

Astrophysical Impacts on Human Physiology

Space Medicine And Human Performance · Practice Test · 8 Questions

1. What is the primary cause of muscle atrophy in astronauts during long-duration spaceflight in microgravity?

- A) Increased caloric intake
- B) Lack of gravitational loading
- C) Excessive exposure to radiation
- D) Higher atmospheric pressure

2. Which physiological system is most immediately affected by the fluid shift occurring in the headward direction during spaceflight?

- A) Cardiovascular system
- B) Musculoskeletal system
- C) Endocrine system
- D) Respiratory system

3. What is a common clinical concern for bone health in astronauts caused by the lack of mechanical stress in space?

- A) Increased bone density
- B) Space-induced osteoporosis
- C) Excessive vitamin D production
- D) Rapid cartilage regeneration

4. What is the effect of ionizing radiation in space on the recovery rate of muscle tissue after exercise?

- A) It accelerates repair
- B) It has no impact
- C) It increases inflammation and slows recovery
- D) It eliminates the need for protein synthesis

5. Which device is used on the International Space Station to provide resistive exercise to mitigate muscle loss?

- A) Treadmill with Vibration Isolation
- B) Advanced Resistive Exercise Device (ARED)
- C) Stationary cycle ergometer
- D) Weighted jump rope

6. How does microgravity affect the vestibular system, often leading to space motion sickness?

- A) Sensory conflict between vision and inner ear
- B) Increase in blood flow to the brain
- C) Temporary blindness
- D) Over-activation of the pineal gland

7. What measurement is primarily used to monitor spinal elongation, a frequent cause of back pain for astronauts in space?

- A) Blood glucose levels
- B) Standing height measurements
- C) Heart rate variability
- D) Joint lubrication frequency

8. Which substance is excreted at higher rates in urine due to bone demineralization in a microgravity environment?

- A) Potassium
- B) Calcium
- C) Iron
- D) Sodium