

SPACE LIFE SCIENCES SYMPOSIUM (A1)  
Behavior, Performance and Psychosocial Issues in Space (1)

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INFLUENCE OF LONG STAY IN SPACE CONDITIONS ON PROCESS OF STORAGE AND  
ACQUISITION OF SKILLS BY COSMONAUTS

**Abstract**

Specific space factors - weightlessness or the lowered gravity, the limited space, vibrations, radiation, - are influencing on cosmonauts at work on Lunar base and in the time of long manned mission flight. These factors transfer accent with personal factors (knowledge, skills, temperament, decision-making, sensorymotor reactions, the mental condition) towards surrounding environment which change not only efficiency of their work, but also ability of the person to acquire new skills, to be trained and retrained depending on changing operative conditions. Experimental researches at Earth conditions cannot answer many similar questions and consequently value of theoretical forecasting of the specified processes grows. The theory of training developed by authors is corroborating by the big number of the experimental data and testifies to an opportunity of its application for a case of acquisition of new skills and retraining in conditions of long work outside of the Earth. Opportunities of use of theoretical dependences for distinct from terrestrial conditions are determined by presence in theory of some universal parameters which depend on external conditions and individual properties of cosmonauts. Such factors are a constant time of the information processing in memory and some amount of the information retained by memory after sufficiently long period of time [1]. The value of these parameters is determined quantitatively for many cases of activity of the person on the Earth, and also for cases of action on the person of accelerations and some conditions of space flight. Therefore the use of these dependences enables to predict influence of factors of space flight on processing information by human memory. Respective formulas for various cases of a range of change accelerations are summarized in the paper. These results allow to find quantitatively influence of accelerations on processing of the information by memory during its learning and forgetting, and also on speed of reaction of the operator. All known experiments by definition of a constant of time have been generalized for definition of sensitivity of cosmonauts of various temperament to distinct from terrestrial of the gravitational fields. The received constants in formulas for calculation of dependence from accelerations and weightlessness have enabled to determine influence of factors of space flight on forgetting of the information, on processes to acquire new skills, to be trained and retrained. 1. Prisniakov V.F, Prisniakova L.M. Mathematical Modelling of Information Processing by the Operators of the Man-machine Systems (in Russian). Moscow. Mashinostroyeniye. 1990.