

# Maritime Health and Physiological Challenges

Maritime Technology And Human Physiology · Practice Test · 20 Questions

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**1. What is the primary physiological mechanism behind 'Mal de débarquement' syndrome occurring after returning to land from a long sea voyage?**

- A) Dehydration of the inner ear fluid
- B) Dysfunction in the vestibular system's adaptation to stable ground
- C) Severe vitamin D deficiency
- D) Increased blood pressure in the carotid sinus

**2. Which condition, historically known as 'shipboard beri-beri', is caused by a deficiency in thiamine (Vitamin B1) often found in historical maritime diets?**

- A) Scurvy
- B) Pellagra
- C) Wernicke-Korsakoff syndrome
- D) Rickets

**3. What is the specific atmospheric pressure limit below which a saturation diver must remain to avoid the onset of High-Pressure Nervous Syndrome (HPNS)?**

- A) 100 meters equivalent
- B) 150 meters equivalent
- C) 200 meters equivalent
- D) 300 meters equivalent

**4. During prolonged periods at sea, what specific physiological change occurs to the circadian rhythm of mariners due to the 'blue light' exposure from modern LED bridge displays?**

- A) Increased melatonin secretion
- B) Suppression of melatonin production
- C) Enhanced cortisol degradation
- D) Stabilized adenosine levels

**5. Which heavy metal exposure, historically associated with ship-breaking and legacy paint removal, leads to 'basophilic stippling' in red blood cells?**

- A) Mercury
- B) Lead
- C) Cadmium
- D) Arsenic

**6. What is the primary cause of 'Immersion Foot' (or Trench Foot) when mariners are exposed to prolonged wet conditions in maritime environments?**

- A) Fungal infection of the dermis
- B) Peripheral nerve damage due to cold-induced vasoconstriction
- C) Severe potassium imbalance
- D) Hyper-osmotic shock to skin cells

**7. Which specific bone density biomarker is most commonly monitored in submarine crews due to the lack of natural sunlight and restricted physical movement?**

- A) Serum osteocalcin
- B) Urinary hydroxyproline
- C) Serum 25-hydroxyvitamin D
- D) Alkaline phosphatase

**8. What is the primary physical effect of 'whole-body vibration' (WBV) experienced by crew members on high-speed craft on the lumbar spine?**

- A) Degenerative disc disease
- B) Bone spur formation
- C) Ligament hypertrophy
- D) Spinal canal stenosis

**9. Which gas is commonly used as a diluent in deep-sea saturation diving to prevent nitrogen narcosis at depths exceeding 50 meters?**

- A) Neon
- B) Argon
- C) Helium
- D) Xenon

**10. The 'Bohr effect' is a critical physiological concern for divers using rebreather technology. What does this effect describe?**

- A) The reduction of hemoglobin's affinity for oxygen in the presence of CO<sub>2</sub>
- B) The increase in blood viscosity due to cold
- C) The formation of nitrogen bubbles in joints
- D) The rapid expansion of lung volume during ascent

**11. In maritime radar operators, what is the documented physiological risk associated with long-term exposure to non-ionizing microwave radiation?**

- A) Cataract formation
- B) Skin pigment changes
- C) Bone marrow suppression
- D) Reduced synaptic plasticity

**12. Which hormone is typically suppressed in mariners working on 'watch' rotations that cross multiple time zones, leading to metabolic syndrome risks?**

- A) Thyroxine
- B) Insulin
- C) Adiponectin
- D) Ghrelin

**13. What physiological phenomenon occurs when a diver ascends too quickly, causing dissolved nitrogen to form bubbles in the bloodstream?**

- A) Hypercapnia
- B) Decompression sickness
- C) Hypoxia
- D) Nitrogen toxicity

**14. Which cardiovascular condition is specifically linked to the high-sodium diet historically prevalent in long-haul maritime catering?**

- A) Left ventricular hypertrophy
- B) Atrial fibrillation
- C) Pulmonary hypertension
- D) Myocarditis

**15. What is the maximum safe exposure limit for noise-induced hearing loss in engine room environments without standard PPE, measured in decibels (dBA) over an 8-hour shift?**

- A) 75 dBA
- B) 85 dBA
- C) 95 dBA
- D) 105 dBA

**16. Which specific neurotransmitter imbalance is hypothesized to contribute to 'sea-sickness' through excessive signaling in the area postrema?**

- A) Dopamine
- B) Acetylcholine
- C) Serotonin
- D) GABA

**17. What is the main physiological purpose of the 'Isobaric Counter-diffusion' phenomenon in mixed-gas diving?**

- A) Equalizing pressure in the middle ear
- B) Preventing gas bubble formation when switching inert gases
- C) Reducing nitrogen absorption during descent
- D) Improving oxygen uptake in cold water

**18. In the context of maritime occupational health, 'Noise Notch' is a diagnostic indicator found in which medical test?**

- A) Electrocardiogram
- B) Audiometry
- C) Spirometry
- D) Blood glucose profile

**19. What is the primary risk of 'Hypercapnia' in closed-circuit rebreather systems?**

- A) Respiratory alkalosis
- B) Central nervous system depression
- C) Increased oxygen toxicity threshold
- D) Decreased carbon dioxide ventilation efficiency

**20. Which muscle group is most frequently affected by repetitive strain injury (RSI) in deck hands performing high-tension manual line handling?**

- A) Flexor digitorum
- B) Biceps brachii
- C) Trapezius
- D) Gastrocnemius