Advanced Exercise Science Foundations

Physical Education And Health · Answer Key · 8 Questions

1. Which specific phase of a muscle contraction involves the sarcomere shortening as actin filaments slide over myosin filaments?

A) Eccentric contraction
B) Isometric contraction
C) Concentric contraction
D) Isotonic relaxation

2. During aerobic respiration, which organelle within the muscle cell is responsible for the majority of adenosine triphosphate (ATP) production?

A) Ribosome
B) Mitochondrion
C) Lysosome
D) Golgi apparatus

3. Which term describes the volume of blood pumped from the left ventricle of the heart in one single contraction?

A) Cardiac output
B) Heart rate
C) Stroke volume
D) Systolic pressure

4. According to the SAID principle (Specific Adaptation to Imposed Demands) in exercise science, what does the body prioritize?

A) Adapting to the specific type of stress placed upon it
B) Increasing overall body mass regardless of training
C) Prioritizing flexibility over muscular strength
D) Focusing solely on cardiovascular recovery

5. Which type of muscle fiber is characterized by high mitochondrial density and a high resistance to fatigue, making it ideal for endurance activities?

A) Type IIb (fast-twitch)
B) Type IIa (fast-oxidative)
C) Type I (slow-twitch)
D) Type III (intermediate)

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6. What is the primary function of the Golgi tendon organ in the human musculoskeletal system?

A) To initiate a contraction when a muscle is stretched
B) To detect changes in muscle tension to prevent injury
C) To store glycogen for immediate energy use
D) To regulate blood flow to active muscles

7. Which anatomical plane divides the human body into anterior and posterior sections?

A) Sagittal plane
B) Transverse plane
C) Frontal plane
D) Oblique plane

8. In the context of energy systems, which substrate is primarily utilized during the initial 10-15 seconds of high-intensity explosive activity?

A) Stored phosphocreatine
B) Adipose tissue
C) Blood glucose
D) Liver glycogen

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