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Title: Converting standard air decompression tables for no-stop diving from altitude or habitat

Authors: Hennessy, TR

Keywords: decompression
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Abstract: Using the phase equilibration theory of Hills (1966), as modified by Hennessy and Hempleman (1977), it is possible to predict formulas for converting standard air decompression tables for no-stop diving at altitude or from a normoxic habitat, breathing air. For diving following equilibration at altitude, the Royal Navy, Royal Naval Physiological Laboratory, and Haldane-type rules appear to be too conservative, with the opposite result for diving after excursion to altitude. Predictions in the latter case are in fair agreement with the Swiss (Boni, Schibli, Nussberger, and Buhlmann 1976) no-stop altitude tables. In the case of habitats, close agreement is found between the Hamilton, Kenyon, Freitag, and Schreiner (1973) normoxic tables for no-stop downward excursions and indefinite dive upward-excursions on air. In the case of flying directly after no-stop diving, the US Navy rule of using repetitive group D appears to be conservative for dives less than 50 fsw, and possibly unsafe for dives over 50 fsw. It is concluded that for no-stop diving a single tissue and single safe ascent pressure formula are all that is necessary to generate equivalent air dives. This enforces the hypothesis that it is the volume of gas released on ascent that governs marginal type I bends, and that in a no-stop ascent, all excess dissolved gas is released in the worst case.
 Aerospace Medicine *Altitude Atmospheric Pressure *Aviation *Decompression Decompression Sickness/prevention & control *Diving Gases/blood Human Mathematics *Pressure Safety Time Factors

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