

Advanced Sports Science Fundamentals

Sports Science · Practice Test · 15 Questions

1. Which specific energy system provides the majority of ATP for high-intensity exercise lasting between 30 and 90 seconds?

- A) Aerobic system
- B) Phosphagen system
- C) Anaerobic glycolysis
- D) Beta-oxidation

2. What is the term for the physiological state where the rate of lactate production exceeds the rate of lactate clearance in the blood?

- A) Lactate threshold
- B) VO2 max
- C) EPOC
- D) Steady state

3. During a muscle contraction, which protein filament primarily slides past myosin to shorten the sarcomere?

- A) Tropomyosin
- B) Actin
- C) Troponin
- D) Titin

4. In biomechanics, what does the 'moment of inertia' represent in relation to a rotating body?

- A) Resistance to linear acceleration
- B) Rate of change of angular velocity
- C) Resistance to angular acceleration
- D) Total angular momentum

5. Which heart valve prevents the backflow of blood from the aorta into the left ventricle?

- A) Mitral valve
- B) Tricuspid valve
- C) Pulmonary valve
- D) Aortic valve

6. What is the primary function of satellite cells in skeletal muscle tissue following intense training?

- A) Increasing metabolic rate
- B) Facilitating muscle hypertrophy and repair
- C) Reducing systemic inflammation
- D) Regulating blood glucose uptake

7. Which hormone is primarily responsible for the stimulation of erythropoiesis, increasing red blood cell production for oxygen transport?

- A) Cortisol
- B) Erythropoietin
- C) Glucagon
- D) Aldosterone

8. What is the effect of 'eccentric' muscle action on force production capabilities compared to concentric action?

- A) Lower force production
- B) Equal force production
- C) Higher force production
- D) Negligible force production

9. Which proprioceptor is located within the muscle tendon and responds to changes in muscle tension?

- A) Muscle spindle
- B) Golgi tendon organ
- C) Pacinian corpuscle
- D) Meissner's corpuscle

10. What is the 'Frank-Starling law' of the heart primarily related to?

- A) Stroke volume and end-diastolic volume
- B) Heart rate and blood pressure
- C) Cardiac output and peripheral resistance
- D) Oxygen extraction at the tissue level

11. Which type of muscle fiber is characterized by high mitochondrial density and high resistance to fatigue?

- A) Type IIx
- B) Type IIa
- C) Type I
- D) Type IIb

12. What is the primary byproduct of the aerobic metabolism of glucose that is exhaled by the lungs?

- A) Lactic acid
- B) Carbon monoxide
- C) Carbon dioxide
- D) Urea

13. In terms of lever systems in the human body, what class of lever is most commonly represented by the bicep curl (elbow flexion)?

- A) First-class
- B) Second-class
- C) Third-class
- D) Fourth-class

14. What does the 'oxygen deficit' represent during the transition from rest to steady-state exercise?

- A) The amount of oxygen consumed during recovery
- B) The difference between oxygen demand and oxygen uptake
- C) The total oxygen storage capacity of the blood
- D) The rate of mitochondrial respiration

15. Which specific electrolyte imbalance is most commonly associated with severe muscle cramping during prolonged physical exertion?

- A) Hyponatremia
- B) Hypercalcemia
- C) Hypokalemia
- D) Hyperphosphatemia