SNS COLLEGE OF PHYSIOTHERAPY
COIMBATORE-35

COURSE : BPT
SUBJECT : BIOMECHANICS
TOPIC : ELBOW COMPLEX

UNIT : V

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ASSISTANT PROFESSOR

ELBOW COMPLEX

- Modified or loose hinge joint
- One degree of freedom is possible
- Movement allowed : Flexion and Extension
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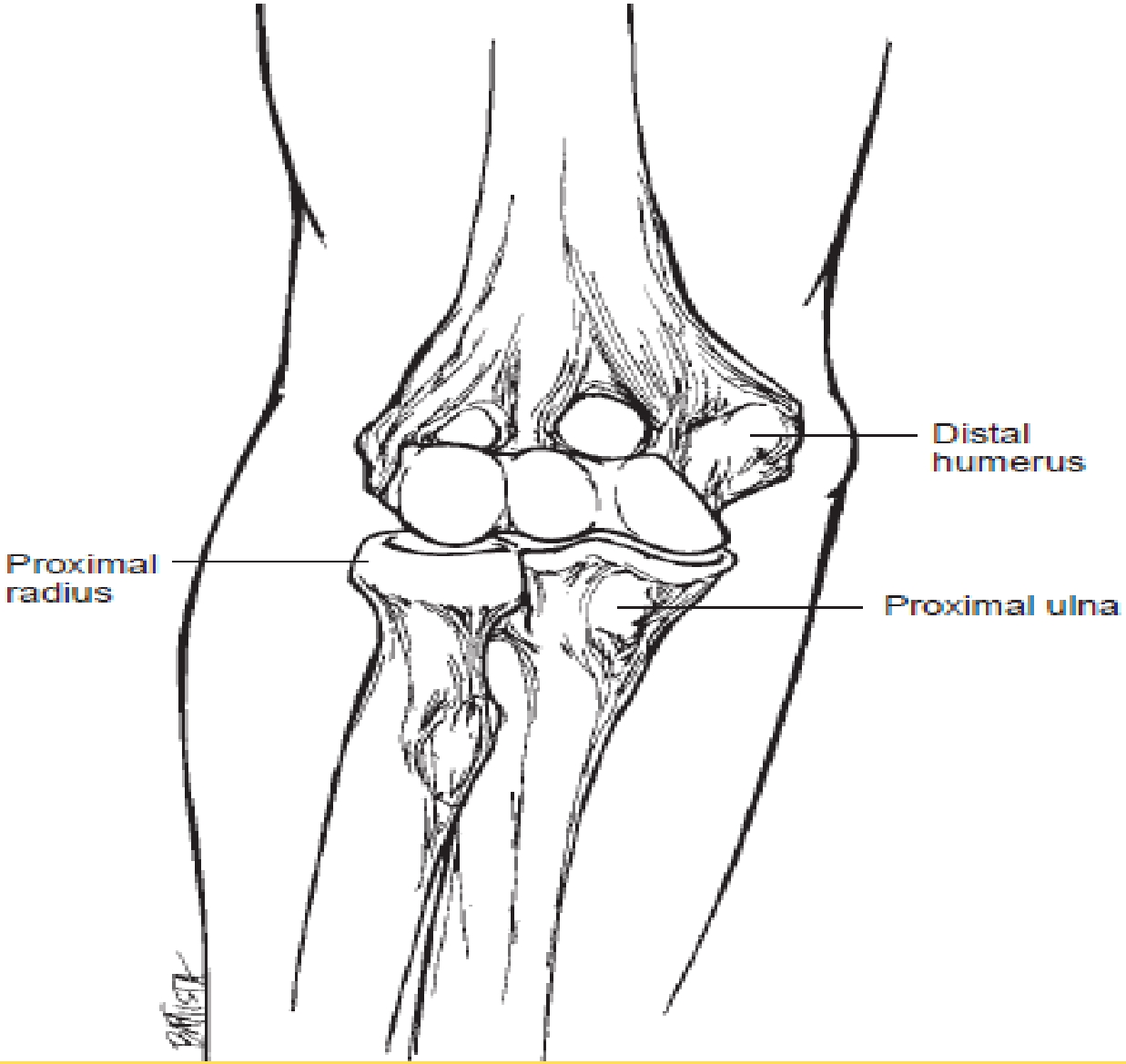
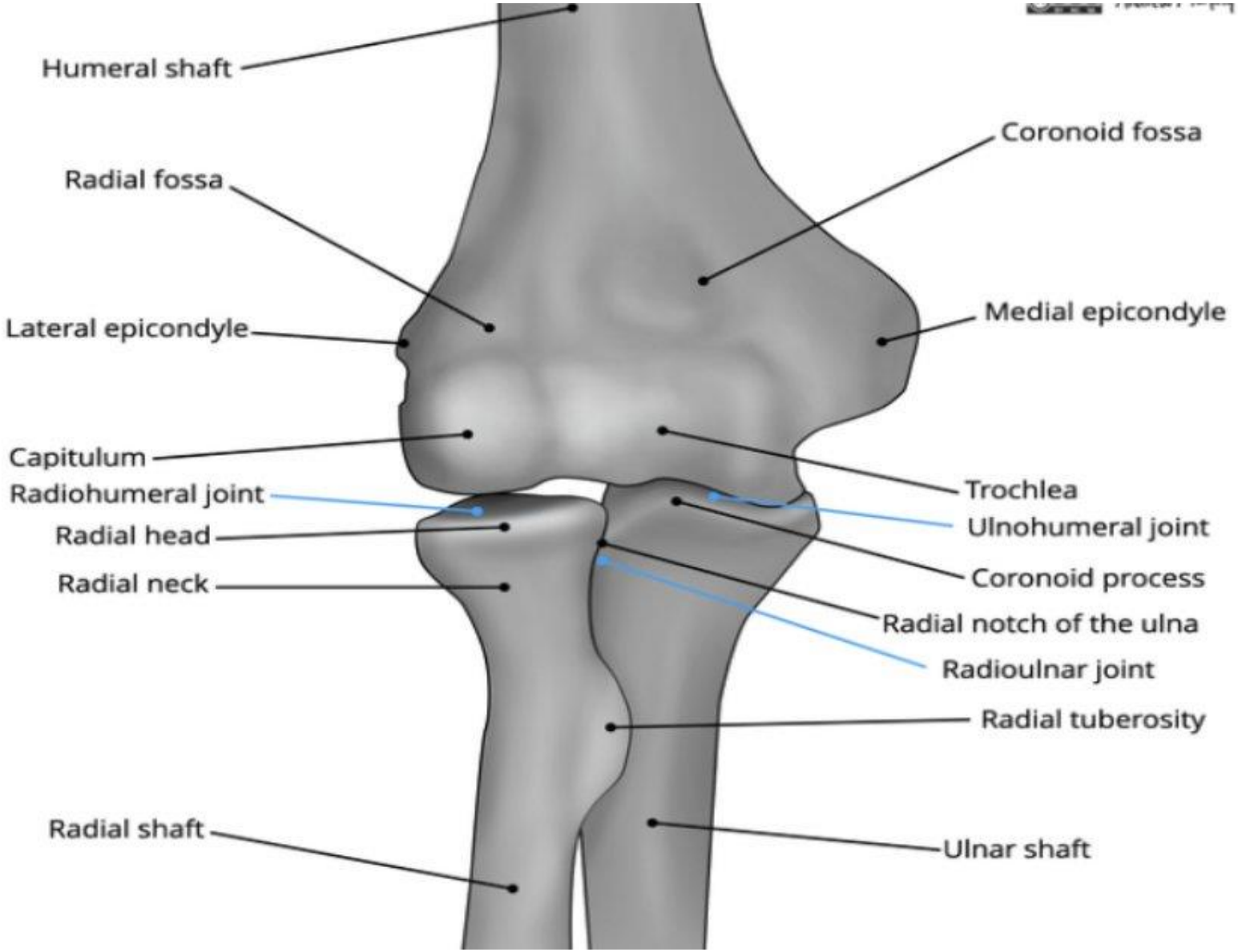
- A slit bit of axial rotation and side to side motion of the ulna occurs during flexion and extension and that's why elbow is considered to be a modified or loose hinge joint


Distal humerus
Proximal radius
Proximal ulna


Humeral shaft
Coronoid fossa
Radial fossa
Lateral epicondyle
Medial epicondyle
Capitulum
Trochlea
Radiohumeral joint
Ulnohumeral joint
Radial head
Coronoid process
Radial neck
Radial notch of the ulna
Radioulnar joint
Radial tuberosity
Radial shaft
Ulnar shaft

Articulating surface of humerus:

- **Articular surface of distal humerus consist of trochlea and capitulum.**

- **Trochlea: hour glass shaped**
- **Capitulum : spherical shaped.**

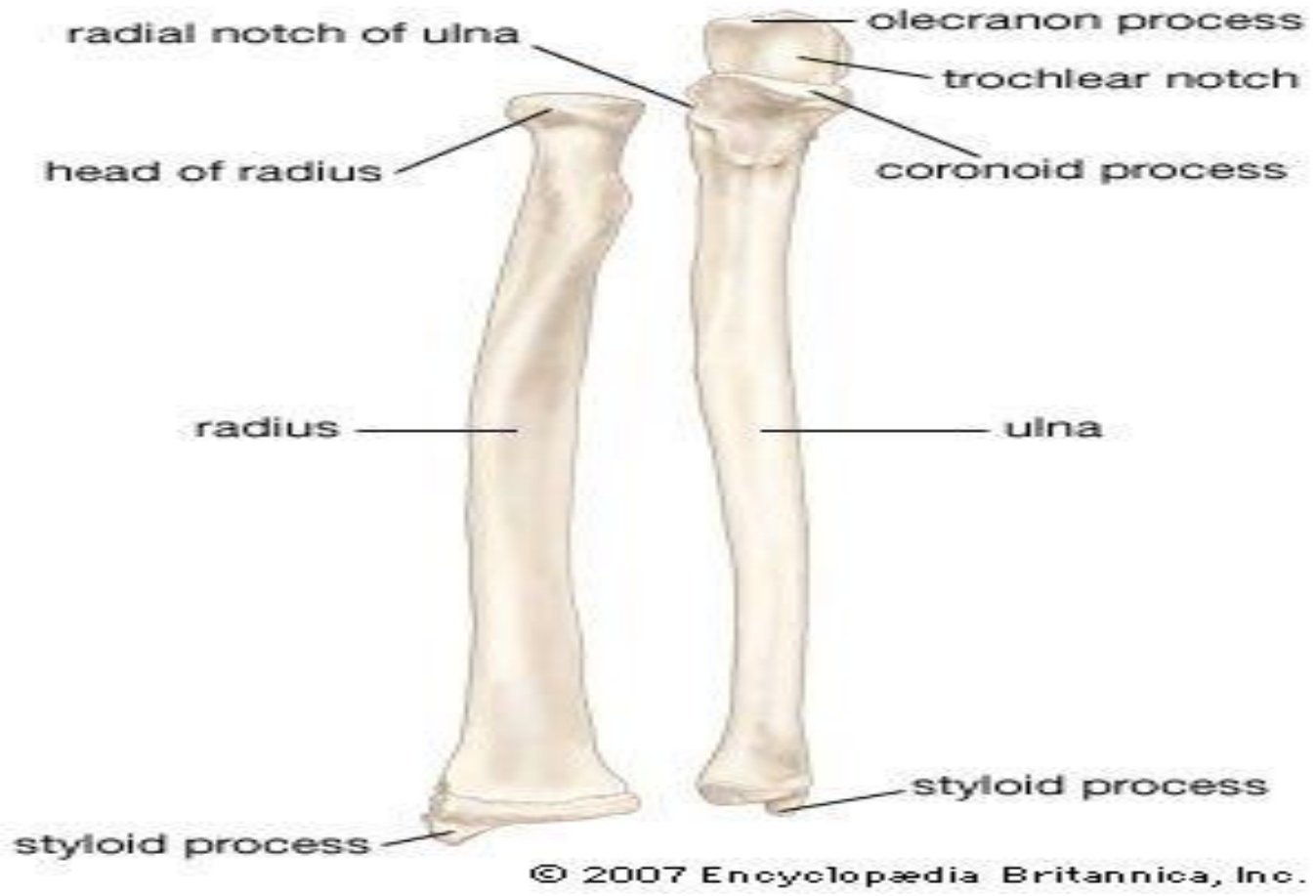
- **These structures are situated between medial and lateral humeral epicondyles.**
- **Trochlear groove: divides trochlea in to medial and lateral portions.**

- The medial portion of trochlea projects more distally than lateral side , which results in valgus angulation of forearm called **CARRYING ANGLE**

- The depression above trochlea is called coronoid fossa.
- It receives coronoid process of ulna at the end of elbow flexion.
- Capitulotrochlear groove seperates the capitulum and trochlea.

- The depression just above the capitulum is called radial fossa, that receive head of radius in elbow flexion.
- Posterior aspect of distal humerus has a deep foosa called olecranon fossa.

CARTILAGE


radial notch of ulna
olecranon process
trochlear notch
head of radius
coronoid process
radius
ulna
styloid process
styloid process
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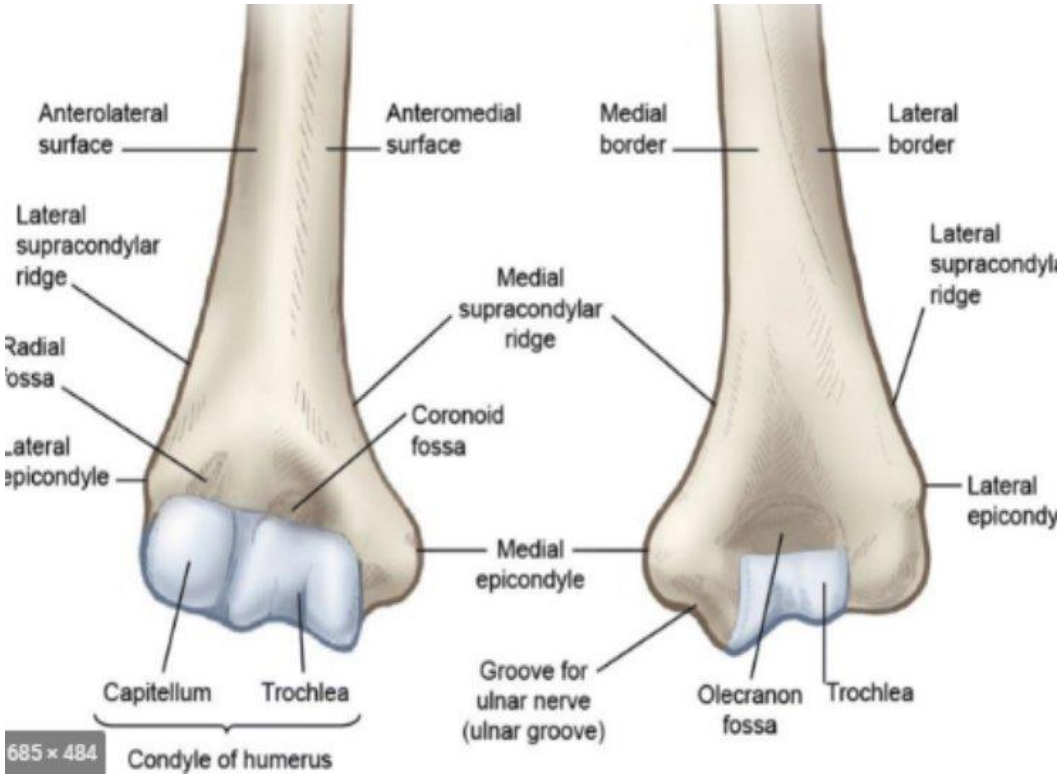
.The articulating surface of the ulna –trochlear notch(deep, concave surface).

The proximal portion of notch is divided in to two unequal parts – trochlear ridge.

The radial articulating surface of humeroradial joint –

Head of radius.

The radial head has a cup shaped concave surface called fovea , that is surrounded by a rim


Anterolateral surface
Anteromedial surface
Medial border
Lateral border
Lateral supracondylar ridge
Radial fossa
Lateral epicondyle
Medial supracondylar ridge
Coronoid fossa
Lateral supracondyl ridge
Lateral epicondy
Medial epicondyle
Capitellum
Trochlea
Groove for ulnar nerve (ulnar groove)
Olecranon fossa
Trochlea
685 × 484
Condyle of humerus

- Articulation between trochlea and trochlear notch of ulna:
- In flexion- trochlear ridge of ulna slides along the trochlear groove until the coronoid process reaches the coronoid fossa in full flexion.
- In normal resting position- only the sides of trochlea and trochlear notch is in contact.

- When arm is loaded (closed chain position)- the trochlea goes inside the trochlear notch.
- There is more joint approximation, contact area is expanded from side to center

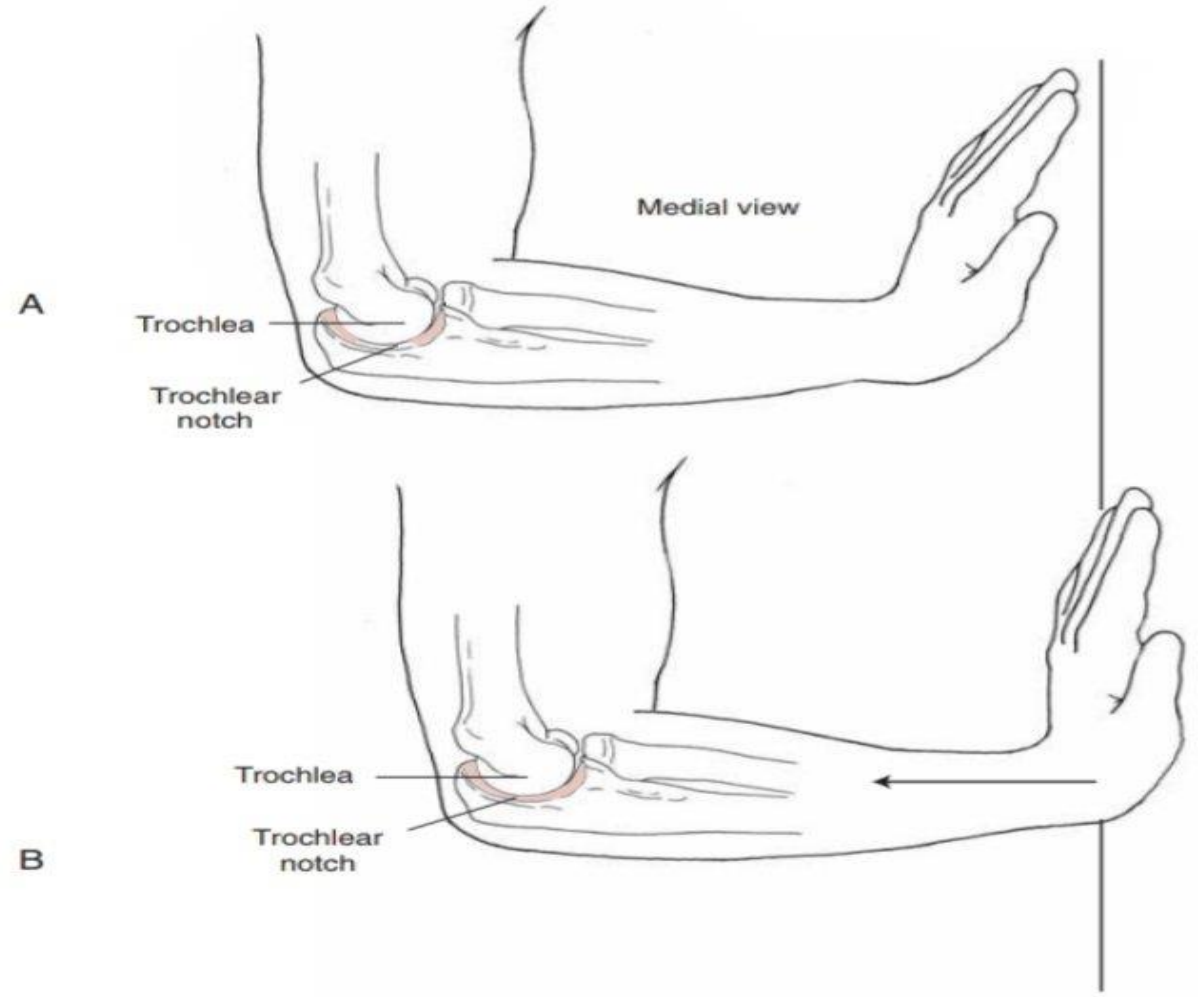


Figure 8–7 ■ **A.** No surface contact occurs between the trochlea and the center of the troclear notch from 30° to 120° of flexion. Contact is primarily on the sides of the notch under no-load conditions. **B.** Contact areas expand from the sides toward the center when a load is applied.

Articulation between radial head and capitulum

In flexion- the rim of radial head slides in the capitulotrochlear groove and enters the radial fossa.

Joint capsule

- Loose , weak anteriorly and posteriorly
- 3 joints(humeroulnar, humeroradial, superior radioulnar joint) are enclosed in a single capsule.
- Distally- capsule attaches margins of coronoid process of ulna

Joint capsule

- Medially and laterally – capsule is continuous with medial and lateral collateral ligaments.
- Posteriorly- capsule is attached to the upper edge of olecranon process and medial epicondyle.

THANKYOU