

A. Columna vertebralis

1. The origin and the location of the curves:

- a. Primary curves, concave ventrally, they appear late in the fetal development and also called accommodation curves because they accommodate the thoracic and abdominopelvic viscera.

1) Thoracic curve is formed by vertebrae thoracalis I – XII

2) Sacral curve is formed by vertebrae sacralis (os sacrum)

- b. Secondary curves, convex ventrally, do not appear until several months after birth and also known as compensation curves because they help shift the trunk weight over the legs. They become emphasized as the toddler learns to walk and run.

1) Cervical curve is formed by vertebrae cervicalis I – VII

2) Lumbar curve is formed by vertebrae lumbalis I – V

All four curves are fully developed by the time a child is 10 years old.

- ### 2. Distinguish the vertebrae cervicales, thoracales, and lumbales based on its own characteristics:

Structure	Vertebrae cervicales	Vertebrae thoracales	Vertebrae lumbales
Corpus vertebrae	Small; oval; curved faces	Medium; heart-shaped; flat faces; facets for rib articulations (fovea costalis superior and inferior)	Massive; oval; flat faces
Foramen vertebrae	Large; triangular	Smaller; rounder	Smallest
Processus spinosus	Long; split; tip points inferiorly	Long; slender; not split; tip points inferiorly	Blunt; broad tip points posteriorly (projects sagittally)
Processus transverses	Has foramen transversus	All but two (T11 and T12) have facets for rib articulation (fovea costalis transversalis)	Short; no articular facets or foramen transverses
Functions	Support skull, stabilize relative positions of brain and spinal cord, allow controlled head movement.	Support weight of head, neck, upper limbs, organs of cavum thorax; articulate with ribs to allow changes in volume of cavum thorax cage	Support weight of head, neck, upper limbs, organs of thoracic and cavum abdominal
Specific structures	Foramen transversarium for a/v. vertebralis	Fovea costalis superior, inferior and transversalis for articulate with ribs	Processus mammillaris and processus accessorius

3. *Vertebrae sacrales / os sacrum*

Os sacrum is a triangle-shaped bone consists of the fused components of five (sometimes 6; seldom 4) sacral vertebrae. They fused to a single bone on about age 25 - 30. The structures of some parts of this bone have the similarity or analogy with other certain vertebral bones structures. Write down the similarities:

Os sacrum	Other vertebrae
Foramen sacralis anterior	Foramina intervertebrale
Foramen sacralis posterior	Foramina intervertebrale
Crista sacralis media	Processus spinosus
Crista sacralis articularis	Processus articularis superior / inferior
Crista sacralis lateralis	Processus transverses

B. Ossa costae

- Based on the attachment to the sternum, ossa costae are divided into the following clusters:
 - Costae verae (I – VII, sometimes VIII)
 - Costae spuriae (VIII – XII)
 - Costae fluitantes (XI – XII)
- Describe the characteristics of the following costae:
 - Costa I: tuberculum musculi scalene anterior / tuberculum Lisfranci for attachment of the m. scalenus anterior; sulcus a. subclavia; sulcus v. subclavia
 - Costa II: tuberositas musculi serrati anterior / tuberositas costae II for the attachment of the m. serratus anterior
 - Costa XI and costa XII: absent of facies articularis tuberculi costae; absent of collum costae; absent of angulus costae

C. Os sternum

Angulus sterni also known as angulus Ludovici is an angle formed by manubrium sterni and corpus sterni