

## **What is the primary function of muscle contraction**

- A. Digestion
- B. Protection
- C. Sensation
- D. Movement

## **What are the two main types of muscle fibers**

- A. Cardiac and smooth
- B. Biceps and triceps
- C. Slow-twitch and fast-twitch
- D. Flexor and extensor

## **What is the role of calcium ions in muscle contraction**

- A. Provides energy for muscle movement
- B. Initiates muscle contraction
- C. Regulates body temperature
- D. Causes relaxation of muscles

## **What is the difference between isotonic and isometric muscle contractions**

- A. Isotonic involves no movement, Isometric involves movement
- B. Isotonic and isometric are the same thing
- C. Isotonic only happens in weightlifting, Isometric only happens in yoga
- D. Isotonic involves constant tension and changing length, Isometric involves constant length and changing tension

## **What is the sliding filament theory of muscle contraction**

- A. Muscle contraction is caused by the sliding of actin and myosin filaments past each other.
- B. Muscle contraction is caused by the lengthening of actin and myosin filaments.
- C. Muscle contraction is caused by the contraction of actin and myosin filaments.
- D. Muscle contraction is caused by the separation of actin and myosin filaments.

### **What is the role of ATP in muscle contraction**

- A. Aids in nerve transmission
- B. Causes relaxation of muscles
- C. Provides energy for muscle contraction
- D. Regulates muscle growth

### **What is the neuromuscular junction**

- A. A type of muscle fiber
- B. A part of the brain responsible for muscle control
- C. A type of joint in the body
- D. The site where a motor neuron meets a muscle fiber

### **What is a motor unit**

- A. A type of car engine.
- B. A type of electric scooter.
- C. A motor unit is a motor neuron and all of the muscle fibers it innervates.
- D. A type of household appliance.

### **What is the difference between concentric and eccentric muscle contractions**

- A. Concentric: no movement. Eccentric: muscle shortens.
- B. Concentric: muscle shortens. Eccentric: muscle lengthens.
- C. Concentric: muscle shortens. Eccentric: no movement.

- D. Concentric: muscle lengthens. Eccentric: muscle shortens.

### **What is the role of troponin and tropomyosin in muscle contraction**

- A. Store energy for muscle movement
- B. Regulate muscle contraction by controlling actin-myosin interaction
- C. Generate ATP for muscle contraction
- D. Control calcium levels in the muscle

### **What is the role of acetylcholine in muscle contraction**

- A. Inhibits muscle contraction
- B. Causes muscle relaxation
- C. Has no effect on muscle contraction
- D. Stimulates muscle contraction

### **What is the role of the sarcoplasmic reticulum in muscle contraction**

- A. Controls muscle movement
- B. Stores and releases calcium ions
- C. Regulates blood flow
- D. Produces ATP for energy

### **What is the difference between slow-twitch and fast-twitch muscle fibers**

- A. Slow-twitch fibers are used for power and speed, while fast-twitch fibers are endurance-based.
- B. There is no difference between slow-twitch and fast-twitch muscle fibers.
- C. Slow-twitch fibers contract slowly and are endurance-based, while fast-twitch fibers contract quickly and are used for power and speed.
- D. Fast-twitch fibers contract slowly and are endurance-based, while slow-twitch fibers contract quickly and are used for power and speed.

## **What is the all-or-none principle in muscle contraction**

- A. All muscle fibers in a motor unit contract fully or not at all
- B. Only a few muscle fibers contract at a time
- C. Some muscle fibers contract partially
- D. Muscle fibers contract in a random order

## **What is the role of myosin in muscle contraction**

- A. Myosin pushes actin filaments away from the center of the sarcomere
- B. Myosin stores energy for muscle contraction
- C. Myosin helps relax the muscle fibers
- D. Myosin pulls actin filaments towards the center of the sarcomere

## **What is the role of the transverse tubules in muscle contraction**

- A. Producing ATP
- B. Transmitting muscle action potentials
- C. Storing calcium ions
- D. Contracting muscle fibers

## **What is a twitch contraction**

- A. A muscle contraction caused by rapid firing of motor neurons
- B. A sudden involuntary movement
- C. A type of video game streaming platform
- D. A type of bird

## **What is the difference between a motor neuron and a muscle fiber**

- A. Motor neuron contracts, muscle fiber sends signals

- B. Motor neuron is in the brain, muscle fiber is in the spinal cord
- C. They are the same thing
- D. Motor neuron sends signals, muscle fiber contracts

### **What is the length-tension relationship in muscle contraction**

- A. Shorter muscle length produces maximum force
- B. Longer muscle length produces maximum force
- C. Optimal muscle length produces maximum force
- D. Muscle length does not affect force production

### **What is the role of the nervous system in initiating muscle contractions**

- A. Producing hormones for muscle contractions
- B. Regulating body temperature
- C. Providing nutrients to muscles
- D. Sending signals from the brain to muscles

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