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

Author: Dr. Rochelle Velho
University of Warwick, United Kingdom

Mr. Nagarjun Konda
University of Birmingham, United Kingdom
Dr. Andrew Winnard
Northumbria University, United Kingdom
Dr. Mona Nasser
University of Plymouth, United Kingdom
Mr. Rama Santhosh Karri
University of Birmingham, United Kingdom
Prof. Simon Evetts
SeaSpace Research, United Kingdom
Dr. Eilis Boudreau
OHSU, United States
Dr. Nick Caplan
Northumbria University, United Kingdom
Dr. Peter Ward
United Kingdom Space Biomedicine Association (UKSBA), United Kingdom
Prof. David Gradwell
Kings College London, United Kingdom

INTRODUCING AN AEROSPACE MEDICINE SYSTEMATIC REVIEW GROUP

Abstract

Introduction

Systematic review finds, appraises and interprets evidence to inform clinical and operational decision making and guidelines. Systematic review methods reduce bias, increase statistical power and perform gap analysis. Conducting systematic reviews requires specific methodological skills, therefore, systematic review groups are established. Due to an increasing amount of research in Aerospace Medicine, there is a need for systematic review in this field. We have, therefore, begun developing an Aerospace Medicine Systematic Review Group and conducted: (A) A pilot systematic review on the effectiveness of countermeasures against spinal changes due to spaceflight. This developed methods for judging the applicability of bedrest simulation studies to spaceflight and statistics to compare countermeasure results to baseline data. (B) Priority setting exercises involving key stakeholders.

Methods

(A) Electronic databases were searched from the start of their records to November 2014. Studies were assessed with PEDro, Cochrane Risk of Bias and a bed-rest study quality tool. Magnitude based inferences were used to assess countermeasure effectiveness. (B) The CAA, AsMA, RAF, ESA, International Space University and SeaSpace Research Ltd. were asked to feedback on group proposals and recommend topical and beneficial reviews to conduct during group establishment.

Results

(A) Seven studies were included in the systematic review that found heterogeneity of outcome measures, no participant reported outcome measures and no countermeasure able to fully protect against all expected spaceflight induced changes. Research and operational recommendations were made and included in a European Space Agency Topical Team Report on post-mission rehabilitation. (B) Stakeholders felt the proposed group would be useful and contributed ideas for initial review topics.

Discussion

The initial systematic review and its impact to an ESA Topical Team Report demonstrates the research and operational usefulness of the group concept. Initial positive response of several major organisations in the Aerospace Medicine field provides support to group proposals and a list of quick win review titles will be reviewed to determine the most beneficial. Funding options to undertake initial reviews and develop resources such as a website with methodological guidance and directory of reviews will be sought.