

ISSMP	EFFECTS OF LONG-DURATION SPACEFLIGHT ON TRAINING RETENTION	Training Retention
<b>Principal Investigator</b>		
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<b>Description</b>		
<p>The current intervals of on-board-training (OBT) for emergencies and to maintain currency on EVA and the robotic arm are largely based on anecdotal experience. Yet, on long-duration, long-distance missions, it will be critical to provide effective refresher training and Just-in-Time (JIT) training for crews to cope with skill decay and with the unexpected, as well as to engage the crew in meaningful activities while in transit. However, all our theories and knowledge about skill acquisition, retention, and transfer to new situations are based on studies conducted at university laboratories with undergraduate students as research subjects. We do not know how well these studies apply to astronauts in space operations. This task is a collaboration among SHFE, ExMC, and BHP. and builds upon the ExMC Support of Medical Scenarios for the Autonomous Mission Operation (AMO) task and prior SHFE and BHP studies to investigate the effects of long duration spaceflight on training retention and transfer. Participants will be trained pre-flight and will then be asked to perform at 3, 6, 9 and 11 months into the mission, as well as post flight. They will also be tested for their ability to generalize and transfer their original learning to novel tasks. In addition, a matched Earth-based subject will be going through the same training and testing to allow a comparison between performance on Earth and performance in space.</p>		
<b>Objectives</b>		
<p><b>Objective 1.</b> Test the retention and transfer of specific technical content learned pre-launch to assess the need for (and possible schedule of) onboard refresher and JIT training.</p> <p><b>Objective 2.</b> Compare the process of knowledge/skill decay on orbit with that of closely matched participant on Earth .</p> <p><b>Objective 3.</b> Collect naturalistic data from onboard crew and ground-control personnel on training-related crew performance including: performance errors, requests for ground support, need to review previously learned material, and training success stories.</p>		
<b>Relevance</b>		
<p>This will be the first official data collection of training retention over time in space, a measure of the degree of assistance currently needed from the ground, and an opportunity to compare training retention on a long-duration mission with that on Earth. It will also be the first opportunity to test the applicability of earth-based university laboratory studies to astronauts in space operations.</p>		
<b>BDC Summary</b>		
<p>12-months crew members will require 1 pre-flight study orientation session and 4 pre-flight training sessions where baseline data will also be collected. One additional training hour is required for training on the naturalistic data collection tool and methodology. There are no additional demands for the 6-months crew members.</p>		
<b>In-flight Operations Summary</b>		
<p>Participants will be completing 2 types of tasks (pre-flight trained and untrained) at 4 points in the flight – 3, 6, 9, and 11 months, and at one point post flight, as well as collect data on training related events. The timing of the task is flexible, and a window exists of +/- one week around those points. 6-months crew members will be tested at 3 and 5 months points. Participants should be able to complete the task in 30 minutes.</p> <p>Measures will include time to complete the procedure, errors, and crew comments.</p> <p>Participants will also collect data on training-related performance of their own and of other crew members when possible including: performance errors, requests for ground support, need to review previously learned material, and training success stories.</p>		
<b>Subject Selection/Participation Criteria</b>		
<p>All crew members are eligible to participate.</p>		