

IAF/IAA SPACE LIFE SCIENCES SYMPOSIUM (A1)
Human Physiology in Space (2)

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ORACLE: NEXT GEN OUTFIT

Abstract

ORACLE is a project to develop an outfit to help maintain physical fitness in zero gravity. The first part consists in compiling various studies carried out on general effects of zero gravity on the body. During long periods in zero gravity, the human body undergoes major changes. The main ones are atrophy of muscle fibers and bone decalcification leading to the weakening of strength and skeleton.

Today, means and measures adopted are insufficient to counter fully these effects. The second part of the project investigates all new solutions to best counteract loss of physical abilities without impeding mobility ; taking inspiration in particular from muscular rehabilitation in clinics: resistance exercise band, isokinetic dynamometer, electromyostimulation (or EMS), etc.

The last part of the project is the design of the appropriate outfit prototype: a real exoskeleton embedded in cloth. The outfit will passively preserve individual's physical fitness in order to ensure a better living condition in zero gravity.