

Maximal physiological responses to deep water running at thermoneutral temperature.

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This study investigated the metabolic demands of deep water running (DWR) compared with those of treadmill running (TMR) while the water and ambient temperatures were kept under thermoneutral condition. Two maximal tests, one on treadmill and the other running in deep water using the Wet Vest (Lincoln life jacket) were undertaken by twenty healthy non-smoker males (Age = 28.0 +/- 9.2 years). The order of trials was counterbalanced with half of the subjects completing the treadmill first and the rest completing the water running first. Oxygen consumption (VO₂), ventilation, heart rate (HR), respiratory exchange ratio (RQ), ratings of perceived exertion (RPE) and blood lactate were measured. VO₂max (2.68 vs 3.40 ml/kg/min), HRmax (171.5 vs 190.8 beats/min), maximal minute ventilation (98.5 vs 113.31/min), and peak blood lactate value (10.44 vs 12.47 mmol/l) in response to DWR were significantly lower than those of TMR in the thermoneutral conditions. The lower VO₂max and HRmax values of DWR compared to those of TMR are shown to be attributed to the hydrostatic effects caused by water and different muscle recruitment patterns between DWR and TMR.