

Solo Athlete Mastery for 11th Grade

Juniors analyze physiological adaptations and biomechanical strategies while designing personalized periodization plans for peak individual athletic performance.

1. When designing a 12-week macrocycle for a competitive cyclist, which phase is characterized by high-volume, low-intensity training to build aerobic capacity?

- A. The Transition Phase
- B. The Preparatory Phase
- C. The Competitive Phase
- D. The Tapering Phase

2. In the context of powerlifting, the state of ___ occurs when the central nervous system is overtaxed, leading to a temporary decrease in performance despite high effort.

- A. Hypertrophy
- B. Systemic adaptation
- C. Overreaching
- D. Neural inhibition

3. Proprioceptive Neuromuscular Facilitation (PNF) stretching is generally considered more effective than static stretching for increasing range of motion because it utilizes the Golgi tendon organ reflex.

- A. True
- B. False

4. Which physiological marker is the most reliable indicator of an individual's 'Lactate Threshold' during a graded exercise test on a treadmill?

- A. Maximum Heart Rate
- B. The point where blood lactate rises exponentially
- C. Total sweat rate per hour
- D. The onset of DOMS (Delayed Onset Muscle Soreness)

5. A marathoner utilizes ___, a strategy involving high carbohydrate intake 2-3 days before an event, to maximize glycogen stores in the liver and skeletal muscles.

- A. Ketosis
- B. Carbo-loading
- C. Protein synthesis
- D. Caloric restriction

6. Plyometric training, such as depth jumps, focuses on the stretch-shortening cycle (SSC) to increase explosive power by utilizing elastic energy stored in tendons.

- A. True

Name: _____

Date: _____

B. False

7. Which biomechanical principle explains why a high-jumper arches their back over the bar, effectively keeping their center of mass below the bar while clearing it?

- A. Newton's Third Law
- B. The Fosbury Flop technique
- C. Conservation of Angular Momentum
- D. Leverage and Torque

8. In competitive archery or riflery, athletes often practice ___ training to lower their heart rate and maintain focus during the 'quiet eye' period before a shot.

- A. Autogenic
- B. Hyperventilation
- C. Plyometric
- D. Isokinetic

9. Hypoxic training (altitude training) improves endurance performance primarily by decreasing the total volume of red blood cells in the body.

- A. True
- B. False

10. An individual athlete experiencing localized muscle fatigue during high-intensity intervals is likely seeing a build-up of which metabolite that interferes with calcium binding in muscle fibers?

- A. Oxygen
- B. Hydrogen Ions (H⁺)
- C. Glucose
- D. Sodium Chloride