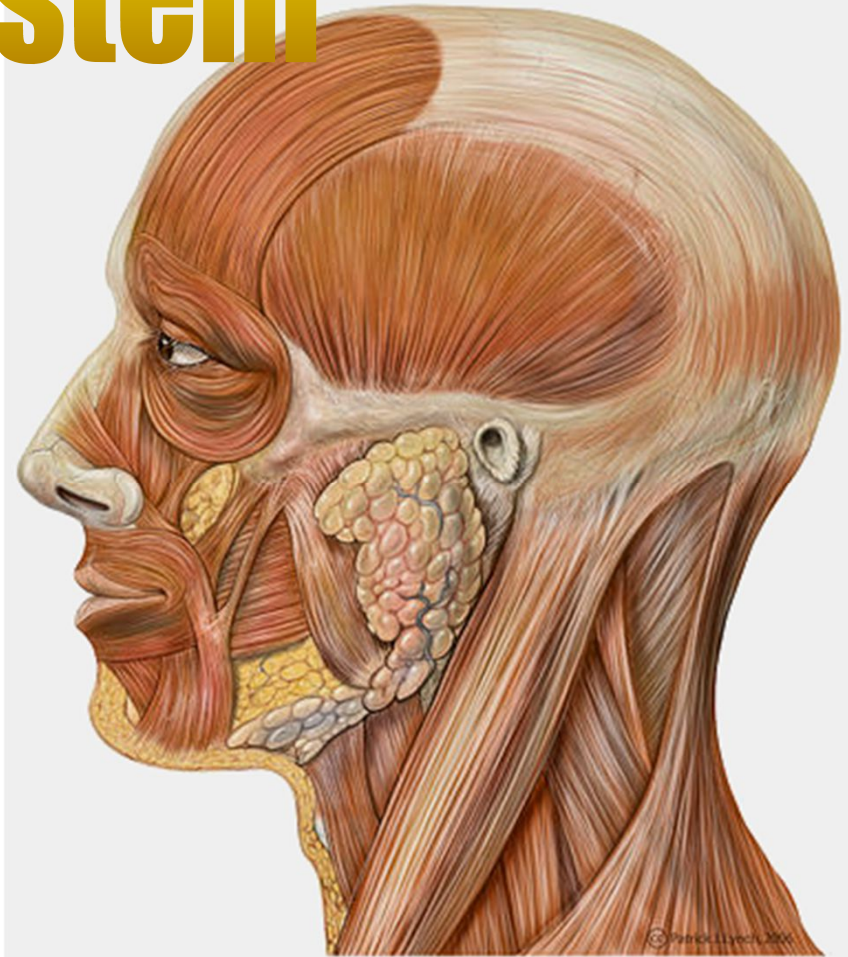


# Topic 5: Anatomy of the Muscular System

## Part 2

Chapter 10



## 5.10 Superficial Muscles of Thorax: arm movements

***pectoralis major*** (*sternum/rib cartilages to humerus*): prime mover of arm flexion; rotates arm medially; adducts arm; climbing, throwing, pushing

⊙ ***latissimus dorsi*** (*vertebrae to humerus*): broad, flat back muscle; prime mover of arm extension, arm adductor, rotates arm at shoulder, rowing, swimming

⊙ ***deltoid*** (*clavicle/scapula to humerus*): thick, rounded, site of IM injection, prime mover of arm abduction (all fibers); also lateral & medial rotations, flexion or extensions if only some fibers used; swinging arm when walking

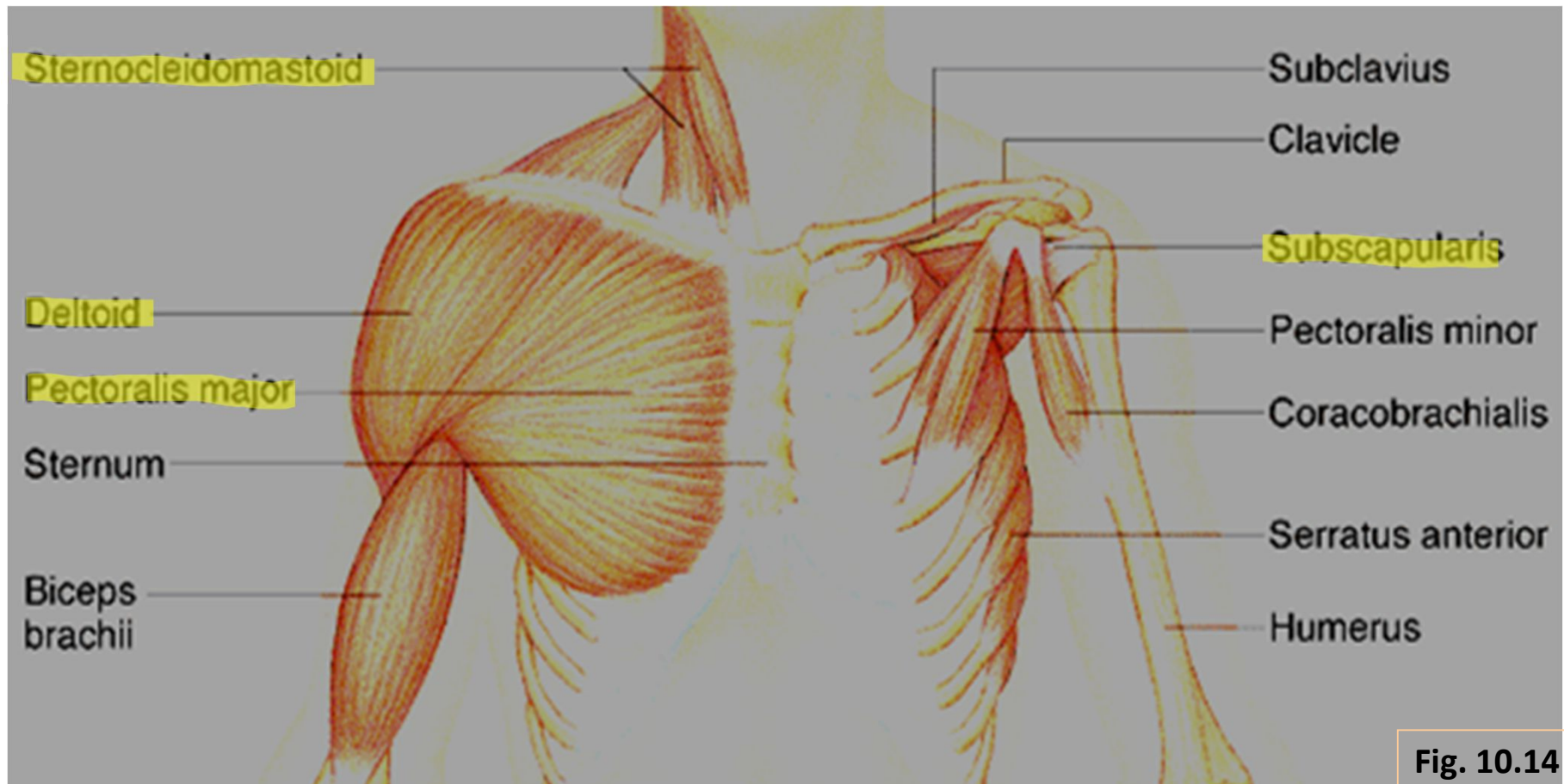
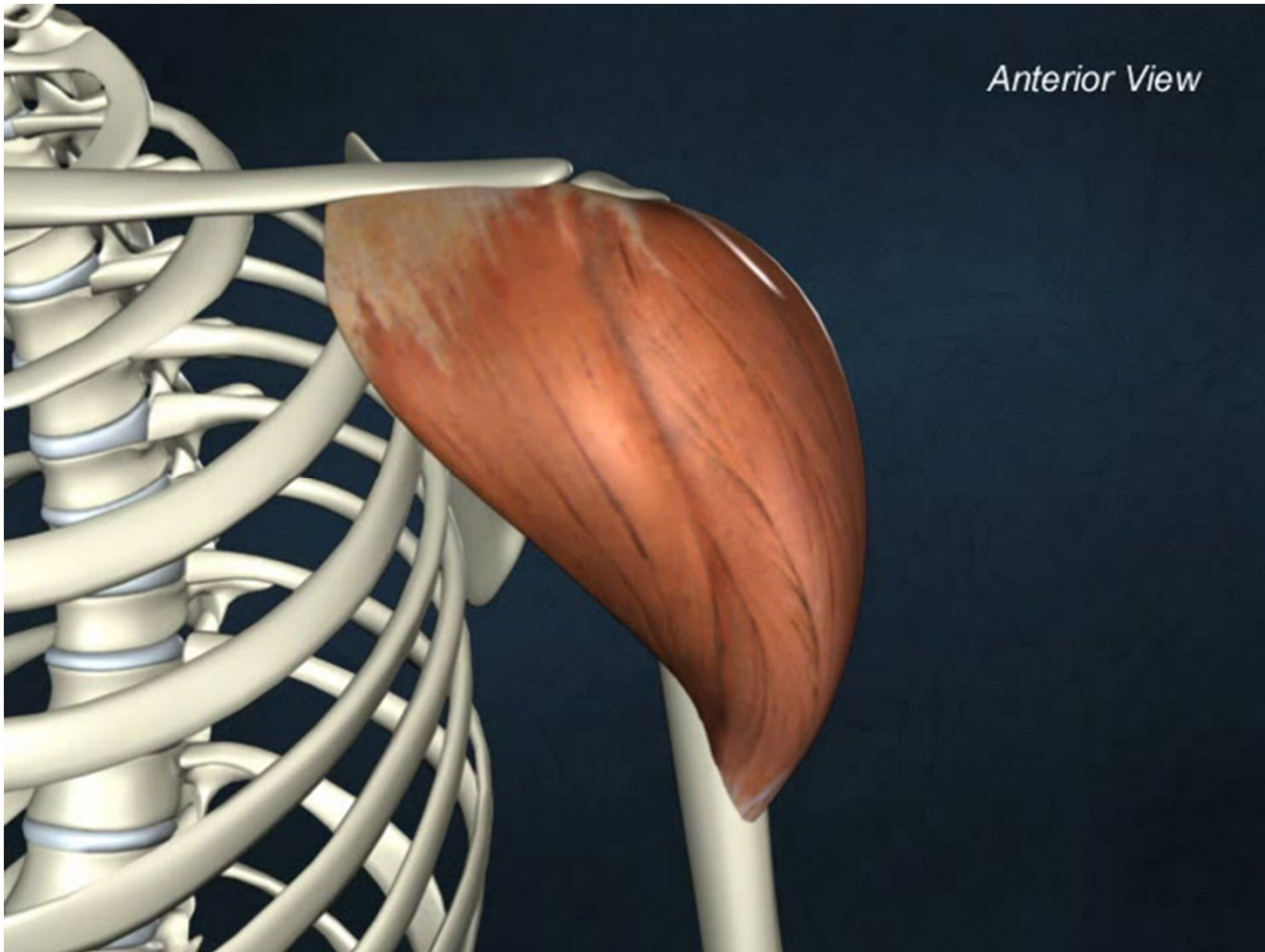


Fig. 10.14



Latissimus dorsi



Deltoid

**⊖ trapezius (occipital & vertebrae to scapula):** superficial, stabilizes, raises, retracts, rotates scapula

**rhomboids (vertebrae to scapula):** deep to trapezius; aid in scapula movements (eg: squaring shoulders, rotation when lowering arm)

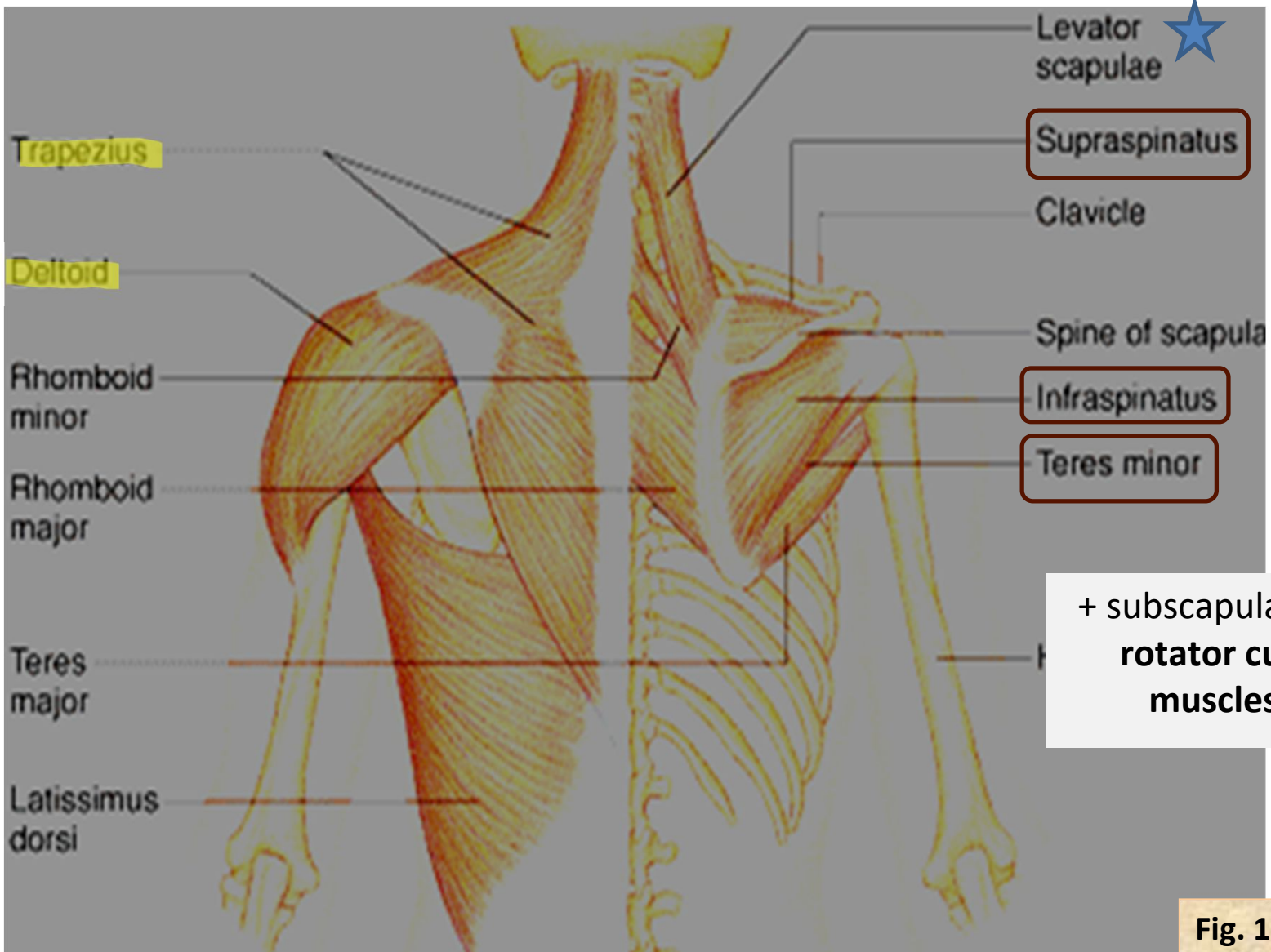


Fig. 10.14

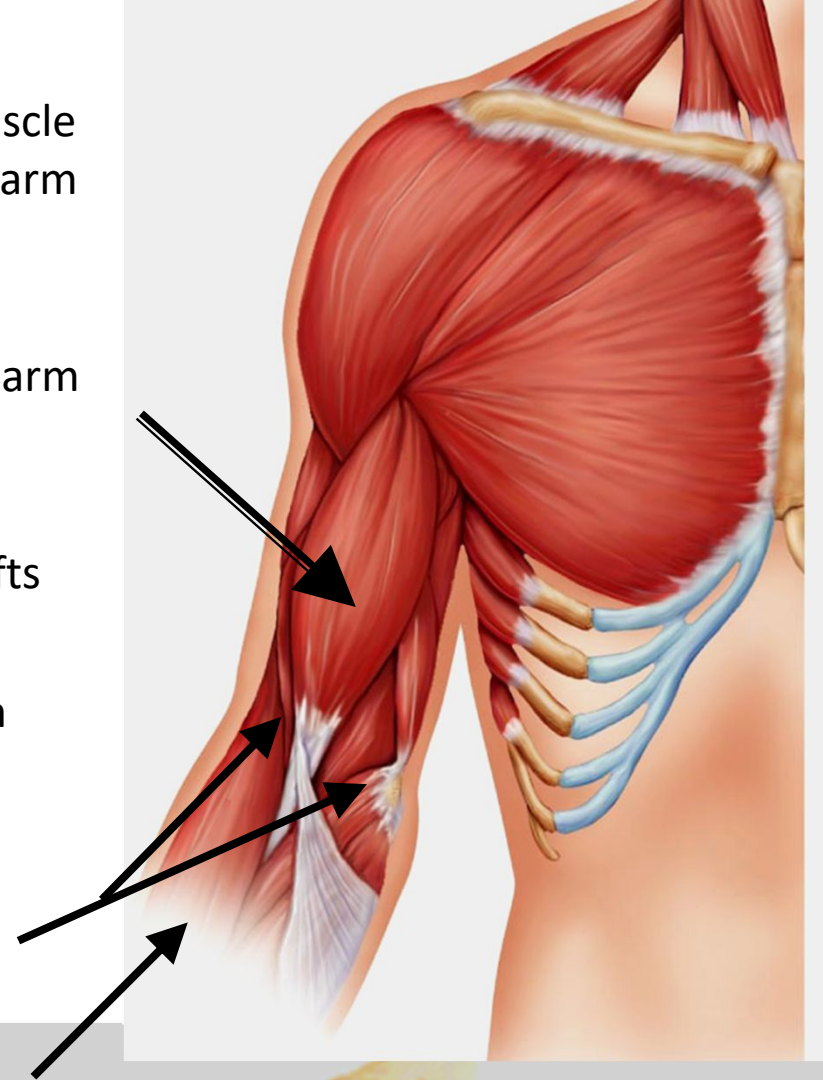
## 5.10 Muscles Crossing the Shoulder & Elbow Joints

⊙ *triceps brachii* (*scapula/humerus to ulna*): only muscle of posterior compartment of arm; powerful forearm extensor, may help stabilize shoulder joint

*biceps brachii* (*shoulder to radius*): anterior, flexes elbow joint & supinates forearm; weak flexor of arm at shoulder

⊙ *brachialis* (*humerus to ulna*): immediately deep to biceps brachii; major forearm flexor (strong) – lifts ulna as biceps lifts radius

*brachioradialis* (*humerus to radius*): superficial; from distal humerus to distal forearm; synergist in forearm flexion



Biceps brachii { Long head  
Short head

(b)



○ = origin  
| = insertion

Fig. 10.15

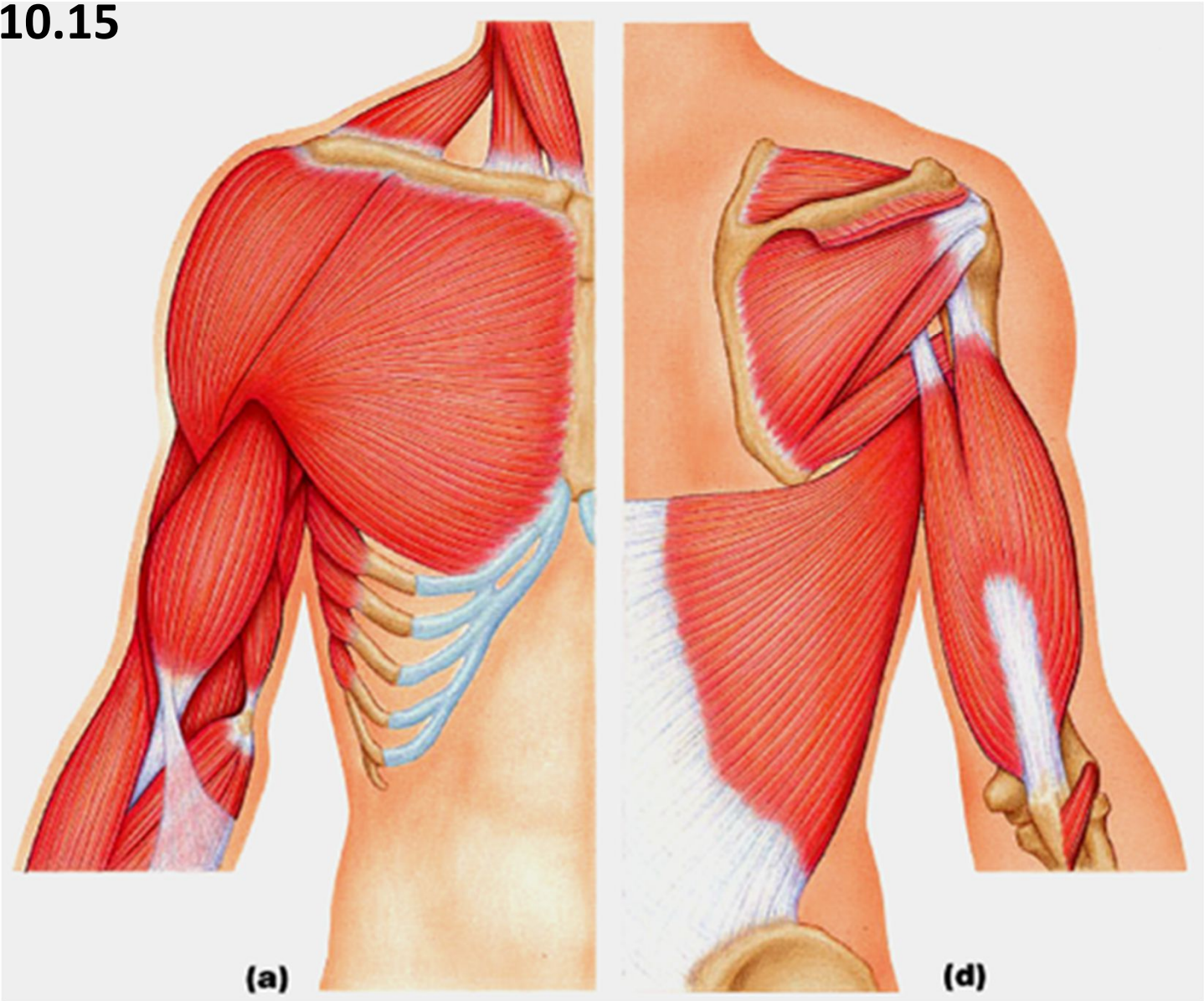


Triceps brachii



brachioradialis

**Fig. 10.15**



**Anterior**

**Posterior**

## 8. Muscles of the Forearm: Movements of the Wrist, Hand & Fingers

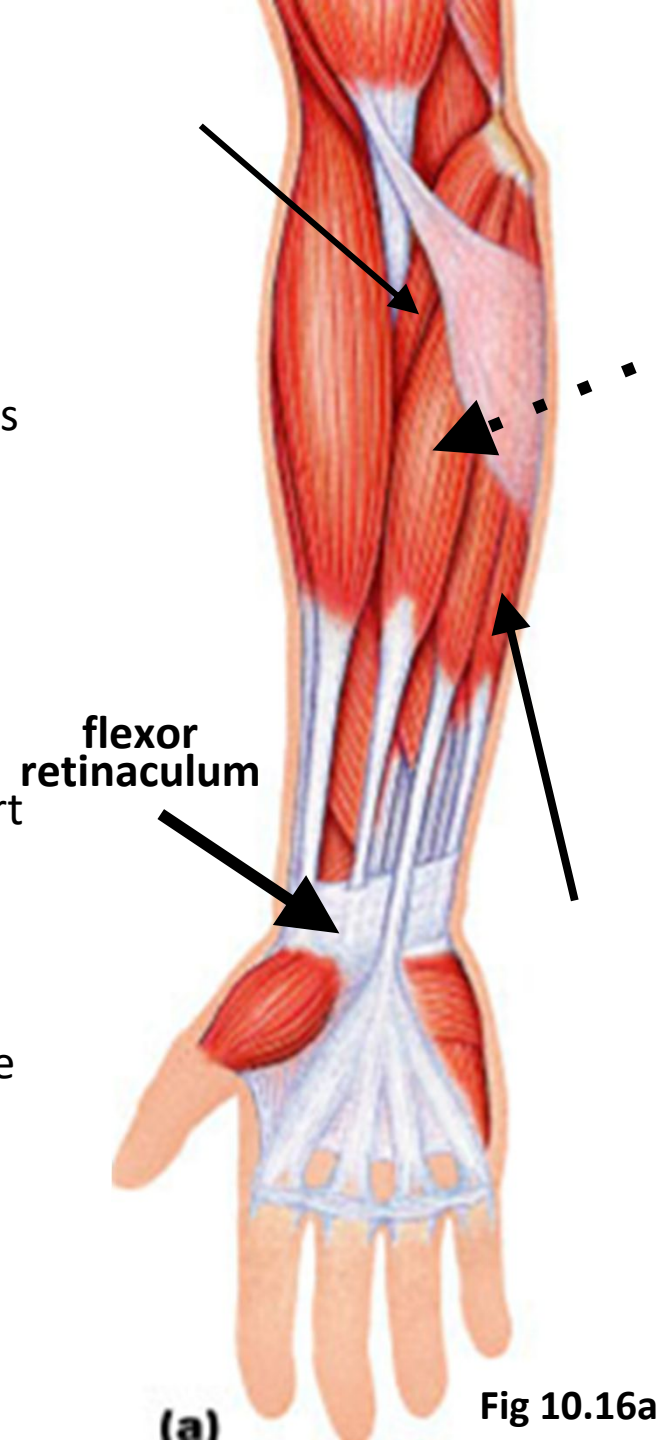
2 functional groups allow for movements of (i) the wrist and of (ii) the fingers and thumb

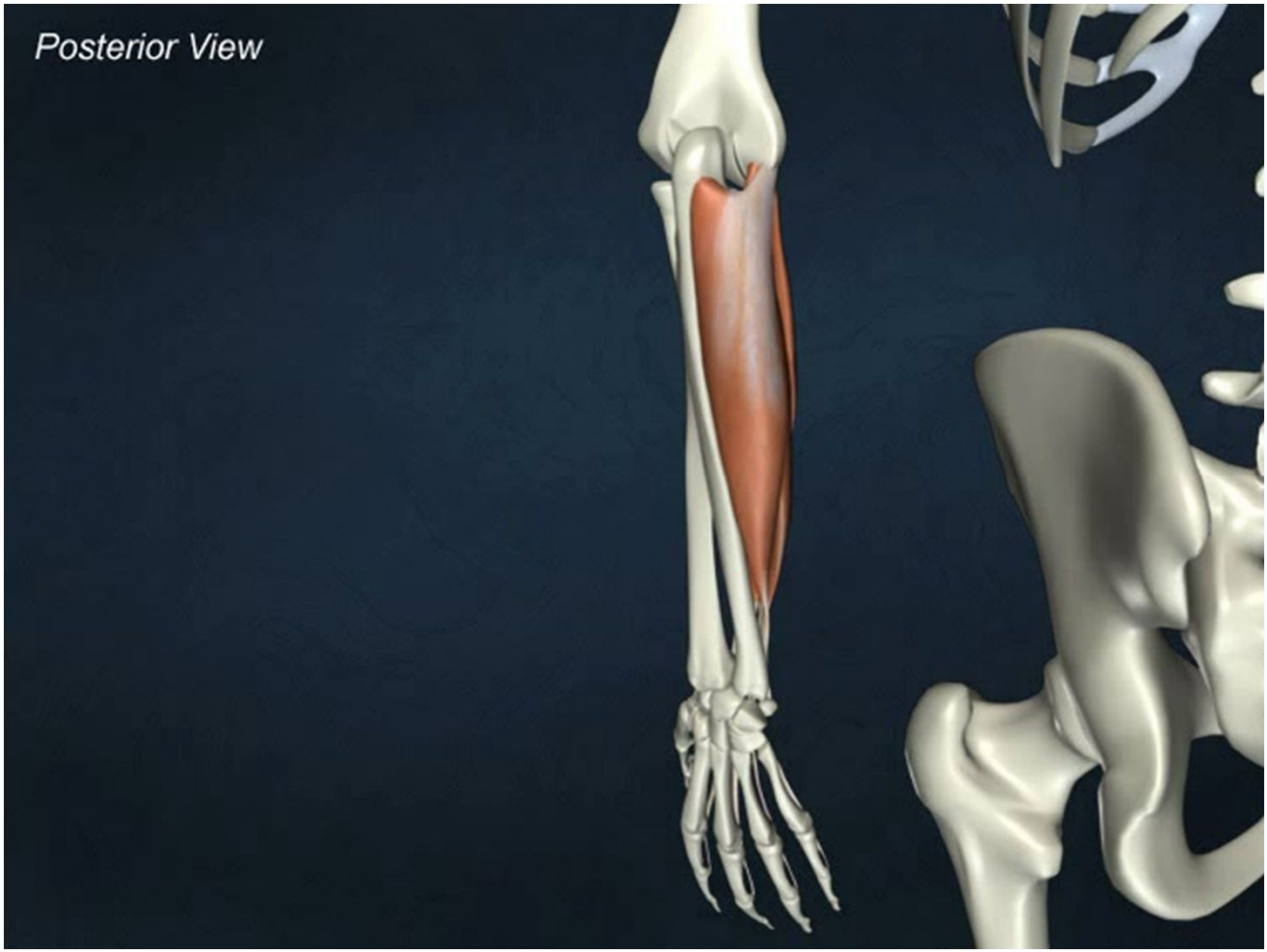
***pronator teres*** (*humerus/ulna to lateral radius*): pronates forearm, weak flexor of elbow

***flexor carpi radialis*** (*humerus to metacarpals*): diagonally across forearm, powerful flexor of wrist; abducts hand

***flexor carpi ulnaris*** (*humerus/ulna to metacarpals*): powerful flexor of wrist; also adducts hand in concert with extensor carpi ulnaris; stabilizes wrist during finger extension

***flexor digitorum superficialis*** (*humerus/ulna to phalanges*): 2-headed, deeper; flexes wrist & middle phalanges of fingers 2-5





Flexor carpi ulnaris

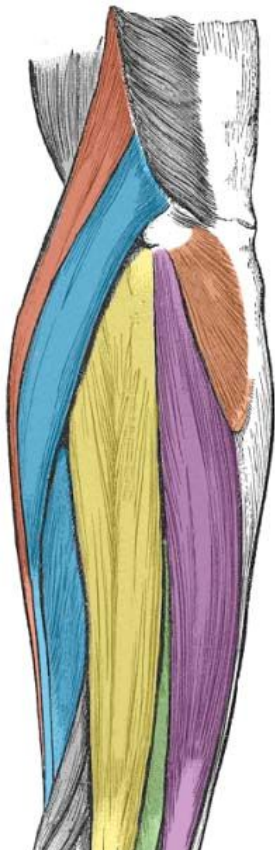








Flexor digitorum superficialis

*extensor carpi radialis longus/brevis* (humerus to metacarpals): extends & abducts wrist

*extensor digitorum* (humerus to phalanges): prime mover of finger extension; extends wrist, can abduct fingers

*supinator* (humerus to radius): deep; assists biceps brachii to supinate forearm



	<b>Brachioradialis</b>
	<b>Extensor carpi radialis longus and brevis</b>
	<b>Extensor digitorum</b>
	<b>Extensor digiti minimi</b>
	<b>Extensor carpi ulnaris</b>
	<b>Anconeus</b>



Tendons of:

**Flexor digitorum profundus**  
**Flexor digitorum superficialis**

**Third lumbrical**

**Fourth lumbrical**

**Opponens digiti minimi**

**Flexor digiti minimi brevis**

**Abductor digiti minimi**

**Pisiform bone**

**Flexor carpi ulnaris tendon**

**Flexor digitorum superficialis tendons**

**(a)**

Fibrous sheath

**Second lumbrical**

**Dorsal interossei**

**First lumbrical**

**Adductor pollicis**

**Flexor pollicis brevis**

**Abductor pollicis brevis**

**Opponens pollicis**

**Flexor retinaculum**

**Abductor pollicis longus**

Tendons of:

- **Palmaris longus**
- **Flexor carpi radialis**
- **Flexor pollicis longus**

**Palmar interossei**

**Opponens digiti minimi**

**Flexor digiti minimi brevis (cut)**

**Abductor digiti minimi (cut)**

**(b)**

**Flexor digitorum profundus tendon**

**Flexor digitorum superficialis tendon**

**Dorsal interossei**

**Adductor pollicis**

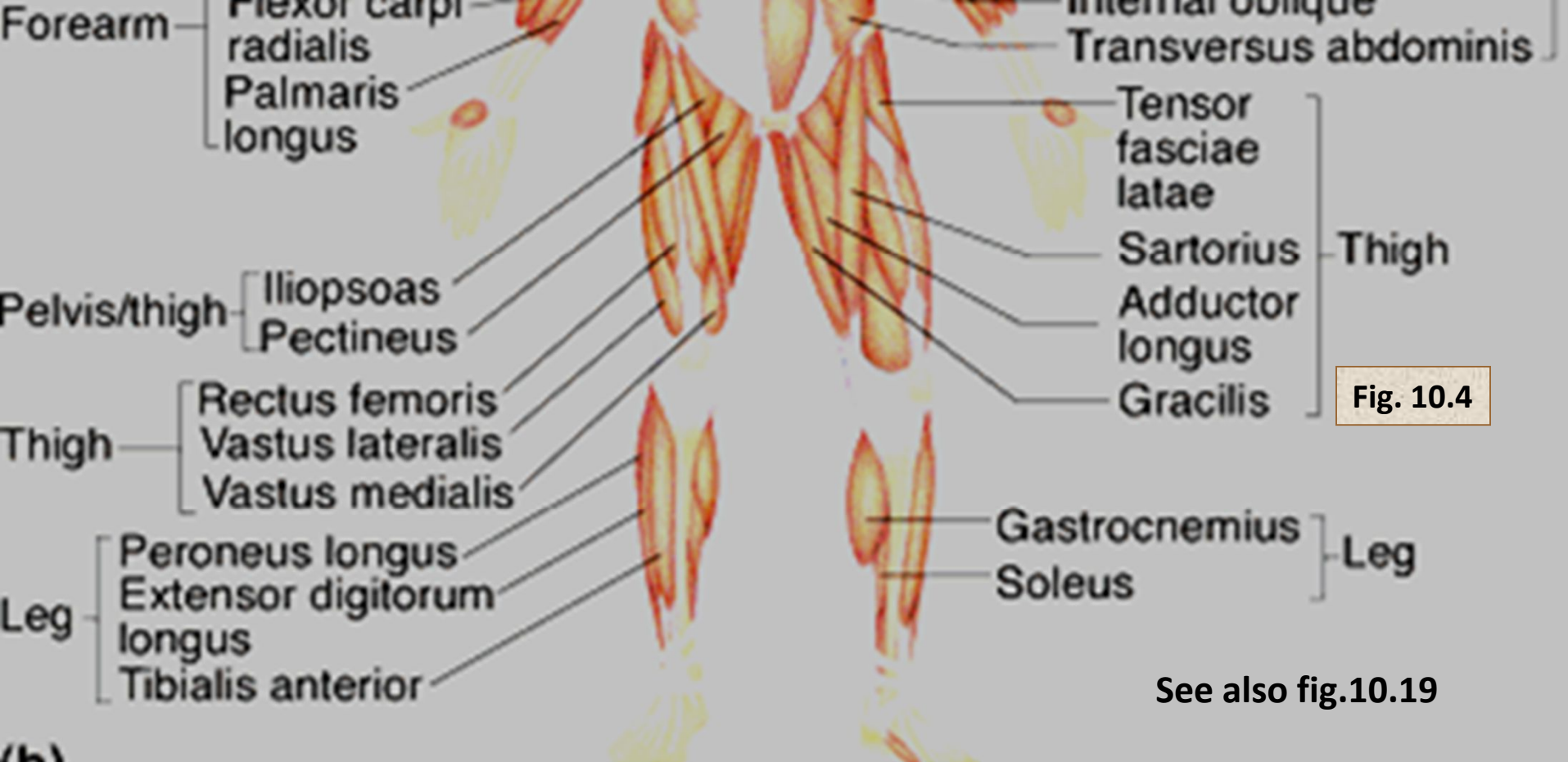
**Flexor pollicis brevis**

**Abductor pollicis brevis**

**Opponens pollicis**

**Flexor pollicis longus tendon**

**Fig. 10.19: Ventral Views of Right Hand**

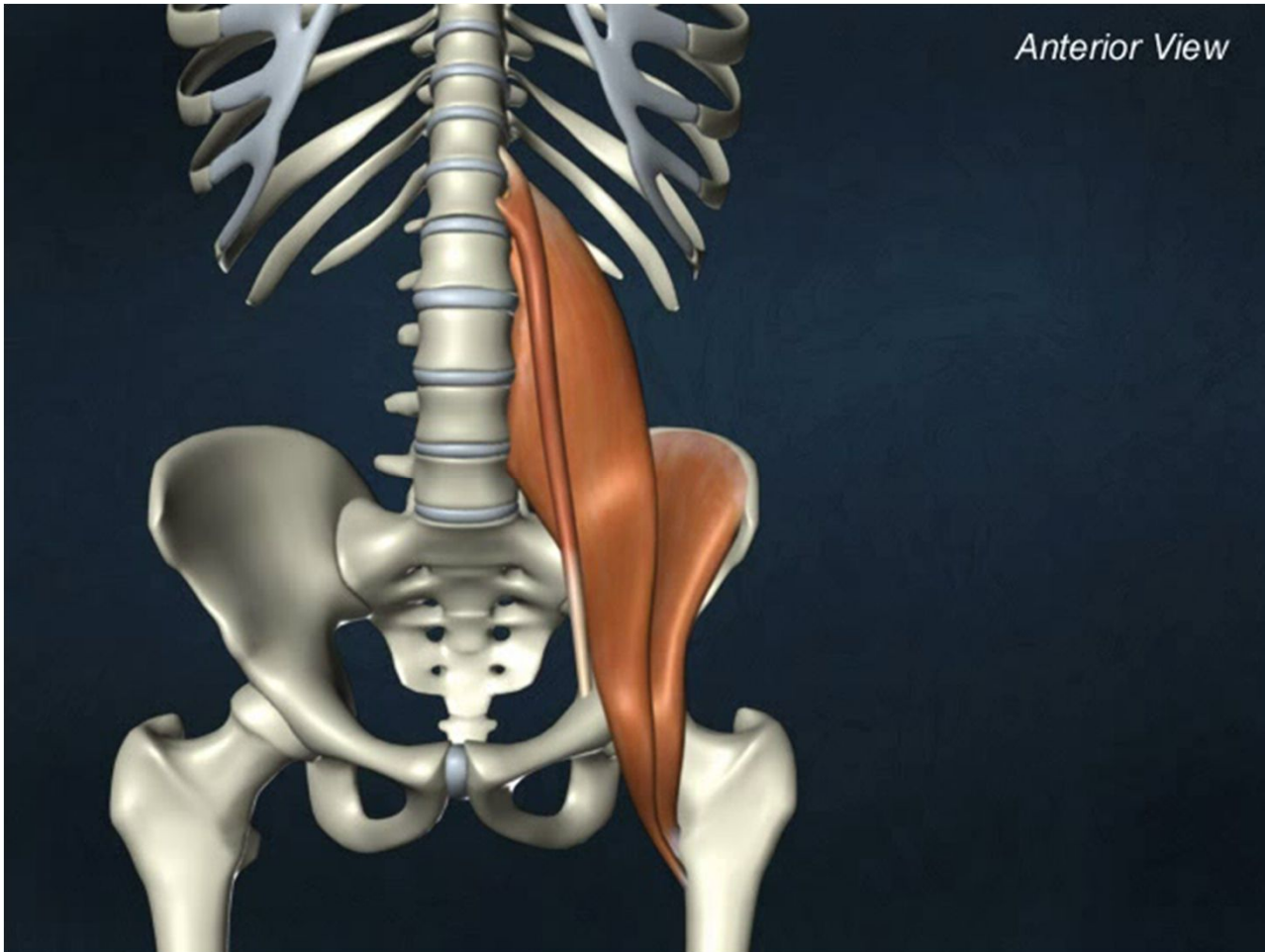


## 9. Muscles of Hip, Thigh & Leg

⊙ **iliopsoas** (*iliac crest & lumbar vertebrae to femur*): composite of 2 muscles; prime mover of hip flexion

⊙ **sartorius** (*iliac spine to medial tibia*): strap-like; longest muscle in the body; flexes & laterally rotates thigh; weak knee flexor

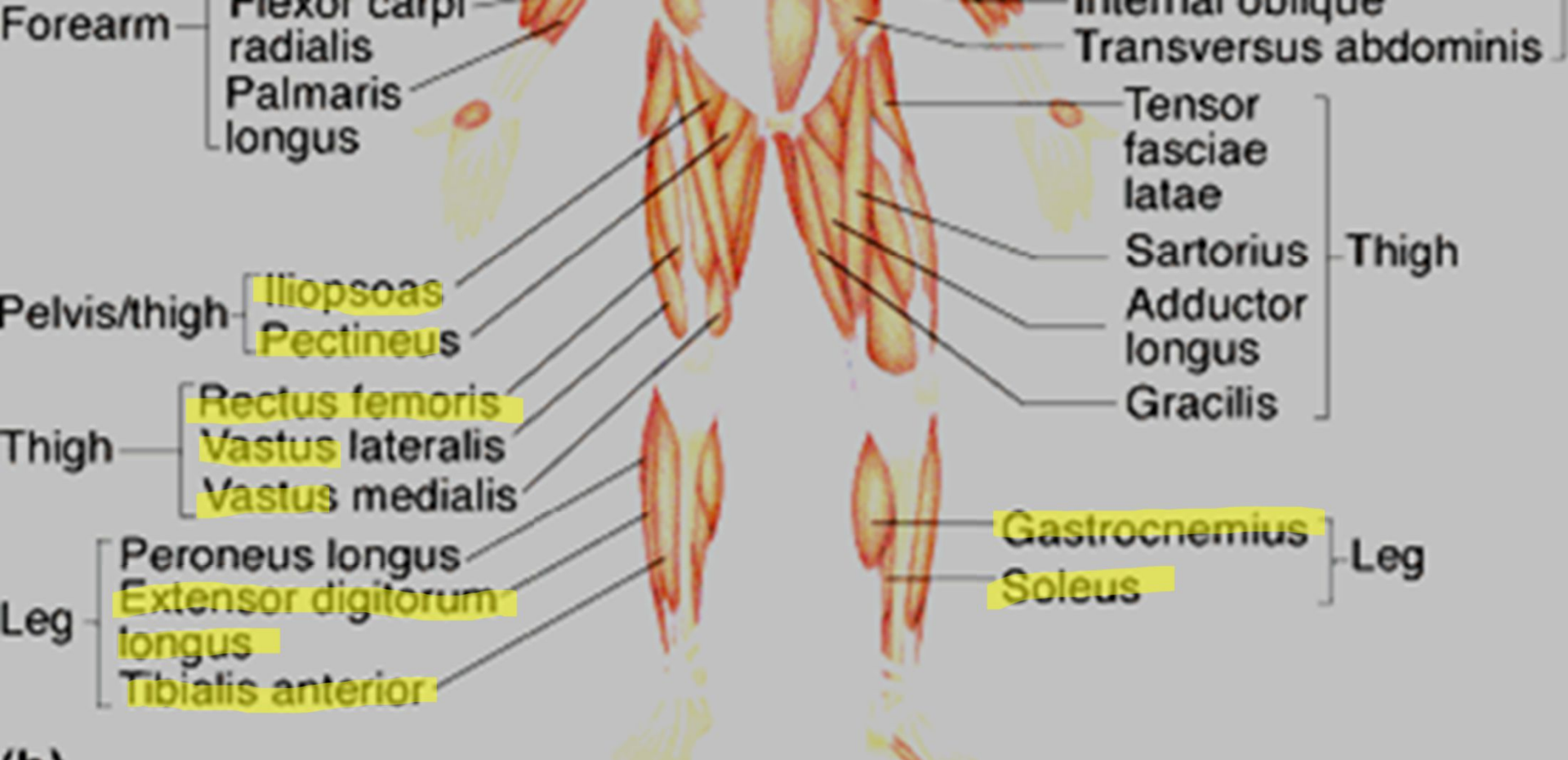
**adductors** (*magnus, longus, brevis*) (*pubis to femur*): all adduct, flex, medially rotate thigh – eg: riding a horse, walking, fixing hip when knee flexed



iliopsoas



sartorius



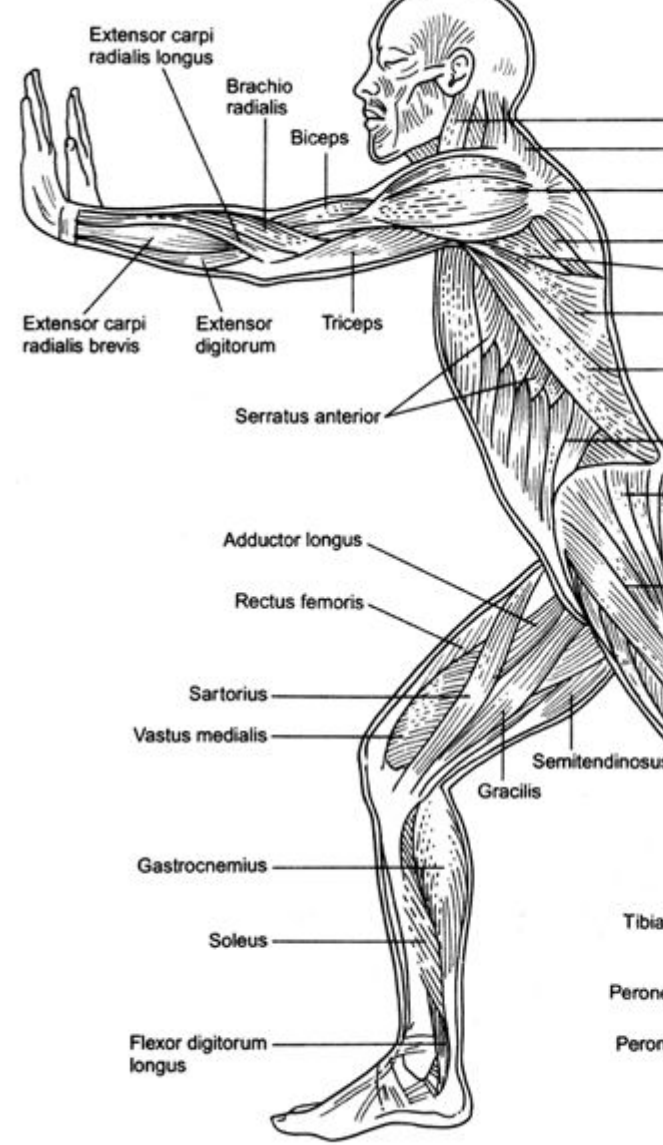
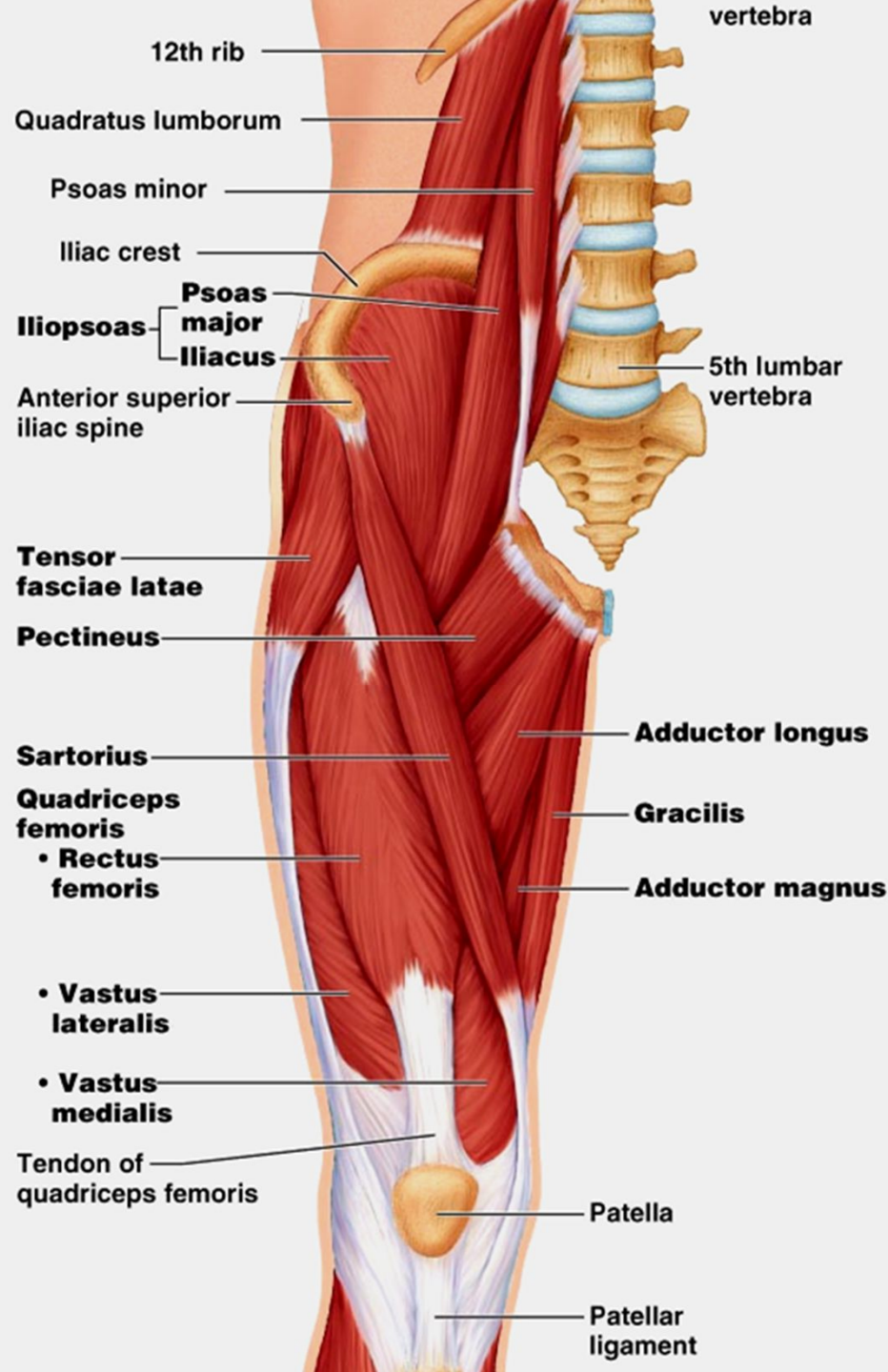
- pectineus*** (*pubis to femur*): adducts, flexes & medially rotates thigh
- gracilis*** (*pubis to medial tibia*): adducts thigh, medially rotates leg (walking)
- rectus femoris*** (*iliac spine to patella & tibia*): extends knee; flexes thigh at hip
- vastus (lateralis, medialis, intermedius)***: all extend the knee
- tibialis anterior*** (*tibia to tarsals*): prime mover of dorsiflexion; inverts foot
- extensor digitorum longus*** (*tibia to phalanges*): dorsiflexes foot; prime mover of toe extension



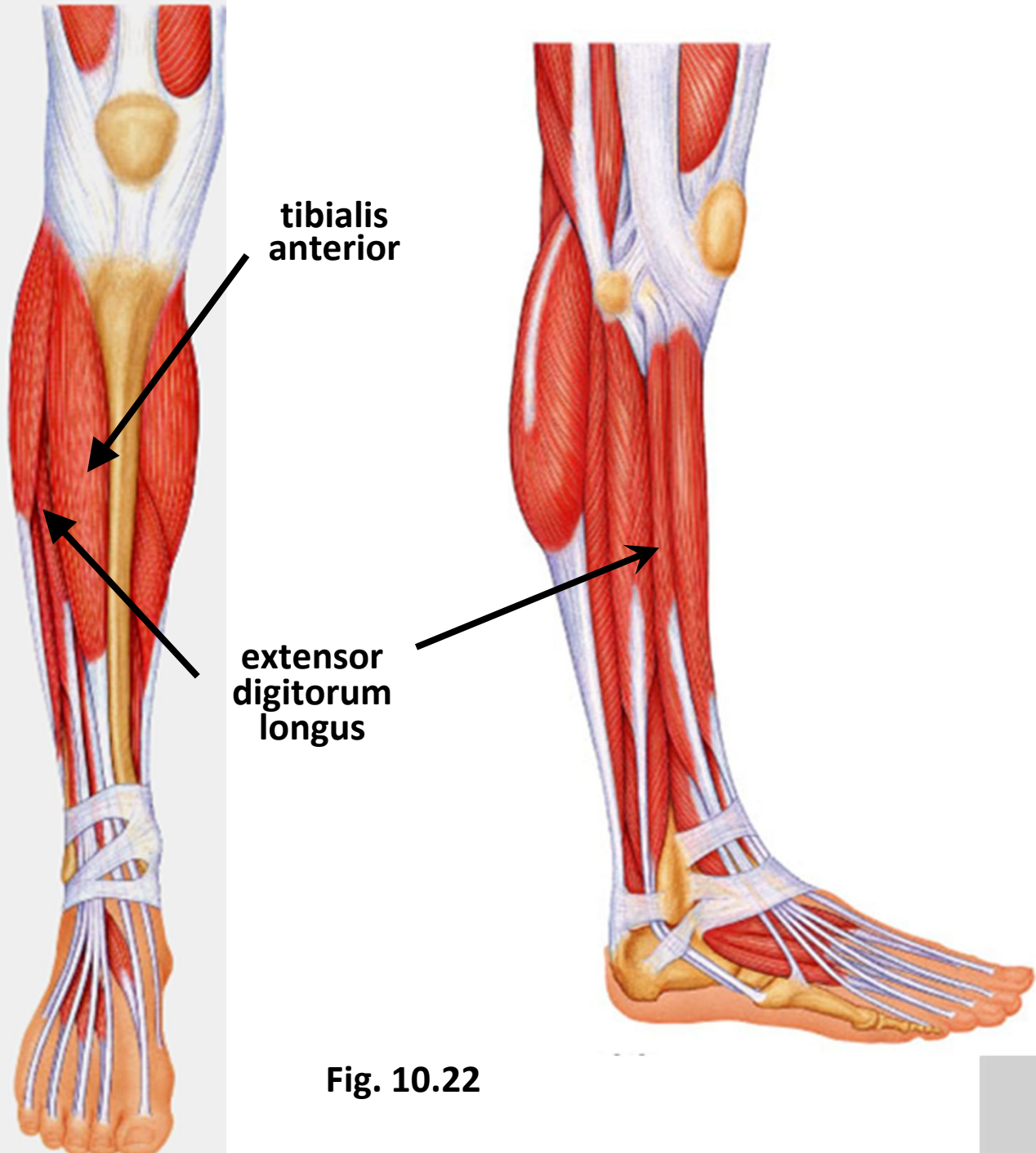
rectus femoris



tibialis anterior



Figs. 10.20

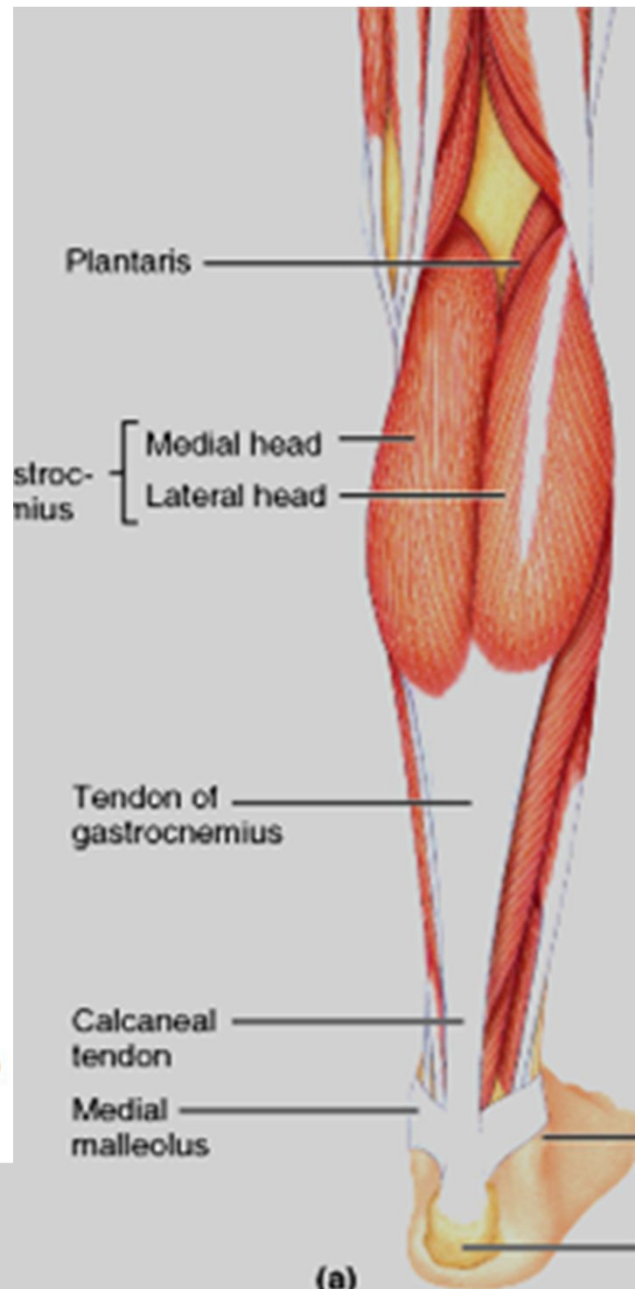


tibialis anterior

extensor digitorum longus

Fig. 10.22

Fig. 10.24



Plantaris

Gastrocnemius { Medial head Lateral head

Tendon of gastrocnemius

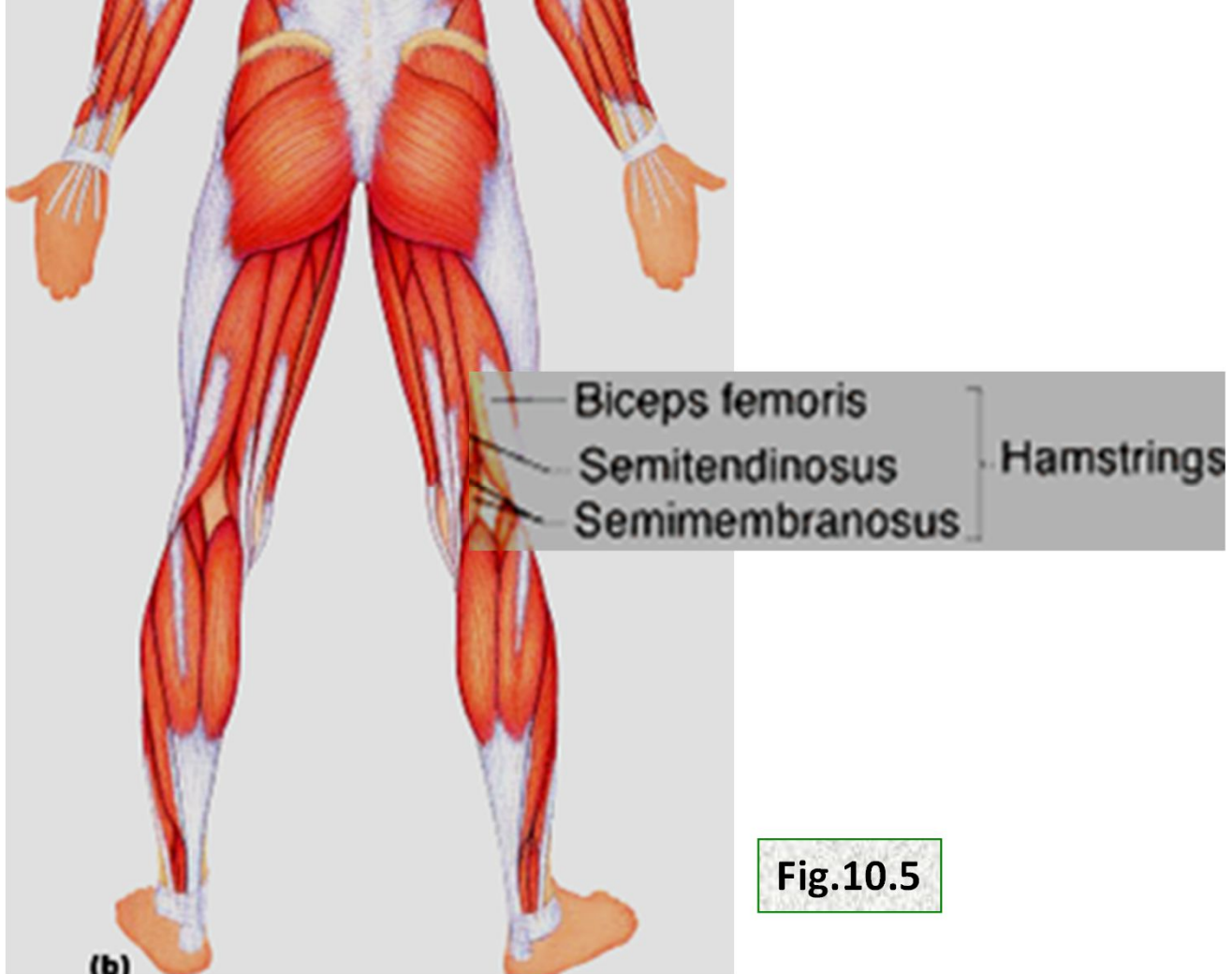
Calcaneal tendon

Medial malleolus

(a)



Extensor digitorum



***gluteus maximus (ilium/sacrum to femur):*** largest & most superficial buttock muscle; major thigh extensor - climbing stairs, running (im injection)

***gluteus medius (ilium to femur):*** abducts & medially rotates thigh; esp. during walking (im injections)

***hamstrings (ischial tuberosity to tibia/fibula):*** 3 muscles; all extend thigh & flex knee

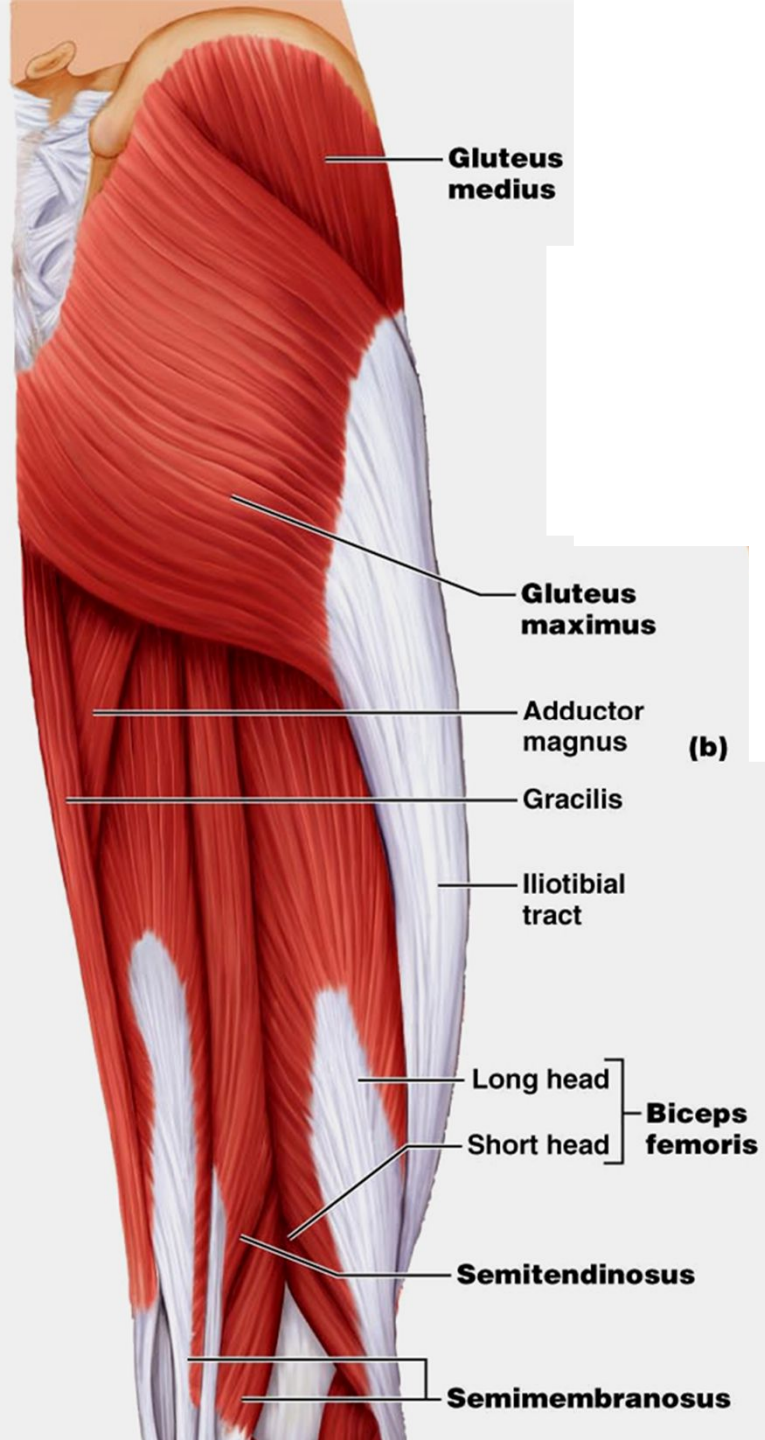


Fig. 10.21

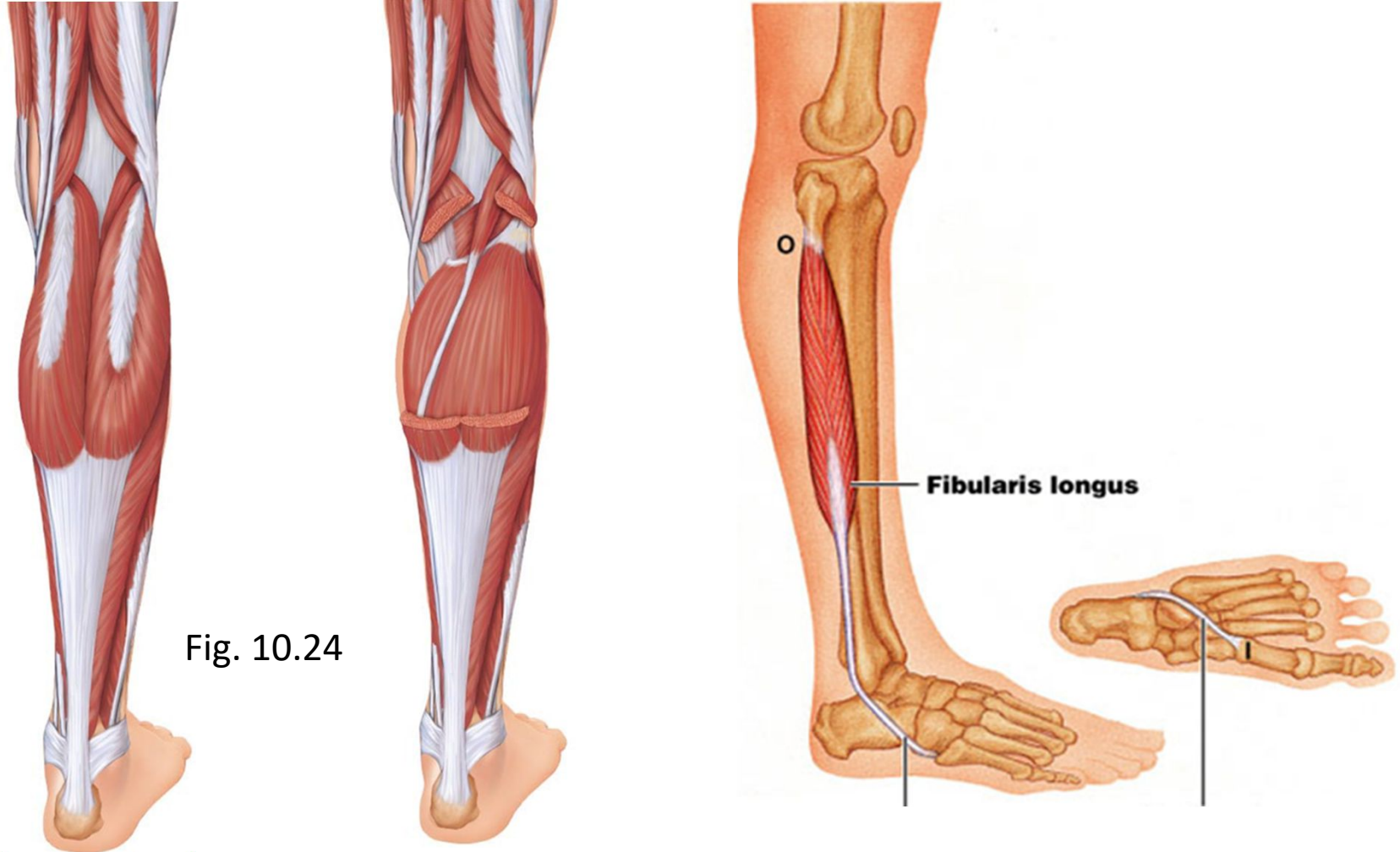


Fig. 10.24

⊙ **gastrocnemius** (*femur to calcaneal tendon*): plantar flexes foot when knee extended; flex knee if foot dorsiflexed

**soleus** (*proximal tibia/fibula to calcaneus*): deeper, plantar flexes ankle: walking, running, dancing

⊙ **fibularis (peroneus) longus** (*fibula under foot to 1<sup>st</sup> metatarsal*): plantar flexes & everts foot; helps keep foot flat on ground

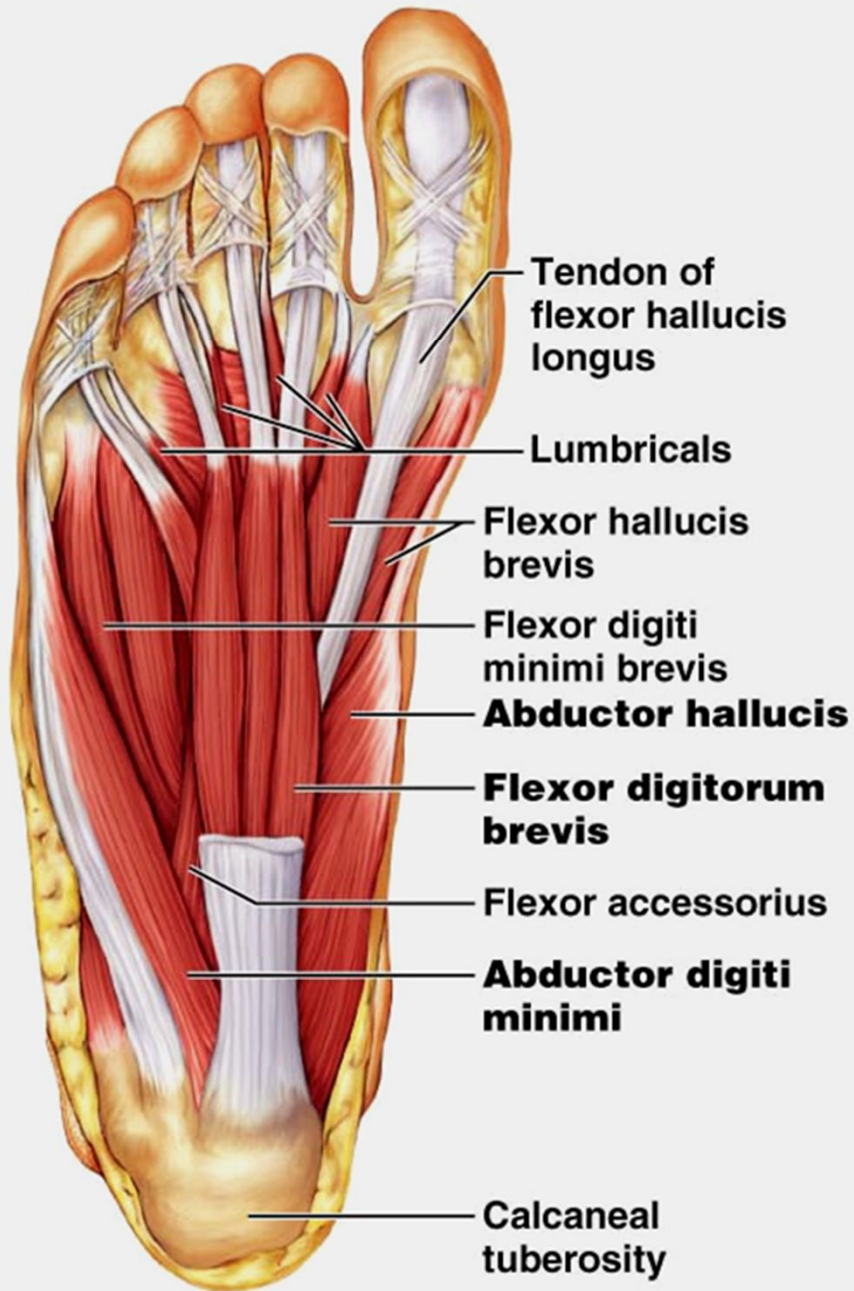
**calcaneal (Achilles tendon)**: largest tendon in body (G & S)



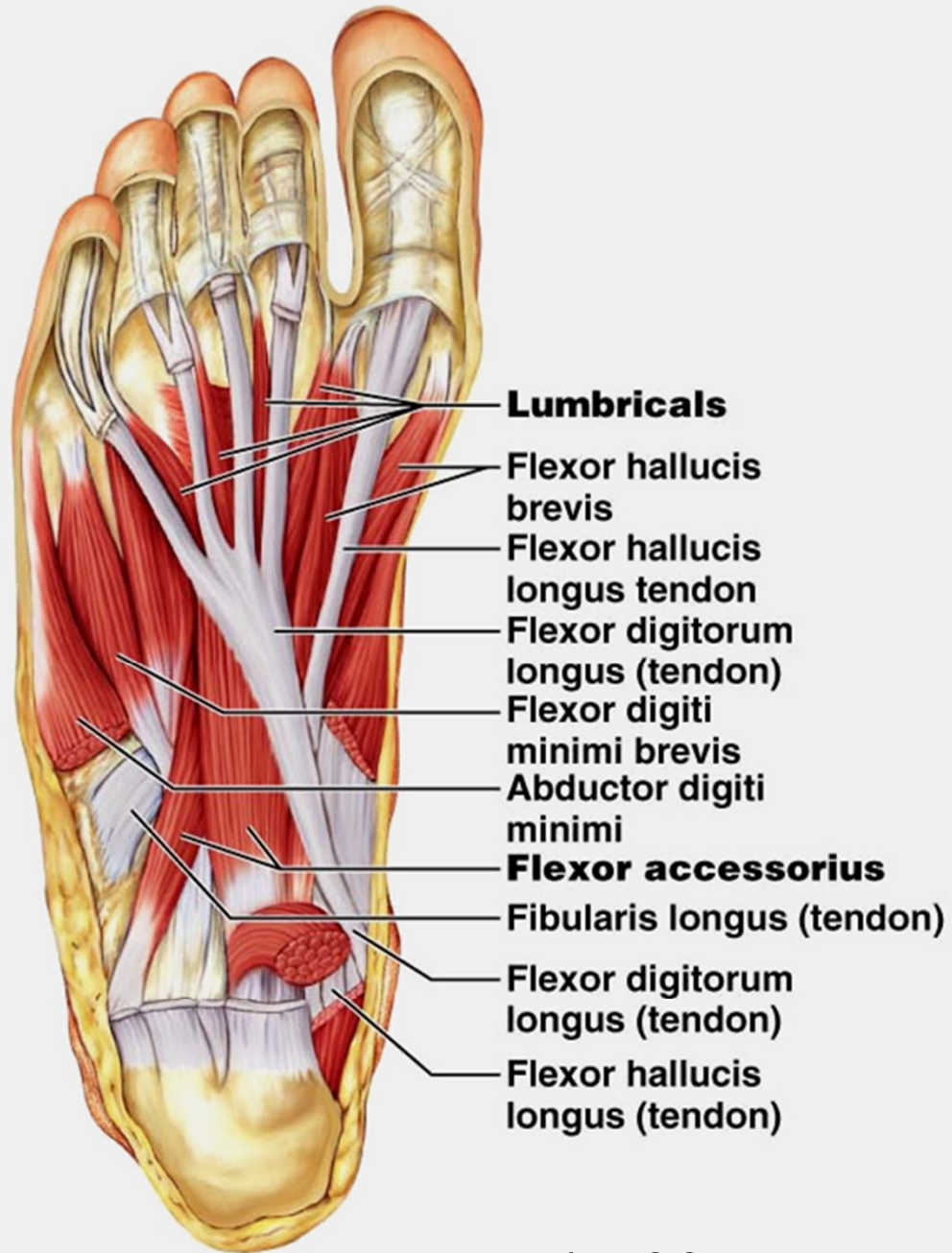
gastrocnemius



fibularis longus



**(a) First layer**



**(b) Second layer**

Fig. 10.25