

Chapter 10, The Muscular System

“Apply What You Know” Answers

- p. 328—There are many possible answers for this. The three listed as intrinsic muscles must be muscles that have their origins and insertions within the head, for example any of the muscles in table 10.1 and several of those in 10.2. Extrinsic muscles have their origins outside the head; examples could include any of the muscles in table 10.3.
- p.330— Severing the left phrenic nerve paralyzes the left side of the diaphragm and sometimes causes difficulty breathing. The diaphragm on the paralyzed side rises higher than on the intact side because it cannot contract and flatten during inspiration.
- p. 330—One eats the intercostal muscles. The membrane is periosteum.
- p. 333— A woman giving birth aids the process through voluntary contractions of the abdominal muscles. Alice maintains the strength of these muscles through her fitness regimen, and will therefore be able to “push” more effectively during the birth of her baby. She is likely to have an easier delivery than a woman whose abdominal muscles are in poorer condition.
- p. 342— Lateral fibers of the deltoid muscle abduct the arm when one is lifting a drink to one’s mouth.
- p. 365— Such dorsiflexion of the foot is achieved with the tibialis anterior, fibularis tertius, extensor digitorum longus, and extensor hallucis longus muscles.
- p. 367— Such a simple seeming action involves nearly all the muscles of the shoulder, arm, forearm, hand, hip, and knee. The most significant of these are as follows, but several more can be cited. Reaching up to a higher rung of the ladder and pulling the body upward alternately elevates and depresses the apex of the scapula, using the serratus anterior, trapezius, and levator scapulae; alternately flexes and extends the humerus at the shoulder, involving the pectoralis major, latissimus dorsi, and deltoid; and extends and flexes the elbow, involving the brachialis, biceps brachii, and triceps brachii. Grasping the ladder rung in the hand and releasing it employs the multiple anterior flexors and posterior extensors in the forearm and intrinsic muscles of the hand. Stepping up to the next rung with one foot flexes the hip and knee, employing the iliopsoas, sartorius, and the three hamstring muscles; lifting the body to that level extends the hip and knee, involving the gluteus maximus and quadriceps femoris, among others. Dorsiflexion and plantar flexion of the foot during climbing also involves flexors and extensors of the leg such as the tibialis anterior, gastrocnemius, and soleus.
- p. 370—This chapter cites five muscles that are lacking from some people of either sex: the superficial and deep transverse perineal muscles (see table 10.7), the palmaris longus (see table 10.11), the gemellus superior (see table 10.13), and the plantaris (see table 10.15). In addition, the compressor urethrae is absent from males (see table 10.7).