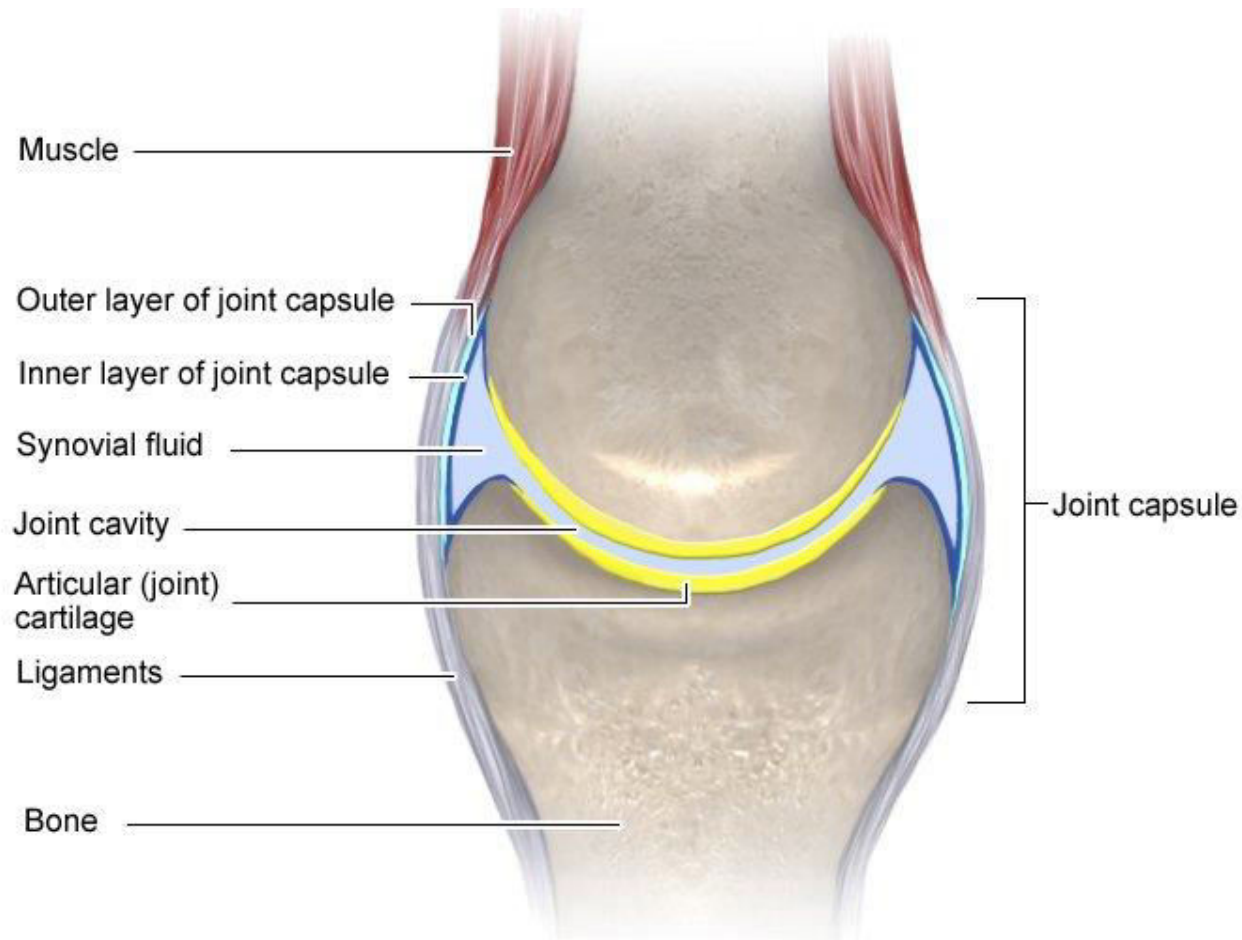


Joints- (Meaning and its types)



Structure of a joint

Joints (articulations)

- A **joint** or **articulation** (or **articular surface**) is the connection made between bones in the body which link the skeletal system into a functional whole.
- Where parts of skeleton meet
- Allows varying amounts of mobility
- Classified by structure or function
- **Arthrology**: study of joints

- **Classification of Joints**

Classified as both

- 1) **Structural** – Structural classification is determined by how the bones connect to each other, while
- 1) **Functionally**- functional classification is determined by the degree of movement between the articulating bones.

Joints by Functional Classification

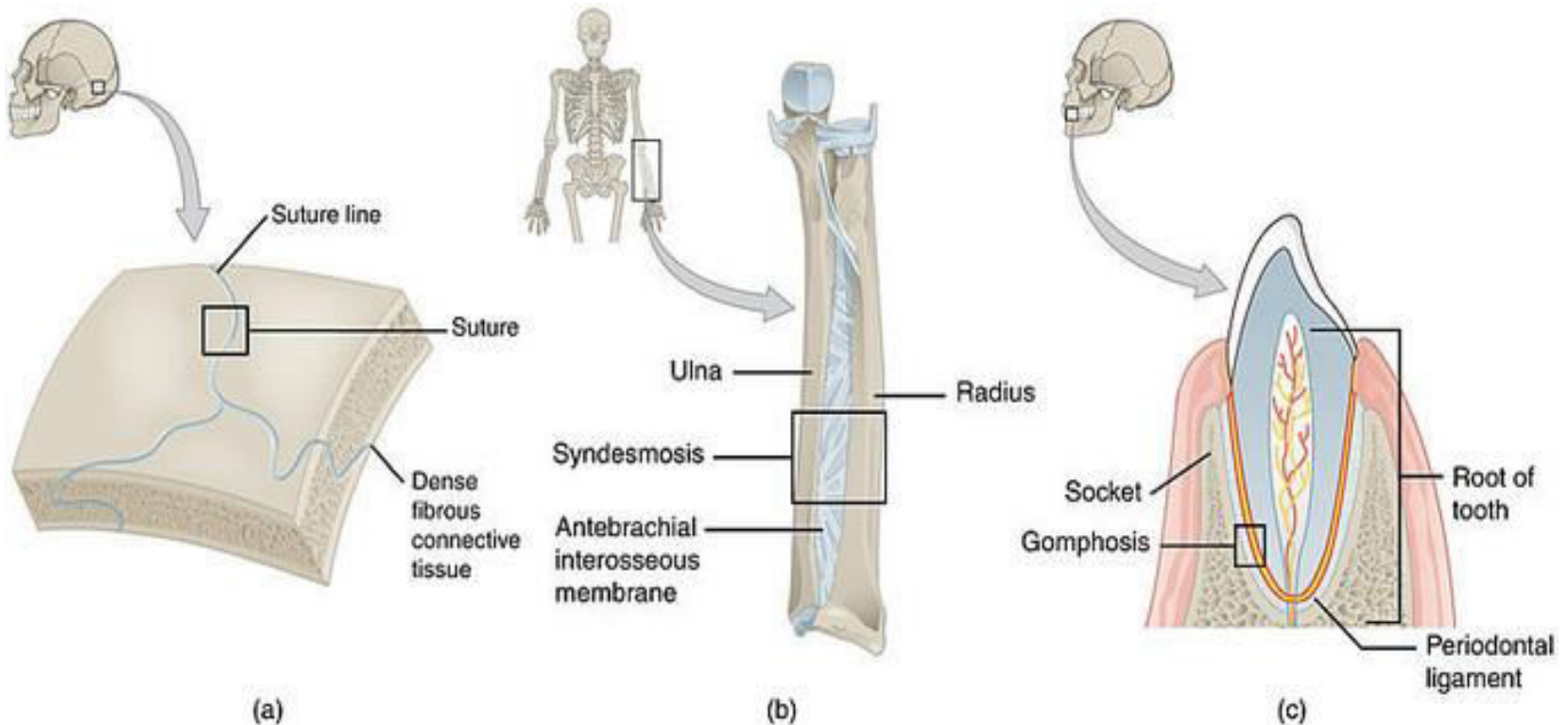
Type	Movement	Example
Synarthrosis	None (minimal)	Sutures, Teeth, Distal Tibia/fibul 1 st rib and costal cart.
Amphiarthrosis	Slight	Intervertebral discs Epiphyseal plates Pubic symphysis
Diarthrosis	Great	Glenohumeral joint Knee joint

Joints by Structural Classification

Structure	Type	Example
Cartilagenous	Synchondrosis Symphysis	Epiphyseal plates Intervertebral discs
Fibrous	Sutures Syndesmoses Gomphosis	Skull Tibia/fibula, Radio- ulnar joint Teeth in sockets
Synovial	Most of the moving joints	Glenohumeral joint Knee joint TMJ

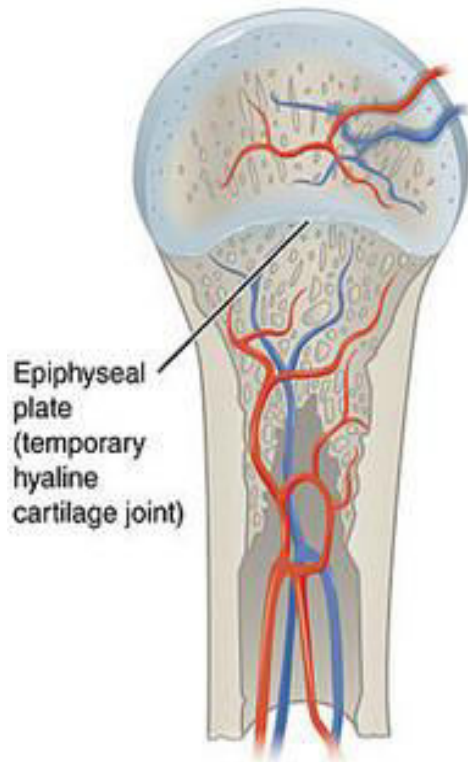
I. Fibrous joint:

- Fibrous joint lacks joint cavity.
- Two bones are joined together by fibrous connective tissue.
- Fibrous joints are joined together tightly so they are generally immobile in adults although some allows slight movement.

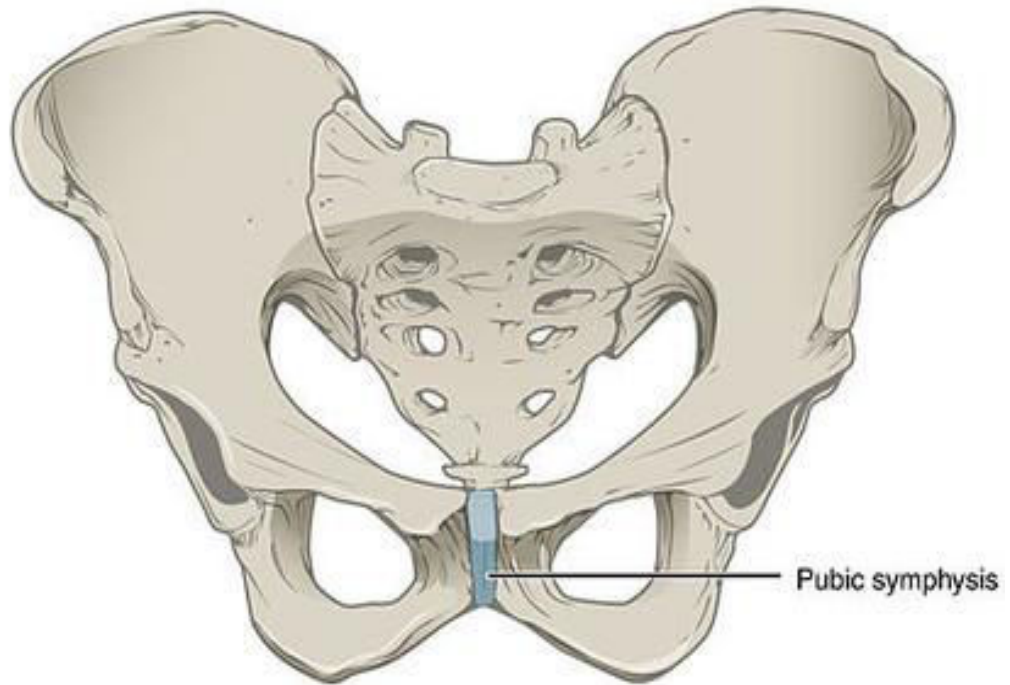


II. Cartilaginous joints:

- In cartilaginous joints, bones are united together by a plate of hyaline cartilage.
- Cartilaginous joints lack joint cavity
- They are slightly movable or immobile

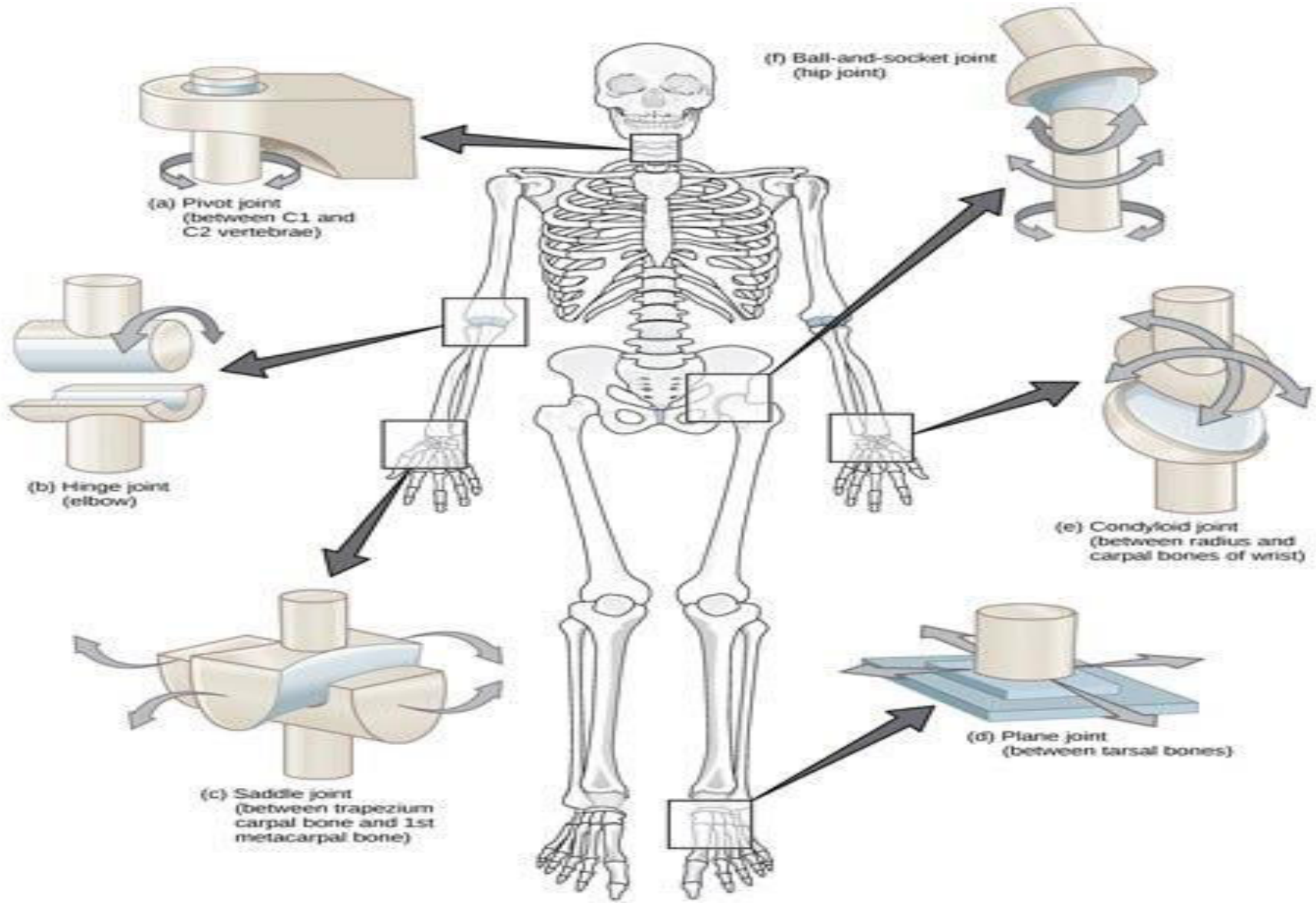


(a)

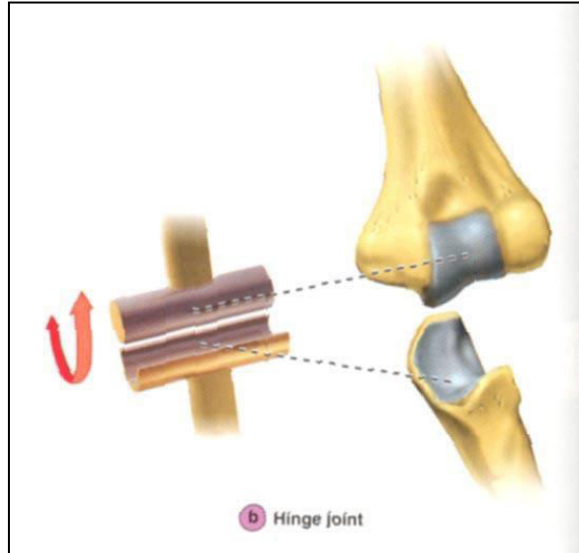


(b)

III. SYNOVIAL JOINT -



Joint Shapes



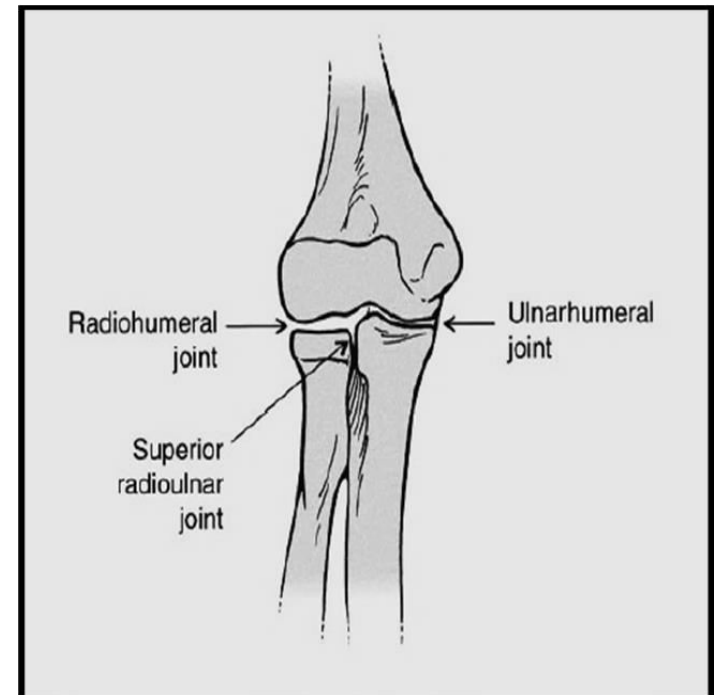
1.HINGE JOINT:

SHAPE - cylindrical end of 1 bone fits into trough shape of other.

Eg.- **Elbow and knee joint and Ankle joint**

The three joints of the **ELBOW** include:

- **Ulnohumeral joint** is where movement between the ulna and humerus occurs.
- **Radio humeral joint** is where movement between the radius and humerus occurs.
- **Proximal radioulnar joint** is where movement between the radius and ulna occurs.



Humeroulnar joint is formed between the humerus and ulna and allows **flexion and extension of the arm**. Humeroradial joint is formed between the radius and humerus, and allows movements like **flexion, extension, supination and pronation**.

Hinge and Pivot Joints



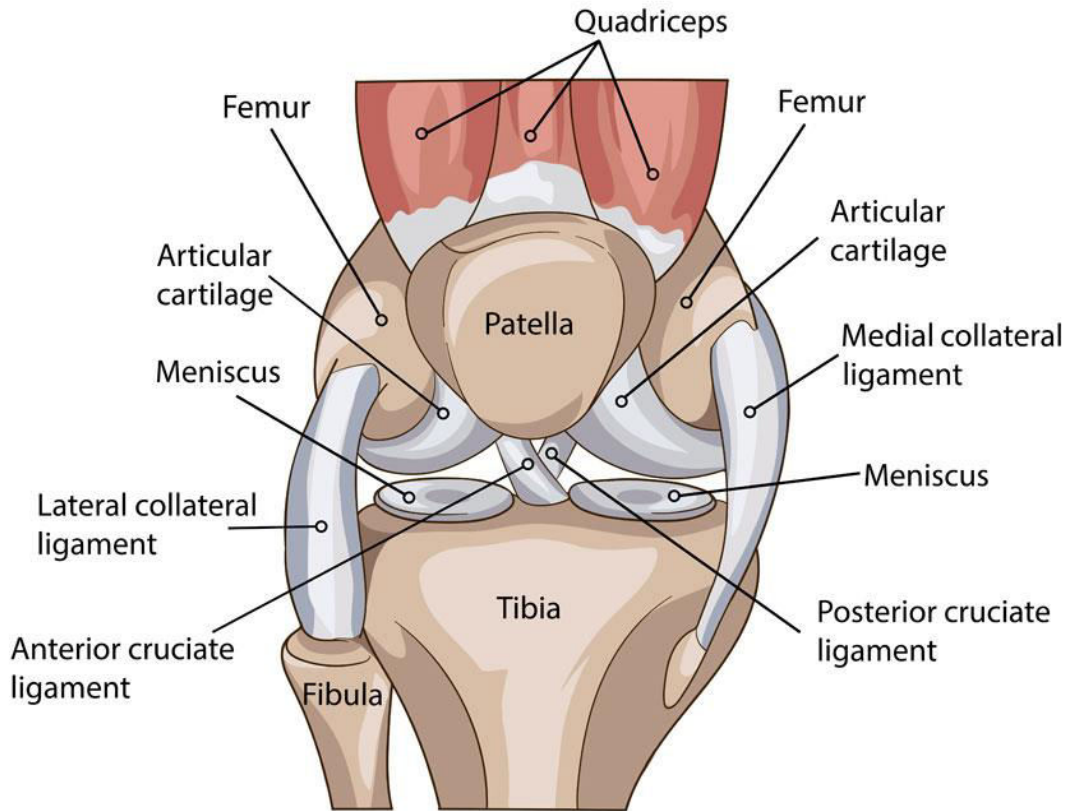
- **Hinge joints**

- Monaxial
- Convex cylinder in one bone; corresponding concavity in the other
- Example: elbow, ankle, interphalangeal

- **Pivot joints**

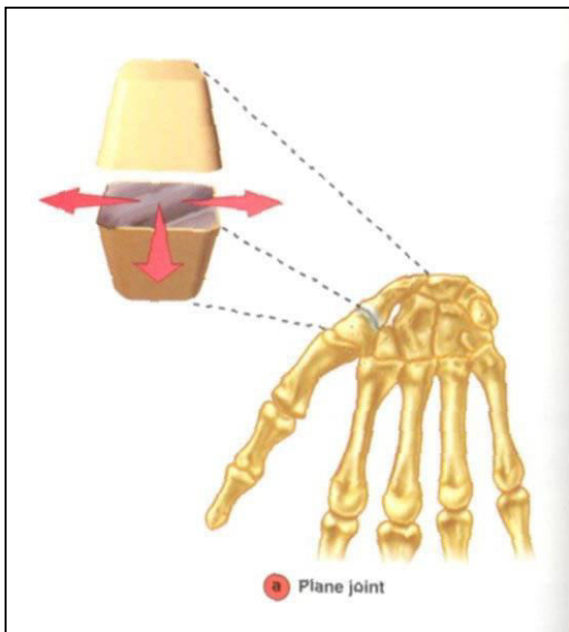
- Monaxial. Rotation around a single axis.
- Cylindrical bony process rotating within a circle of bone and ligament
- Example: articulation between dens of axis and atlas (atlantoaxial), proximal radioulnar, distal radioulnar

KNEE JOINT—



MOVEMENTS –

Anterior-posterior, medial-lateral, flexion-extension, adduction-abduction.

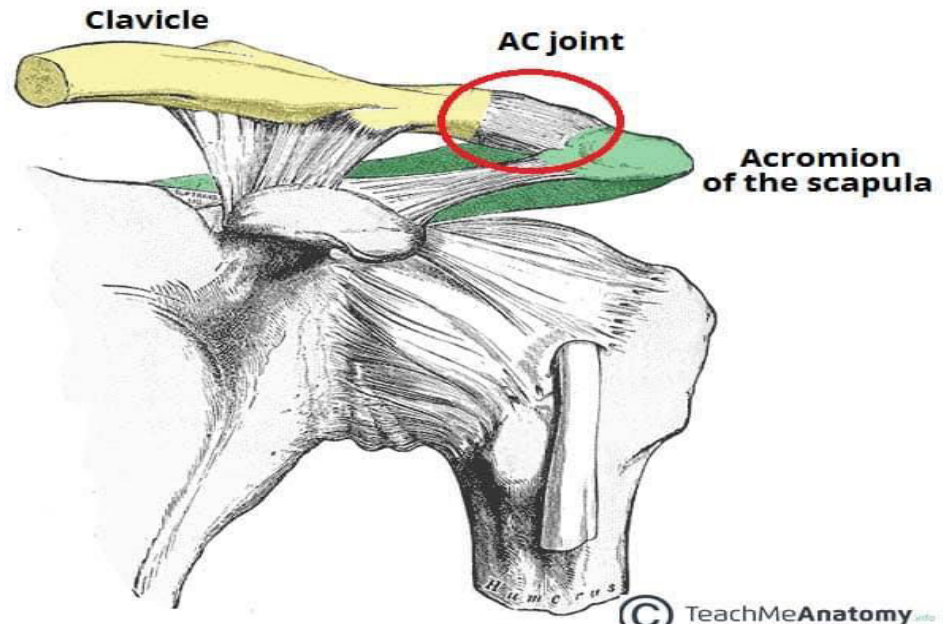


2.Plane or Gliding joint:

Structure - articular surface in flat plane

Functions - These joints allow only gliding or sliding movements, permits limited movement. it's characterized by smooth surfaces that can slip over one another.

Eg. – Inter-Carpals of the wrist, inter-tarsals of ankle, and acromioclavicular joint



3. **Condyloid** (also called **condylar**, **ellipsoidal**, or **bicondylar**):

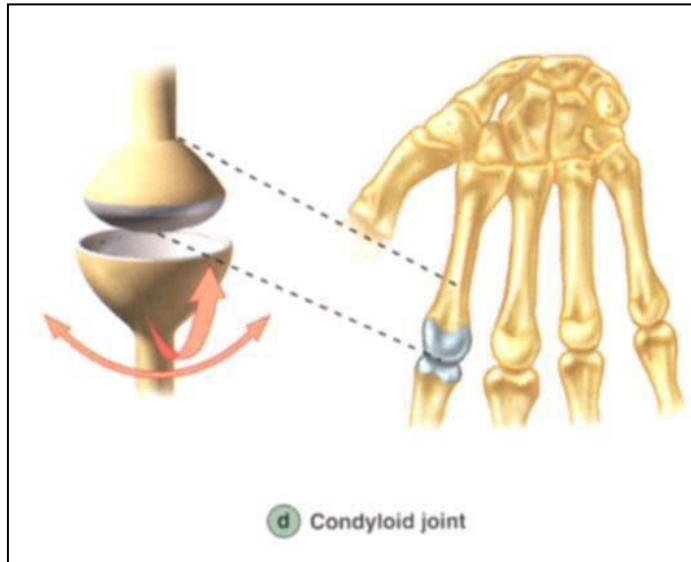
Shape - egg- shape articular surface + oval concavity.

A condyloid joint is a modified ball and socket joint that allow primary movement within two perpendicular axes.

The condyloid joint allows movement, but no rotation.

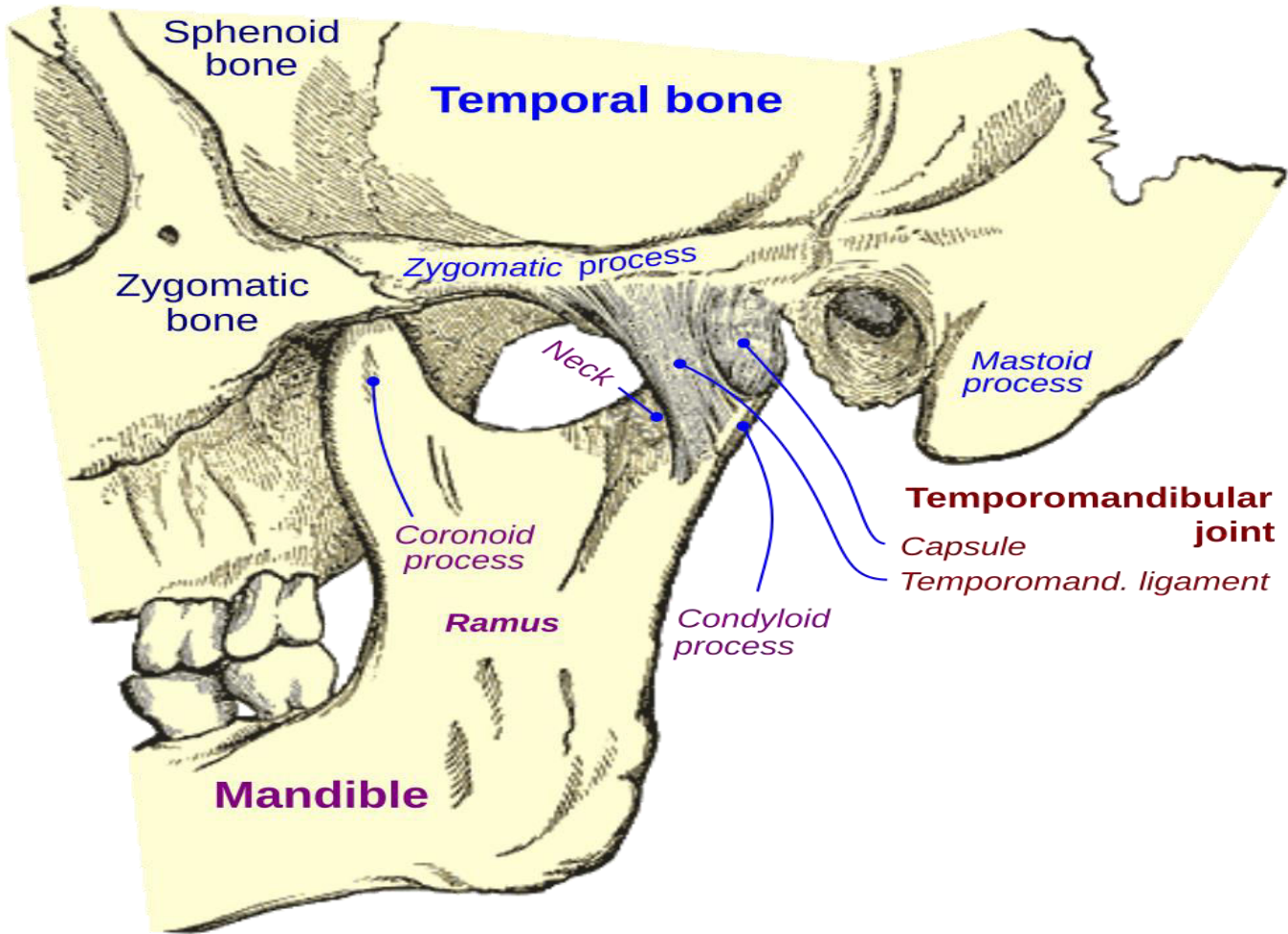
Examples include your finger joints and your jaw.

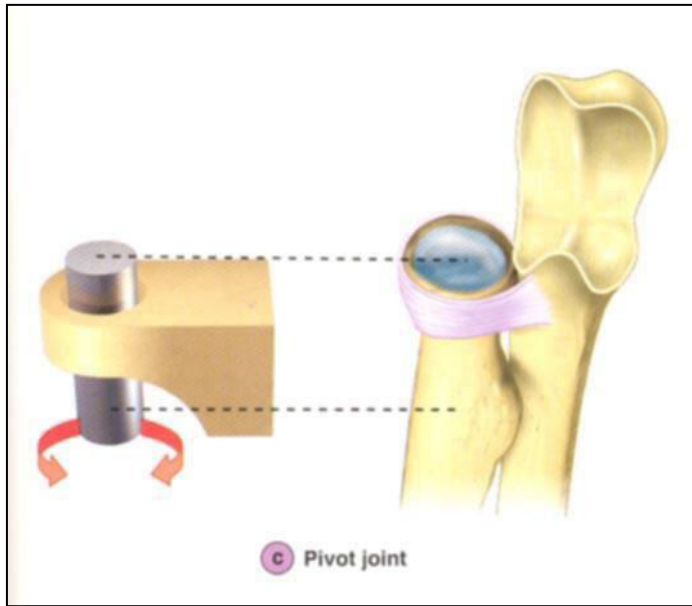
– side-to-side, back+forth movement



E.g. – the [wrist-joint](#), [metacarpophalangeal joints](#), [metatarsophalangeal joints](#), [atlanto-occipital joints](#)

This **permits movement** in two planes, allowing [flexion](#), [extension](#), [adduction](#), [abduction](#), and [circumduction](#).





4.Pivot JOINT: (trochoid joint, rotary joint or lateral ginglymus)

SHAPE - One bone rotates about another round end fits into ring of bone + ligament
– rotation on long axis

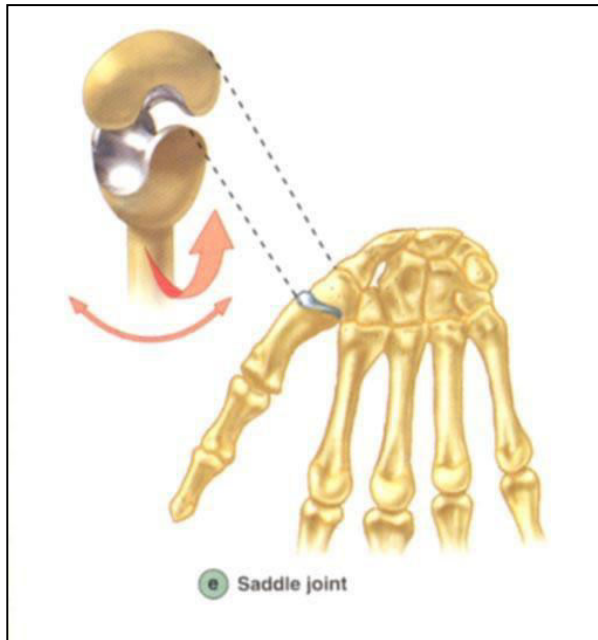
E.g.- [atlanto-axial joint](#), [proximal radioulnar joint](#), and [distal radioulnar joint](#)

5. Saddle JOINT: (sellar joint, articulation by reciprocal reception)

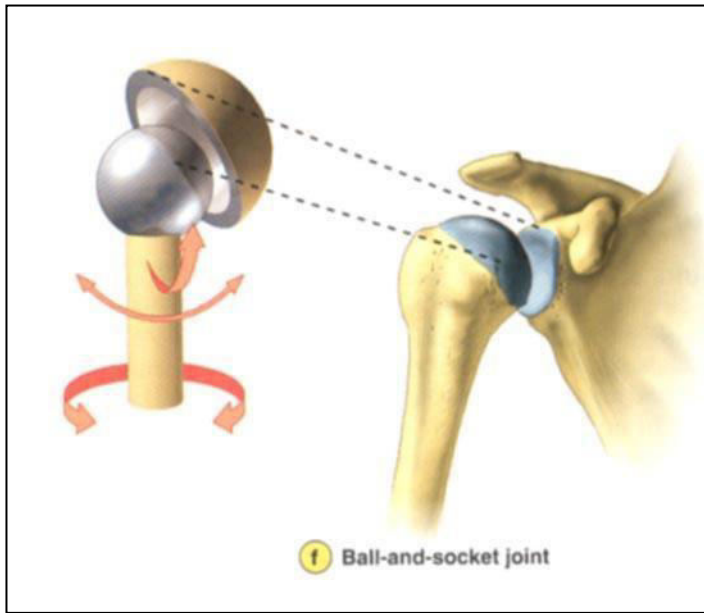
Permit the same movements as the condyloid joints but allows greater movement.

SHAPE - articular surface both concave + convex

- i. side-to-side, back-forth movement
- ii. (eg) carpometacarpal joint of thumb



Examples of saddle joints in the human body include the carpometacarpal joint of the thumb, the sternoclavicular joint of the thorax, the incudomalleolar joint of the middle ear,^[9] and the calcaneocuboid joint of the heel.



b. **Ball + Socket**("universal Joint"):

spherical head + round socket

-These allow for all movements except **gliding**.

- multiaxial movement
- (eg) shoulder joint and hip joint.

