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Title: Perception of thermal comfort during narcosis

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Abstract: We examined the perception of thermal comfort in six male subjects immersed in water at 28 degrees C (study I) and 15 degrees C (study II), breathing either room air (AIR) or a normoxic mixture containing 30% N₂O (N₂O). Immersions were terminated if esophageal temperature (T_{es}) decreased by 2 degrees C from resting levels or to 35 degrees C. At regular intervals, subjects rated their perception of thermal comfort on a 21-point scale (thermal comfort vote, TCV; +10 = very, very hot, 0 = neutral, -10 = very, very cold). For similar decreases in T_{es} from resting preimmersion values (mean +/- SD = -0.90 degrees +/- 0.13 degrees C and -0.92 degrees +/- 0.15 degrees C during the AIR and N₂O trials in study I, and -0.90 degree +/- 0.22 degree C and -0.89 degree +/- 0.27 degree C during the AIR and N₂O trials in study II), subjects perceived the immersions as less cold during the N₂O trials. The median TCVs for the AIR condition of -5 in study I and -7.75 in study II, were significantly lower than those reported by the subjects for the respective N₂O conditions (1.75 in study I and -5.5 in study II). It is concluded that behavioral adjustments required for maintaining thermal balance may be diminished during narcosis due to the altered perception of thermal discomfort. Assuming that the effect of inert gas narcosis on thermoregulatory responses is similar to that of N₂O, then combined with the significant attenuation of heat gain mechanisms by anesthetic gases, the attenuation of the

perception of thermal comfort may represent a significant factor in the etiology of hypothermia observed in compressed air divers.

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