

MedFit Classroom

Orthopedic Fitness Specialist Course

Module 9: Cervical Spine

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Learning Objectives

Neck/Cervical Spine

Neck/Cervical Spine

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

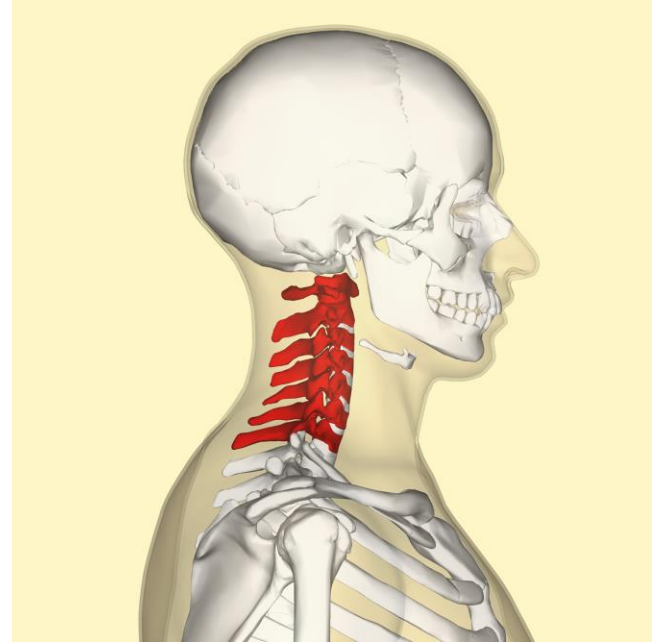
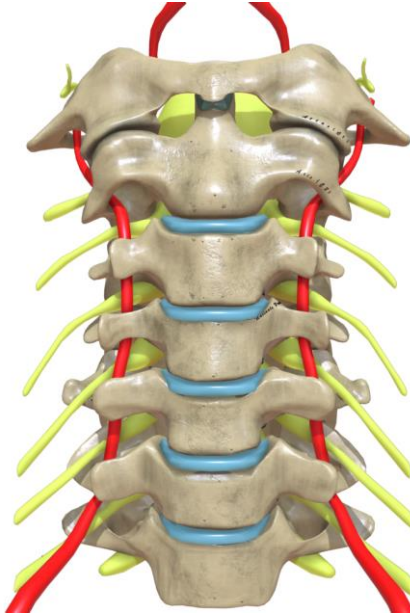
What is the Cervical Spine?

Cervical Spine/Neck:

The neck is part of a long flexible column, known as the spinal column or backbone, which extends through most of the body. The cervical spine (neck region) consists of seven bones (C1-C7 vertebrae), which are separated from one another by intervertebral discs.

What is the Cervical Spine?

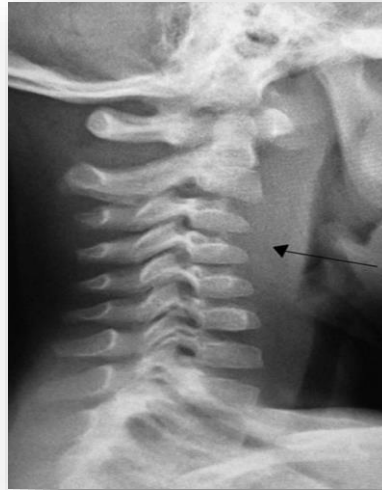
Cervical Spine:



[Cervical Spine – Anatomy, Diseases and Treatments \(aans.org\)](http://aans.org).

What is Cervical Osteoarthritis?

Cervical Osteoarthritis of the spine is a breakdown of the cartilage of the joints and discs in the neck. Sometimes, osteoarthritis produces spurs that put pressure on the nerves leaving the spinal column. This can cause weakness and pain in the arms or legs.



What Causes Cervical Osteoarthritis?

- **Wear and tear of the cartilage and bones in neck due to:**
 - Age - elderly persons are more prone to develop spondylosis
 - Dehydrated or drying spinal discs, reducing the space between two neck bones
 - Herniated discs
 - Injury to the neck
 - Stiffer ligaments in the neck
 - Overuse of spine
 - Repetitive stress: holding the neck in an uncomfortable position for long durations
- **Risk factors include:**
 - Age - risk increases after 40 years of age
 - Lifting heavy weight
 - Family history
 - Smoking
 - Overweight and obesity

Cervical Osteoarthritis Spondylitis/Neck Arthritis Symptoms

- **Pain around the shoulder blade**
- **Pain along the arm and in the fingers**
- **Increasing pain during standing, sitting, sneezing, coughing, or bending the neck backwards**
- **Muscle weakness, making it difficult to lift the arm or grasp things**
- **Neck pain and stiffness**
- **Headaches, mostly in the back of the head**
- **Numbness or tingling sensation in the shoulder and arms**
- **Loss of balance and control over bladder and bowel movements**

What is Cervical Stenosis?

- Spinal canal narrows and compresses the spinal cord most frequently caused by aging. The discs in the spine that separate and cushion vertebrae may dry out and herniate.
- Space between the vertebrae shrinks, and the discs lose their ability to act as shock absorbers.
- Bones and ligaments that make up the spine become less pliable and thicken and these changes result in a narrowing of the spinal canal.
- Degenerative changes associated with cervical stenosis can affect the vertebrae by contributing to the growth of bone spurs that compress the nerve roots.

What is the cause?

Age, injury, poor posture or diseases such as arthritis, sudden injury, herniated discs, etc...

[Know Your Back \(spine.org\)](http://spine.org)

What is Cervical Stenosis?



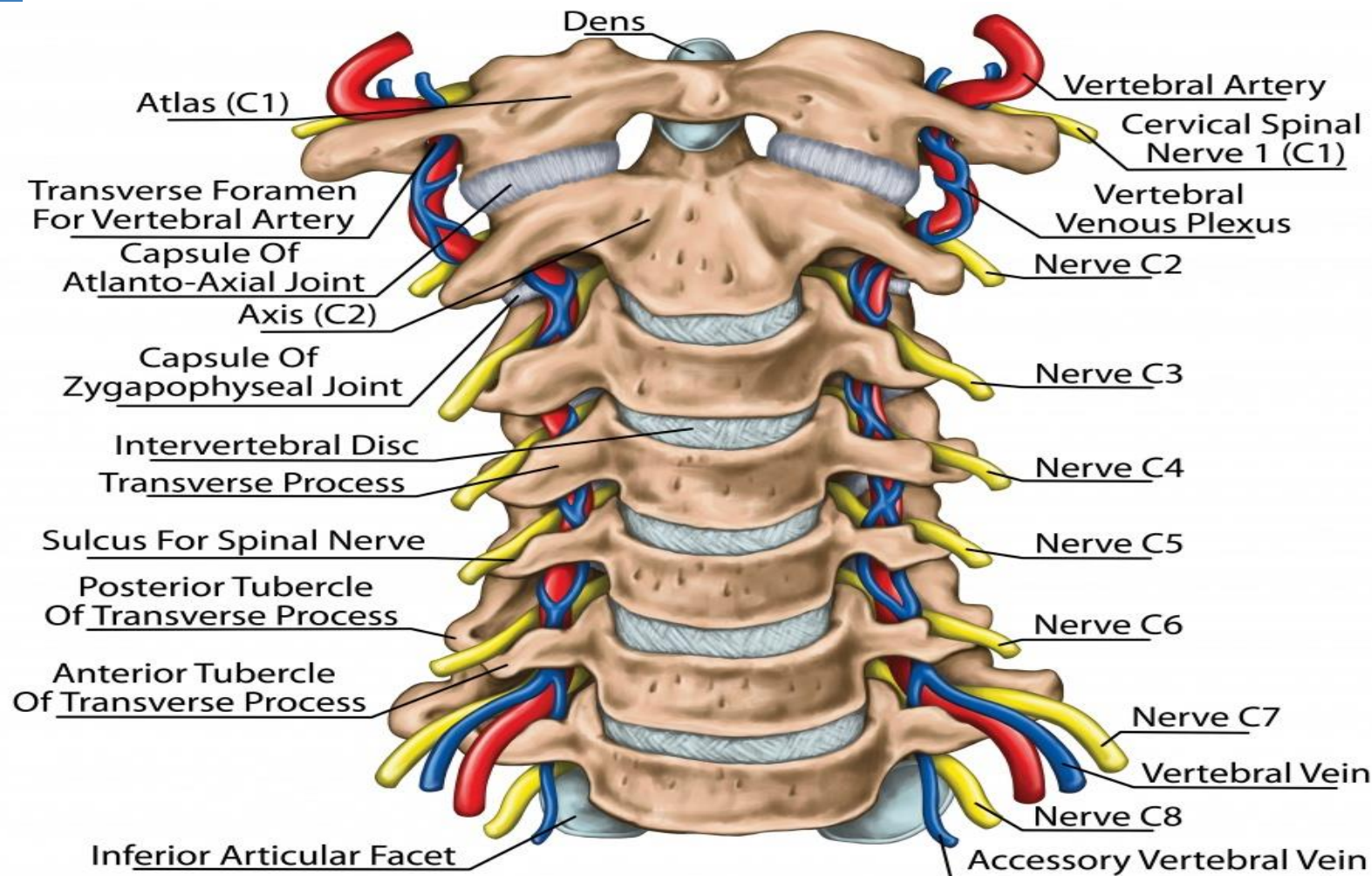
What is Cervical Stenosis?

Symptoms:

Neck pain may be caused by disc degeneration, narrowing of the spinal canal, arthritis and, in rare cases, cancer or meningitis .

Symptoms include:

- Neck or arm pain
- Numbness and weakness in the upper extremities hands
- Unsteady gait when walking
- Muscle spasms in the legs
- Loss of coordination in arms, hands, finger
- Loss of muscle tone in arms and/or hands
- Dropping items or loss of dexterity of hands



Cervicalgia

Although a pain in the neck sounds simple, cervicalgia can have many causes.

1. **Gravity:**
2. **Flexibility:**
3. **Injury:**
4. **Stress:**
5. **Workplace Ergonomics:**
6. **Kyphosis:**
7. **Tight muscles:**

Cervicalgia

Although a pain in the neck sounds simple, cervicalgia can have many causes.

Injury:

[Spinal Cord Injury: High Cervical Level - YouTube](#)

[Whiplash Video \(spine-health.com\)](#)

[49ers' Trenton Cannon scary head/neck injury on kickoff return \(carted off & ambulance\) – YouTube](#)

[Cervicalgia - The Southeastern Spine Institute](#)

Cervicalgia Treatments

Treatments:

1. Prescription-strength anti-inflammatories and painkillers.
2. Temporary cervical collar to support your head so neck muscles can rest/ heal.
3. Ergonomic Chairs/Standing Desks
4. Correct Posture
5. Massage/Stretching of the back, chest, shoulders and neck
6. Change positions often (set timers)
7. Exercise: Increase circulation through walking, yoga, etc..
8. Meditation/Mindfulness practices to decrease stress



Cervical Disc Disease

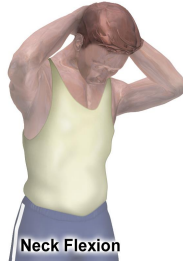
Degeneration of the Discs:

In the moving sections of the spine, like the cervical and lumbar levels, it is a natural process of "aging." When this "aging" process occurs more rapidly or prematurely it is considered "degeneration." The dehydration or desiccation of the disc material reduces the flexibility and typically the height of the disc. In some cases, the degeneration causes pain from loss of disc height and abnormal motion or compression between the vertebrae and causes pain.

[Cervical Degenerative Disc Disease - UCLA Spine Center - Los Angeles, Santa Monica, CA \(uclahealth.org\)](http://uclahealth.org)

What are the Symptoms?

Cervical Disc Disease Treatment



Treatment:

1. Avoidance of painful positions and/or use of a neck brace are all options to try to reduce tension by the affected discs.
2. Anti-inflammatory medications, steroid pills, injections around the nerves or epidurals can be tried.
3. Surgery to take the pressure off nerves
 - a. Spinal Fusion (screws, rods, bone grafts, full disc replacement)
4. Exercise: Supervised and consistent strength, flexibility and mobility programs.

The Danish Study

“Danish scientists at the National Research Center for the Working Environment in Copenhagen recruited women engaged in repetitive work, mostly at computer keyboards, at banks, post offices, administrative offices, and an industrial facility. All complained of neck pain lasting more than a month during the previous year. They were eligible for the study if physical examinations showed they had trapezius myalgia — chronic pain and tightness in the muscles that run down the back of the neck and fan out toward the shoulders.”

April 1st, 2008

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

What is Trapezius Myalgia?

Trapezius myalgia (TM): The complaint of pain, stiffness, and tightness of the upper trapezius muscle. It is characterised by acute or persistent neck-shoulder pain. TM is not a medical disorder or disease but rather a symptom of an existing underlying condition. The pain in the muscle can last a few days or longer.



<https://onlinelibrary.wiley.com/doi/10.1002/art.23256>

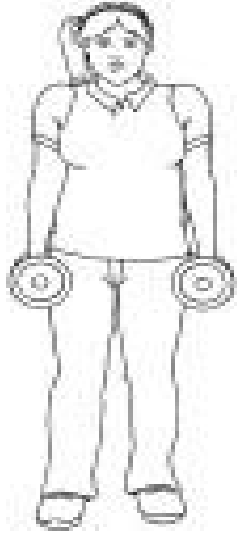
The Danish Study

5 Main Exercises: Hi-Rep, Low-Load

Strength training in the Danish study consisted of five exercises that involved the use of hand weights to strengthen neck and shoulder muscles. Three times a week (Mondays, Wednesdays, and Fridays), for 20 minutes per session, participants performed three of the five exercises, doing three sets of eight to 12 repetitions (each set lasting 25 to 35 seconds) for each exercise. The exercises changed from session to session but always included dumbbell shrugs. The weight load was gradually increased during the study, roughly doubling in 10 weeks.

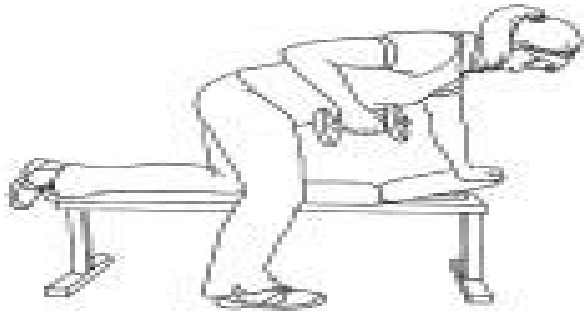
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Dumbbell Shrug

Stand straight with your feet shoulder-width apart and your knees slightly bent. Hold a weight in each hand, and allow your arms to hang down at your sides, with your palms facing your body. Shrug your shoulders upward, contracting the upper trapezius muscle, hold for one count, and lower. Repeat eight to 12 times per set. (Starting weight: 17 to 26 pounds.)



One-arm row

Stand with your left knee on a flat bench and your right foot on the floor. Hold a weight in your right hand. Bend your torso forward, placing your left hand on the bench for support. Allow the weighted hand to hang down toward the floor. Pull the weight up until your upper arm is parallel with your back, pause, and then lower it. Repeat eight to 12 times per set. Switch to the left side, and repeat. (Starting weight: 13 to 22 pounds.)



Upright Row

Stand straight with your feet shoulder-width apart. Hold the weights down in front of your thighs, with your palms facing your body. Slowly bring the weights straight up, as if you were zipping up a jacket. Slowly lower the weights to their original position. Repeat eight to 12 times per set. (Starting weight: 4 to 11 pounds.)



Reverse Fly

Lie on a bench at a 45-degree angle. Hold a weight in each hand and allow your arms to extend down toward the floor. Keeping your elbows slightly bent, lift the weights up and out to the side to about shoulder level. Slowly lower the weights. Repeat eight to 12 times per set. (Starting weight: 2 to 6 pounds.)



Lateral Raises

Stand straight with your feet shoulder-width apart and your knees slightly bent. Lift your arms up to the sides until they are parallel with the floor. Your elbows should be slightly bent. Slowly lower your arms. Repeat eight to 12 times per set. (Starting weight: 4 to 9 pounds.)

April 1st, 2008

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

Cervical Spine Flexibility & Strengthening

Do you have a "pain in the neck?" Try this! - YouTube

Neck Rotation

Shoulder Rolls

Sideways Head Tilt

Neck Retraction

Side-Bending with Hands at Ears

Neck Extension and Flexion

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



Neck Flexion

**At this time, please complete the
Cervical Spine/Neck Quiz!**



RESOURCES

Anderson, L., Kjaer, M., Sogaard, K., Hansen, L., Kryger, A. I., & Sjogaard, G. (2008, January 15).

Effect of Two Contrasting Types of Physical Exercise on Chronic Neck Muscle Pain. Online

Library Wiley. Retrieved April 19, 2022, from

<https://onlinelibrary.wiley.com/doi/epdf/10.1002/art.1780240229>

Gandhi, S. V., & Schulder, M. (n.d.). *Cervical Spine.* AANS. Retrieved April 19, 2022, from

<https://www.aans.org/Patients/Neurosurgical-Conditions-and-Treatments/Cervical-Spine>

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>

RESOURCES

Rao, R. (2009, May 1). *What you should know*. Cervical Stenosis, Myelopathy and Radiculopathy.

Retrieved April 19, 2022, from

<https://www.spine.org/KnowYourBack/pages/spinalconditions/degenerativeconditions>

The Southeastern Spine Institute. (2022, April 18). *Cervicalgia*. The Southeastern Spine Institute.

Retrieved April 19, 2022, from <https://southeasternspine.com/condition/cervicalgia/>

UCLA Health, UCLA Spine Center. (2022, April 19). *Cervical degenerative disc disease*. Cervical

Degenerative Disc Disease - UCLA Spine Center - Los Angeles, Santa Monica, CA. Retrieved

April 19, 2022, from <https://www.uclahealth.org/spinecenter/cervical-degenerative-disc-disease>

