IAF HUMAN SPACEFLIGHT SYMPOSIUM (B3)
Interactive Presentations - IAF HUMAN SPACEFLIGHT SYMPOSIUM (IP)

Author: Mr. Murray Mackay
Analog Astronaut Training Center, Poland

Mr. Angelo Miccoli
Analog Astronaut Training Center, Italy
Ms. Eleonora Kaiser
Cyprus
Mr. Simonas Pukinskis
University College London (UCL), United Kingdom
Ms. Salome Gervasoni
Analog Astronaut Training Center, France
Mr. Przemyslaw Rudzinski
Poland
Dr. Agata Kolodziejczyk
Analog Astronaut Training Center, Poland
Mr. Matt Harasymczuk
Analog Astronaut Training Center, Poland

PRIVACY IN SPACE

Abstract

Astronaut missions require crew members, who come from various educational and social backgrounds, to co-exist and work with one another for a prolonged period of time in an extremely confined and isolated environment. Research suggests that confinement and inefficient designs of working and living spaces during long duration space-flight missions, contribute significantly to psychological stress and produce risk factors which have been shown to facilitate interpersonal conflict during missions. Additionally, an increase of both acute and chronic psychological stress, along with decreased sleep quality, has been shown to play a role in the physiological de-conditioning associated with long duration spaceflight missions. The present study evaluates how the implementation of a privacy shelter within the sleeping environment during an Analog Astronaut Mission may affect the sleep quality, physiological stress parameters and psychological stress parameters of crew members during their period of isolation with the research being conducted at the Analog Astronaut Training Center (AATC), located in Rzepiennik, South of Poland. AATC is a private company which specializes in operational trainings for scientists, engineers, space enthusiasts and future astronaut candidates and the habitat is fully equipped, including dedicated software, for long-term isolated crewed projects. The aim of this study is to gain a better insight into how potential mitigators to stress, such as increased access to privacy within the bedroom module, may be introduced to further facilitate effective crew dynamics and physical wellbeing, and how they can be used to improve the overall likelihood of a long-duration spaceflight mission's success. Materials and Methods: Over the course of 24 months, multiple crews of Analog Astronauts underwent mental state and cognitive function testing, sleep cycle recordings and physiological parameter analysis before, during and after sleeping within the shared bedroom module, without access to privacy shelters. Following the initial control phase of the study, control subjects then continued the remainder of their mission sleeping within the previous conditions whilst test subjects were provided with a privacy shelter. Test parameters, along with crew mission

reports were then analyzed to assess whether increased access to privacy during their sleeping hours would result in any significant effect on their psychological and physiological well-being as well as overall crew dynamics however, further investigations, conducted over future missions, are required to consolidate our hypothesis.