IAF SPACE EXPLORATION SYMPOSIUM (A3)
Interactive Presentations - IAF SPACE EXPLORATION SYMPOSIUM (IP)

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THE EFFECTS OF PHYSICAL TRAINING AND MEDITATION ON HUMAN BEHAVIOUR AND BASIC PHYSIOLOGICAL NEEDS FOR FUTURE HUMAN SPACE FLIGHT MISSIONS

Abstract

The research described here is a human factors research conducted during the fourth EuroMoonMars - IMA - HI-SEAS (EMMIHS) mission took place between February 1st - 15th 2020 at the Hawaii - Space Exploration Analog and Simulation (HI-SEAS) habitat in Hawai'i, USA. This mission was part of the EMMIHS campaign, which is part of the EuroMoonMars initiative by ILWEG, the International Moonbase Alliance (IMA) and HI-SEAS. The EMMIHS IV mission consisted of a crew of six (four females and two males). This research was to study the effects of physical training and meditation on human behaviour and basic physiological needs in an extreme environment/Space. Several types of physical training regiments and meditation techniques were proposed to each astronaut; three of the six astronauts conducted hula, yoga and breathing techniques twice or more per day, while the other three astronauts have conducted Russian and American military physical training. They were all evaluated at the same time while going through the same training regiments throughout portions of the entirety of the mission. Multiple tests, questionnaires, visual observations of the state of their moods, sleep patterns, and physical check-ups were performed to evaluate those astronauts daily throughout the mission; on how much their basic physiological needs like food, water, breathing, sleep and mental health were affected. Each day, the amount of their consumed food and water were analysed, along with the amount of their average intake air particle in a minute. This is particularly relevant to human Space flight, since one of the main challenges of sending humans to Space will be the great mission costs and the weight of all mission materials. Lowering the material weight by decreasing basic human physiological needs could lead us closer to more affordable future human Space flight missions.