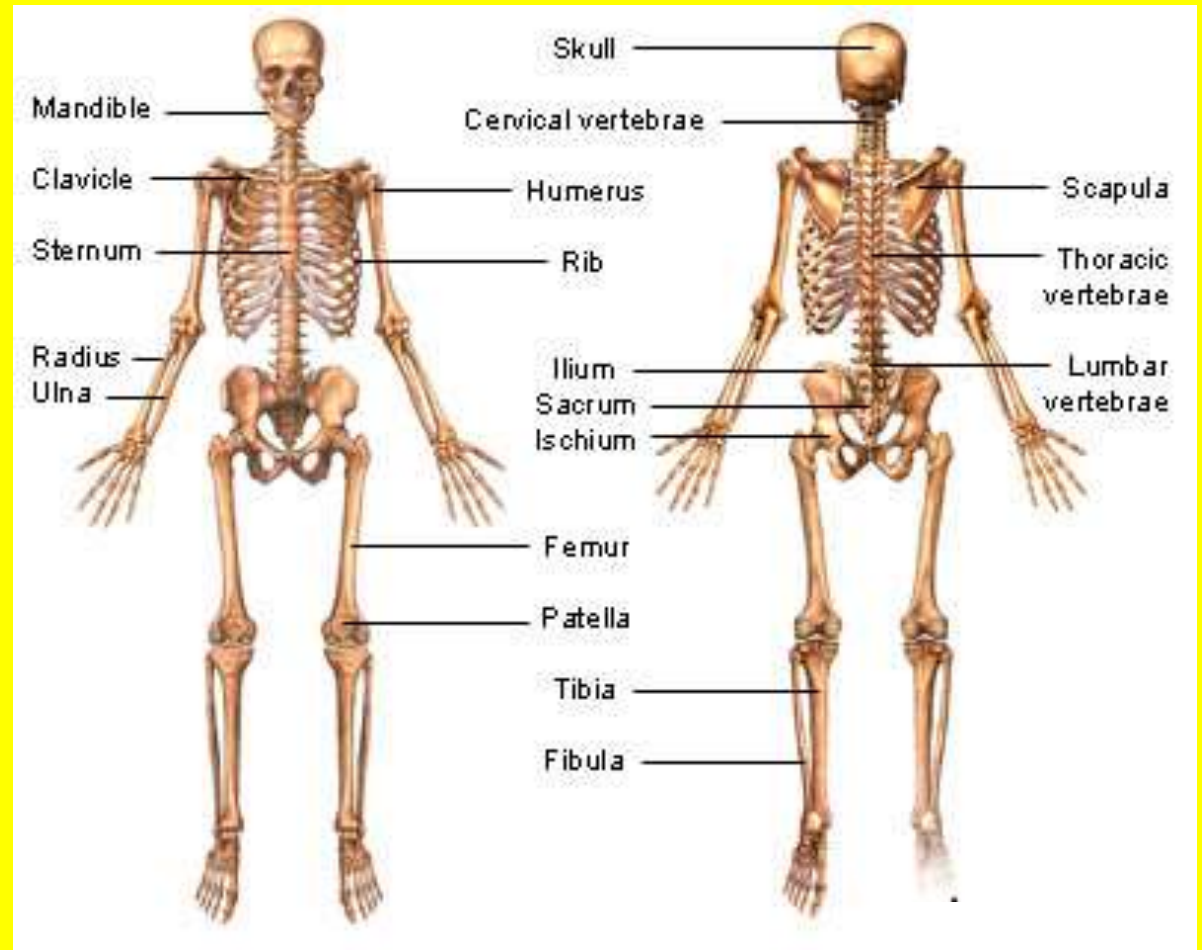


LEC-4-

SKELETAL SYSTEM

What is the skeletal system?



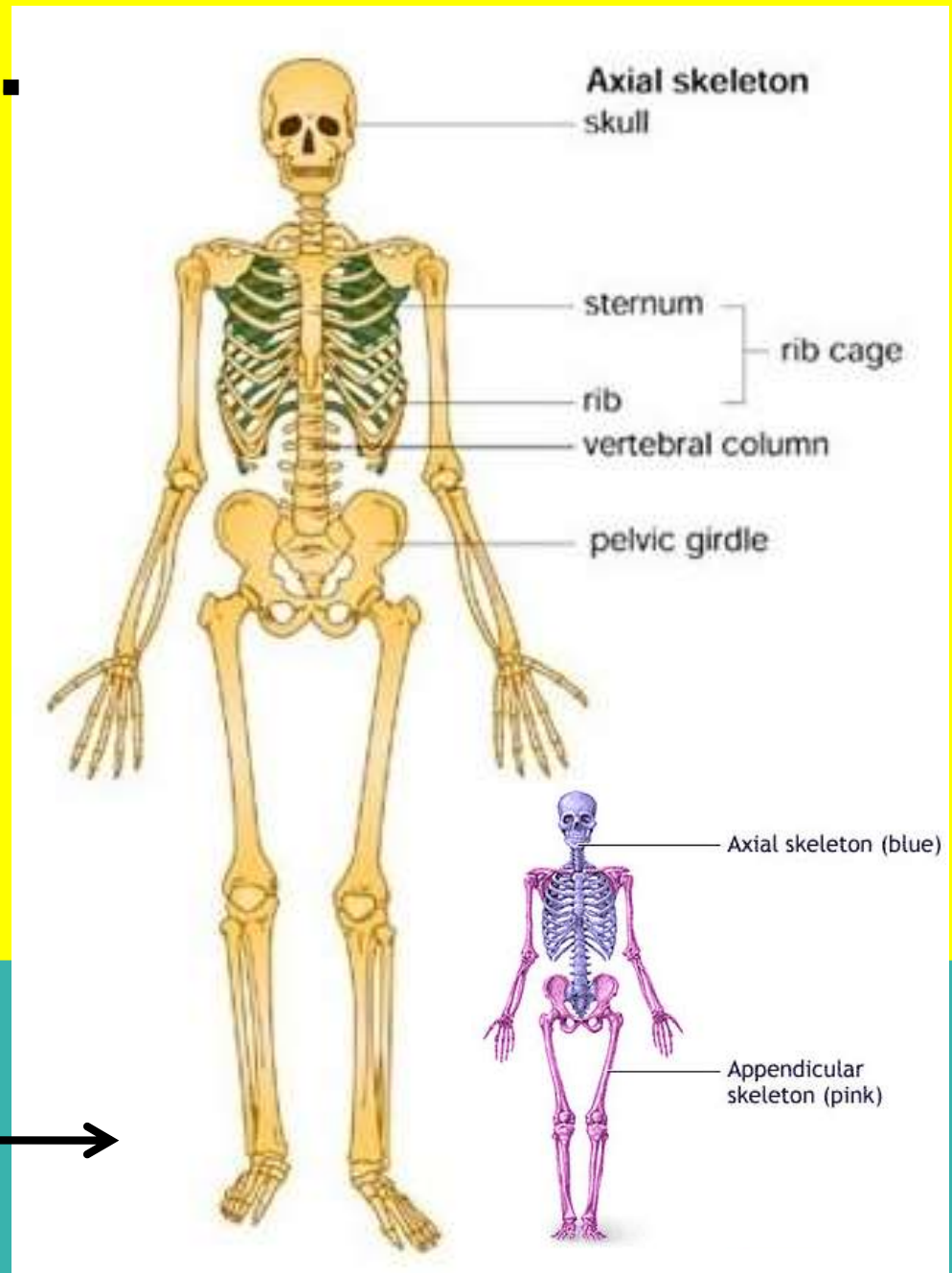
The skeletal system is composed of 206 bones that, along with cartilage, tendons, and ligaments, make up the framework or skeleton of the body.

Axial skeleton...

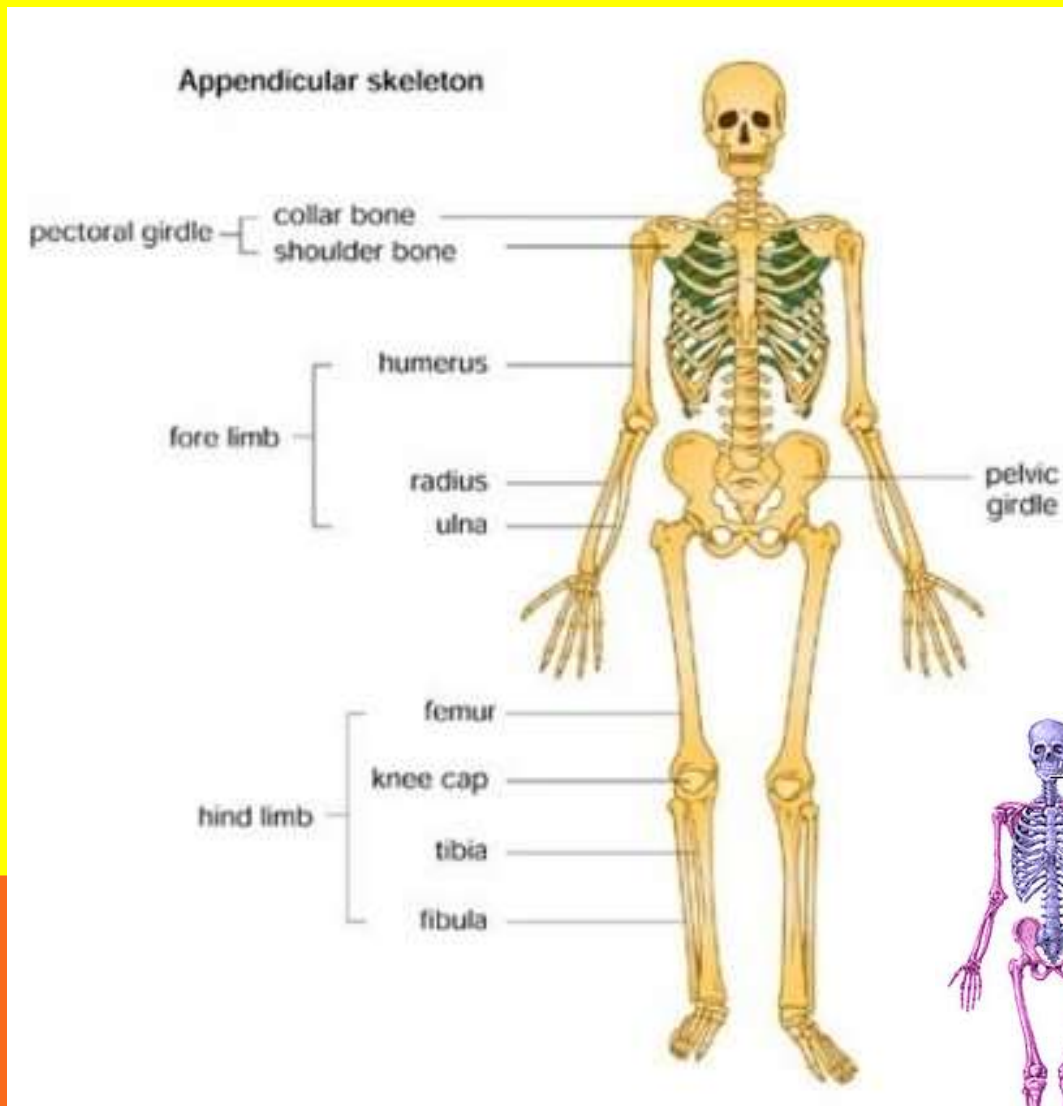
The skeleton can be divided into two main parts. The axial skeleton consists of 80 bones. The primary bones of the axial skeleton are the skull, spine, ribs and sternum (thorax).

Anterior means front; posterior means back.

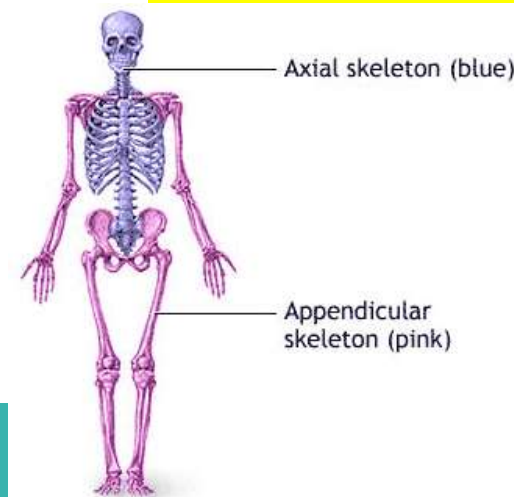
This is an anterior view of the skeleton.



Appendicular skeleton...

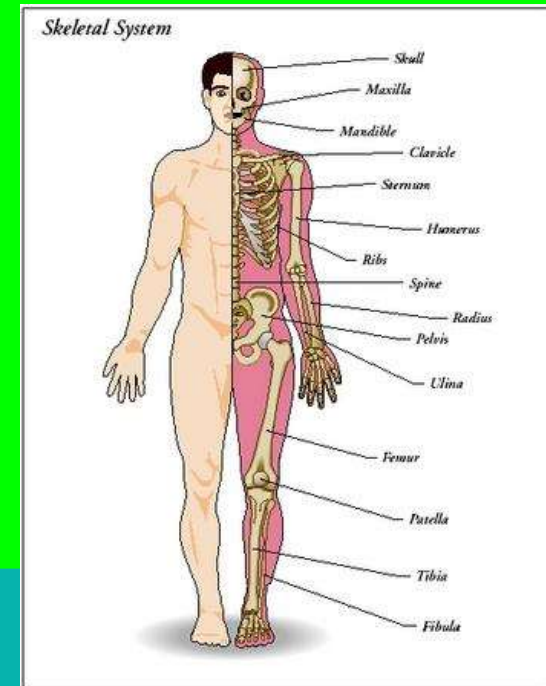
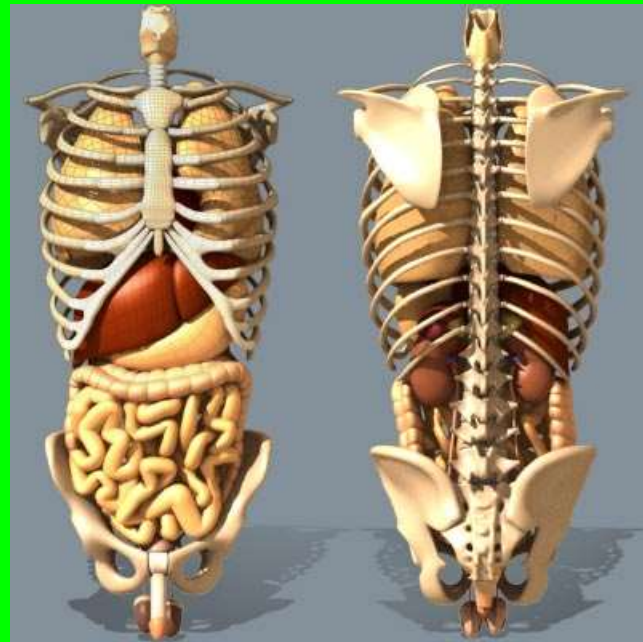


The appendicular skeleton consists of 126 bones. The primary bones of this skeleton are the shoulder or pectoral girdle, arms, hands, pelvic girdle, legs, and feet.



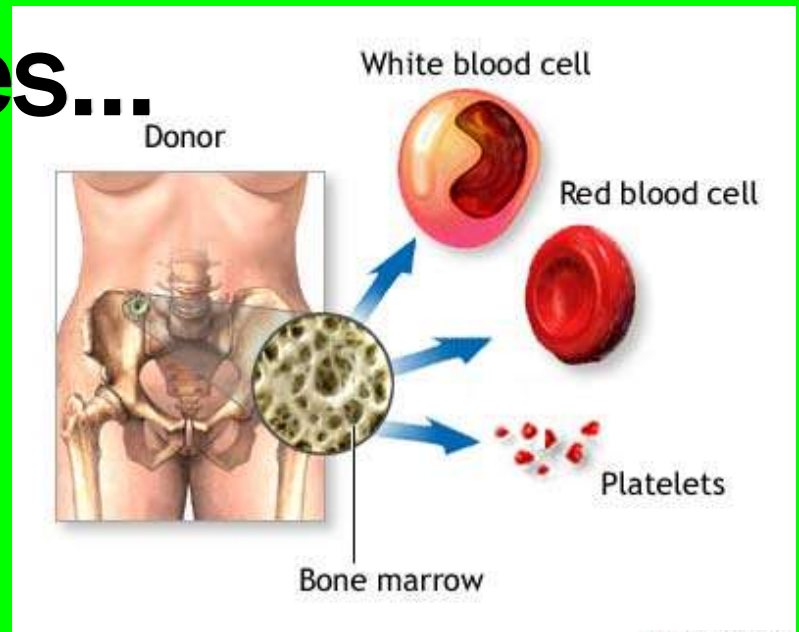
Functions of bones...

Bones are composed of about 50% water and 50% a solid, calcified, rigid substance known as osseous (AH see us) tissue.



1. Bones provide shape, support, and the framework of the body.
2. Bones protect internal organs.
3. Bones serve as a storage place for minerals such as salts, calcium, and phosphorus.

Functions of bones...

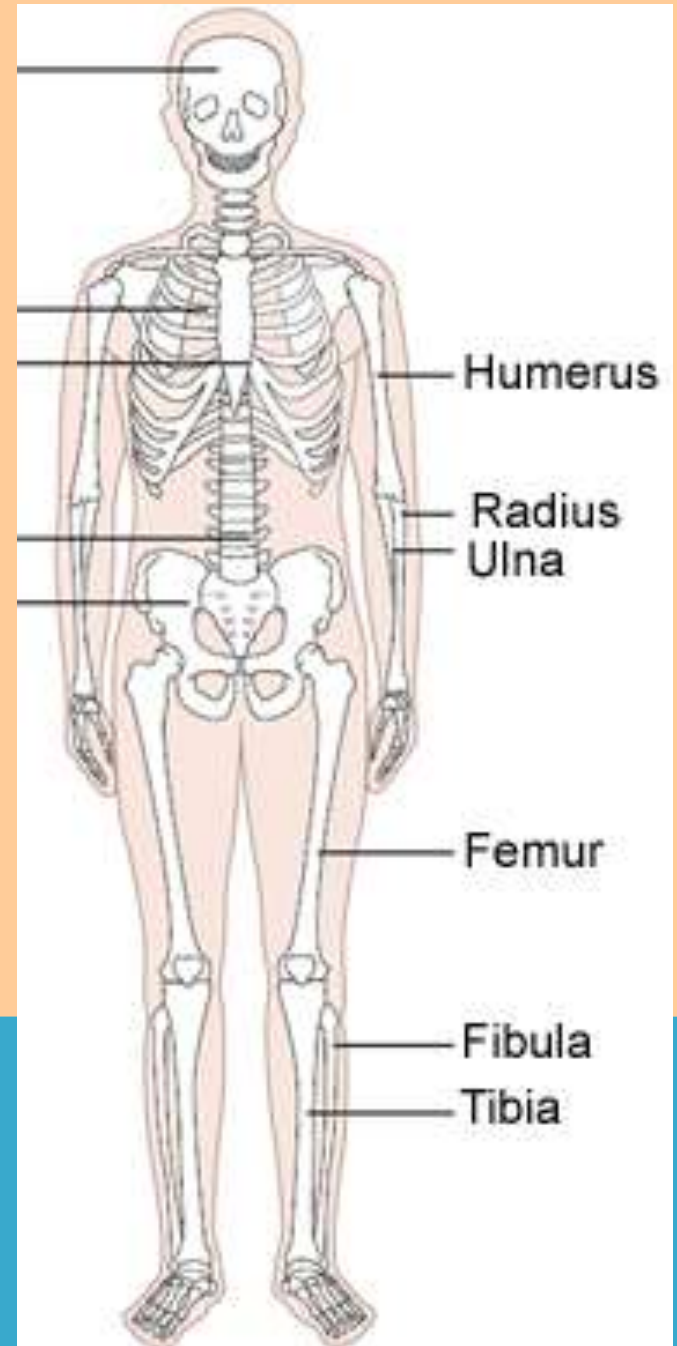


4. Bones play an important role in hematopoiesis (hee MAT ah poh EE siss)... the formation of blood cells that takes place in bone marrow.
5. Bones provide a place to attach muscles.
6. Bones make movement possible through articulation (manner in which the parts come together at a joint) .

Classifications of bones by shape...

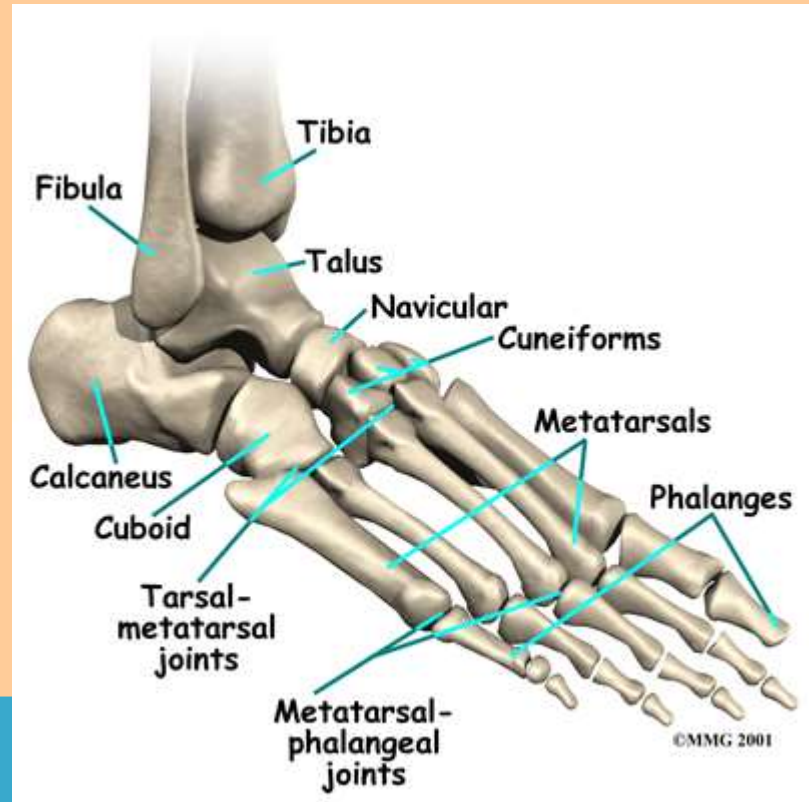
Bones can be classified by shape. 4 of those classifications are:

LONG bones include the femur (thigh), tibia (larger shin), fibula (smaller shin bone), humerus (upper arm), radius (larger forearm), and ulna (smaller forearm).



Classifications of bones by shape...

Bones can be classified by shape.
4 of those classifications are:

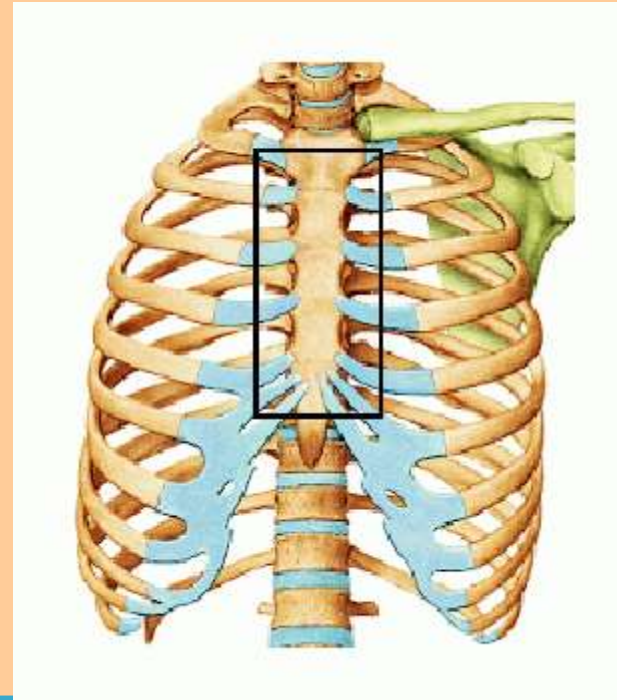
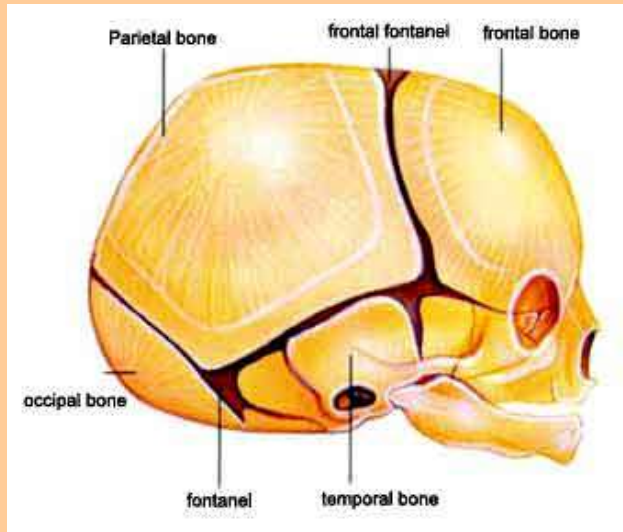


SHORT bones include the carpals of the wrist and tarsals of the ankle.

Classifications of bones by shape...

Bones can be classified by shape.

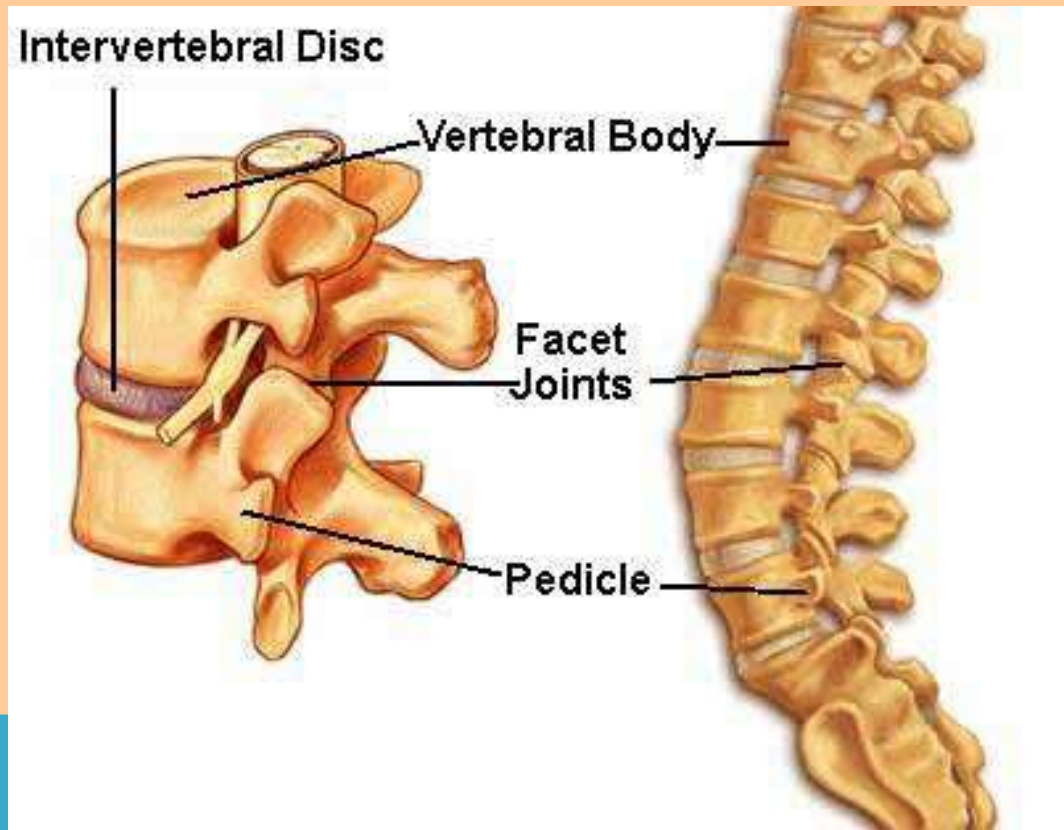
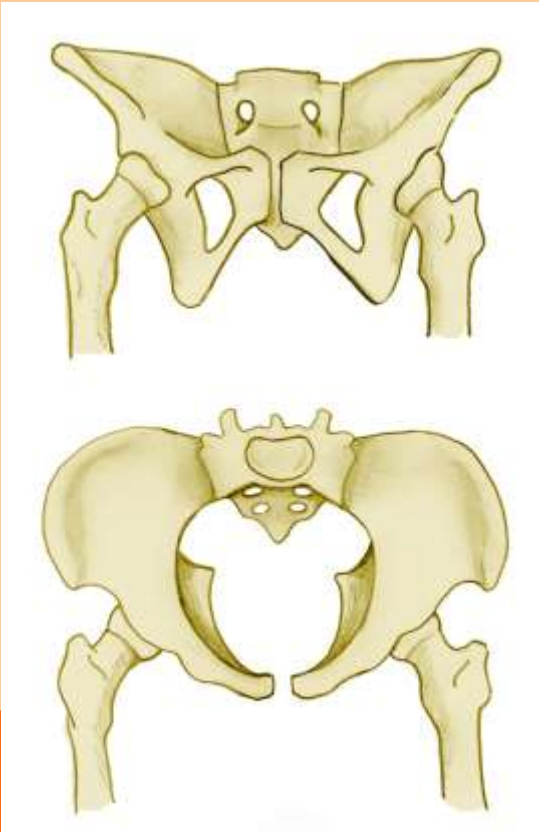
4 of those classifications are:



FLAT bones include the skull, sternum (breastbone), and scapula (shoulder bone).

Classifications of bones by shape...

Bones can be classified by shape.
4 of those classifications are:



IRREGULAR bones include the vertebrae (spine),
and pelvic.

Bone structure...

The features in this long bone illustrate those found in all bones.

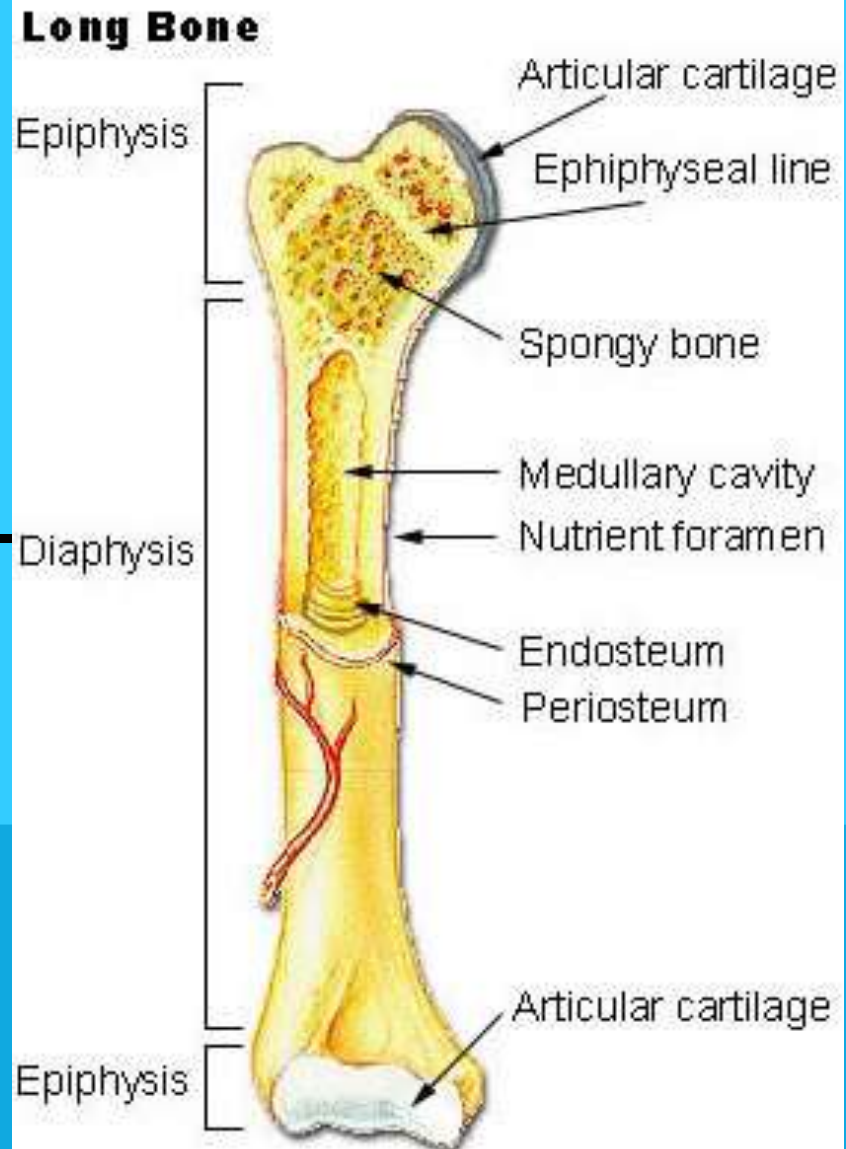
Epiphysis (ĭ PIF ah siss) -
growing end

Diaphysis (dye AF ah siss) -
shaft

Periosteum (peri OSS tee um) -
outside covering

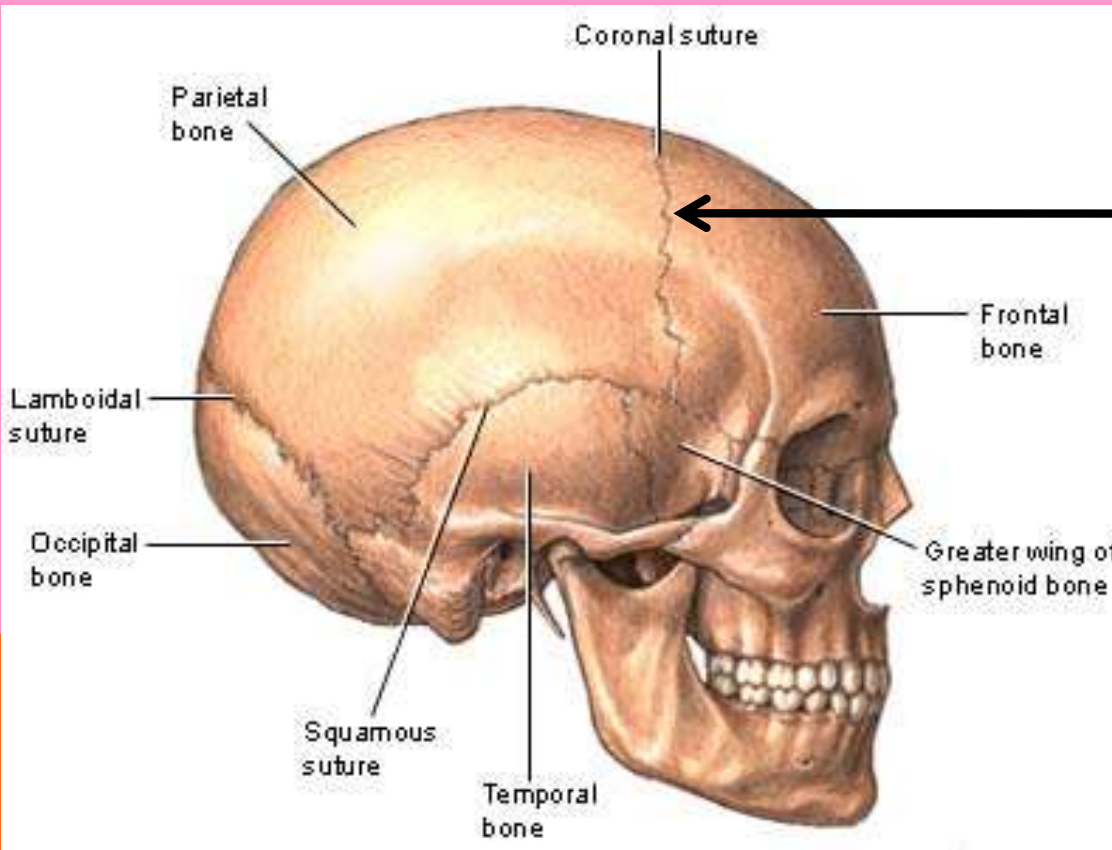
Medullary (MED ul air ee)-
inner space containing
bone marrow

Endosteum (en DOS tee um)-
lining of medullary cavity



Joints...

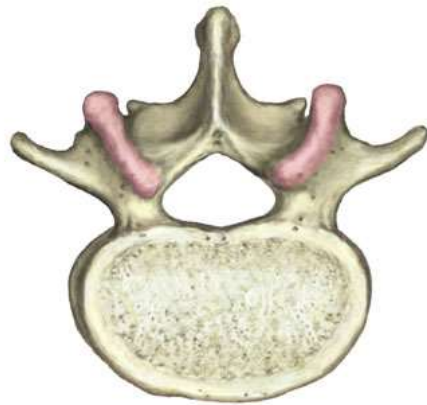
A joint is a place where two or more bones connect. The manner in which they connect determines the type of movement allowed at that joint.



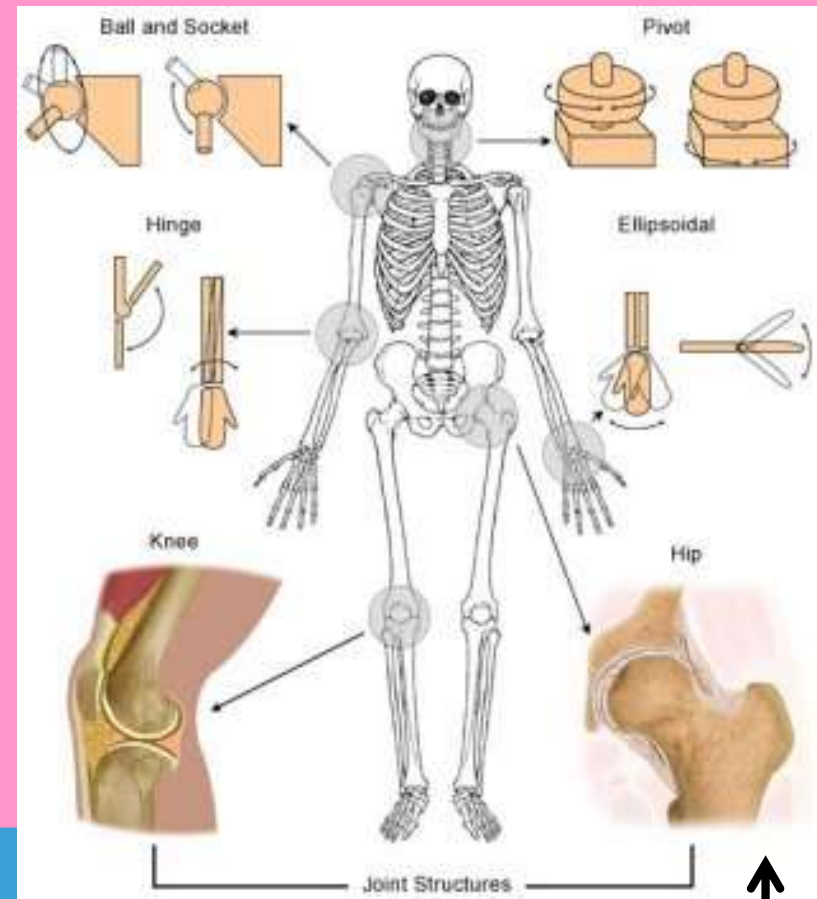
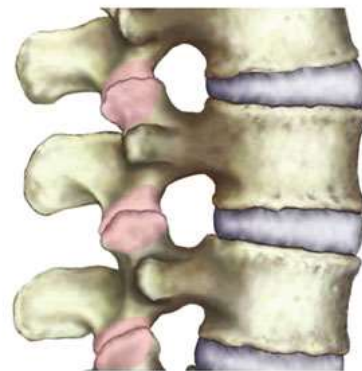
A synarthrosis (sĭn ahrTHROW siss) is a joint that allows no movement. An example would be a cranial suture.

A amphiarthrosis (am fee ahr THROW siss) is a joint that allows slight movement. An example would be a vertebra.

Joint Structures

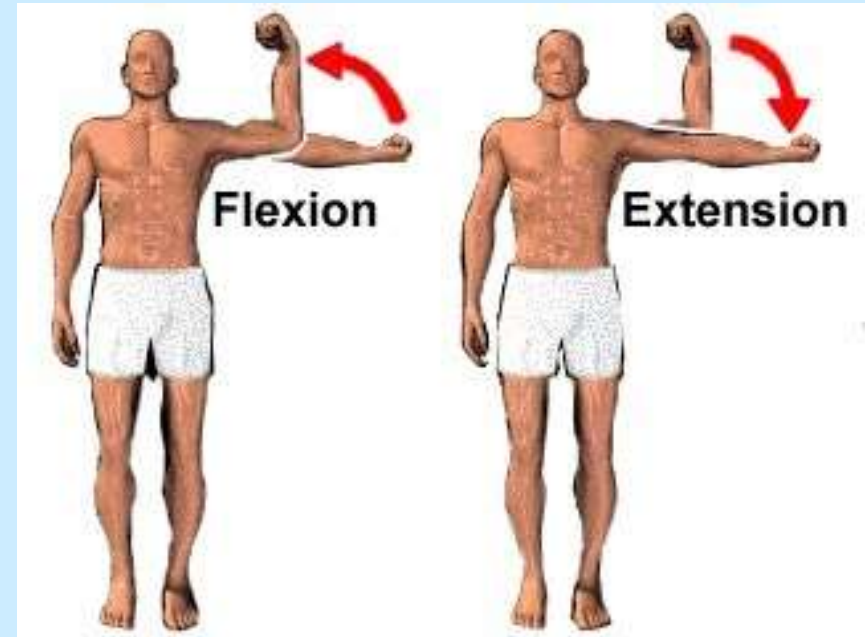
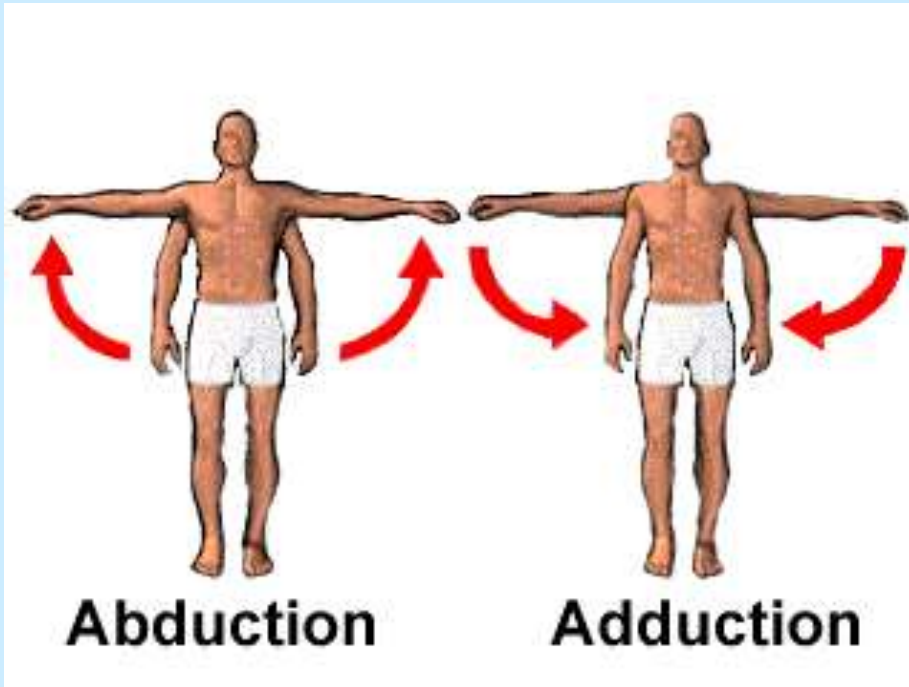


Facet Joints



A diarthrosis (dye ahr THROW siss) is a joint that allows free movement in a variety of directions, such as knee, hip, elbow, wrist, and foot.

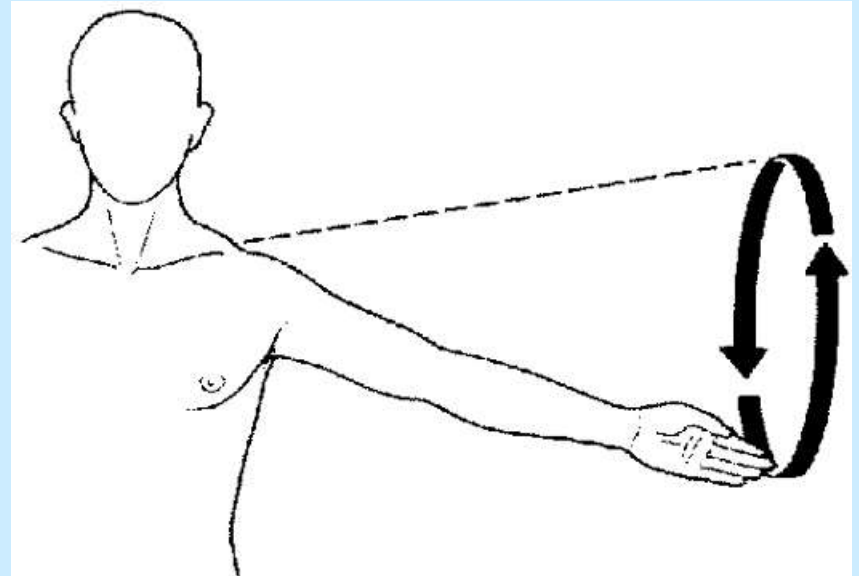
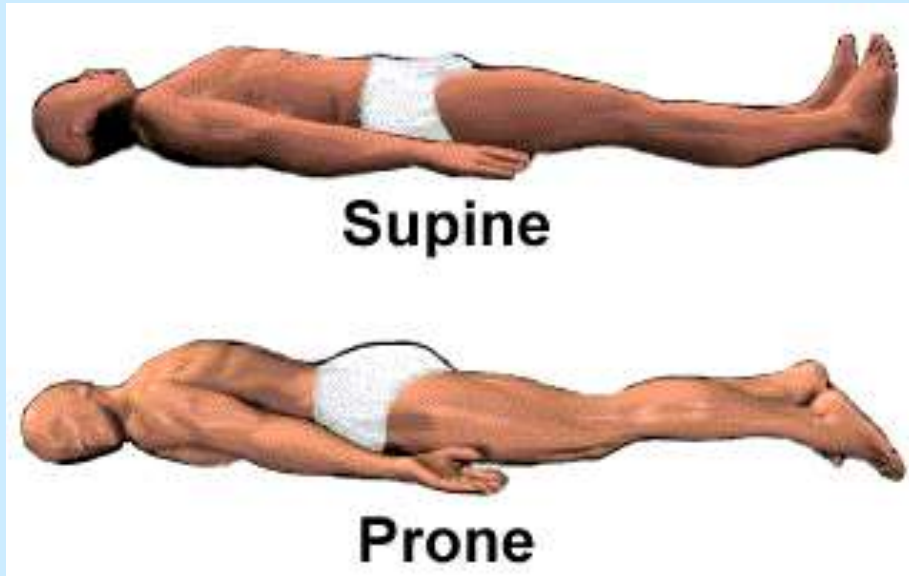
Types of body movements at diarthrotic joints...



Abduction: moving a body part away from the middle.
Adduction: moving a body part toward the middle.

Flexion:
bending a limb
Extension:
straightening a flexed limb

Types of body movements at diarthrotic joints...



Supination: lying supine or face upward; or turning the palm or foot upward.

Pronation: lying prone or face downward; or turning the palm downward.

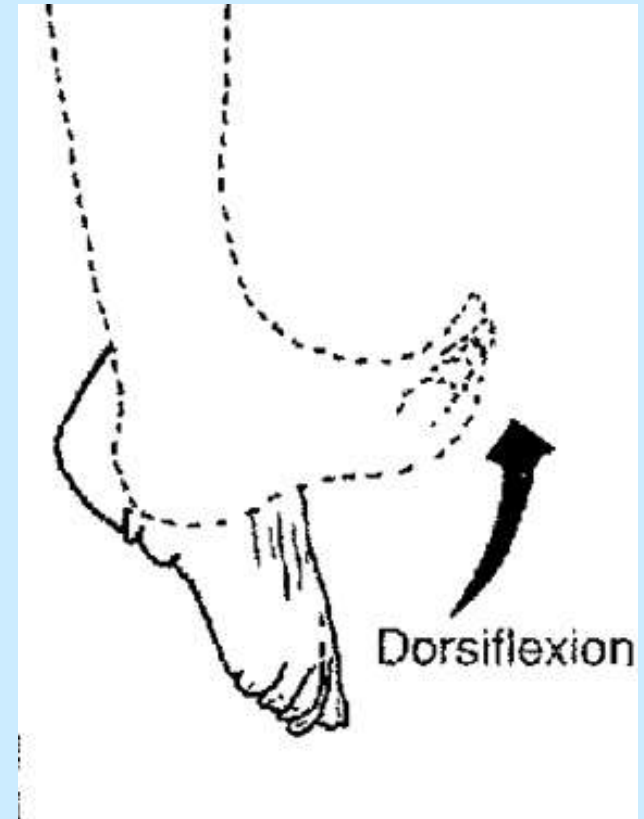
Circumduction: moving a body part in a circular motion

Types of body movements at diarthrotic joints...



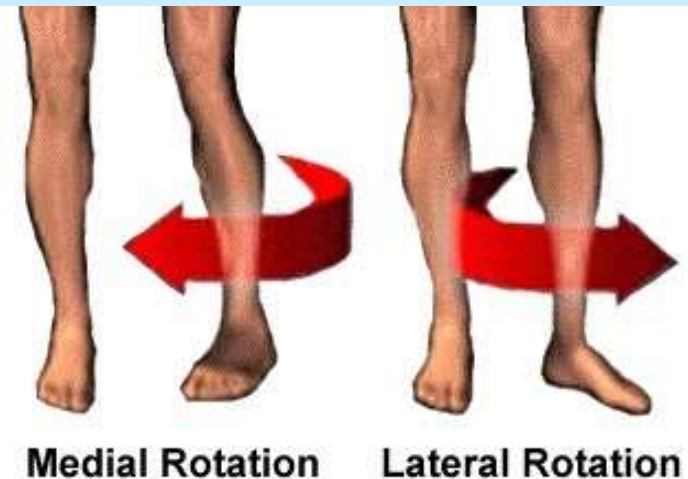
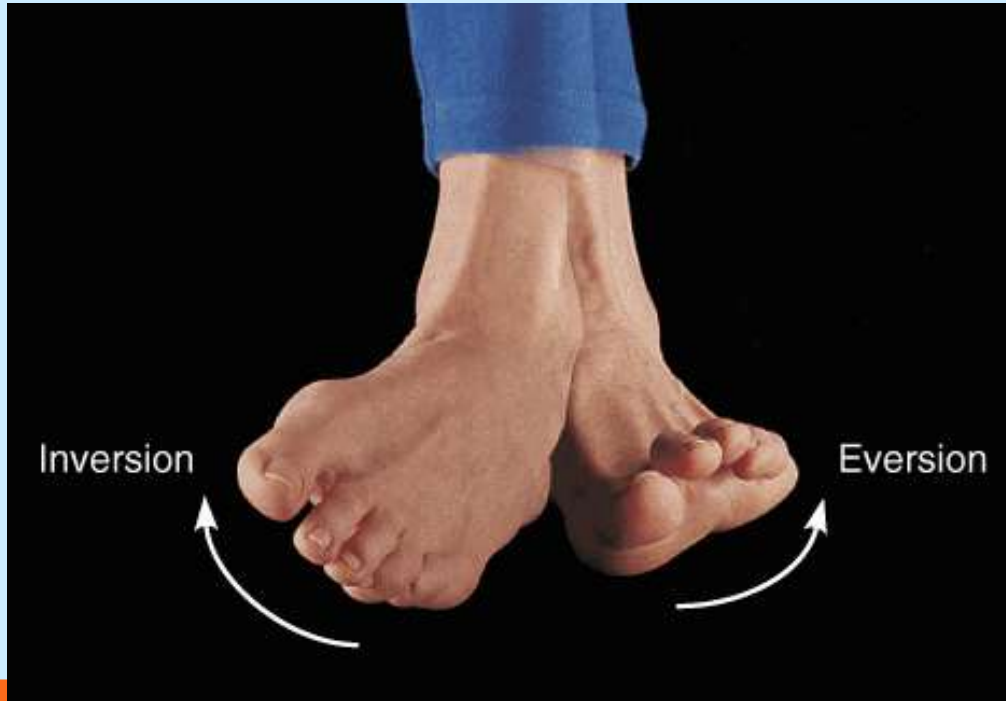
Protraction: moving a body part forward.

Retraction: moving a body part backward.



Dorsiflexion: bending a body part backwards.

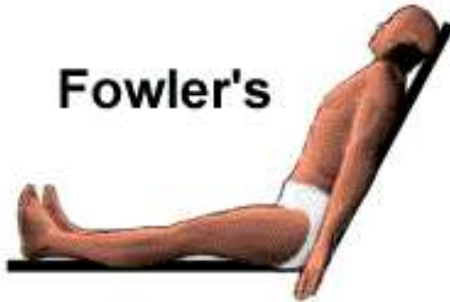
Types of body movements at diarthrotic joints...



Inversion: turning inward.
Eversion: turning outward.

Rotation:
moving a body part around a central axis

Types of body movements at diarthrotic joints...

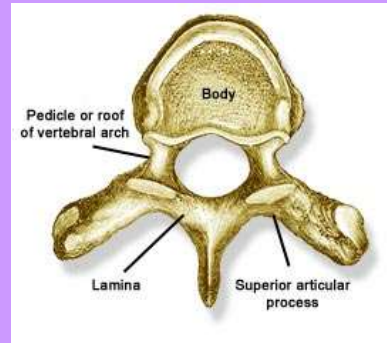
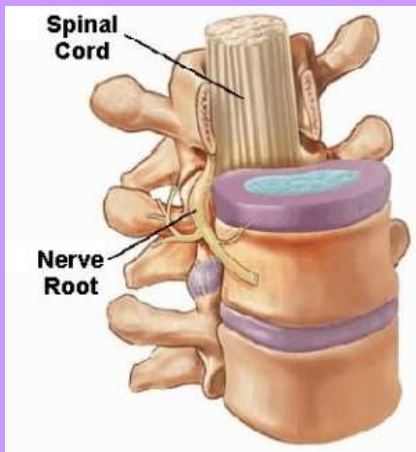


Fowler's position: sitting straight up or reclining slightly; legs straight or bent.

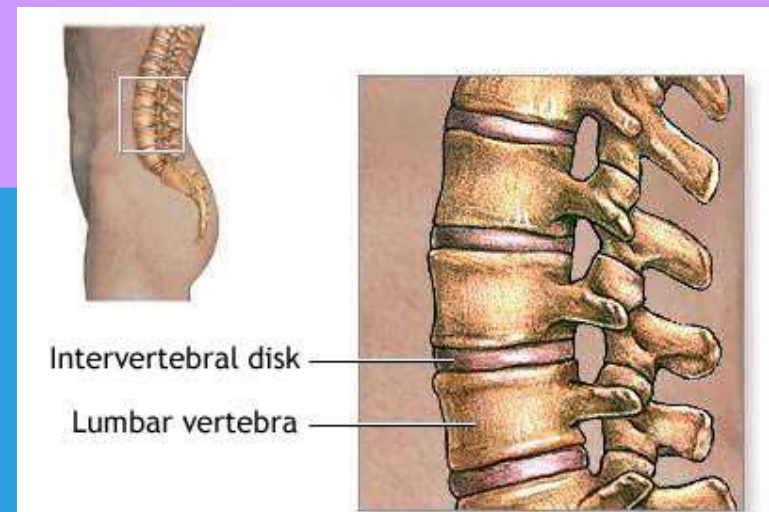
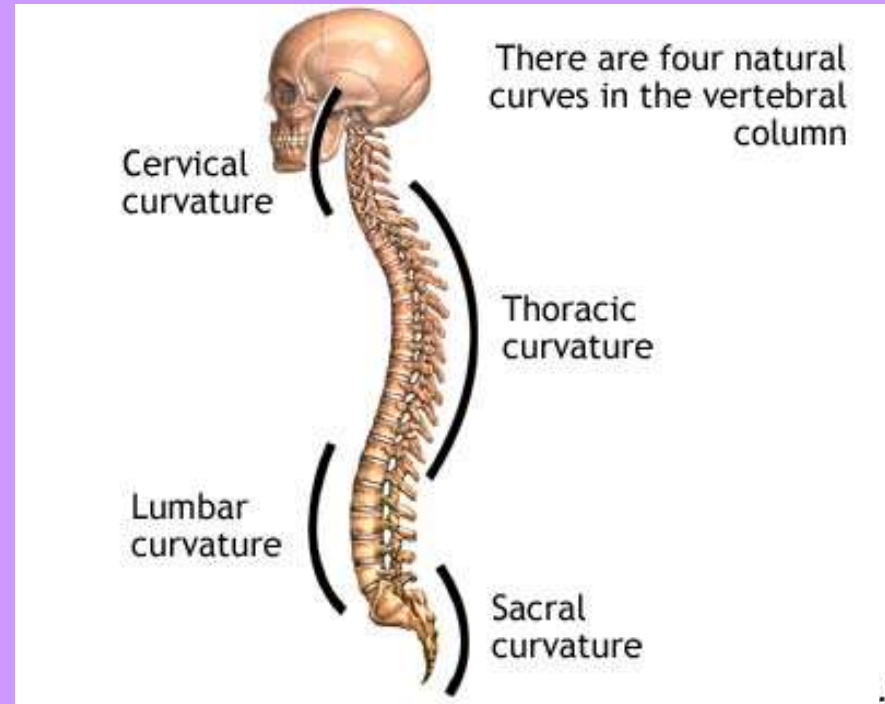
Trendelenburg position: (TREN duh len burg) lying supine with head lower than feet.

Lateral recumbent: lying on your left or right side

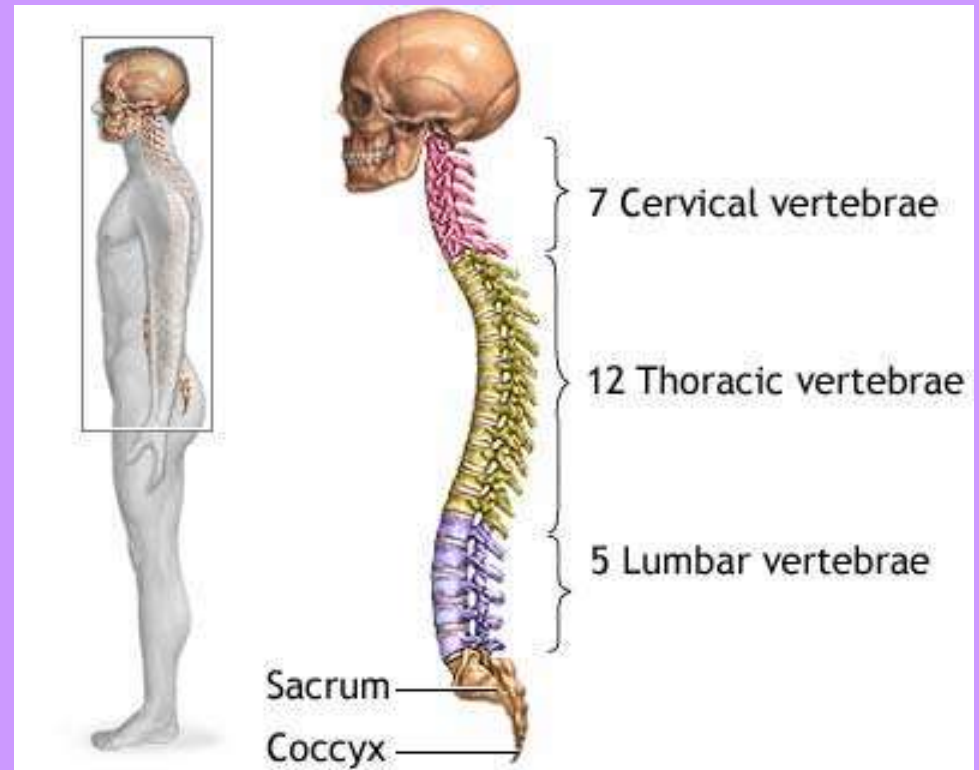
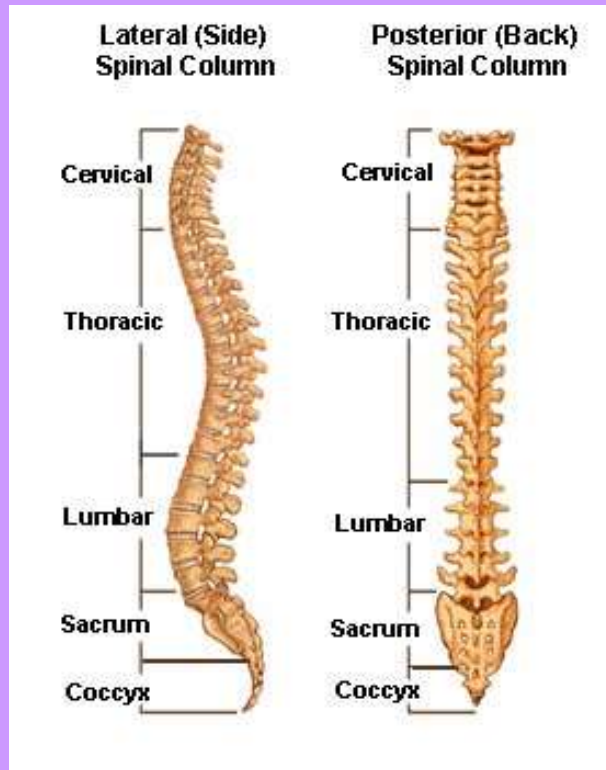
The vertebral column...



The vertebral column is composed of separate bones called vertebrae, connected to form four spinal curves. A curve has more strength than a straight line, so can support the weight of the body and provide balance needed to walk.



The vertebral column...



The cervical curve contains the first 7 vertebrae; the thoracic curve contains the next 12; the lumbar curve contains 5. The sacral curve does not contain vertebrae. It contains the sacrum and coccyx (KOCK siks) or tailbone.

The male and female pelvis...

The pelvis is the lower portion of the trunk of the body. The hip bones, sacrum, and coccyx form the pelvic basin. Hip bones include the ilium (Īl ee um), pubis (PYU bus), and ischium (ISS kee um).

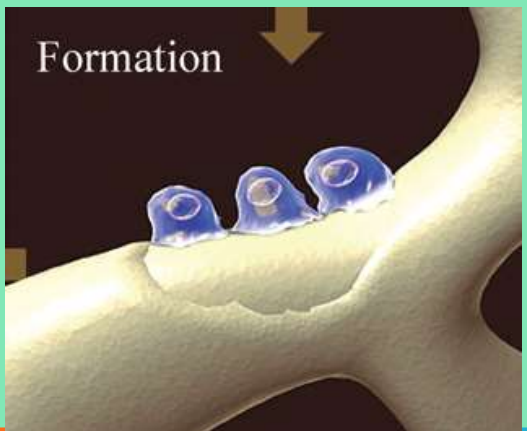
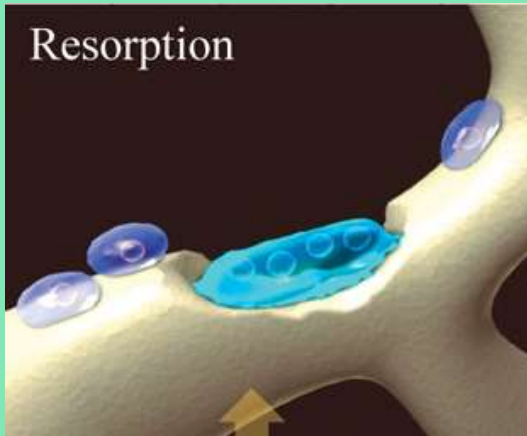


Male

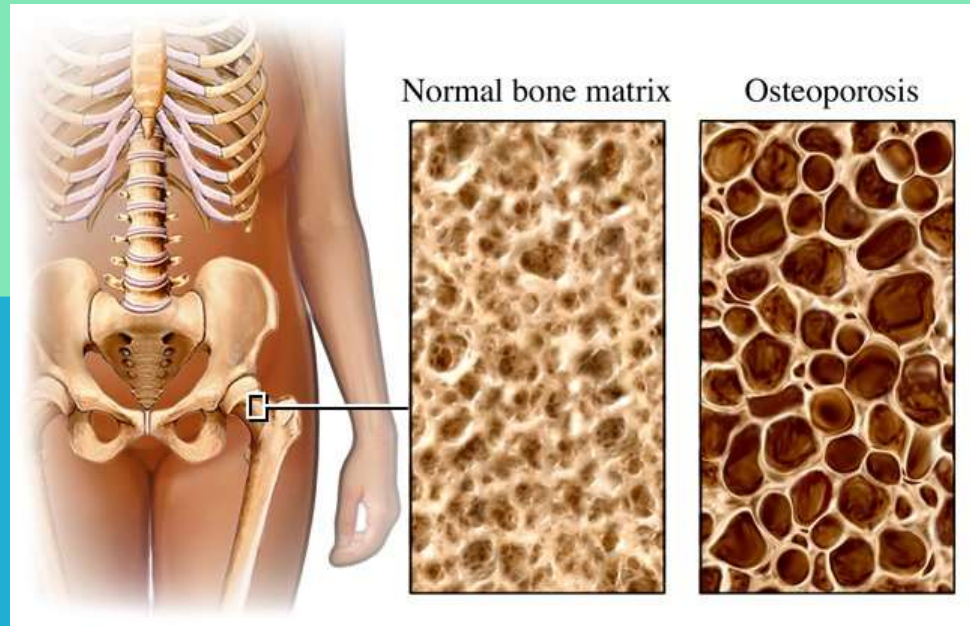
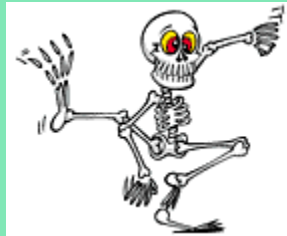
Female

The male pelvis is shaped like a funnel and is heavier and stronger than the female. The female pelvis is oval to round, and wider than the male.

Bone growth and resorption...



Bone is continually remodeled. It is broken down by osteoclasts in a process called resorption, and formed again by osteoblasts. Bone formation and healing slow down as part of the aging process.



Osteoporosis is an age-related loss of bone mass or density.