

## Chapter 02 Neuromuscular Fundamentals

### True / False Questions

1. The shape and arrangement of muscle fibers affect the muscle's ability to relax.

**FALSE**

2. Eccentric muscle "actions" result from isometric muscle contractions.

**FALSE**

3. Each muscle in the human body may be innervated by a single nerve or multiple nerves.

**TRUE**

4. Fusiform muscle fiber arrangement results in a circular pattern.

**FALSE**

5. The synergist muscle of an activity is considered to be the primary mover.

**FALSE**

6. Isokinetic muscle contractions involve a dynamic movement wherein the speed of movement is variable.

**FALSE**

7. There are two major types of fiber arrangements which are parallel and pennate.

**TRUE**

8. Contractility is the ability of muscle to contract and develop tension or internal force in the same direction as a resistive force when stimulated.

**FALSE**

9. The term "intrinsic" usually pertains to muscles within or belonging solely to the body part upon which they act.

**TRUE**

10. The term "action" refers to a specific movement of a joint that occurs as a result from a concentric muscle contraction.

**TRUE**

11. It is not possible for a muscle to cause more than one action in an associated joint.

**FALSE**

12. The term "innervation" is used to describe a segment of nervous system and is defined as being responsible for providing a stimulus to muscle fibers within a specific muscle or portion of a muscle.

**TRUE**

13. Skeletal muscles are responsible for movement of the body as a whole and movement within each of the joints of the body.

**TRUE**

14. The term "extensibility" refers to the ability of a muscle to return to its original length following stretching.

**FALSE**

15. All muscle contractions are classified as either isometric or isotonic.

**TRUE**

16. Isotonic contractions are described as either concentric or eccentric on basis of whether shortening or lengthening of the muscle occurs.

**TRUE**

17. Joint movement may occur without any muscle contraction.

**TRUE**

18. Eccentric muscle contractions are referred to as muscle actions instead of a contraction since the muscle is shortening as opposed to lengthening.

**FALSE**

19. The term "isokinetics" describes a type of dynamic exercise that uses concentric and/or eccentric muscle contractions.

**TRUE**

20. Two different muscles may contract simultaneously at a joint and cause a motion that neither would cause if contracting alone.

**TRUE**

21. Antagonist muscles are known as primary or prime movers or muscles most involved in a joint action.

**FALSE**

22. When antagonist muscles contract concentrically they perform the opposite joint motion of the agonist muscle.

**TRUE**

23. The conscious awareness of the position and movement of the body in space is kinesthesia.

**TRUE**

24. The more sudden the activation of a myotatic reflex, the less significant the reflexive contraction.

**FALSE**

25. Generally, as a muscle gets longer, its ability to exert force increases.

**TRUE**

### **Multiple Choice Questions**

26. Muscles provide all of the following except?

A. Protection

B. Posture and support

C. Produce a major portion of total body heat

**D.** Attachment points for other muscles

27. Muscles are usually named due to all of the following except?

**A.** Nerve

B. Shape

C. Size

D. Function

28. Which of the following is affected by the shape and size of a muscle?

- A. Rate of muscle contraction
- B. Bony structure
- C.** Ability of a muscle to produce force
- D. Location of the associated nerve

29. Which of the following is not a shape by which muscles are categorized?

- A. Sphincter
- B.** Radial
- C. Strap
- D. Fusiform

30. Which of the following is not a property of skeletal muscle tissue that allows for force production and movement about joints?

- A.** Constrictability
- B. Elasticity
- C. Extensibility
- D. Irritability

31. Which of the following is not true with respect to an isometric muscle contraction?

- A. Tension is developed within muscle but joint angles remain constant
- B. Considered to be a static contraction
- C.** Is considered to be a dynamic contraction
- D. Joint angle may be maintained in a relatively stable position

32. The pennate type of muscle fiber arrangement may be classified by the following terms except?

- A. Unipennate
- B. Bipennate
- C.** Tripennate
- D. Multipennate

33. Which of the following statements is true regarding isometric muscle actions?

- A. Tension is developed within a muscle but joint angles remain constant
- B. Tension is developed to either cause or control joint movement
- C. Dynamic type of contraction
- D. Varying degrees of tension in muscles are causing joint angles to change

34. Which of the following is not true regarding concentric muscle contractions?

- A. A muscle develops active tension as it shortens
- B. Contractions occur when the muscle develops enough force to overcome applied resistance
- C. Contractions cause movement against gravity or resistance
- D. Commonly described as being a negative type of contraction

35. Which of the following is true regarding concentric muscle contractions?

- A. The force developed by the muscle is less than that of the resistance
- B. Contractions cause movement against gravity or resistance
- C. Causes a body part to remain stable against gravity or external forces
- D. Results in the joint angle changing in the opposite direction of the applied muscle force

36. Which of the following is not true regarding an eccentric muscle action?

- A. Typically called a positive type of muscle contraction
- B. The muscle lengthens under tension
- C. Occurs when muscle gradually lessens in tension to control the descent of resistance
- D. Weight or resistance overcomes muscle contraction but not to the point that muscle cannot control descending movement

37. Which of the following is true regarding an eccentric muscle action?

- A. The muscle does not control the movement with gravity or resistance
- B. Described as a positive type of contraction
- C. The force developed by the muscle is less than that of the resistance
- D. Results in the joint angle changing in the direction opposite that of the resistance or external force

38. Which of the following is not a true statement regarding isokinetic exercise?

- A. The speed or velocity of movement is constant
- B. Muscular contraction occurs only through part of the movement**
- C. Is not another type or classification of muscle contraction
- D. Can only be performed on machines such as Biodex, Cybex, and Lido

39. Which of the following is a true statement regarding agonist muscles?

- A. Causes a joint motion through a specified plane of motion when contracting concentrically**
- B. Causes a joint motion through a specified plane of motion when contracting isometrically
- C. Causes a joint motion through a specified plane of motion when contracting eccentrically
- D. Causes a joint motion through a specified plane of motion when contracting isokinetically

40. Which of the following is not a true statement regarding antagonist muscles?

- A. Muscle is typically located on opposite side of the joint from agonist
- B. When activated these muscles have the opposite concentric action
- C. Also known as contralateral muscles
- D. These muscles work against agonist muscles by contracting and preventing movement**

41. Which of the following is a true statement regarding stabilizer muscles?

- A. Are essential in establishing a relatively firm base for the more distal joints to work from when carrying out movements**
- B. Contract to unlock the joint to enable another limb or body segment to exert force and/or move
- C. Known as guiding muscles
- D. Are located opposite a joint or body part

42. Which of the following is a true statement regarding synergist muscles?

- A. Assist in action of antagonists
- B. Are always considered to be prime movers for the action
- C. Known as guiding muscles**
- D. Assist in refined movement and cause undesired motions

43. Which of the following is the basic functional unit of the nervous system responsible for generating and transmitting nervous impulses?

- A. Dendrite
- B. Neuron**
- C. Ganglion
- D. Dermatome

44. Which of the following is not a classification of neuron type?

- A. Sensory
- B. Motor
- C. Peripheral**
- D. Interneuron

45. Which of the following is a proprioceptor associated with muscle tissue?

- A. Pacian corpuscle
- B. Golgi Tendon Organ**
- C. Meissner's corpuscle
- D. Ruffini organ

46. The subconscious mechanism by which the body is able to regulate posture and movement is \_\_\_\_\_.

- A. kinesthesia
- B. proprioception**
- C. reflex
- D. pathogenesis

47. Which of the following do not result in the contraction of the muscle fibers in a particular motor unit?

- A. Maximal stimulus
- B. Submaximal stimulus
- C. Threshold stimulus
- D. Subthreshold stimulus**

48. \_\_\_\_\_ occurs when an antagonistic muscle becomes stretched to the point at which it can no longer lengthen and allow movement.

- A. Active insufficiency
- B. Countercurrent movement
- C. Passive insufficiency**
- D. Reciprocal innervation

49. Regarding the angle of pull, a muscle would be most effective in moving a joint when its angle of pull is at \_\_\_\_\_ degrees.

- A. 32
- B. 84**
- C. 99
- D. 102

### **Essay Questions**

50. List the four properties of muscle tissue.

1. Contractility
2. Irritability
3. Extensibility
4. Elasticity