

# V. MUSCULAR SYSTEM / LOWER LIMB

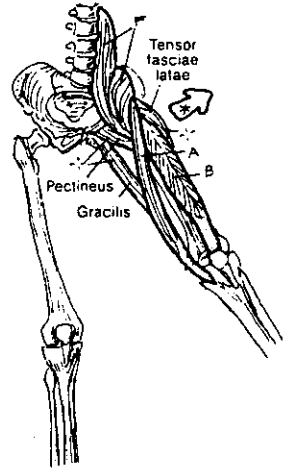
## MUSCLES OF ANTERIOR THIGH

- SARTORIUS<sup>A</sup>
- QUADRICEPS FEMORIS:
  - RECTUS FEMORIS<sup>B</sup>
  - VASTUS LATERALIS<sup>C</sup>
  - VASTUS INTERMEDIUS<sup>D</sup>
  - VASTUS MEDIALIS<sup>E</sup>
- ILIOPSOAS<sup>F</sup>

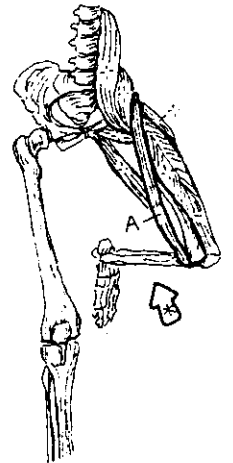
PATELLAR LIGAMENT<sup>G\*</sup>

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 portions of the quadriceps that are antagonists to the hamstring group. (3) Complete the action diagrams along the right margin.

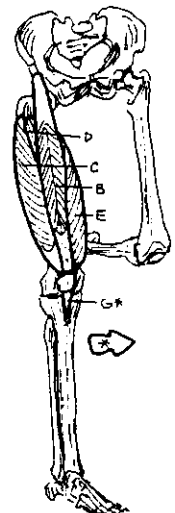
### FLEXORS OF THE HIP JOINT



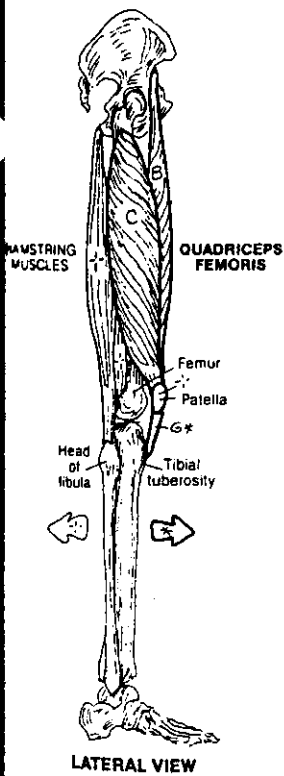
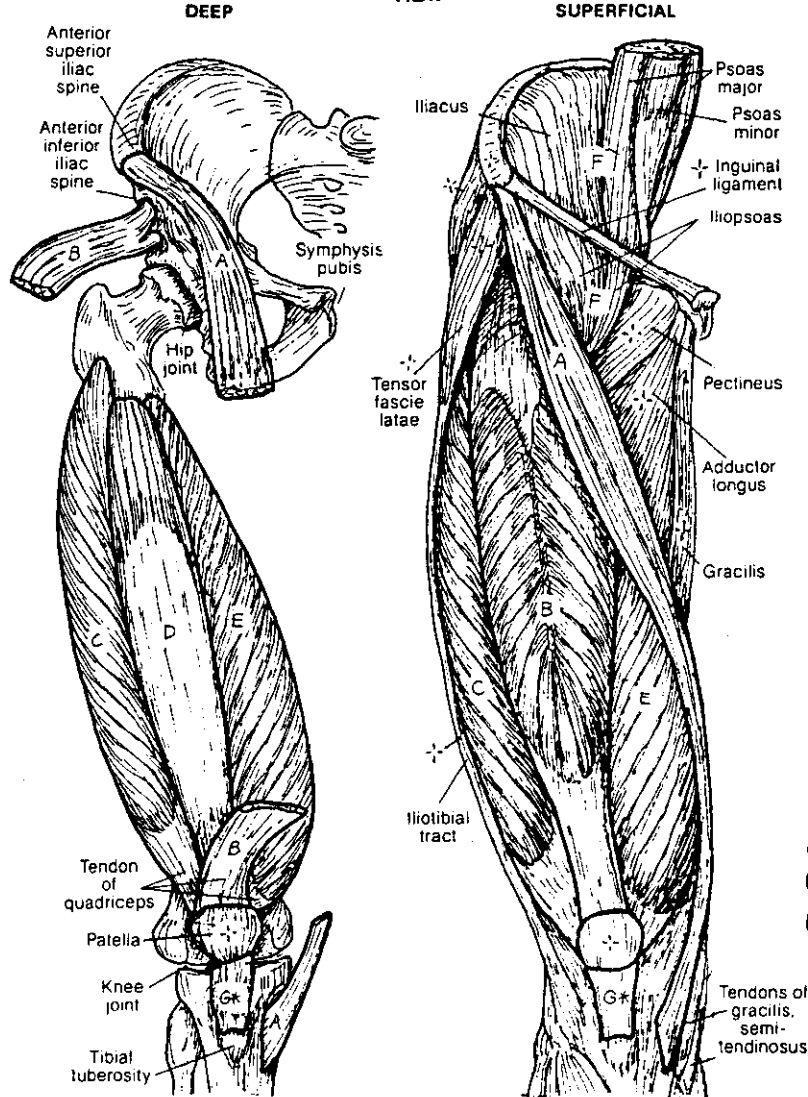
### FLEXOR OF THE KNEE JOINT



### EXTENSORS OF THE KNEE JOINT



#### ANTERIOR VIEW



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 *quadriceps femoris* 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 on to 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* is a strong hip joint flexor, and 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 42 for its posterior abdominal origin.

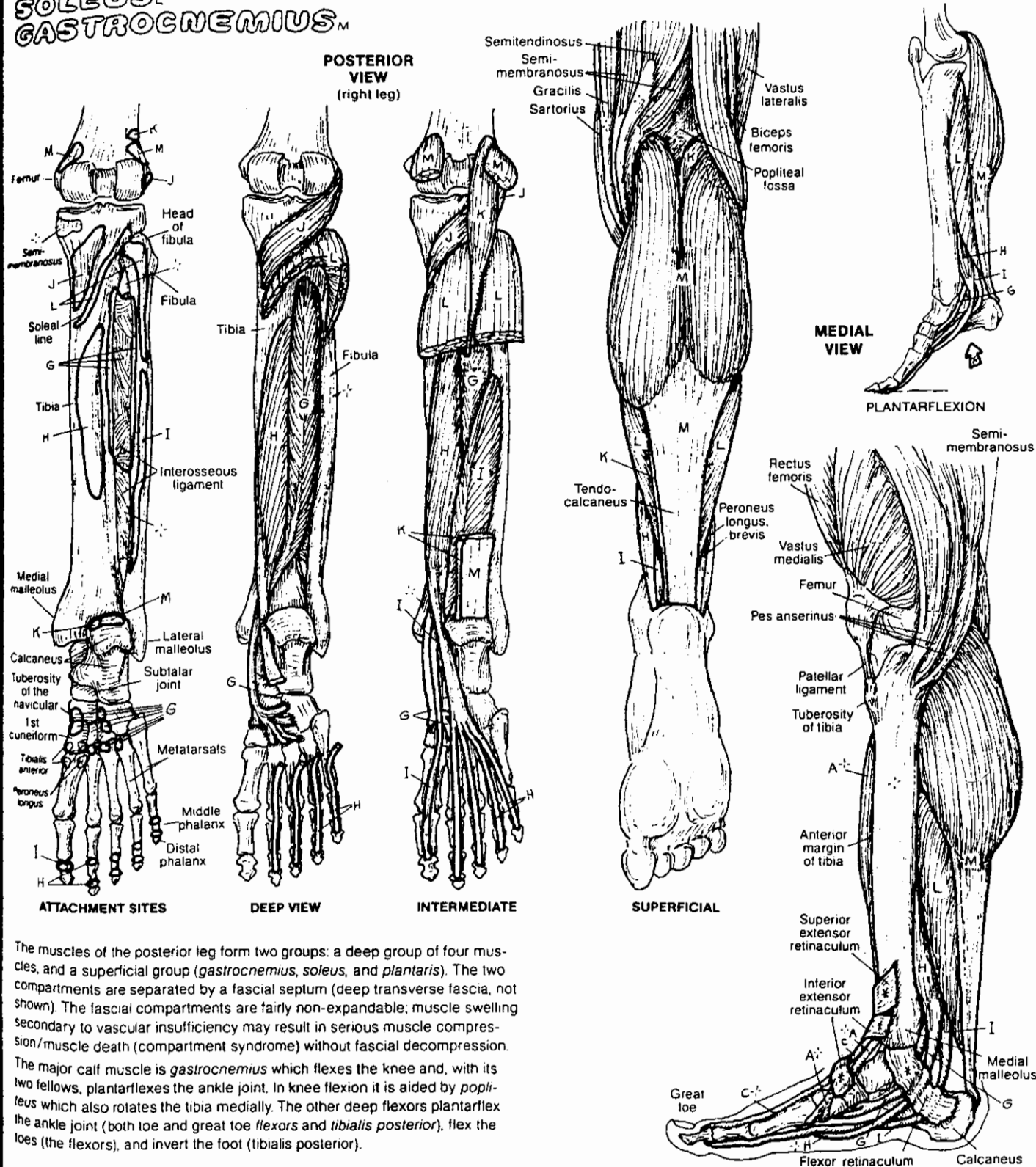


# V. MUSCULAR SYSTEM / LOWER LIMB

## MUSCLES OF POSTERIOR LEG

**TIBIALIS POSTERIOR,  
FLEXOR DIGITORUM LONGUS,  
FLEXOR HALLUCIS LONGUS,  
POPLITEUS,  
PLANTARIS<sub>K</sub>  
SOLEUS<sub>L</sub>  
GASTROCNEMIUS<sub>M</sub>**

CN: The muscles to be colored on this plate are labeled G-M, any other letter label found here (A-F from Pl. 57; N-Y from Pl. 59) 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 form two groups: a deep group of four muscles, and a superficial group (*gastrocnemius*, *soleus*, and *plantaris*). The two compartments are separated by a fascial septum (deep transverse fascia, not shown). The fascial compartments are fairly non-expandable; muscle swelling secondary to vascular insufficiency may result in serious muscle compression/muscle death (compartment syndrome) without fascial 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*).

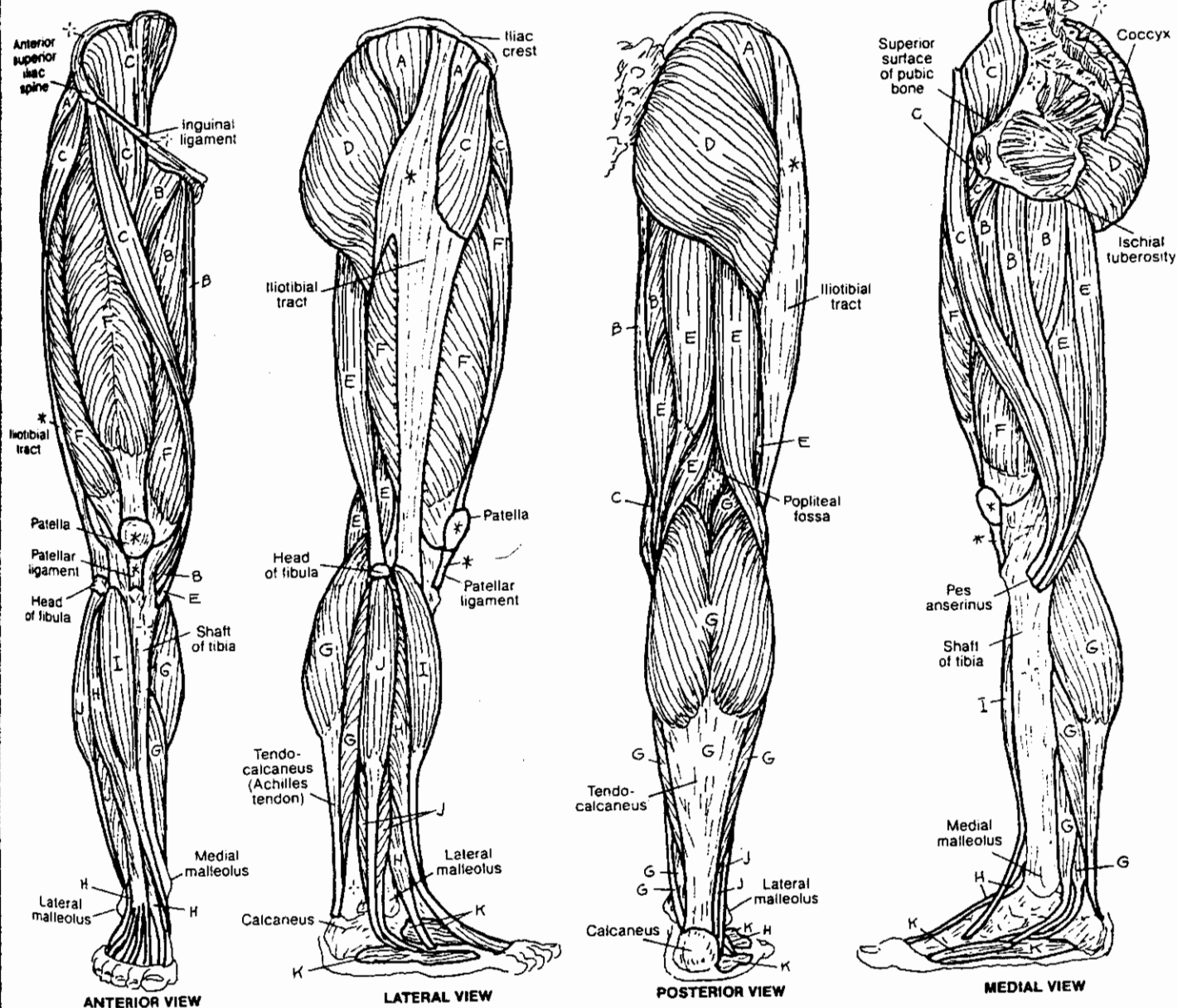
# V. MUSCULAR SYSTEM / LOWER LIMB

## SUMMARY OF MUSCLE GROUPS

- ABDUCTORS OF THE HIP<sub>A</sub>
- ADDUCTORS OF THE HIP<sub>B</sub>
- FLEXORS OF THE HIP<sub>C</sub>
- EXTENSORS OF THE HIP<sub>D</sub>
- FLEXORS OF THE KNEE<sub>E</sub>
- EXTENSORS OF THE KNEE<sub>F</sub>
- PLANTAR FLEXORS OF ANKLE & FOOT<sub>G</sub>
- DORSAL FLEXORS OF ANKLE & FOOT<sub>H</sub>
- INVERTORS OF THE ANKLE<sub>I</sub>
- EVERTORS OF THE ANKLE<sub>J</sub>
- INTRINSIC MUSCLES OF THE FOOT<sub>K</sub>

CN: Color one group of muscles in as many views as it appears before going on to the next. Most of the intrinsic muscles of the foot (K) are on the plantar surface and are not shown here.

Some of the muscles shown here cross two joints and/or have more than one function; the primary functions of the muscles are labeled here, as in Plate 52 (summary of upper limb muscles).



# MUSCULAR SYSTEM / SKELETAL MUSCULATURE

## FUNCTIONAL OVERVIEW

**EXOR**<sup>A</sup>  
**EXTENSOR**<sup>B</sup>  
**ABDUCTOR**<sup>C</sup>  
**ADDUCTOR**<sup>D</sup>  
**ROTATOR**<sup>E</sup>  
**SCAPULAR**  
**STABILIZER**<sup>F</sup>  
**VERTOR**<sup>G</sup>  
**INVERTOR**<sup>H</sup>

CN: Use light colors throughout (especially for A and B). Deeper muscles are not included in the large illustrations. (1) Color all of the muscle groups in the anterior view before going on to the posterior view at right. Only the muscles on one side of the figure have been labeled. As you color the muscle, also color its opposite. (2) Color the small diagram below

Upon coloring these functional groups, note the spatial relationship of adductors to abductors and evertors to invertors. Take particular note of the extensors and flexors. Recall that extension of weightbearing joints is an anti-gravity function, and extensor muscles of these joints tend to keep the standing body vertically straight. Note the line of gravity and its relationship to the vertebral, hip, knee, and ankle joints. The center of gravity of an average human being standing with perfect posture is just anterior to the motion segment of S1-S2. Flexion of the neck and torso moves the center of gravity forward, loading the posterior cervical, thoracic, and lumbar paraspinal (extensor) muscles. The actors moving the vertebral, hip, knee, and ankle joints make possible erect standing and walking/running posture.

