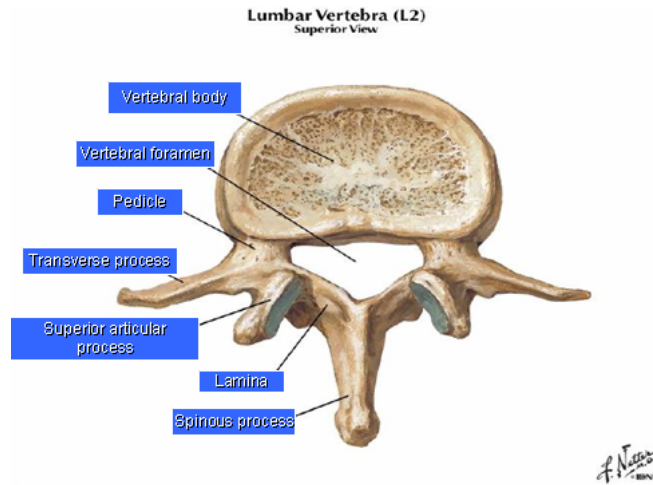


Science Olympiad - High School

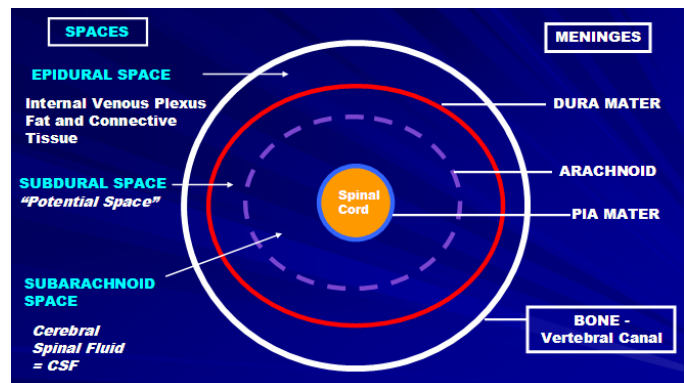
- Anatomy of a Vertebrae – see picture
 - Body – weight bearing
 - Vertebral foramen – spinal cord
 - Intervertebral foramen – spinal nerves exit here



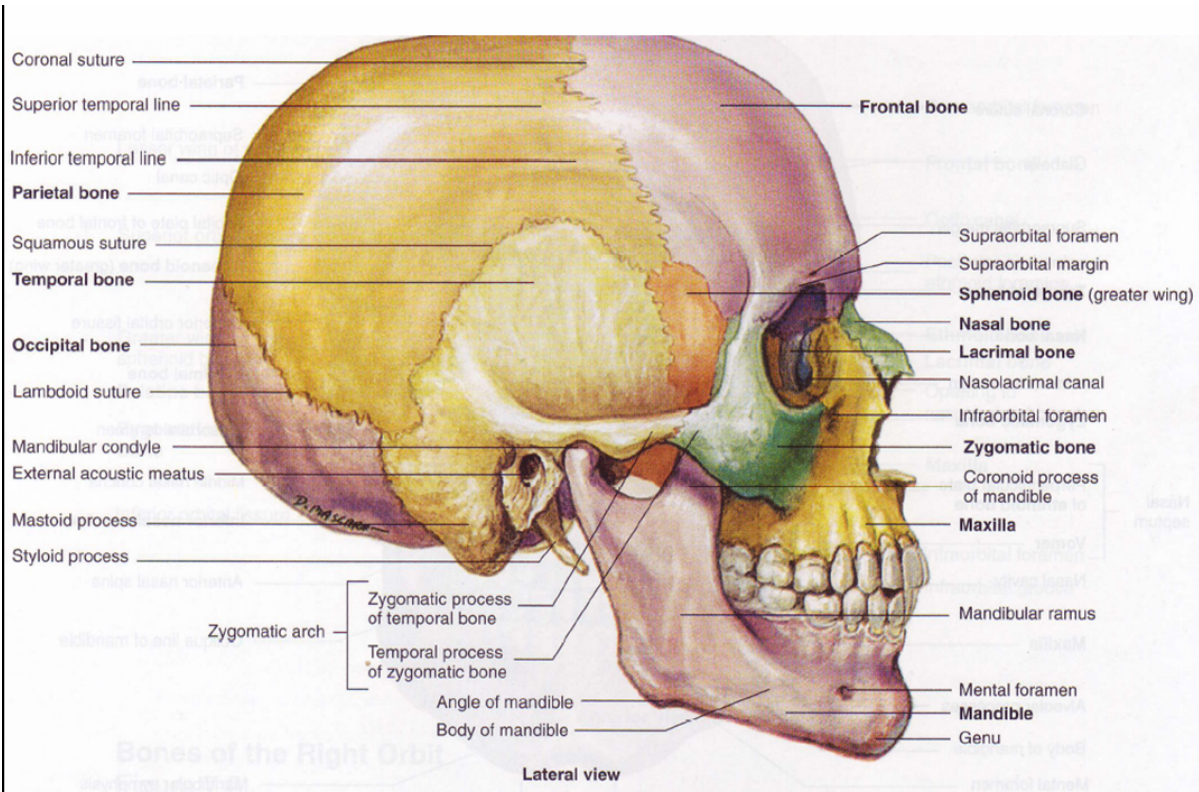
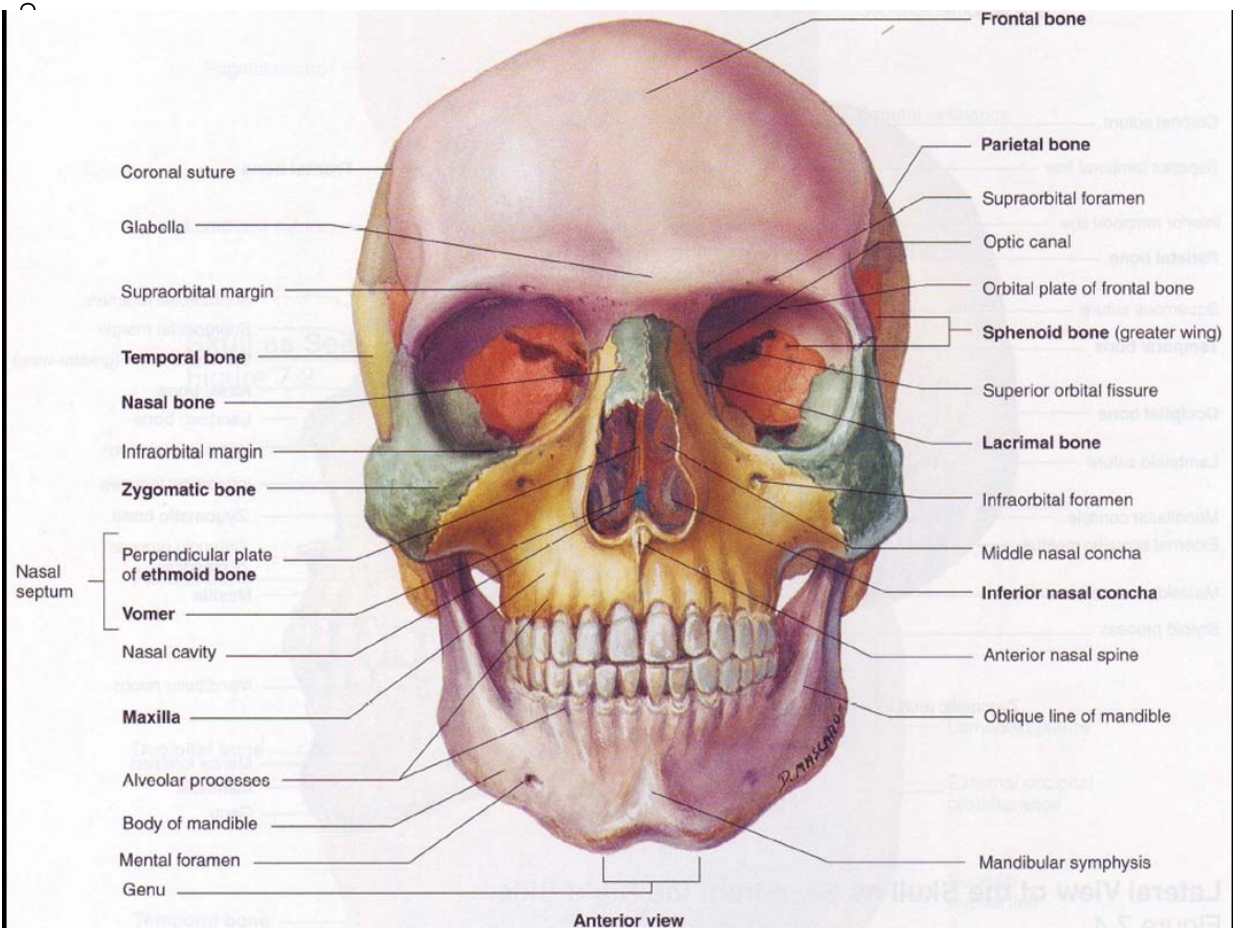
- Curves of the Spine
 - Primary Curves:
 - Thoracic (12)
 - Sacral (5)
 - Secondary Curves:
 - Cervical (7) – hold up head
 - Lumbar (5)– walking
- Abnormal Curvatures of the Spine
 - Scoliosis – exaggerated lateral curvature of vertebral column
 - Kyphosis – exaggerated thoracic, often result of osteoporosis in older women
 - Lordosis – exaggerated lumbar curvature
- Types of vertebrae
 - **Cervical** – transverse foramen (for vertebral artery), short and bifid spinous process, small body, large triangular vertebral foramen
 - Atlas – “yes” bone – no body – synovial condyloid
 - Axis – “no” bone – dens – synovial pivot joint
 - Vertebral prominens – longest spinous process (palpate it)
 - **Thoracic** - Very long and inclined downward spinous process, costal facets on sides of body for head of rib, costal facts on tranverse process for tubercle of rib, vertebral foramen small and circular, vertebral body heart shaped
 - **Lumbar** - body large and kidney shape, vertebral foramen triangular, spinous process short and flat, tranverse process long and thin, strong pedicle
 - End of spinal cord contained at this level – between L2-L3
 - **Sacral** – all fused, sacral promontory, sacral hiatus

- **Invertebral discs** – solid cartilaginous joint (symphysis) – 25% of vertebral column length
 - Cushions vertebral column and allows movement
 - Disk herniation – protrusion of IV disc into vertebral canal (compresses spinal nerves)

- **Meninges** – from outside to the inside
- **Spina bifida** - a developmental anomaly characterized by defective closure of the vertebral arch – meninges protrudes through vertebral arch



- Skull Bones
 - Frontal, Sphenoid, Parietal, Occipital, Temporal, Zygomatic, Maxilla, Mandible, Nasal
 - Temporomandibular Joint – joint that allows chewing and speaking
 - Sutures – solid fibrous synarthrosis joints – allow growth of the brain
 - Lambdoid, Sagittal, Coronal Sutures
- Epidural hematoma
 - Most commonly caused by blows to the head (*pteron)
 - Rupture of the middle meningeal artery – severe bleeding in the epidural space within the skull
 - Pterion – made up of frontal, parietal, sphenoid, and temporal bones – all intersect here



Lateral View of the Skull as Seen from the Right Side
 Figure 7.4