

Muscular System

Name / Period _____

Muscles, the specialized tissues that facilitate body movement, make up about 40% of body weight. Most body muscle is the voluntary type, called skeletal muscle because it is attached to the bony skeleton. Skeletal muscle contributes to body contours and shape, and composes the organ system called the muscular system. These muscles allow you to smile, frown, run, swim, shake hands, grasp things, and to otherwise manipulate your environment. The balance of body muscle is smooth and cardiac muscles, which form the bulk of the walls of hollow organs and the heart. Smooth and cardiac muscles are involved in the transport of materials within the body.

Study activities in this chapter deal with microscopic and gross structure of muscle, identification of voluntary muscles, body movements, and important understandings of muscle physiology.

Overview of Muscle Tissues

1. Nine characteristics of muscle tissue are listed below. Identify the muscle tissue type described by choosing the correct response(s) from the key choices. Enter the appropriate term(s) or letter(s) of the key choice in the answer blank.

KEY CHOICES:

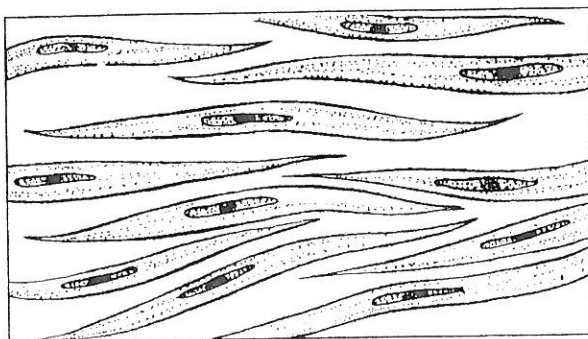
- A. Cardiac B. Smooth C. Skeletal

- _____ 1. Involuntary
 _____ 2. Banded appearance
 _____ 3. Coordinated activity to act as a pump
 _____ 4. Moves bones and the facial skin
 _____ 5. Referred to as the muscular system
 _____ 6. Voluntary

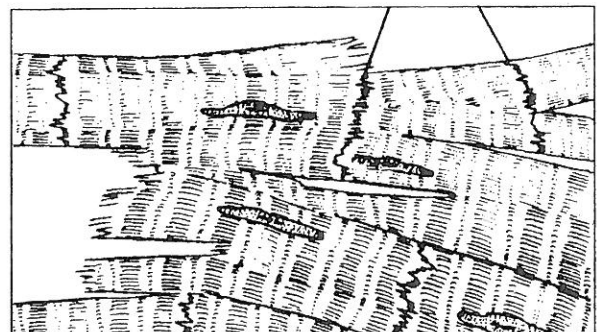
KEY CHOICES:

- A. Cardiac
 B. Smooth
 C. Skeletal

2. Identify the type of muscle in each of the illustrations in Figure 6-1. Color the diagrams as you wish.



A _____



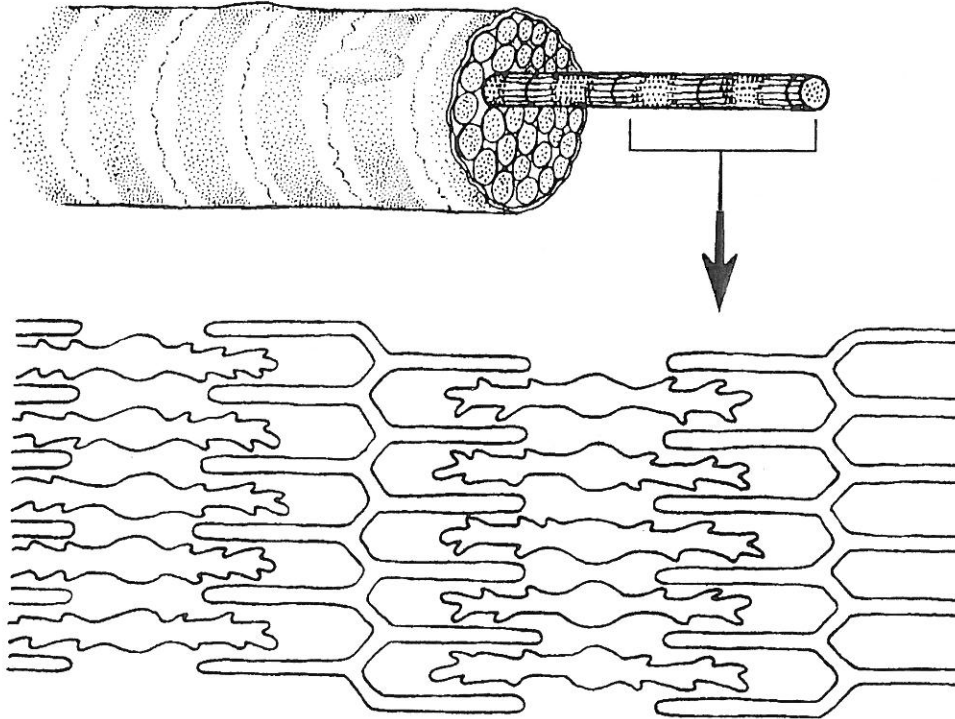
B _____

3. Figure 6-3 is a diagrammatic representation of a small portion of a relaxed muscle cell (bracket indicates the portion enlarged). First, select different colors for the structures listed below. Use them to color the coding circles and corresponding structures on Figure 6-3. Then bracket and label an A band, an I band, and a sarcomere. When you have finished, draw a contracted sarcomere in the space beneath the figure and label the same structures.

Myosin

Actin filaments

Z line



4. Complete the following statements by choosing the correct response from the key choices and entering the appropriate letter or term in the answer blanks.

KEY CHOICES:

- | | | |
|-------------------------|--------------------------|---------------------|
| A. Fatigue | E. Isometric contraction | I. Many motor units |
| B. Isotonic contraction | F. Whole muscle | J. Repolarization |
| C. Muscle cell | G. Tetanus | K. Depolarization |
| D. Muscle tone | H. Few motor units | |

- _____ 1. _____ is a ^{mild} continuous contraction that shows no evidence of relaxation. EC Severe/Strong continuous contraction
- _____ 2. A(n) _____ is a contraction in which the muscle shortens and work is done.
- _____ 3. When a muscle is being stimulated but is not able to respond due to "oxygen debt," the condition is called _____.
- _____ 4. A(n) _____ is a contraction in which the muscle does not shorten but tension in the muscle keeps increasing.

5. Which of the following occur within a muscle cell during oxygen debt? Place a check (✓) by the correct choices.

___ 1. Decreased ATP

___ 2. Increased ATP

___ 3. Increased lactic acid

___ 4. Decreased oxygen

___ 5. Increased oxygen

___ 6. Decreased carbon dioxide

___ 7. Increased carbon dioxide

___ 8. Increased glucose

Muscle Movements, Types, and Names

6. Relative to general terminology concerning muscle activity, first, label the following structures on Figure 6-4: insertion, origin, tendon, resting muscle, and contracting muscle. Next, identify the two structures named below by choosing different colors for the coding circles and the corresponding structures in the figure.

Movable bone

Immovable bone

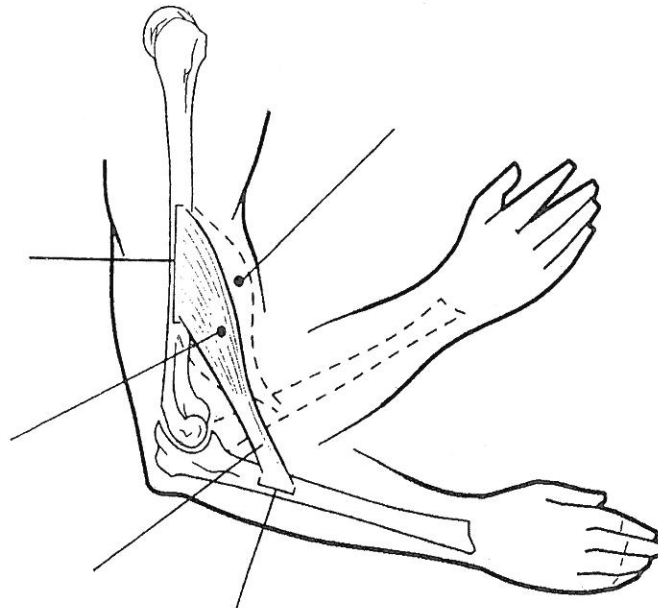


Figure 6-4