

Challenges of Life Support/Medical Support for Human Missions (8)
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Author: Mr. Aaron Garduño Rodríguez
Moscow Aviation Institute (National Research Institute, MAI), Russian Federation,
alfredashford@hotmail.com

Dr. Lyubov Strogonova
Moscow Aviation Institute (National Research Institute, MAI), Russian Federation, buksan@list.ru

DESIGN AND CREATION OF A NEW MEDICAL AND PSYCHOLOGICAL CONTROL SYSTEM
FOR MANNED MISSIONS TO THE MOON

Abstract

A promising problem in research in the field of manned cosmonautics is the creation of methods and means for manned missions for future lunar exploration, with the aim of ensuring the survival of human life on the surface of our natural satellite. Given such arguments, it is necessary to create a new medical and psychological control system to monitor the psychophysiological parameters of the lunar crew, which will prevent situations that put their health at risk in the event of an emergency. This new method will be based on the following basic principles: pathogenic and identifying the dependence of correlation between the physiological and psychological parameters recorded, in addition to having a prototype for the method of recording these parameters, which has the scoop of not being invasive and continuous registration (online), in order to avoid discomfort for the patient. In the case of our research, we will focus on the relationship between the psychophysiological state and one of the most important metabolic indicators of our body, glucose. It is necessary to know the value of this physiological parameter, since several studies indicate a directly proportional relationship in the increase of this parameter in stress situations, where insulin levels decrease and glucagon and epinephrine levels increase, causing more to be released glucose in the liver, at the same time growth hormone and cortisol levels rise, which makes the human body tissues less sensitive to insulin, resulting in a higher level of glucose in the blood stream. Stressful situations that cosmonauts may experience can occur due to infections, serious illnesses, or emotional problems (anxiety or depression). Given these arguments, our medical and psychological control system must take into account the characteristics of lunar expeditions, and be an understandable, powerful and quite simple system for the user, based on a decision support system (DSS), which it will help us make better decisions in the diagnosis and treatment of the patient in an emergency situation. In addition, as part of our control system, it will have a device for the continuous and non-invasive measurement of the blood glucose levels of cosmonauts.