

MUSCLE TISSUE

Select the correct term from the choices given and write the letter in the answer blank.

- _____ A. Skeletal muscle B. Cardiac muscle C. Smooth muscle
- _____ 1. Striated
 - _____ 2. Cells branch frequently
 - _____ 3. Moves food into stomach
 - _____ 4. Nonstriated
 - _____ 5. Voluntary
 - _____ 6. Keeps blood circulating through its vessels
 - _____ 7. Involuntary
 - _____ 8. Attaches to bone
 - _____ 9. Found in hollow internal organs
 - _____ 10. Maintains normal blood pressure



If you have had difficulty with this section, review pages 134-135.

SKELETAL MUSCLES

Match the term on the left with the proper selection on the right.

Group A

- _____ 11. Origin
 - _____ 12. Insertion
 - _____ 13. Body
 - _____ 14. Tendons
 - _____ 15. Bursae
- A. The muscle unit, excluding the ends
 - B. Attachment to the more movable bone
 - C. Fluid-filled sacs
 - D. Attachment to more stationary bone
 - E. Attach muscle to bones

MICROSCOPIC STRUCTURE

Group B

- _____ 16. Muscle fibers
 - _____ 17. Actin
 - _____ 18. Sarcomere
 - _____ 19. Myosin
 - _____ 20. Myofilament
- A. Protein that forms thick myofilaments
 - B. Basic functional unit of skeletal muscle
 - C. Protein that forms thin myofilaments
 - D. Microscopic threadlike structures found in skeletal muscle fibers
 - E. Specialized contractile cells of muscle tissue



If you have had difficulty with this section, review page 135.

FUNCTIONS OF SKELETAL MUSCLE

Fill in the blanks.

21. Muscles move bones by _____ on them.
22. As a rule, only the _____ bone moves.
23. The _____ bone moves toward the _____ bone.
24. Of all the muscles contracting simultaneously, the one mainly responsible for producing a particular movement is called the _____ for that movement.
25. As prime movers contract, muscles called _____ relax.
26. The biceps brachii is the prime mover during flexing, and the brachialis is its helper or _____ muscle.
27. We are able to maintain our body position because of a specialized type of skeletal muscle contraction called _____.
28. _____ maintains body posture by counteracting the pull of gravity.
29. A decrease in temperature, a condition known as _____, will drastically affect cellular activity and normal body function.
30. Energy required to produce a muscle contraction is obtained from _____.

▶ If you have had difficulty with this section, review pages 137-138.

FATIGUE ROLE OF BODY SYSTEMS MOTOR UNIT MUSCLE STIMULUS

If the statement is true, write "T" in the answer blank. If the statement is false, correct the statement by circling the incorrect term and writing the correct term in the answer blank.

31. The point of contact between the nerve ending and the muscle fiber is called a motor neuron.
32. A motor neuron together with the cells it innervates is called a motor unit.
33. If muscle cells are stimulated repeatedly without adequate periods of rest, the strength of the muscle contraction will decrease resulting in fatigue.
34. The depletion of oxygen in muscle cells during vigorous and prolonged exercise is known as fatigue.
35. An adequate stimulus will contract a muscle cell completely because of the "must" theory.
36. When oxygen supplies run low, muscle cells produce ATP and other waste products during contraction.
37. In a laboratory setting, a single muscle fiber can be isolated and subjected to stimuli of varying intensities so that it can be studied.

FUNCTIONS OF SKELETAL MUSCLE

Fill in the blanks.

21. Muscles move bones by _____ on them.
22. As a rule, only the _____ bone moves.
23. The _____ bone moves toward the _____ bone.
24. Of all the muscles contracting simultaneously, the one mainly responsible for producing a particular movement is called the _____ for that movement.
25. As prime movers contract, muscles called _____ relax.
26. The biceps brachii is the prime mover during flexing, and the brachialis is its helper or _____ muscle.
27. We are able to maintain our body position because of a specialized type of skeletal muscle contraction called _____.
28. _____ maintains body posture by counteracting the pull of gravity.
29. A decrease in temperature, a condition known as _____, will drastically affect cellular activity and normal body function.
30. Energy required to produce a muscle contraction is obtained from _____.



If you have had difficulty with this section, review pages 137-138.

FATIGUE ROLE OF BODY SYSTEMS MOTOR UNIT MUSCLE STIMULUS

If the statement is true, write "T" in the answer blank. If the statement is false, correct the statement by circling the incorrect term and writing the correct term in the answer blank.

- _____ 31. The point of contact between the nerve ending and the muscle fiber is called a motor neuron.
- _____ 32. A motor neuron together with the cells it innervates is called a motor unit.
- _____ 33. If muscle cells are stimulated repeatedly without adequate periods of rest, the strength of the muscle contraction will decrease resulting in fatigue.
- _____ 34. The depletion of oxygen in muscle cells during vigorous and prolonged exercise is known as fatigue.
- _____ 35. An adequate stimulus will contract a muscle cell completely because of the "must" theory.
- _____ 36. When oxygen supplies run low, muscle cells produce ATP and other waste products during contraction.
- _____ 37. In a laboratory setting, a single muscle fiber can be isolated and subjected to stimuli of varying intensities so that it can be studied.

- _____ 38. The minimal level of stimulation required to cause a fiber to contract is called the threshold stimulus.
- _____ 39. Smooth muscles bring about movements by pulling on bones across movable joints.
- _____ 40. A nervous system disorder that shuts off impulses to certain skeletal muscles may result in paralysis.

TYPES OF SKELETAL MUSCLE CONTRACTION

Circle the correct answer.

41. When a muscle does not shorten and no movement results, the contraction is:
- A. Isometric
 - B. Isotonic
 - C. Twitch
 - D. Tetanic
42. Walking is an example of which type of contraction?
- A. Isometric
 - B. Isotonic
 - C. Twitch
 - D. Tetanic
43. Pushing against a wall is an example of of which type of contraction?
- A. Isotonic
 - B. Isometric
 - C. Twitch
 - D. Tetanic
44. Endurance training is also known as:
- A. Isometrics
 - B. Hypertrophy
 - C. Aerobic training
 - D. Strength training
45. Benefits of regular exercise include all of the following *except*:
- A. Improved lung function
 - B. More efficient heart
 - C. Less fatigue
 - D. Atrophy
46. Twitch contractions can be easily seen:
- A. In isolated muscles prepared for research
 - B. In a great deal of normal muscle activity
 - C. During resting periods
 - D. None of the above
47. Individual contractions "melt" together to produce a sustained contraction or:
- A. Twitch
 - B. Tetanus
 - C. Isotonic response
 - D. Isometric response

48. In most cases, isotonic contraction of muscle produces movement at a/an:
- A. Insertion
 - B. Origin
 - C. Joint
 - D. Bursa
49. Prolonged inactivity causes muscles to shrink in mass, producing a condition called:
- A. Hypertrophy
 - B. Disuse atrophy
 - C. Paralysis
 - D. Muscle fatigue
50. Muscle hypertrophy can be best enhanced by a program of:
- A. Isotonic exercise
 - B. Better posture
 - C. High-protein diet
 - D. Strength training



If you have had difficulty with this section, review pages 140-141.

SKELETAL MUSCLE GROUPS

Choose the proper function or functions for the muscles listed below and write the appropriate letter or letters in the answer blank.

A. Flexor

B. Extensor

C. Abductor

D. Adductor

E. Rotator

F. Dorsiflexor or plantar flexor

- C 51. Deltoid
- F, A, D 52. Tibialis anterior
- F, B 53. Gastrocnemius
- A 54. Biceps brachii
- C 55. Gluteus medius
- B, F 56. Soleus
- A 57. Iliopsoas
- A, D 58. Pectoralis major
- B 59. Gluteus maximus
- B 60. Triceps brachii
- A, E 61. Sternocleidomastoid
- B 62. Trapezius
- D 63. Gracilis



If you have had difficulty with this section, review pages 145-153.

MOVEMENTS PRODUCED BY SKELETAL MUSCLE CONTRACTIONS

Circle the correct answer.

64. A movement that makes the angle between two bones smaller is:
 A. Flexion
B. Extension
C. Abduction
D. Adduction
65. Moving a part toward the midline is:
A. Flexion
B. Extension
C. Abduction
 D. Adduction
66. Moving a part away from the midline is:
A. Flexion
B. Extension
 C. Abduction
D. Adduction
67. When you move your head from side to side as in shaking your head "no," you are _____ a muscle group.
 A. Rotating
B. Pronating
C. Supinating
D. Abducting
68. _____ occurs when you turn the palm of your hand from an anterior to a posterior position.
A. Dorsiflexion
B. Plantar flexion
C. Supination
 D. Pronation
69. Dorsiflexion refers to:
A. Hand movements
B. Eye movements
 C. Foot movements
D. Head movements



If you have had difficulty with this section, review page 150.

APPLYING WHAT YOU KNOW

70. Casey noticed pain whenever she reached for anything in her cupboards. Her doctor told her that the small fluid-filled sacs in her shoulder were inflamed. What condition did Casey have?

Bursitis

71. The nurse was preparing an injection for Mrs. Satin. The amount to be given was 2 mL. What area of the body will the nurse most likely select for this injection?

Deltoid

72. Chris was playing football and pulled a band of fibrous connective tissue that attached a muscle to a bone. What is the common term for this tissue?

Tendon

73. WORD FIND

Can you find 25 muscle terms? Words may be spelled top to bottom, bottom to top, right to left, left to right, or diagonally.

G A S T R O C N E M I U S D U
M S G I O N O I S N E T X E U
U R N N T O M S R B S F D T T
S U I S C I B O N T P N E A R
C B R E U X V T O O E C L I A
L Q T R D E C O D A C M T R P
E T S T B L M N N V I E O T E
X F M I A F Y I E Y B N I S Z
S I A O V I E C T L S S D I I
S Y H N S S R O T A T O R G U
U A M G A R H P A I D J N R S
E H A T R O P H Y L N J T E B
L N O H T D E U G I T A F N T
O R I G I N O S N V S B Z Y L
S B V T O J C T R I C E P S S

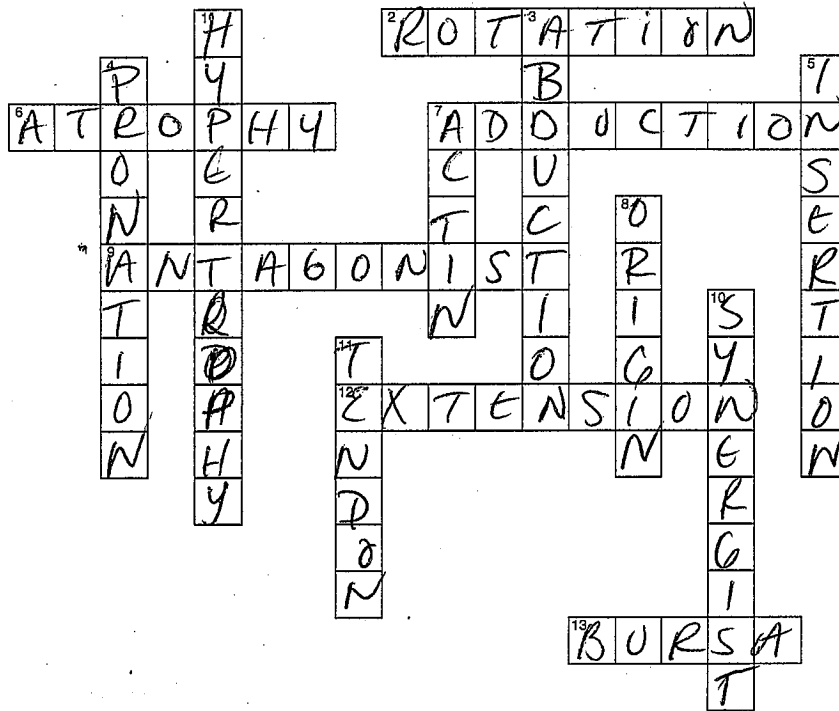
- | | | |
|--------------|---------------|---------------|
| Abductor | Flexion | Soleus |
| Atrophy | Gastrocnemius | Striated |
| Biceps | Hamstrings | Synergist |
| Bursa | Insertion | Tendon |
| Deltoid | Isometric | Tenosynovitis |
| Diaphragm | Isotonic | Trapezius |
| Dorsiflexion | Muscle | Triceps |
| Extension | Origin | |
| Fatigue | Rotator | |

DID YOU KNOW?

If all of your muscles pulled in one direction, you would have the power to move 25 tons.

THE MUSCULAR SYSTEM

Fill in the crossword puzzle.



Across

2. Shaking your head "no"
6. Muscle shrinkage
7. Movement toward the body's midline
9. Produces movement opposite to prime movers
12. Movement that makes joint angles larger
13. Small fluid-filled sac between tendons and bones

Down

1. Increase in size
3. Movement away from the body's midline
4. Turning of the palm from an anterior to a posterior position
5. Attachment to the more movable bone
7. Protein that composes myofilaments
8. Attachment to the more stationary bone
10. Assists prime movers with movement
11. Anchors muscles to bones

Chapter Test

- _____ is another name for muscle cell.
- Cardiac muscle makes up the bulk of the tissue of the _____.
- The muscle attachment to the more movable bone is called the _____.
- The muscle attachment to the more stationary bone is called the _____.
- _____ is the protein that makes up the thin myofilaments.
- _____ is the protein that makes up the thick myofilaments.
- The _____ is the basic functional unit of contraction in a skeletal muscle.
- The three functions of the skeletal system are _____, _____, and _____.
- The molecule _____ supplies energy for muscle contraction.
- _____ is the waste product produced when the muscle must switch to an energy supplying process that does not require oxygen.
- A single motor neuron with all the muscle cells it innervates is called a _____.
- _____ is the minimal level of stimulation required to cause a muscle fiber to contract.
- _____ is a type of muscle contraction that produces movement in a joint and allows the muscle to shorten.
- _____ is a type of muscle contraction that does not produce movement and does not allow the muscle to shorten but increases muscle tension.
- _____ is a term describing movement of a body part away from the midline of the body.

Chapter 6 • The Muscular System 159

Chapter Test—cont'd

- _____ is a term used to describe the movement that is the opposite of flexion.
- _____ describes the hand position when the body is in anatomical position.
- Skeletal muscles can also be called:
 - visceral muscles
 - voluntary muscles
 - cardiac muscles
 - all of the above
- Smooth muscles can also be called:
 - visceral muscles
 - involuntary muscles
 - nonstriated muscles
 - all of the above

Identify the following muscles as:

- ___ temporal muscle
- ___ biceps brachii
- ___ sartorius
- ___ gastrocnemius
- ___ masseter
- ___ pectoralis major
- ___ external oblique
- ___ gluteus maximus
- ___ sternocleidomastoid
- ___ rectus abdominis
- ___ rectus femoris
- ___ triceps brachii
- ___ muscles of the head or neck
- ___ muscles that move the upper extremity
- ___ muscles of the trunk
- ___ muscles that move the lower extremity

