

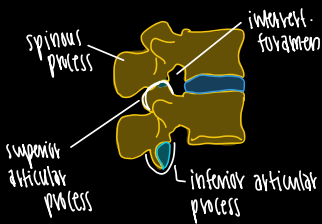
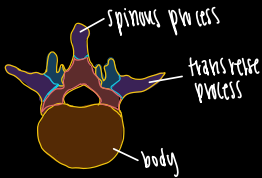
# Spine:

## vertebrae FUNCTIONS:

## vertebrae REGIONS:

\*breakfast at 7  
lunch at 12  
2 dinner at 5  
snack to 4 bed \*

## vertebrae STRUCTURE:



## regional vertebrae characteristics:

## special vertebrae:

# Mega Block 1:

protects spinal cord = nerves  
supports weight of body

provides rigid yet flexible axis  
facilitates posture = locomotion (movement)

Cervical (neck) = C1-C7  
Thoracic (rib articulation) = T1-T12  
Lumbar (lower back) = L1-L5  
Sacral (fused) = S1-S5  
Coccygeal = Co1-Co4

body: weight bearing  
arch: supports spinal cord = forms vertebral column  
↳ laminae  
pedicles

superior + inferior vert notch = intervert. foramen  
↳ where spinal n. exit

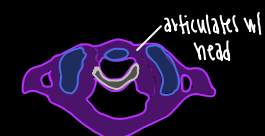
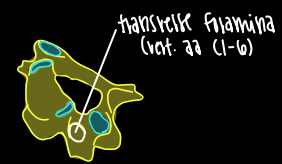
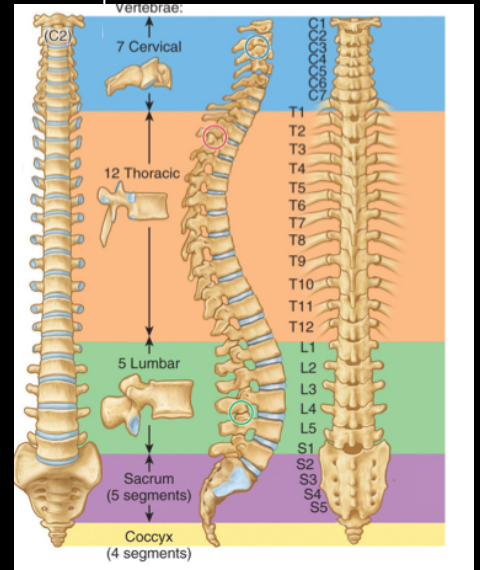
processes: muscle & ligament attachment  
↳ spinous = 1  
transverse = 2  
superior/inferior articular: 2 = 2

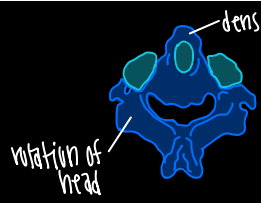
Cervical: -small body w/ concave/convex structure  
-bifid spinous process  
-transverse foramina

Thoracic: -heart shaped body  
-long spinous process  
-costal demi facets = } rib articulation  
-transverse costal facets

Lumbar: -large, kidney shaped body  
-triangular vertebral foramen

Atlas (C1): -no body  
-transverse ligament that holds C2





• Axis (C2): -axis  
-odontoid process (dens)

• Vertebra prominens (C7): long = prominent spinous process

• Sacrum: 5 fused elements; triangle shaped  
↳ transmits weight to pelvic girdle

• Coccyx: 4 fused (could be 3-5)  
↳ \*non-weight bearing\*

• vertebral column curvatures:

• primary curvatures: thoracic = sagittal  
↳ anterior concavity

\*HYPHOSSES\*

\*present in fetus\*

• secondary curvatures: cervical = lumbar  
↳ posterior concavity

\*LORDOSSES\*

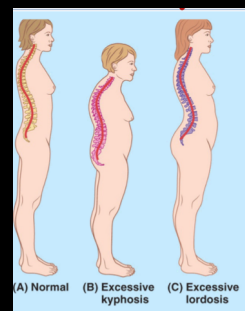
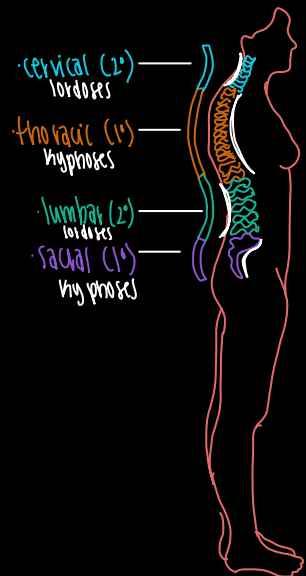
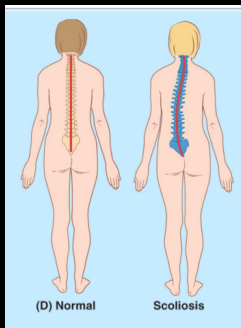
\*prominent around 1st year; infant raises head, starts to walk

• abnormal curvatures:

• excessive kyphosis: hump / hunchback  
↳ osteoporosis or trauma

• excessive lordosis: sway / hollow back  
↳ excess anterior weight  
pregnancy = obese

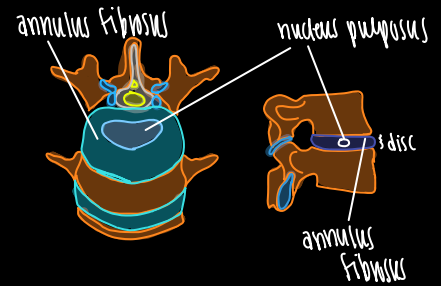
• scoliosis: lateral curvature  
↳ functional: nm imbalance  
structural: hemivertebra, trauma



• joints of vertebral bodies:

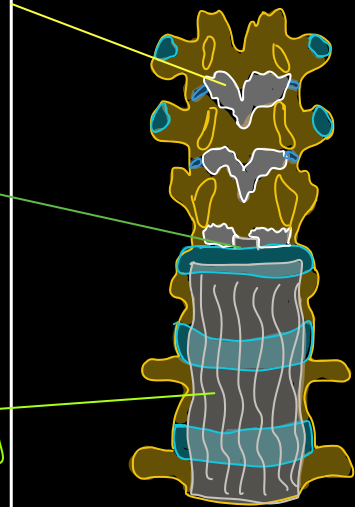
### Intervertebral discs

- annulus fibrosus: - fibrocartilaginous ring  
- THIN posteriorly, THICK anteriorly  
\* limits PROXIMATE vertebrae \*
- nucleus pulposus: - more cartilage = semi fluid  
- provides disc flexibility



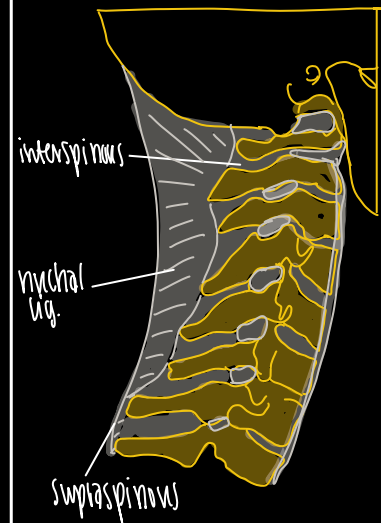
### Ligaments of IV joints

- ligamentum flavum: joins adjacent lamina  
↳ resists abrupt flexion = laminae separation
- posterior longitudinal ligament: - narrow = weak  
- attaches to IV discs  
↳ resists some hyperflexion
- anterior longitudinal ligament: - broad = strong  
- covers anterior body to IV foramina  
↳ resists \*hyperextension\*



### Accessory Ligaments of IV Joints

- interspinous ligament (thin, membranous)
- supraspinous ligament (thick, fibrous)  
↳ connect adjacent spinous processes
- \* limits flexion \*
- nuchal ligament: - fibrelatic tissue, thick band  
↳ from occipital protuberance to cervical spinous process
- \* provides muscle attachment = supports head \*



\* behind vert = limits FLEXION  
\* in front of = limits EXTENSION

\* hyper EXTENSION = ALL

\* FLEXION = everything else

# Back Muscles:

## MOVEMENTS

- Abduction: away from midline
- Adduction: adding back to midline
- Elevation: Shrug shoulders
- Depression: bring down
- Upward/downward rotation: reach for the sky

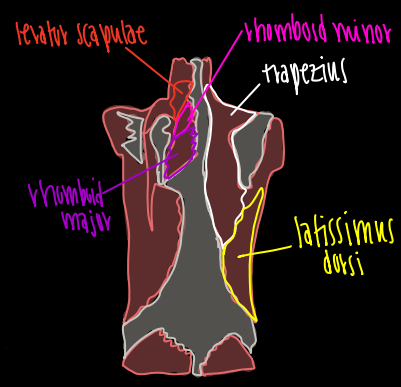
## LAYERS of back mm:

- superficial } EXTRINSIC
- intermediate }
- deep } INTRINSIC
  - ↳ superficial
  - ↳ intermediate
  - ↳ deep
  - ↳ major

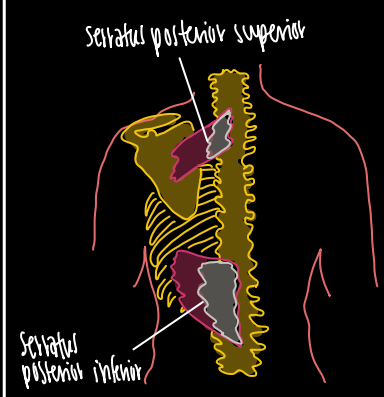
★ EXTRINSIC = innervated by ANTERIOR horns of spinal nn.  
 ↳ Move Upper Limbs  
 • proximal attach: BACK  
 • distal attach: UPPER LIMB

## EXTRINSIC

- ★ superficial:
- levator scapulae
  - trapezius
  - latissimus dorsi
  - rhomboid minor/major

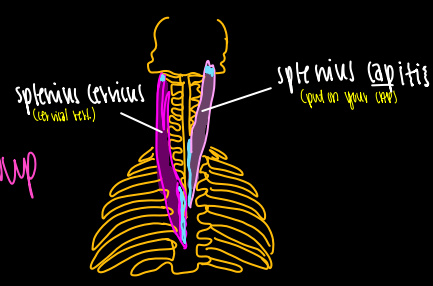


- ★ intermediate:
- Serratus anterior superior
  - Serratus anterior inferior

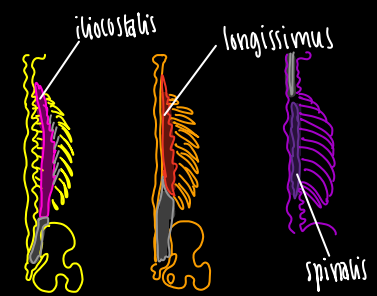


## INTRINSIC

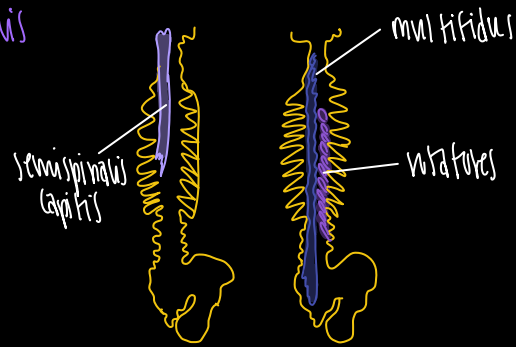
- ★ superficial:
- splenius capitis
  - splenius cervicis



- ★ intermediate:
- erector spinae group
    - iliocostalis
    - longissimus
    - spinalis



- ★ deep (MAJOR):
- transversospinalis
  - semispinalis
  - multifidus
  - rotatores



## \* EXTRINSIC:

• superficial →

\* dorsal scapular n: levator scap = rhomboids

\* spinal accessory n: trapezius

\* thoracodorsal n: latissimus dorsi

## - levator scapulae:

• p: C1-C4

• d: medial border of scapula

• n: dorsal scapular n

• a: elevate scapula, rotate GH joint

## - trapezius ↔:

• p: EOP, nuchal ligament (C7-T12)

• d: clavicle, acromion = spine of scapula

• n: spinal accessory n. (cranial n. II)

• a: elevate, depress = retract scapula

## - latissimus dorsi:

• p: T7-T12, thoracolumbar fascia

• d: intertubercular sulcus of humerus

• n: thoracodorsal n.

• a: extend, abduct, =

medially rotate humerus

## - rhomboid major/minor:

• p: C7-T5

• d: medial border of scapula

• n: dorsal scapular n

• a: retract scapula, rotate GH joint

• intermediate →

## - serratus posterior superior = inferior:

• p: C7-T3, T11-L2

• d: ribs 2-4 = 8-12

• n: intercostal n, anterior rami

• a: proprioception (elevate = depress ribs)

## \* INTRINSIC:

• superficial →

## splenius capitis = splenius cervicis

↳ "bandages" that cover = hold deep neck muscles in position

• a: laterally flex neck, rotate head = neck

↳ capitis: goes to head

↳ put on your cap

↳ cervicis: cervical vertebrae

• intermediate →

## erector spinae group (iliocostalis, longissimus = spinalis)

↳ ~~PRIMARY~~ extensors of vertebral column

= some lateral flexion

• deep (massive) →

## transversospinalis (semispinalis, multifidus = rotatores)

↳ stabilization, extension = rotation

MOVEMENTS at intervertebral joints:

EXTENSION:

- Semispinalis cervicis
- iliocostalis cervicis
- splenius cervicis
- splenius capitis
- trapezius
- levator scapulae
- multifidus
- longissimus
- semispinalis capitis

} CERVICAL

- erector spinae
- multifidus
- semispinalis

} LUMBAR & THORACIC

LATERAL FLEXION:

- iliocostalis
- longissimus
- splenius capitis
- splenius cervicis

} CERVICAL

- iliocostalis
- longissimus
- multifidus
- rhomboids

} LUMBAR & THORACIC

ROTATION:

- rotatores
- semispinalis capitis
- semispinalis cervicis
- multifidus
- splenius cervicis

} CERVICAL

- rotatores
- multifidus
- iliocostalis
- longissimus
- splenius

} LUMBAR & THORACIC

\* Suboccipital Triangle:

↳ 3D w/ pyramid shape

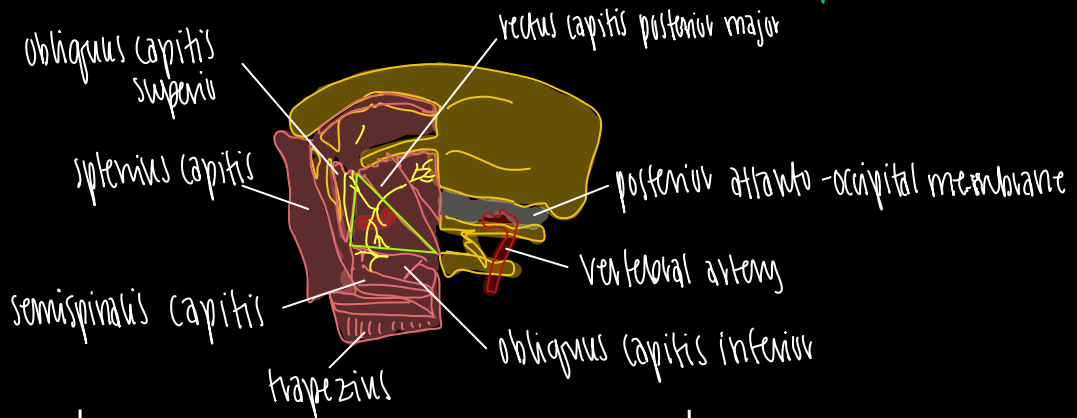
found below external obl. protuberance deep to superior part of posterior cervical region

\* ROOF: semispinalis capitis

\* BOUNDARIES: rectus capitis posterior major (superomedial)  
obliquus capitis superior (superolateral)  
obliquus capitis inferior (inferolateral)

\* CONTENTS: vertebral a. & suboccipital n. (C1)

\* FLOOR: post- atlanto occipital membrane, posterior arch C1



# Spinal Cord

## Meninges:

SPINAL CORD: major reflex center = conduction pathway between body = brain

↳ protected by: vertebral meninges = CSF

↳ spinal cord = continuation of medulla oblongata in brainstem down to L1-L2

\* spinal cord ends at L1-L2 \*

- terminates at conus medullaris

↳ bundle of fibers below = cauda equina  
↳ horses tail  
(bundle of spaghetti)

## \* SPINAL CORD enlargements:

- cervical → C4-T1 } expansions due to LARGE # of nerve fibers entering & exiting cord from upper = lower limbs

- lumbosacral → T11-S1 }

## \* NERVE ROOTS = SPINAL NERVES:

\* anterior = ventral → motor (efferent) \* goes out to periphery \*

\* posterior = dorsal → sensory (afferent) \* back to CNS = brain \*

① posterior horn → ② posterior rootlets → ③ posterior roots → ④ dorsal root ganglion

① anterior horn → ② anterior rootlets → ③ anterior roots

\* mixed = motor = sensory

- posterior ramus: synovial joints of vertebral column (deep back mm. / overlying skin)
- spinal n: anterior + posterior roots; through intervertebral foramen
- anterior ramus: skin = hypaxial muscles of anterior/lateral regions = LIMBS

Spinal segments:

vertebrae: 7C 5L 4C  
12T 5S

spinal nerve pairs: 8C  
12T  
5L  
5S  
1C

When EXITTING canal:

- \* C1-8: ABOVE corresponding vertebrae
- \* C8: between C7 & T1
- \* T1-L5: BELOW corresponding vertebrae
- \* S1-S4: BELOW corresponding vertebrae
- \* S5: Col. through sacral hiatus

Herniated IV discs: commonly occurs in posterolateral direction w/ nucleus pulposus protrusion  
↳ L4-L5 or L5-S1 from traumatic or chronic injury

\* thinner, weaker supporting ligament on posterior side = PLL

\* broader, stronger supporting ligament on anterior side = ALL

\* herniated discs affect spinal nerves BELOW \*  
↳ i.e. disc between T11 & T12 would affect T12 \*

SPINAL MENINGES: continuous w/ cerebral meninges

\* superficial → deep = dura  
arachnoid  
pia

Spinal meninges:

↳ layers of connective tissue  
≡ spaces that surround,  
support & protect spinal  
cord & nerves

\* contain CSF \*

dura-arachnoid interface = subdural space

\* arachnoid trabeculae: reach down to pia mater

\* denticulate ligament: lateral extensions of pia → help anchor cord in dural sac

\* epidural space: adipose = internal venous plexus

more on spinal meninges:

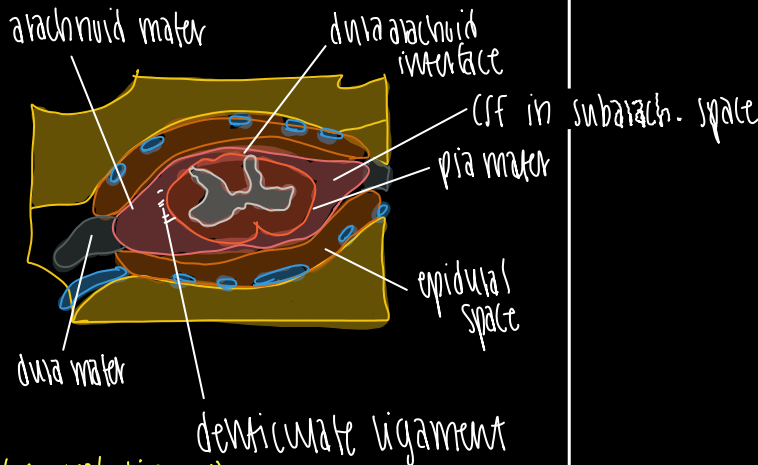
• filum terminale INTERNUM =

↳ extension of menial tissue = supporting CI, neuroglia = PIA

• from tip of cone → sacrum = PIVOTAL

• filum terminale EXTERNUM =

↳ dura anchoring to coccyx (coccygeal ligament)





\*Lumbar puncture: to withdraw CSF from subarachnoid space

↳ L3-L4, L4-L5 to avoid spinal cord

L3, L4, L5 keeps the cord alive

\*Epidural anesthesia: anesthetic injected by lumbar puncture method, local hiatus of local Epidural

↳ Blood Supply of Spinal Cord:

- anterior/posterior segmental medullary a.

- 3 longitudinal: - anterior spinal a.  
- posterior spinal a. (PAIRS)

- greater anterior segmental medullary a.  
↳ lower cord = reinforced anterior spinal a.

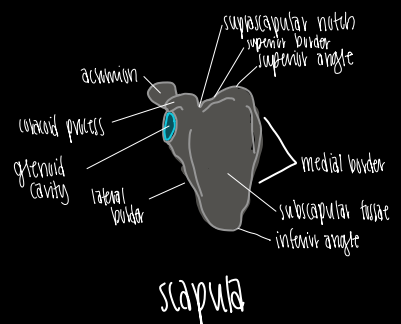
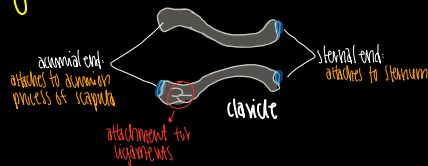
↳ Venous Drainage:

- 3 anterior = 3 posterior

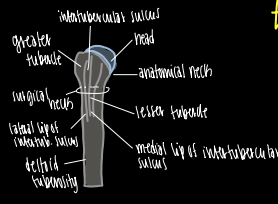
↳ drain into internal vertebral venous plexus to dural sinuses = intervertebral vv.

Scapular region  
= joints of SHOULDER

\*Pectoral girdle = clavicle = scapula



**\* HUMERUS:**



\* humerus = most movable joint in body

↳ glenohumeral joint (GH): ball & socket synovial joint

- abduction
- flexion
- medial rotation
- adduction
- extension
- lateral rotation

\* Scapulo humeral muscles:

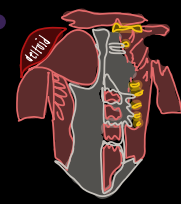
\* Deltoid:

o: spine/lacromium of scapula, lateral 1/3 clavicle

i: deltoid tuberosity of humerus

- a: anterior → FLEXION
- mid → abduction (15-90°)
- posterior → EXTENSION

n: axillary n. (C5)



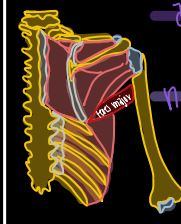
\* Teres Major:

o: inferior angle of scapula

i: medial lip of intertubercular sulcus

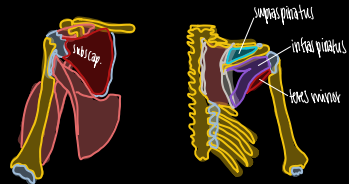
a: abduction

n: to or subscapular n. (C6)



anterior loss causes paresis (weaving)

mid loss causes paralysis of 15-90° abduction



\* Rotator cuff: SITS

subscapularis:

- o: subscapular fossa
- i: lesser tubercle of humerus
- a: medial rotation of humerus
- n: upper/lower subscapular n. (C6)

only muscle to attach to lesser tubercle of humerus

teres minor:

- o: lateral border of scapula
- i: inferior facet of greater tubercle
- a: LATERAL rotation
- n: axillary n. (C5)

\* Innervation:

- upper subscap = subscapularis m.
- lower subscap = teres major = subscapularis m.
- middle (trivascular) = latissimus dorsi

infraspinatus:

- o: infraspinous process of scapula
- i: middle facet of greater tubercle
- a: LATERAL rotation of hum.
- n: subscapular n. (C5)

supraspinatus:

- o: supraspinous fossa of scapula
- i: upper facet of greater tubercle

- a: abduction of humerus (0-15°)
- n: subscapular n. (C5)

↳ ligament superior transverse scapular ligament

\* ARMY/NAVY:

• suprascapular a: OVER ligament

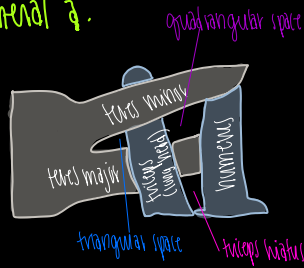
• suprascapular n: UNDER ligament

★ Gateways in posterior shoulder:

quadrangular space = axillary n.  
posterior circumflex humeral a.

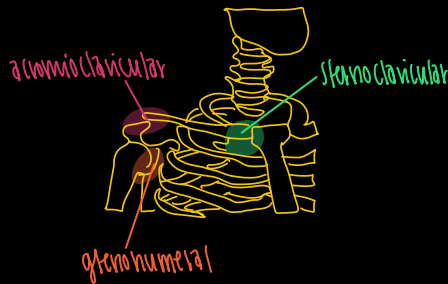
triangular space = circumflex scapular a.

triangular interval = radial n.  
profunda brachii a.



★ Shoulder Region JOINTS:

synovial: sternoclavicular  
acromioclavicular  
glenohumeral



★ Sternoclavicular: clavicle fracture

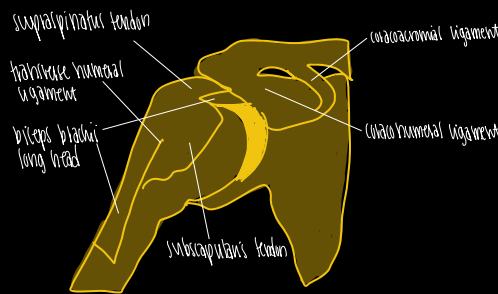
★ Acromioclavicular: Shoulder separation

★ Glenohumeral: dislocation  
impingement syndrome

★ Clinical Correlation:

Shoulder separation = rupture of acromioclavicular ligament

↳ more acute = rupture of AC = coracoclavicular ligament



★ Coracohumeral ligament:  
↳ humerus to coracoid process

★ Coracoclavicular ligament:  
↳ acromioclavicular joint

★ Glenohumeral Joint:

↳ formed by articulation between humerus head & scapula glenoid cavity

★ biceps brachii long head tendon

↳ runs through joint capsule of GH joint

↳ is transfixed to humerus by transverse humeral ligament

★ supraspinatus = subscapularis tendons

↳ strengthen joint capsule = can be damaged

\* Glenohumeral Bursae: Lubrication point for tendons in areas of FRICTION

↳ outpocketings of synovial membrane of joint

\* Intra-tubercular tendon sheath: wraps around biceps brachii tendon

· subacromial bursa } keep deltoid fibers away  
· subdeltoid bursa } from supraspinatus fibers

\* Clinical Correlation: Impingement Syndrome

↳ can occur due to trauma or overuse causing bursae inflammation = BURSITIS

\* usually subacromial bursa gets impinged between

· acromion } attached to greater tubercle  
· tendons (supraspinatus)

· Ultrasound / MRI to diagnose

· Treat: corticosteroids

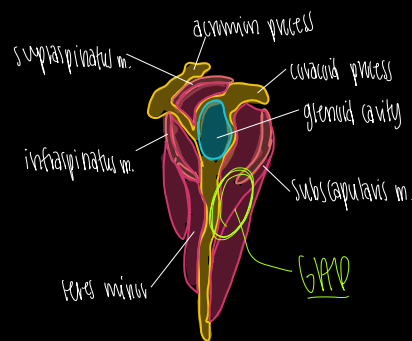
\* Clinical Correlation: GH dislocation



humeral head disarticulation

\* usually occurs anterior inferior

↳ lack of support in inferior direction



\* REVIEW:

· Dislocation: Glenohumeral joint

· Separation: Acromioclavicular joint

· CC ligament

· acromioclavicular ligament

# Pectoral region

= Axilla:

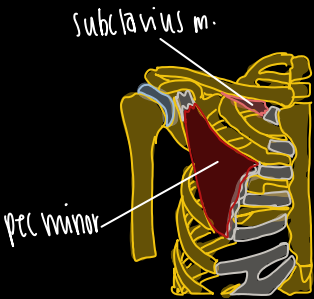
## Muscles:

3 muscles around that area:

- pectoralis major = medial lip
- latissimus dorsi = floor of intertubercular sulcus

## AHEU:

- Medial rotation = INTERNAL
- Lateral rotation = EXTERNAL



Pectoralis MAJOR: 2 heads → clavicular: more superior = attaches to clavicle  
 sternocostal: attaches to sternum = ribs

o: medial 1/2 clavicle → clavicular head  
 sternum, costal cartilages, external abdominal oblique aponeurosis (sternocostal head)

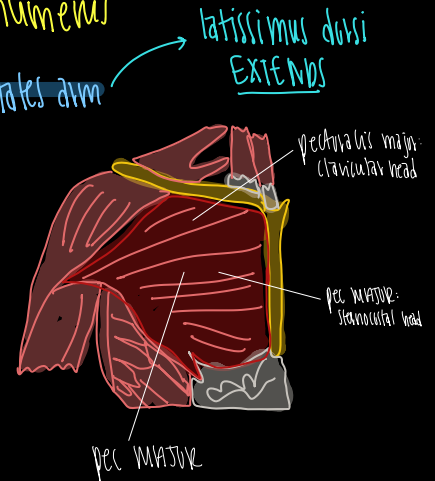
i: lateral lip of intertubercular surface of humerus

a: BOTH heads = flexes, adducts = medially rotates arm

n: medial = lateral pectoral n.

↳ medial: pec MAJOR = MINOR  
 "medial does MORE"  
 = pierces pec MINOR

↳ lateral: pec MAJOR only  
 "lateral does LESS"  
 = slides OVER superior / medial border of pec minor



## Pectoralis minor:

o: ribs 3-5 near costal cartilages  
 i: coracoid process of scapula

a: stabilizes scapula by pulling inferior = anterior  
 n: medial pectoral n.

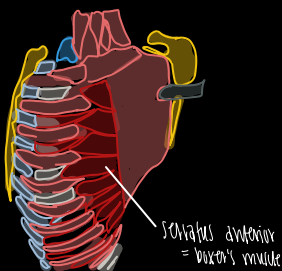
\* pec MINOR = subclavius: invested by clavipectoral fascia → DEEP to pec. MAJOR

## Serratus Anterior:

o: ribs 1-8  
 i: medial border of scapula (anterior)

a: protracts scapula, upward rotation of glenoid  
 helps keep medial border = inferior angle

n: long thoracic n. → on superficial surface of muscle



★ Clinical Correlation: winged scapula

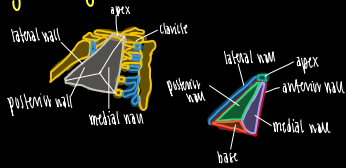
↳ damage to Long Thoracic N. can cause paralysis of serratus anterior

★ causes medial border of scapula to protrude away from thoracic wall

↳ "winged" appearance: accentuated when patient is asked to push on wall w/ outstretched arm

AXILLA:

gateway between neck & arm

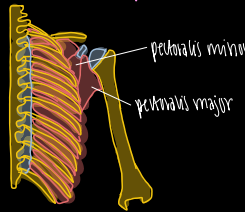


★ cervico-axillary canal: BORDEKS

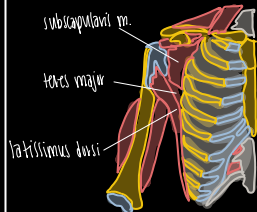
- 1st rib
- clavicle
- superior scapula border

★ bony ring that can limit structures  
↳ like w/ tumor or inflammation

↳ ANTERIOR WALL: pectoralis MAJOR MINOR



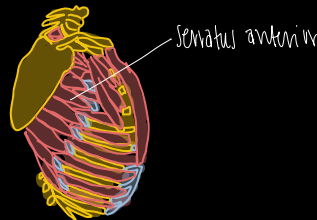
↳ POSTERIOR WALL: teres MAJOR latissimus dorsi



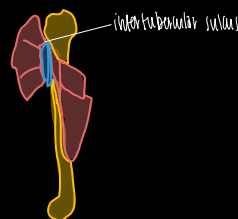
↳ MEDIAL WALL: serratus anterior → intercostobrachial n. (T2 anterior ramus)

↳ innervation from medial arm plex

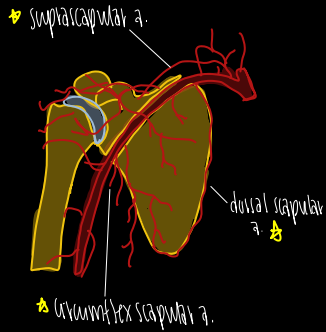
★ referred pain w/ MIA



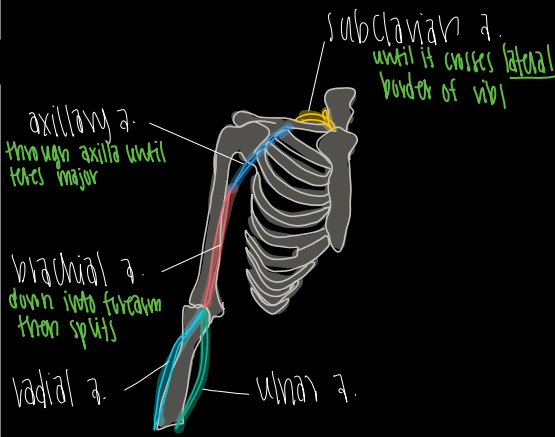
↳ LATERAL WALL: intertubercular sulcus



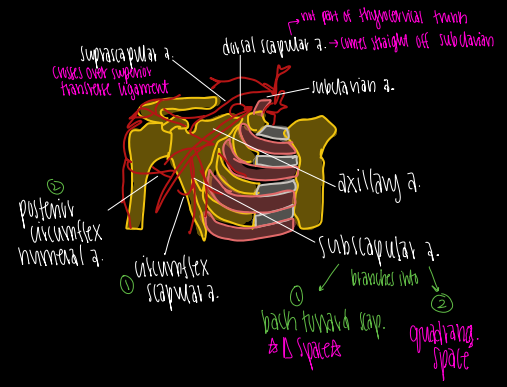
★ Major Arteries of Upper Extremity:



★ these 3 anastomose which is important bc w/ blockage can still get blood supply

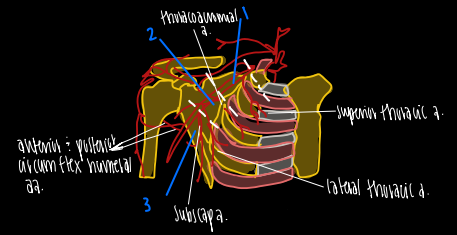


★ Axilla vessels are covered w/ axillary sheath CT mapped around axillary a. to keep close together



★ Axillary Artery Divisions:

- 1 superior thoracic a. → Division 1: 1 artery
- 2 thoracoacromial a. } Division 2: 2 aa.  
lateral thoracic a.
- 3 subscapular a. } Division 3: 3aa.  
anterior circumflex humeral a.  
posterior circumflex humeral a.



★ LYMPH NODES:

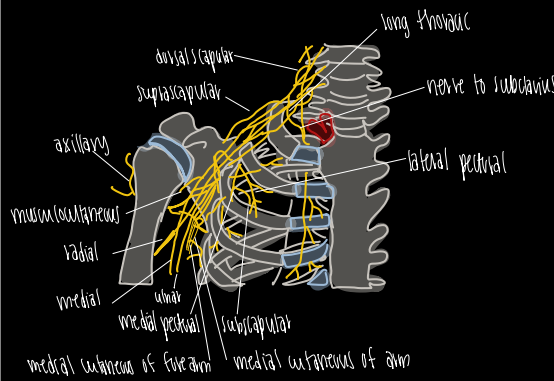
3 common spots for swollen LN = cervical, axilla, inguinal } due to infection, disease or cancer

subscapular → from scapular region  
pectoral → from breast region  
humeral → from arm region } all drain to CENTRAL → APICAL

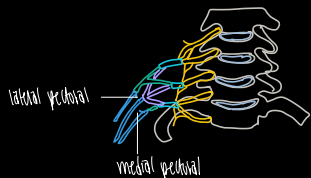
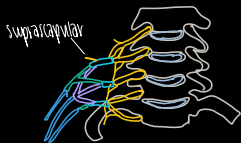
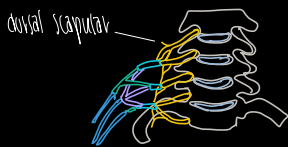
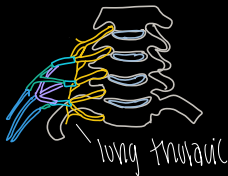
# Brachial Plexus:

\* Brachial Plexus first seen emerging between:

Scalene anterior = middle m.



## \* Branches of Brachial Plexus:



### ① Long Thoracic N:

motor → serratus anterior  
(C5, C6, C7)

↳ "winged scapula" = paralysis of S.A. due to long thoracic n. injury

### ② Dorsal Scapular N:

motor → rhomboids (major = minor) = levator scapulae  
(C5)

↳ any issue to C5 would affect 3 muscles

### ③ Suprascapular N:

motor → supraspinatus  
infraspinatus

sensory: GH joint  
(C5-C6)

### ④ Nerve to Subclavius:

motor → subclavius

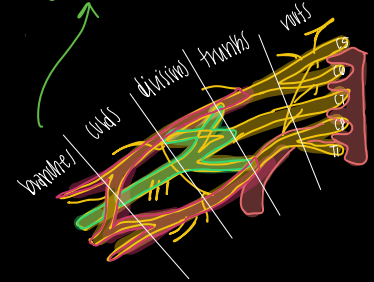
sensory → sternoclavicular joint  
(C5-C6)

### ⑤ Pectoral NN:

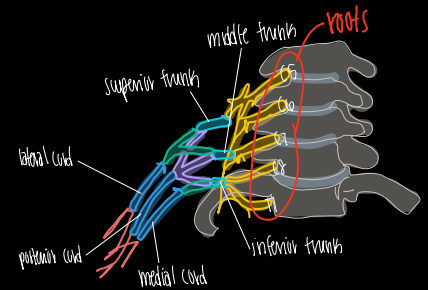
LATERAL: motor → pec major (C6)

MEDIAL: motor → pec major = minor (C5, T1)

## Randy Travis Drinks Cold Beer



—: posterior  
—: anterior



\* (C5 + C6) = superior trunk

\* (C8 + T1) = inferior trunk

\* C7 = middle trunk

\* lateral cord = continuation of superior trunk

\* medial cord = continuation of inferior trunk

} often have connection  
↳ medial does MORE: pec major = minor  
Lateral does LESS: pec major

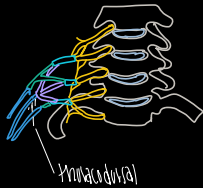
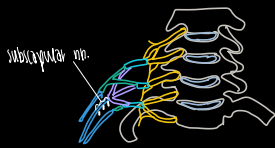


⑥ Subscapular NN:

UPPER:  
motor → subscapularis C5

LOWER:  
motor → subscapularis  
teres major C6

MIDDLE (thoracodorsal):  
motor → latissimus dorsi C7



⑦ Axillary N:

motor → deltoid  
teres minor C5

sensory: skin over upper/lateral arm &  
GH joint

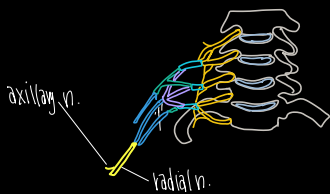
↳ Injury by: fracture to surgical neck of humerus  
dislocation of GH joint  
compression from incorrect use of crutches or  
misplaced IM injection

★ test by: asking patient to abduct arm  
w/ resistance while palpating  
deltoid

causes deltoid atrophy  
(cutaneous sensory loss &  
difficulty abducting arm)

could test:

0-15°: supraspinatus (suprascapular n.)  
15-90°: deltoid (axillary n.)  
90° & ↑: trapezius (spinal accessory n.)  
scapular anterior: (long thoracic n.)



⑧ Radial N:

motor → all muscles of posterior arm & forearm

sensory → skin on posterior arm, forearm &  
C5-T1 dorsal/lateral hand

↳ Midshaft humeral fracture: can damage radial nerve along radial groove

★ symptoms: posterior forearm mm. &  
skin on dorsum of hand

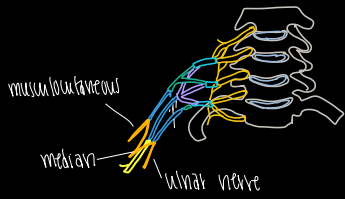
causes radial nerve compression  
so strengthening below would have  
partial/total paralysis

★ ANTERIOR BRANCHES:

"M"

⑨ Musculocutaneous N:

motor → all muscles in anterior  
arm



- \* musculocut: continuation of LATERAL cord
- \* median: medial = lateral contributions
- \* ulnar: continuation of MEDIAL cord

sensory → skin on lateral forearm (lateral cutaneous n. of forearm)  
 ↳ changes when emerging from lateral brachial border

(5-6)

⑩ Median N:

motor → all muscles in anterior forearm (EXCEPT: flexor carpi ulnaris = medial 1/2 of flexor digitorum profundus) + flexor muscles in thumb = lateral 2 lumbricals

sensory → skin on lateral 3 1/2 digits = lateral palm

(6-T1)

⑪ Ulnar N:

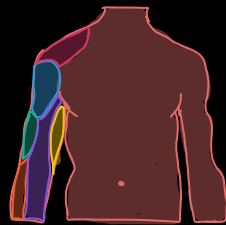
motor → flexor carpi ulnaris, medial 1/2 of flexor digitorum profundus, all intrinsic mm. of hand (EXCEPT: flexor mm. = lateral 2 lumbricals)

sensory → skin on medial 1 1/2 digits = medial palm/dorsal hand

(C7), (C8-T1)

\* Cutaneous ONLY:

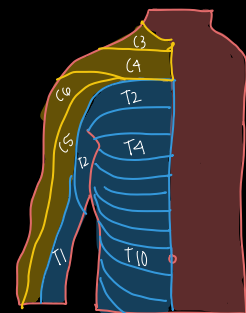
- medial cutaneous n. of arm → (C8, T1)
- medial cutaneous n. of forearm → (C8, T1) } both of MEDIAL cord



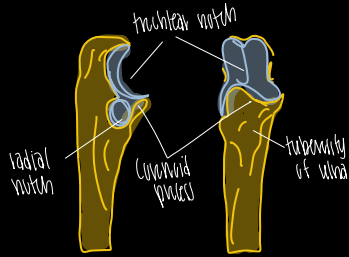
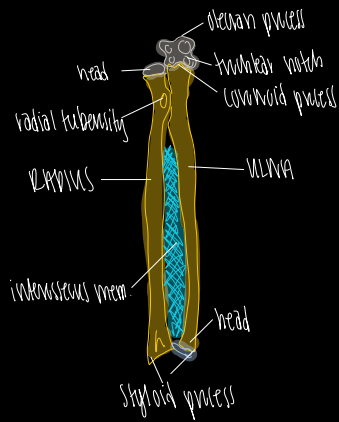
- m = branch of axillary n. (C5-C6)
- m = branch of radial n. (C5-C6)
- m = lateral cutaneous nerve of forearm (C5-C6)
- m = intercostobradial n. (T2)
- m = medial cutaneous n. of forearm (C8, T1)

↳ w/ compression of ↑ levels  
 \* proximal: whole dermatome  
 \* distal: distal n. injury  
 ↳ proximal: motor = sensory loss  
 distal: less motor

\* Dermatom: theoretical strips of skin innervated by single spinal cord level



# Arm, Elbow, Forearm:



## CLINICAL:

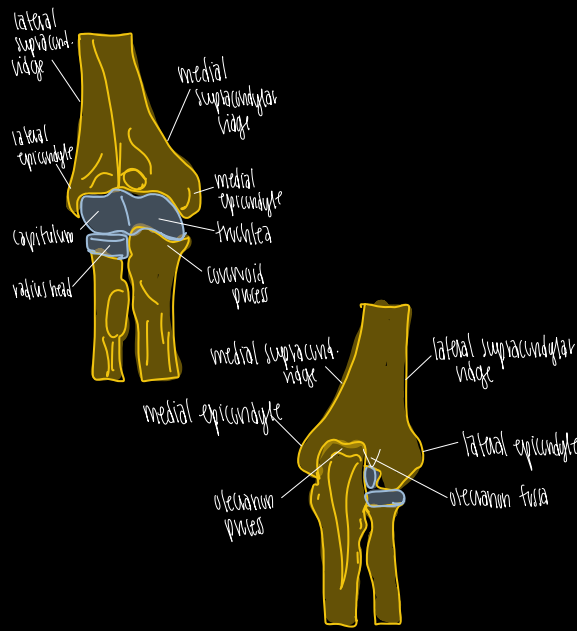
"Nursemaid's Elbow"  
 ↳ radius dislodged from annular ligament

↳ more common in CHILDREN

- partial: subluxation
- total: whole radius comes out of ligament; SURGERY

## CLINICAL:

Colles Fracture  
 ↳ fractured distal radius positioned distally  
 fractured styloid process of ulna  
 "dinner fork abnormality"



## ★ ELBOW JOINT: 3 joints

• humero-radial: between radius = capitulum  
 ★ flexion / extension ★

• humero-ulnar: between trochlea = trochlear notch  
 ★ flexion / extension ★

• proximal radioulnar: where head of radius meets  
 ↳ pronation = supination

## LIGAMENTS:

• Radial Collateral

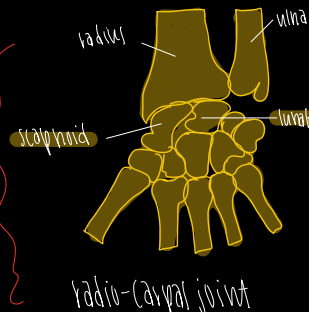
↳ Annular ligament: expansion of RCL  
 holds head of radius in radial fossa on ulna

## CLINICAL:

Dislocated Elbow  
 ↳ posteriorly  
 when falling on hands w/ elbow flexed or hyperextension  
 ↳ distal humerus driven through weak anterior joint capsule  
 ★ ulnar n. / ulnar CL can be torn or compressed = olecranon process may fracture ★

## ★ Radio-Carpal Joint:

↳ anatomical position ulna doesn't articulate w/ wrist carpals



## ARM:

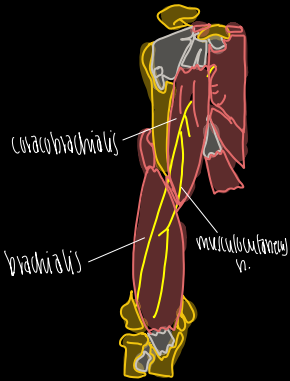
\* ANTERIOR compartment of arm:

"Flexor compartment"

↳ flex elbow joint or GH joint

\* innervation: musculocutaneous n.

\* Deep group:



\* POSTERIOR compartment of arm:

"EXTENSOR compartment"

↳ extends elbow (some GH) joint

innervation: radial n.

### ① Biceps Brachii:

o: supraglenoid tubercle → long head  
coracoid process → short head

i: radial tuberosity, bicipital aponeurosis

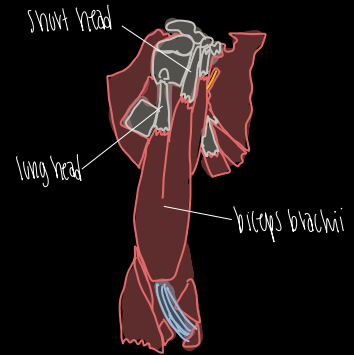
a: flexes & supinates forearm;  
assists in resisting dislocation of shoulder

n: musculocutaneous n.

↳ CLINICAL: Rupture of Biceps Brachii tendon

\* long head biceps brachii avulsed from supraglenoid tubercle \*

→ also common to have: torn glenoid labrum



\* attaching to coracoid process:

- ① coracobrachialis
- ② pec minor
- ③ biceps brachii

### ② Coracobrachialis:

o: coracoid process of scapula  
i: medial humeral mid-shaft

a: flexes & adducts arm

n: musculocutaneous n.

### ③ Brachialis:

o: distal shaft of humerus  
i: coronoid process / tuberosity of ulna

a: flexes forearm

n: musculocutaneous n.

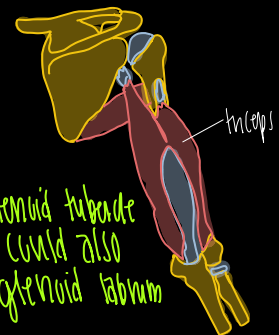
### Triceps Brachii:

o: infraglenoid tubercle, posterior humeral

i: olecranon process of ulna

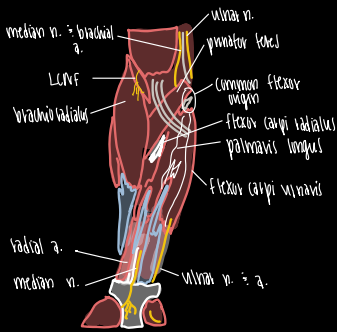
a: extends forearm

n: radial n.



\* infraglenoid tubercle injury could also affect glenoid labrum

# FOREARM:



## ASUPERFICIAL:

### ① Pronator Teres:

o: medial condyle (CFO), proximal ulna  
i: mid-shaft radius

a: pronates forearm  
n: median n.

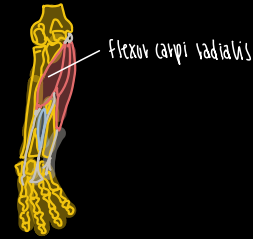


## ANTERIOR

### Common flexor origin:

- pronator teres
- flexor carpi radialis
- palmaris longus
- flexor carpi ulnaris

↳ fracture to medial condyle or distal humerus can affect ALL



### ② Flexor Carpi Radialis:

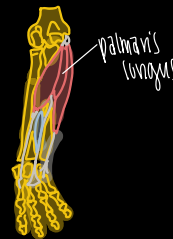
o: CFO  
i: base of 2nd & 3rd metacarpal

a: flexes & abducts wrist  
n: median n.

### ③ Palmaris Longus:

o: CFO  
i: palmar aponeurosis

a: flexes wrist  
n: median n.



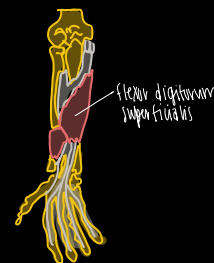
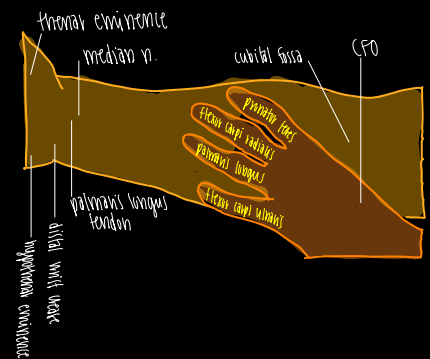
### ④ Flexor Carpi Ulnaris:

o: CFO  
i: pisiform; base of 5th metacarpal

a: flexes & abducts wrist  
n: ulnar n.



## Superficial Layer:



## INTERMEDIATE:

### Flexor Digitorum Superficialis:

o: CFO, radius shaft  
i: middle phalanges of digits 2-5

a: flexes wrist & digits 2-5 (not distal interphalangeal joint)  
n: median n.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

