Human Physiology in Space

Astronomy And Human Health · Answer Key · 8 Questions

1. What is the primary cause of 'space adaptation syndrome' experienced by many astronauts during their initial days in microgravity?

A) Exposure to cosmic radiation

B) Fluid shifts affecting the vestibular system

C) Lack of oxygen in the spacecraft cabin

D) Rapid cooling of body core temperature

2. Long-duration exposure to microgravity often leads to which of the following changes in the human musculoskeletal system?

A) Increased bone density

B) Rapid muscle hypertrophy

C) Loss of bone mineral density

D) Enhanced cartilage regeneration

3. What is a known physiological effect of the 'fluid shift' that occurs when a human body enters a microgravity environment?

A) Increased blood volume in the legs

B) Facial puffiness and nasal congestion

C) Permanent decrease in heart rate

D) Spontaneous production of red blood cells

4. Which condition, often referred to as SANS (Spaceflight Associated Neuro-ocular Syndrome), is a health concern for astronauts on long missions?

A) Structural changes to the eye and optic nerve

B) Sudden loss of color vision

C) Complete detachment of the retina

D) Increased risk of cataracts from light

5. In the absence of Earth's gravity, how does the human spine typically change in length?

A) It compresses due to lack of pressure

B) It expands, causing an increase in height

C) It remains completely unchanged

D) It becomes curved into a permanent C-shape

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6. Which organ system is most responsible for the cardiovascular deconditioning observed in astronauts after returning from space?

A) The endocrine system
B) The digestive system
C) The heart and blood vessels
D) The lymphatic system

7. What is the most significant health risk posed by high-energy cosmic radiation during long-term space travel outside of Earth's magnetosphere?

A) Increased risk of DNA damage and cancer
B) Immediate loss of motor function
C) Rapid hair loss within hours
D) Total failure of the immune system

8. Which sleep-related issue is commonly reported by astronauts due to the frequent sunrise and sunset cycles in low Earth orbit?

A) Inability to dream
B) Disruption of the circadian rhythm
C) Hypersomnia
D) Increased sleep efficiency

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