
Introduction. Exercise is one of the countermeasures to the physiological changes occurring in space. However, astronauts have to pay for it by losing weight because of the energy imbalance making the researchers rethink about the traditional exercise protocol. Considering the above the authors in this article have suggested an exercise protocol requiring minimum energy expenditure as well as not compromising on the beneficial effects of energy expenditure.

Methods. 10 healthy men completed 3 exercise protocols: Sprint interval training (SIT) consisting of 7 sets of 30-s cycling at (120% \( V_{\text{O}_2\ max} \), over 85 rpm) with a 15 s rest period between each bout, high-intensity interval aerobic training (HIAT) consisting of 3 sets of 3-min cycling at 80-90% \( V_{\text{O}_2\ max} \) with a 2-min active rest at 50% \( V_{\text{O}_2\ max} \), continuous aerobic training (CAT) consisting of 40-min of cycling at 60-65% \( V_{\text{O}_2\ max} \). All exercise sessions were followed up by a pre-exercise warm up session, and an ending session ie 2 min 60 rpm and 3 min 40-60 rpm. The total energy expenditure (EE) during and 180 min after the exercises were calculated.

Results. The net EE during the exercise and after the exercise were 77, 161, 350 and 13, 11, 5 kcals in SIT, HIAT, CAT respectively. Finally the total energy EE during and after the exercise were found to be 109, 182, 363 kcal in SIT, HIAT, CAT respectively. The results showed total energy expenditure is less for SIT, HIAT than CAT suggests that these are better protocols for future space missions. However, these are ground based studies and require further research to validate before accepting these protocols.

Discussion. The less energy expenditure not compromising with the beneficial effects in SIT, HIAT than CAT suggests that these are better protocols for future space missions. However, these are ground based studies and require further research to validate before accepting these protocols.


Introduction. The Air Force and the Defence advanced Research Project Agencies have augmented the research into use of HBOT for mild traumatic brain injury (mTBI). The present study is aimed at reviewing the status and design of this programme.

Methods. Discussion was done with the principal investigators, research and administrative leaders about the overall programme and the effect of HBOT on symptoms of individuals with mTBI.

Results. All prospective studies were conducted by Air Force, Navy and others with various atmospheric pressure either by room air or by 100% oxygen. The participants were assessed by improvement in their symptoms or by various tests at baseline, at exposure completion and at 3-12 months.

Discussion. This integrated programme of clinical trials investigating the efficacy of HBOT in service members with persistent symptoms following mTBI exposure will be important to define practice guidelines and, if needed, for the development of definitive clinical trials in this population.


Introduction. In 1995 OSHA has mandated a construction standard specifying that full-body
harness replace waist belts for fall arrest in a personal fall arrest system. Thus the current study is aimed to determine the effects of full-body harness fit on suspension tolerance time.

**Method.** 20 men and 17 women were suspended from the dorsal D-ring and full-body harness system 5 cms from the floor, and their suspension tolerance time was calculated. The suspension tolerance time was defined as the duration of motionless suspension time until any sign of orthostatic intolerance or a voluntary termination by the participant is done.

**Results.** The study results showed that body weight, stature, torso angle of suspension, thigh strap angles, upper- and lower torso body depths, and harness size match level all had a correlation with suspension tolerance time where as gender and harness static fit did not demonstrate any correlation.

**Discussion.** The recommendation by the author is to establish a 9-min rescue plan for a well-fitted harness so that less than 5% of workers would experience suspension trauma. As the rescue time is too less they have suggested the integration of self-deployable suspension trauma relief accessory. The study results provide a basis for harness designers, standards writers, and manufacturers to improve harness configurations and testing requirements for better worker protection against suspension trauma.


**Introduction.** Touch screen is user friendly and the use has been increased. Thus the need to explore the effect of touch screen interface on touch characteristics and the effect of disabilities on these characteristics exists. Therefore the present study is aimed at testing the effect of button size and spacing on touch characteristics.

**Method.** 52 participants (23 - fine motor disability, 14 – gross motor disabilities, 15 o disabilities) completed the digital entry tasks. Button size varied from 10 mm to 30mm and the spacing increased from 1 mm to 3mm. The Kiosk data acquisition system consisted of a touch screen mounted to a force plate was used for the study. Force characteristics, dwell time, impulse were calculated.

**Results.** The exerted peak forces increased 17% between the largest and the smallest buttons, whereas impulses decreased 28%. Compared with the fine motor and nondisabled groups, the gross motor group had greater impulses (98% and 167% respectively) and dwell times (60% and 129% respectively).

**Discussion.** Button size significantly affects forces, impulses and dwell times for participants completing a number entry task in a touch screen. Both groups with disabilities had longer dwell times than the group without disabilities, and participants with gross motor disabilities had increased impulses.

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