

Preparing for Mars -psychological issues

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Abstract

Human missions to Mars are widely seen as the next step of human exploration. The characteristics of human long-term missions will pose numerous challenges with regard to psychology. An overview is given of the current state of knowledge in the area of space psychology and future research topics specifically in the field of human factors and ergonomics are defined. Preparatory activities for human long-term exploration are simulation studies using ground-based facilities. Such experiments will not only prepare us technologically for future interplanetary flights, but will also give insight into the effects on the astronaut's health, well-being, safety and performance.

AURORA programme

Recently the European Space Agency (ESA) has initiated a new programme for planetary exploration, called Aurora. The objective of the Aurora Programme is to formulate first, and then implement a European long-term plan for the robotic and human exploration of the solar system bodies holding promise for traces of life, with Mars as the main focus. Mars is the most Earth-like planet of the Solar system and recent indications of the presence of water in the past raise the likelihood of being able to find traces of life on its surface. Furthermore, it represents the only neighbour planet that might be reached in reasonable time by a human expedition given current propulsion systems. Consequently, human exploration missions to Mars have always represent a vision of space faring countries.

Robotic mission together with technology development and scientific preparation constitute the starting point of Aurora. In preparation, technologies specific to human missions, such as life support, recycling, medical support, etc. must be developed through ground based research and development, parallel to the robotic missions. The characteristics of human long-term exploration missions will pose numerous challenges not only technologically but also with regard to health, well-being, safety and performance of the astronauts. Thus, for the success of a future mission to Mars, a clear understanding about all aspects of human adaptation to long-term presence of humans in space will be necessary (Schmitt, 1990).

In D. de Waard, K.A. Brookhuis, S.M. Sommer, and W.B. Verwey (2003), *Human Factors in the Age of Virtual Reality* (pp. 327 - 339). Maastricht, the Netherlands: Shaker Publishing.