Harnessing Smart Devices to Optimize Human Performance

Biography

Assoc. Prof. Jason Lee is Associate Professor in Yong Loo Lin School of Medicine at the National University of Singapore. He is also a Fellow of the American College of Sports Medicine. He serves in various national and international panels related to human performance and safety. His main research interests are in fluid balance, thermoregulation and mitigation strategies for improving human performance. A key outcome of his research is the formulation of a holistic heat management system. He recently completed his 12-year tenure at the DSO National Laboratories by directing the Human Performance Programme in his final appointment. He is also a Member of the WHO and WMO Work Group on Climate Change on Workers Health and Productivity and chairs the Scientific Committee on Thermal Factors at the International Commission on Occupational Health. He obtained his Ph.D. in Exercise Physiology at Loughborough University, United Kingdom under the sponsorship from the UK Overseas Research Scholarship and Faculty Studentship. He also received the award of G V Sibley Memorial Prize upon obtaining his B.Sc. (1st Class Honours) in Sports and Exercise Science at the same university.

Abstract

Evidence-based recommendations often do not optimize performance of every individual in the cohort. Adoption of general guidelines in hope to achieve optimal human performance can at times induce negative health implications. For example, the desire to minimize excessive dehydration by drinking based on general guidelines can induce overhydration, leading to water intoxication that is potentially fatal. With the impending rise in global temperature, there is a pertinent need to maximize work productivity without compromising health (heat injury etc.). As there is extensive variability in physiological tolerance to a given absolute level of stress, individual monitoring of physiological strain during exertional events will allow optimal safety and work productivity without delayed and premature cessation of activity respectively. The development of individualized guidelines that accounts for intrinsic and extrinsic factors is envisaged. With the rapid growth in data analytics and smart devices, there is huge potential to harness these enablers to disrupt human performance without compromising safety. These smart devices offer huge potential to collect rich sources of data to guide interventional strategies.