



Introduction to Anatomy

Anatomy is the science of the structure and function of the body.

- Branches of anatomy

- Gross anatomy

- Systemic

- Regions

- Microscopic anatomy

- Cytology

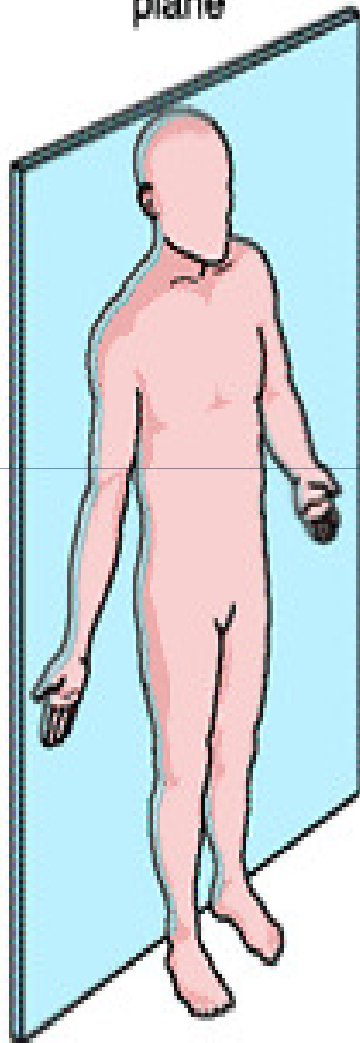
- Histology

- Developmental anatomy

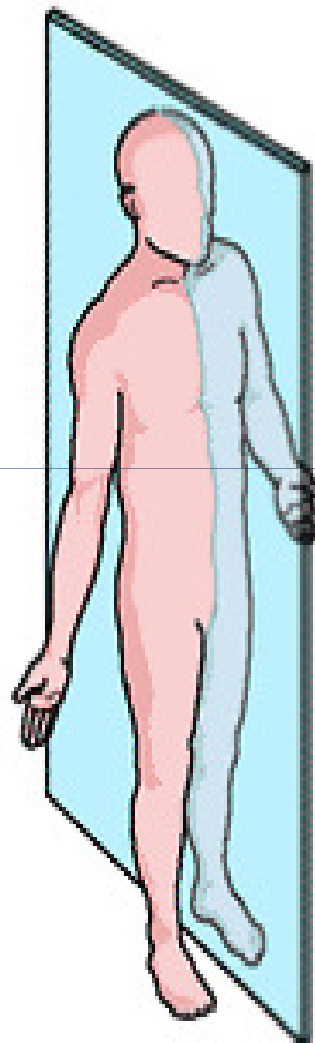
- Embryology

- Comparative anatomy

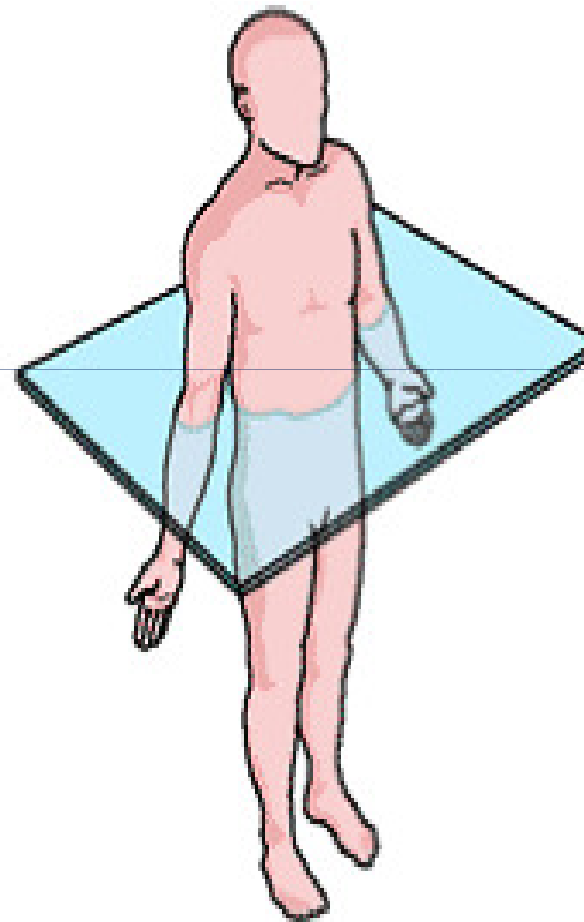
Frontal
(coronal)
plane



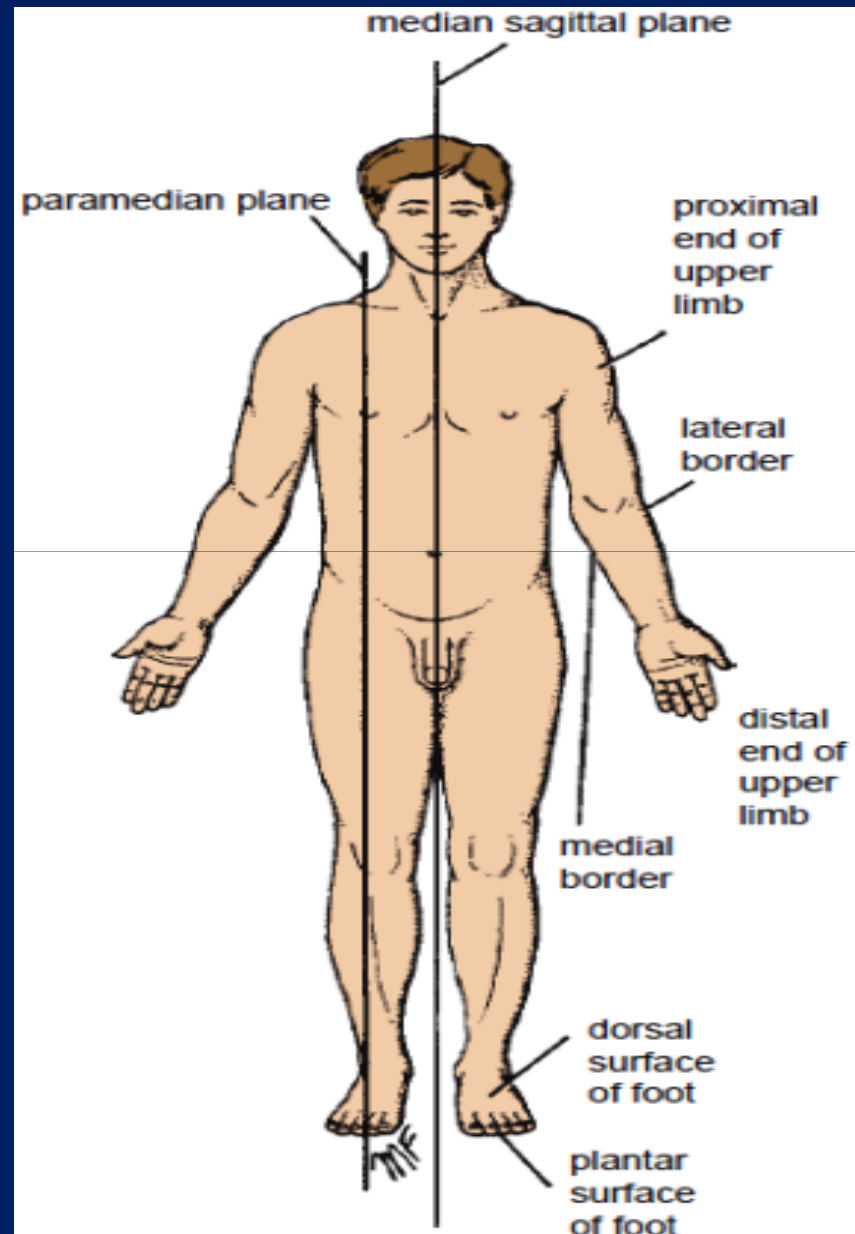
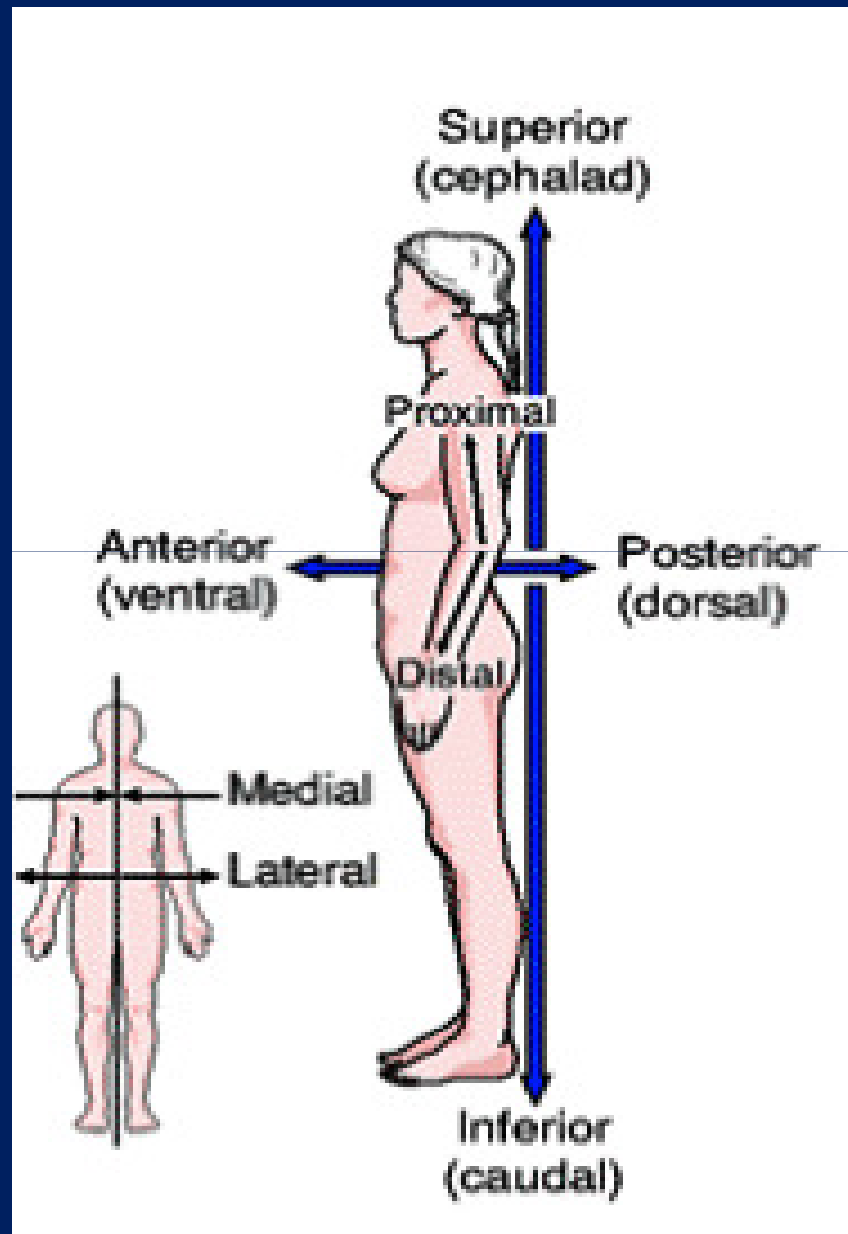
Sagittal
plane



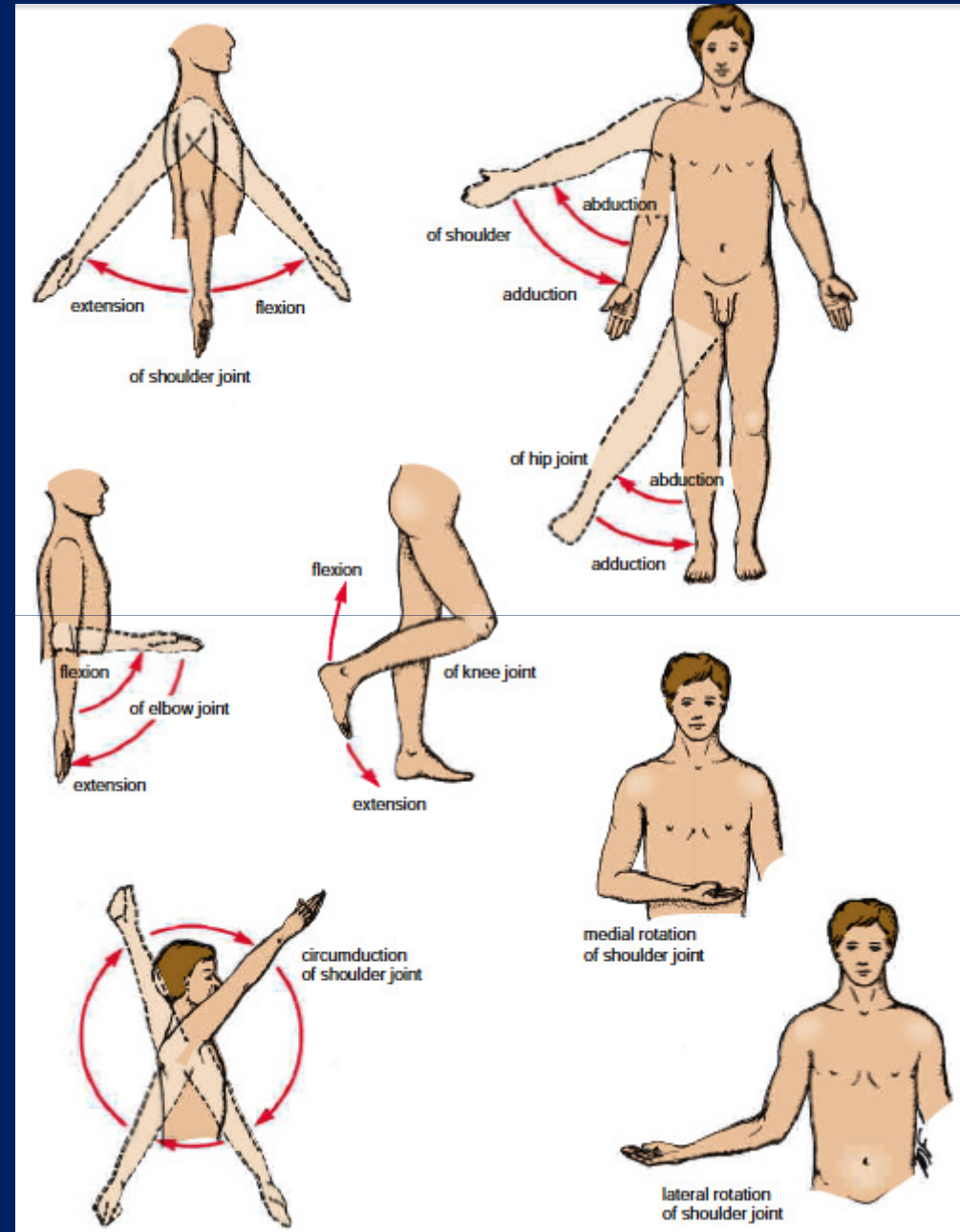
Transverse
(horizontal)
plane



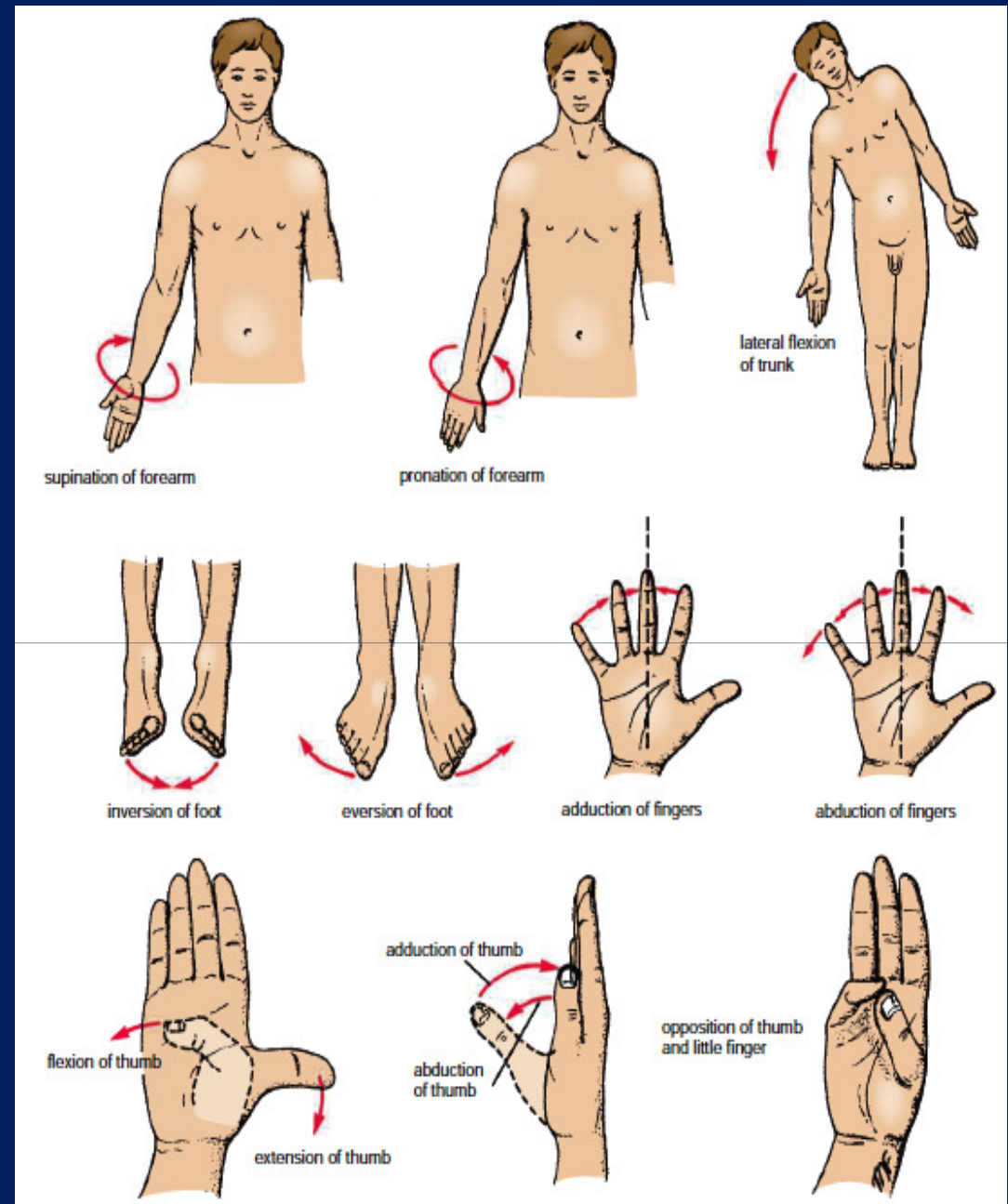
Terms Related to Position



Terms Related to Movement

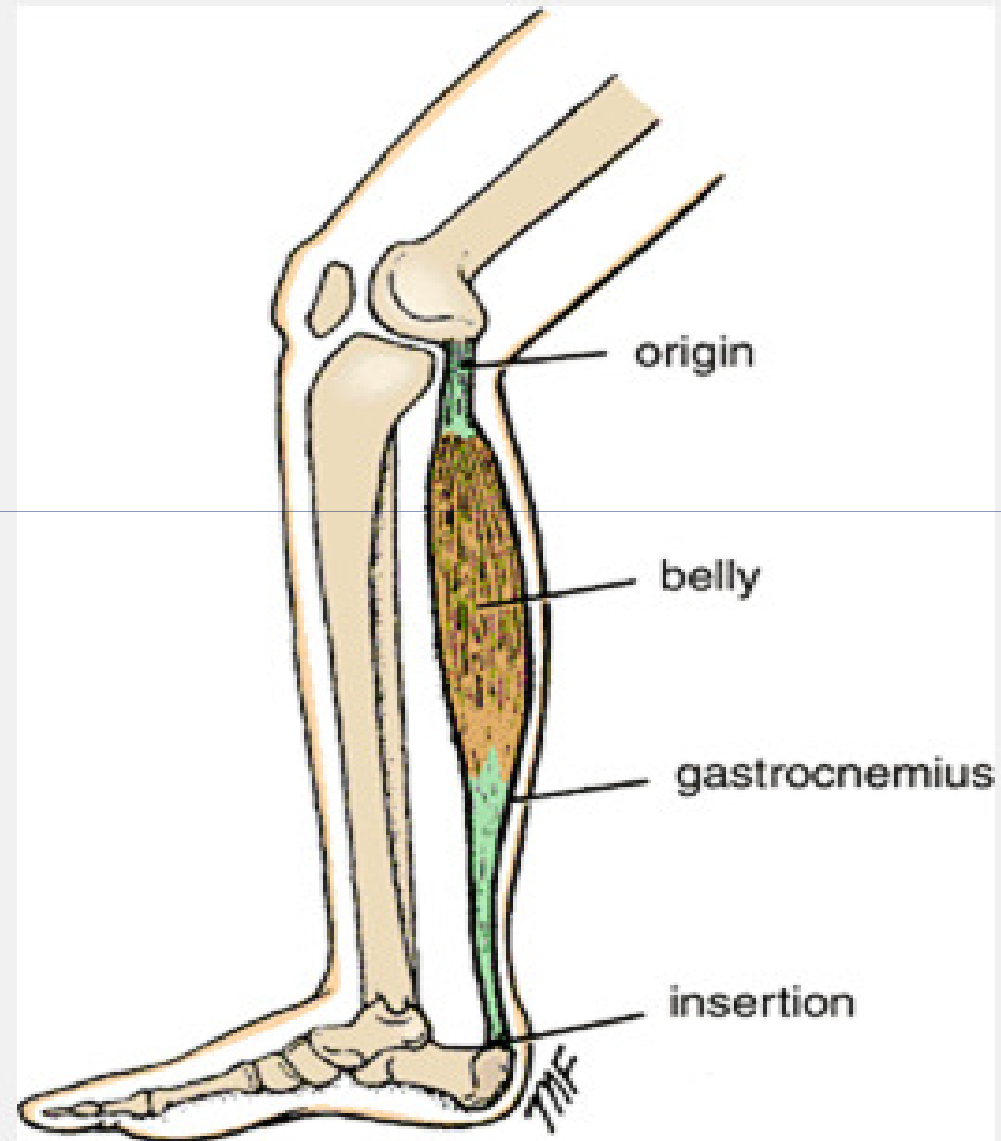


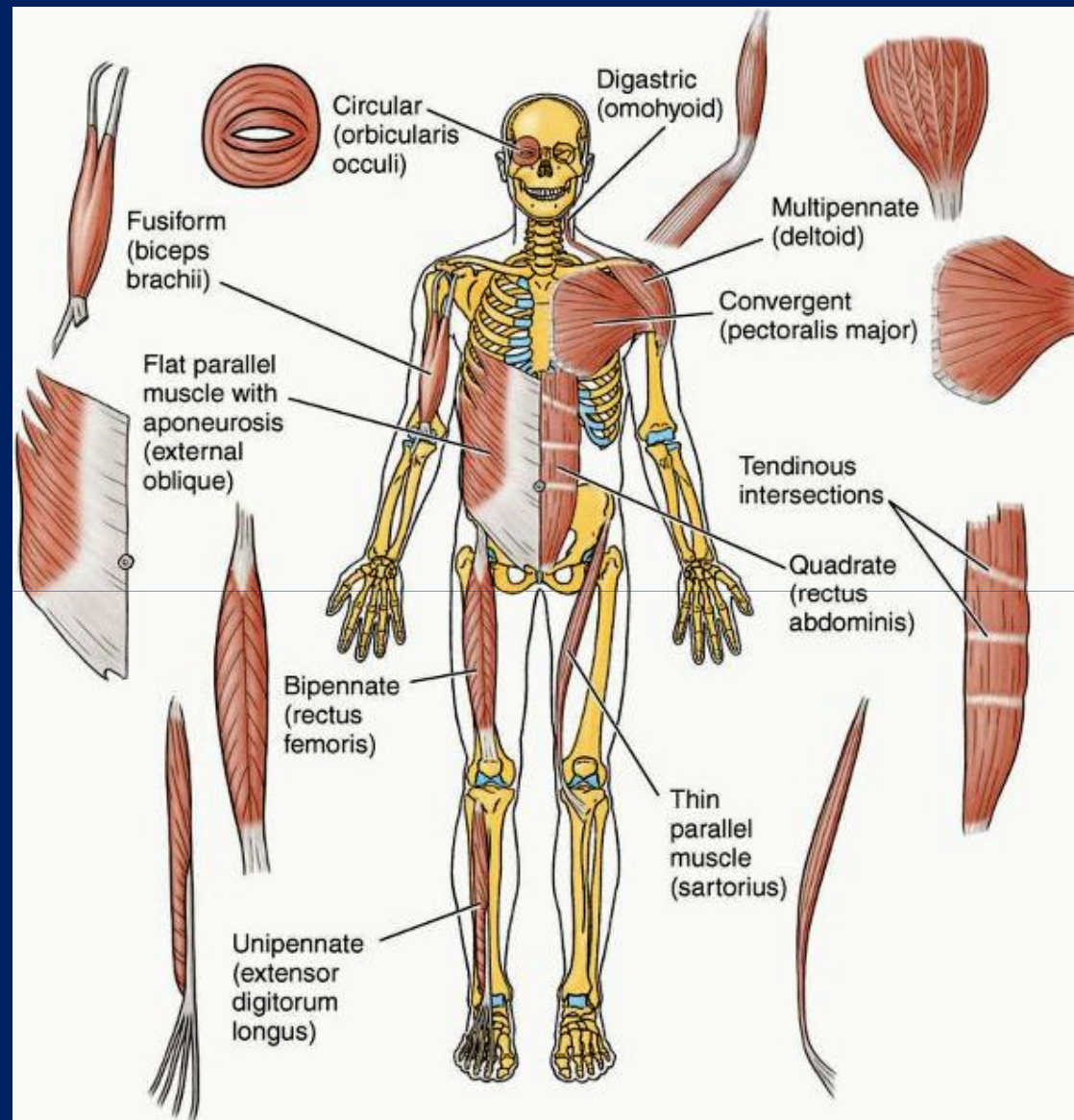
Terms Related to Movement

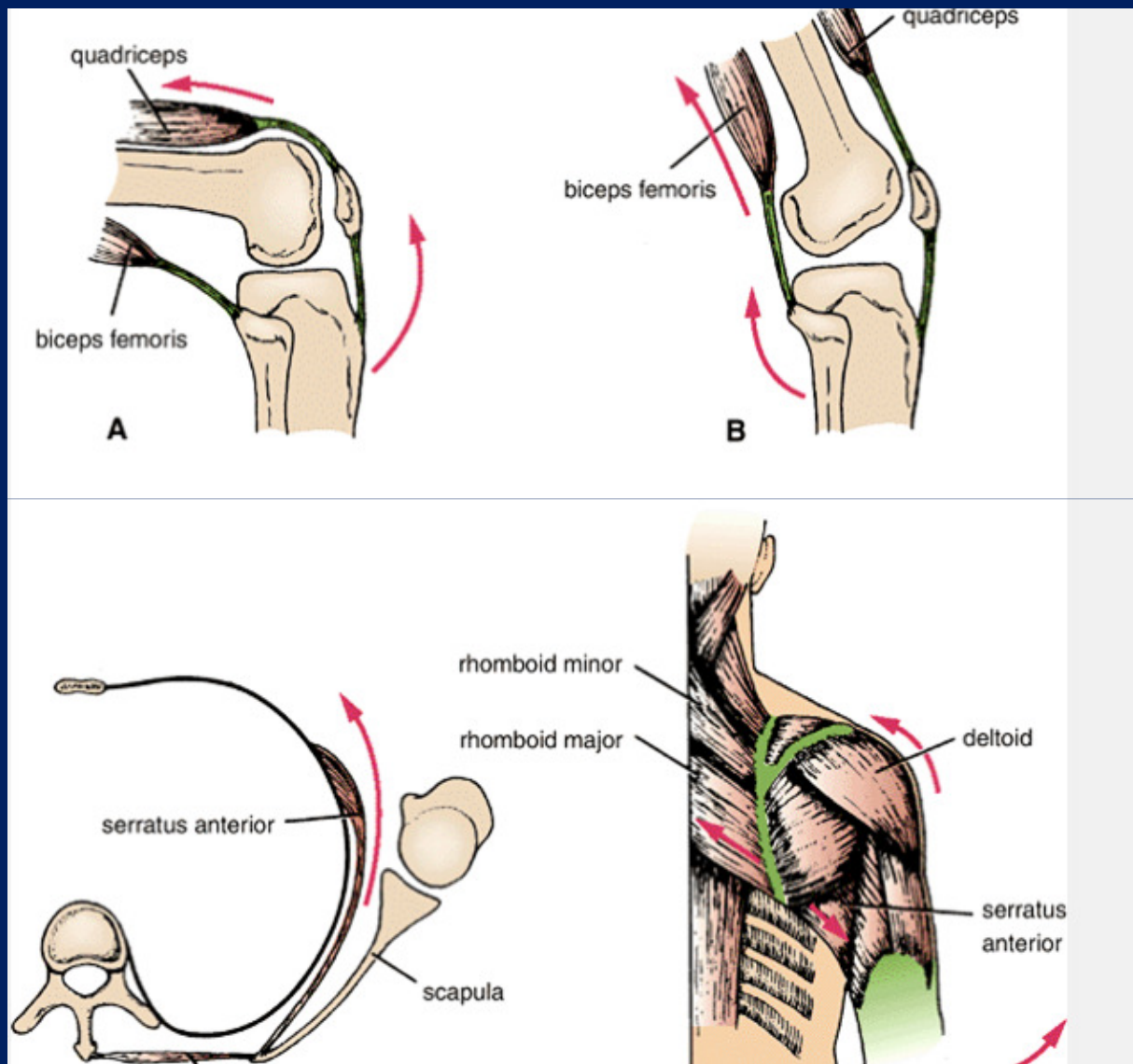


MUSCLES

- Skeletal, smooth and cardiac muscles.
- Movement
- Voluntary
- Origin, insertion, belly, tendon, aponeurosis.
- Nerve supply (60% motor, 40% sensory)
- Naming: size, shape (deltoid), No. of bellies, O+I, location, action, profundus & superficial

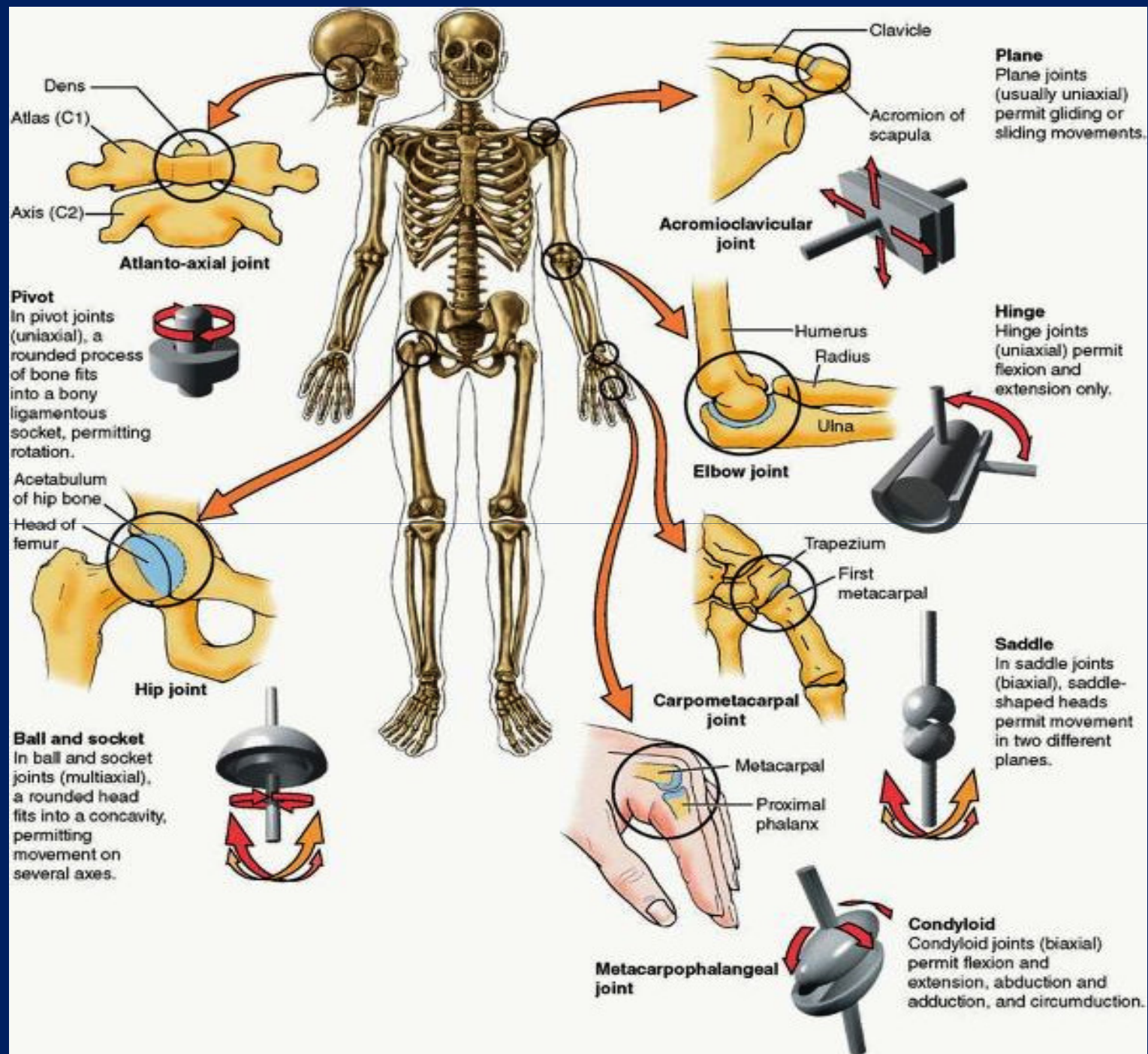


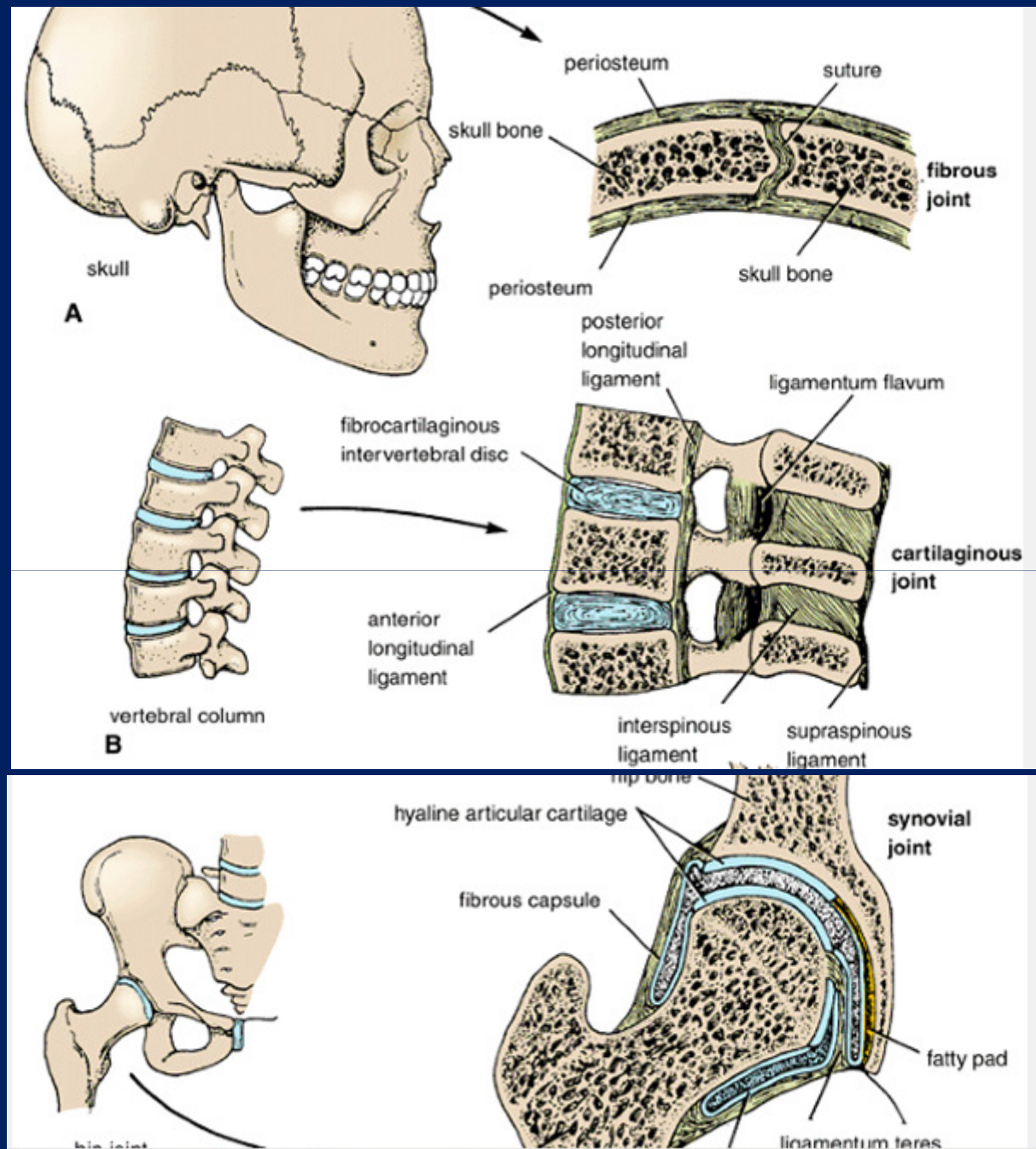




JOINTS

- Joints are formed by union of two bones.
- Three types
- *Fibrous joints*
- *Cartilaginous joints*: primary C.J.(1st rib& sternum) & secondary C.J. (vertebrae)
- *Synovial joint*
- Plane joints: the sternoclavicular j.
- Hinge.
- Pivot.
- Condylod: metacarpophalangeal j.
- Ellipsoid: wrist
- Saddle: carpometacarpal of thumb
- Ball and socket.



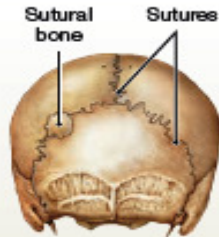


BONES

- Bone is a living tissue capable of changing its structure
- Like other **connective tissues**, bone consists of cells, fibers, and matrix.
- It is *hard* because of the calcification of its extracellular matrix and possesses a degree of *elasticity* because of the presence of organic fibers.
- Bone has a **protective function**; the skull and vertebral column, for example, protect the brain and spinal cord from injury; the sternum and ribs protect the thoracic and upper abdominal viscera .
- It serves as a **lever**, as seen in the long bones of the limbs,
- important **storage** area for calcium salts.
- It houses and protects within its cavities the delicate blood-forming **bone marrow**.

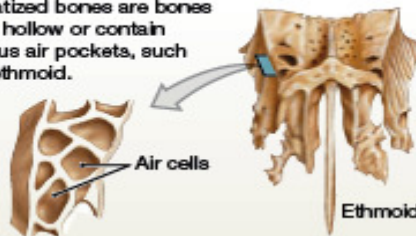
Sutural Bones

Sutural (Wormian) bones are small, flat, oddly shaped bones found between the flat bones of the skull in the suture line. They develop from separate centers of ossification, regarded as a type of flat bone.



Pneumatized Bones

Pneumatized bones are bones that are hollow or contain numerous air pockets, such as the ethmoid.



Short Bones

Short bones are boxlike in appearance. Their external surfaces are covered by compact bone, but the interior contains spongy bone. Examples of short bones include the carpal bones (wrists) and tarsal bones (ankles).



Irregular Bones

Irregular bones have complex shapes with short, flat, notched, or ridged surfaces. Their internal structure is equally varied. The vertebrae that form the spinal column and several bones in the skull are examples of irregular bones.



Flat Bones

Flat bones have thin, roughly parallel surfaces of compact bone. In structure a flat bone resembles a spongy bone sandwich; such bones are strong but relatively light. Flat bones form the roof of the skull, the sternum, the ribs, and the scapulae. They provide protection for underlying soft tissues and offer an extensive surface area for the attachment of skeletal muscles. Special terms are used when describing the flat bones of the skull, such as the parietal bones. Their relatively thick layers of compact bone are called the internal and external tables, and the layer of spongy bone between the tables is called the diploë.



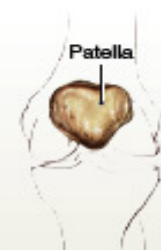
Long Bones

Long bones are relatively long and slender. They have a diaphysis, two metaphyses, two epiphyses, and a medullary (marrow) cavity, as detailed in Figure 5.3. Long bones are found in the upper and lower limbs. Examples include the humerus, radius, ulna, femur, tibia, and fibula.



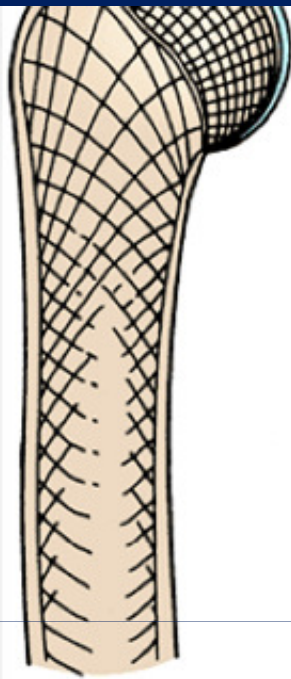
Sesamoid Bones

Sesamoid bones are usually small, round, and flat. They develop inside tendons and are most often encountered near joints at the knee, the hands, and the feet. Few individuals have sesamoid bones at every possible location, but everyone has sesamoid patellae, or kneecaps.

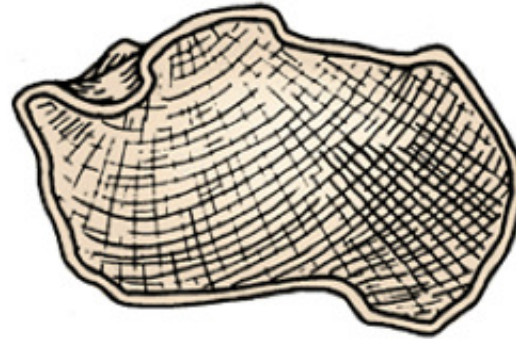


■ Long Bones

- Long bones are found in the limbs (e.g., the humerus, femur, metacarpals, metatarsals, and phalanges). Their length is greater than their breadth. They have a tubular shaft, the diaphysis, and usually an epiphysis at each end. During the growing phase, the diaphysis is separated from the epiphysis by an epiphyseal cartilage. The part of the diaphysis that lies adjacent to the epiphyseal cartilage is called the metaphysis. The shaft has a central marrow cavity containing bone marrow. The outer part of the shaft is composed of compact bone that is covered by a connective tissue sheath, the periosteum.
- The ends of long bones are composed of cancellous bone surrounded by a thin layer of compact bone. The articular surfaces of the ends of the bones are covered by hyaline cartilage.



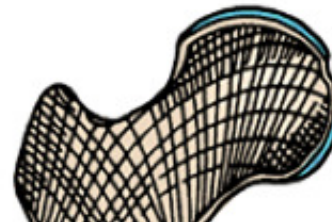
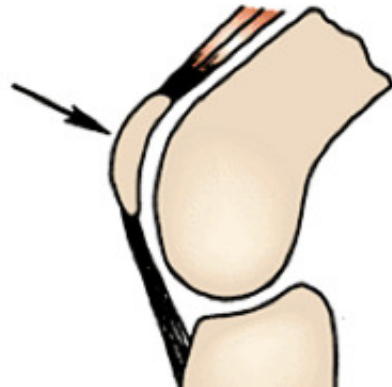
A



B



C



■ **Short Bones**

- Short bones are found in the hand and foot (e.g., the scaphoid, lunate, talus, and calcaneum). They are roughly cuboidal in shape and are composed of cancellous bone surrounded by a thin layer of compact bone. Short bones are covered with periosteum, and the articular surfaces are covered by hyaline cartilage.

■ **Flat Bones**

- Flat bones are found in the vault of the skull (e.g., the frontal and parietal bones). They are composed of thin inner and outer layers of compact bone, the tables, separated by a layer of cancellous bone, the diplo^e.»
The scapulae, although irregular, are included in this group.

■ **Irregular Bones**

- Irregular bones include those not assigned to the previous groups (e.g., the vertebrae, and the pelvic bones). They are composed of a thin shell of compact bone with an interior made up of cancellous bone.

- **Sesamoid bones** are small nodules of bone that are found in certain tendons where they rub over bony surfaces. The greater part of a sesamoid bone is buried in the tendon, and the free surface is covered with cartilage. The largest sesamoid bone is the *patella*, which is located in the tendon of the quadriceps femoris. Other examples are found in the tendons of the flexor pollicis brevis and flexor hallucis brevis. The function of a sesamoid bone is to reduce friction on the tendon; it can also alter the direction of pull of a tendon.

Thank You & Good Luck

