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A pilot study on the effects of 48 hours dry water immersion on static postural control

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Four healthy male volunteers (age 24 – 30 years) were tested before and after 48 hours Dry-Water-Immersion with the TETRAX Interactive Balance System based on the assessment of the interaction of vertical pressure fluctuations on four independent platforms, one for each heel and forefoot, respectively. Nearly motionless, the subjects were lying on a thin foil on the surface of a water-filled pool in supine position for 48 hours. In the course of the posturographic examination pre- and post-immersion the four subjects were standing on the platforms and had to cope with increasing magnitudes of postural stress, i.e. standing on a firm support with eyes open/closed, on elastic pads with eyes open/closed, the head rotated to the right and left, head bent forward and backward (eight different test conditions). The pre-experimental stability of the four subjects was fairly within normal limits when compared to a normative data base. After 48 hours in DWI, the weight displacement on heels was significantly greater. This effect can be described as a backward shift of the point of gravity. Prolonged exposure to simulated weightlessness had a general destabilising effect on postural control which was consistent in 8 different test conditions. The effect was pronounced and statistically significant on the two positions of lateral head turning as well as when the head was bent backward. Summing up the Fourier intensities within the four frequency bands over all eight test conditions, a consistent trend of intensification emerged which was significant. These findings indicate that all the postural sub-systems are sensitised and marginally irritated after 48 hours sensory deprivation.



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