SPACE OPERATIONS SYMPOSIUM (B6)
Training Relevant for Operations (3)

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RESEARCH ON THE TRAINING METHOD OF MANUAL RENDEZVOUS AND DOCKING BASED ON COGNITIVE TASK ANALYSIS

**Abstract**

Objective: To establish a rendezvous and docking training method system of Chinese astronaut based on cognitive task analysis. Method: Firstly, the cognitive complexity of manual rendezvous and docking was analyzed. Then, a rendezvous and docking training method system was designed for three different skill levels. After that, an experiment participated by 16 volunteers was designed to test the methodology. Finally, the method system was verified and improved by Chinese astronaut training. Results: (1) The cognitive process and intellectual framework in different skill levels of manual rendezvous and docking were gained. (2) Training methods were designed for three skill level including skill-based, rule-based and knowledge-based level to promote the skill development. (3) The training method for knowledge-based level was tested by operation experiments, and the results showed that the operating time and fuel consumption significantly decreased with the training. (4)The operation performance of Chinese astronauts significantly increased using the training method, which was proved and improved at the same time. Conclusion: The designed training methods can weaken the impact of cognitive factors on the operation performance and effectively improve the Chinese astronaut skills.

Keywords: manual rendezvous and docking; cognitive task analysis; training method; skill development; operation performance.