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ASTRONAUT INTERACTIONS ON THE MOON: LUNAR EXPEDITION 0 AS AN ANALOGUE

Abstract

Current targets of space agencies and other companies regarding human space exploration, like *e.g.* Moon Village or journey to Mars, represent many challenges. Despite years of research, not much has been published in the scope of psychosocial aspects of crews in space. For example, astronaut interactions, coping with stress, ability to work, or feelings experienced during long-duration space missions are aspects that need to be investigated. Potential failure caused by human factor represents a risk that could jeopardize the whole effort of a project. One of the possibilities, how to investigate the aforementioned aspects, is to conduct analogue missions.

The one-week analogue lunar campaign, named Lunar Expedition 0, has been conducted in Poland, in August 2017. The crew was composed of 6 analogue astronauts (2 women and 4 men). Psychosocial study was conducted using several methods – sociomapping, interviews and analysis of written communication between individual astronauts and mission psychologist. The data for sociomapping was collected by questionnaires every other day. Sociomapping questionnaires were based on questions relating:

- mutual communication and cooperation,
- crew's performance,
- mutual trust,
- perception of knowing each other,
- atmosphere within the crew,
- perceived misunderstandings,
- discomforts.

Additionally, the relationship between the astronaut crew and mission control was studied. Analysis of written communication has been conducted. Common debriefing was performed right after the simulation and individual interviews were performed subsequently with all of the analogue astronauts .

One of the most important findings is the importance of good relationship between the astronaut crew and mission control. From the beginning of the experiment, astronauts expressed low trust to mission control which caused difficulties. Although with time, the trust increased, reducing the problems. On the other hand, the results showed high quality communication and cooperation among crew-members, as well as high cohesion of the team throughout the whole period of the experiment. Knowledge, gained during the mission, is going to be applied in further analogue simulations. Future plans were described.