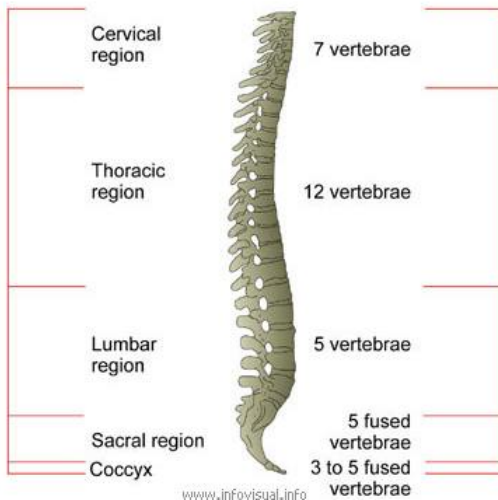




SPINAL ANATOMY

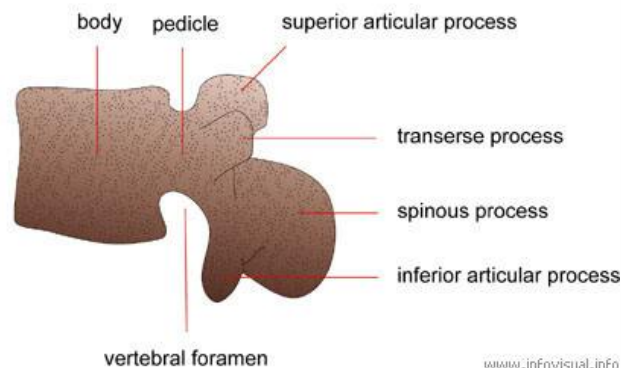
HOW IS THE SPINE BUILT?

The Bones and Joints



The spine is a flexible column of 24 vertebrae that are grouped into three regions based on their structure and function. From top to bottom, they are called the cervical, thoracic, lumbar regions. The pelvis sits at the base of the spine and is formed by the sacral region and coccyx.

VERTEBRA (lateral view)



The vertebra is divided into a weight bearing portion and a movement portion. The weight bearing portion is the **body** of the vertebra. It is shaped like a box which is excellent for resisting load longitudinally like sitting or standing or for more powerful activities such as running or swinging a golf club.

The articular processes are the movement portion of the vertebra. The **superior articular process** of one vertebra and the **inferior articular process** of the next vertebra connect to form the **zygapophyseal** or **facet joints**. These joints allow the spine to move. The direction and amount of movement available varies in each region of the spine.

The **pedicle** is the junction between the weight bearing and movement parts of the vertebra. The **transverse** and **spinous processes** are where many muscles attach.

Intervertebral joints join the spinal vertebrae together into a column. The spine must provide two roles of weight bearing and mobility. The vertebral bodies are designed to bear load, whereas the joints to the side are designed to provide movement. The spinal curves and the intervertebral disks between each vertebra help provide shock absorption during impact activities.

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The sacroiliac joint joins the sacrum to the pelvis, and is the site of load transfer from the trunk to lower extremities. A small amount of movement is always possible at this joint, although its flexibility is increased during pregnancy. The front of the pelvis is joined in the midline by the pubic symphysis.

The hip joint is the juncture between the trunk and leg formed by the pelvis and the femur. The hip is a ball and socket-shaped joint that allows for a high degree of movement. It has strong ligaments which provide a lot of support to the joint.

What are the differences between the regions?

The neck or cervical region is designed for mobility. The cervical spine's job is to move the head to allow the eyes to see through as wide a range as possible. The movement parts of the cervical spine are quite large and the weight bearing area is smaller than in the other regions of the spine.

The thoracic spine has mostly a protective function. It has limited mobility, especially due to the ribs which provide a frame to protect the heart and lungs. The thoracic vertebrae have attachments for the ribs and long processes for muscle attachments.

The lumbar spine provides some mobility but also takes a heavy load. The weight of the upper body is borne through the lumbar spine before being transferred to the pelvis. The weight bearing area of a lumbar vertebra is larger than the other types of vertebrae. The facet joints of the lumbar spine are vertical and not designed to bear load. When you sit in a slouched posture, the facet joints get compressed and bear weight which may lead to injury.

The pelvis takes the load borne centrally by the spine and divides and transfers it to each femur. The pelvis is made up of three irregular-shaped bones that are strongly connected and surround the reproductive organs. The pelvis has very strong well developed ligaments connecting the bones. There are very strong muscles which attach the femur or thigh bone to the pelvis. These generate a lot of force and require a strong stable base to work effectively. The stable base is provided by the interaction of the bones, strong pelvic ligaments and stabilising muscles in the lumbopelvic area.