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Title: Intentional tremor on a helium-oxygen chamber dive to 49.5 ATA

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Abstract: Tremor is a well-recognized manifestation of the high pressure nervous syndrome (HPNS). As such, its measurement and analysis during deep hyperbaric exposures can be an important index of central nervous system integrity. During the U.S. Navy's experimental chamber dive to a depth equivalent to 1600 fsw (49.5 ATA), objective measures of intentional tremor were obtained at several depths. Six subjects were pressurized in 6 days to 49.5 ATA. After spending 7 days at this pressure, they were decompressed in 19 days to the surface. Measures of intentional tremor were obtained predive and at pressure levels of 13.1, 31.3, 49.5, 40.4, and 31.3 ATA using the Naval Medical Research Institute Mark 3 Mod 1 tremor device. Each subject's microtremor was measured while he produced a force of 50 grams and 500 grams against a finger force transducer. Unlike previous studies of HPNS tremor, special attention was given to amplitude rather than frequency analysis. All subjects displayed a marked increase in tremor that interfered with fine motor performance at depths greater than 1000 fsw. A statistically significant increase in signal frequency was also observed.

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