

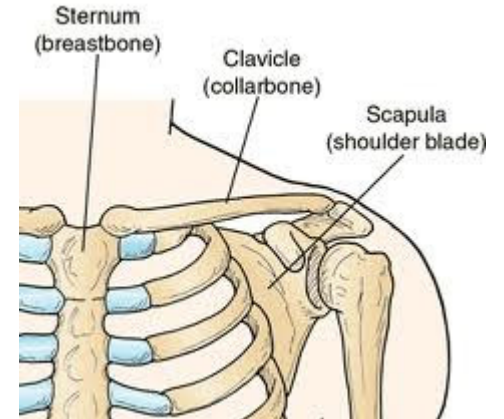


Joints of the upper extremity

JOINTS OF THE UPPER EXTREMITY

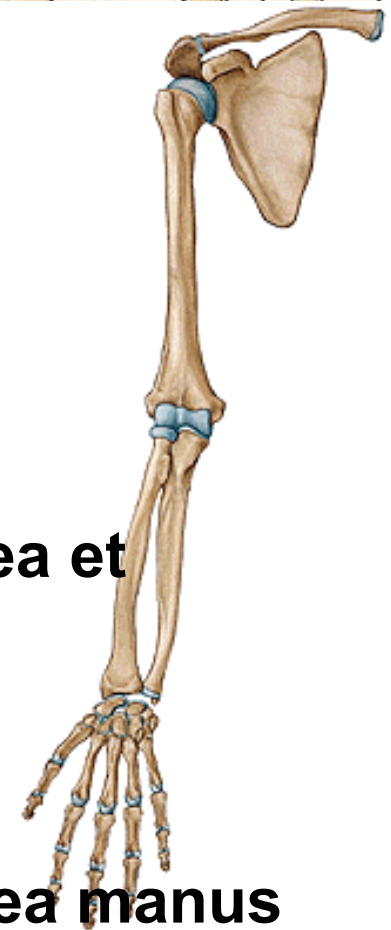
Joints of girdle bones:

scapula + clavicle – **art. acromioclavicularis**
clavicle + sternum – **art. sternoclavicularis**



Joints of bones of free upper extremity:

humerus + scapula – **art. humeri**
humerus + radius + ulna – **art. cubiti**
radius + ulna – **membrana interossea antebrachii**
– **art. radioulnaris distalis**
radius + carpal bones – **art. radiocarpea**
carpal bones between themselves – **art. mediocarpea et intercarpea**
carpal + metacarpal bones – **art. carpometacarpea**
metacarpal bones + proximal phalanges – **art. metacarpophalangea**
phalanges between themselves – **art. interphalangea manus**



Joints of girdle bones

I. Articulatio sternoclavicularis

Type: composed joint- discus articularis is inserted

Type of joint: spherical joint (is bound to movements of scapula)

Articular head: facies articularis sternalis claviculae

articular pit: incisura clavicularis manubrii sterni

articular capsule: tough, short

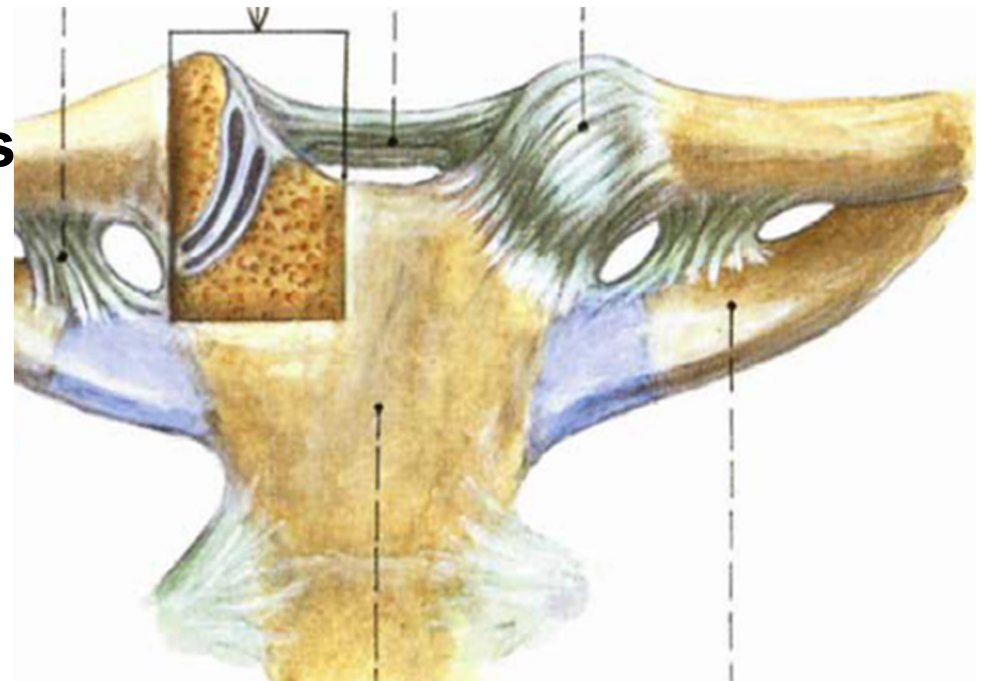
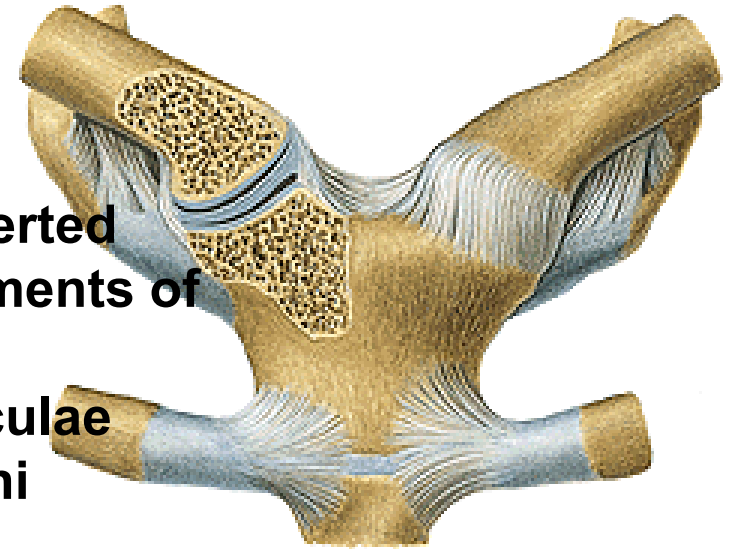
Ligaments:

lig. sternoclaviculare anterius

lig. sternoclaviculare posterius

lig. interclaviculare

lig. costoclaviculare



Movements: in all directions but in a small range

II. Articulatio acromioclavicularis

Type: spherical joint, sometimes discus articularis is inserted

articular surfaces: facies art. acromialis (clavicula) + facies art. acromii

articular capsule: tough, short

Ligaments:

lig. acromioclaviculare

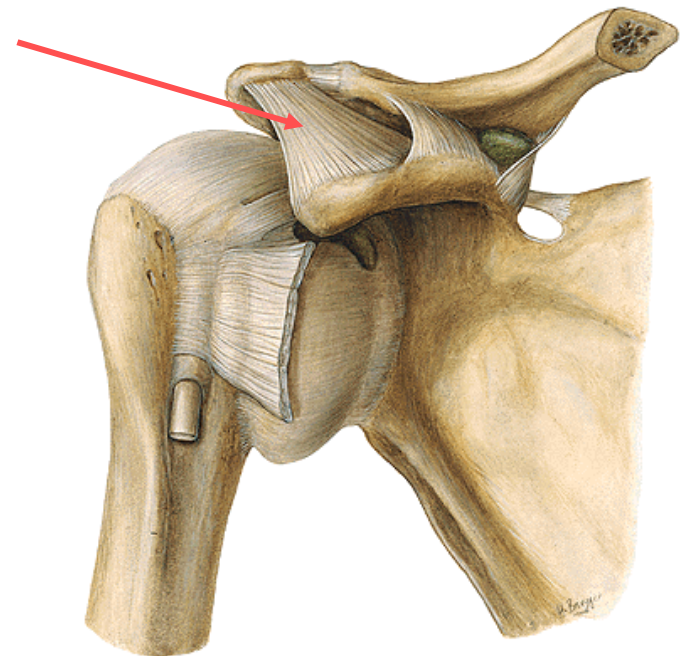
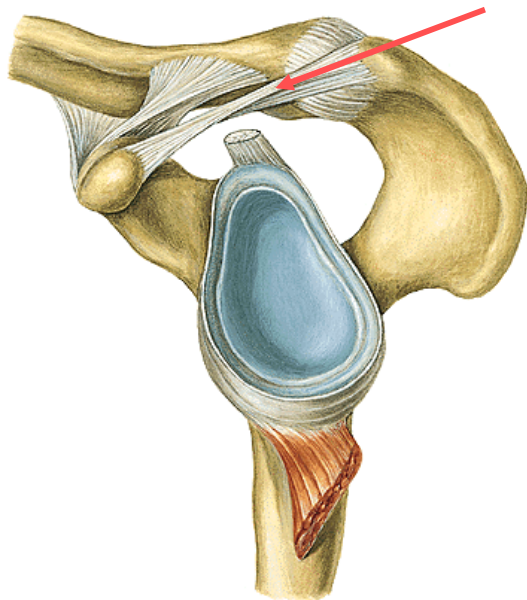
lig. coracoclaviculare

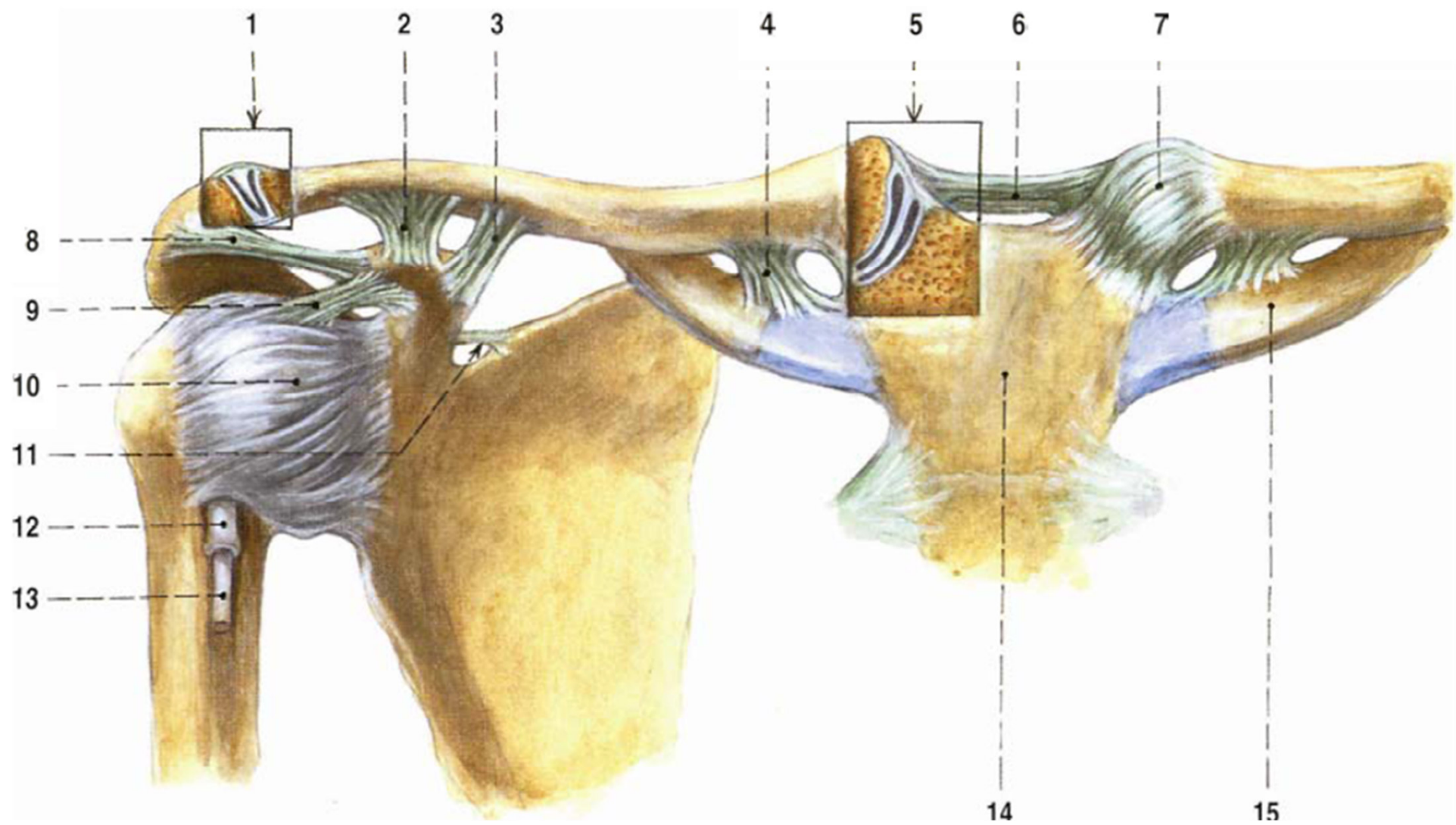
lig. trapezoideum

lig. conoideum

lig. coracoacromiale - fornix humeri

Movements: restricted





Syndesmoses:

lig. transversum scapulae

Movements of scapula:

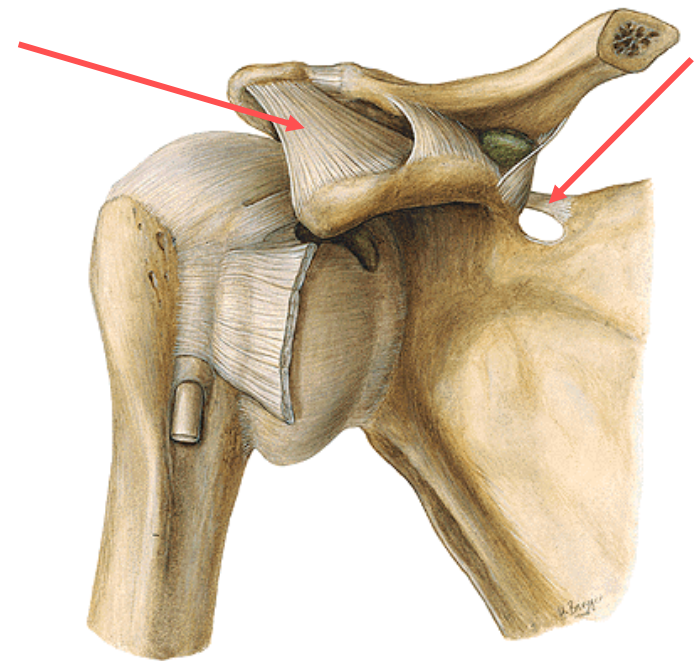
Retraction

Protraction

Elevation

Depression

Rotation





Joints of bones of free upper extremity

Articulario humeri (shoulder joint)

Type: spherical, free

articular head: caput humeri

articular pit: **cavitas glenoidalis** , enlarged by **labrum glenoidale**

articular capsule: **collum anatomicum humeri**

On the ventral side of the capsule, there appears the tendon of long head of biceps.

Ligaments:

lig. coracohumerale

ligg. glenohumeralia

lig. coracoacromiale

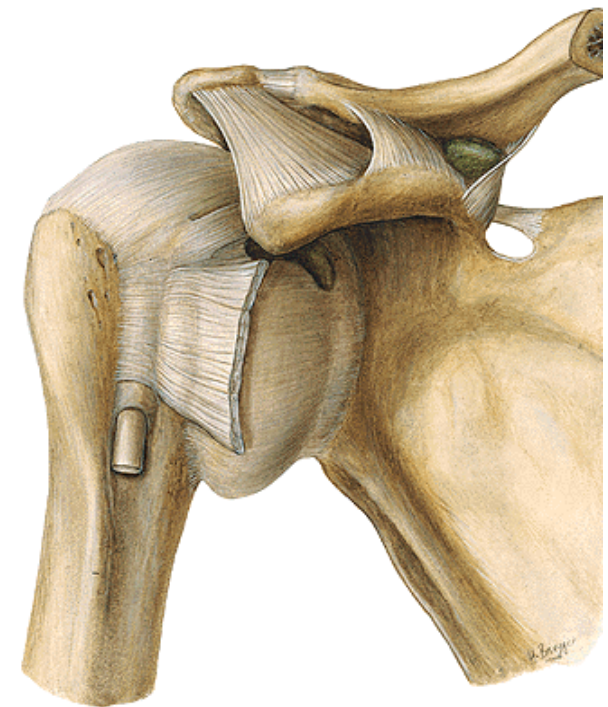
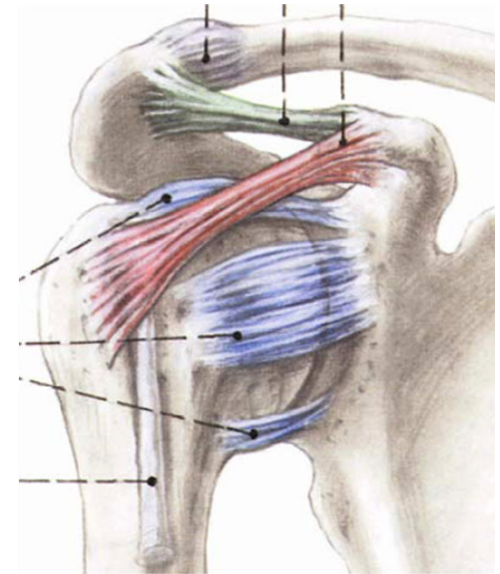
Bursa subacromialis, subcoracoidea, subdeltoidea

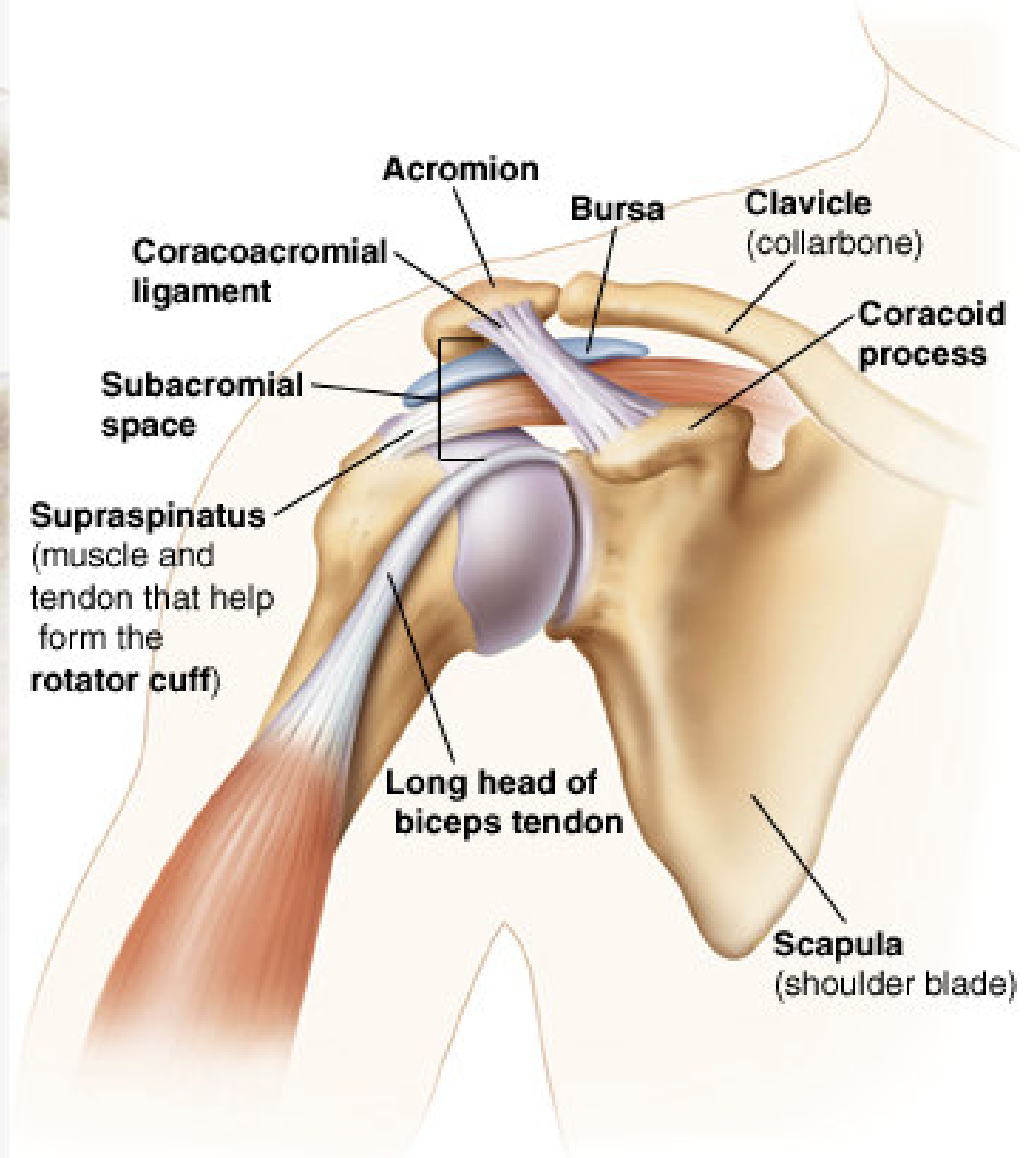
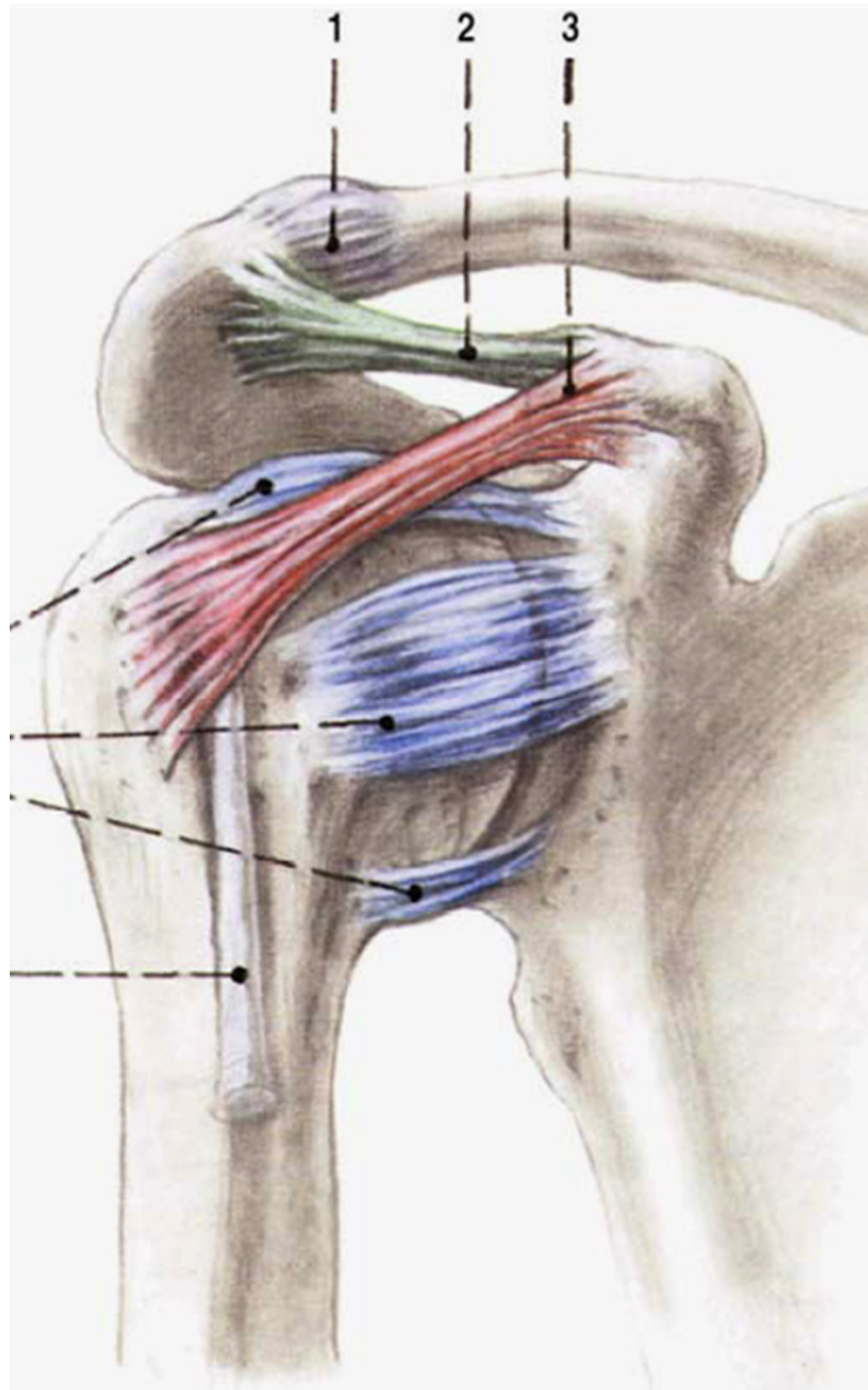
movements: **flexion and extension**

abduction (from horizontal line only together with movement of scapula)

adduction

rotation- supination, pronation





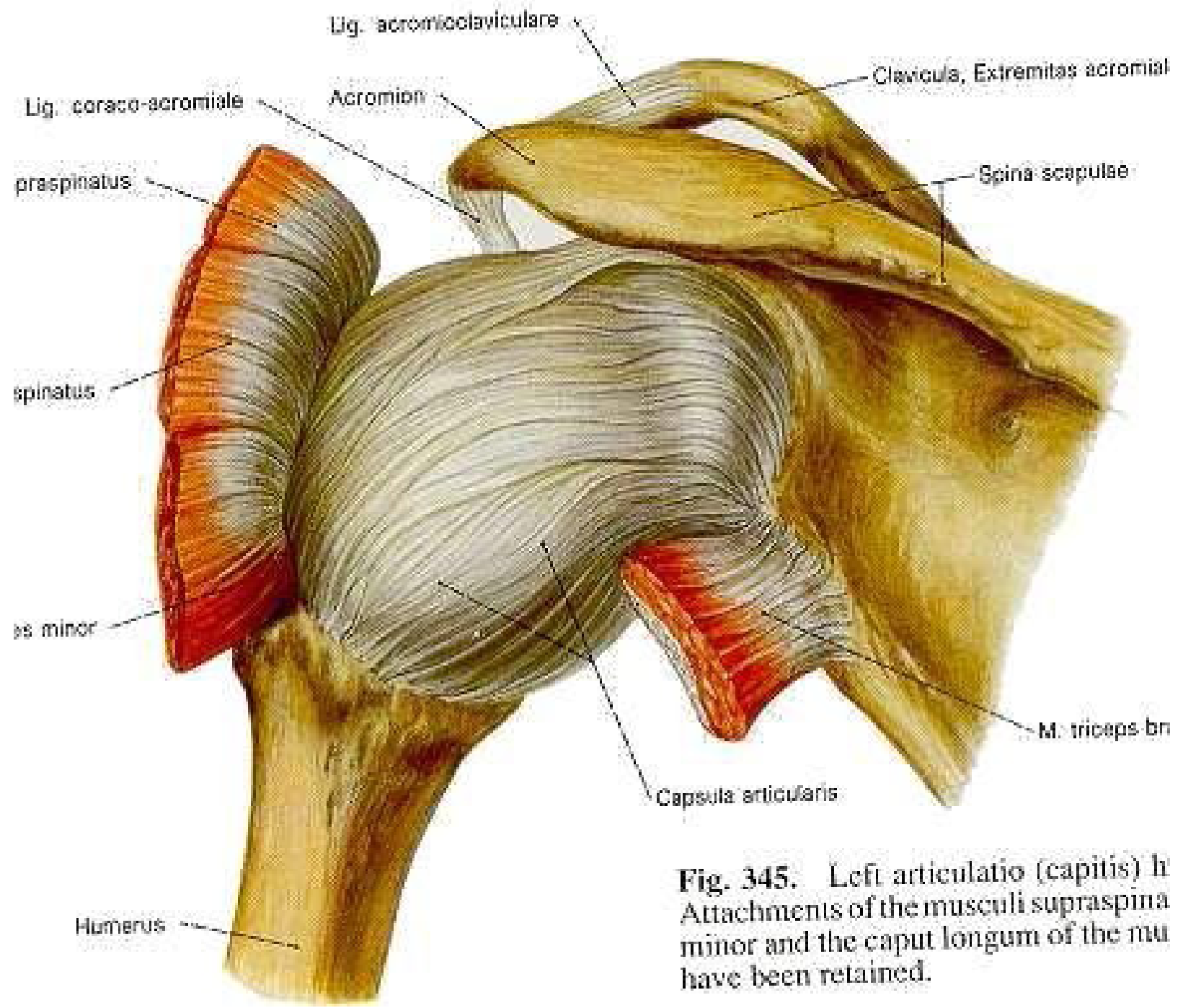
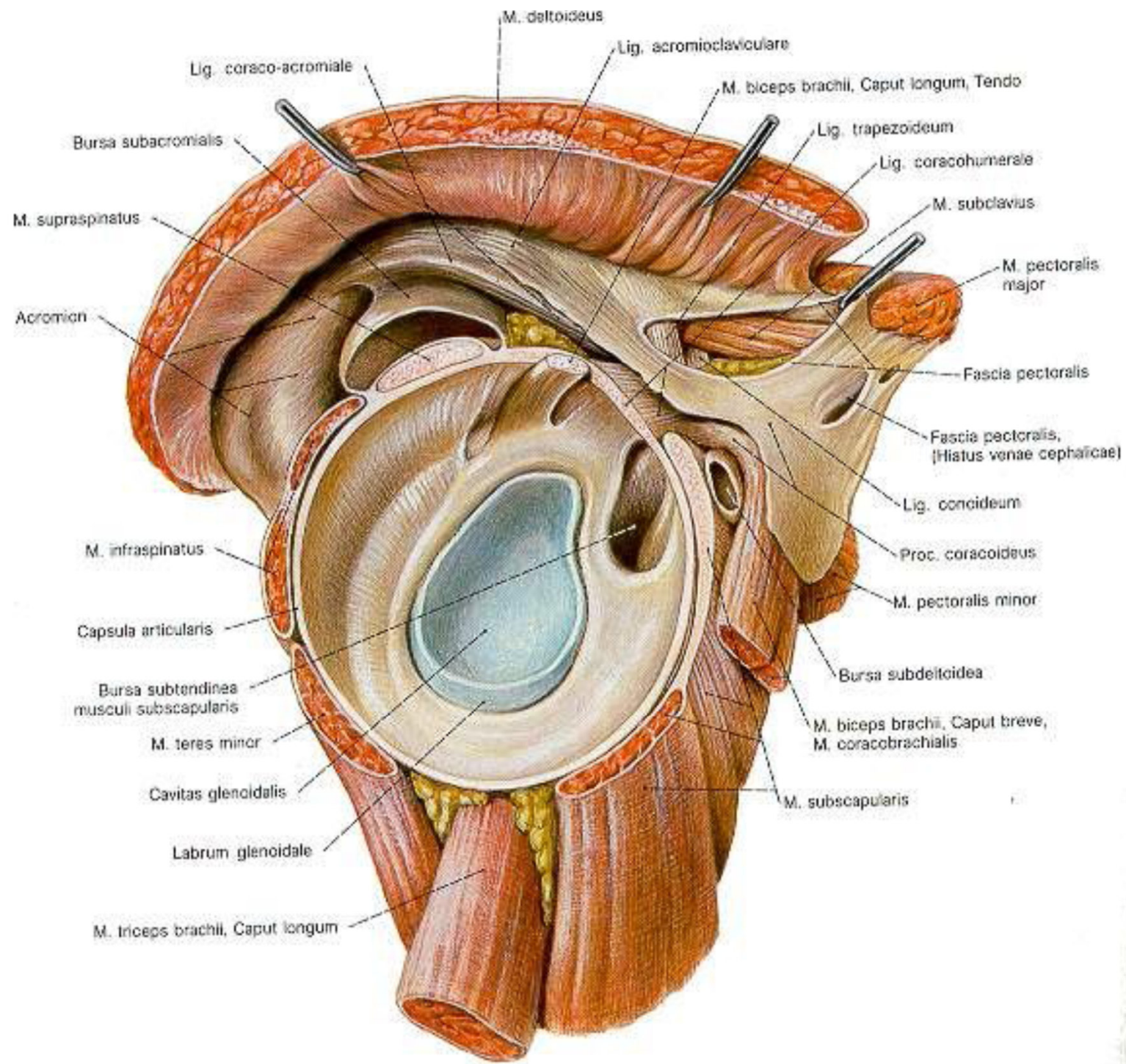
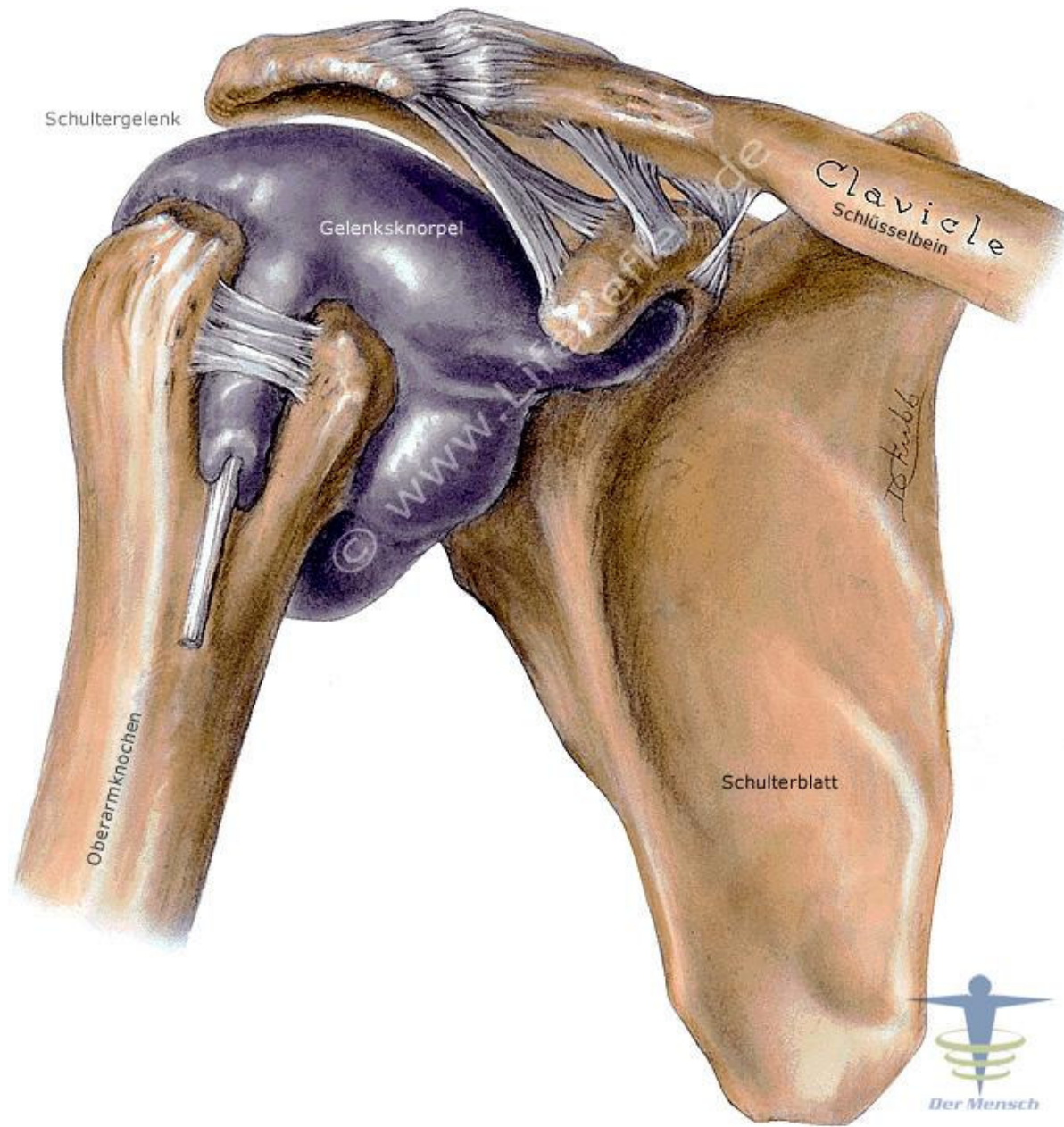


Fig. 345. Left articulatio (capitis) h
 Attachments of the musculi supraspinatus
 minor and the caput longum of the musculi
 triceps have been retained.





Schultergelenk

Gelenksknorpel

Clavicle
Schlüsselbein

Oberarmknochen

Schulterblatt





Articulario cubiti (elbow joint)

Type: **composed joint**

Articulatio humeroulnaris

Type: **trochlear joint**

articular head: **trochlea humeri**

Articular pit: **incisura trochlearis ulnae**

Articulatio humeroradialis

Type: **spherical joint**

articular head : **capitulum humeri**

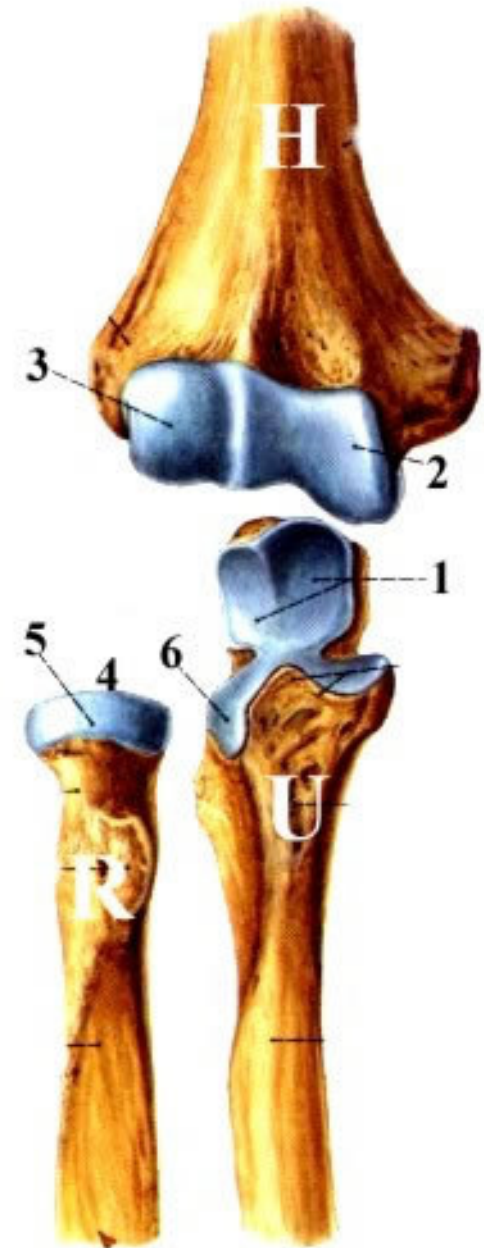
Articular pit : **fovea articularis radii**

Articulatio radioulnaris proximalis

Type: **wheel joint**

articular head : **circumferentia articularis radii**

Articular pit : **incisura radialis ulnae**



Articular capsule: it covers all three articulations
It is attached to the margins of articular surfaces, on radius reaches to collum- recessus sacciformis

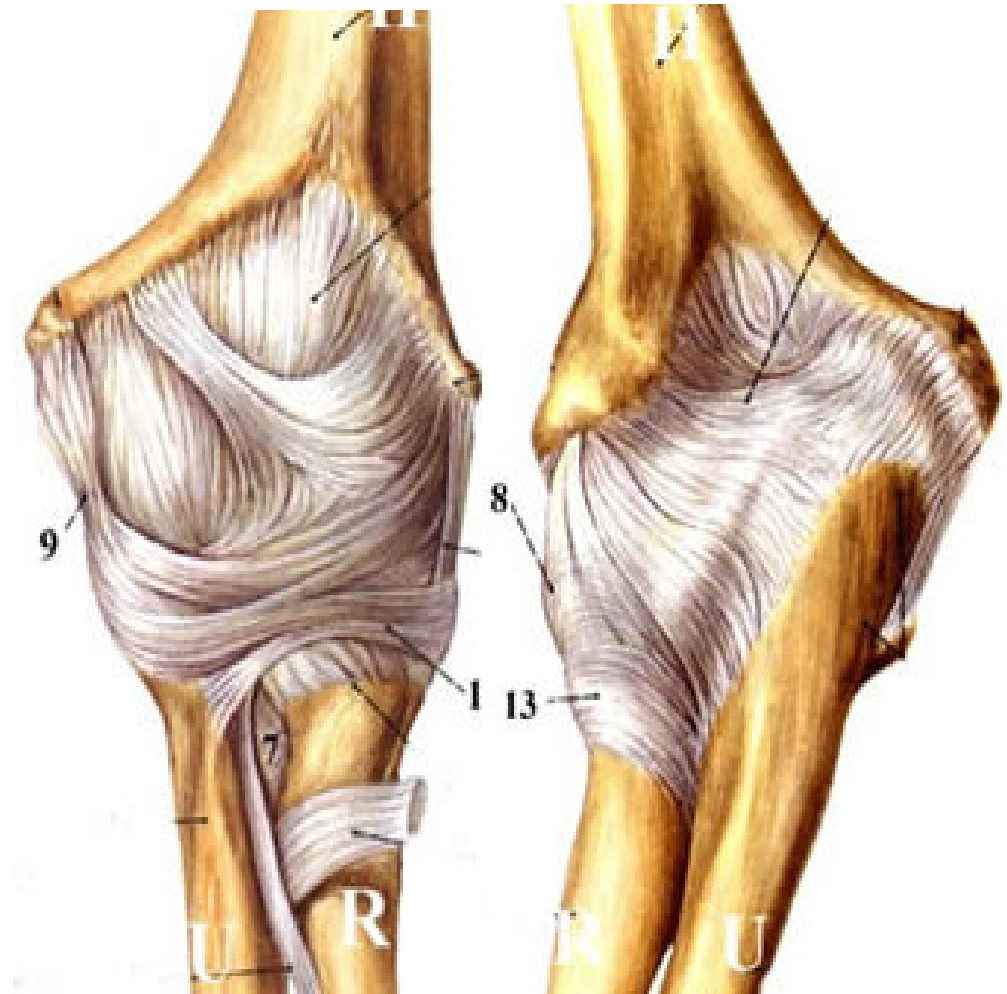
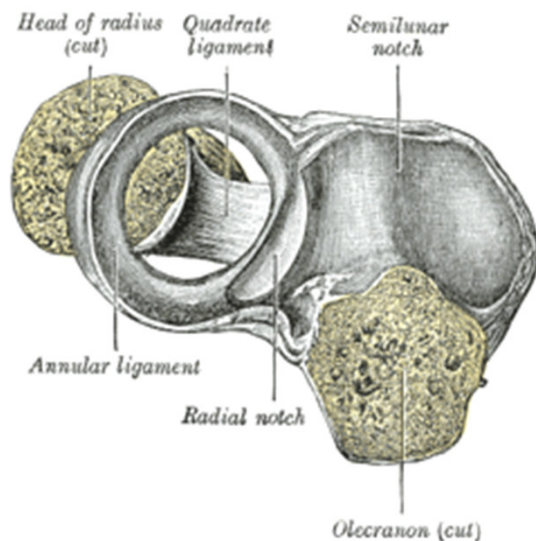
Ligaments:

lig. collaterale radiale

lig. collaterale ulnare

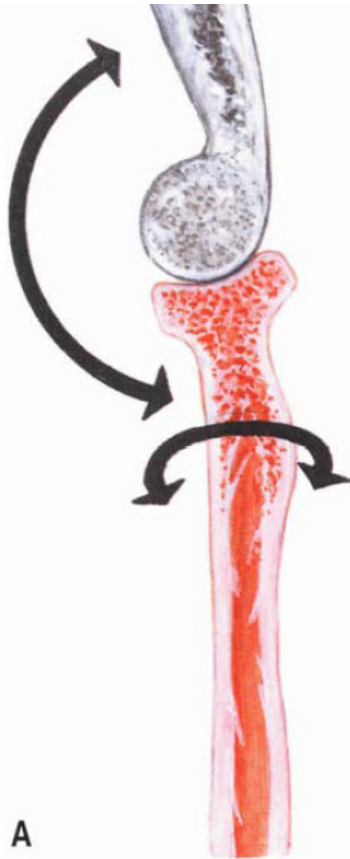
lig. obliquum

lig. anulare radii

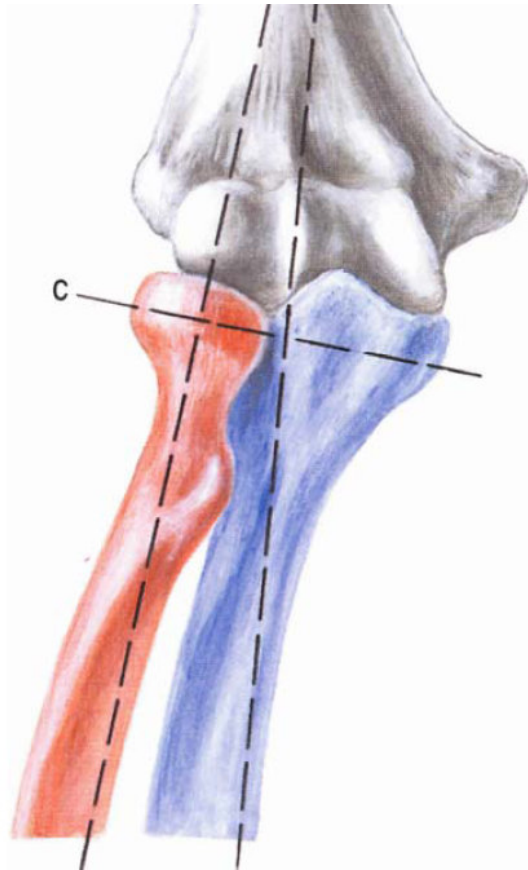


Movements: flexion, extension

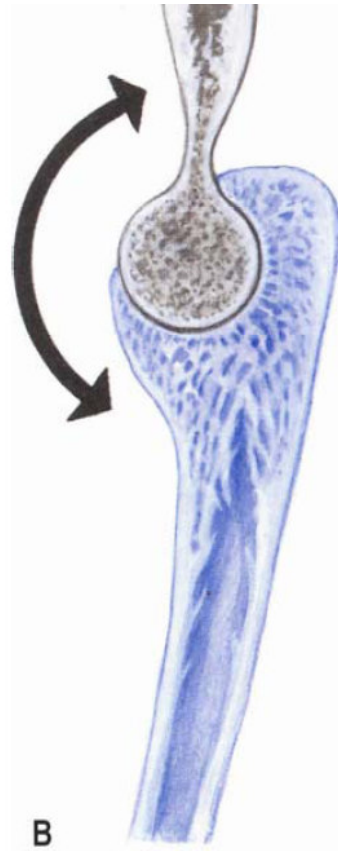
Art. radioulnaris proximalis together with **art. radioulnaris distalis** - pronation, supination



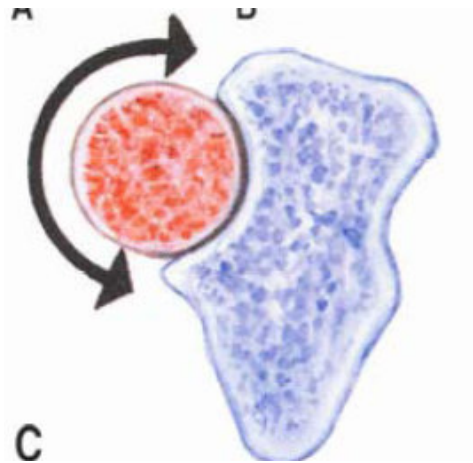
A



C



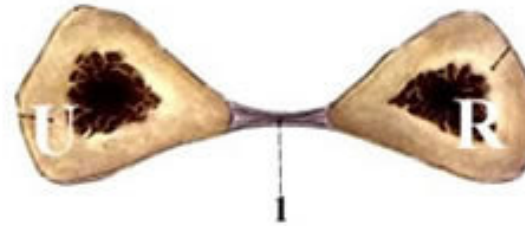
B



C



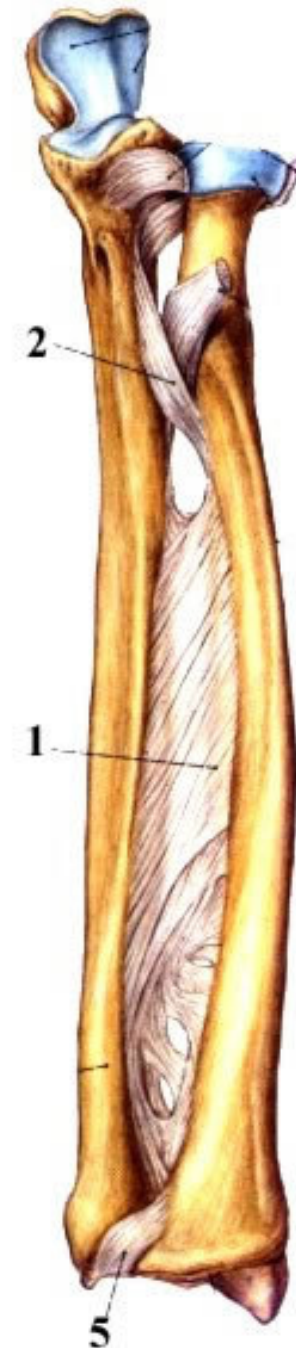
Syndesmosis radioulnaris



membrana interossea antebrachii

Fibrous membrane which is stretched between margo interosseus radii and margo interosseus ulnae

chorda obliqua



Articulatio radioulnaris distalis

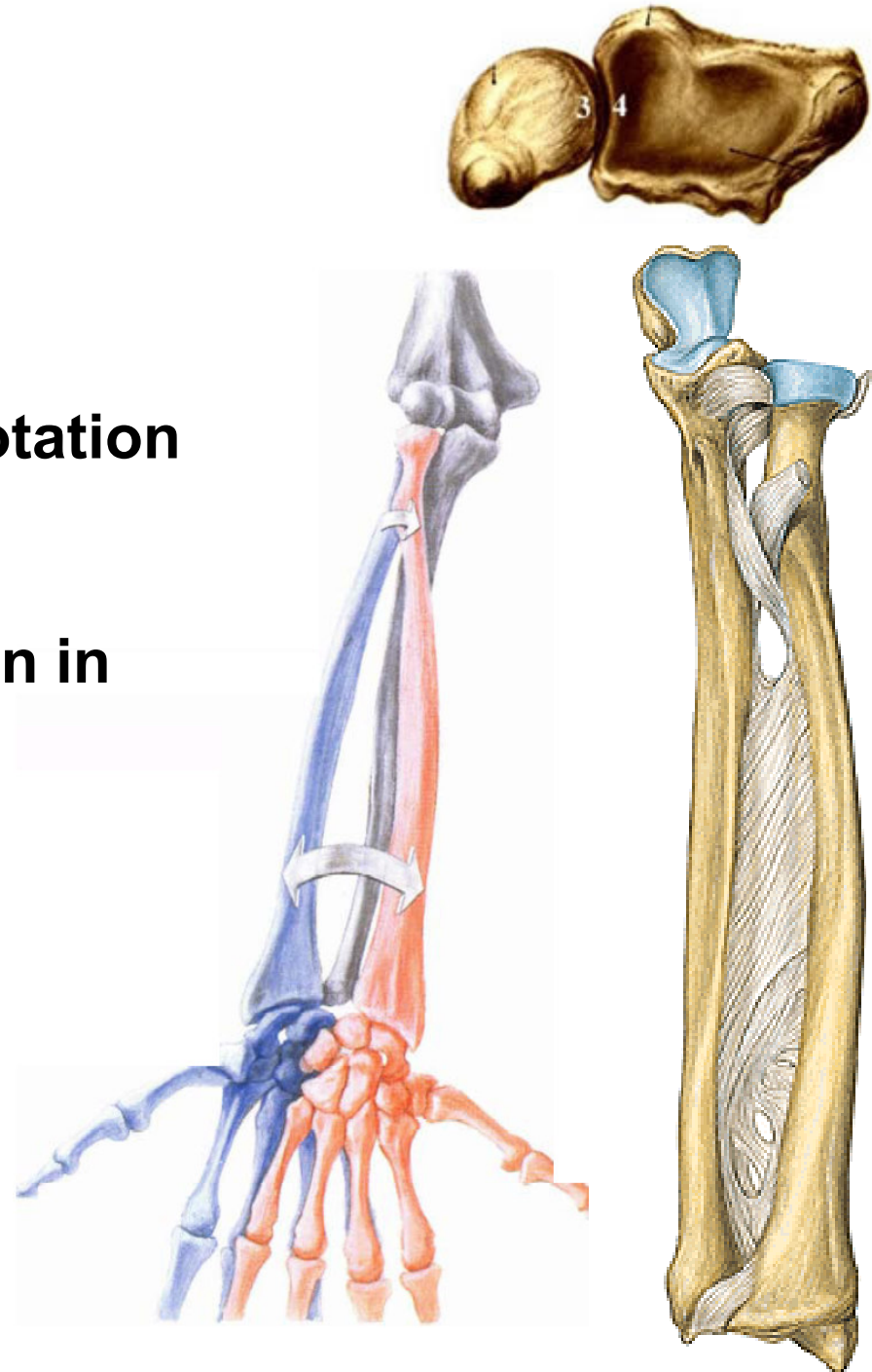
Type: wheel joint

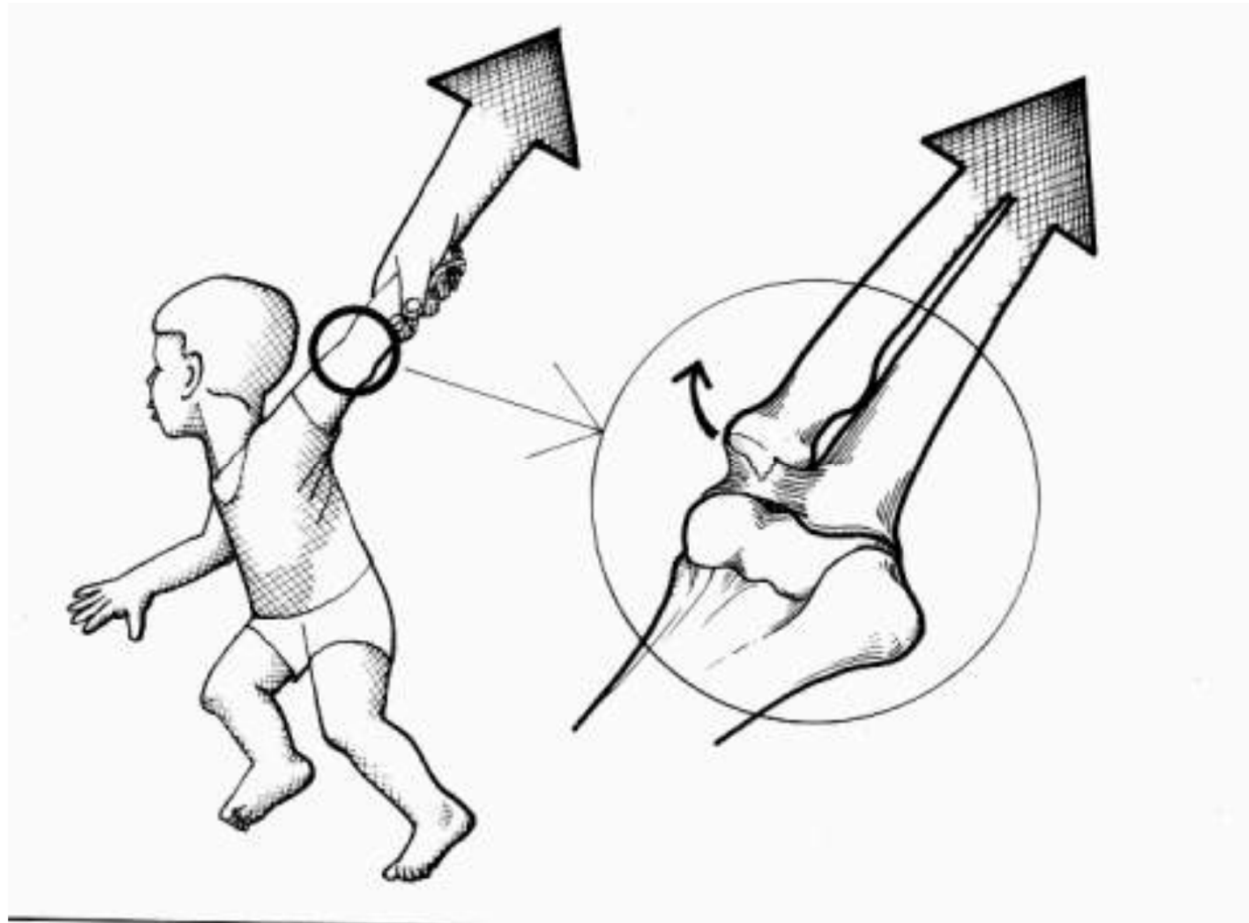
Articular head: caput ulnae

Articular pit: incisura ulnaris radii

Articular capsule: free, it allows rotation of radius around caput ulnae

movements: together with rotation in art. radioulnaris proximalis supination and pronation





pronatio dolorosa – common injury in childhood–
Radial head subluxation, the head falls out from lig.
anulare radii through a strong thrust in pronation

Joints of the hand Articulationes manus

ARTICULATIO RADIOCARPALIS

Between radius and carpal bones

ARTICULATIO MEDIOCARPALIS

between proximal and distal row of carpal bones

ARTICULATIONES INTERCARPALES

between single carpal bones

ARTICULATIONES CARPOMETACARPALES

between distal row of carpal bones and metacarpal bones

ARTICULATIONES INTERMETACARPALES

between bases of neighbouring metacarpal bones

ARTICULATIONES METACARPOPHALANGEALES

heads of metacarpal bones with proximal phalanges

ARTICULATIONES INTERPHALANGEALES

Between phalanges

retinaculum musculorum flexorum

(lig. carpi transversum)

between eminentia carpi radialis et ulnaris -> canalis carpi



Articulatio radiocarpalis

Type: composed, elipsoidal

articular head: os scaphoideum, os lunatum, os triquetrum

articular pit: facies articularis carpalis radii, discus articularis

articular capsule: tough and short

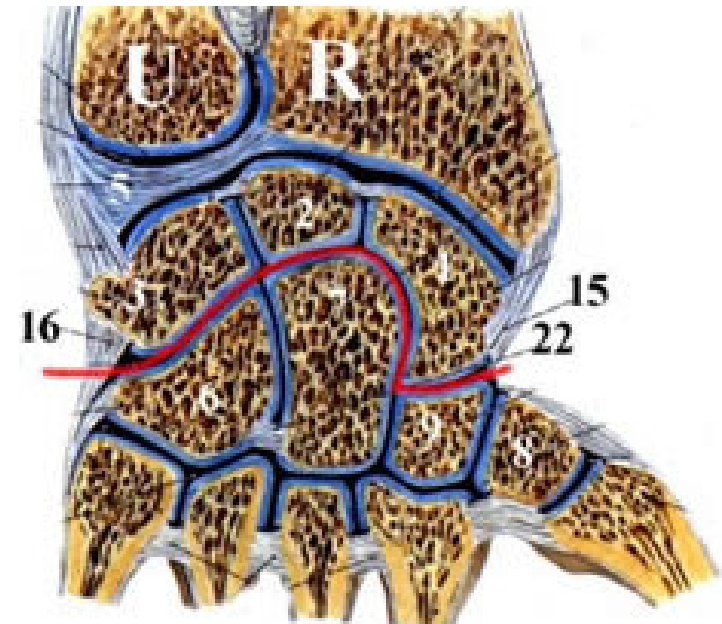
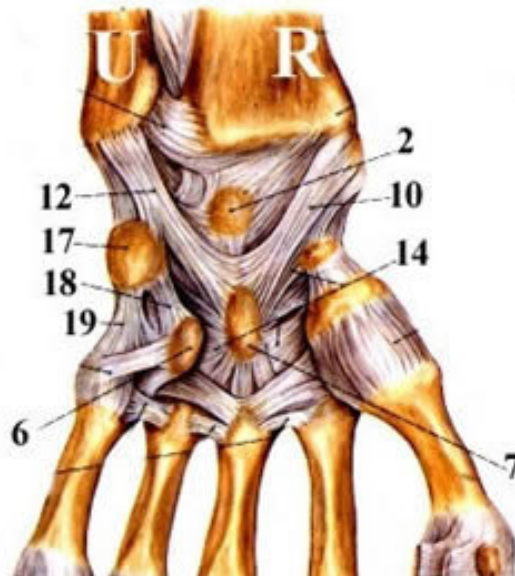
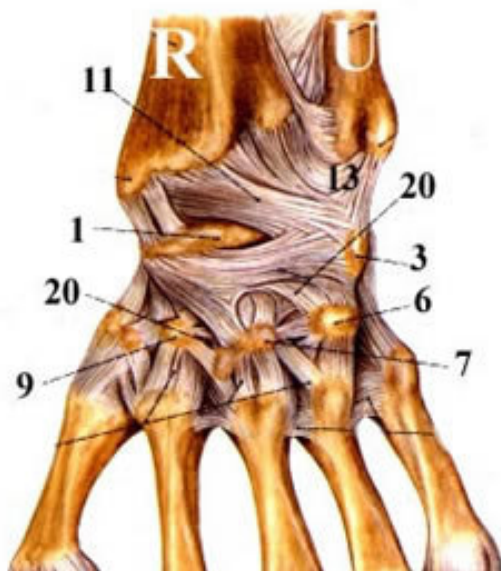
Ligaments: are common with articulatio mediocarpalis

movements: functional unit with mediocarpal, intercarpal and carpometacarpal joints

palmar and dorsal flexion

radial and ulnar duction

circumduction

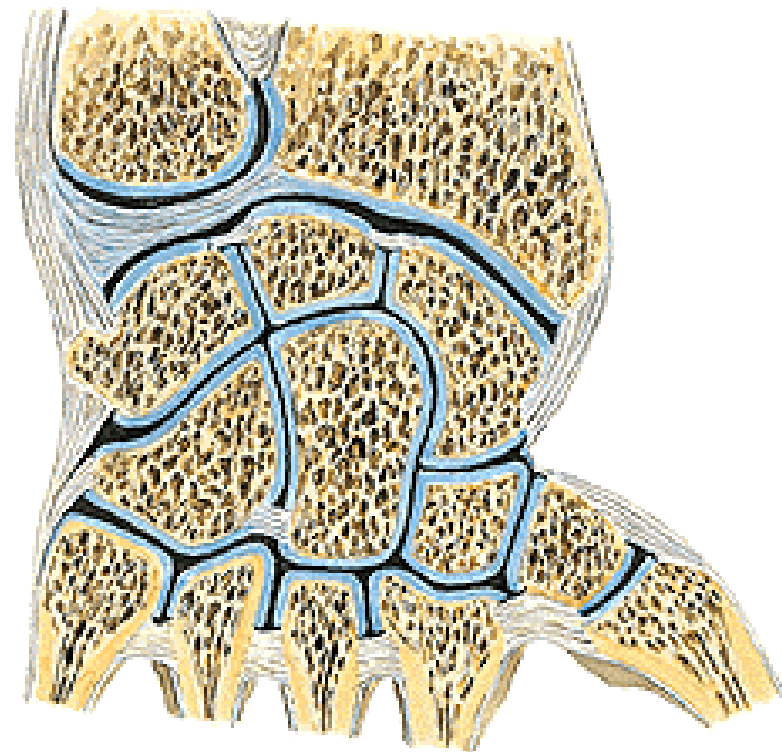
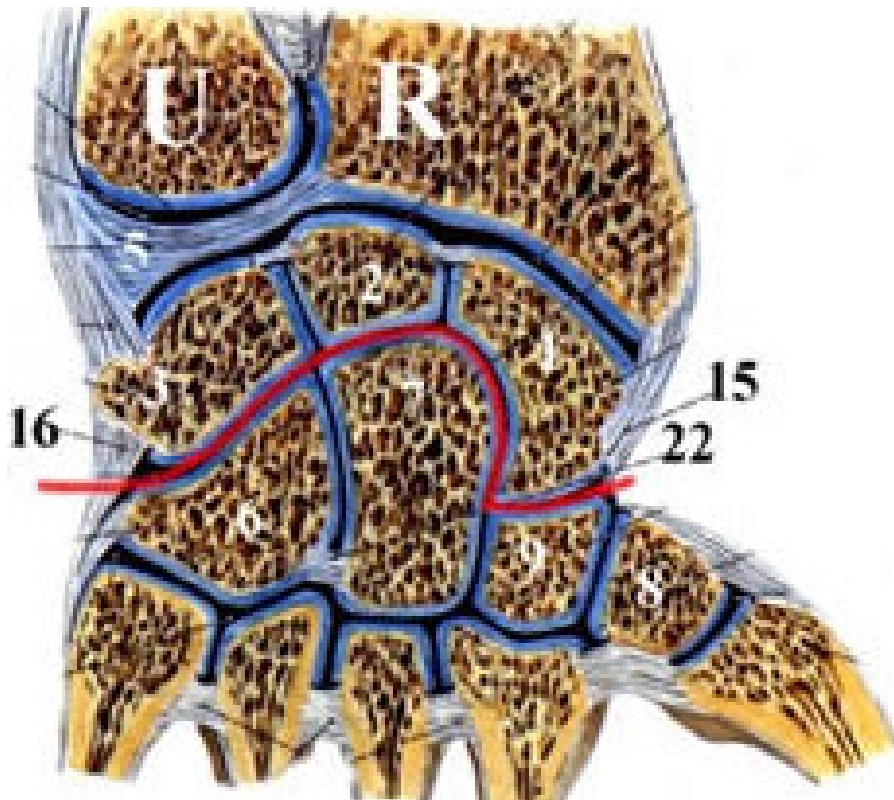


Articulatio mediocarpalis

Type: **elipsoidal, composed,**
articular head on ulnar side: **os hamatum, os capitatum**
articular head on radial side : **os scaphoideum**

articular pit on ulnar side : **os scaphoideum, os lunatum,**
os triquetrum

articular pit on radial side : **os trapezium, os trapezoideum**
articular capsule : **tough and short**



Ligaments:

lig. intercarpea dors., ventr., interossea

lig. radiocarpale palmare et dorsale

lig. ulnocarpale palmare et dorsale

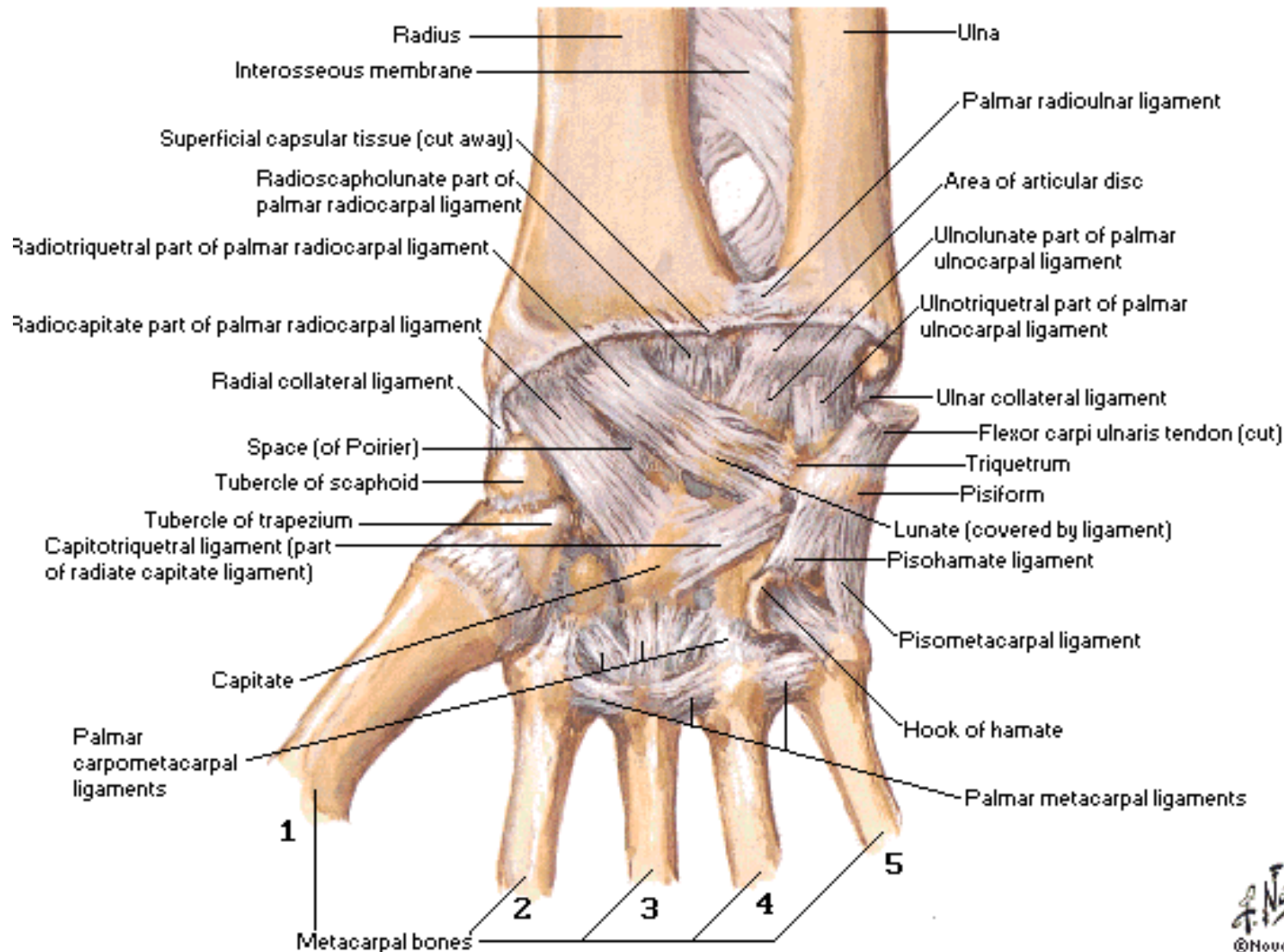
lig. carpi radiatum

lig. collaterale carpi radiale et ulnare

movements: **functional unit with mediocarpal, intercarpal and carpometacarpal joints**

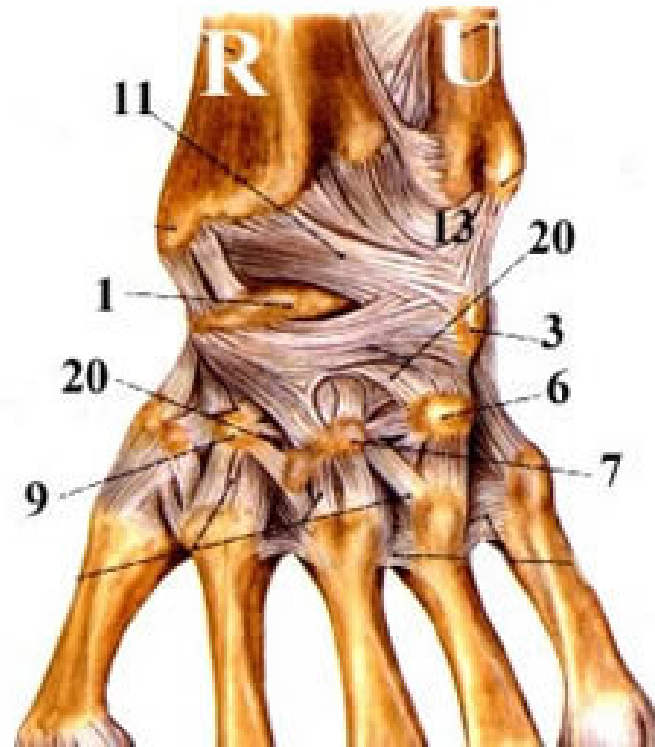
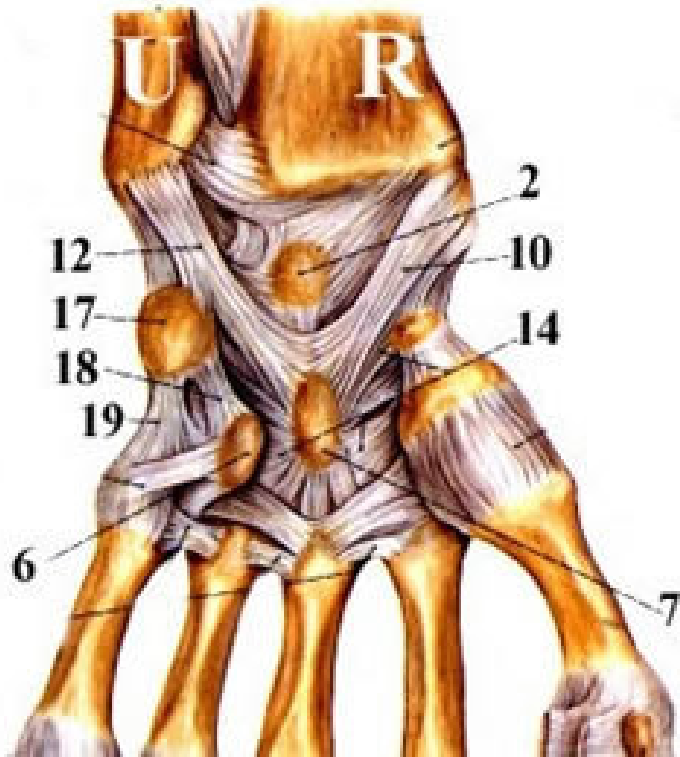
**palmar and dorsal flexion,
radial and ulnar duction, circumduction**

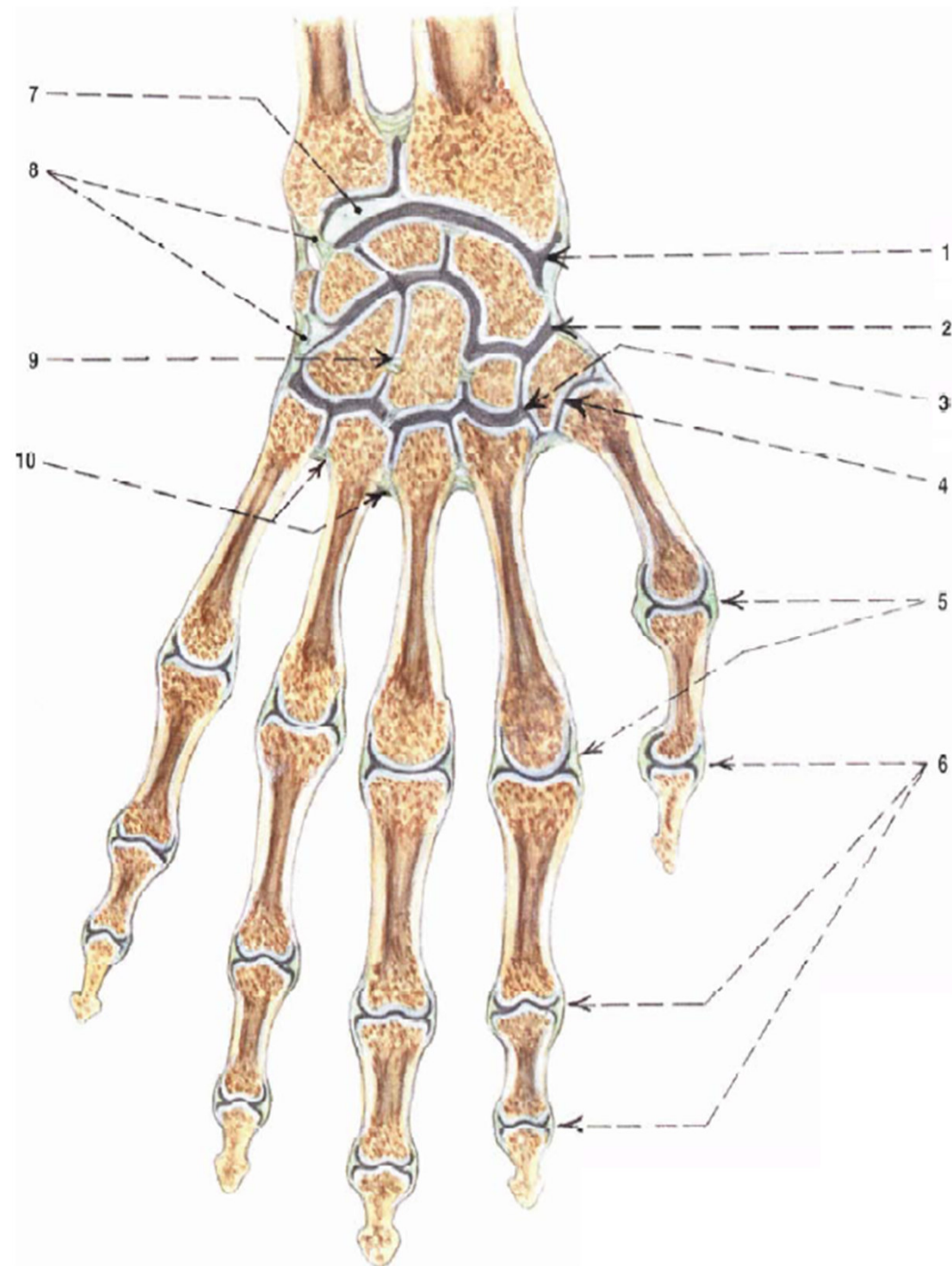
Articulatio ossis pisiformis: tough joint between os pisiforme and os triquetrum - amfiarthrosis
lig. pisohamatum
lig. pisometacarpeum
(both are continuation of tendon of m. flexor carpi ulnaris)



Articulaciones intercarpales

- **Connections between the single carpal bones**
ligg. intercapalia dorsalia
ligg. intercarpalia palmaria
ligg. intercarpales interossea





Articulationes carpometacarpales II.-V.

Type: composed joint, amphiarthrosis

articular surfaces: basis of 2nd metacarpal bone -
os trapezium, os trapezoideum a os capitatum

basis of 3rd metacarpal bone - os capitatum

bases of 4th and 5th metacarpal bone - os
hamatum

Bases of metacarpal none between themselves

articular capsules: tough, short

Ligaments:

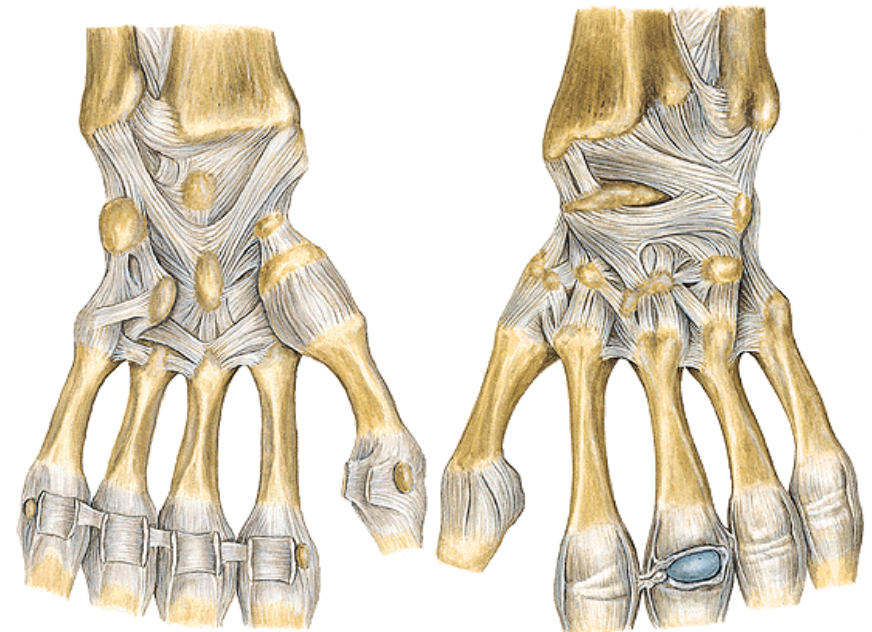
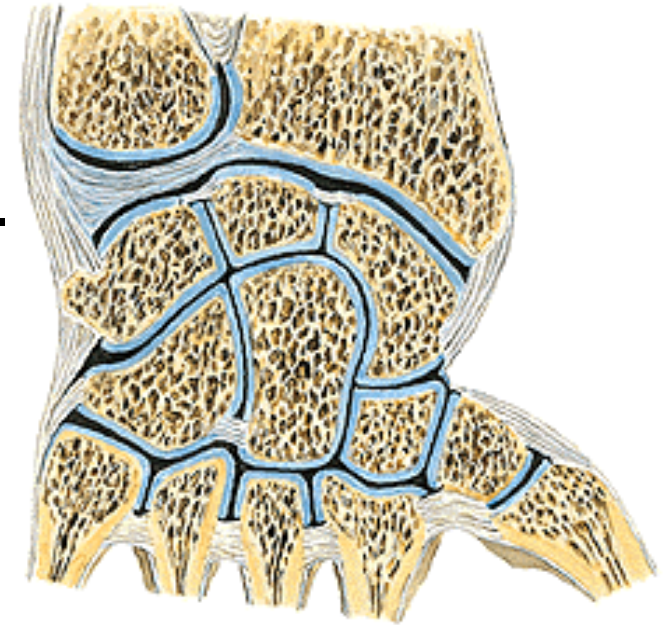
ligg. carpometacarpea dorsalia

ligg. carpometacarpea palmaria

ligg. carpometacarpea interossea

ligg. metacarpea palm., dors., interossea

movements: minimal



Articulatio carpometacarpalis pollicis

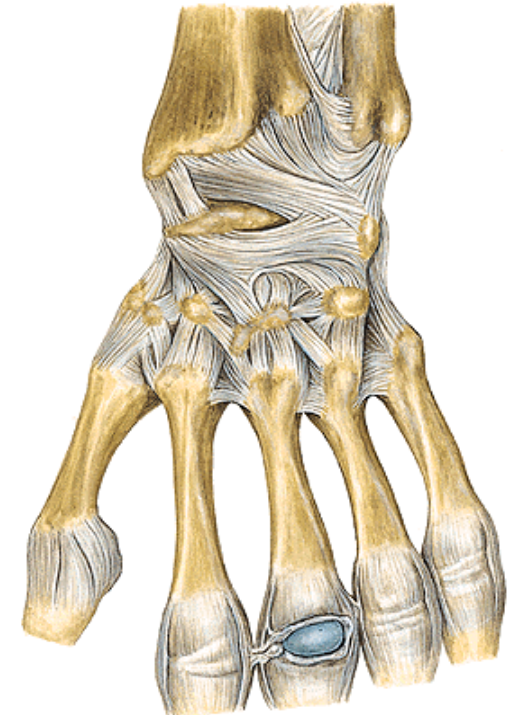
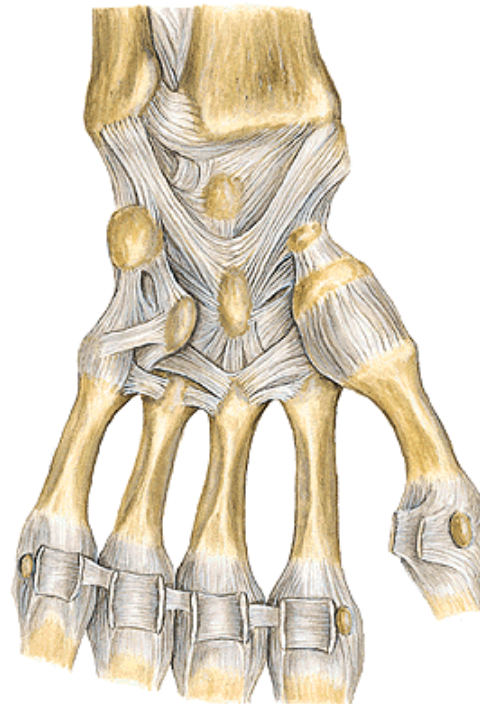
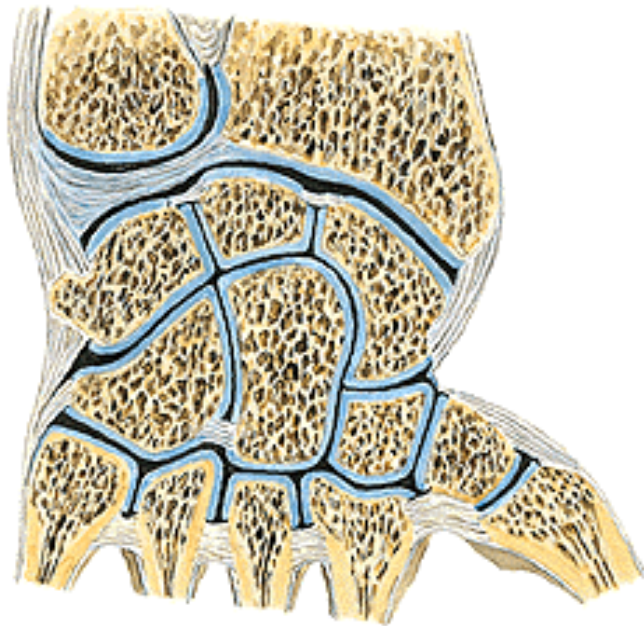
Type: **seller joint**

articular head: **basis ossis metacarpale I**

articular pit: **os trapezium**

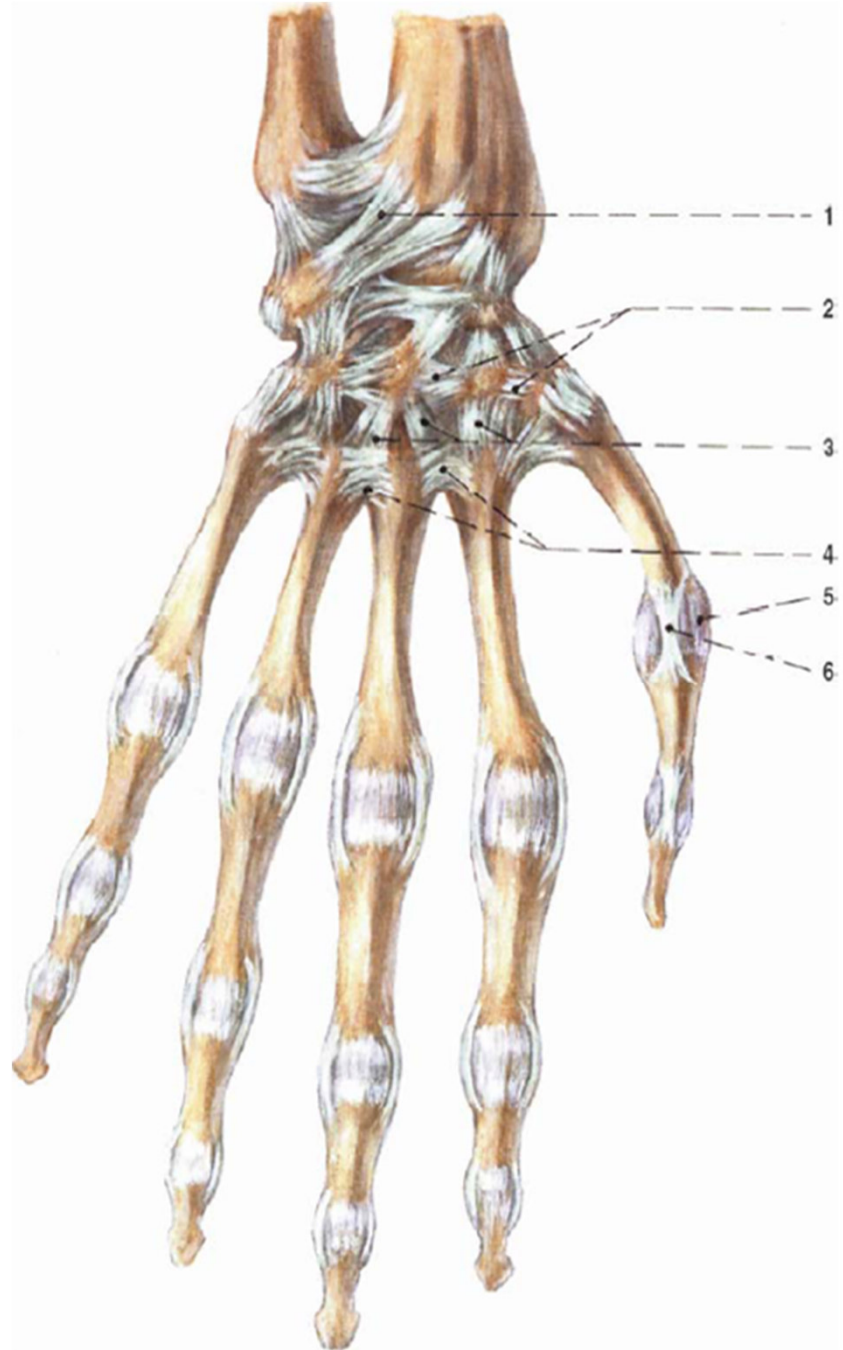
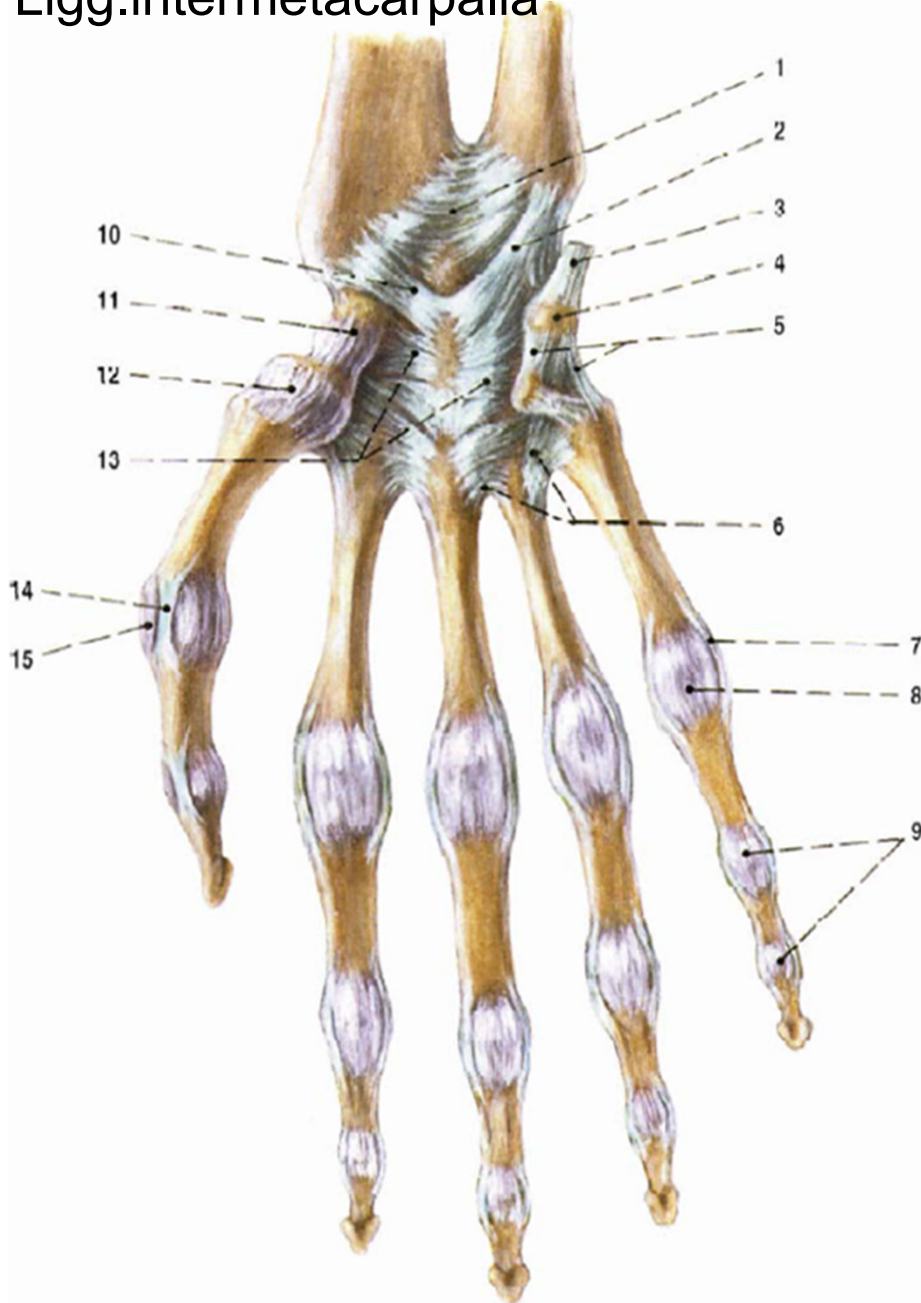
articular capsule: **free**

movements: **abduction, adduction, flexion, extension
opposition, reposition**



Articulaciones intermetacarpales

Ligg.intermetacarpalia



Art. metacarpophalangeales

Type: intermediate between cylindroidal and spherical joint

articular head: caput ossis metacarpalis

articular pit: basis phalangis

articular capsule: free

Ligaments:

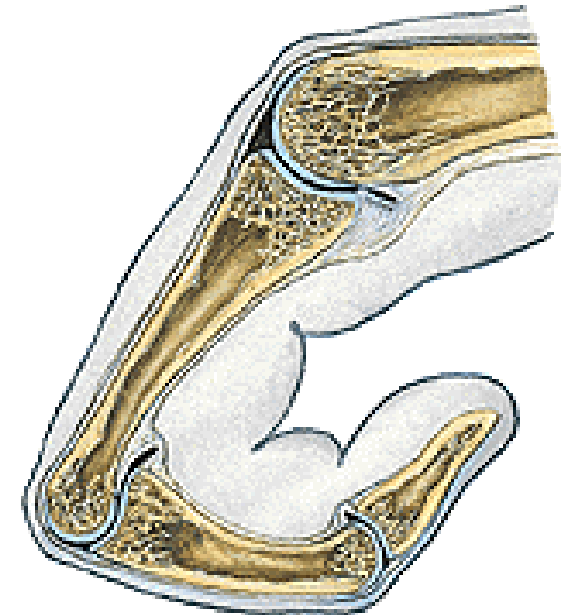
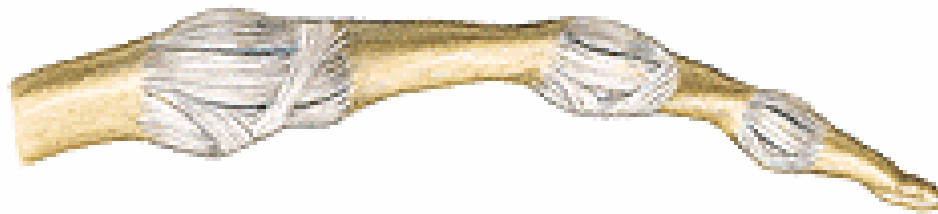
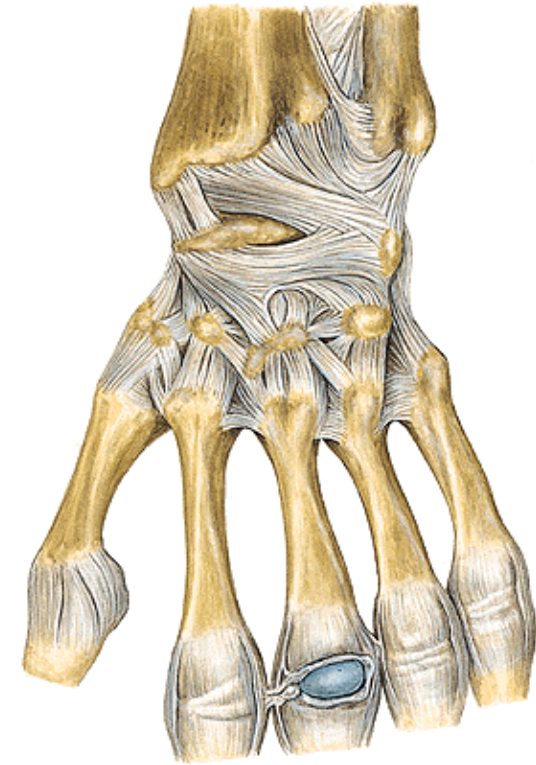
ligg. collateralia

fibrocartilago palmaris

lig. metacarpale transversum profundum

movements: flexion and extension

abduction and adduction- only in straightened finger



Articulationes interphalangeales

Type: trochlear joint

articular head: caput (trochlea) phalangis

articular pit: basis phalangis

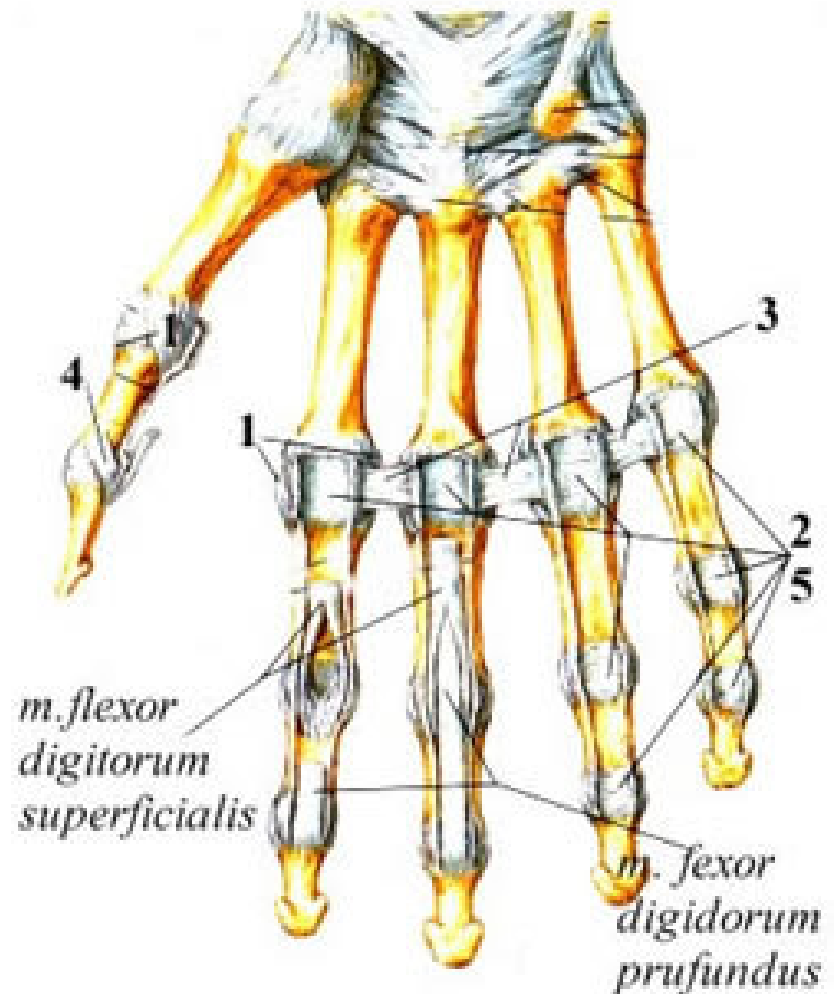
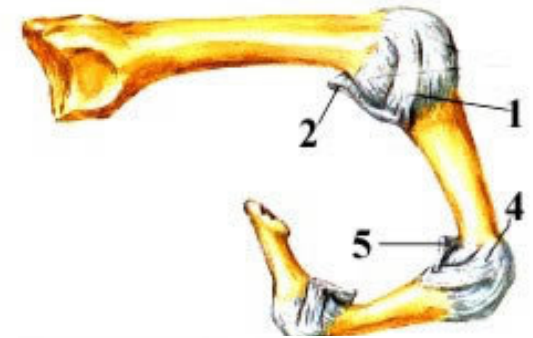
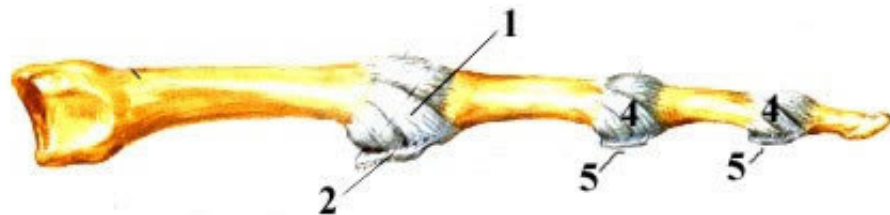
articular capsule: free

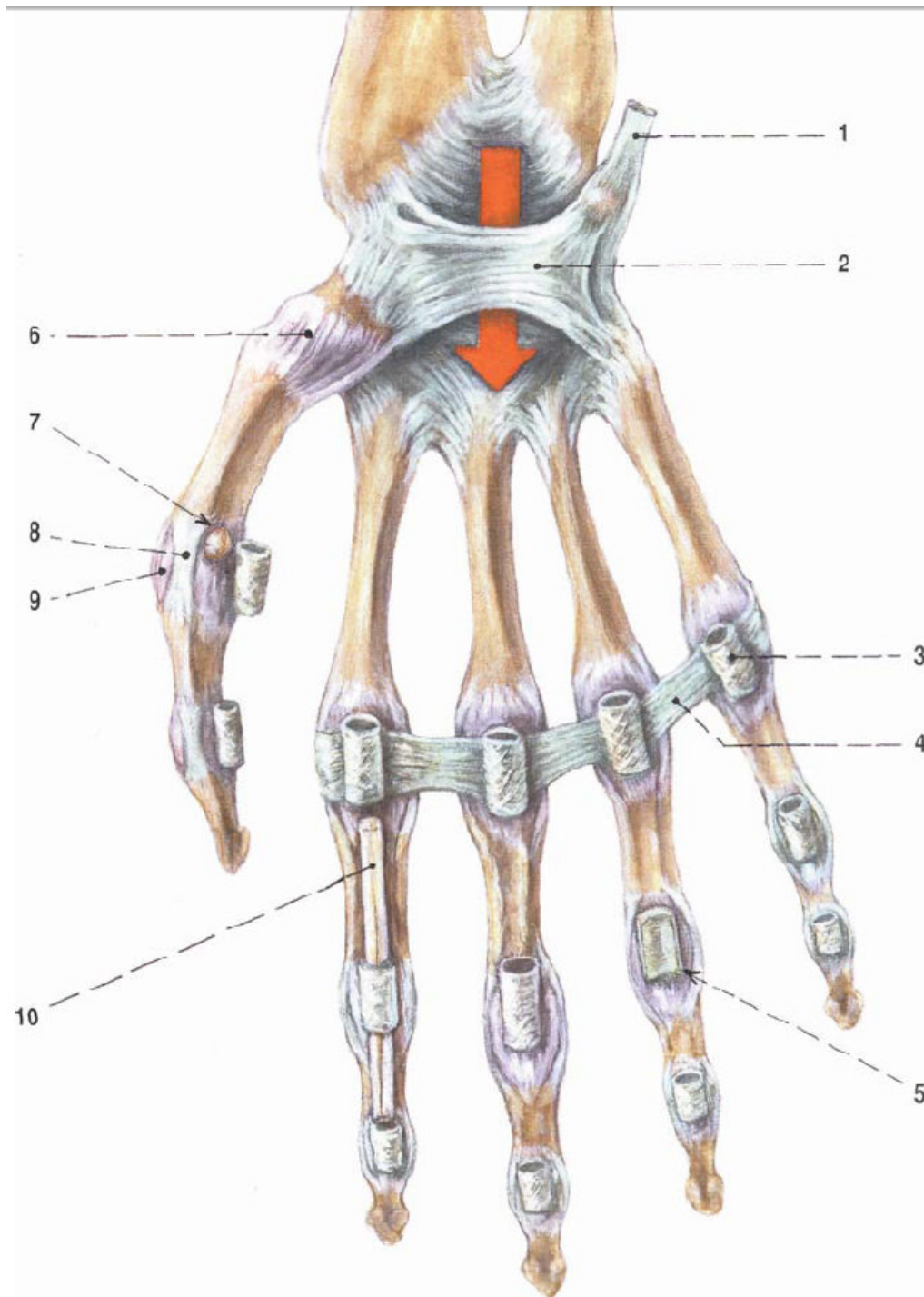
Ligaments:

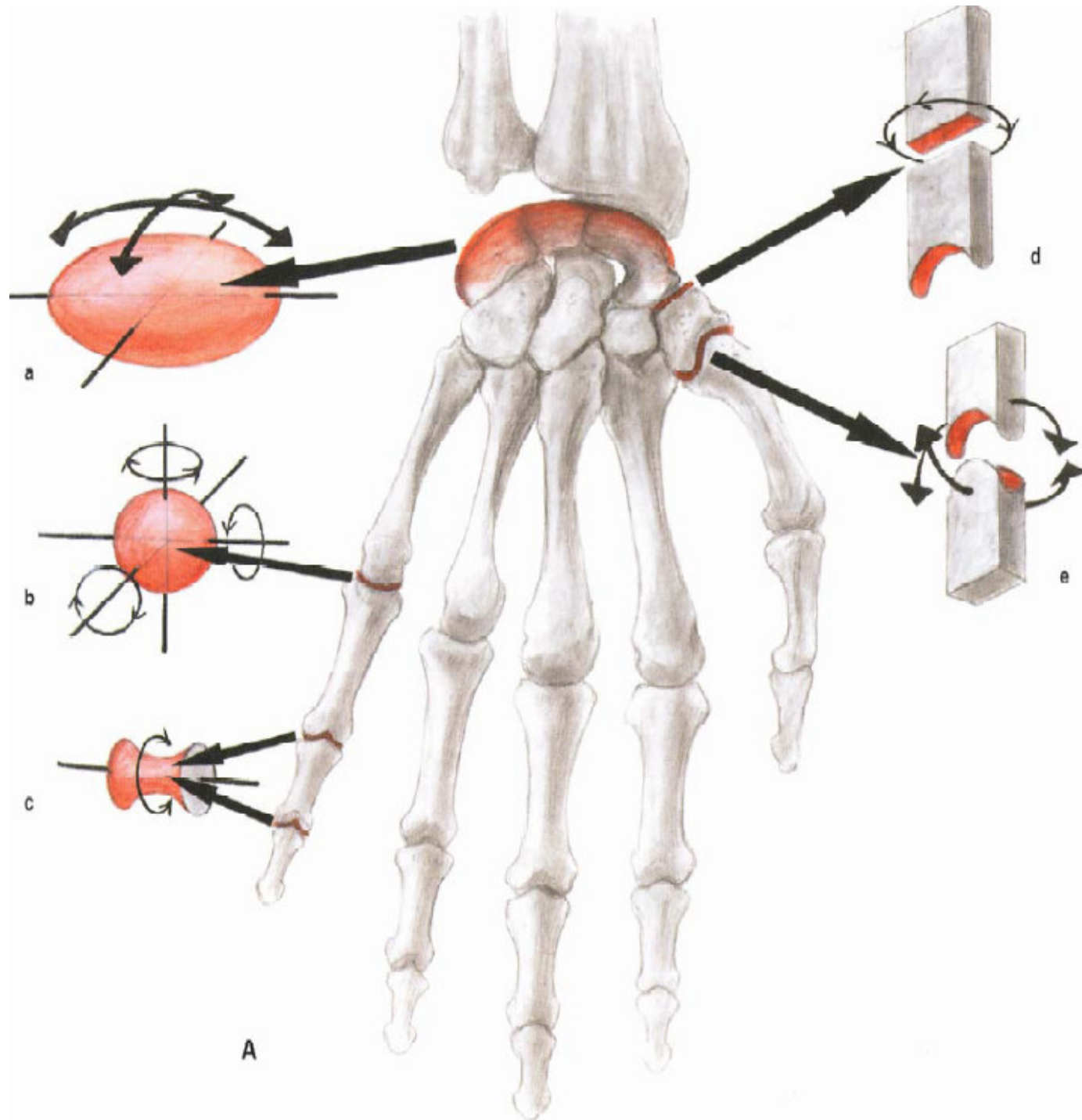
ligg. collateralia

fibrocartilagineae palmares

movements: flexion and extension









Thank you for your attention!

Pictures:

Atlas der Anatomie des Menschen/Sobotta. Putz,R., und Pabst,R. 20. Auflage.

München:Urban & Schwarzenberg, 1993

Netter: Interactive Atlas of Human Anatomy.

Naňka, Elišková: Přehled anatomie. Galén, Praha 2009.

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