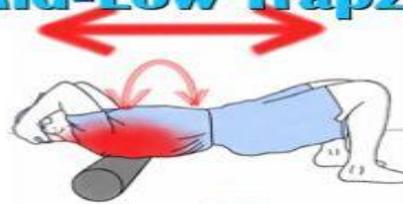
**Terry Kane Registered Physiotherapist
Registration #1726 Calgary, AB**

[Exercise program \(terrykane.ca\)](http://terrykane.ca)

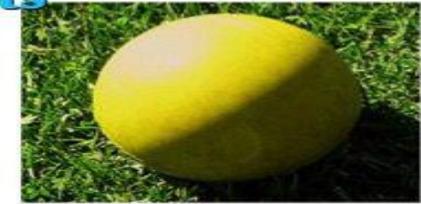
Foam Roll



Mid-Low Trapz, Rhomboids & Lats

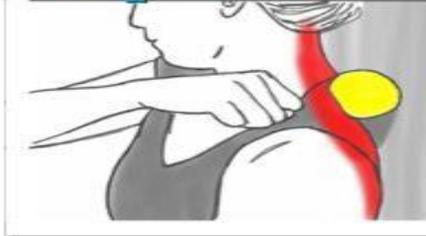


Oscillate Over Roller



Lacrosse Ball

Trapezius



Thoracic Spine Mobility
Soft Tissue Therapy

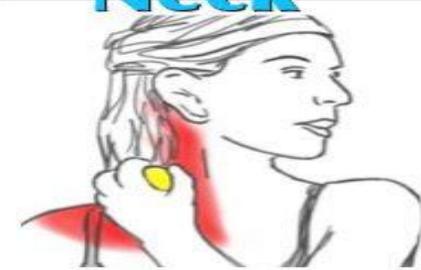


followed by
Joint Distraction
on Roller

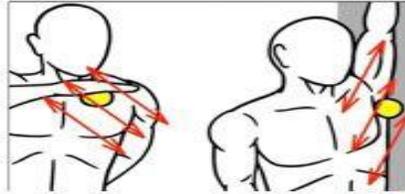
Pec Major



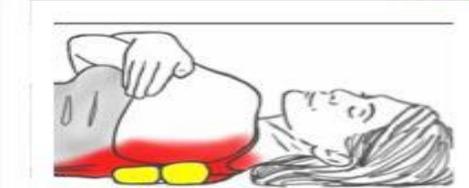
Neck



Pec Minor



Scalenes



Rhomboids



Peanut

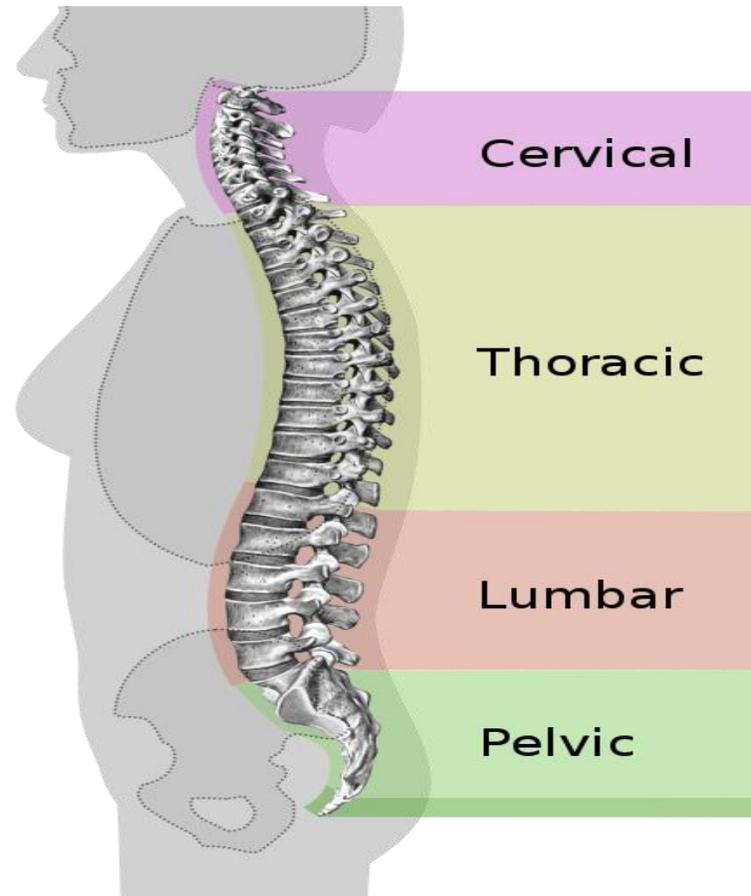
Erector Spinae



**Please refer to the thoracic spine
exercise resource video for more
examples.**



At this time, please complete the Thoracic Spine Quiz



RESOURCES

Dye Last Modified Date: April 09, F. (2022, April 9). *What is the spinal cord?* The Health Board. Retrieved April 19, 2022, from

<https://www.thehealthboard.com/what-is-the-spinal-cord.htm>

Harvard Medical School. (2008, April 1). *Strength training relieves chronic neck pain.* Harvard Health. Retrieved April 19, 2022, from

<https://www.health.harvard.edu/pain/strength-training-relieves-chronic-neck-pain>

Kane, T. (2020, February 26). *Thoracic spine rom exercises* . Retrieved April 20, 2022, from

<https://terrykane.ca/wp-content/uploads/2020/02/Thoracic-ROM-Exercises.pdf>

Osteoarthritis spine stock illustrations – 749 osteoarthritis spine stock illustrations, vectors & clipart. Dreamstime. (n.d.).

Retrieved April 19, 2022, from <https://www.dreamstime.com/illustration/osteoarthritis-spine.html>

RESOURCES

Spinal Stenosis. Microsoft. (n.d.). *Spinal Stenosis*. Bing. Retrieved April 20, 2022, from

<https://www.bing.com/images/search>

Thoracic Degenerative Joint Disease: Lancaster Orthopedic Group, Lancaster County, PA. Lancaster Orthopedic Group.

(2017, July 27). Retrieved April 19, 2022, from

<https://www.lancasterortho.com/conditions/neck-spine/thoracic-degenerative-joint-disease.htm>

Thoracic Spinal Stenosis Treatment: NJ & NYC. Neurosurgeons of New Jersey. (2018, December 19). Retrieved April 20, 2022, from

<https://www.neurosurgeonsofnewjersey.com/thoracic-spinal-stenosis>

