

Saladin 7E
Answer Key
Chapter 10, The Muscular System

Testing Your Comprehension

1. Because the pectoralis major flexes the shoulder, adducts and rotates the humerus, and depresses the pectoral girdle, its absence would make such actions as climbing, pushing, throwing, and adducting the arm (as in reaching across to the other side of the chest) difficult. Some synergists that could partially take over these functions include the latissimus dorsi, teres major and minor, coracobrachialis, subscapularis, and anterior portion of the deltoid (see table 10.9).
2. If the left sternocleidomastoid were removed, for example, it would make it more difficult to rotate the head to the right, look upward toward the right, and bow the head.
3. (a) The bellies of the triceps surae muscles contract upward when their tendinous connection to the calcaneus is severed. (b) Muscles of dorsiflexion in the anterior leg are no longer opposed by the muscles of plantar flexion in the posterior leg. (c) The strongest muscles of plantar flexion can no longer act on the calcaneus.
4. The gastrocnemius and soleus muscles and the calcaneal tendon are affected because they are more stretched when a person walks flat-footed than when one walks in high heels.
5. In heavy lifting of this sort, the quadriceps femoris and gluteus maximus produce most of the force in extending the knee and hip, respectively.