

SPACE LIFE SCIENCES SYMPOSIUM (A1)  
Behaviour, Performance and Psychosocial Issues in Space (1)

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## POSSIBILITIES AND EFFECTS OF SOUNDSCAPE DESIGN

**Abstract**

Even if extremely healthy astronauts are selected, they might experience anxiety and depressive reactions in stressful environments. Therefore, there are needs to study stress responses in extreme environments, such as the International Space Station (ISS). The noise level in the space station is about 60dB, which is about the same level as in an operating factory. One way for astronauts to adapt to the environment is by using ear plugs and headphones for listening to music. As another countermeasure, this paper suggests that environmental soundscape control must be considered for long-duration missions and space tourism. It is difficult to choose music with general or universal appeal, due to differences in individual taste, and we thought that sounds from nature would be more general and have appeal to all. We focused on one of the nature sounds, water flowing in a stream with occasional bird call. Also, this paper review recent psycho-physiological studies such as using salivary amylase, electroencephalogram, electrocardiogram, blood pressure, and questionnaires.

**Keywords:** psycho-physiological, nature sounds, salivary amylase, electroencephalogram, electrocardiogram, blood pressure.