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Title: Nitrogen narcosis and ethyl alcohol increase the gain of the vestibular ocular reflex

Authors: Hamilton, K
Fowler, B
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Keywords: helium
heliox
nitrogen
hyperbaric
air
alcohol
narcosis
dive

Issue Date: 1989

Abstract: The effects of air, helium-oxygen (6.4 ATA), and ethyl alcohol (40% by volume at a dose of 1.5 ml/kg body weight) were examined on the gain, number of beats, and phase lag of the vestibular ocular reflex (VOR) by means of electronystagmography (n = 7). It was found that hyperbaric air and alcohol, both alone and in combination, produced approximately the same increase in the velocity of the slow phase component of the nystagmus, thereby elevating the gain of the system to unity. Hyperbaric helium-oxygen did not influence the gain. These findings suggest that nitrogen narcosis differentially impairs the system controlling the VOR. It is proposed that this impairment may help to explain the disorientation sometimes associated with nitrogen narcosis.

Description: Undersea and Hyperbaric Medical Society, Inc. (<http://www.uhms.org>)

URI: [PMID: 2734965](http://archive.rubicon-foundation.org/2509)
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