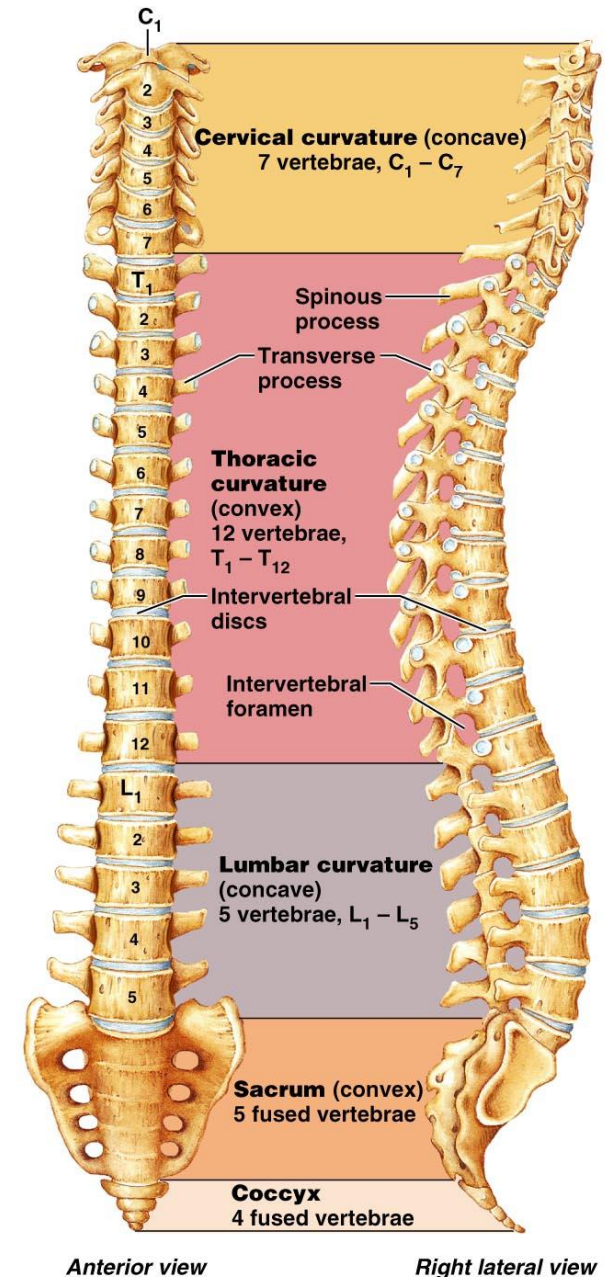


Axial Skeleton

Vertebral Column

Vertebral Column

- Aka → Spine or backbone
- Formed from 26 irregular bones
- Connected in a way that the flexible curved structure is formed
- Along with sternum and ribs, forms the trunk of the body

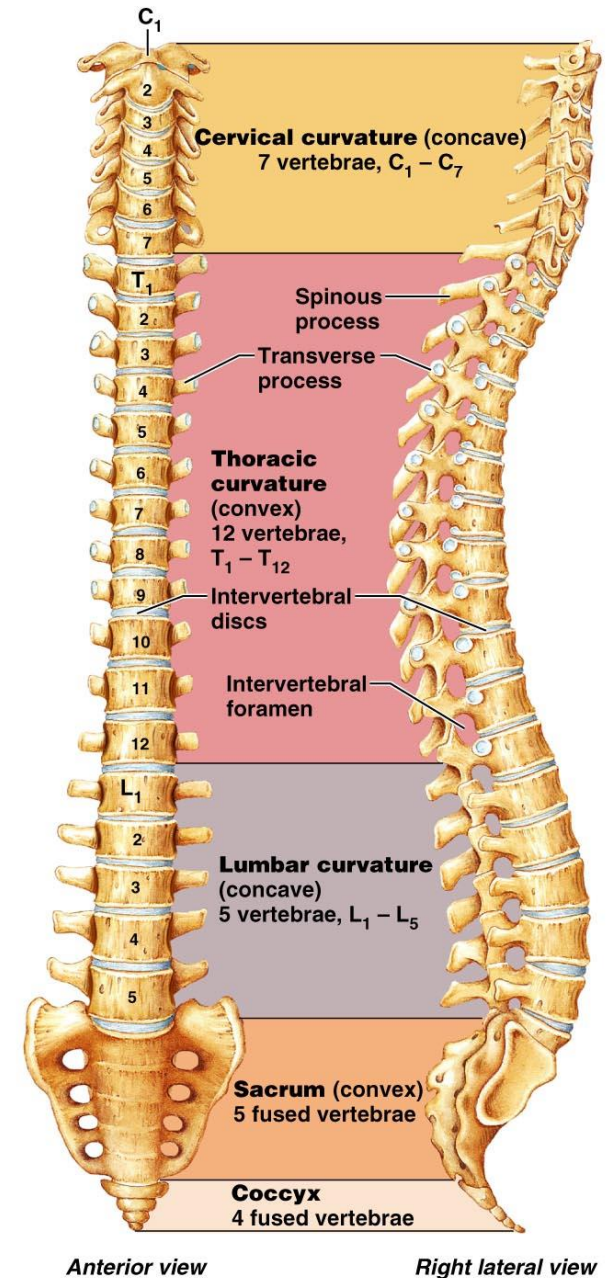


Anterior view

Right lateral view

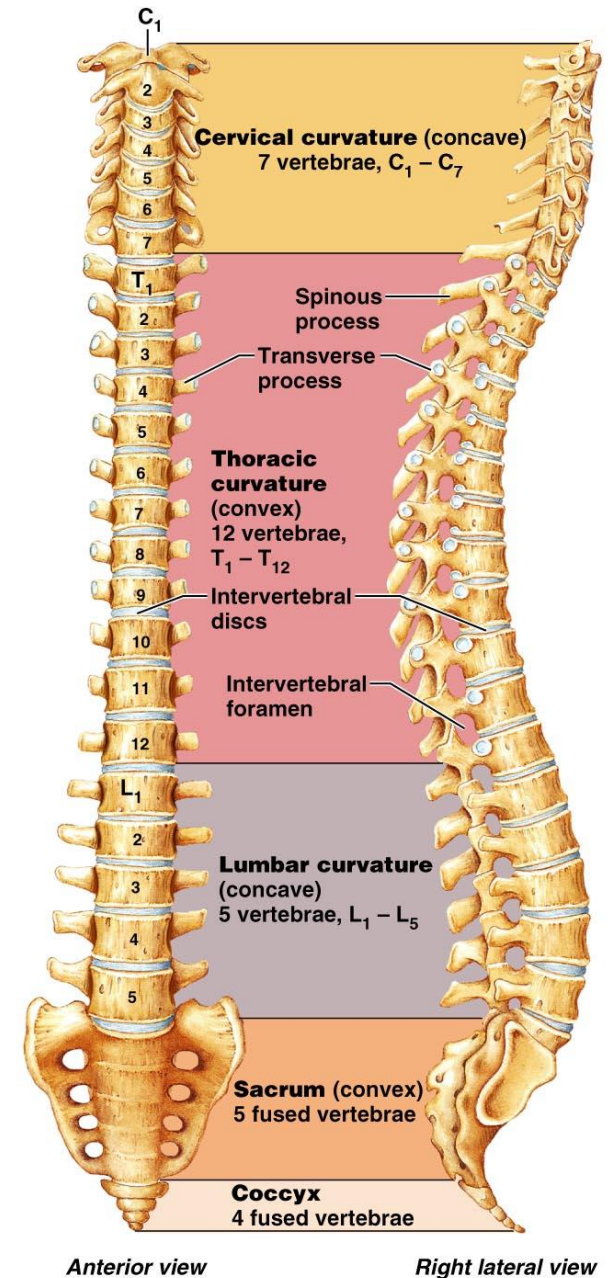
Vertebral Column

- Surrounds and protects the spinal cord
- Provides attachment points for the ribs and back and neck muscles
- Transmits weight of the trunk to the lower limbs



Divisions

- Cervical - 7
 - Neck
- Thoracic - 12
 - Ribs
- Lumbar - 5
 - Lower back
- Sacrum - 5
 - Articulates with pelvic bones
- Coccyx – 4 (3-5)
 - Tailbone

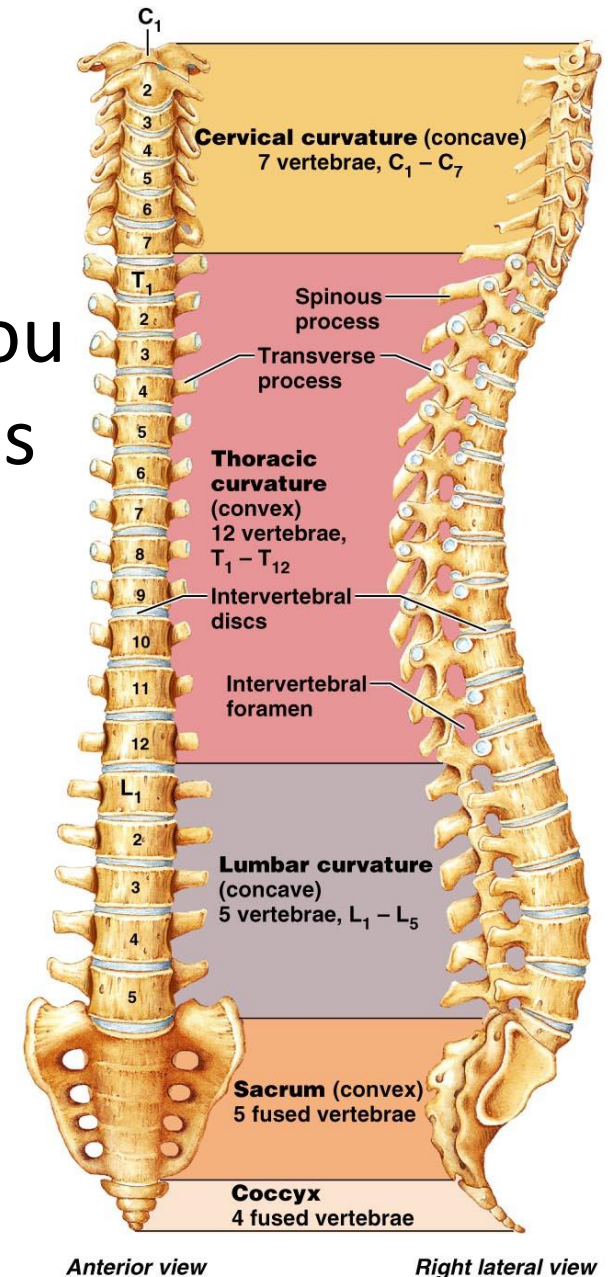


Anterior view

Right lateral view

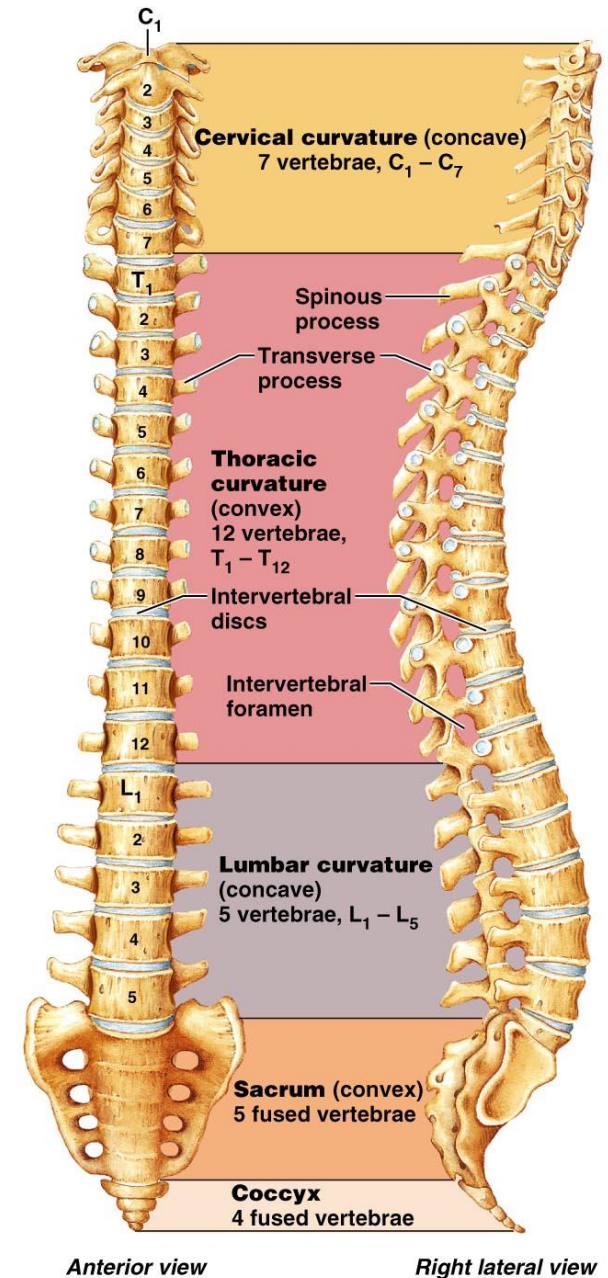
Curvatures

- When viewed from the side, you see 4 slight bends or curvatures that give it an “S” shape.
- Increases the resilience and flexibility of the spine
- Helps to absorb shock during walking
- Protects the vertebrae from fracture



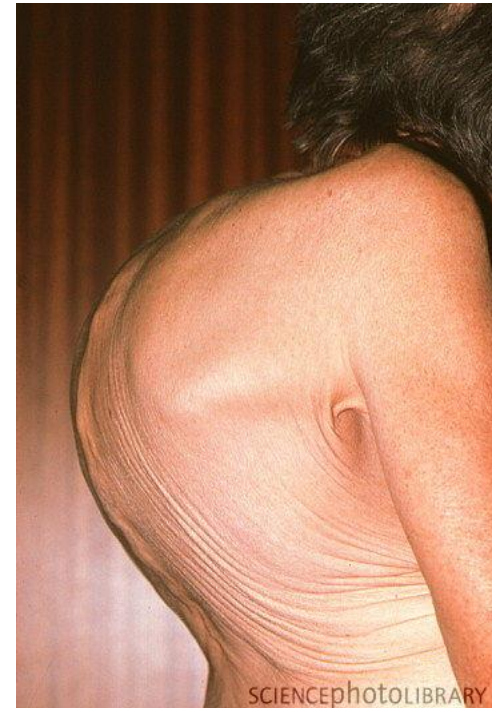
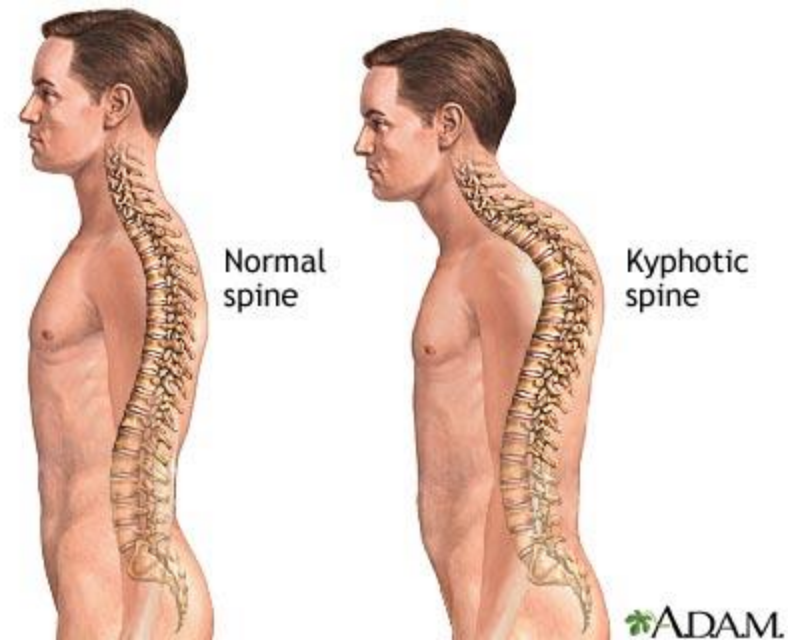
Curvatures

- Cervical and Lumbar
 - Concave (curve in)
- Thoracic and Sacral
 - Convex (curve out)



Kyphosis

- Hunchback
- Dorsally exaggerated thoracic curvature
- Common in elderly because of osteoporosis
- May also result from tuberculosis of the spine, rickets, or osteomalacia



Lordosis

- Swayback
- Accentuated lumbar curvature
- Common in those with an increase in abdominal weight
 - Men with potbellies
 - Pregnant women
- An attempt to preserve the center of gravity they throw their shoulders back

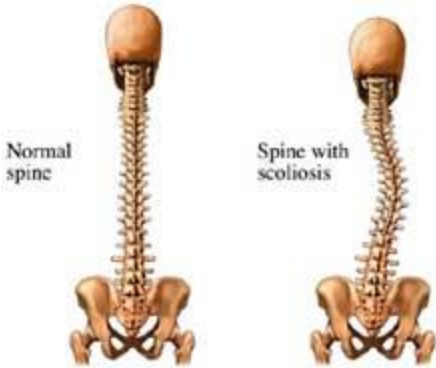


Normal spine

Lordosis of the spine



Exaggerated lumbar curve



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Scoliosis

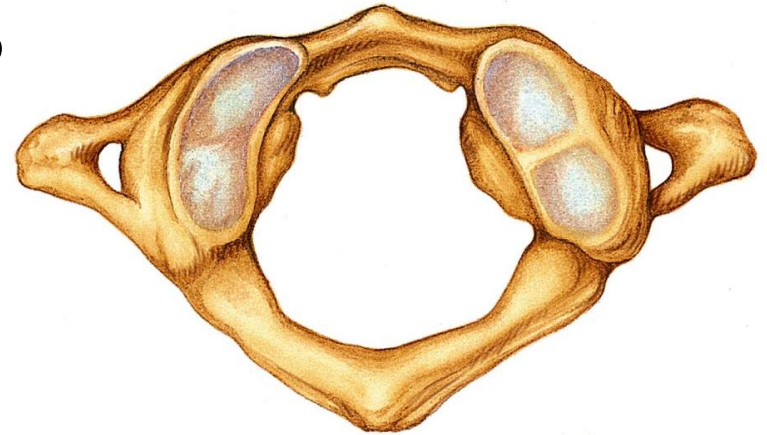
- “twisted disease”
- Abnormal lateral curvature most often seen in thoracic region
- Most common in girls during late childhood



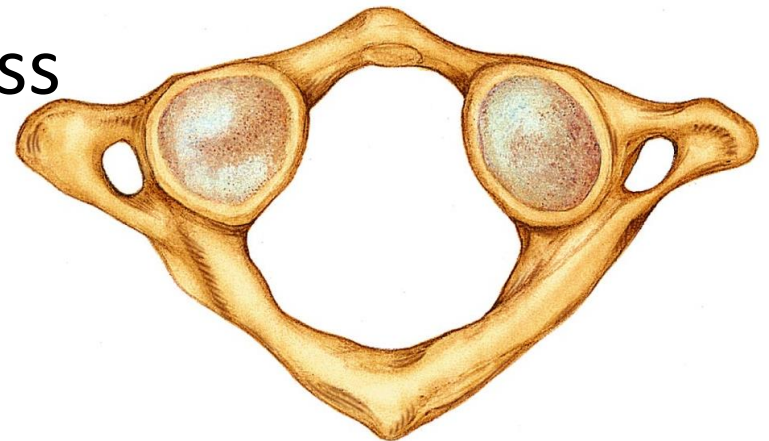
Types of Vertebrae

- Handout and Notes for Cervical, Thoracic, and Lumbar Vertebrae

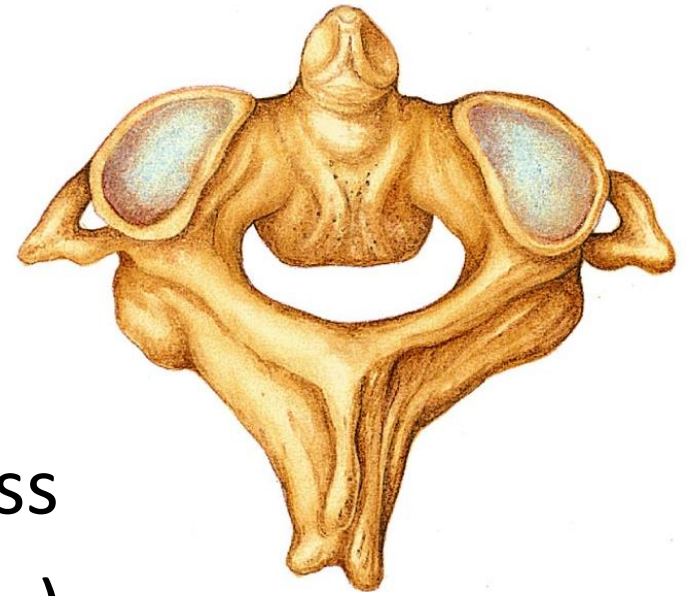
Atlas



- 1st cervical Vertebrae - C₁
- Supports the head
- Named for mythological Atlas who supported the world on his shoulders
- Ring of bone
- No body or spinous process
- Allows for “Yes” motion



Axis



- 2nd cervical Vertebrae – C₂
- Has body and spinous process
- Has a dens (odontoid process)
 - Missing body of the atlas which fuses during development
- Dens is a pivot that the atlas can rotate around allowing for “No” motion

Sacrum

- 5 fused bones
- Triangular
- Shapes the posterior wall of the pelvis



Coccyx

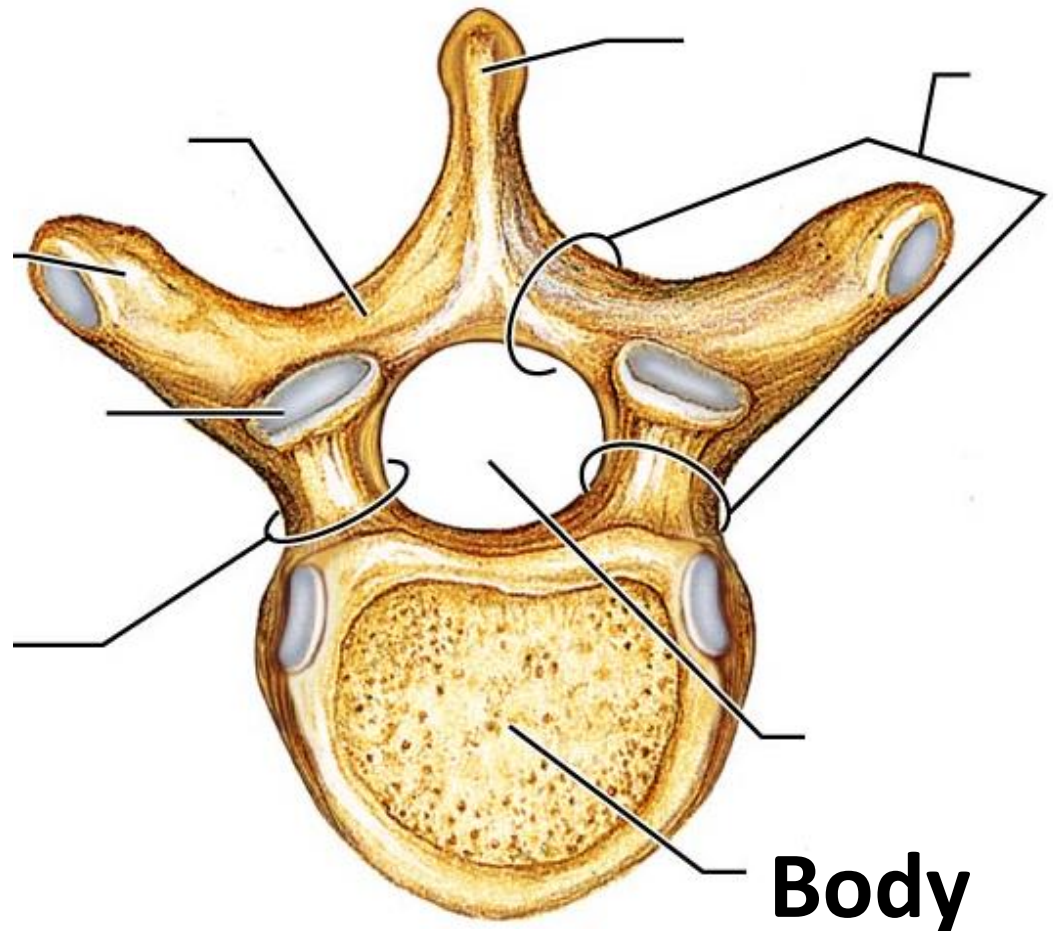


- Tailbone
- 4 Fused bones (3-5)
- Slight support of pelvic organs



Body (Centrum)

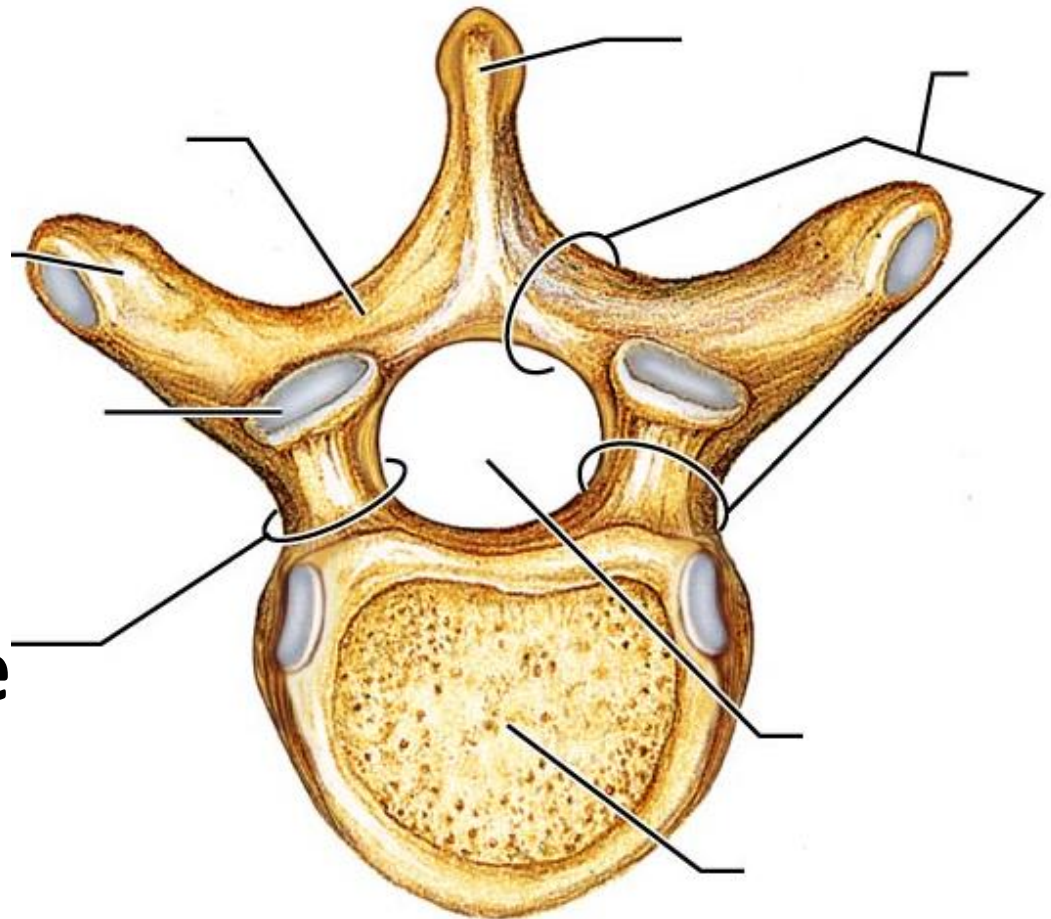
- Disc-shape; weight bearing (anterior) region



Pedicle

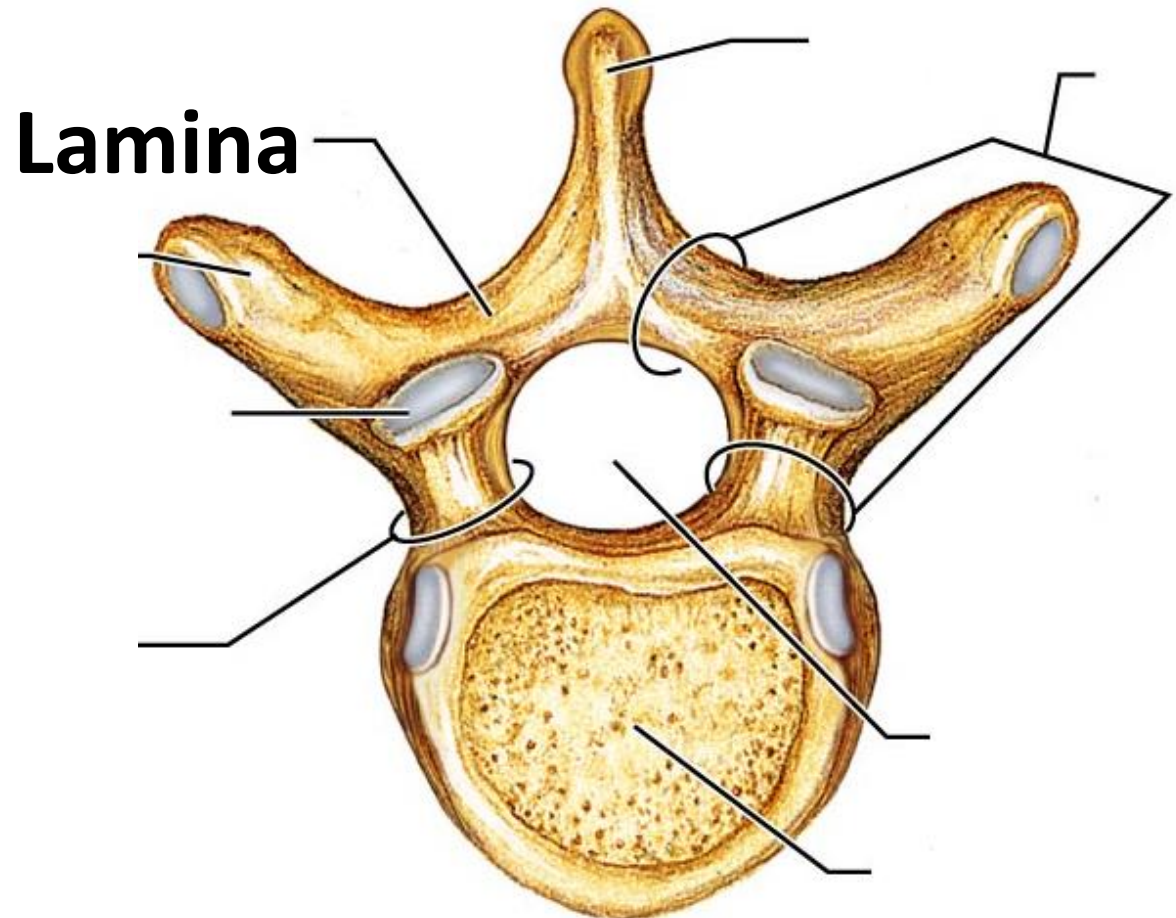
- “little feet”
- Short bony pillars
- Project posteriorly from body
- Forms sides of arch

Pedicle



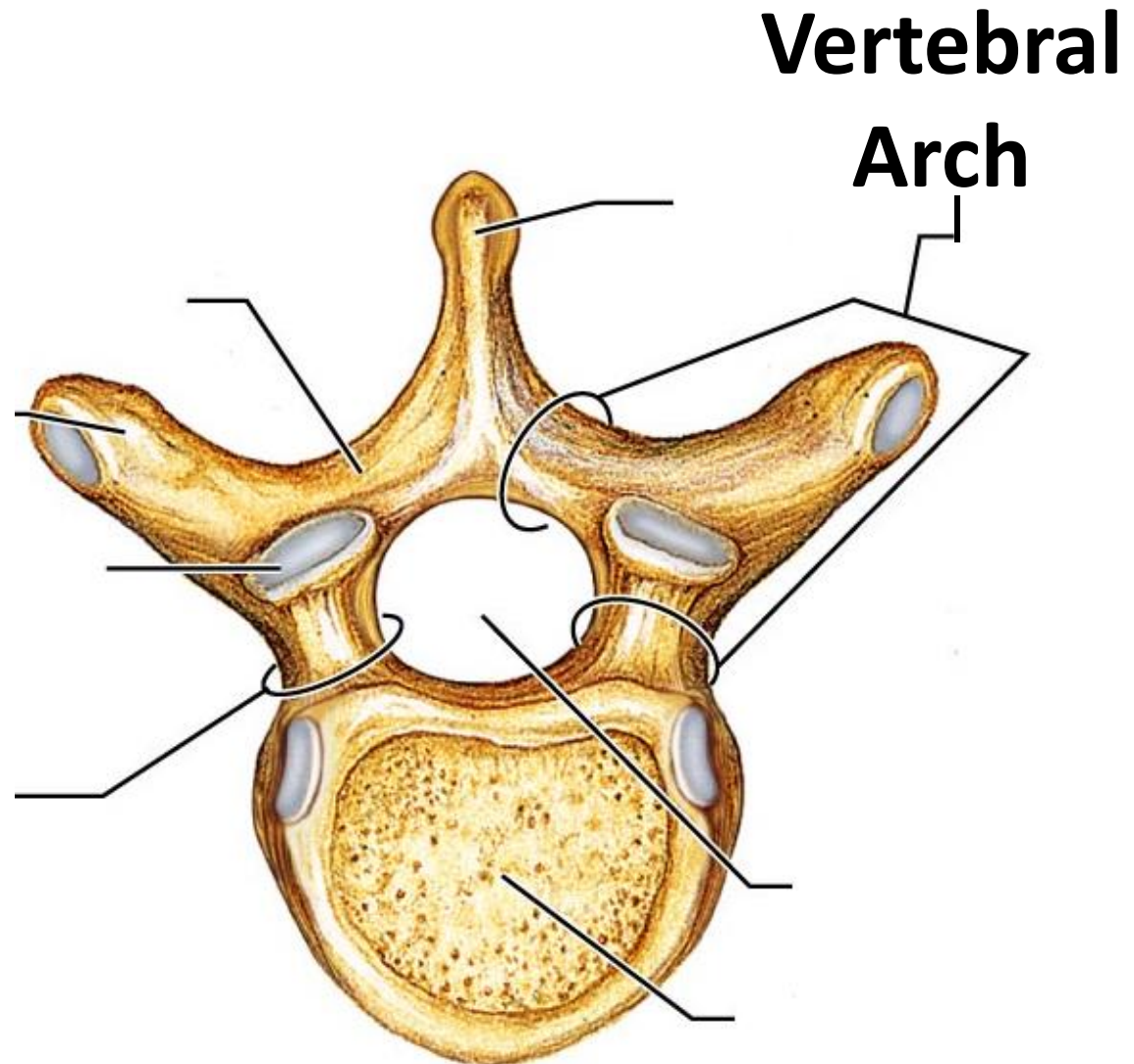
Lamina

- Flattened plates
- Join to form the posterior portion of the arch



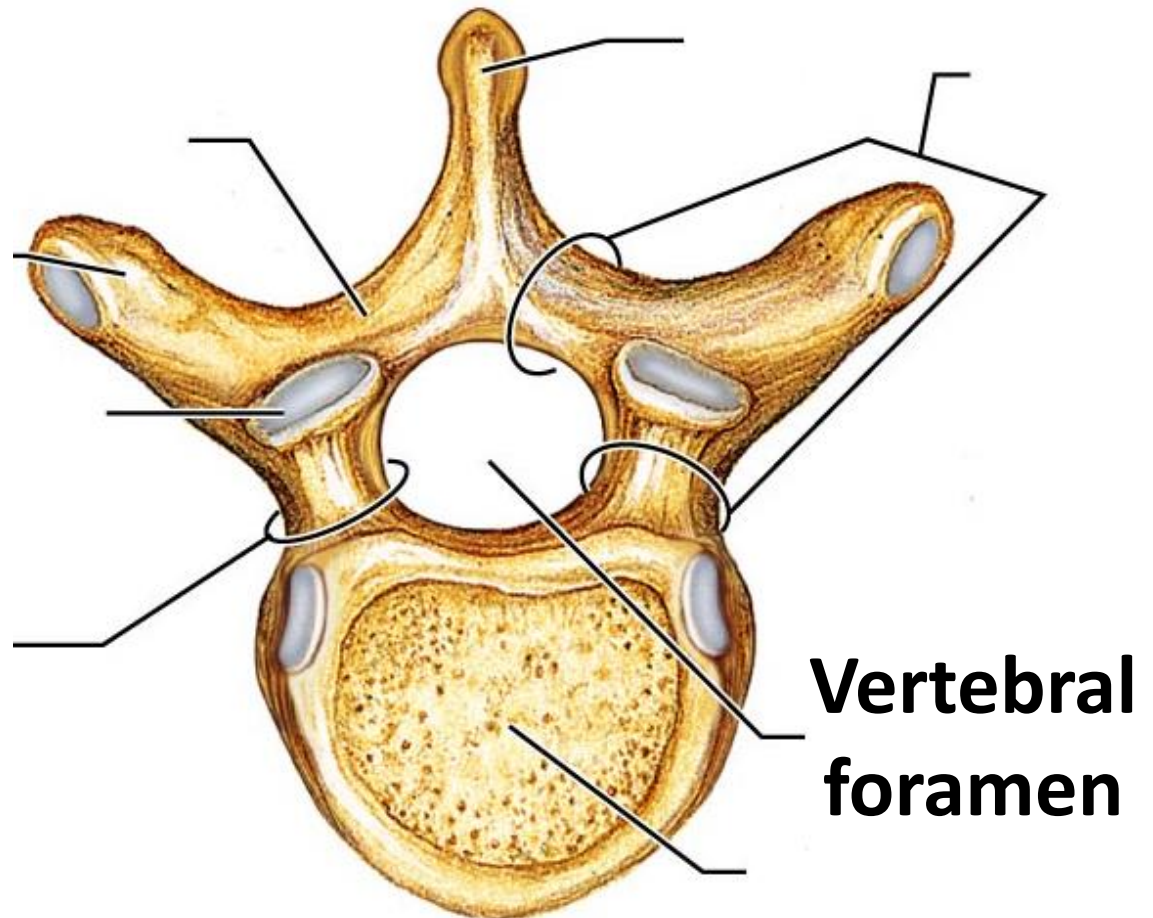
Vertebral Arch

- Extends posteriorly from the body
- Made up of the pedicle and laminae
- Body and arch enclose the vertebral foramen



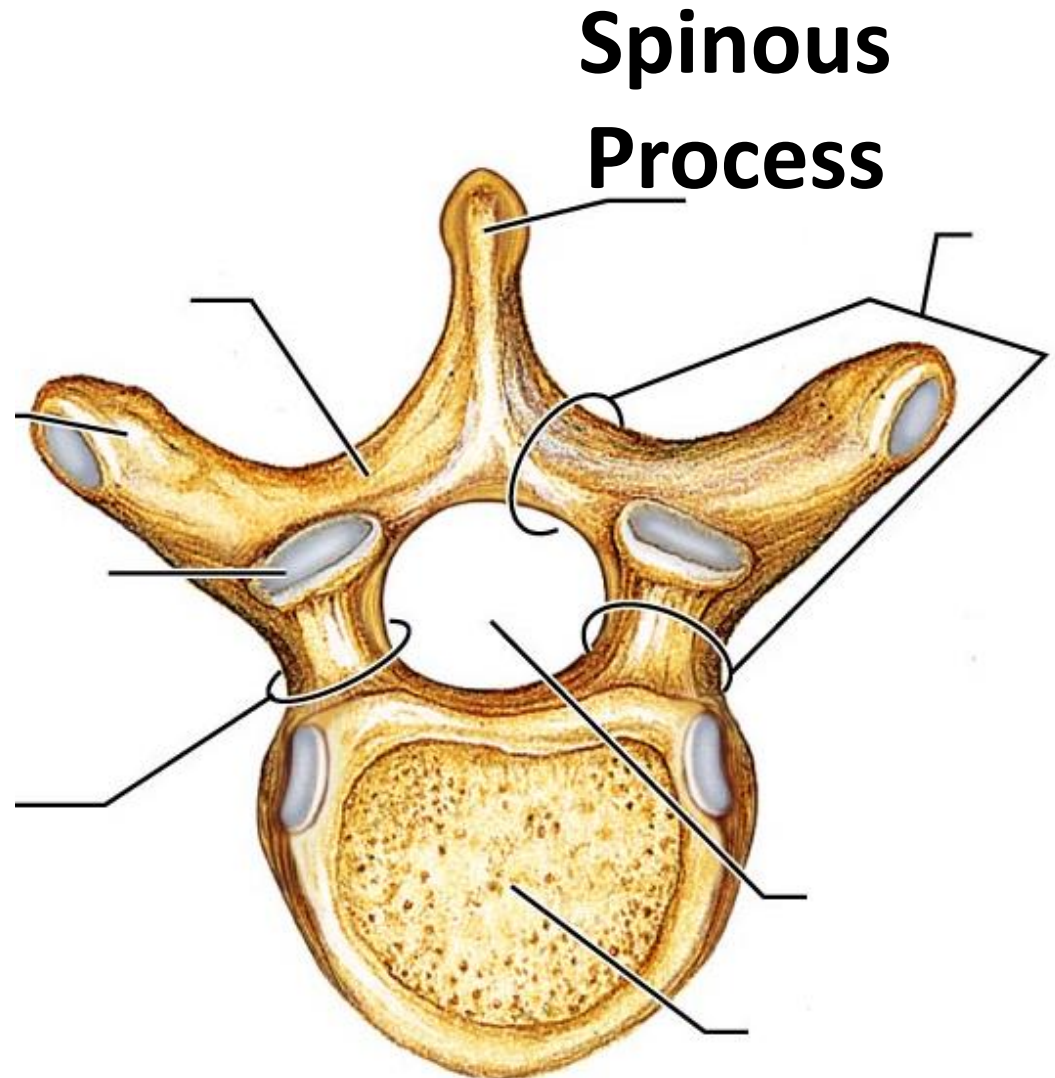
Vertebral Foramen

- Formed from the vertebral arch and body
- Contains the spinal cord



Spinous Process

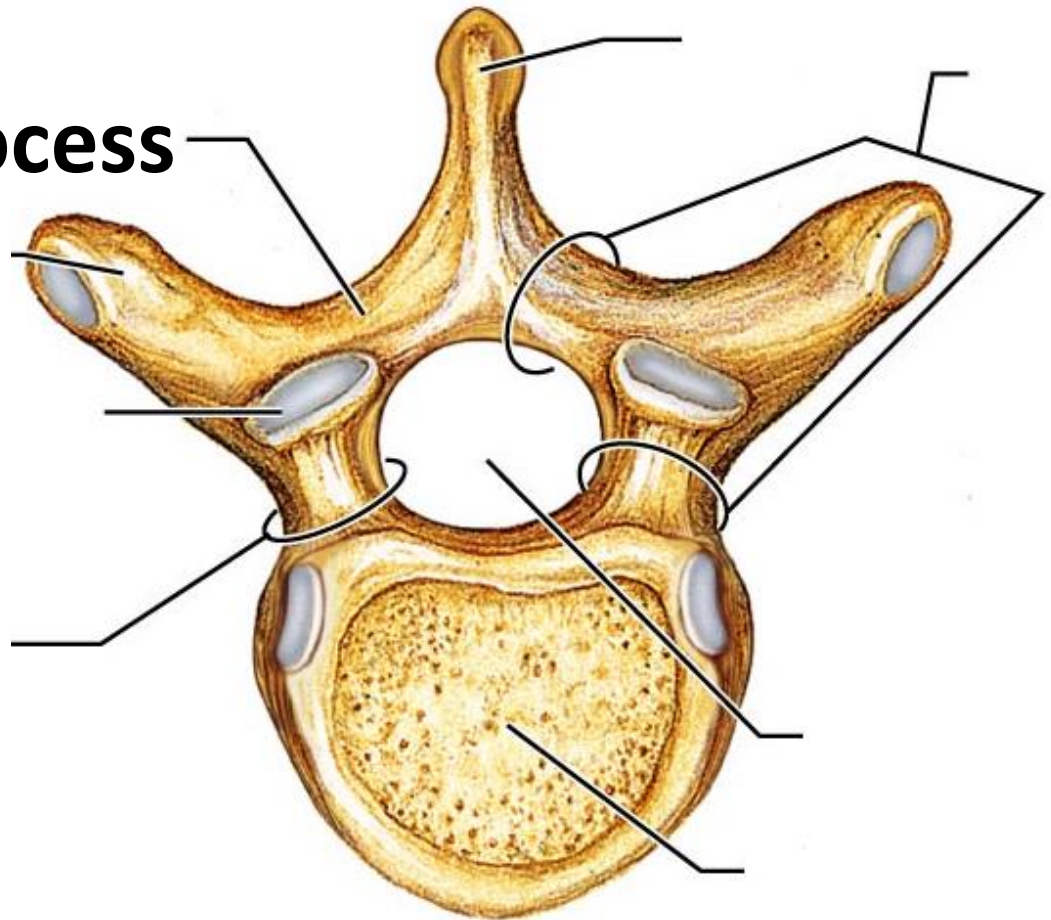
- Median posterior projection
- Seen at the junction of the two laminae
- Points of muscle attachment



Transverse Process

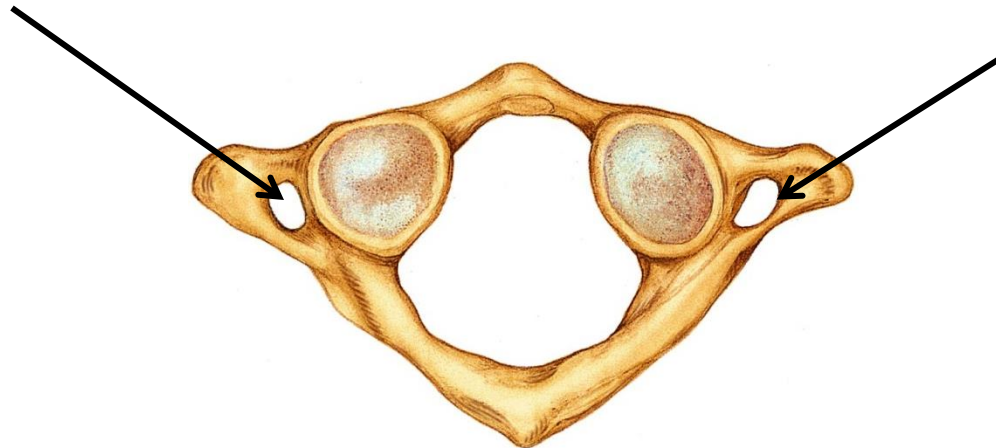
- Extends laterally from each side of the arch
- Points of muscle attachments

Transverse Process



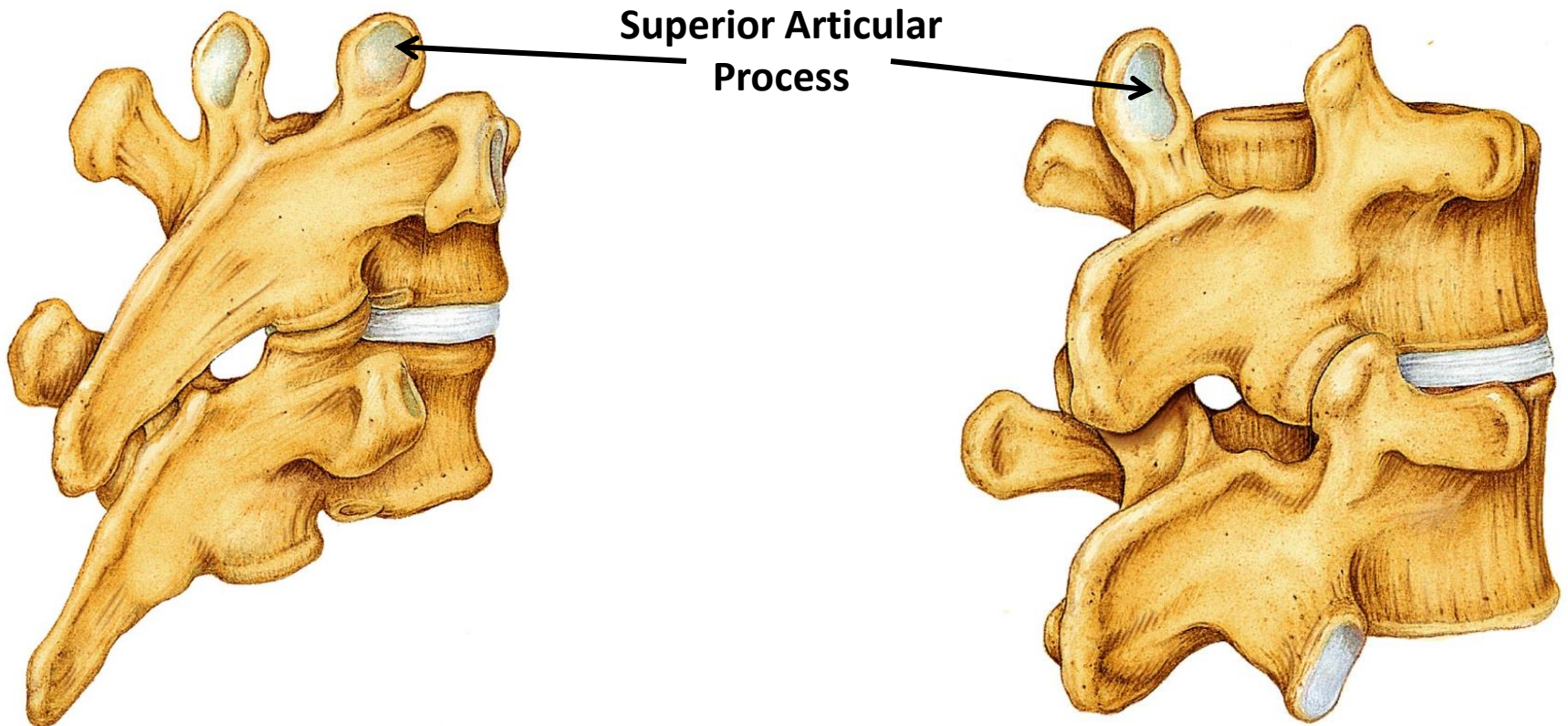
Transverse Foramen

- “holes” in the transverse process of cervical vertebrae.
- The vertebral arteries pass through to service the brain.



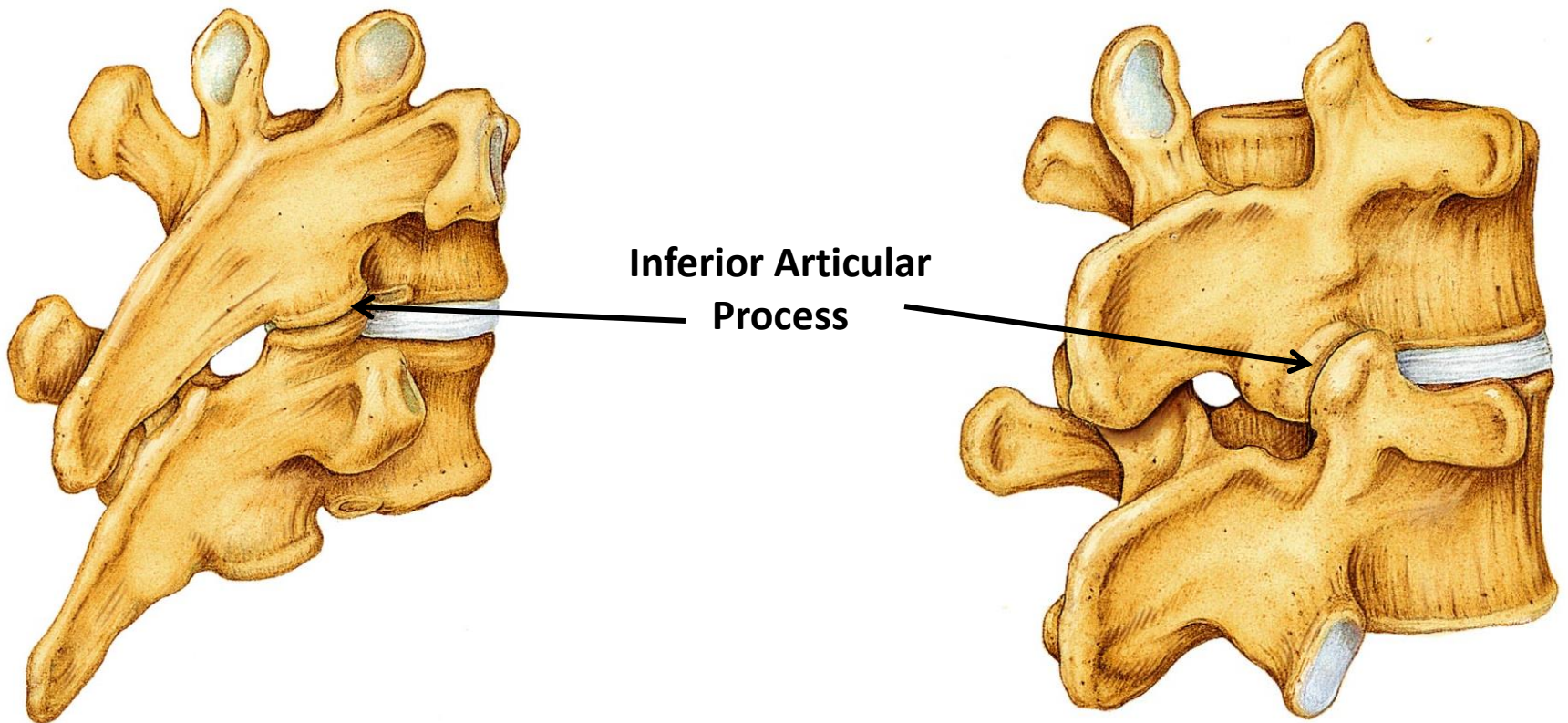
Superior Articular Process

- Seen on superior side of vertebra
- Articulate with the inferior articular process of the vertebra above it



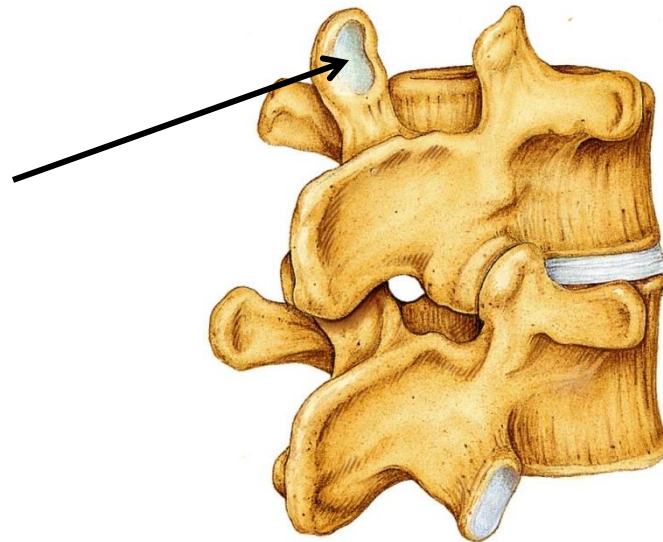
Inferior Articular Process

- Seen on the inferior side of the vertebra
- Articulate with the superior articular process of the vertebra below it



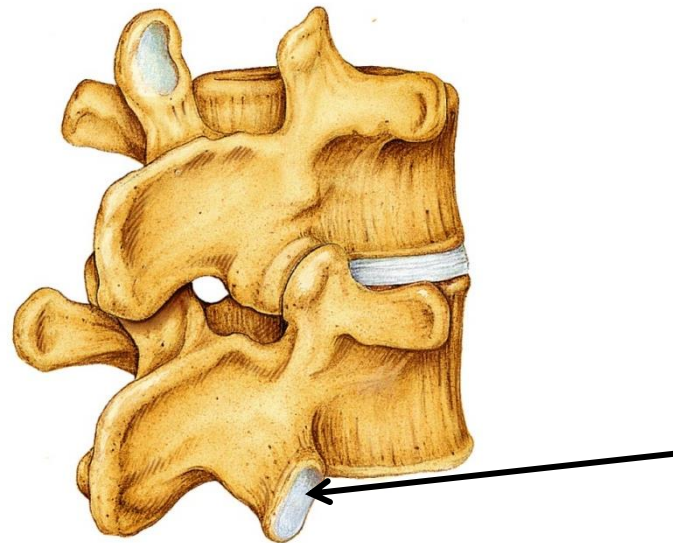
Superior Articular Facet

- Smooth joint surfaces found on the articular process.
- Covered with hyaline cartilage.
- Join with the inferior articular facet of the vertebra above it.

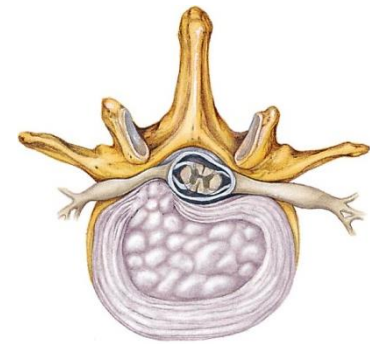


Inferior Articular Facet

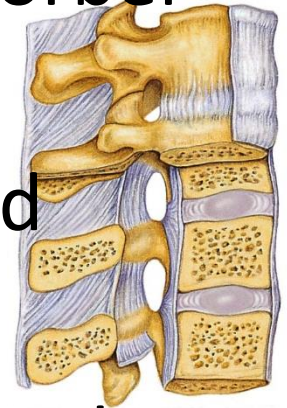
- Smooth joint surfaces found on the articular process.
- Covered with hyaline cartilage.
- Join with the superior articular facet of the vertebra below it.



Intervertebral Disc

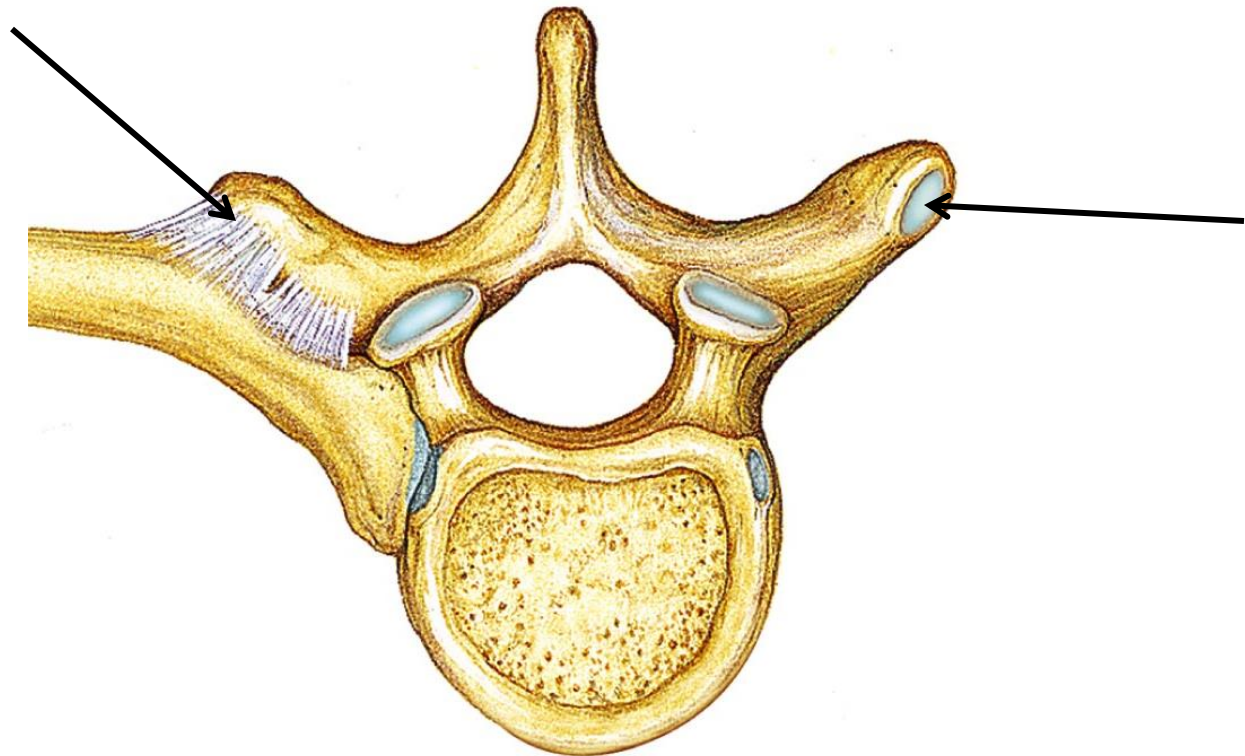


- Cushion-like pad that acts as a shock absorber during activity
- Allows the spine to flex, extend, and bend laterally
- Thickest in the cervical and lumbar regions to allow for greater movement
- Flatten during the day so we are taller in the morning than in the evening
- No disc between first two cervical vertebrae



Transverse Costal Facet

- Facets on thoracic transverse process
- Articulate with the tubercle of the rib



Rib Articulations

