

Advanced Exercise Science Concepts

Exercise Science · Practice Test · 18 Questions

1. What is the primary site of oxygen consumption and ATP production during aerobic metabolism in skeletal muscle cells?

- A) Sarcoplasmic Reticulum
- B) Sarcomere
- C) Mitochondria
- D) Golgi Apparatus

2. Which of the following is the primary muscle action characterized by a decrease in muscle length under a constant load?

- A) Isometric
- B) Eccentric
- C) Isokinetic
- D) Concentric

3. The lactate threshold is typically defined as the highest intensity of exercise at which:

- A) Blood lactate begins to accumulate exponentially
- B) Oxygen consumption reaches its maximum
- C) Heart rate exceeds 90% of maximum
- D) Glycogen stores are fully depleted

4. What is the average resting heart rate for a healthy adult?

- A) 150-180 bpm
- B) 120-140 bpm
- C) 60-100 bpm
- D) 40-50 bpm

5. Which hormone is primarily responsible for promoting glucose uptake into cells during and after exercise?

- A) Glucagon
- B) Cortisol
- C) Epinephrine
- D) Insulin

6. In biomechanics, what term describes the resistance to acceleration of a body or object?

- A) Velocity
- B) Momentum
- C) Inertia
- D) Force

7. Which type of muscle fiber is characterized by its high oxidative capacity, slow contraction speed, and resistance to fatigue?

- A) Type IIb
- B) Type IIa
- C) Type I
- D) All muscle fibers equally

8. The Valsalva maneuver, often used in strength training, involves:

- A) Exhaling forcefully during exertion
- B) Holding one's breath during exertion
- C) Inhaling deeply after exertion
- D) Relaxing abdominal muscles during exertion

9. What is the typical range for VO₂ max in elite male endurance athletes?

- A) 30-40 ml/kg/min
- B) 40-50 ml/kg/min
- C) 70-85 ml/kg/min
- D) 90-100 ml/kg/min

10. Which neurotransmitter is primarily involved in muscle contraction at the neuromuscular junction?

- A) Dopamine
- B) Serotonin
- C) Acetylcholine
- D) Norepinephrine

11. During steady-state aerobic exercise, the primary source of fuel for muscles shifts from predominantly carbohydrates to a greater reliance on which macronutrient as exercise duration increases?

- A) Protein
- B) Fats
- C) Micronutrients
- D) Water

12. What is the principle of reversibility in training, often referred to as the 'use it or lose it' principle?

- A) Adaptations to training are temporary and will be lost if training stops
- B) Training adaptations are permanent
- C) Training intensity must always increase
- D) Specific adaptations occur only with specific training

13. Which phase of the stretch-shortening cycle is characterized by the eccentric loading of a muscle?

- A) Amortization
- B) Concentric
- C) Eccentric
- D) Isometric

14. What is the physiological term for the body's ability to maintain a stable internal environment despite external changes?

- A) Allostasis
- B) Adaptation
- C) Homeostasis
- D) Metabolism

15. Which joint movement involves decreasing the angle between two bones at a joint?

- A) Abduction
- B) Extension
- C) Flexion
- D) Rotation

16. The Cori Cycle describes the metabolic pathway where lactate is converted to glucose in which organ?

- A) Skeletal Muscle
- B) Adrenal Gland
- C) Kidney
- D) Liver

17. What is the maximum heart rate formula most commonly used in exercise physiology for estimating an individual's theoretical maximum heart rate?

- A) $220 - \text{Age}$
- B) $208 - (0.7 \times \text{Age})$
- C) $215 - \text{Age}$
- D) $190 - (0.5 \times \text{Age})$

18. Which component of skill-related fitness refers to the ability to change the body's position effectively and efficiently?

- A) Agility
- B) Coordination
- C) Balance
- D) Power