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Title: Relative decompression risk of dry and wet chamber air dives

Authors: Weathersby, PK
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Abstract: The difference in risk of decompression sickness (DCS) between dry chamber subjects and wet, working divers is unknown and a direct test of the difference would be large and expensive. We used probabilistic models and maximum likelihood estimation to examine 797 dry (and generally resting and comfortable) and 244 wet (and generally working and cold) chamber dives from the Defence and Civil Institute of Environmental Medicine, supplemented with 483 wet (working, cold) dives from the Navy Experimental Diving Unit. Several analyses considered whether dry and wet data were distinguishable using several models, whether models obtained from one set of exposure conditions would correctly predict the occurrence of DCS in the other condition, and whether a single wet-dry risk difference parameter was different from zero. Although the two conditions may not produce identical risks, immersion appears to change relative risk of DCS by less than 30% and certainly involves less than a doubling of DCS risk. Uncontrolled differences in exercise and temperature stresses unavoidably complicate interpretation. Several methods are presented to extrapolate results from dry-test subjects in decompression trials to expected at-sea performance.

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