MUSCLES OF FACIAL EXPRESSION

CN: Use your lightest colors for O and Q. Use warm and cheerful colors for the muscles producing a smile (A–H). Color the muscles reflecting sadness (I–O) with greens, blues, and grays. (1) Begin with the smiling side, and color only the muscles identified by titles A–H. Color those muscles in the profile view below. (2) Repeat the process with the sad side. Note that a portion of frontalis (I) has been cut away to reveal corrugator supercilii (J). (3) Color the titles at the bottom and the related muscles on the lower view. Include the portions of the auricular muscles that disappear beneath the ear.

* ORBICULARIS OCULI A

NASALIS B

LEVATOR LABII SUPERIORIS ALAEQUE NASI C

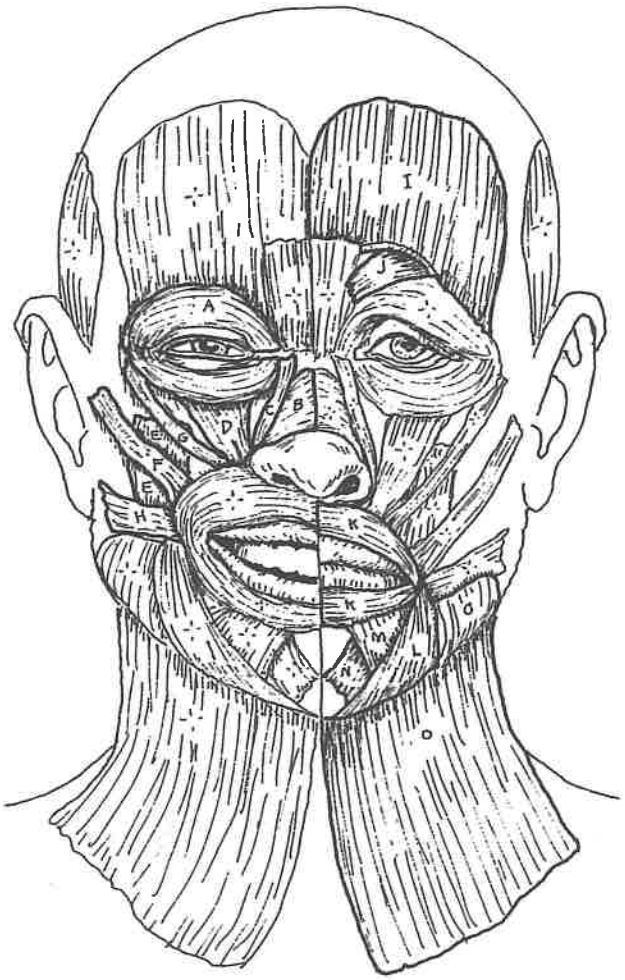
LEVATOR LABII SUPERIORIS D

LEVATOR ANGULI ORIS E

ZYGOMATICUS MAJOR F

ZYGOMATICUS MINOR G

RISORIUS H



FRONTALIS I

CORRUGATOR SUPERCILII J

* ORBICULARIS ORIS K

DEPRESSOR ANGULI ORIS L

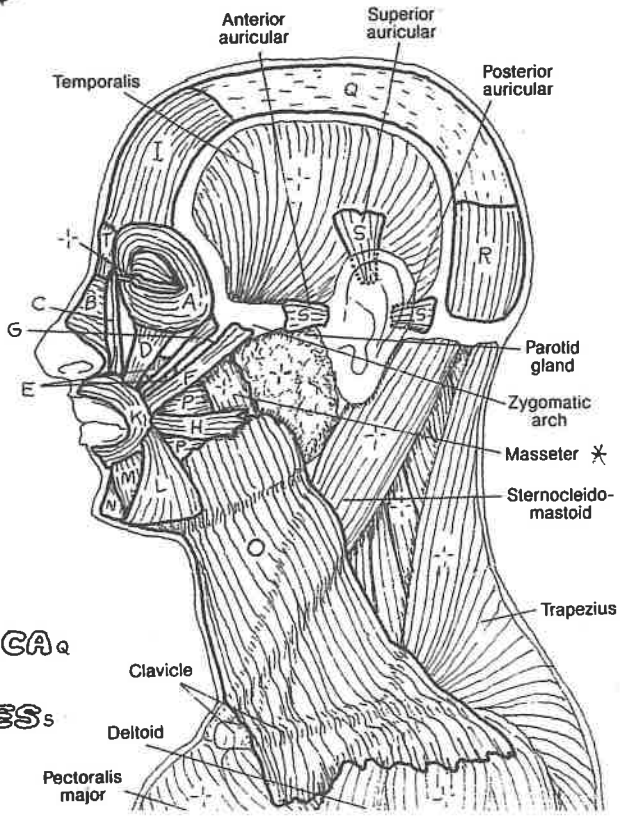
DEPRESSOR LABII INFERIORIS M

MENTALIS N

PLATYSMA O

The muscles of facial expression are generally thin, flat bands arising from a facial bone or cartilage and inserting into the dermis of the skin or the fibrous tissue enveloping the sphincter muscles of the orbit or mouth. These muscles are generally arranged into the following regional groups: (1) the epicranial group (*occipitofrontalis* moving the scalp); (2) the orbital group (*orbicularis oculi, corrugator supercilii*); (3) the nasal group (*nasalis, procerus*); (4) the oral group (*orbicularis oris, zygomaticus major* and *minor,* the *levators* and the *depressors* of the lips and angles of the mouth, *risorius, buccinator,* and part of *platysma*); and (5) the group moving the ears (*auricular muscles*). The general function of each of these muscles is to move the skin wherever they insert. As you color each muscle, try contracting it on yourself while looking into a mirror, and see what develops.

Orbicularis oculi and oris are sphincter muscles, tending to close the skin over the eyelids and tighten the lips, respectively. Contractions of the cheek muscle buccinator makes possible rapid changes in volume of the oral cavity, as in playing a trumpet or squirting water. The nasalis muscle has both compressor and dilator parts, which influence the size of the anterior nasal openings.



BUCCINATOR P

GALEA APONEUROTICA Q

OCCIPITALIS R

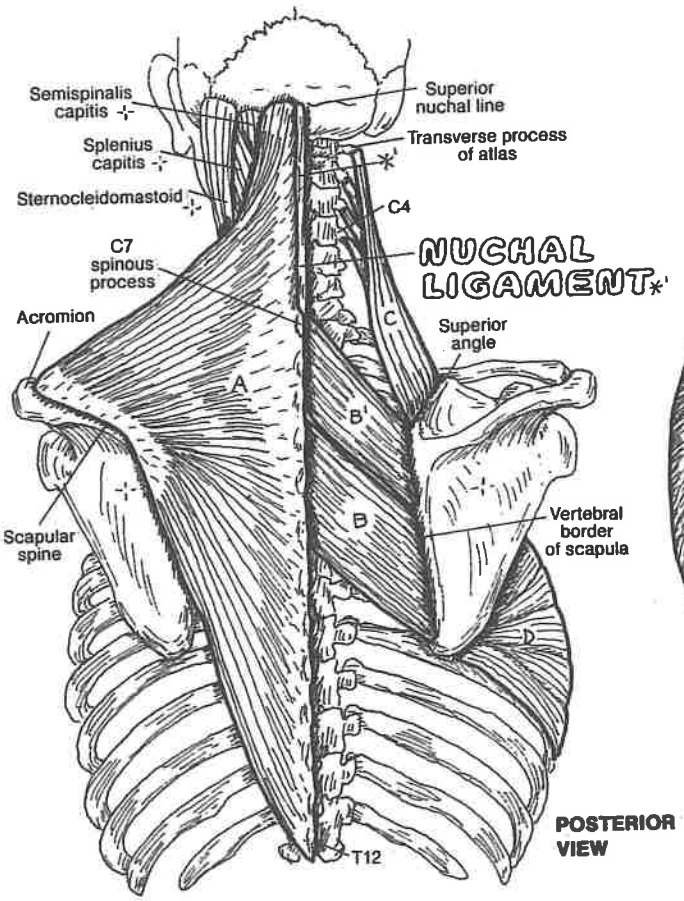
AURICULAR MUSCLES S

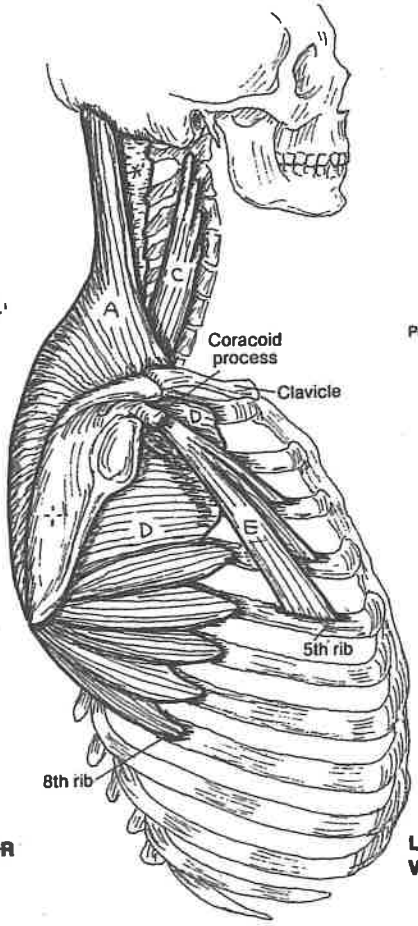
PROCERUS T

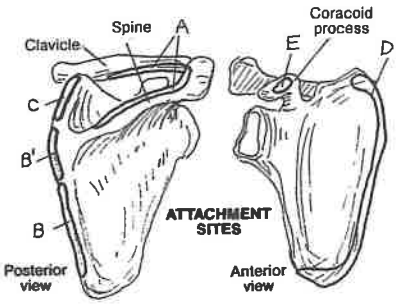
MUSCLES OF SCAPULAR STABILIZATION

* TRAPEZIUS$_A$
* RHOMBOID MAJOR$_{B}$ & MINOR$_{B'}$
* LEVATOR SCAPULAE$_C$
* SERRATUS ANTERIOR$_D$
* PECTORALIS MINOR$_E$

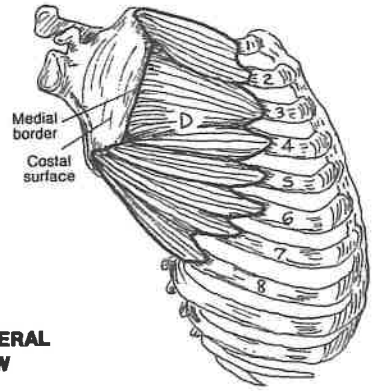
CN: (1) Color the six muscles of scapular stabilization. Note that the two rhomboids receive the same color (B). In the two main views, color gray the nuchal ligament and its title. (2) Color the attachment site diagrams at upper right. (3) In the illustrations below describing scapular movement, note that the three regions of trapezius (A) play different roles. Color gray the scapulae, the arrows, and the movement titles.







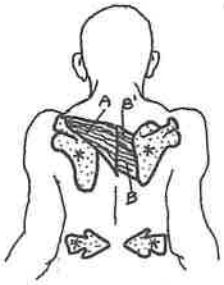
Scapula is shown pulled away from the thorax to reveal attachment of serratus anterior to the medial border of the scapula.



The scapula lies on the posterior thorax, roughly from T2 to T8. It has no direct bony attachment with the axial skeleton. Enveloped by muscle, it glides over the fascia-covered thorax during upper limb movement (scapulothoracic motion). Bursae have been reported between the thorax and the scapula; so has bursitis. The scapula is dynamically moored to the axial skeleton by muscles attaching the scapula to the axial skeleton. These *muscles of scapular stabilization* make possible considerable scapular mobility and, therefore, shoulder/arm mobility.

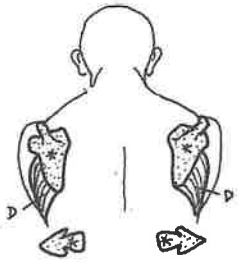
Note the roles of these six muscles in scapular movement, and note how the shoulder and arm are affected. *Pectoralis minor* assists *serratus anterior* in protraction of the scapula such as in pushing against a wall; it also helps in depression of the shoulder and downward rotation of the scapula. Consider the power resident in serratus anterior and trapezius in pushing or swinging a bat. Note the especially broad sites of attachment of the *trapezius* muscle. Trapezius commonly manifests significant tension with hard work—mental or physical. A brief massage of this muscle often brings quick relief.

MOVEMENTS OF THE SCAPULA*



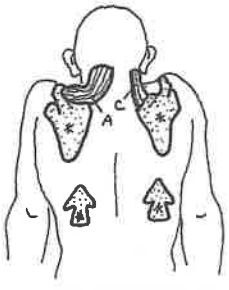
RETRACTION*

Military posture ("squaring the shoulders")



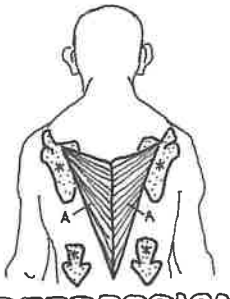
PROTRACTION*

Pushing forward with outstretched arms and hands.



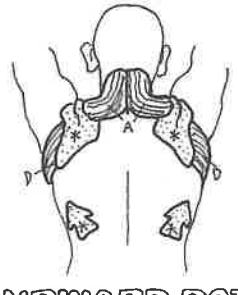
ELEVATION*

Shrugging the shoulders or protecting the head.



DEPRESSION*

Straight arms on parallel bars, holding weight.



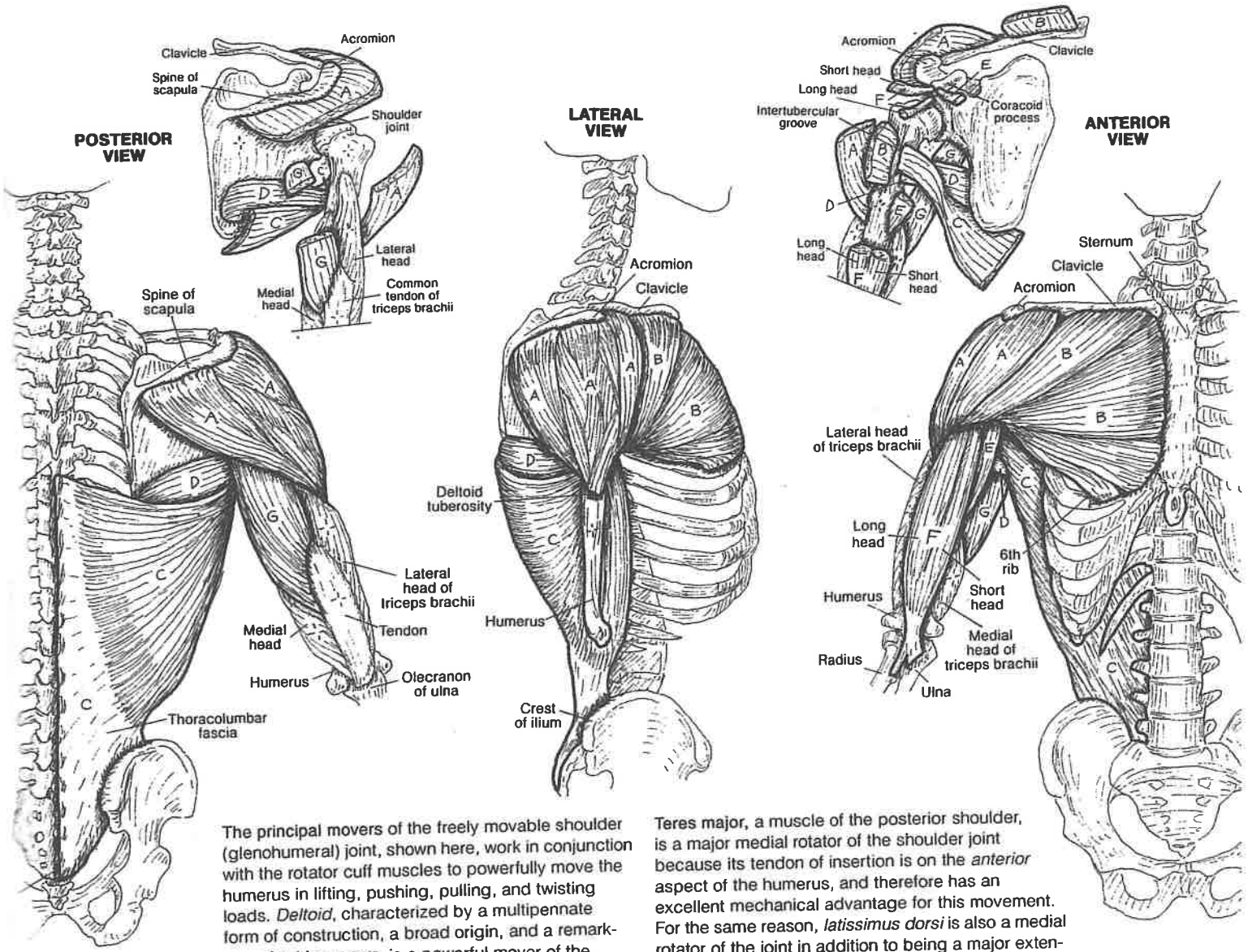
UPWARD ROT.*

Lifting or reaching over head.

MOVERS OF SHOULDER JOINT

*DELTOID$_A$ *PECTORALIS MAJOR$_B$
*LATISSIMUS DORSI$_C$ *TERES MAJOR$_D$
CORACOBRACHIALIS$_E$ *BICEPS BRACHII$_F$
*TRICEPS BRACHII (LONG HEAD)$_G$

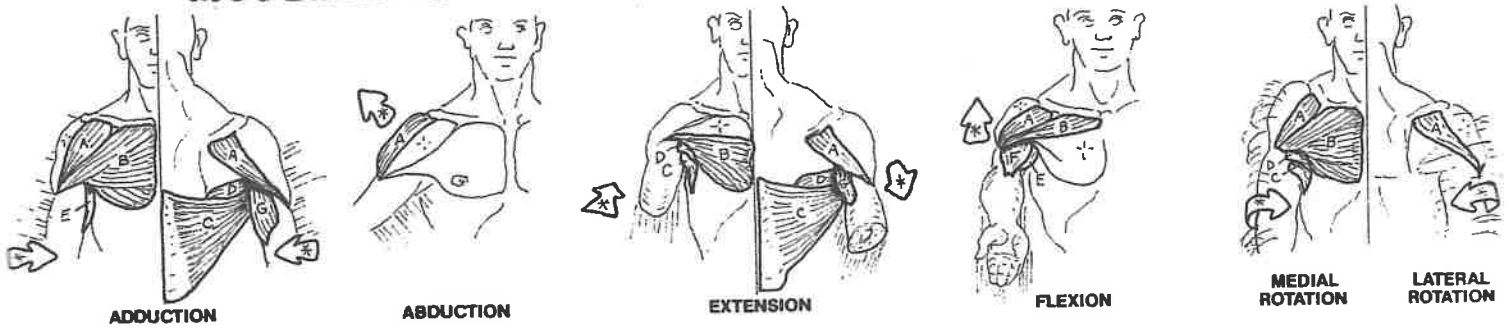
CN: (1) Begin with both posterior views; note that the biceps and triceps are not shown on the lateral view. (2) When coloring the muscles below, note the actions of different parts of the deltoid (A) and pectoralis major (B).



The principal movers of the freely movable shoulder (glenohumeral) joint, shown here, work in conjunction with the rotator cuff muscles to powerfully move the humerus in lifting, pushing, pulling, and twisting loads. *Deltoid*, characterized by a multipennate form of construction, a broad origin, and a remarkably short lever arm, is a powerful mover of the humerus in flexion, extension, and abduction. The clavicular (upper) fibers of *pectoralis major* are effective in flexing the shoulder joint; the sternal/abdominal (lower) fibers *extend* the *flexed* joint. Both are effective medial rotators as well.

Teres major, a muscle of the posterior shoulder, is a major medial rotator of the shoulder joint because its tendon of insertion is on the *anterior* aspect of the humerus, and therefore has an excellent mechanical advantage for this movement. For the same reason, *latissimus dorsi* is also a medial rotator of the joint in addition to being a major extensor. Both heads of *biceps brachii* are active in resisted flexion. *Coracobrachialis* is not a significant mover in either flexion or adduction, and the *long head of triceps brachii* is not a major mover in extension of the shoulder joint.

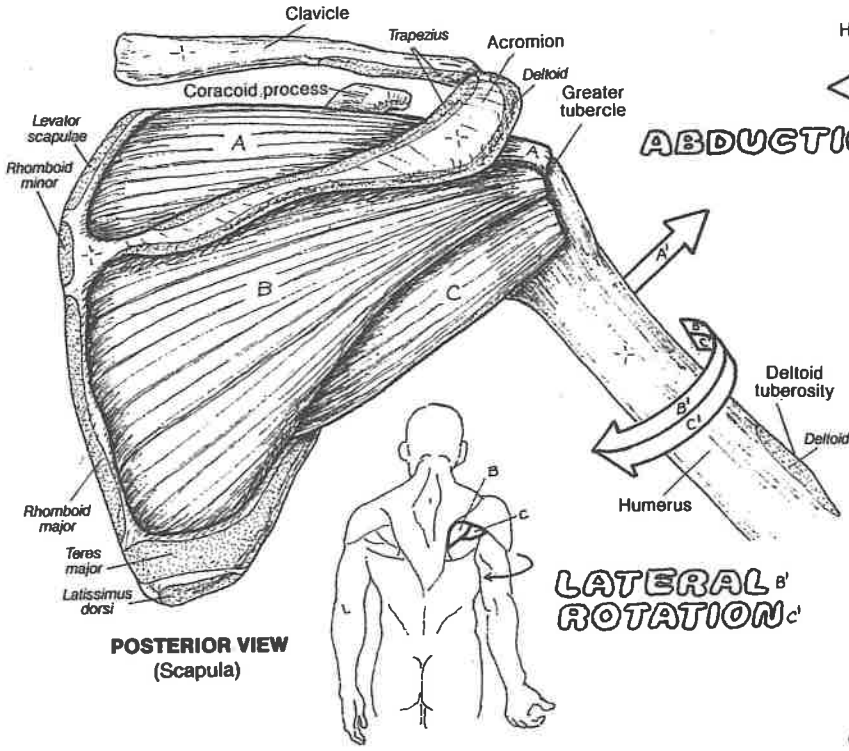
MOVEMENTS OF THE HUMERUS AT THE SHOULDER JOINT*

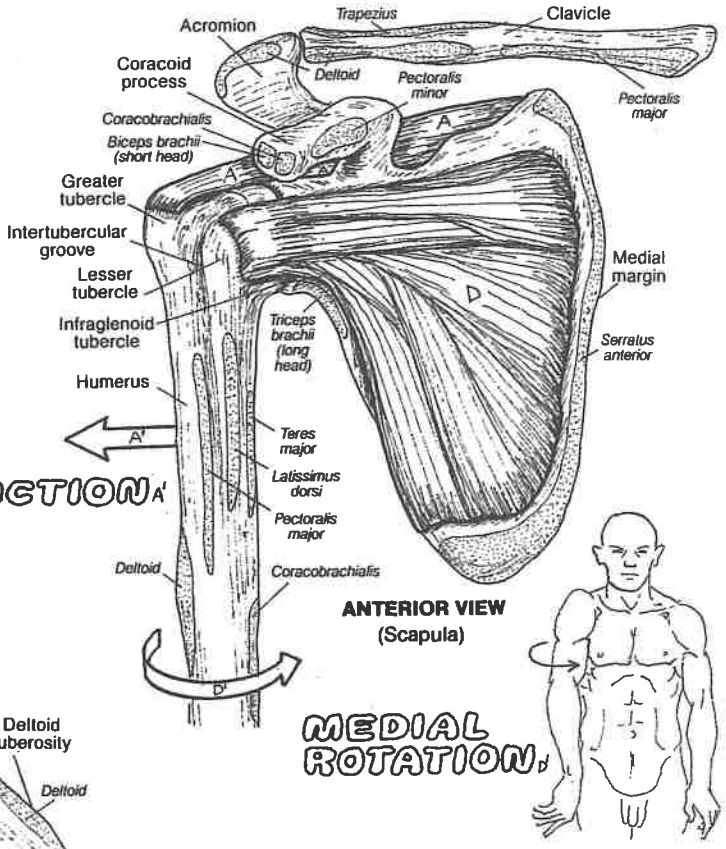


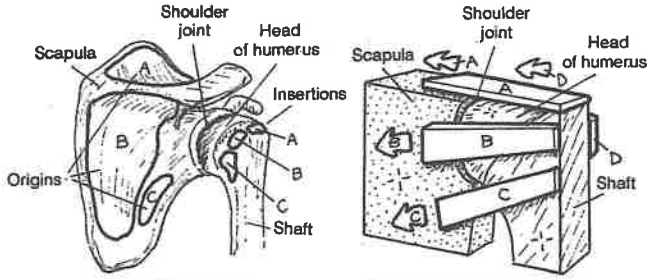
MUSCLES OF MUSCULOTENDINOUS CUFF

CN: (1) In addition to the four muscles, color the arrows and titles describing their actions. (2) Color the muscular attachment sites and the diagram of the function of the cuff muscles at mid-right. (3) Do not color the problem spot numerals in the lower illustration. They are there to identify locations discussed in the text.

- *SUPRASPINATUS A
- *INFRASPINATUS B
- *TERES MINOR C
- *SUBSCAPULARIS D





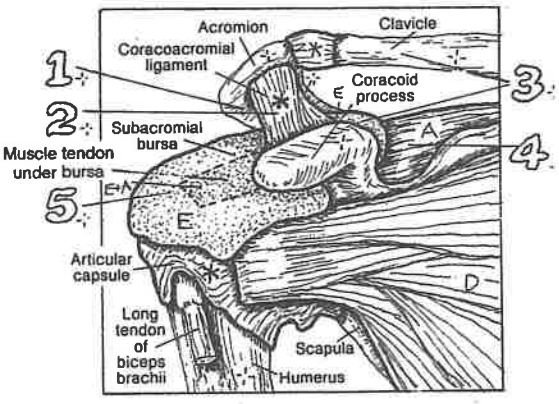


The socket at the glenolhumeral joint (glenoid fossa) is too shallow to offer any bony security for the head of the humerus. As ligaments would severely limit joint movement, muscle tension must be employed to pull the humeral head in to the shallow scapular socket during shoulder movements. Four muscles fulfill this function: *supraspinatus*, *infraspinatus*, *teres minor*, and *subscapularis* ("SITS muscles"). These muscles form a musculotendinous ("rotator") cuff around the head of the humerus, enforcing joint security. Especially effective during robust shoulder movements, they permit the major movers of the joint to work without risking joint dislocation.

The SITS muscles have come to be known as the *"rotator cuff" muscles*, even though one of them, supraspinatus, is an abductor of the shoulder joint and not a rotator. Indeed, among some health care providers, supraspinatus is known as the "rotator cuff" in the context of a "rotator cuff tear."

The shoulder joint and the supraspinatus muscle/tendon are subject to early degeneration from overuse. The problem is generally one of impingement (chronic physical contact and friction) between the acromion (1), the coraco-acromial ligament (2), and the distal clavicle (3) above, and the tendon of supraspinatus (4) and the subacromial bursa (5) below. Those with a down-turned acromion or a previously dislocated, offset acromioclavicular joint are especially vulnerable to impingement (supraspinatus tendinitis and subsequent tearing, subacromial bursitis, limitation of shoulder motion, and pain). All over-head activities (such as those of professional drapery hangers, ceiling plasterers, baseball pitchers) and acromial loading (hose-carrying firemen, those carrying heavy purses by straps over the shoulder, mail delivery persons) pursued over a long period can induce changes (bony spurring, bursal destruction) with impingement signs and symptoms.

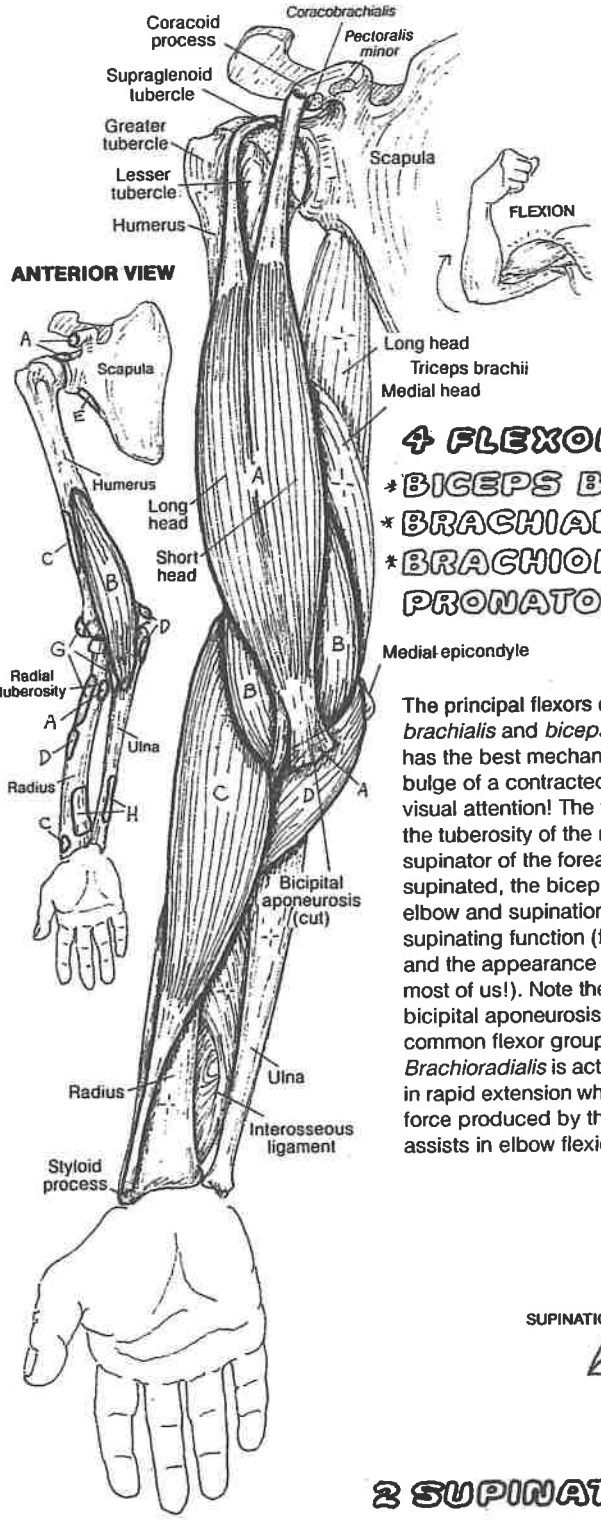
PROBLEM SPOTS IN THE SHOULDER REGION
(Anterior view)



BURSA E

LIGAMENT *

MOVERS OF ELBOW & RADIOULNAR JOINTS

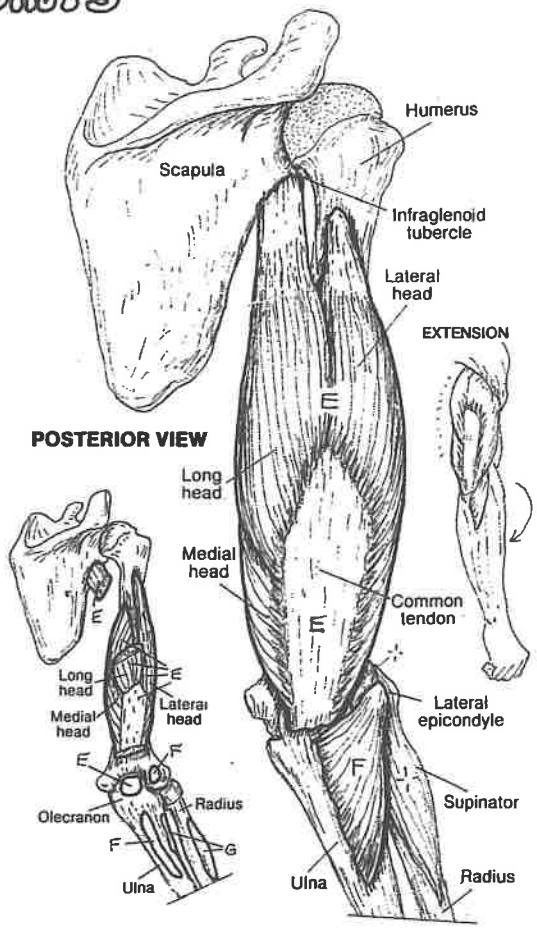


CN: Use the same colors for biceps brachii (A) and triceps brachii (E) as you did for those muscles on Plate 56. (1) Color the four flexors and their attachment sites on the drawings to their left. Do the same for the extensors on the right. (2) Color the supinators and pronators below. the arrows demonstrating their actions, and their attachment sites at upper left.

4 FLEXORS:

* BICEPS BRACHII A
* BRACHIALIS B
* BRACHIORADIALIS C
PRONATOR TERES D

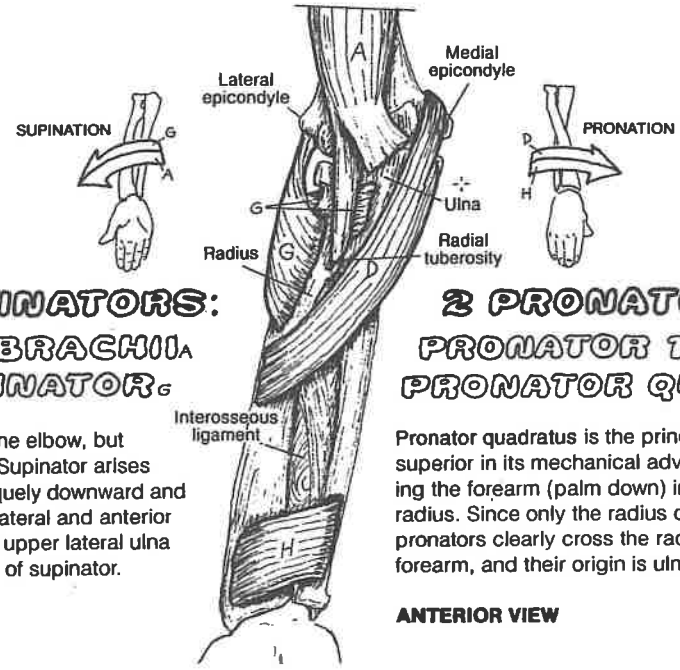
The principal flexors of the elbow joint are *brachialis* and *biceps brachii*, of which the former has the best mechanical advantage. Yet it's the bulge of a contracted biceps that gets all the visual attention! The tendon of biceps inserts at the tuberosity of the radius, making the muscle a supinator of the forearm as well. With the limb supinated, the biceps works to fulfill flexion of the elbow and supination of the elbow. Take away the supinating function (flexing the pronated elbow), and the appearance of biceps is disappointing (in most of us!). Note the additional attachment of the bicipital aponeurosis into the deep fascia of the common flexor group (not shown) in the forearm. *Brachioradialis* is active in flexion of the elbow and in rapid extension where it counters the centrifugal force produced by that movement. *Pronator teres* assists in elbow flexion as well as pronation.



2 EXTENSORS:

* TRICEPS BRACHII E
ANCONEUS F

The principal extensor of the elbow joint is the three-headed *triceps brachii* with its massive tendon of insertion. The smaller *anconeus* assists in this function. Triceps is a powerful antagonist to the elbow flexors.



2 SUPINATORS:

* BICEPS BRACHII A
SUPINATOR G

Biceps brachii is the more powerful supinator of the elbow, but *supinator* is important in maintaining supination. Supinator arises from the lateral aspect of the elbow, passing obliquely downward and forward to a rather broad insertion on the upper lateral and anterior surface of the radius. A bundle of fibers from the upper lateral ulna passes behind the radius to join the lateral fibers of supinator.

2 PRONATORS:

PRONATOR TERES D
PRONATOR QUADRATUS H

Pronator quadratus is the principal pronator of the elbow joint, superior in its mechanical advantage to *pronator teres.* Pronating the forearm (palm down) involves medial rotation of the radius. Since only the radius can rotate in the forearm, the pronators clearly cross the radius on the anterior side of the forearm, and their origin is ulnar.

ANTERIOR VIEW

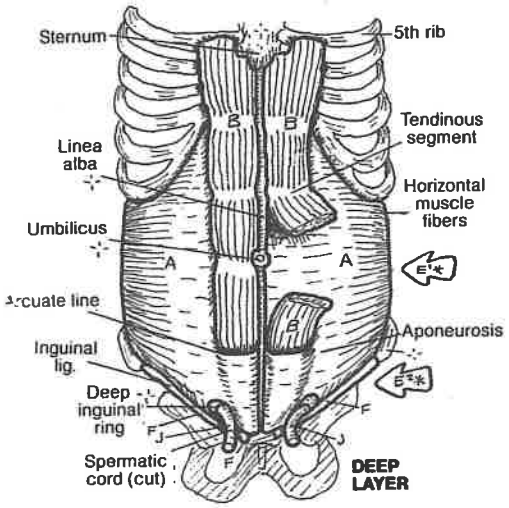
MUSCLES OF ANTERIOR ABDOMINAL WALL & INGUINAL REGION

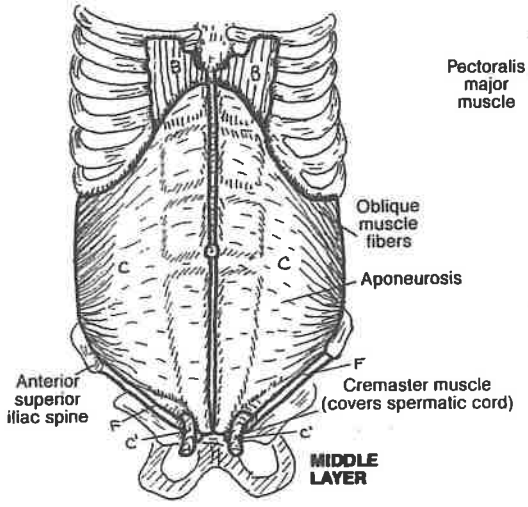
CN: Use a dark color for J and bright ones for B and I. (1) Color the 3 layers of the abdominal wall. (2) Color the sheath of the rectus abdominis in the lower left illustration gray. Color the two locator arrows gray in this and the upper illustration. (3) Beginning with J and K, and followed by H, color the coverings of the spermatic cord.

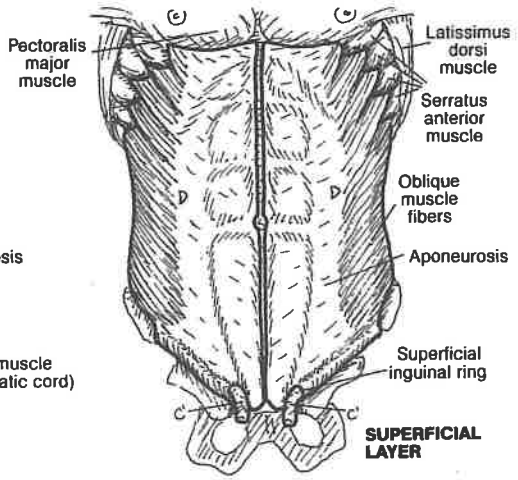
ANTERIOR ABDOMINAL WALL:

* TRANSVERSUS ABDOMINIS A
* RECTUS ABDOMINIS B
* INTERNAL OBLIQUE C
* EXTERNAL OBLIQUE D

The anterior abdominal wall consists of three layers of flat muscles, the tendons (aponeuroses) of which interlace in the midline, and a vertically oriented pair of segmented muscles that are ensheathed incompletely by the aponeuroses of the three flat muscles (*sheath of the rectus abdominis*). The flat muscles arise from the lateral aspect of the torso (inguinal ligament, iliac crest, thoracolumbar fascia, lower costal cartilages, ribs). The lowest fibers of *external oblique* roll inwardly to form the *inguinal ligament*. These three muscles act to compress the abdominal contents during expiration, urination, and defecation. They assist in maintaining pressure on the curve of the low back, resisting "sway back" (excess lumbar lordosis) and extension of the low back.

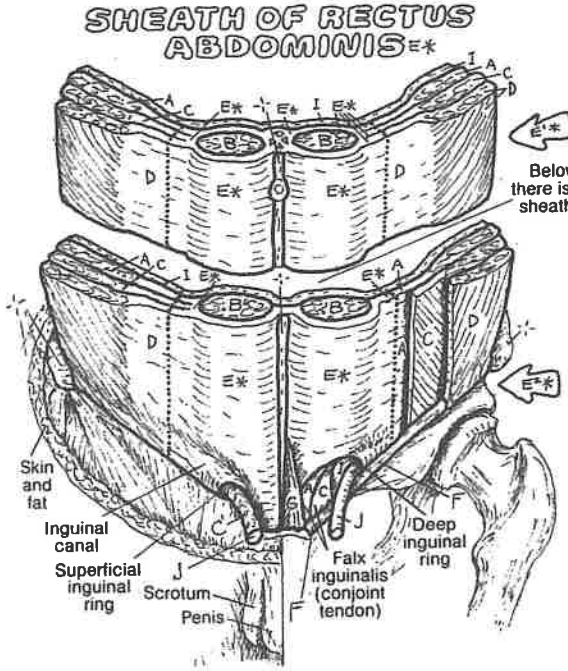




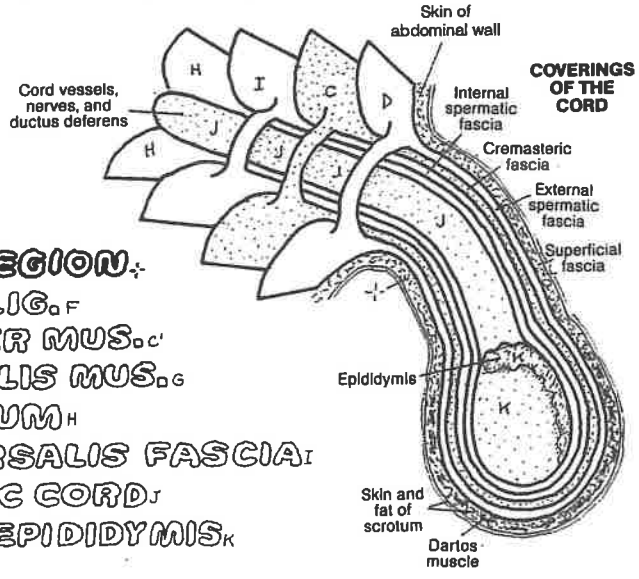


Each segmented rectus abdominis muscle arises from the pubic crest and tubercles and inserts on the lower costal cartilages and xiphoid process (sternum). They are flexors of the vertebral column. The *sheath of the rectus* varies in its extent, running from deep to superficial from below upward, as illustrated. Below the arcuate line, no muscle contributes to its posterior layer (E^{2*}); in the middle, all three flat aponeuroses contribute equally to the sheath (E^{1*}); above, the anterior sheath is formed from external oblique; posteriorly, the rectus contacts the costal cartilages.

SHEATH OF RECTUS ABDOMINIS E*



The inguinal region is the lower medial part of the abdominal wall, characterized by a canal with inner (deep) and outer (superficial) openings or rings. This canal carries the *spermatic cord* (ductus deferens and its vessels, testicular vessels, lymphatics) in the male and the round ligament of the uterus in the female. The testes and spermatic cords "descend" (by differential growth) into outpocketings of the anterior abdominal wall, collectively called the scrotum. In their descent, they push in front of them layers of fibers from the three flat muscles of the abdominal wall and their aponeuroses, much as a finger might push against four layers of latex to form a four-layered finger glove. These are the coverings of the cord: internal, cremasteric, and external spermatic fasciae. The lower fibers of internal oblique are unique in that they continue in loops around the spermatic cord as the cremaster muscle; the two are connected by cremasteric fascia. The canal area is a weak point, subject to protrusions of fat or intestine (hernias) from within the abdominal cavity, either directly through the wall (direct inguinal hernia) or indirectly through the canal (indirect inguinal hernia).

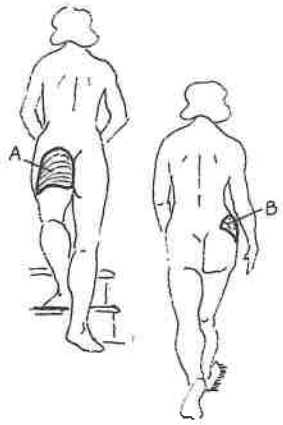


INGUINAL REGION

* INGUINAL LIG F
* CREMASTER MUS C'
* PYRAMIDALIS MUS G
* PERITONEUM H
* TRANSVERSALIS FASCIA I
* SPERMATIC CORD J
* TESTIS / EPIDIDYMIS K

MUSCLES OF THE GLUTEAL REGION

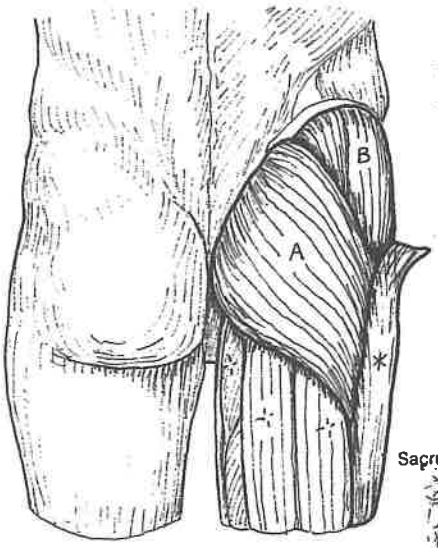
CN: In the posterior and lateral views (superficial dissections), the upper fibers of the iliotibial tract (*[1]) have been cut away, exposing gluteus medius. (1) Color each muscle in all views, including the directional arrows, before going on to the next. The origin of piriformis (E) cannot be seen in these views, but see Plate 52. A better view of the origin of obturator internus (F) also can be seen on Plate 52.



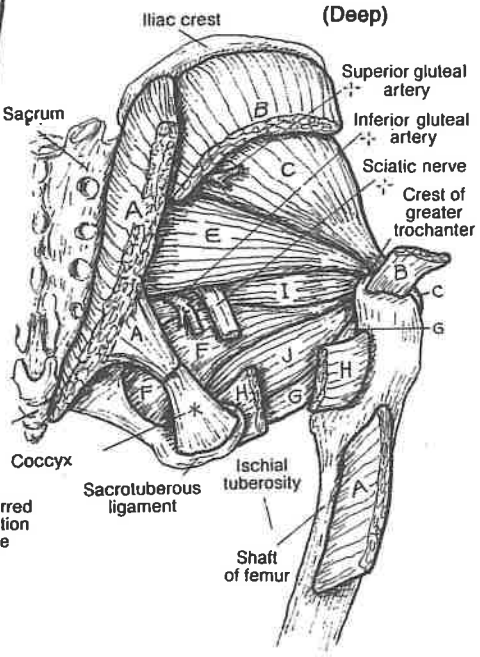
3 GLUTEAL MUSCLES:

- * GLUTEUS MAXIMUS A
- * GLUTEUS MEDIUS B
- * GLUTEUS MINIMUS C
- * TENSOR FASCIAE LATAE D

The gluteal muscles are arranged in three layers: the most superficial is *gluteus maximus*. The large sciatic nerve runs deep to it, as every student nurse has learned well. Its thickness varies. Gluteus maximus extends the hip joint during running and walking uphill, but does not act in relaxed walking. The intermediately placed, more lateral *gluteus medius* is a major abductor of the hip joint and an important stabilizer (leveler) of the pelvis when the opposite lower limb is lifted off the ground.



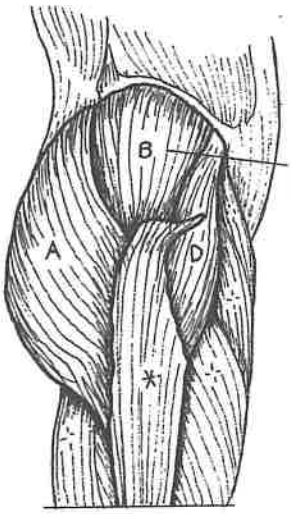
(Superficial)



6 DEEP, LATERAL ROTATORS:

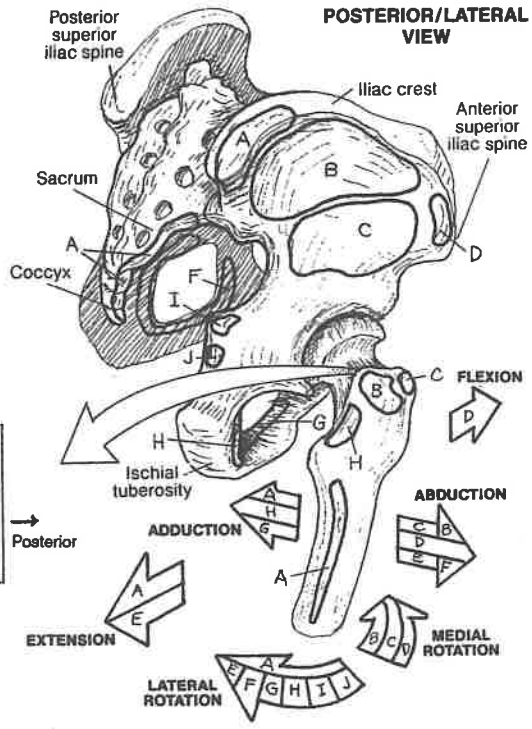
- * PIRIFORMIS E
- OBTURATOR INTERNUS F
- OBTURATOR EXTERNUS G
- QUADRATUS FEMORIS H
- GEMELLUS SUPERIOR I
- GEMELLUS INFERIOR J

The deepest layer of gluteal muscles is the *gluteus minimus* and the *lateral rotators* of the hip joint. They cover up/fill the greater and lesser sciatic notches. These muscles generally insert at the posterior aspect of the greater trochanter of the femur. The gluteal muscles (less gluteus maximus) correspond to some degree with the rotator cuff of the shoulder joint: lateral rotators posteriorly, abductor (gluteus medius) superiorly, medial rotators (gluteus medius and minimus, tensor fasciae latae) anteriorly.



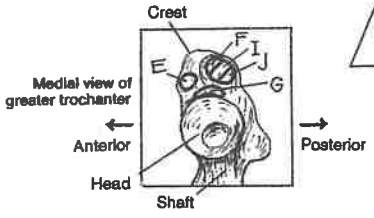
LATERAL VIEW

(Superficial)



ILIOTIBIAL TRACT*

The iliotibial tract, a thickening of the deep fascia (fascia lata) of the thigh, runs from ilium to tibia and helps stabilize the knee joint laterally. The muscle *tensor fasciae latae*, a frequently visible and palpable flexor and medial rotator of the hip joint, inserts into this fibrous band, tensing it. Despite its major flexor function, this anterolaterally-placed muscle is considered a part of the more posterior gluteal group; it shares its insertion into the iliotibial tract with gluteus maximus, and it is supplied by the superior gluteal nerve and artery.

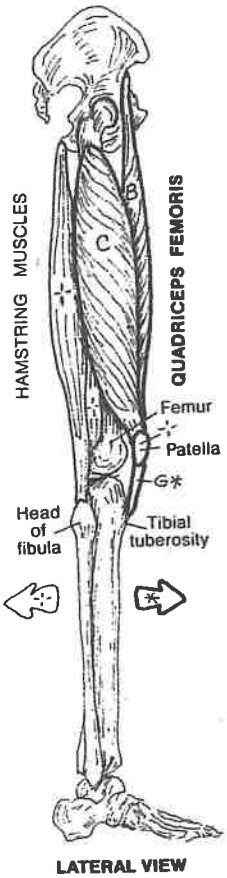


MUSCLES OF THE ANTERIOR THIGH

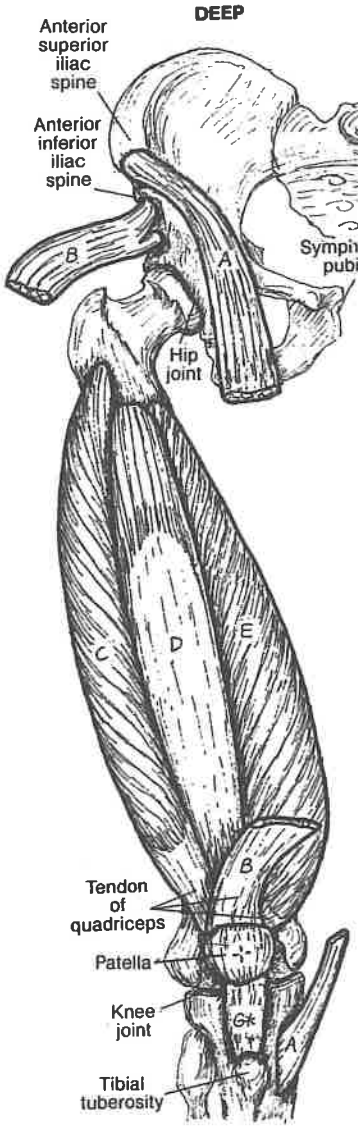
* SARTORIUS A
* QUADRICEPS FEMORIS:
  * RECTUS FEMORIS B
  * VASTUS LATERALIS C
  * VASTUS INTERMEDIUS D
  * VASTUS MEDIALIS E
* ILIOPSOAS F

PATELLAR LIGAMENT G*

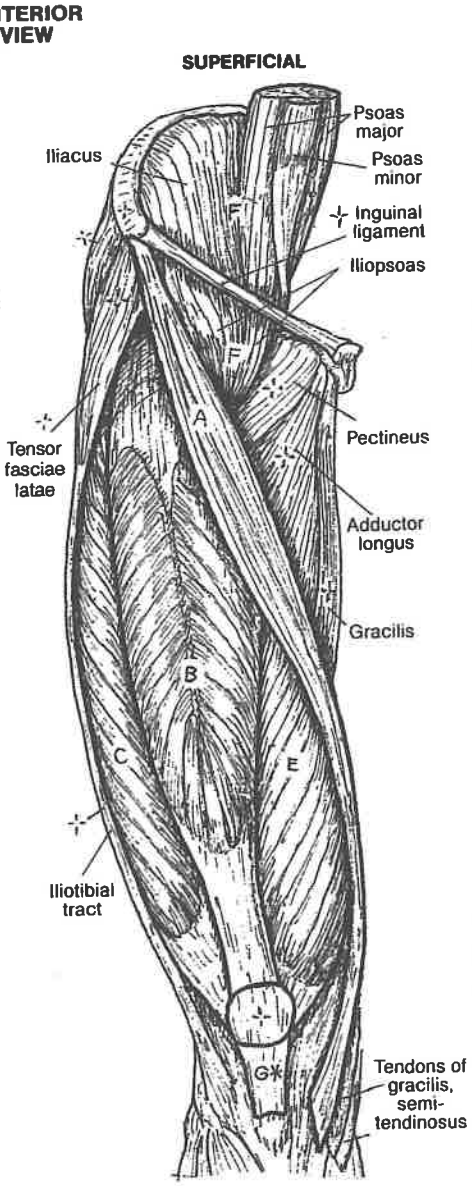
CN: The patellar ligament (G*) is colored gray but the patella is left uncolored. (1) Begin with the deep view of the thigh and then complete the superficial view. (2) On the far left, color the visualized portions of the quadriceps that are antagonists to the hamstring group. (3) Complete the action diagrams along the right margin.



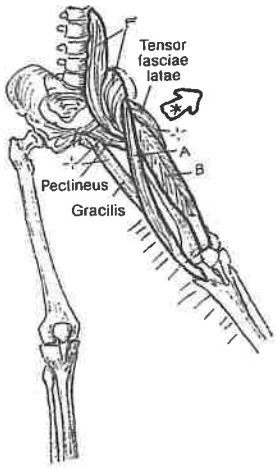
LATERAL VIEW



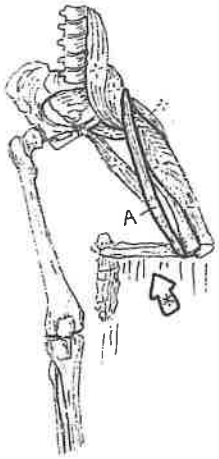
ANTERIOR VIEW



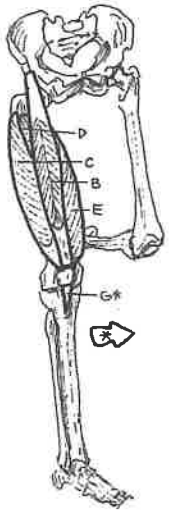
FLEXORS OF THE HIP JOINT



FLEXOR OF THE KNEE JOINT



EXTENSORS OF THE KNEE JOINT



The sartorius ("tailor's" muscle; so-called because of the role of this muscle in enabling a crossed-legs sitting posture) is a flexor and lateral rotator of the hip joint and a flexor of the knee joint, as you can infer from its illustrated attachments. *The quadriceps femoris* muscle arises from four heads. The *vastus medialis* and *lateralis* arise from the linea aspera on the posterior aspect of the femur; the *vastus intermedius* arises from the anterior femoral shaft. All four converge onto the superior aspect (base) of the patella to form the patellar tendon. Some tendon fibers continue over the patellar surface to join the ligament below. At the inferior aspect (apex) of the patella, the tendinous fibers continue to the tibial tuberosity.

The tendon between the patella and the tibial tuberosity is called the *patellar ligament. Rectus femoris*, a strong hip joint flexor, is the only member of quadriceps to cross that joint. Quadriceps femoris is the only knee extensor. The significance of its role becomes crystal clear to those having experienced a knee injury; the muscles tend to atrophy and weaken rapidly with disuse, and "quad" exercises are essential to maintain structural stability of the joint. The *iliopsoas* is the most powerful flexor of the hip, having a broad thick muscle belly and attaching at the lesser trochanter at the proximal end of the femoral shaft. Recall Plate 50 for its posterior abdominal origin.

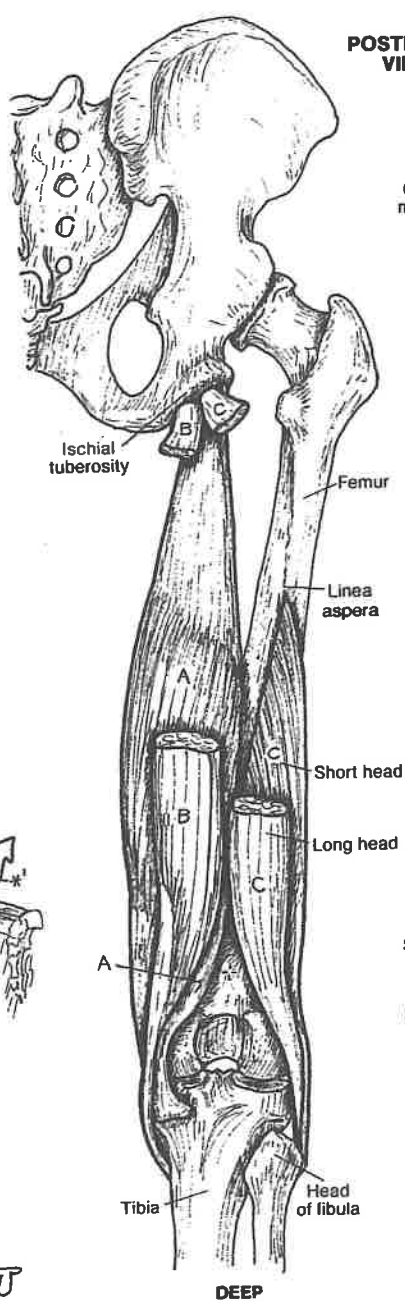
MUSCLES OF THE POSTERIOR THIGH

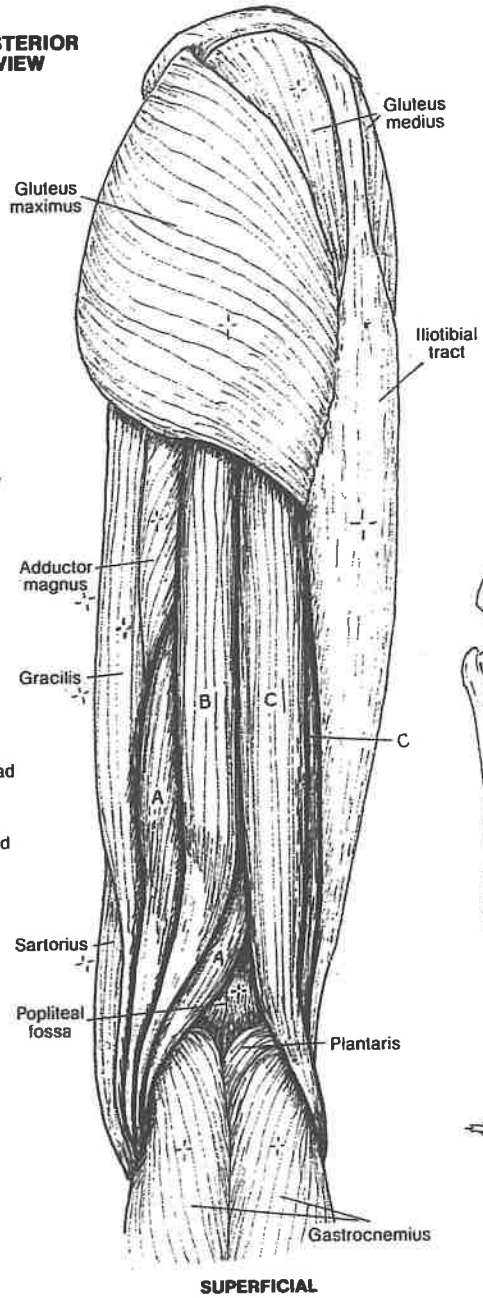
HAMSTRINGS:

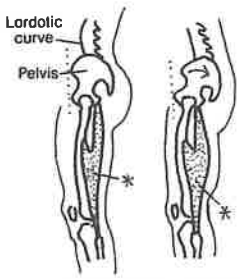
* SEMIMEMBRANOSUS A
* SEMITENDINOSUS B
* BICEPS FEMORIS C

Tight hamstrings limit flexion of hip when knee joint is extended.

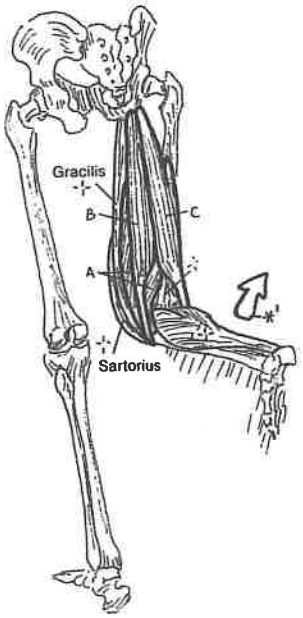
CN: (1) Color each hamstring muscle in the deep view before going on to the superficial. Then color the diagrams of flexion and extension. (2) Color gray the outline of the muscles in the drawings at upper right.



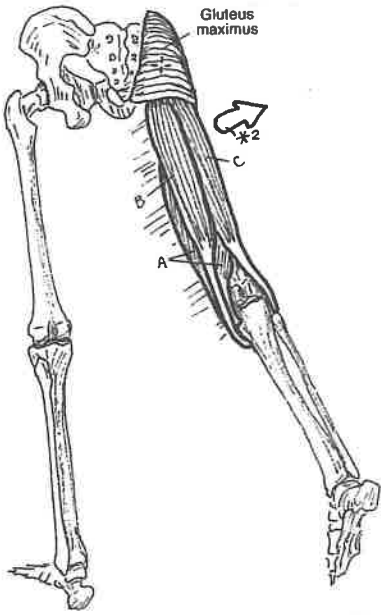




Tight hamstrings (at right) tilt pelvis backwards, flattening lordotic curve of lower back.



FLEXORS OF THE KNEE JOINT



EXTENSORS OF THE HIP JOINT

The hamstring muscles are equally effective at both extension of the hip joint and flexion of the knee joint. Unlike the hip extensor gluteus maximus, the hamstrings are active during normal walking. In relaxed standing, both gluteus maximus and the hamstrings are inactive. In knee flexion, the hamstrings act in concert with sartorius, gracilis, and gastrocnemius (Plates 63 and 66). Long tendons of the hamstrings can be palpated just above the partially flexed knee on either side of the midline.

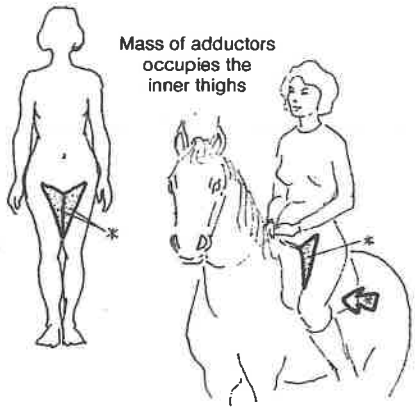
Reduced hamstring stretch ("tight hamstrings") limits hip flexion with the knee extended; flexion of the knee permits increased hip flexion. Try this on yourself. Tight hamstrings, by their ischial origin, pull the posterior pelvis down, lengthening the erector spinae muscles and flattening the lumbar lordosis, potentially contributing to limitation of lumbar movement and back pain. Tight hamstrings often cause posterior thigh pain on straight leg raise testing (subject is supine, lower limbs horizontal; one heel is lifted, progressively flexing the hip joint with knee extended). This pain from muscle stretch may be confused with sciatic nerve/nerve root pain, which normally shoots into the leg and foot.

Powerful extensors of the hip joints.

MUSCLES OF THE MEDIAL THIGH

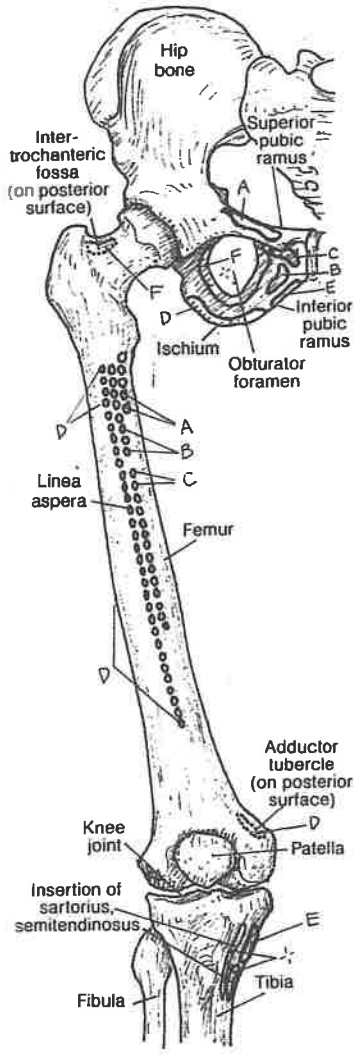
CN: Color one muscle at a time in the five main views before going to the next one. Note that the attachment sites on the *posterior* surface of the femur are represented by dotted lines.

*PECTINEUS A
*ADDUCTOR BREVIS B
*ADDUCTOR LONGUS C
*ADDUCTOR MAGNUS D
*GRACILIS E
OBTURATOR EXTERNUS F

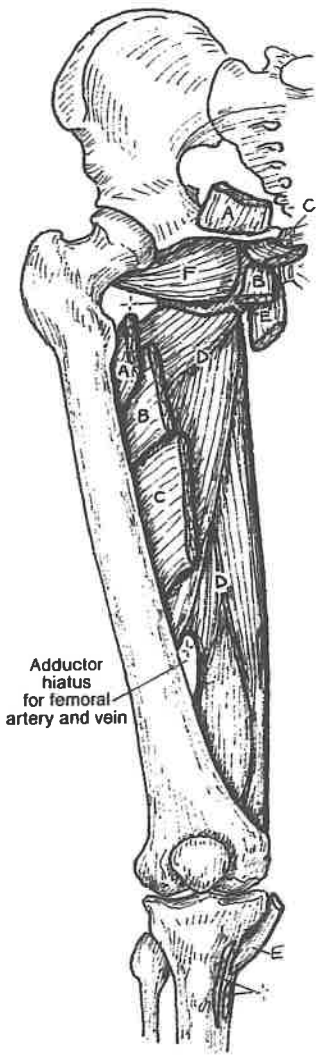


ANTERIOR VIEW

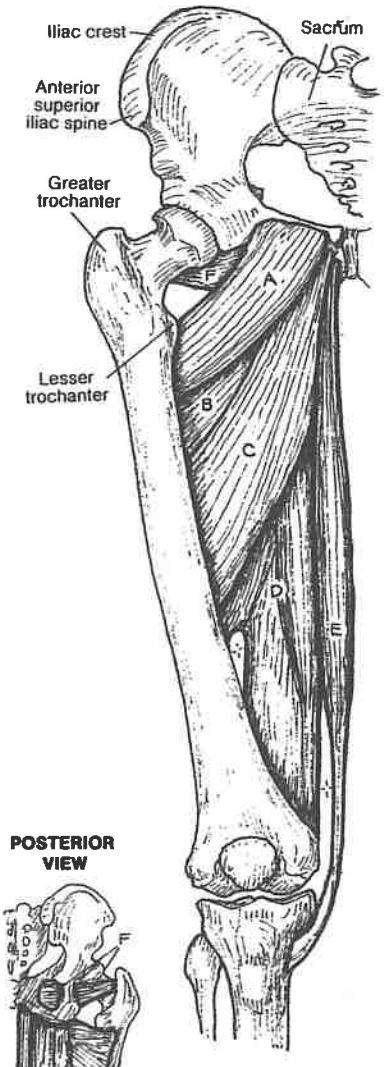
ATTACHMENT SITES



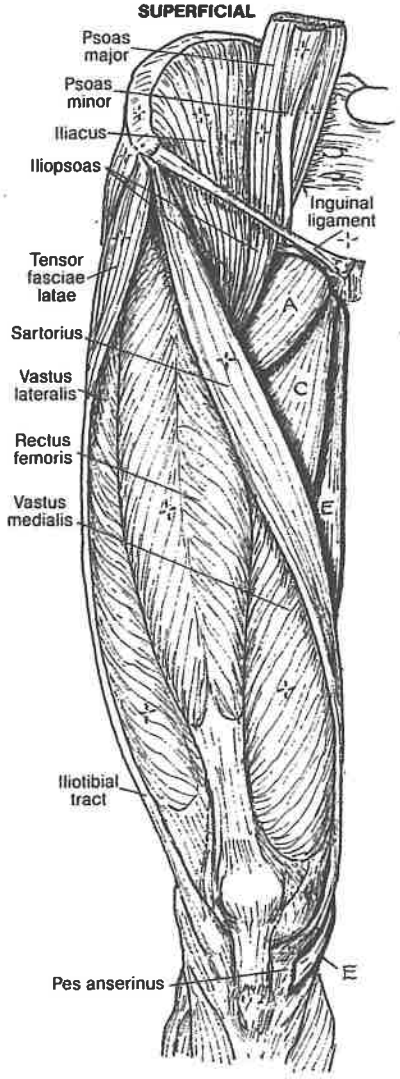
DEEP



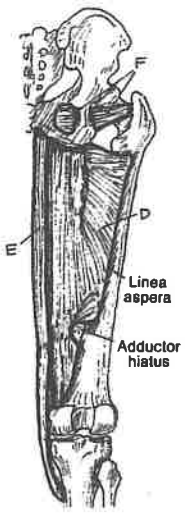
INTERMEDIATE



SUPERFICIAL



POSTERIOR VIEW



The medial thigh muscles consist of the hip joint *adductors* (A through E) and *obturator externus*, a lateral rotator of that joint. The latter was colored on Plate 61 as one of the deep gluteal muscles, as its tendon passes into that region. However, it is compartmentalized by fasciae in the medial thigh, covers the external surface of the obturator foramen in the deep upper medial thigh, and receives the same innervation as the adductors. The *gracilis* is the longest of the adductor group, crosses the medial knee (flexing it), and inserts only on the medial tibia; its tendon joins the tendons of sartorius and semitendinosus to form an insertion shaped like a goose's foot (hence called the pes anserinus). The *adductor magnus* is the most massive of the group (see posterior view). In its lower half, adductor magnus fibers give way to the passage of the femoral vessels (adductor hiatus). All the adductors, except gracilis, insert on the vertical rough line (linea aspera) on the posterior surface of the femur.

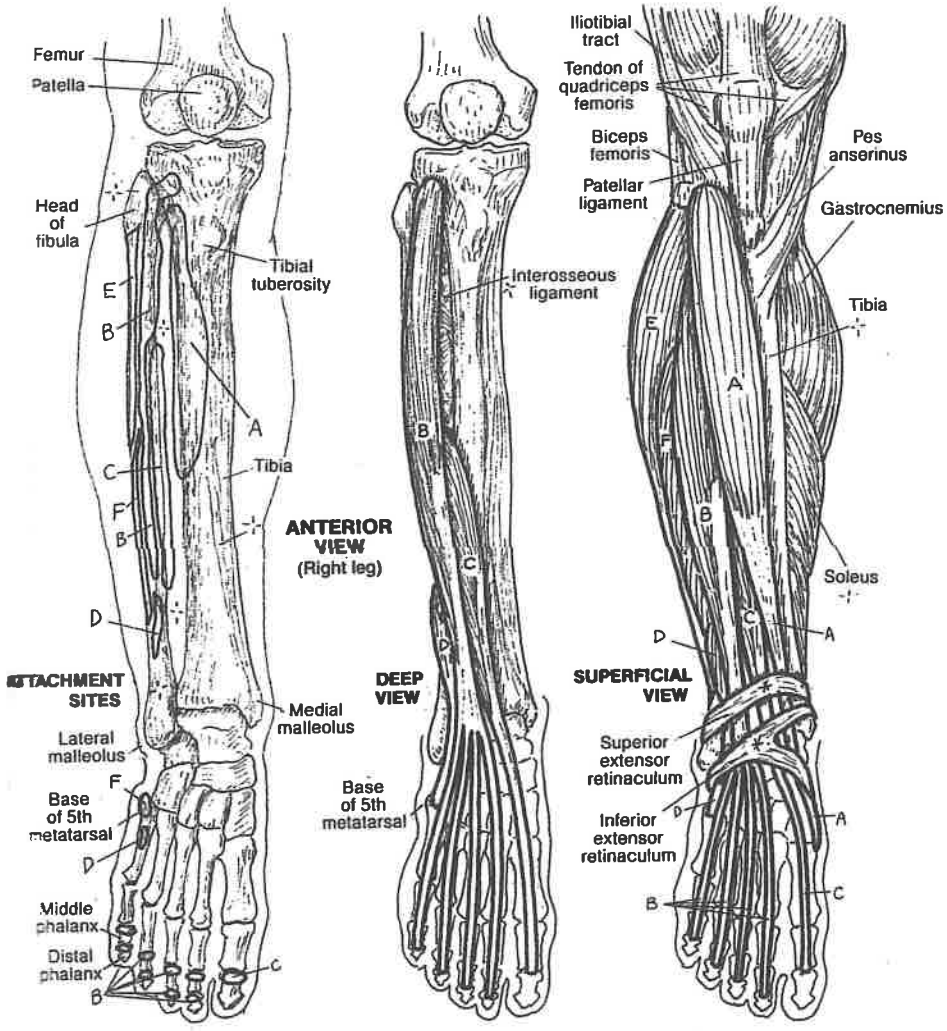
MUSCLES OF THE ANTERIOR & LATERAL LEG

CN: Take care with the narrow attachment sites of the anterior leg. Although the muscles A, B, and C arise from the interosseous ligament as well as the tibia and the fibula, the ligament has been left out of the attachments illustration for purposes of simplification. Attachment sites on the plantar surface of the foot are shown at upper right.

The muscles of the leg are arranged into anterior-lateral, lateral, and posterior compartments. The bony ridge (anterior margin) of the tibia creates two oblique surfaces, the anterolateral of which relates to the anterior leg muscles; the anteromedial surface is bony (ouch!) and devoid of muscle. The lateral compartment fibular muscles largely arise from the fibula and the interosseous ligament between the tibia and fibula.

ANTERIOR LEG:

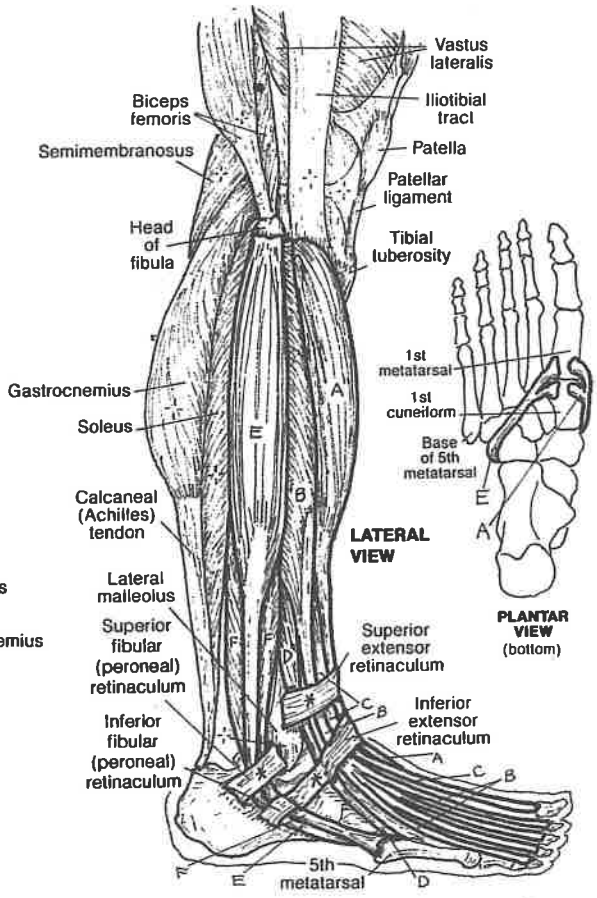
* TIBIALIS ANTERIOR A
  EXTENSOR DIGITORUM LONGUS B
  EXTENSOR HALLUCIS LONGUS C
  FIBULARIS TERTIUS D



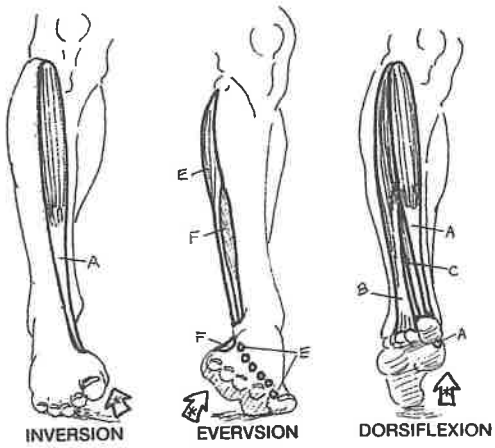
All of the anterior leg muscles are dorsiflexors (extensors) of the ankle; *extensors hallucis and digitorum longus* are toe extensors; *tibialis anterior* is an invertor of the subtalar joints as well, and *fibularis tertius* (the 5th tendon of extensor digitorum) is an evertor. Due to rotation of the lower limb during embryonic development, these extensors are anterior to the bones in the anatomical position (unlike the upper limb wrist extensors). Tibialis anterior is particularly helpful in lifting the foot up during the swing phase of walking to avoid striking the toes.

LATERAL LEG:

* FIBULARIS LONGUS E
* FIBULARIS BREVIS F



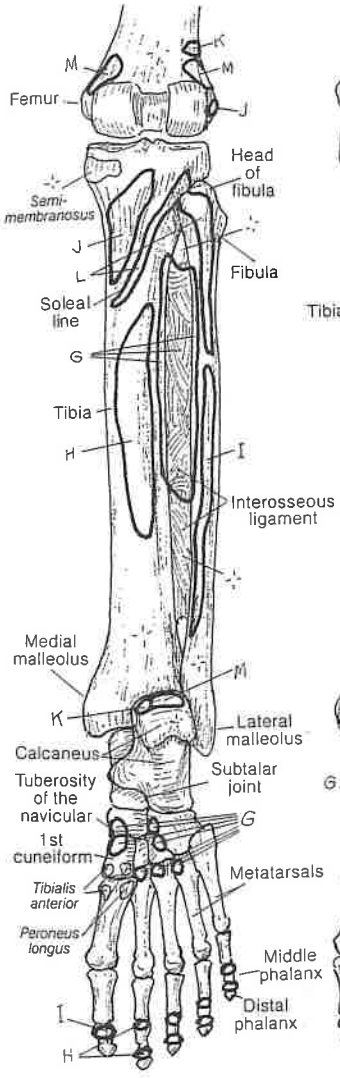
The fibular (peroneal) muscles are principally evertors of the foot, and are especially active during plantar flexion, as in walking on the toes or pushing off with the great toe. Fibularis tertius arises in the fibular compartment but is actually part of extensor digitorum.

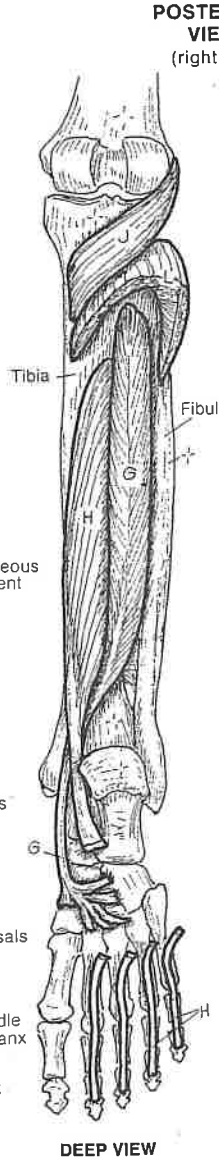


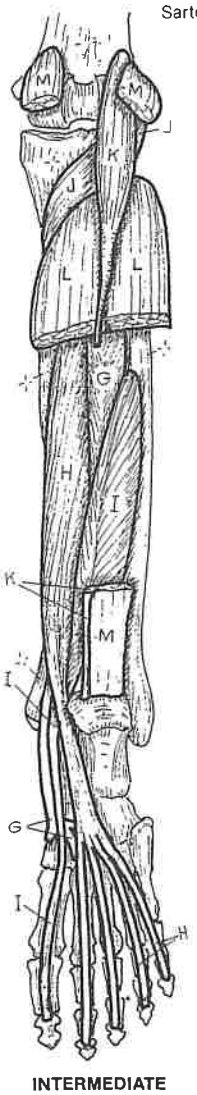
MUSCLES OF THE POSTERIOR LEG

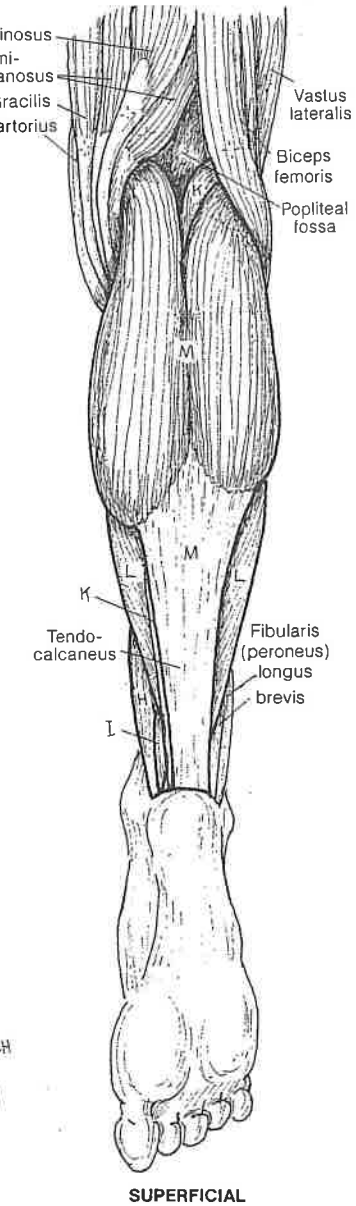
TIBIALIS POSTERIOR G
FLEXOR DIGITORUM LONGUS H
FLEXOR HALLUCIS LONGUS I
POPLITEUS J
PLANTARIS K
* SOLEUS L
* GASTROCNEMIUS M

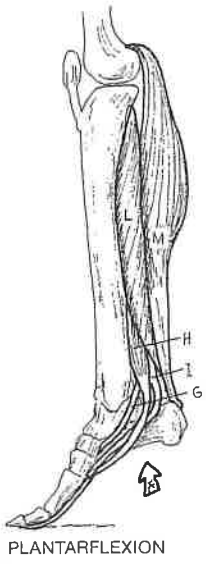
CN: The muscles to be colored on this plate are labeled G–M; any other letter label found here (A–F from Pl. 65; N–Y from Pl. 67) is for identification only, and those muscles should be left uncolored. You may repeat colors used for muscles on Plate 57 on this and/or the next plate. (1) Color one muscle at a time in each of the posterior views. Note that the plantaris (K), the soleus (L), and the gastrocnemius (M) all insert into the same tendon (tendocalcaneus), which receives the color M. (2) Color the upper and lower medial views.

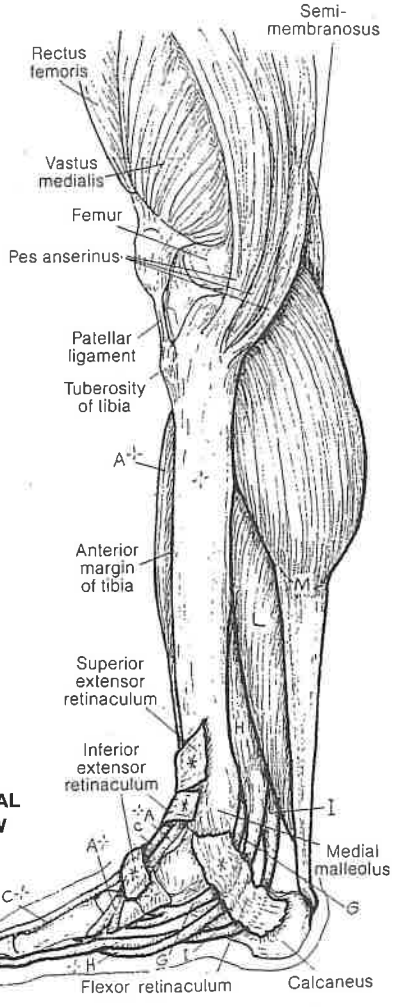












The muscles of the posterior leg are arranged into two compartments separated by a fascial septum (deep transverse fascia, not shown). The superficial group (gastrocnemius, soleus, and plantaris) inserts by way of a common tendon, tendocalcaneus (Achilles tendon; see glossary). These fascial compartments are fairly inelastic. Muscle swelling secondary to vascular insufficiency can result in serious muscle compression/death (compartment syndrome) in the absence of fascial (surgical) decompression.

The major calf muscle is gastrocnemius, which flexes the knee and, with its two fellows, plantarflexes the ankle joint. In knee flexion it is aided by *popliteus*, which also rotates the tibia medially. The other deep flexors plantarflex the ankle joint (both toe and great toe *flexors* and *tibialis posterior*), flex the toes (the flexors), and invert the foot (tibialis posterior).