

SHSS5062

ELBOW ARTHROKINEMATICS

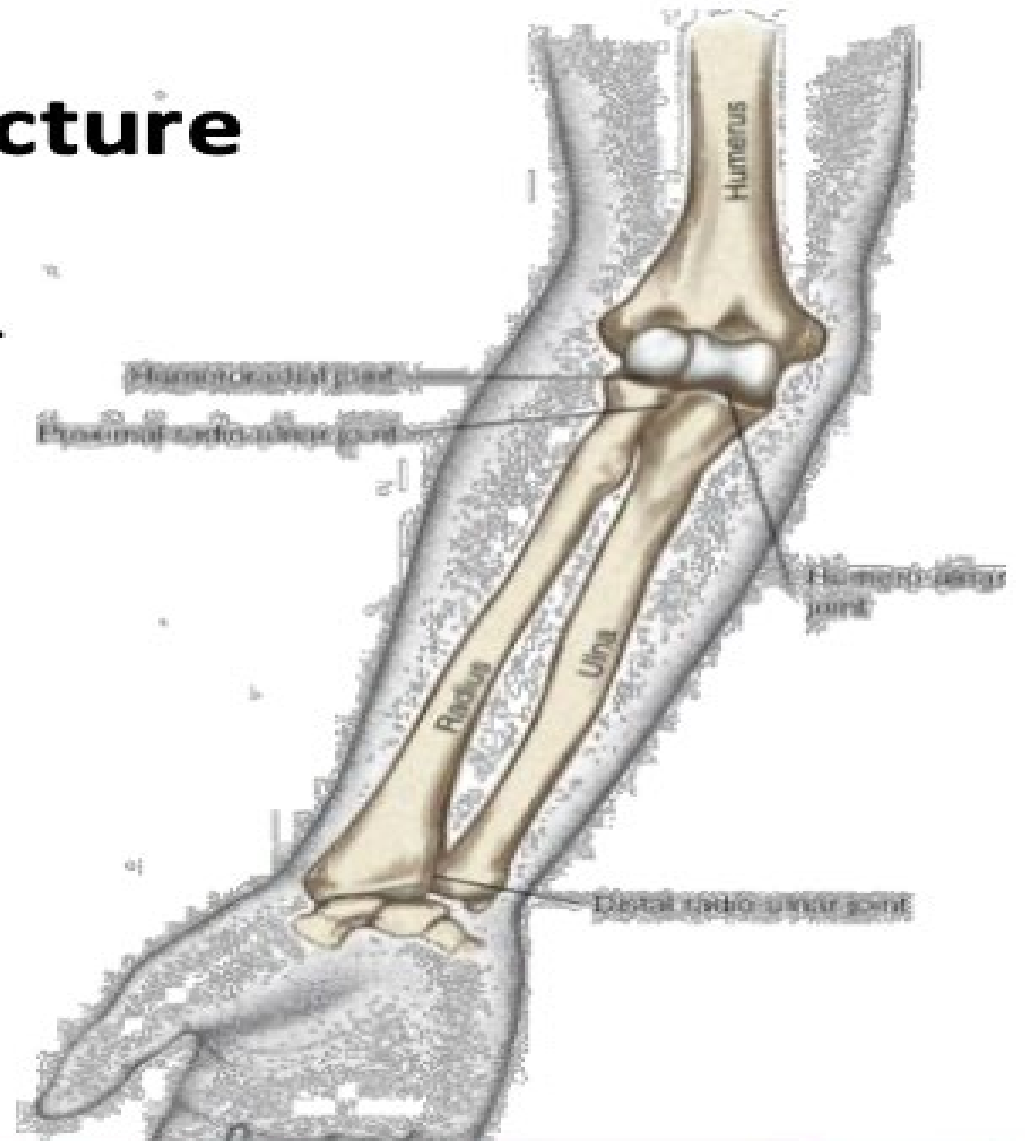
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Transforming Education; Transforming Lives

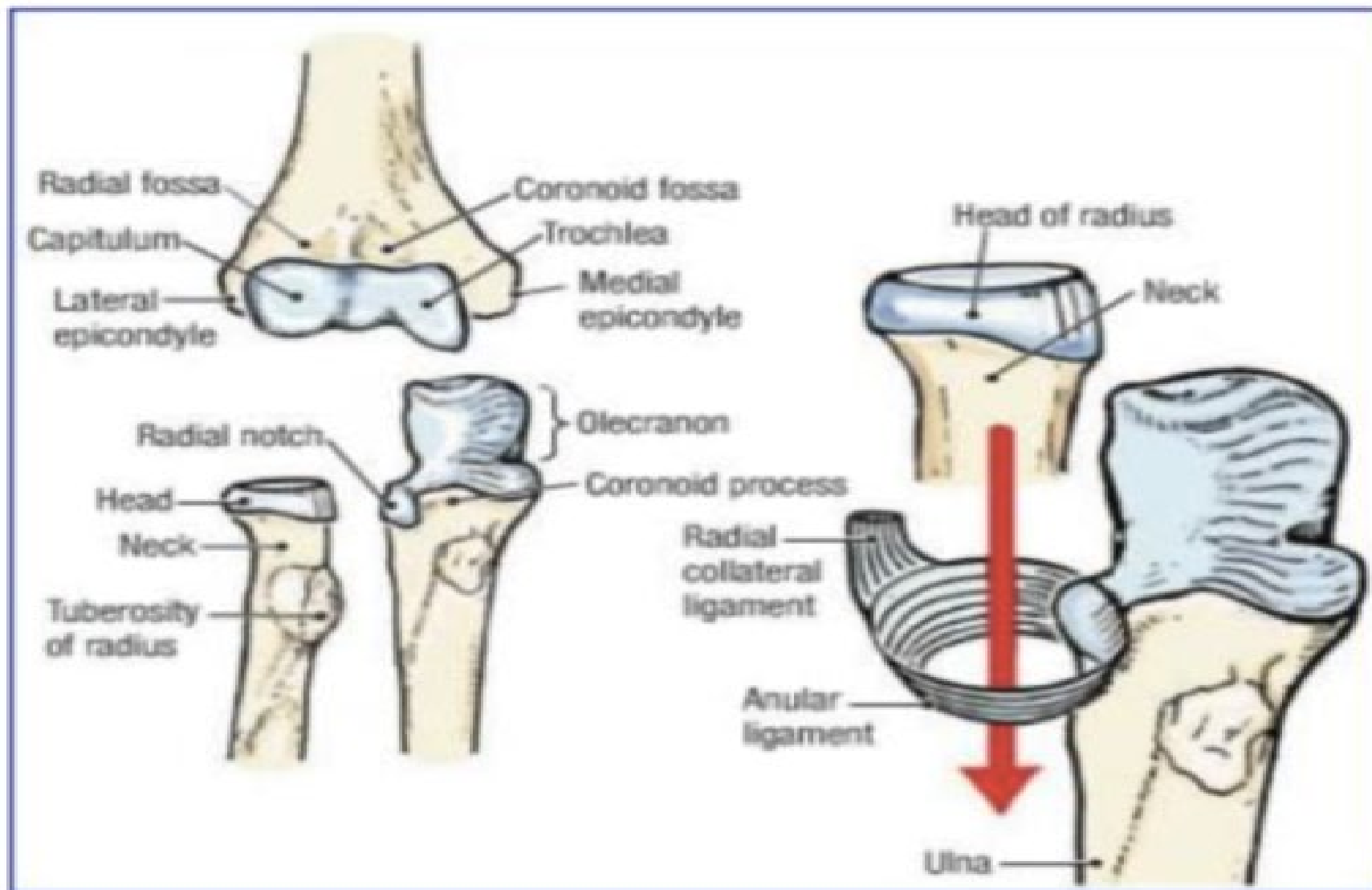


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Elbow Structure

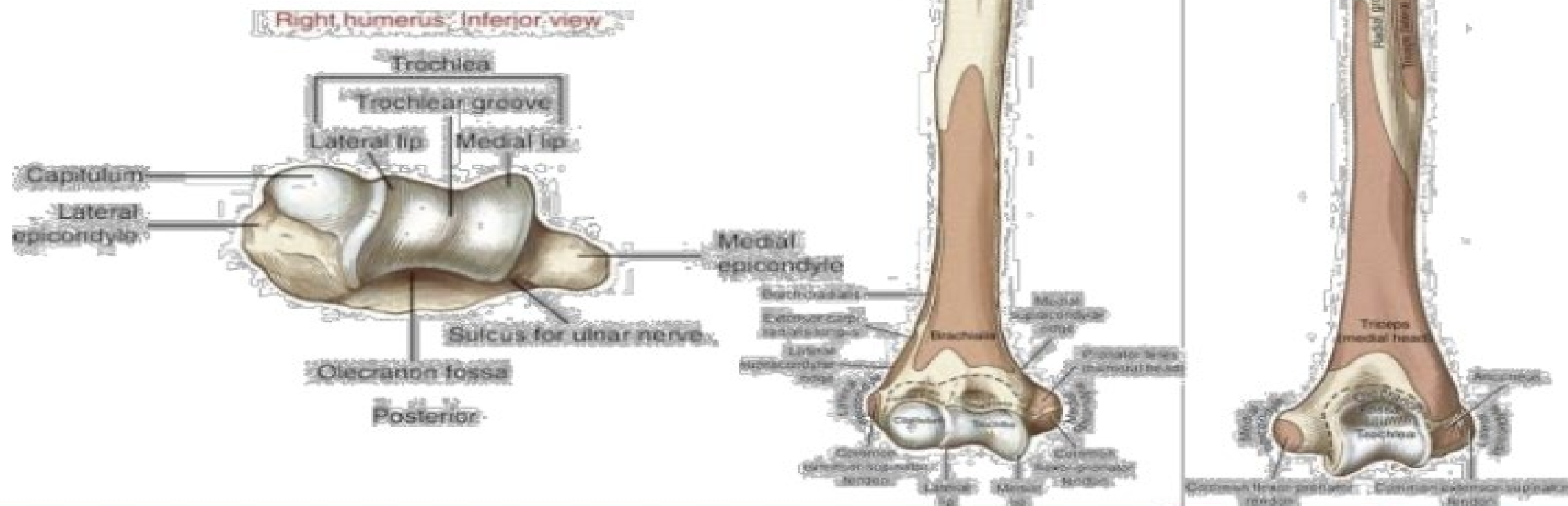
- 3 joints comprised of 3 articulating bones.
- Humeroulnar Joint
- Humeroradial Joint
- Proximal Radioulnar Joint
- Good joint congruence gives stability.



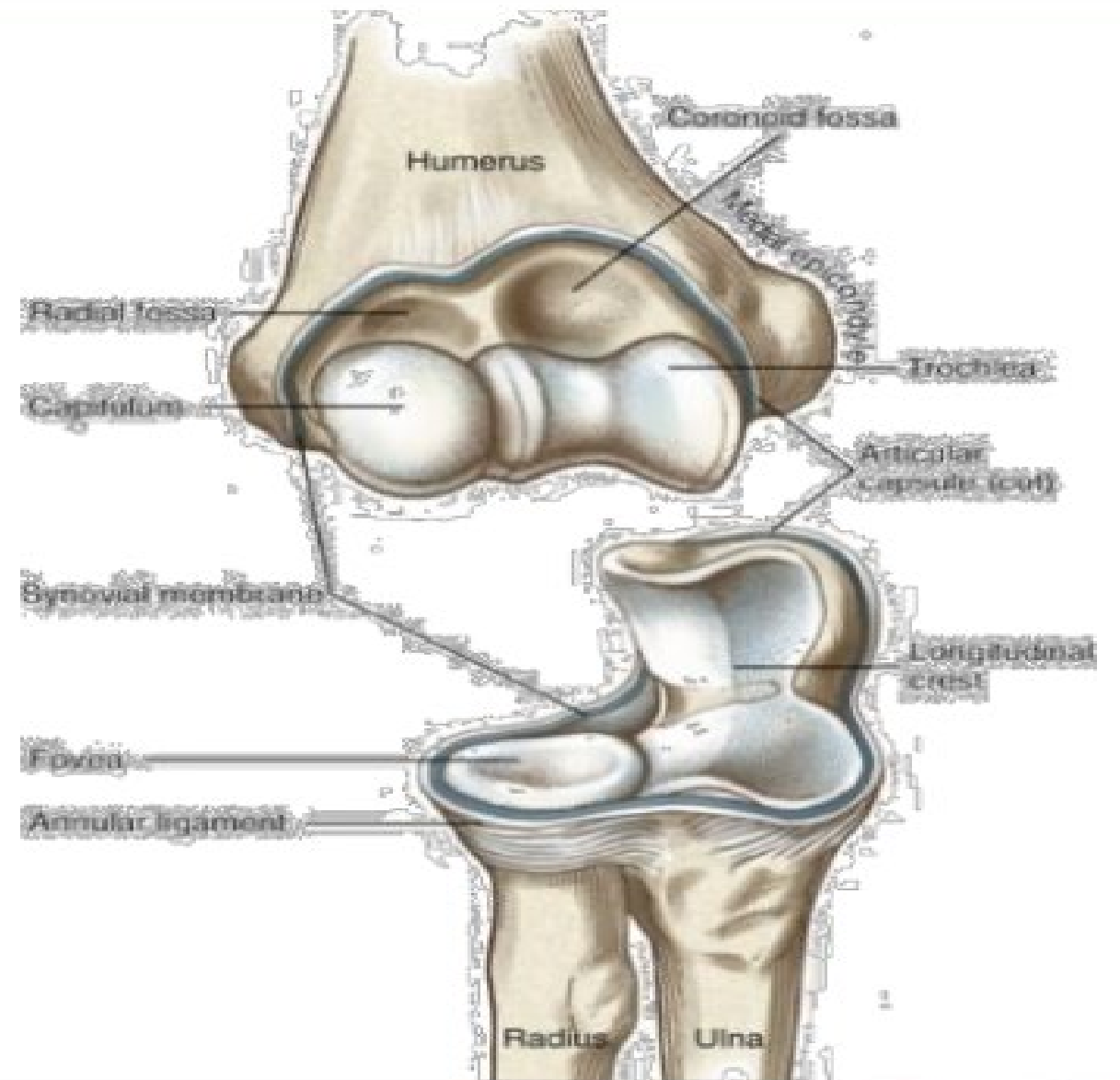


Elbow Structure:

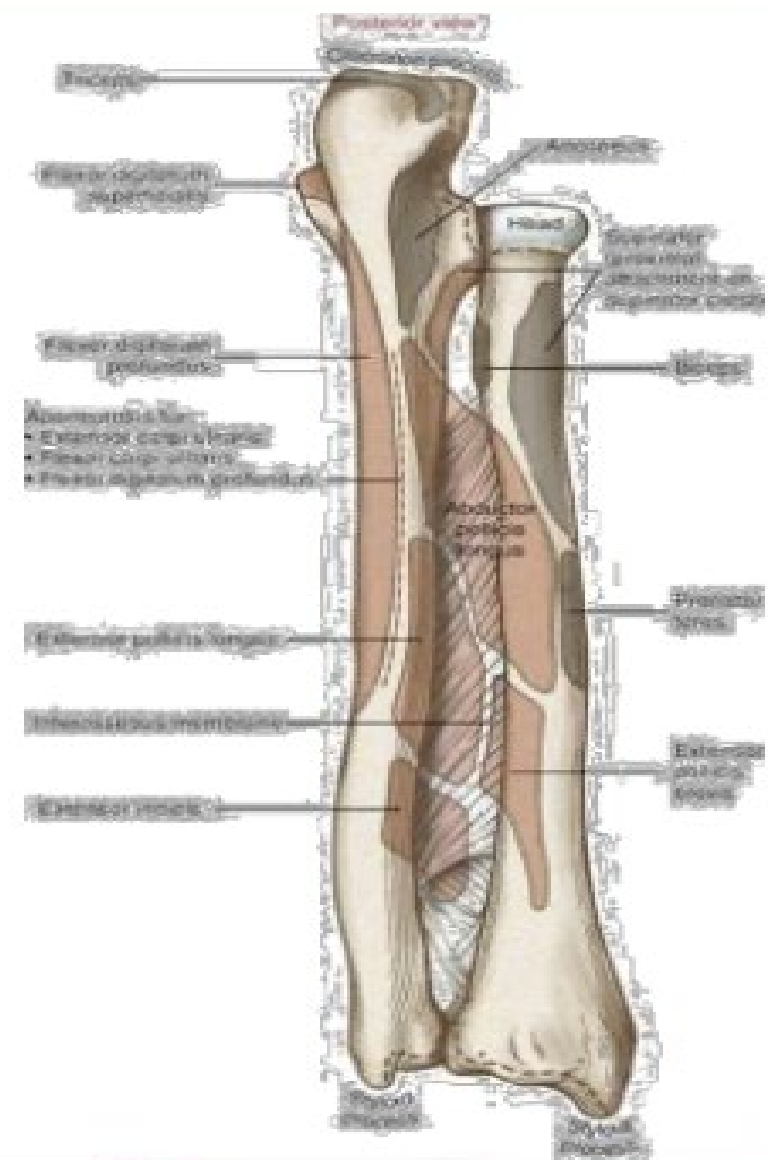
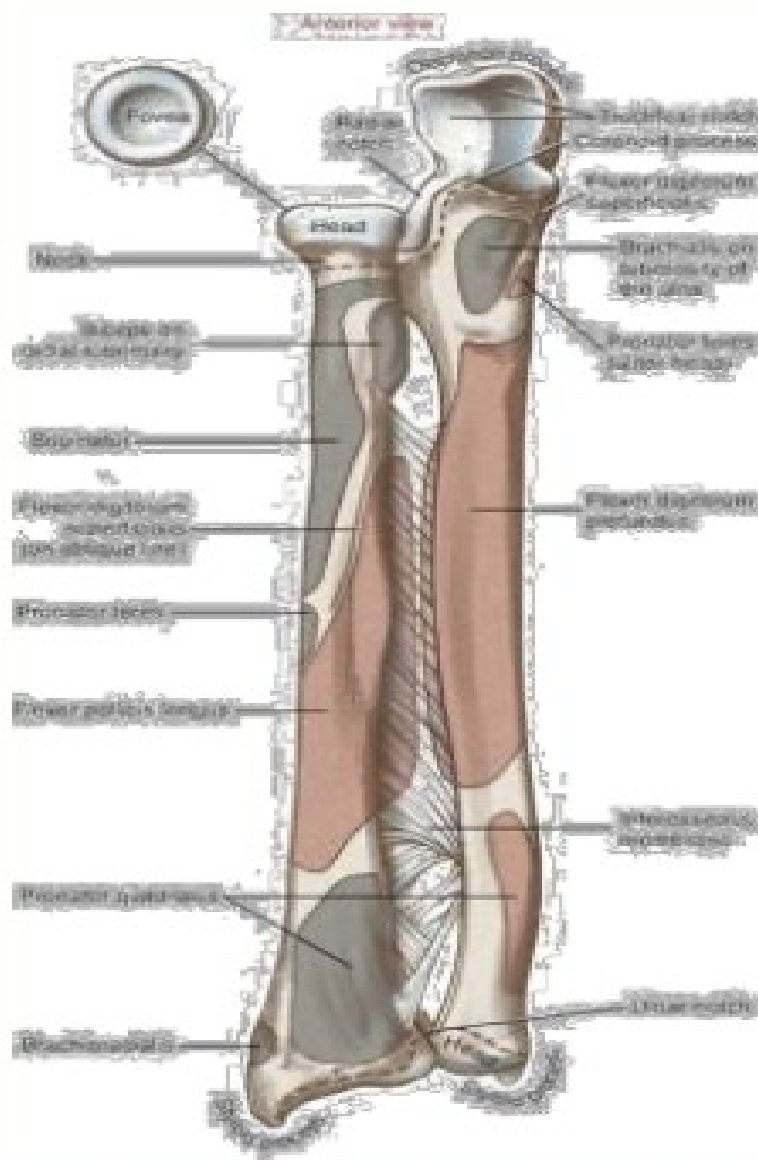
Humerus articulating surface & muscle attachments



Elbow Structure: Ulna and Radius



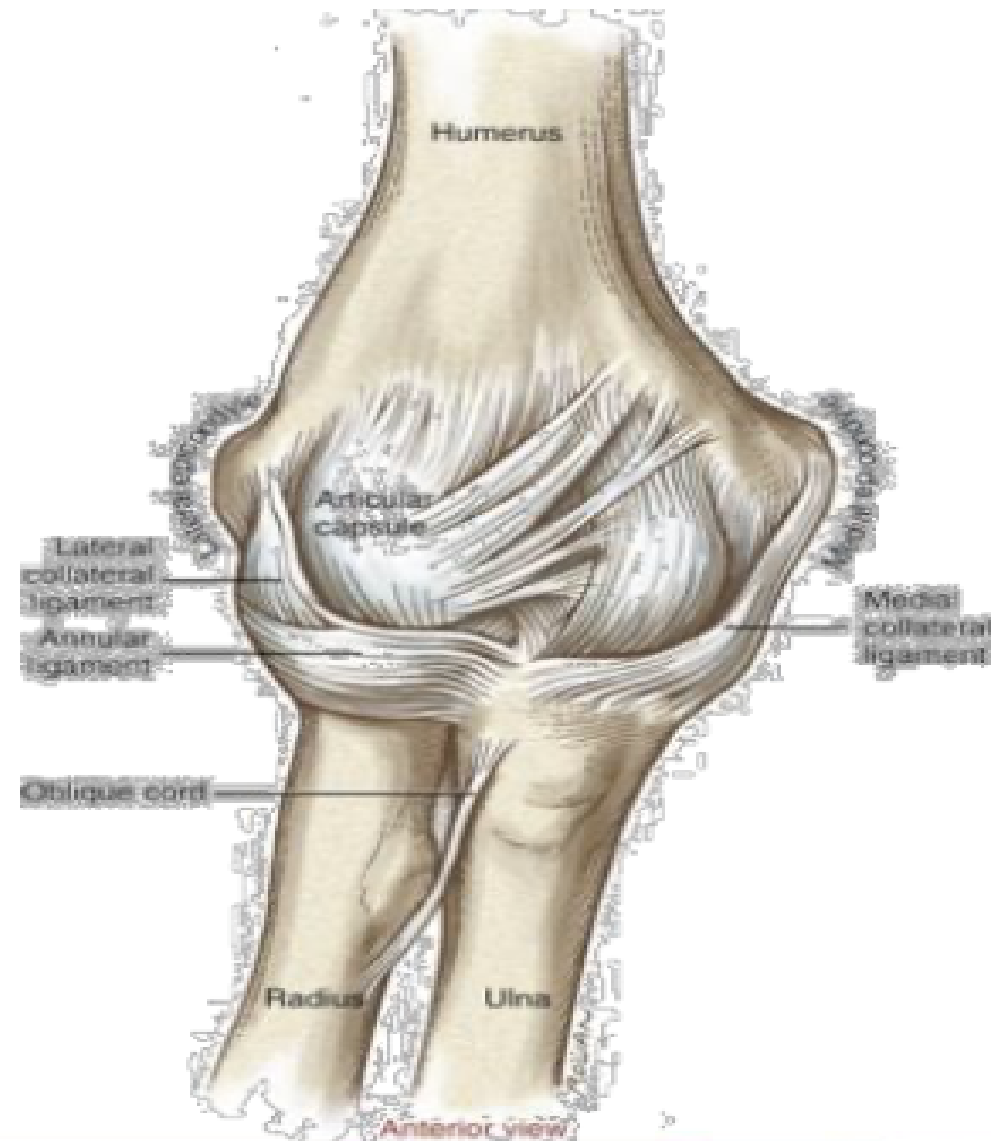
Elbow Structure: Muscle Attachments



Ligamentous Support

Joint Capsule

- Covers all 3 articulations
 - Relatively thin
 - Reinforced anteriorly by oblique fibres
 - Highly innervated by mechanoreceptors
-
- Anterior/posterior = loose
 - allow for extension/flexion
 - Medial/lateral = taut for stability.
 - Reinforced by collateral ligaments



Ligamentous Support

Medial Collateral Ligament

Reinforced by wrist flexors and pronator group

Anterior

- Strongest against valgus force
- Crosses axis of rotation
- Provides articular stability through entire range of sagittal plane movement

Posterior

- Thickenings of posterior-medial capsule
- Resist valgus force and also taut EOR flexion.

Transverse

- Provides little resistance to valgus force.

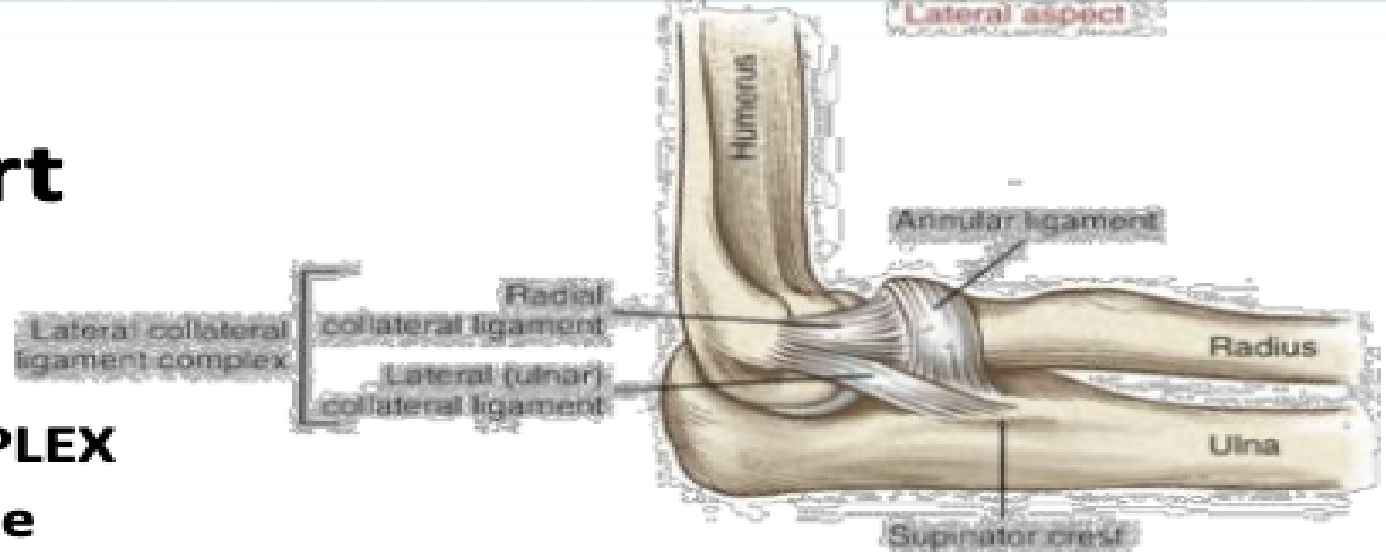


Ligamentous Support

Lateral Collateral Ligament COMPLEX

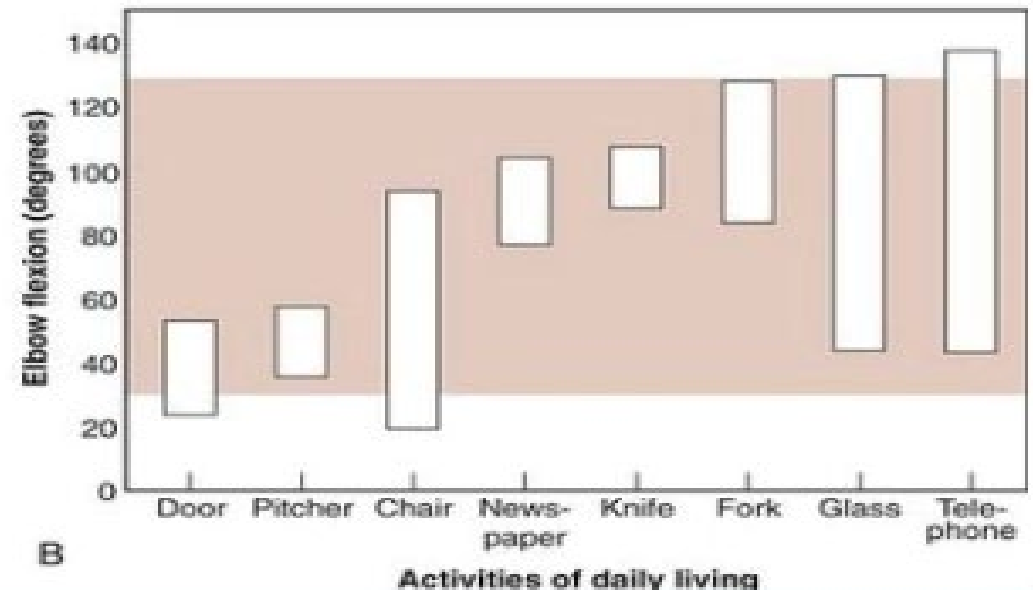
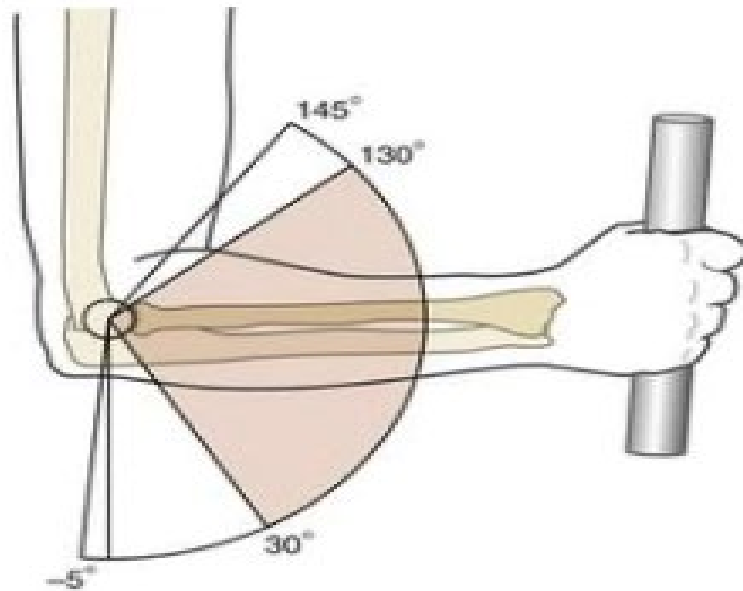
Acts with posterior-lateral capsule

- Radial collateral ligament (primary varus resistance)
- PLUS
- Lateral/ulnar collateral ligament
- Both are taut in EOR flexion.
- Annular ligament supports/holds the radial head on the radial notch of Ulna
 - Is the attachment site for Radial collateral ligament



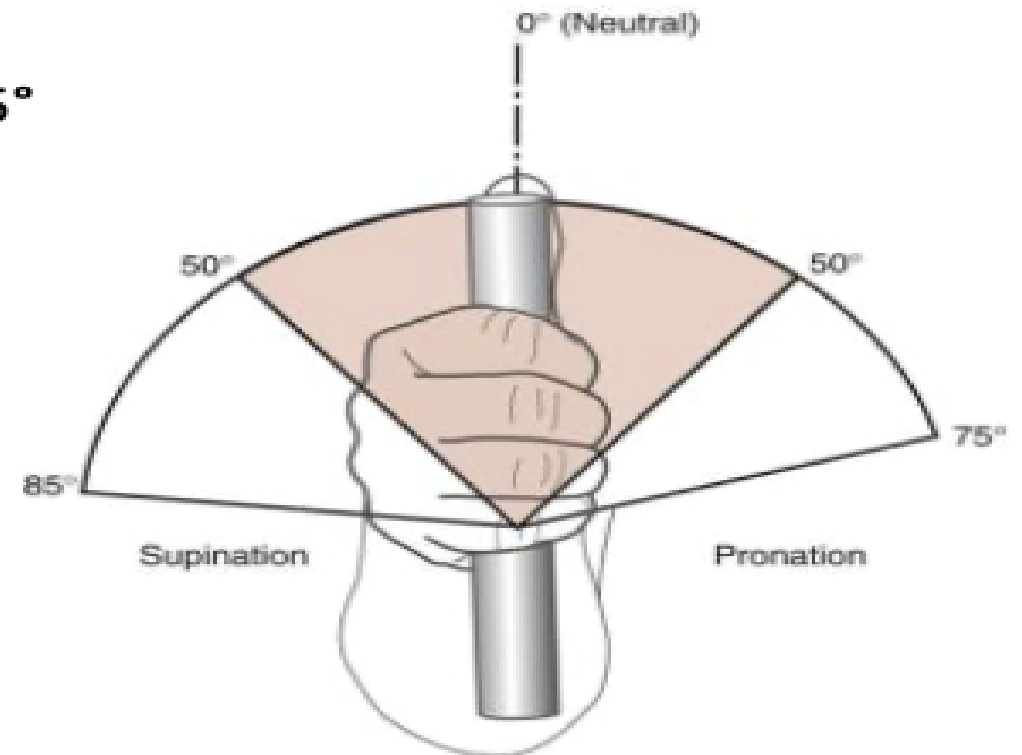
Range of Movement

- Gross movement in the sagittal plane is a combination of the 3 joints
 - ROM: 0-150°
 - Functional ROM for ADL: 30-130°



Range of Movement

- Gross movement in the horizontal plane is a combination of the proximal and distal radioulnar joints
 - ROM: Supination 0-85°, Pronation 0-75°
 - Functional ROM for ADL: 100° arc



Humeroulna Joint

Convex

- Trochlea of humerus

Concave

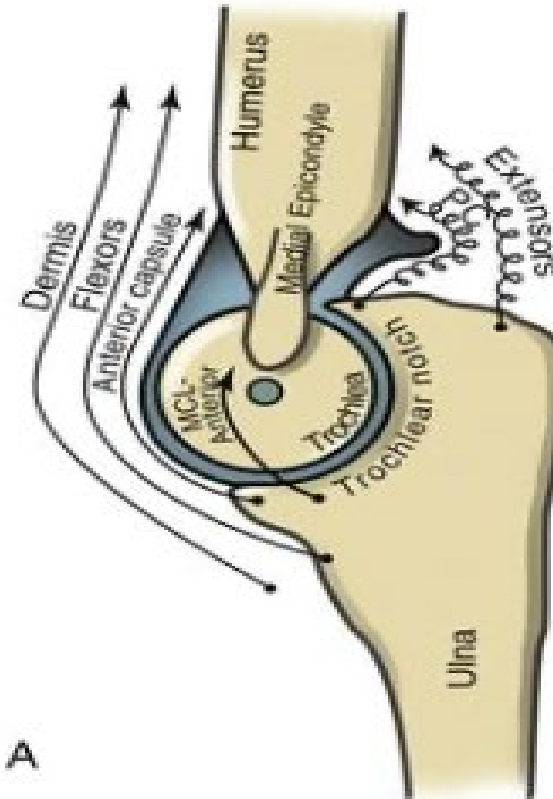
- Trochlea notch of ulna

Loose Pack

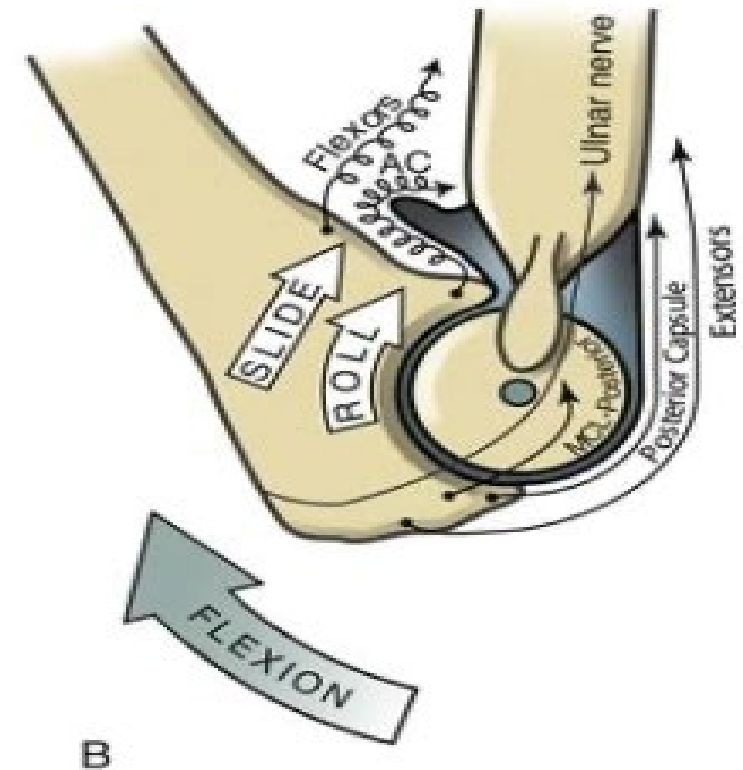
- 70° flexion
- 10° supination

Close Pack

- Full Extension



Resting in extension



Humero radial Joint

Convex

- Capitulum of humerus

Concave

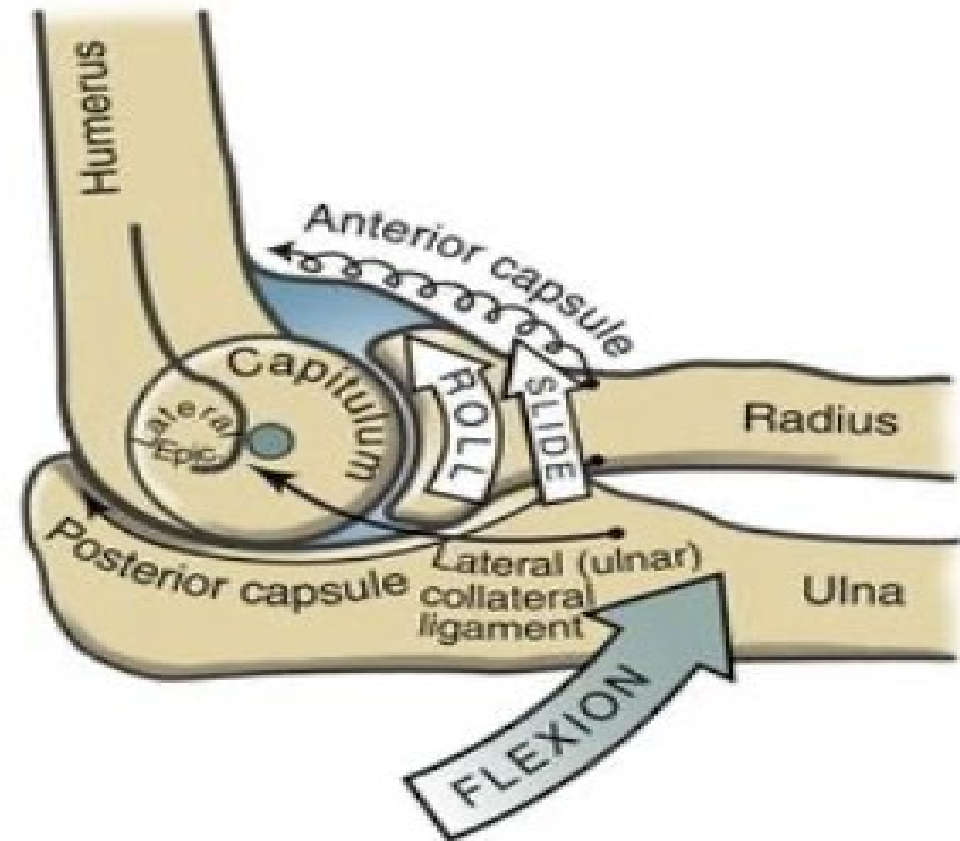
- Fovea of radial head

Loose Pack

- Full Extension
- Full Supination

Close Pack

- Mid-flexion
- Mid-pronation



Proximal Radioulnar Joint

Convex

- Radial head

Concave

- Radial notch of ulna

Loose Pack

- 70° flexion
- 35° supination

Close Pack

- Full Supination/Pronation

