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

Flyore Gebreyesus  
San Jose State University  
Dr. Patricia Cowings  
Psychophysiology Lab, NASA Ames Research Center  
Dr. William Toscano  
Psychophysiology Lab, NASA Ames Research Center

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
Aims of the study were to test the effectiveness of AFTE in reducing motion sickness related symptoms.

Results and Conclusions

AFTE involved training participants to control specific physiological responses with both visual and auditory feedback. In this study, subjects were given 6-8 hours of training. Figure 7 is an example of one training session which is 30 minutes in duration and includes alternating trials of relaxation and arousal. Subjects learned to recognize and control bodily sensations associated with both increases and decreases in their physiological responses.

Figure 1

Autogenic Feedback Training Exercise

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Figure 7

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.

Figure 8

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References