
INTRODUCTION. An estimated 29% of aviators experience symptoms of Simulator Sickness (SS) following simulator training. Highly sensitive measures are required to assess the aftereffects of simulator training on balance and coordination, and the impact on performance and safety. The Neucom Equistest System is a clinical device that examines the interaction of vestibular, visual and proprioceptive inputs on the balancing ability of subjects. The purpose of this study was to develop a normative aviator database as compared to clinical norms, and to determine learning effects from repeated test sessions. METHODS. Fifty-three male and 33 female aviators were tested on an initial day using an Equistest System. Repeat testing was completed on 19 males and 11 females on four additional days. RESULTS. Sensory Organization Test (SOT) equilibrium scores for the aviators were significantly higher than clinical norms. Equilibrium scores on the first trial were significantly lower than on the two subsequent trials. Differences between males and females existed in a correlation between equilibrium and strategy scores. A significant learning effect existed for equilibrium, with a plateau reached after 3 days. Motor Coordination Test latency scores for male aviators were significantly faster than for females. CONCLUSIONS. The high aviator scores demonstrate the importance of establishing population-specific norms for balance research. Gender differences among the aviators on latency scores support previous research establishing similar differences in reaction time. The learning effects from repeated SOT tests, which could explain the embeddedness of this device to assess SS aftereffects in clinical practice, are valid results. The results of this study will support the development of a normative database and the identification of gender differences in the Equistest System.

THE VESTIBULO-OCULAR REFLEX AND OPTOKINETIC NYSTAGMUS UNDER THE INFLUENCE OF CINNARIZINE. T. Domack, A. Shupak, O. Spitzer, Y. Melamed and C.R. Gordon*. Motion Sickness and Human Performance Laboratory, Israel Naval Hyperbaric Institute, Haifa, ISRAEL.

INTRODUCTION. Cinnarizine (Cn) is an antihistaminic agent with specific vestibular Ca++ channel blocking capacity, which has been found effective as an anti-motion sickness drug. We used the Vestibulo-ocular reflex (VOR) and the optokinetic nystagmus (OKN) to evaluate Cn's effects on the eye movement control mechanisms. METHODS. The VOR parameters were evaluated using the Smooth Harmonic Acceleration Test (SHM) at 5 frequencies: 0.01-0.04 Hz. The study was conducted on 16 healthy subjects aged 18-22. The effects of Cn 50 mg vs placebo were compared using a double-blind, randomized, crossover design 2 hours after drug administration. All 16 subjects underwent the SHM test, but only 12 completed the OKN test. RESULTS. Under the influence of Cn 50 mg, VOR gain at 0.04 Hz and phase lead at 0.16 Hz were significantly lower, while on the OKN test, phase lead values were higher at 0.01 Hz. CONCLUSIONS. Cn 50 mg partially affects both VOR and OKN parameters. The drug's influence on the OKN's phase parameter suggests that Cn affects the oculomotor pathways as well as the vestibular end organ.