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Title: Diver performance: the effect of cold

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Abstract: Fifteen divers performed five tasks in water of temperatures 20 degrees C and 5 degrees C, using standard scuba equipment. A significant deterioration of performance occurred under the colder condition in: simple arithmetic 13%; logical reasoning 17%; word recall 37%; word recognition 11%; and manual dexterity 17%. Throughout each dive, rectal and five skin temperatures were monitored. Average fall in rectal temperature was 0.5 degrees C during 20 degrees C dives and 1.1 degrees C during 5 degrees C dives. Average body surface temperature fell by 5 degrees C and 12.5 degrees C respectively. Average heat losses calculated from the data were 95 kcal.m(-2).hr(-1) (20 degrees C dives) and 245 kcal.m(-2).hr(-1) (5 degrees C dives). The impairment in word recognition was significantly correlated with the fall in rectal temperature for the 5 degrees C dives. For other tests, the deterioration did not appear to be correlated with body-temperature changes, but rather, occurred rapidly upon cold water immersion. The significance of these findings is discussed in relation to current understanding of the mechanisms by which cold is thought to influence performance underwater.

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