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Title: Effects of increased O₂-N₂ pressure and breathing apparatus on respiratory function

Authors: Morrison, JB
Butt, WS
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Keywords: human
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Abstract: The ventilatory response of four subjects was measured at rest and various intensities of exercise. Experiments were conducted in a dry pressure chamber (1) at 1 ATA and 4 ATA with the subjects breathing from a low-resistance mouthpiece, and (2) at 4 ATA with the subjects breathing from open-circuit breathing apparatus (Royal Naval Swimmers' Air Breathing Apparatus). At 4 ATA there was significant hypoventilation and hypercapnia, together with an increased tidal volume and lower respiratory frequency. The use of the breathing apparatus tended to amplify these changes in ventilatory response. In addition, the extent of hypercapnia at 4 ATA was related to the exercise intensity. When subjects breathed from a low-resistance mouthpiece, oxygen uptake was significantly greater at 4 ATA than at the surface for the same ergometric work load, but when they breathed from the breathing apparatus, the increase in oxygen uptake was not significant in comparison to surface values. At 4 ATA bradycardia was evident at all levels of exercise but was not affected significantly by the presence of the breathing apparatus. Atmosphere Exposure Chambers *Atmospheric Pressure Bradycardia/etiology Exertion Human Hypercapnia/etiology *Naval Medicine *Nitrogen *Oxygen Oxygen Consumption *Protective Devices

Respiratory Function Tests *Respiratory Physiology
*Respiratory Protective Devices

Description: Undersea and Hyperbaric Medical Society, Inc.
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