

SPACE LIFE SCIENCES SYMPOSIUM (A1)
Medical Care for Humans in Space (3)

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SPACE SAFETY AND HEALTH CONTRIBUTIONS

Abstract

Deep space human exploration and development is the long term goal of international space programs. Accomplishing this goal requires the maintenance of crew health and safety. Experiences of low earth orbit missions have shaped our understanding of the physiological effects due to environmental stresses of space. The benefits of this understanding are useful here on earth and will further our progress into the solar system. Through space missions diagnostic tools have been invented that have proven beneficial on Earth by improving patient outcomes. An examination of the genesis of diagnostic tools and the contributions of space related research to modern health care is presented.

An evaluation of scientific literature was used to integrate documentation as it related to the contributions of manned space flight to space safety and health. Also, included in the paper is a brief summarization of the physiological effects discovered from National Aeronautics and Space Administration (NASA) Mercury, Gemini Apollo and Apollo-Soyuz missions. The Skylab era provided health information acquired from the first extended durations of living and working in space. (Hughes-Fulford, 2011) Further lessons were learned from the space shuttle mission successes and failures. Mankind greatly benefited from the contributions of the Russian space program to long duration space flight due to the biomedical experiments of the physician investigator Valeri Polyakov. The advent of telemedicine and its subsequent use on Earth have furthered the advancement of the technology and our understanding of the benefits of alternative medicine. The partnering of the United States and Russia for the Shuttle-Mir program prepared mankind for the expansion of physiological research opportunities provided by the International Space Station (ISS). (Nicogossian, 1996)

Appreciation of experiences of past human space exploration is necessary for mitigating the risks of future long duration space flight missions. Werner Von Braun stated "Don't tell me that man doesn't belong out there. Man belongs wherever he wants to go – and he'll do plenty well when he gets there." (Time, 1958) With that affirmation, this paper compiles manned mission contributions to medicine that have resulted in better outcomes for related terrestrial ailments.