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INTERACTIONS AND INTELLIGENT CLOTHING WITH MONITORING-ALERTING SYSTEM FOR PHYSIOLOGICAL BEHAVIOUR

Abstract

The experimental set-up proposed combines an interactive wall with an intelligent clothing system. The wireless monitoring and data processing, could have numerous applications and its development has the potential for use in medical applications relating to astronauts' health and well-being. The sensors in the proposed intelligent clothing transmit the data from the body surface to the hardware-software system, which in turn calculates physiological data, allowing an overview of the state and proposals for any necessary countermeasures. The system may be adopted for a number of conditions such as: body mass, training state, physiological variables, application in Space and on Earth. A great advantage of such a system lies in the fact that the astronaut while wearing comfortable clothes would be free to perform his/her daily routines (maintaining physical and physiological well-being) without having to perform complicated tests involving stored hardware to check his/her bodily functions status.

Development of clothing for intelligent monitoring will allow system to:

• Perform continual control of astronaut's health status • Give access to individual physiological data through monitoring body functions • Alert crew members and medical personnel on Earth • Aid well-being of astronaut's body under stress • Be worn as clothing item during short and long space missions

The project's long-term goals are:

• To design clothes able to monitor bio-physiological behaviour of astronauts and their interrelations with the habitat environment. This will be possible throughout the implementation of sensors • To help and control body training (especially important for long term Space flights and missions). Collect information and achieve training instructions and parameters for long-term human Space flight, thus improving life quality and physical state in Space • To design and manufacture clothes with high performance textiles, able to create high level of comfort and well-being. This can be reached by satisfying hygiene requirements, maintaining thermal balance, allowing transpiration and using anti-stress fibres ac carbon fibre cloth. • To identify the best software offering service aimed to maximize the astronaut's well-being in terms of body health. All this by in-flight testing of clothing item during normal and gymnastic activities with the aim of monitoring the product • To evaluate psychological benefits of clothing because astronaut can be safe and sure of health while performing other tasks • To identify applications for such systems for Earth usage in medicine, rehabilitation, training, dietary monitoring, disaster and relief management activities. . .