Operational Applications of Autogenic Feedback Training Exercise as a Treatment for Airsickness in the Military

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Introduction

Airsickness is experienced by about 50% of military aviators some time in their career. Aviators who suffer from recurrent episodes of airsickness are typically referred to the Naval Aerospace Medical Institute (NAMI) at Pensacola where they undergo extensive evaluation and 8 weeks of training in the Self-Paced Airsickness Desensitization (SPAD) program. Researchers at NASA Ames have developed an alternative mitigation training program, Autogenic Feedback Training Exercise (AFTE) that has demonstrated an 80% success rate for improving motion sickness tolerance.

Background

Airsickness is a motion sickness in the flight environment and is experienced by about 50% of aviators sometime in their career. It can cause flight performance degradation and affect motivation. Autogenic Feedback Training Exercise (AFTE), combines the application of physiological and perceptual training techniques, such as autogenic therapy and biofeedback. AFTE is a proven method to train astronauts and cosmonauts to voluntarily control their physiological responses.

Methods

Equipment: An ambulatory monitoring system (Figures 2 and 3) was used to measure physiological responses, such as heart rate, respiration rate, skin temperature, and skin conductance level.

Subjects

Thirty aviators from the Navy Training Wing and Army combat helicopter pilots participated in this experiment. All participants were stationed at the Naval Aerospace Medical Institute (NAMI). Airsickness training with AFTE was delivered over the internet.

Methods (cont’d)

Rotating Chair: The method used to evaluate subjects improvement in motion sickness tolerance after AFTE is shown in figures 4 and 5.

Procedures

To date, 5 out of 7 aircrew were returned to active duty flight status. Figure 8 shows the total numbers of rotations achieved by each participant before and after AFTE. Criteria for success in controlling motion sickness was 500 rotations achieved following training. AFTE is proven to be effective and more cost-effective than other similar training programs (SPAD). AFTE may also have benefits for other medical, commercial, and military applications.

Results and Conclusions

References


Figure 1: Example of AFTE

Figure 2: Ambulatory monitoring system

Figure 3: Subjects in the AFTE system

Figure 4: Rotating chair experiment

Figure 5: AFTE training activity

Figure 6: AFTE training interface

Figure 7: Z-scores of physiological responses during training

Figure 8: Total rotations achieved by subjects W31-W37, 1st session vs. Last