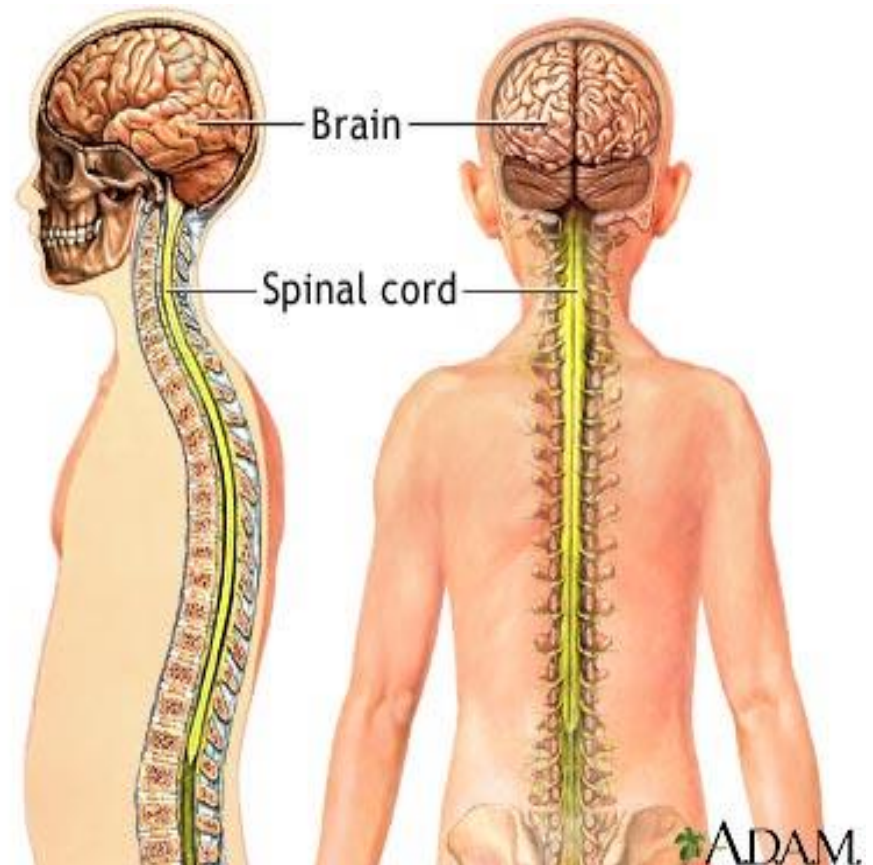


Spinal Degeneration Pain & Chiropractic

Jeffrey Swift D.C., D.A.B.C.N.

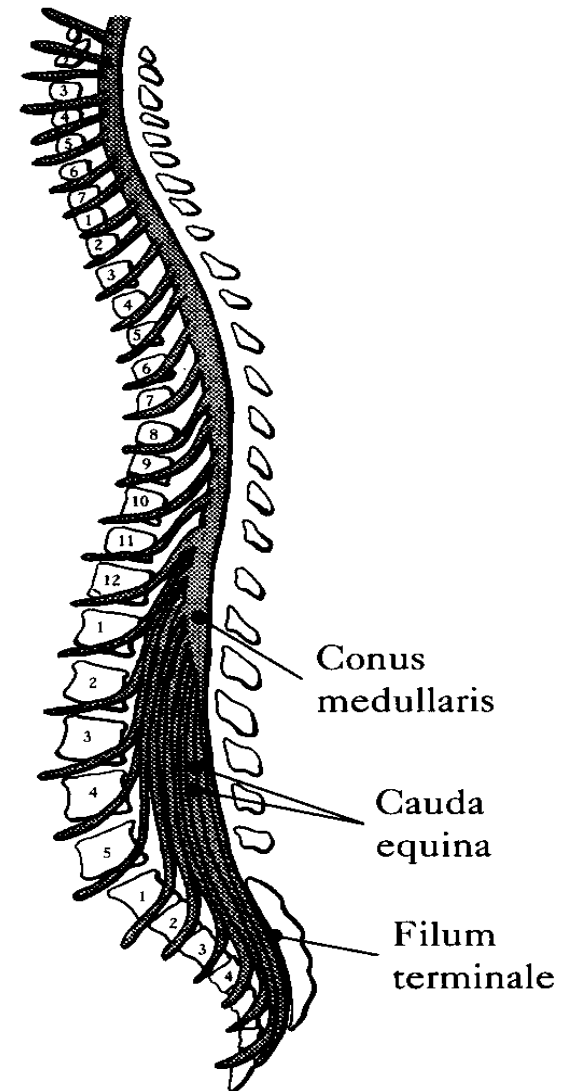
Central nervous system

- Command system of the body.
- The brain extends to the rest of the body through the spinal cord.
- The brain is considered to be driven by input from external stimulation.



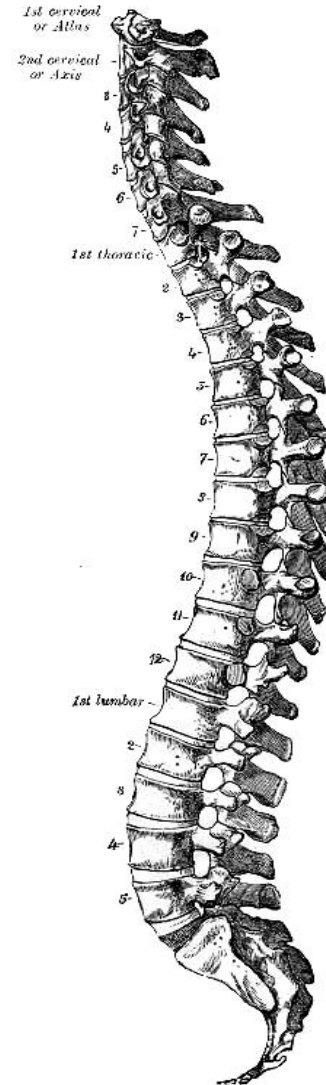
The Spinal cord

- The Spinal cord
- Information to and from the brain is transmitted through spinal nerves.
- These nerves exit the spinal vertebra through holes called foramen.

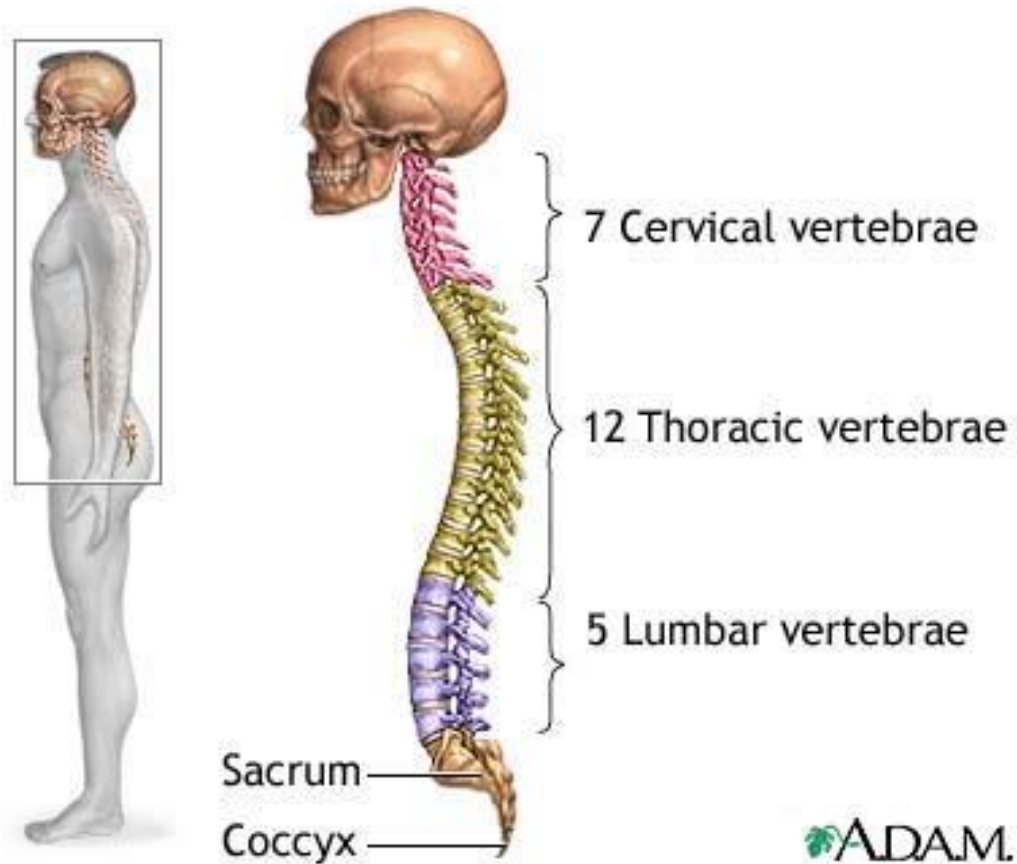


The Vertebral column

- The vertebra or separate bones of the spine provide a protective armor for the central nervous system.
- It must be flexible to provide mobility as well as protection.

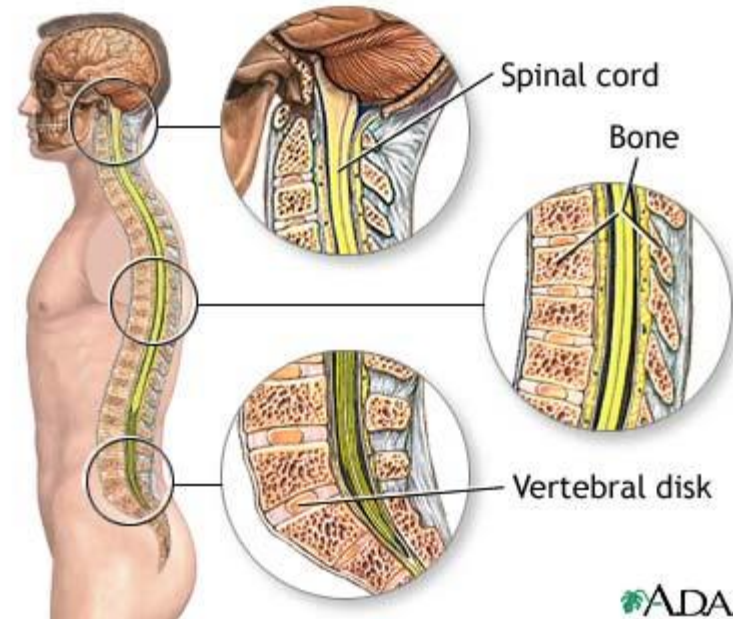


Divisions of Vertebral column



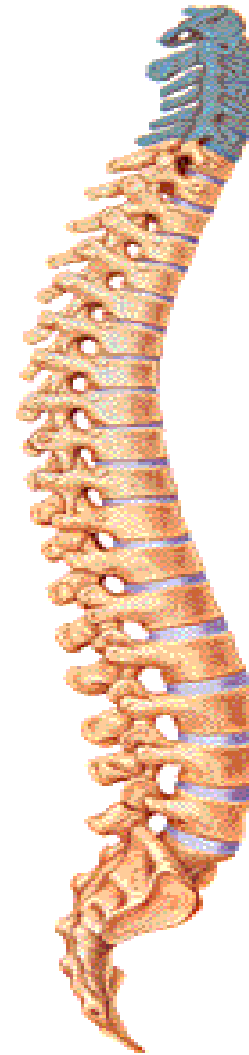
Possible areas of insult.

- In all three regions of the vertebral column there is possible insult to the spinal cord and exiting nerve roots.
- This can be from bone, disc or facet joints of the vertebra.



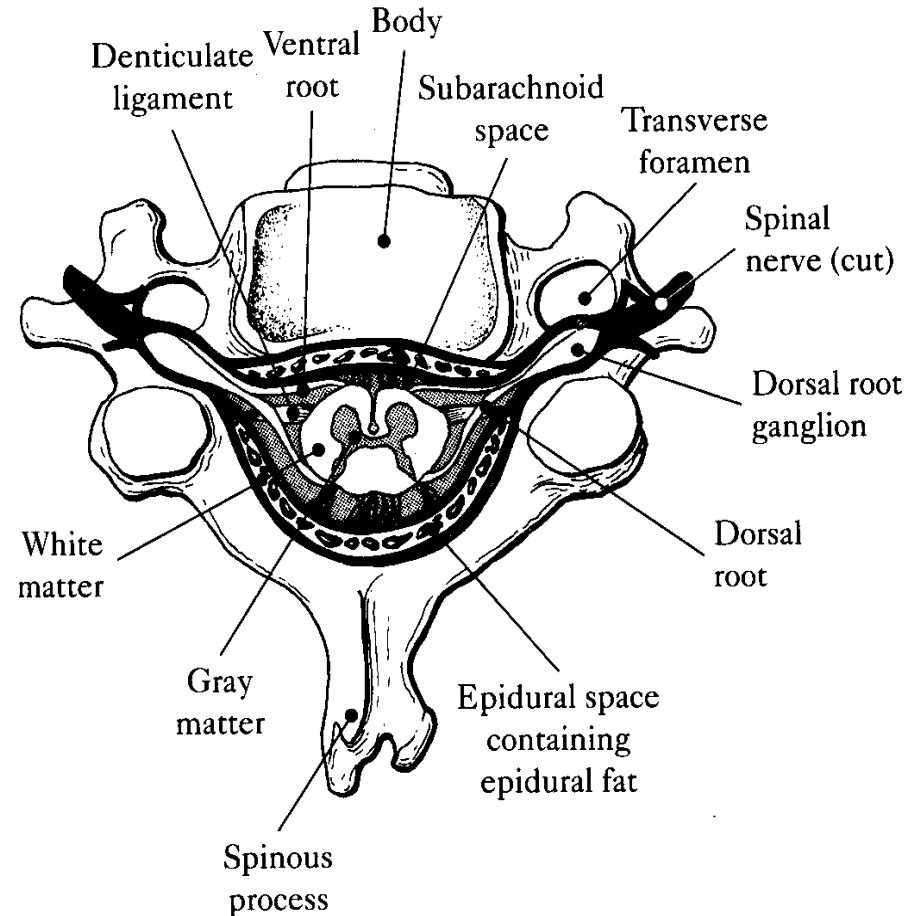
Cervical Spine

- The cervical spine is the most mobile area of the spine.
- It lies on top of the thoracic spine the most immobile area of the spine
- Therefore area of high stress, and therefore degeneration.



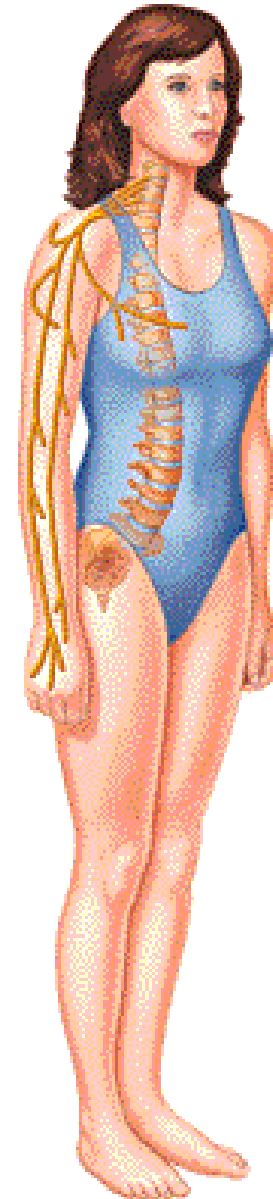
Cervical spine anatomy

- There are several areas of possible insult to the spinal cord and exiting nerve roots.
- Degeneration may cause enlargement of facet joint and bone spurs on the vertebral body.



Cervical Nerves

- The cervical nerves innervate the upper extremity.
- The spinal cord must also travel through the cervical area to reach the lower extremities.
- Therefore cervical problems can affect the legs.



Cervical spine degeneration



Cervical spine degeneration



Cervical spine

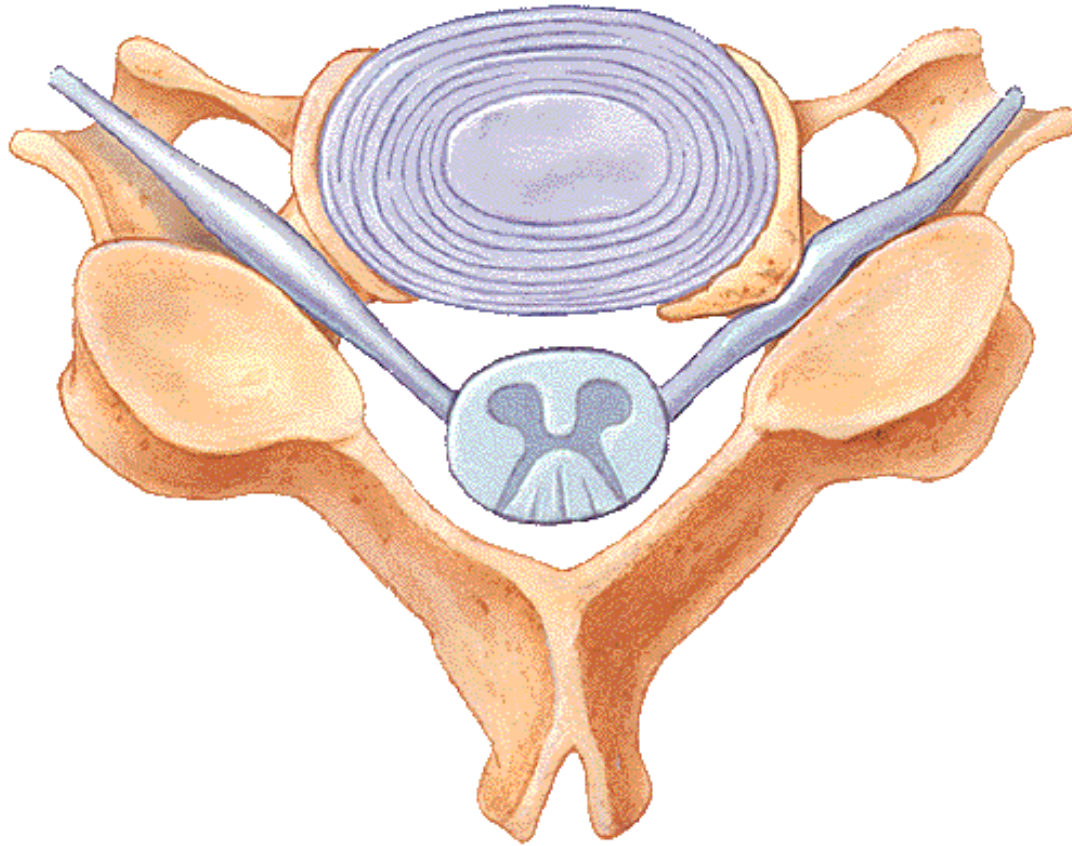
- Degeneration and arthritis can cause enlargement of joints which form the walls of the holes the nerve roots exit.
- Spurs as seen in last slide may affect nerve roots.



Posterior spur Cervical spine

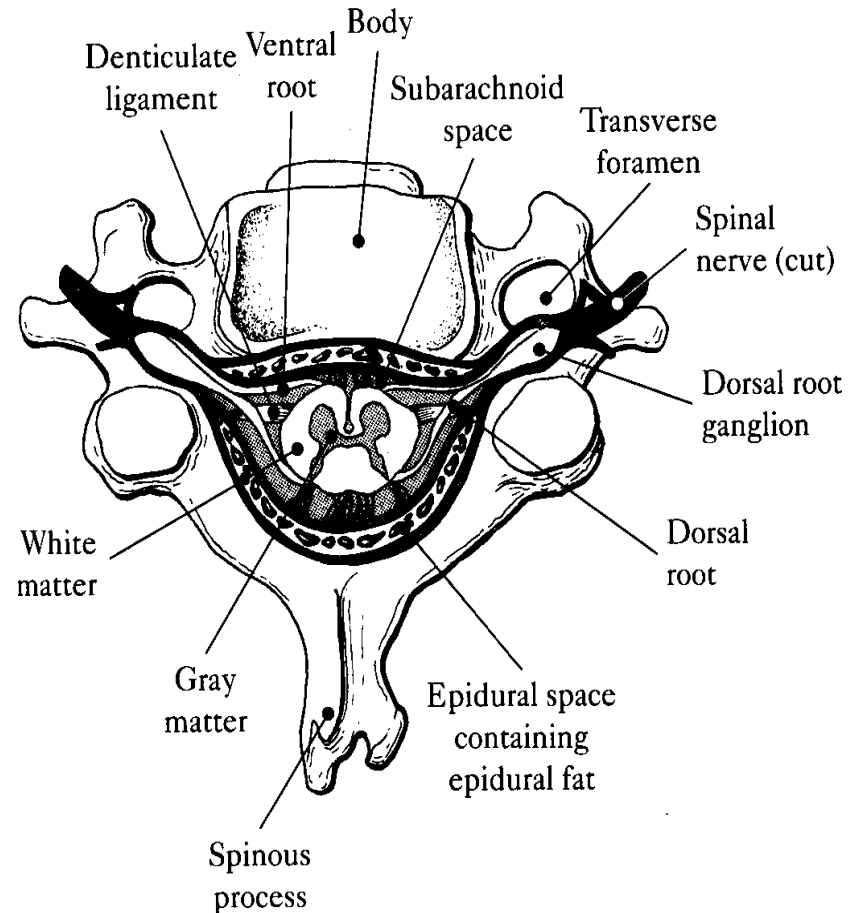


Bone spur cervical spine



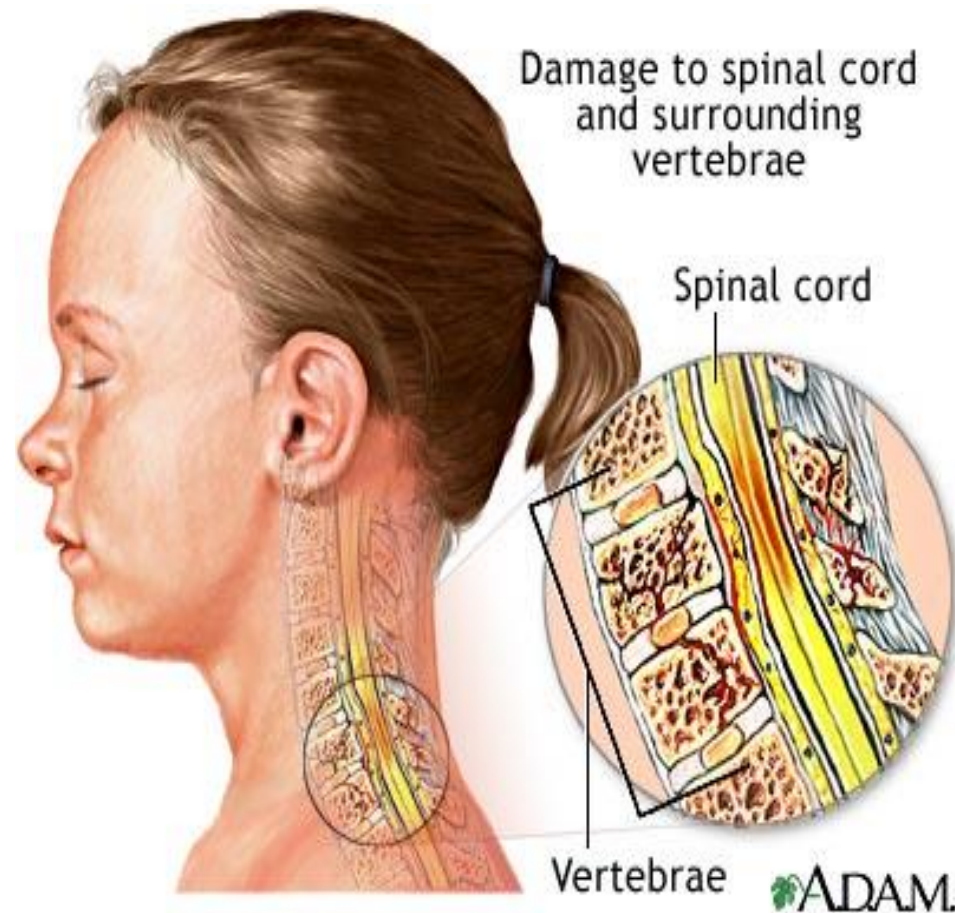
Vascular compromise & DJD

- Bone spurs, and posterior joint enlargement can compromise venous and arterial supply to surrounding tissues.
- Stimulation of pain fibers cause muscle contraction.



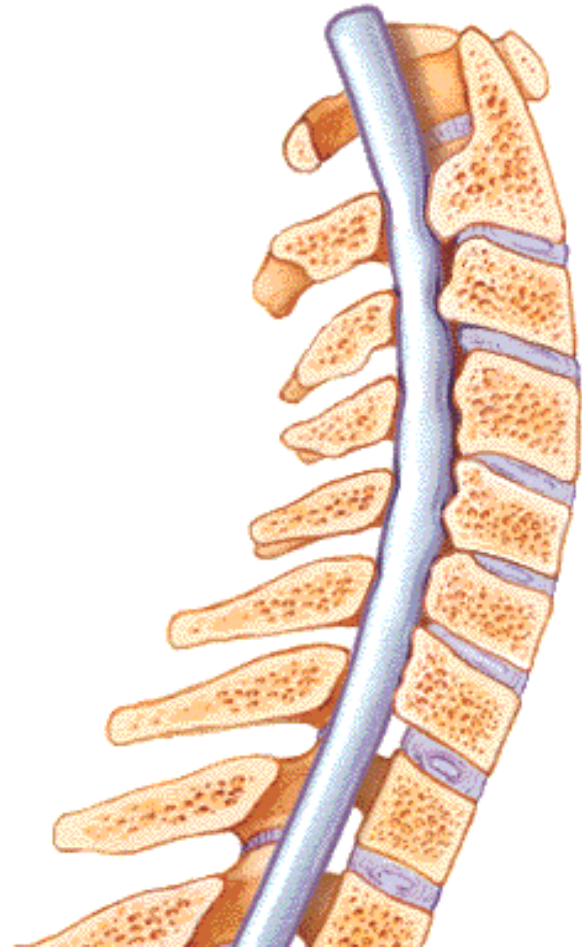
Spinal cord Injury

- Any narrowing of the spinal canal by disc herniation, bone spur, posterior joint enlargement due to arthritis, or reversal of normal curve with aging can cause cord insult.



Cervical Stenosis

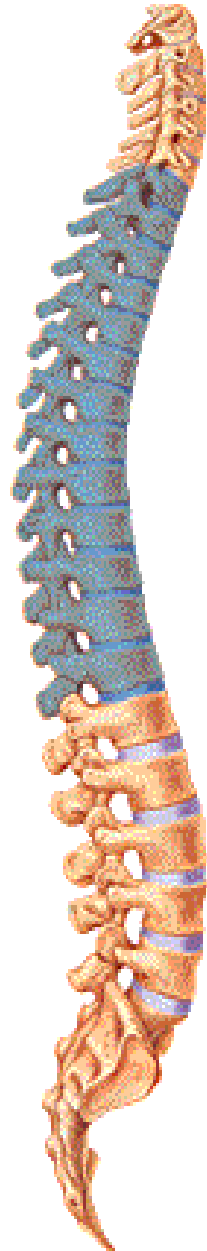
- Narrowing of the spinal canal can cause insult to the cord or the spinal nerve roots.
- In advanced cases this can cause lower extremity symptoms and loss of balance.



Cervical Degeneration

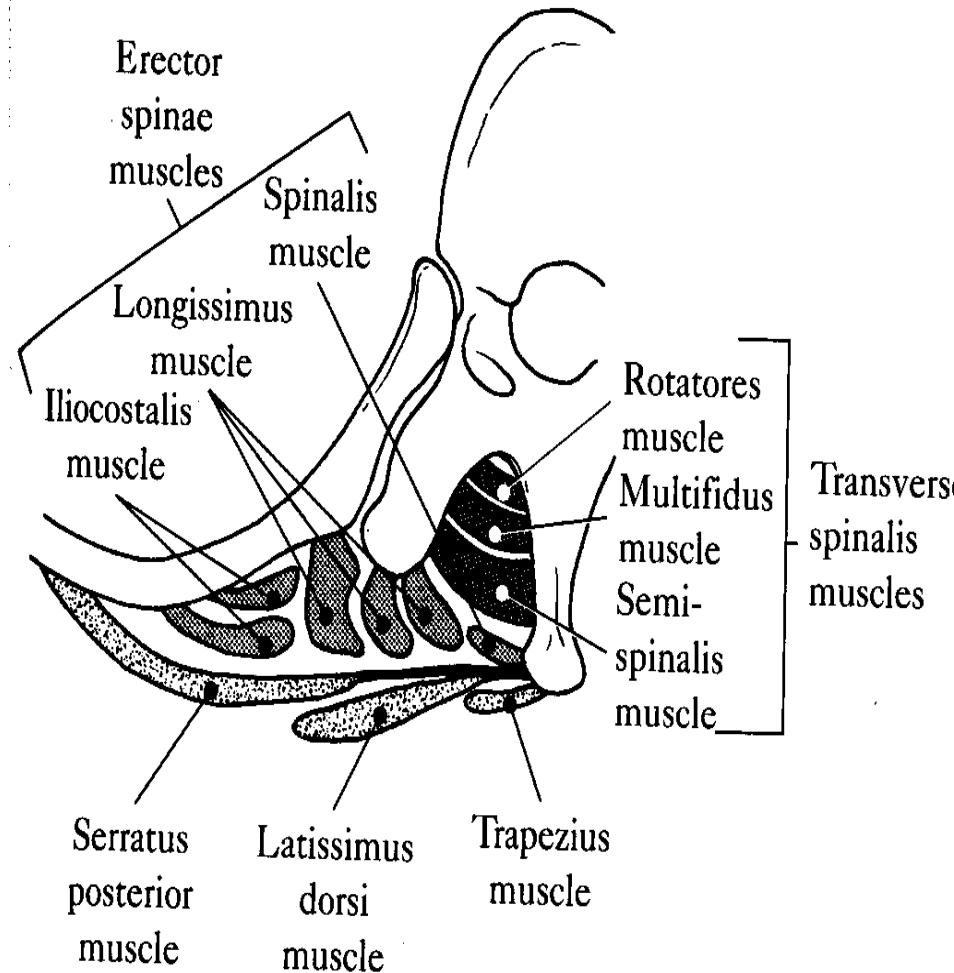
- Cervical degeneration is associated with loss of motion and enlargement of joints and bone spurs.
- Loss of motion will cause joint degeneration.
- The goal is to maintain normal range of motion and prevent DJD, and vertebral and joint health.

Thoracic spine



Thoracic spine

- Note three joints in thoracic spine.
- All areas of possible DJD and pain.
- Pain will cause muscle spasm, and decreased motion.
- Decreased motion increases DJD.

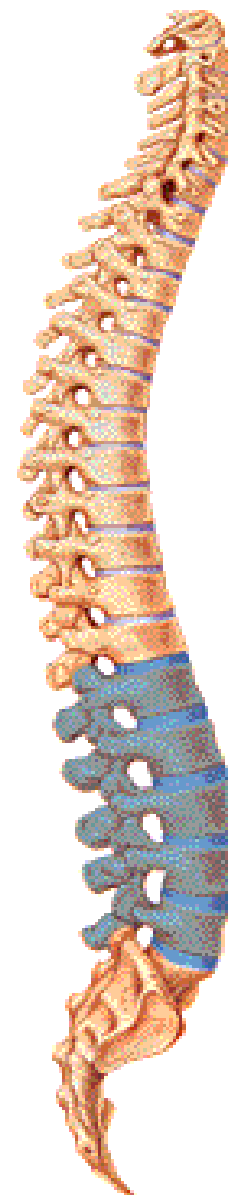


Chiropractic Manipulation

- Manipulation can increase motion in thoracic segments.
- Increased mobility will promotes joint and muscle health.
- Increased thoracic mobility increases ability to breath and oxygenate and vascular perfusion.

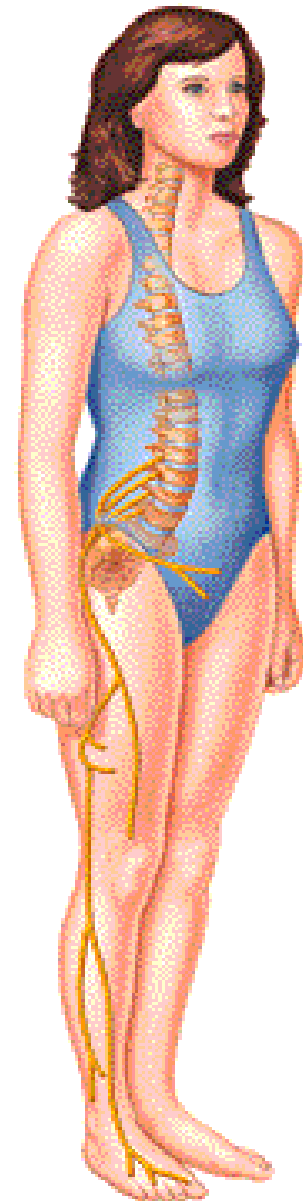
Lumbar spine

- The lumbar spine is the lowest segment of the spinal column.
- It has the greatest weight bearing stress.
- It is an area that has a high incident of DJD.



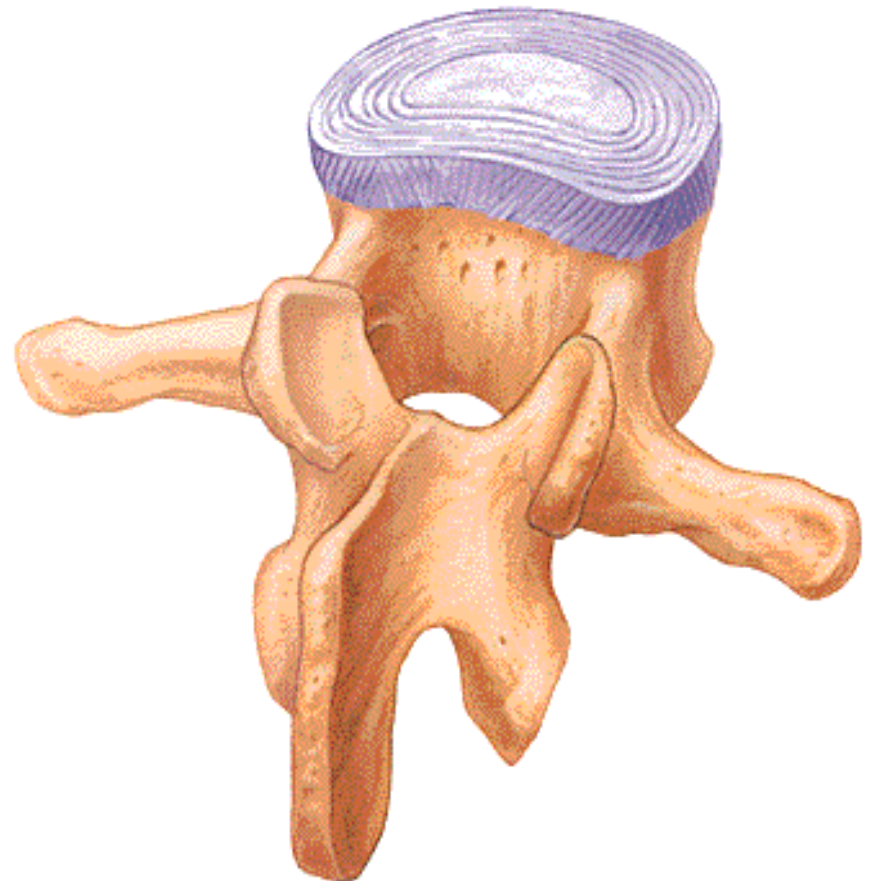
Lumbar nerves

- Lumbar nerve roots innervate the lower extremity.
- They can be insulted by bone spurs, herniated discs, and enlargement of posterior joints like the cervical spine.



The Intervertebral disc

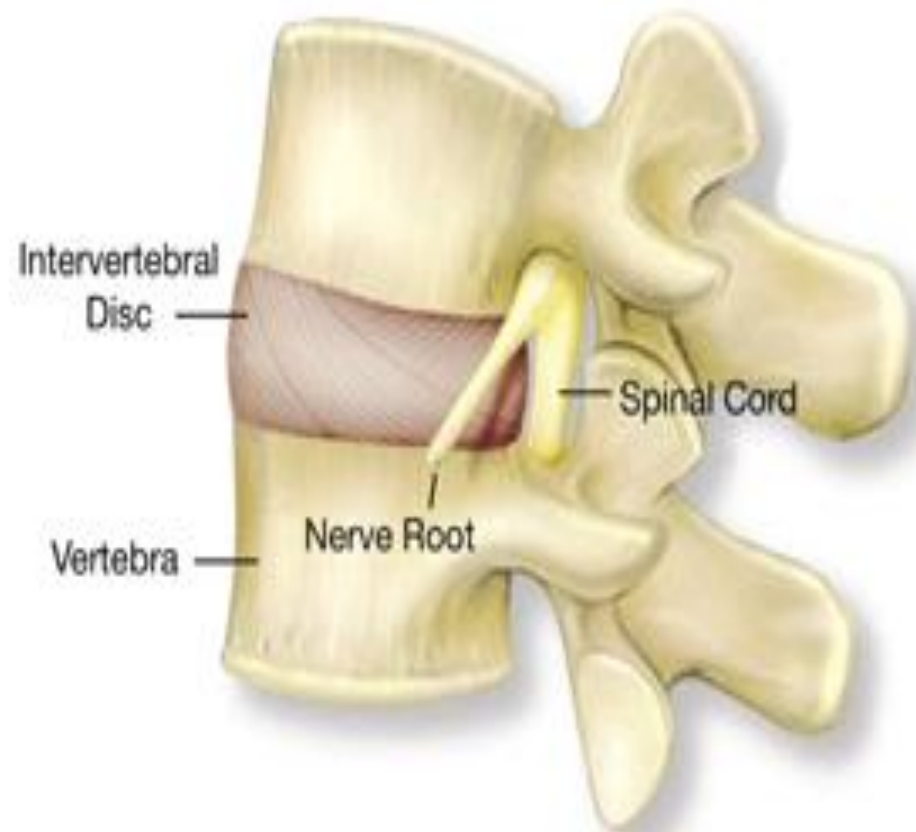
- The intervertebral disc may enlarge or become calcific compromising the spinal canal or where nerve roots exit.



Vertebral motion segment

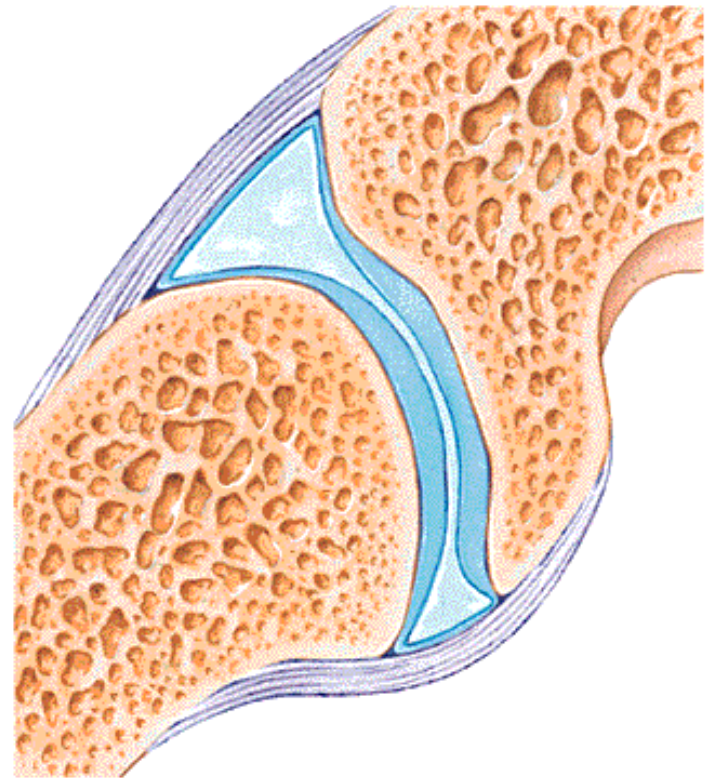
- The intervertebral disc may affect the nerve root.
- The posterior joint may affect the nerve root.

Normal Spinal Segment



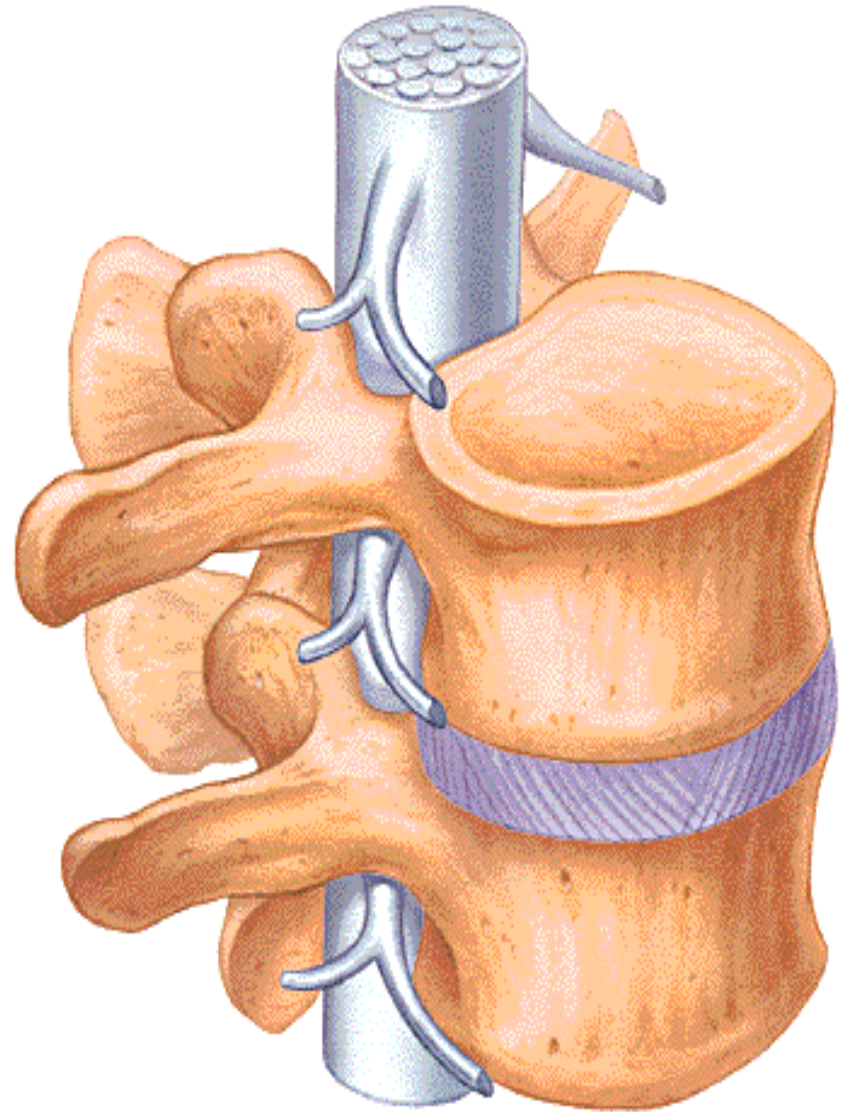
The Facet joint

- The posterior joints of the spine are like other joints of the body.
- With arthritis the cartilage can erode and cause pain.
- Pain will cause decreased motion and further joint DJD.



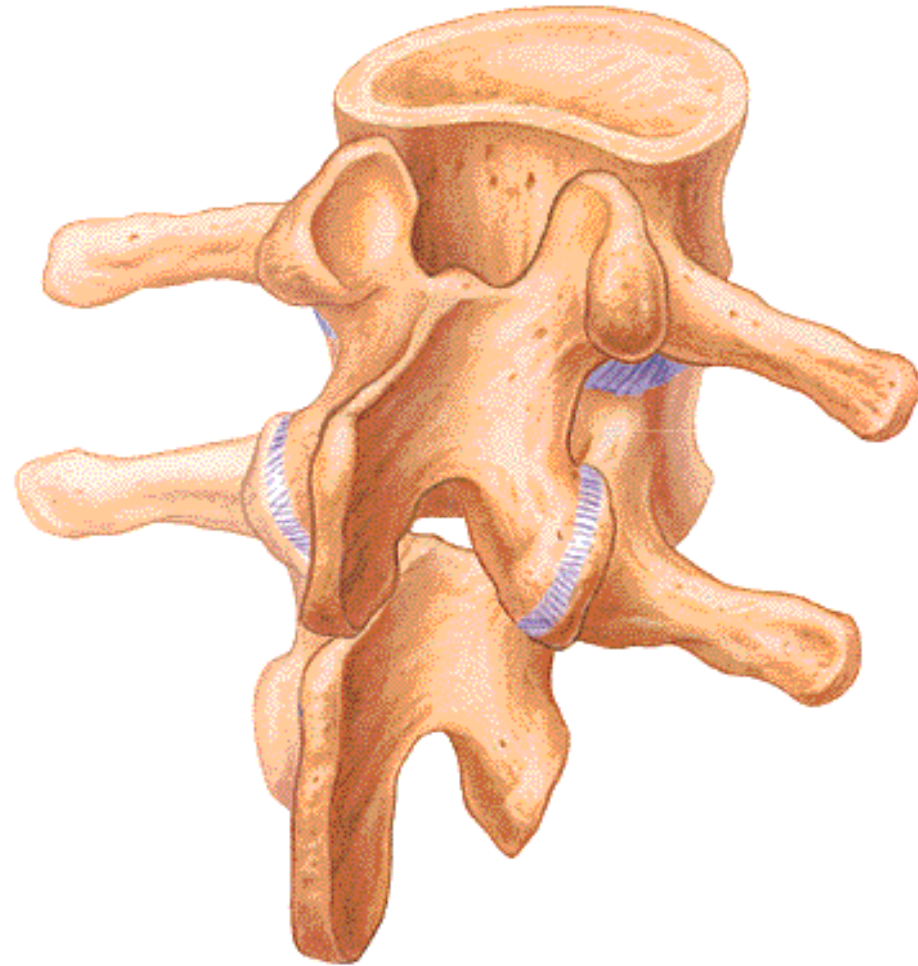
Lumbar motion segment

- Note as disc height decreases with age and DJD the hole the nerve roots come out will become smaller in size.
- Also the posterior joints will start to rub more increasing degeneration.



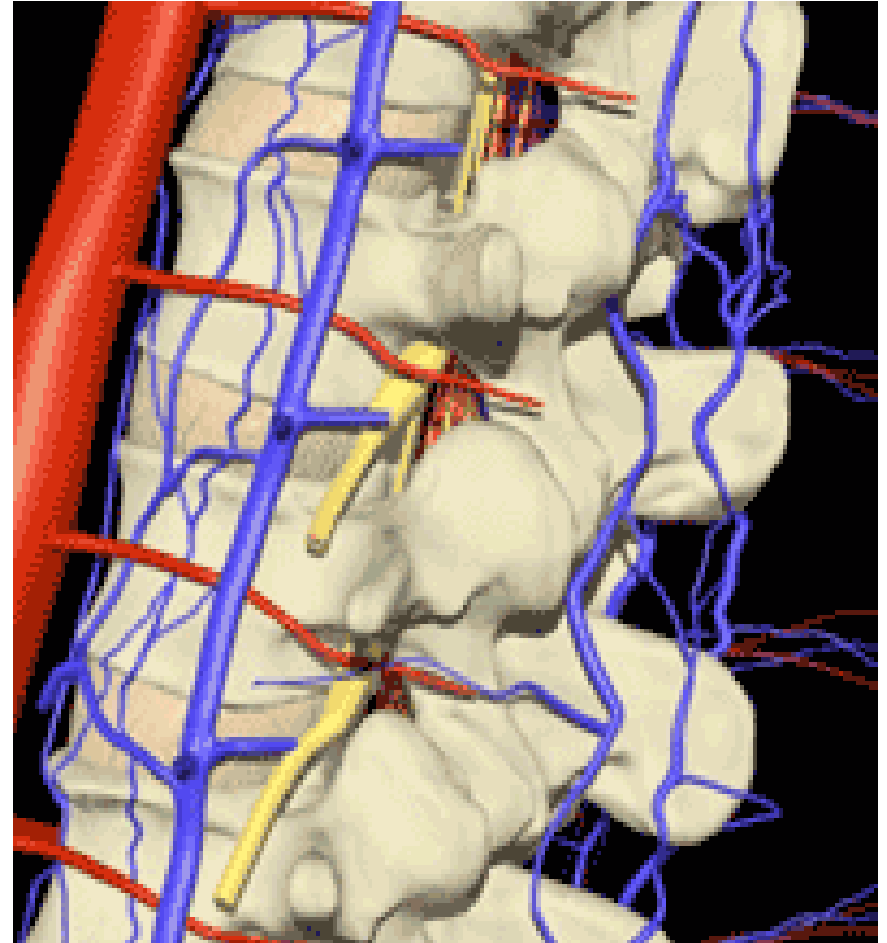
Posterior facet joints

- As the disc ages it loses water content and decreases its height it becomes less symptomatic.
- The posterior joints undergo more stress, and start to degenerate.



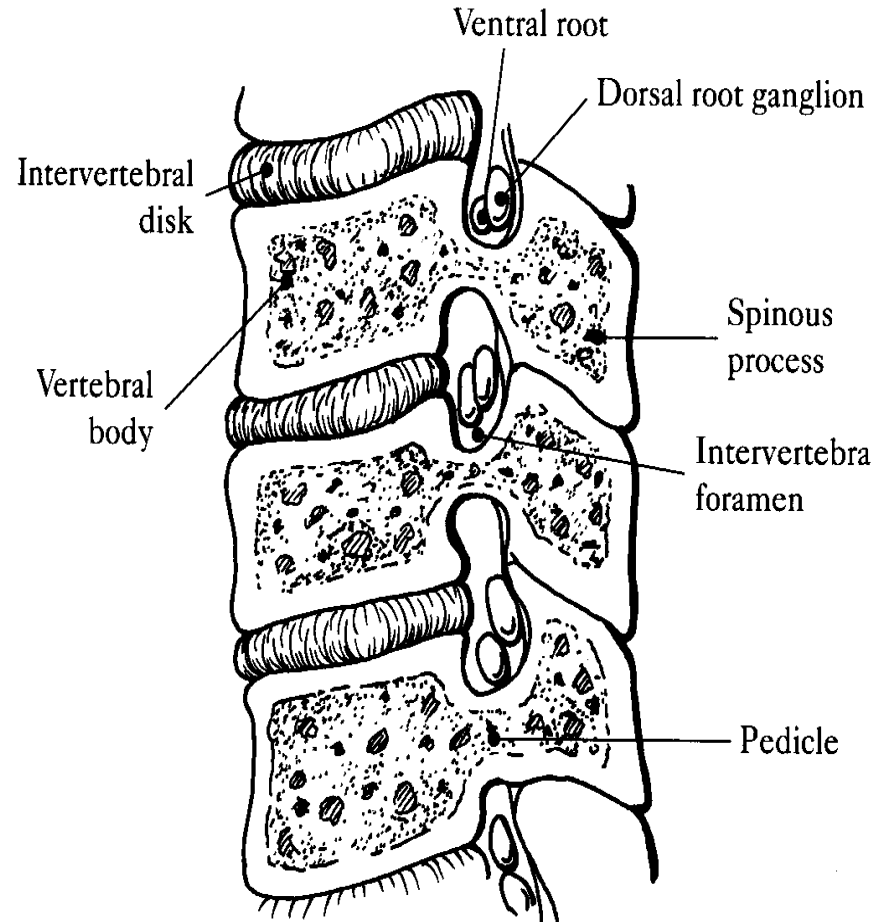
Vascular Supply Vertebra

- Degeneration will cause breakdown of tissues which will stimulate pain fibers, and possible inflammation.
- This will cause tightening of muscles and decreased vascular perfusion.



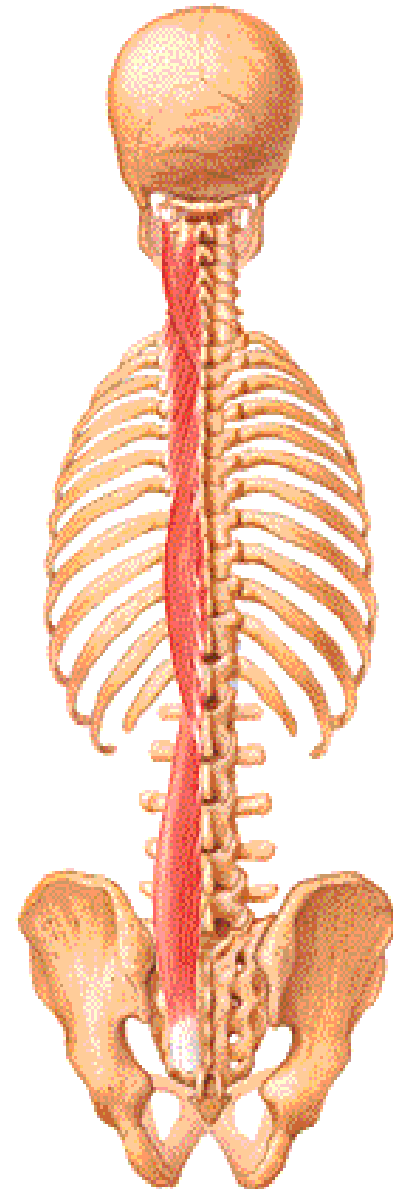
Contents of the Foramen

- With aging there is a narrowing of the hole the nerve root comes out.
- With irritation or inflammation the nerve root can become larger than the hole it exits.
- This can promote venous congestion and further inflammation.
- In the arthritic spine minimal insult can cause root inflammation and leg pain.



Pain causes muscle tightness

- The pain from degenerative joints will cause muscle shortening, and wasting.
- Decreased motion will perpetuate joint degeneration.
- This will further muscle loss and further DJD.
- It is a viscous cycle.



Muscles move bones

- Muscles attach to bones through tendons.
- Manipulation stretches tendons quickly.
- This cause relaxation of muscles, and increased motion.
- Increased motion means decreased Degeneration, and increased blood flow.

