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STRUCTURE AND DYNAMICS OF RELATIONSHIPS BETWEEN CREW MEMBERS IN  
ANALOGUE STUDIES CONSIDERING THE CONTEXT OF ISOLATION LENGTH AND THE  
ENVIRONMENT

**Abstract**

**TOPIC** Relationships between crew members staying in extremely demanding and specific conditions of simulated and real space missions directly affect the work performance, resilience and mental and physical health of individual crew members. Research in this area indicates specific risks in the development of the structure and dynamics of relationships, such as the creation of subgroups, the isolation of a crew member, the emergence of group thinking, the occurrence of the "third quarter phenomenon", etc. However, the degree of probability of risk occurrence in specific isolation situations varies depending on many factors.

**AIM** The report aims to compare the structure and dynamics of relationships between the crew members of three isolation experiments differing from each other in (1) the length of the isolation and (2) the environment in which the crew was isolated. The purpose of the mutual comparison is to discuss similarities and differences both in the structure and in the dynamics of relationships in the context of specific conditions of the experiments.

**METHODS** The report focuses on the comparison of outputs from the areas of COMMUNICATION and COOPERATION within the experiments: "SIRIUS 17", 17-day crew isolation study, "SIRIUS 19", 4-month crew isolation study and "AQUAKOSMOW10", 10-day crew isolation study. The first two mentioned studies were carried out at the IBMP RAS institute in the above-ground experimental complex (referred as NEK), as part of a broader research project within the project "SIRIUS 2017-2023". The last study "AQUAKOSMOW 10" was carried out as an analogue study of a diver's crew in the environment of a habitat located below the water surface, in an environment associated with a real threat of damage to health or loss of life. The shorter duration of the "AQUAKOSMOW10" experiment corresponds to the duration of the "SIRIUS 17" experiment, allowing them to be compared. The Sociomapping method, which monitors selected variables using 5-point Likert scales with verbally described values, was used as the main method for measuring the level of communication and cooperation. The following methods were chosen for statistical analysis: analysis of control diagrams, correlation analyzes between the nearest measurements and comparative analyzes between potential subgroups.

**RESULTS** The results of analyses of gender-heterogeneous crews of isolation experiments "SIRIUS 17", "SIRIUS 19" and "AQUAKOSMOW10" show significant changes, especially in the dynamics of relationships and ties in individual teams. Possible connections of similarities and differences in the found statistical outputs are discussed.