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# EXPERIMENTAL STUDIES TO EVALUATE THE PERFORMANCE OF COMPLEX OPERATOR ACTIVITY OF COSMONAUTS JUST AFTER THE YEAR-LONG SPACEFLIGHT

**Abstract**

The paper evaluates the results of experiments carried out for the first time in manned spaceflight history involving crews of long-duration expeditions just after their space missions. Particular attention is paid to the study of the results of Mikhail Kornienko after his year-long space flight. This experimental study allows providing scientific and technical foundation for doing work by crews of promising manned space complexes within the framework of the Moon exploration program, interplanetary missions and exploration of solar system's planets. The subjects are the Russian crew members of ISS-38/39- ISS-44/45 expeditions who performed long-duration space flights aboard the ISS. In the course of long-duration space missions, parameters of cosmonauts' activity as an operator and their capabilities to perform different work types change due to adaptation of a human organism to the weightless conditions. To implement long-term tasks of space missions to the Moon and the solar system's planets, it is required to forecast cosmonauts' capabilities to perform different kinds of activity under gravity conditions of particular planets after long weightlessness impact. Data on factors influencing on the operator activity of crews can be obtained by way of specific experimental research. The goal of experimental studies is to evaluate the capabilities of cosmonauts to fulfill complex operator activity just after long-duration space flights under conditions of low gravity and g-loads and to obtain experimental data on the quality of the performance of these type operations by comparison with the pre-flight data. All experiments with the ISS crew members were carried out by experts of the Cosmonaut Training Center and the Institute of Bio-Medical Problems on the Center's training facility within the framework of post-flight activities.