

Submitted by

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Submitted to

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ASSIGNMENT TOPIC

FOR ANATOMY LAB

{MID TERM}

➤ Write a brief note on the joints of upper limbs.


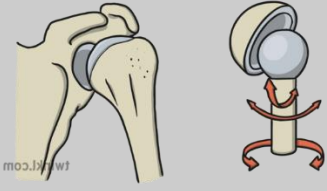




INTROCUSSION

- **JOINTS: -**

Joints are the areas where two or more bones meet together.

Here I will discuss the major joints of upper limbs briefly:

SHOULDER JOINT: (GLENOHUMERAL JOINT)		
ARTICULATION	formed between <ul style="list-style-type: none"> • the glenoid fossa of scapula (gleno-) • the head of humerus. 	 <p>Shoulder Joint</p>
TYPE	Synovial ball and socket joint.	 <p>Ball and socket joint</p>
CARTILAGE	both articular surfaces are covered with hyaline cartilage.	
GLENOID LABRUM	a fibrocartilaginous ridge surrounding the glenoid cavity. Function: <ul style="list-style-type: none"> • It deepens the cavity and creates a seal with the head of humerus, reducing the risk of dislocation. 	 <p>Glenoid Labrum</p>
CAPSULE	Surrounds by fibrous capsule. <ul style="list-style-type: none"> • Medially: attach to the margin of glenoid cavity. • Laterally: attach to the anatomical neck. Function: <ul style="list-style-type: none"> • Allows wide range of movement. 	 <p>Glenohumeral capsule</p>

LIGAMENTS

Glenohumeral ligaments: (superior, middle and inferior)

- the joint capsule is formed by this group of ligaments connecting the humerus to the glenoid fossa.

Functions:

- stability for the shoulder, holding it in place and preventing it from dislocating anteriorly.

Coracohumeral ligament:

- attaches the base of the coracoid process to the greater tubercle of the humerus.

Function:

- It supports the superior part of the joint capsule.

Transverse humeral ligament:

- spans the distance between the two tubercles of the humerus.

Functions:

- It holds the tendon of the long head of the biceps in the intertubercular groove.



Superior Glenohumeral ligament



Coracohumeral ligament

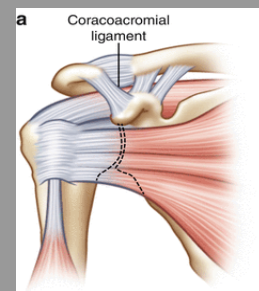
ACCESSORY LIGAMENTS

coracoacromial ligament:

- Running between the acromion and coracoid process of the scapula it forms the coracoacromial arch.

Function:

- preventing superior displacement of the humeral head.



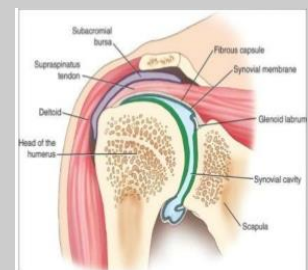
Coracoacromial ligament

SYNOVIAL MEMBRANE

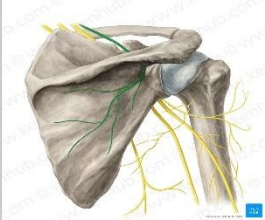
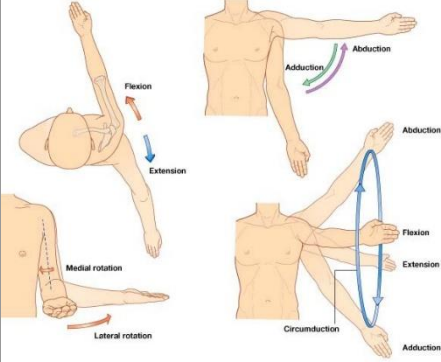
Lines the internal surface of capsule.

Functions:


- produces synovial fluid to reduce friction between the articular surfaces.
- Forms a tubular sheath around the tendon of the long head of biceps brachii.

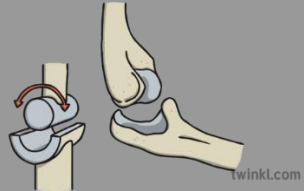
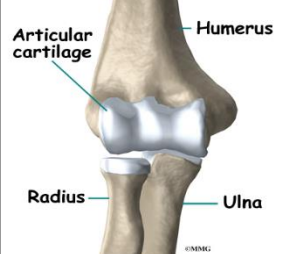



Synovial membrane

BLOOD SUPPLY	<ul style="list-style-type: none"> • Anterior and posterior circumflex humeral • circumflex scapular • suprascapular arteries 	
INNERVATION	<ul style="list-style-type: none"> • suprascapular nerve • axillary nerve 	 <p style="text-align: center;">suprascapular nerve</p>
MOVEMENTS	<ul style="list-style-type: none"> • Flexion • Extension • abduction • adduction • lateral rotation • medial rotation • circumduction 	

Now I will briefly discuss the elbow joint:

ELBOW JOINT:		
BONES	Bones involved in articulation: <ul style="list-style-type: none"> • Humerus • radius • ulna 	
ARTICULATION	Formed between <ul style="list-style-type: none"> • Trochlea and capitulum of humerus • Trochlear notch of the ulna and the head of radius. 	 <p style="text-align: center;">ELBOW JOINT</p>

TYPE	Synovial hinge joint	 <p>Hinge Joint</p>
Mnemonics	<ul style="list-style-type: none"> • CRAzy TULips (Capitulum = RADIUS, Trochlear = ULnar) • CUTER (Capitulum = Ulnar, Trochlea = Radial) 	
CARTILAGE	Hyaline cartilage	 <p>Hyaline cartilage</p>
CAPSULE	<p>Anteriorly attached to:</p> <ul style="list-style-type: none"> • Above: to humerus along upper margin of coronoid and radial fossae • To front: medial and lateral epicondyles • Below: to margin of coronoid process of ulna and anular ligament, which surrounds the head of radius. <p>Posteriorly attached to:</p> <ul style="list-style-type: none"> • Above: to margin of olecranon fossa of humerus. • Below: to upper margin and sides of olecranon process of ulna and to anular ligament. <p>Function:</p> <ul style="list-style-type: none"> • stabilise the flexing and extending motion of the arm. 	 <p>Capsule of elbow joint</p>

LIGAMENTS

Lateral collateral ligament:

- Triangular

Attached to:

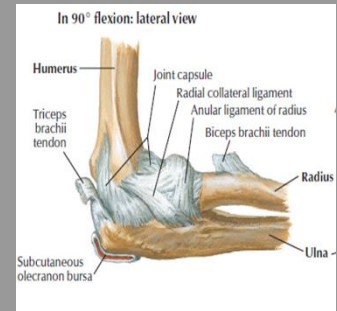
- **By Apex:** to lateral epicondyle of humerus
- **By Base:** to upper margin of anular ligament.

Medial collateral ligament:

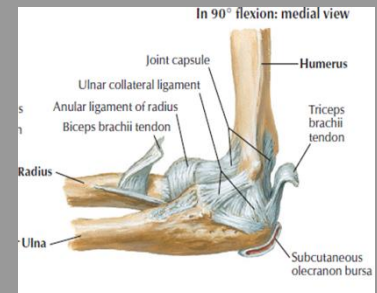
- Triangular

Consists of three strong bands:

- **Anterior band:** passes from medial epicondyle of humerus to medial margin of coronoid process.
- **Posterior band:** passes from medial epicondyle of humerus to medial side of olecranon.
- **Transverse band:** passes between the ulnar attachment of two preceding bands.



Radial collateral ligament



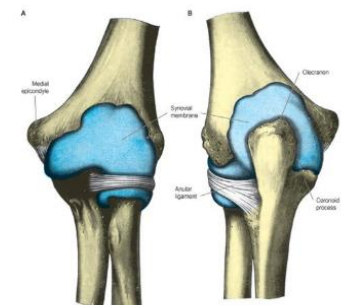
Ulnar collateral ligament

SYNOVIAL MEMBRANE

Lines the capsule.

- Continues below synovial membrane of proximal radioulnar joint.
- Covers fatty pads in the floor of:
 1. Coronoid
 2. Radial
 3. Olecranon fossa

Synovial Membrane



Synovial membrane of elbow joint

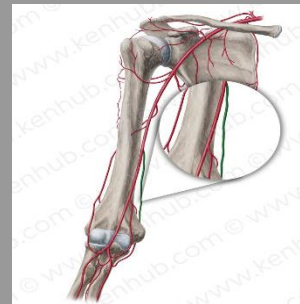
BLOOD SUPPLY

Proximal to elbow joint:

- Ulnar collateral artery
- Radial collateral artery
- Middle collateral artery

Distal to elbow joint:

- Radial recurrent artery
- Ulnar recurrent artery



Superior ulnar collateral artery

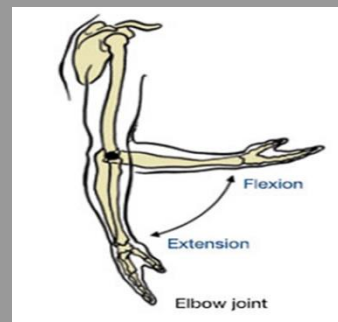
INNERVATION

Branches from:

- Median
- Ulnar
- Musculocutaneous
- Radial nerves

MOVEMENTS

- Flexion
- Extension



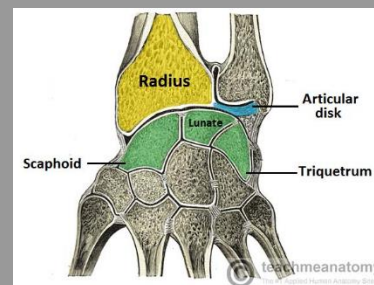
Now I will describe the 3rd major joint of the upper limbs:

Wrist Joint: (Radiocarpal Joint)

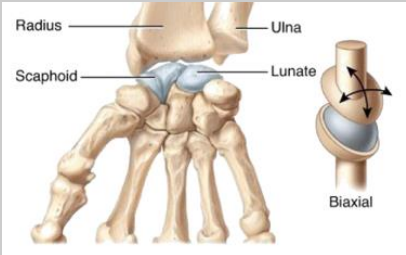


ARTICULATION

formed by:

- **Distally:** The proximal row of the carpal bones (except the pisiform).
- **Proximally:** The distal end of the radius, and the articular disk



Wrist joint

<p>TYPE</p>	<p>Synovial ellipsoid joint.</p>	 <p>Ellipsoid joint</p>
<p>CAPSULE</p>	<p>Surrounds the joint. It is dual layered:</p> <ol style="list-style-type: none"> 1. Outer layer of capsule: <ul style="list-style-type: none"> • Distally: attach to end of radius and ulna. • Proximally: attach to row of carpal bones. 	
<p>SYNOVIAL MEMBRANE</p>	<ol style="list-style-type: none"> 2. Internal layer of capsule: <ul style="list-style-type: none"> • comprised of a synovial membrane. <p>Function:</p> <ul style="list-style-type: none"> • secreting synovial fluid which lubricates the joint 	
<p>LIGAMENTS</p>	<p>There are four ligaments.</p> <p>Palmar radiocarpal: (Anterior ligament)</p> <ul style="list-style-type: none"> • passes from the radius to both rows of carpal bones. <p>Function:</p> <ul style="list-style-type: none"> • Increasing stability • Ensure that the hand follows the forearm during supination. <p>Dorsal radiocarpal: (posterior ligament)</p> <ul style="list-style-type: none"> • passes from the radius to both rows of carpal bones. <p>Functions:</p> <ul style="list-style-type: none"> • Contributes to the stability of the wrist • Ensures that the hand follows the forearm during pronation. 	 <p>Palmer Radiocarpal ligament</p>  <p>Dorsal Radiocarpal Joint</p>

Ulnar collateral: (Medial ligament)

- Runs from the ulnar styloid process to the triquetrum and pisiform.

Function:

- Works in union with the other collateral ligament to prevent excessive lateral joint displacement.

Radial collateral: (Lateral ligament)

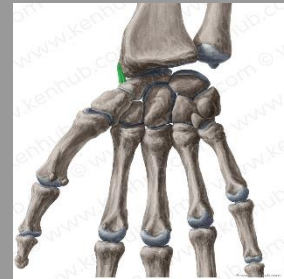
- Runs from the radial styloid process to the scaphoid and trapezium.

Function:

- to limit overextension of the wrist joint.



Ulnar collateral ligament



Radio collateral ligament

BLOOD SUPPLY

Branches of:

- dorsal and palmar carpal arches



Deep palmer arches

INNERVATION

Anterior interosseous nerve:

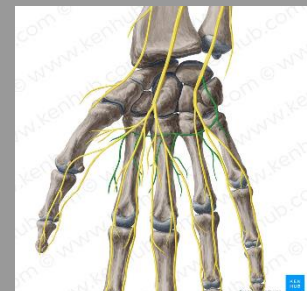
- arising from median nerve (C5-T1)

Posterior interosseous nerve:

- arising from radial nerve (C7-C8)

Deep and dorsal branches of:

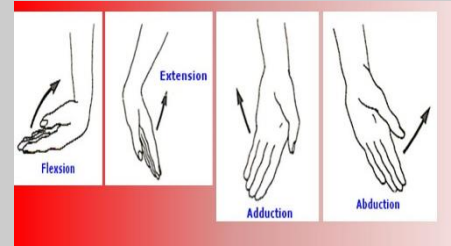
- ulnar nerve (C8-T1)



Deep branches of ulnar nerve

MOVEMENT

- Flexion
- Extension
- Adduction
- Abduction



Now I am going to briefly describe Hand and Finger Joints:

Five sets of synovial joints comprise the hand and finger joints:

- Intercarpal Joints
- Carpometacarpal Joints
- Intermetacarpal Joints
- Metacarpophalangeal Joints
- Interphalangeal Joints

INTERCARPAL JOINT

ARTICULATION

connect the carpal bones.
Gather three sets of joints.

1. Joints of the proximal carpal row:

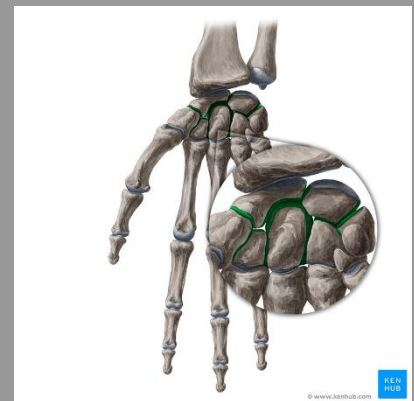
- connect the adjacent surfaces of the scaphoid, lunate and triquetrum bones.

2. Joints of the distal carpal row:

- connect adjacent surfaces of the trapezium, trapezoid, capitate, and hamate bones.

3. Midcarpal joint:


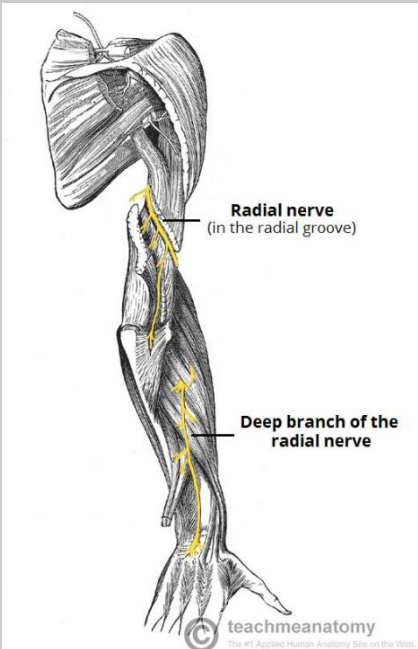
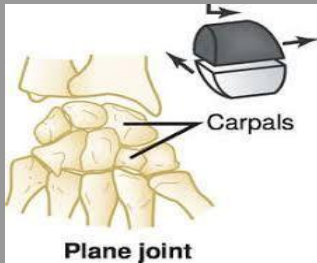
- carpal rows articulate with each other.



INTERCARPAL JOINTS

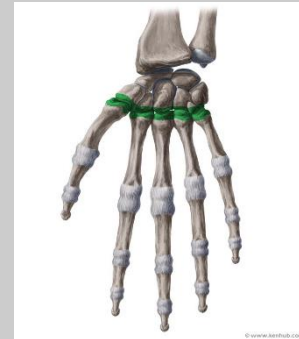
TYPE

Synovial plane joints

CAPSULE	Surrounds joint	
LIGAMENT	Bones are strongly united by: <ul style="list-style-type: none"> • Interosseous ligaments • Anterior ligament • Posterior ligament 	 <p>Interosseous ligaments</p>
SYNOVIAL MEMBRANE	<ul style="list-style-type: none"> • responsible for the secretion of synovial fluid • keeping the joint lubricated 	
INNERVATION	<ul style="list-style-type: none"> • Anterior interosseous nerve • Deep branches of radial nerve • Deep branches of ulnar nerve 	 <p>Radial nerve (in the radial groove)</p> <p>Deep branch of the radial nerve</p> <p>© teachmeanatomy The #1 Applied Human Anatomy Site on the Web.</p>
MOVEMENT	Gliding	 <p>Carpals</p> <p>Plane joint</p>




CARPOMETACARPAL AND INTERMETACARPAL JOINTS

1. Both joints are synovial plane joint
2. possessing similar ligaments.
 - Anterior ligament
 - Posterior ligament
 - Interosseous ligament
3. They have common joint cavity
4. They move by gliding over one another.


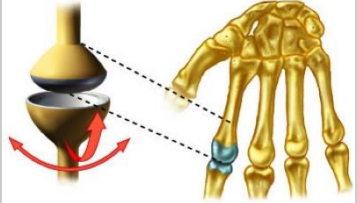

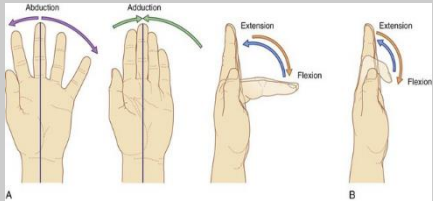


JOINT OF THUMB

CARPOMETACARPAL

ARTICULATION	Formed between: Trapezium and base of 1 st metacarpal.	
TYPE	Synovial saddle shaped joint.	 <p style="text-align: center;">Saddle shaped joint</p>
CAPSULE	Surrounds joint.	
SYNOVIAL MEMBRANE	Forms joint cavity.	
MOVEMENT	<ul style="list-style-type: none"> • Flexion • Extension • Abduction • Adduction • Rotation 	

METACARPOPHALANGEAL JOINTS

ARTICULATION	Formed between: <ul style="list-style-type: none"> • Heads of metacarpals and the base of proximal phalanges. 	 <p>Metacarpophalangeal Joints</p>
TYPE	Synovial condyloid joint.	
CAPSULE	Surrounds the joint	
LIGAMENT	<ul style="list-style-type: none"> • Collateral ligament • Palmar ligament • Deep transverse metacarpal ligaments 	 <p>Collateral ligament</p>
SYNOVIAL MEMBRANE	Forms joint cavity.	
MOVEMENT	<ul style="list-style-type: none"> • Flexion • Extension • Abduction • Adduction 	

INTERPHALANGEAL JOINTS

Structure of these joints are similar to metacarpophalangeal joints except the type of joints as it is synovial hinge joints.