

IAF/IAA SPACE LIFE SCIENCES SYMPOSIUM (A1)  
Interactive Presentations - IAF/IAA SPACE LIFE SCIENCES SYMPOSIUM (IP)

Author: Ms. Sara Gonzalez-Torre  
University of Cádiz, Spain

Prof. Gabriel G. De la Torre  
University of Cádiz, Spain  
Mr. Miguel A. Ramallo  
University of Cádiz, Spain

OPEN VS CLOSED SPACE ANALOGS. DOES EVA MAKE A DIFFERENCE?

**Abstract**

In the context of future space missions with long durations and extreme environments of isolation and confinement, concerns arise about the potential adverse impact on crew health and performance due to cognitive or behavioral behaviors. These conditions could even trigger mental disorders if not detected and treated properly. Current research approaches in this area seek to establish links between basic research, problematic etiological variables, and the identification of potential biomarkers and more effective treatments. Living organisms experience shock and adaptation when subjected to the space environment, which has been documented in various physiological and psychological aspects, such as sleep disturbances, changes in immune function, and bone loss.

The crew selection process for these missions requires consideration of a variety of medical and psychological aspects. Therefore, this study employs a series of psychometric instruments. The main objective is to investigate and analyze the effects of ten analogous space and planetary exploration simulation experiences on participants of up to 20 different nationalities, with different combinations of equipment in terms of gender, age and culture. We seek to understand how these experiences affect cognitive performance, as well as psychological variables (stress, fatigue, depression, conflict, etc.) and the individual adaptation of each crew member by comparing open analog space missions and closed analog space missions, i.e. , those that have the possibility of EVAs and those that do not.

The study also aims to investigate cultural differences in cognitive processes, adaptation and resilience observed in various analog environments around the world before, during and after analog space missions of different durations. These analyzes ultimately aim to select astronauts most likely to maintain human health and performance during long-term exploration missions. In summary, this study will contribute to understanding the effects of the cultural factor on the configuration of future space equipment by collecting data in a variety of analog space environments.