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### Exercise intensity for health and sports performance: recent updates

Sport and physical activity prescription guidelines continue to evolve, which helps responding to a global epidemic of obesity, diabetes and several other lifestyle diseases, and addressing sports performance needs. Individualized exercise prescription should consider human physiological and behavioral adaptations and long term adherence. The intensity, duration and mode of exercise all determine the effectiveness and adherence of exercise training in the short and long term. Exercise or physical activity intensity prescription is considered one of the most important determinants for both health and sport related outcomes because of its complex effects on human cardiometabolic, neurological and psychological responses. Exercise training effectiveness can be defined based on several markers or thresholds at maximal and submaximal levels, including oxygen uptake, carbon dioxide production, blood metabolites, and perceived physical exertion, all affected by how intense the exercise is. Unfortunately, blurred definitions of exercise intensity prescription have recently surfaced including high-intensity or supramaximal high-intensity training (HIT or S-HIT). Some suggest HIT as a “novel” method for exercise training based on several findings showing short term-effectiveness in selected populations, which has been swiftly recommended by some as a public health strategy. Inaccurate exercise intensity prescription can be counterproductive, and increases the injury risk of and affect exercise adherence. Perhaps the history of exercise science associated with intensity domains including HIT can be traced back to early physiology work of 1920s. Since then, it had been known that exercise intensity domains are defined as light, moderate, heavy, severe, maximal and supramaximal intensities. Each domain is associated with complex adaptive responses, so HIT is not novel after all. A careful understanding of exercise intensity prescription necessitates an individualized exercise prescription in order to enable exercise scientists and sports medicine professionals to accurately address populations’ health and sporting outcomes.

### Biography

Professor Alkhatib is the Head of Epidemiology and Public Health at Dasman Diabetes Institute, Kuwait, following his move from the UK, where he headed and developed several programs in Sport Science, physical activity, nutrition and health at the universities of Sheffield Hallam, Greenwich, Lincoln, Suffolk, Essex and Abertay Dundee. He earned his PhD in Sport Science (Exercise Physiology and Metabolism) and MSc in (Health and Fitness) from the University of Essex, and is a Fellow of the UK Higher Education Academy (FHEA), an accredited UK nutritionist (RNutr), a clinical physiologist, a Fellow of Royal Society of Medicine, and a certified international sports nutritionist (CISSN). The research of Dr Alkhatib focuses on developing effective physical activity and nutritional strategies to prevent lifestyle-related diseases, including type-II diabetes and cardiovascular disease. Public health intervention studies he led have demonstrated effectiveness of combining physical activity with healthy food components to prevent cardio-metabolic risks amongst high-risk populations, including older and prediabetic adults, post-menopausal women and sedentary workers. Recent nutraceutical experiments he developed and led have shown bioactive effectiveness of a number of natural herbs for weight and loss, appetite, mood state and sports performance. He has over 100 publications including those in high impact journal articles, conferences, books and book chapters, including editing a best-seller entitled “Sedentary Lifestyle, Predictive Factors, Health Risks and Physiological Implications”.

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