1.1 ADAPTATION TO CORIOLIS INDUCING HEAD MOVEMENTS IN A SUSTAINED-G FLIGHT SIMULATOR

Summary

Experienced pilots made 14 predetermined head movements in a sustained G flight simulator (at 3 Gz+) on five consecutive days and 17 days after training. Symptoms were measured after each head turn using a subjective 0-10 motion sickness (MS) scale. The Simulator Sickness Questionnaire (SSQ) was also administered before and after each daily training session. RESULTS: After five daily training sessions normalized mean MS scores were 58% lower than on day one. Mean total, nausea, and disorientation SSQ scores were 55%, 52%, and 78% lower, respectively. During retesting 17 days after training, nearly all scores indicated 90-100% retention of training benefits. DISCUSSION: The reduction of unpleasant effects associated with sustained-G flight simulation using an adaptation training protocol may enhance the effectiveness of simulation. Practical use of sustained-G simulators is also likely to be interspersed with other types of ground and in-flight training. Hence, it would be undesirable and unpleasant for trainees to lose adaptation benefits after a short gap in centrifuge use. However, current results suggest that training gaps in excess of two weeks may be permissible with almost no loss of adaptation training benefits.

Objectives

- To determine if adaptation to repeated coriolis-inducing head movements in the sustained-G training environment is possible
- To determine the rate, degree and retention of possible adaptation
- To quantify the intensity of head movements at all angles within the cockpit for future software improvements (i.e. at 3Gz pitching head movements become very benign, therefore making it

beneficial to present enemy targets in this plane of head-neck motion in order to significantly reduce motion artifacts)

Customer/Partner
St. Peter's College partnered with ETC

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