Vertebral Column

- Backbone consists of 26 vertebrae.
- **Five vertebral regions**
  - Cervical vertebrae (7) in the neck.
  - Thoracic vertebrae (12) in the thorax.
  - Lumbar vertebrae (5) in the lower back.
  - Sacrum (5, fused).
  - Coccyx (4, fused).
Kyphosis

Lordosis

Scoliosis
Atlas (C1)

- Atlas - ring of bone, superior facets for occipital condyles.
  - Nodding movement signifies “yes”.

Labels:
- Vertebral foramen
- Superior articular facet
- Transverse foramen
- Posterior tubercle
- Tubercle for transverse ligament
- Transverse process
- Facet for dens
- Anterior tubercle
**Axis (C2)**

- **Axis** dens or odontoid process is body of atlas.
  - Pivotal movement signifies “no”.

- Spinous process
- Lamina
- Vertebral foramen
- Transverse foramen
- Transverse process
- Superior articular facet
- Odontoid process (dens)
Typical Cervical Vertebra (C3-C7)

- Smaller bodies
- Larger spinal canal
- Transverse processes
  - Shorter
  - Transverse foramen for vertebral artery
- Spinous processes of C2 to C6 often bifid
- 1st and 2nd cervical vertebrae are unique
  - Atlas & axis
Typical Cervical Vertebra

- Lamina
- Vertebral foramen
- Transverse foramen
- Transverse process
- Spinous process (bifid)
- Inferior articular process
- Superior articular process
- Pedicle
- Body

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Thoracic Vertebrae (T1-T12)

- Larger and stronger bodies
- Longer transverse & spinous processes
- Demifacets on body for head of rib
- Facets on transverse processes (T1-T10) for tubercle of rib
Thoracic Vertebra- superior view

- Spinous process
- Transverse process
- Lamina
- Vertebral foramen
- Facet for tubercle of rib
- Superior articular process
- Pedicle
- Superior demifacet for head of rib
- Body

(b) Superior view

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Thoracic Vertebra- lateral view

Superior articular process
Facet for tubercle of rib
Spinous process
Inferior articular process

Superior notch
Superior demifacet for head of rib
Body
Inferior notch
Inferior demifacet for head of rib
Lumbar Vertebrae

- Strongest & largest
- Short thick spinous & transverse processes
Typical Lumbar Vertebra-
superior view

- Spinous process
- Superior articular process
- Transverse process
- Vertebral foramen
- Body
- Lamina
- Pedicle
Typical Lumbar Vertebra- lateral view

Superior articular process
Transverse process
Spinous process
Inferior articular process

Superior notch
Body
Inferior notch
Pedicle

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Sacrum

(a) Anterior view

(b) Posterior view
Sacrum- ventral view

- Lateral mass
- Body
- Promontory
- Anterior sacral foramen
- Apex of sacrum
- Superior articular process
- Coccyx
Thorax

- Thorax contains 25 bones
- Bony cage flattened from front to back
- Sternum (breastbone)
- Ribs
  - 1-7 are true ribs (vertebrosternal)
  - 8-12 are false ribs (vertebrochondral)
  - 11-12 are floating
- Costal cartilage
Ribs

Fracture at site of greatest curvature.

- Increase in length from ribs 1-7, thereafter decreasing
- Head and tubercle articulate with facets
- Body with costal groove containing nerve & blood vessels
- Intercostal spaces contain intercostostal muscles
Rib

Cranial border

Articular facet for a transverse process
Tubercle
Angle
Costal groove

Body
Neck
Head

Articular facets for bodies of vertebrae

Caudal border

Ventral extremity

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Rib Articulation

- Tubercle articulates with transverse process
- Head articulates with vertebral bodies
Intervertebral Discs

- Positioned between adjacent vertebrae
- Absorb vertical shock
- Permit movements of the vertebral column
- Fibrocartilagenous ring with a pulpy center
Herniated (Slipped) Disc

- Protrusion of the nucleus pulposus
- Most commonly in lumbar region
- Pressure on spinal nerves causes pain
- Surgical removal of disc after laminectomy