

Sports Science Fundamentals

Sports Science · Answer Key · 18 Questions

1. Which molecule is the primary source of chemical energy for muscle contraction?

- A) Glucose
- B) Adenosine triphosphate (ATP)**
- C) Lactic acid
- D) Hemoglobin

2. What is the primary function of red blood cells during strenuous physical activity?

- A) To produce hormones
- B) To repair muscle tissue
- C) To transport oxygen to muscles**
- D) To regulate body temperature

3. Which type of muscle fiber is best suited for endurance activities like long-distance running?

- A) Type I (slow-twitch)**
- B) Type IIa (fast-twitch oxidative)
- C) Type IIx (fast-twitch glycolytic)
- D) Smooth muscle

4. What is the term for the physiological process of building new muscle tissue through resistance training?

- A) Atrophy
- B) Hypertrophy**
- C) Homeostasis
- D) Vasodilation

5. Which nutrient is considered the primary fuel source for high-intensity, short-duration exercise?

- A) Protein
- B) Fat
- C) Fiber
- D) Carbohydrates**

6. Where in the human body is the primary site of aerobic energy production?

- A) Nucleus
- B) Ribosomes
- C) Mitochondria**
- D) Cell membrane

7. Which organ is responsible for filtering metabolic waste, such as urea, from the blood during exercise?

- A) Liver
- B) Kidneys**
- C) Pancreas
- D) Gallbladder

8. What is the main role of tendons in the human musculoskeletal system?

- A) Connecting bone to bone
- B) Connecting muscle to bone**
- C) Lubricating joints
- D) Producing white blood cells

9. Which heart chamber is responsible for pumping oxygenated blood to the rest of the body?

- A) Right atrium
- B) Left atrium
- C) Right ventricle
- D) Left ventricle**

10. What physical law explains why athletes lean into a curve while running to maintain balance?

- A) Newton's First Law
- B) Centripetal force**
- C) Law of Reflection
- D) Thermodynamics

11. Which vitamin is essential for the absorption of calcium to maintain bone density in athletes?

- A) Vitamin A
- B) Vitamin C
- C) Vitamin D**
- D) Vitamin K

12. What is the primary component of muscle tissue?

- A) Fat
- B) Protein**
- C) Carbohydrate
- D) Water

13. What does VO2 max measure?

- A) Maximum heart rate
- B) Maximum oxygen consumption**
- C) Muscle mass percentage
- D) Recovery time

14. Which bodily system is most responsible for the immediate 'fight or flight' response during a sports match?

- A) Digestive system
- B) Endocrine system
- C) Sympathetic nervous system**
- D) Lymphatic system

15. Which substance builds up in muscles during intense anaerobic exercise, contributing to fatigue?

- A) Lactic acid**
- B) Creatine
- C) Glycogen
- D) Dopamine

16. Which joint type allows for the greatest range of motion in the human body?

- A) Hinge joint
- B) Ball-and-socket joint**
- C) Pivot joint
- D) Saddle joint

17. What is the primary function of electrolytes like sodium and potassium in athletes?

- A) Building muscle mass
- B) Regulating nerve impulses and fluid balance**
- C) Increasing red blood cell count
- D) Storing energy for later use

18. What is the main role of the alveoli in the respiratory system?

- A) Humidifying inhaled air
- B) Filtering dust particles
- C) Gas exchange between air and blood**
- D) Protecting the lungs from infection