

Challenges of Life Support/Medical Support for Human Missions (8)
Challenges of Life Support/Medical Support for Human Missions (1) (1)

Author: Prof. Igor Ushakov
Russian Federation, iushakov@fmbcfmba.ru

Prof. Yuri Voronkov
Institute for Biomedical Problems, Russian Federation, doc@imbp.ru

Prof. Igor Bukhtiyarov

FSBSI Izmerov Research Institute of Occupational Health, Russian Federation, info@irioh.ru

Ms. Kristina Betts

FSBSI Izmerov Research Institute of Occupational Health, Russian Federation, betts@irioh.ru

Dr. Galina Tikhonova

FSBSI Izmerov Research Institute of Occupational Health, Russian Federation, gtikhonova@ya.ru

INTEGRAL ASSESSMENTS OF COSMONAUTS ' HEALTH IN THE LONG-TERM PERIOD OF
PROFESSIONAL ACTIVITY

Abstract

Cosmonautics has always developed on the triune principle of flying “higher, farther and longer”. Spaceflights of nowadays have evolved from minute suborbital programs to many-month orbital missions, during which astronauts are forced to stay and work in such environment conditions that are never found on Earth. The radiation background alone, for example, exceeds the terrestrial one by about 200 times. Complex combination of factors contributes to the development of functional and somatic disorders in human body during the flight and after it – physical characteristics of outer space, flight dynamics, long-term stay in the cockpit of a spaceship. Integral indicators of health status are morbidity, prevalence of diseases of various organs and systems, injuries; life expectancy and mortality from individual causes. Our studies show that Russian astronauts with flight experience have a significantly lower risk of death than the male population of Russia (from any causes for the period from 1961 to 2014). A similar American study also showed a significantly lower risk of death for astronauts compared to the US population (from 1960 to 2017) (Reynolds, Day, 2018). The assessing of real consequences of the spaceflight factors impact on astronauts' mortality is faced with difficulties because of the selecting problem for a comparison group. Cosmonauts are subjected to a thorough medical selection process before entering the profession, which continues during the process of preparing for the flight, providing them with better initial health characteristics compared to the population and other professional groups. An accurate understanding of the consequences of the spaceflight adverse factors on the health of the crew will further improve the prevention system and extend the professional longevity. As a group for comparative analysis the astronauts who were selected, but for one reason or another did not fly into space deserve serious attention. As well as cosmonauts who have flight experience they have undergone a complex medical selection procedure and subsequent special training. In addition, an important research area is the assessment of the long-term consequences of spaceflight for the cosmonauts' health, depending on the number of flights, their duration and the length of extravehicular activity. All of the above proves the necessity of further research in the area and the reasonableness for international exchange of the study results obtained with possible combinations of several professional samples to increase the statistical significance of the findings.