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Behavior, Performance and Psychosocial Issues in Space (1)

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COUNTERMEASURES FOR PSYCHOLOGICAL ISSUES: SOUNDSCAPE DESIGN FOR CONFINED
ENVIRONMENTS**Abstract**

The International Space Station (ISS) is complete, and long-term missions have become the norm. It is necessary to consider crew members' mental health. "Psychological countermeasures include all the actions and measure that alleviate the effects of the extreme living and working conditions of space flight on crew performance and behaviour" (Kanas, N., 2003) Excessive stress can be caused by problems such as noise, sleep shift, having no boundary between working and living space, and isolation in the close-quartered environment. As a countermeasure for noise (about 60dB in the ISS), a soundscape (acoustic environment) design must be studied. "Soundscape design" (or "acoustic environment design") attempts to discover principles and to develop techniques by which the social, psychological and aesthetic quality of the acoustic environment or soundscape may be improved." (Truax, B., 1999) The purpose of this study is to provide better stimulation to improve living and working in a close-quartered environment such as a space habitat. Considering the psycho-physiological influences of sounds on human; "Music changes the human mind and body." (Nuki, M., 1992) There are insufficient innovative research for a stressful acoustic environment as the ISS. Electronic music can be composed easily by the general public these days, and composing music as a hobby could be an active expression during long-term missions. "Leisure time activity in space is very important. They help to counter boredom and monotony, and they can serve as a way for the crewmembers to interact around a positive event" (Kanas, N., 2003). Also, according to Malchiodi (2006) "Art making is seen as an opportunity to express oneself imaginatively, authentically, and spontaneously, an experience that, over time, can lead to personal fulfilment, emotional reparation, and transformation. This view also holds that the creative process, in and of itself, can be a health-enhancing and growth-producing experience." Akihiko Hoshide (2008), a Japanese astronaut, said that the balance of passive and active art expression is important.

"Brain-science the Arts' as a frontier figures out the importance of art through brain-science. At the same time, it is an effort to know the brain's activities through art, to know ourselves more deeply." (Koizumi, H., 2008) Therefore, the goal of this study is to illustrate the method for co-creation of sensibility intelligence, which seems to be helpful to control the balance between the left brain/right brain and the brain stem by oneself.

Keywords: psychiatry, psychology, well-being, long-duration manned space missions, acoustic environment design.