Advanced Sports Science for Young Athletes

Sports Science · Practice Test · 10 Questions

1. What is the primary function of the Golgi Tendon Organ (GTO) in proprioception during resistance training?

A) To initiate a stretch reflex, causing muscle contraction.
B) To monitor muscle tension and inhibit muscle contraction when tension becomes excessive.
C) To detect changes in muscle length and signal the brain to adjust posture.
D) To enhance the rate of muscle fiber recruitment for maximal force production.

2. Which of the following metabolic pathways is the most significant contributor to ATP production during high-intensity, short-duration exercise (e.g., a 100m sprint)?

A) Aerobic Respiration (Krebs Cycle and Oxidative Phosphorylation)
B) Glycolysis (Anaerobic)
C) Beta-Oxidation of Fatty Acids
D) The Phosphagen System (ATP-PCr)

3. In biomechanics, what does the term 'center of mass' refer to in relation to a moving athlete?

A) The point where the athlete's body is perfectly balanced on a single leg.
B) The geometric center of the athlete's entire body mass, regardless of limb position.
C) The highest point an object reaches during projectile motion.
D) The intersection of all forces acting upon the athlete's body.

4. What is the primary physiological adaptation observed in response to regular, prolonged aerobic endurance training regarding the cardiovascular system?

A) Increased resting heart rate and decreased stroke volume.
B) Decreased maximal cardiac output and increased blood viscosity.
C) Increased left ventricular hypertrophy and enhanced stroke volume.
D) Reduced capillary density in skeletal muscles and decreased mitochondrial volume.

5. Which macronutrient plays a critical role in muscle protein synthesis and repair, especially following strenuous exercise?

A) Complex Carbohydrates
B) Monounsaturated Fats
C) Protein
D) Dietary Fiber

6. What does the concept of 'specificity' in training principles imply for an athlete preparing for a basketball game?

A) Training should focus on improving general cardiovascular fitness through long-distance running.
B) Training drills should mimic the energy systems and movement patterns used in basketball.
C) The athlete should engage in a variety of unrelated sports to develop broad athleticism.
D) Recovery methods should be prioritized over training intensity.

7. Which of the following is a key indicator of overtraining syndrome that can be measured through physiological monitoring?

A) A sustained increase in resting heart rate.
B) A decrease in perceived exertion during submaximal exercise.
C) An elevated morning heart rate variability (HRV) compared to baseline.
D) Increased levels of cortisol indicating improved recovery.

8. What is the primary role of creatine monohydrate supplementation in sports performance?

A) To enhance aerobic capacity and endurance.
B) To increase muscle protein synthesis and hypertrophy.
C) To improve the regeneration of ATP in short, high-intensity bursts.
D) To reduce inflammation and muscle soreness.

9. During plyometric exercises, the rapid eccentric contraction followed immediately by a concentric contraction is known as the:

A) Stretch-shortening cycle
B) Isokinetic contraction
C) Isometric hold
D) Eccentric overload phase

10. What is the recommended daily protein intake range for adolescent athletes engaged in regular training to support muscle growth and repair?

A) 0.5 - 1.0 grams per kilogram of body weight
B) 1.2 - 1.7 grams per kilogram of body weight
C) 2.5 - 3.0 grams per kilogram of body weight
D) Less than 0.5 grams per kilogram of body weight