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Editorial

Can heat exposure improve exercise performance?

As part of a new set of initiatives, the JSAMS editor group established the early goal in 2022 of increasing the social media activity of our journals. Many academic journals have demonstrated over the past few years the increased importance of a strong social media presence. Dissemination of information on platforms such as Twitter, Instagram and YouTube help maximise a journal's impact and reach across a variety of different stakeholders, which is particularly important for JSAMS and its new sister journal JSAMS Plus, as we seek to best serve both our academic and practitioner readership. To this end, we are delighted to announce that we have appointed, after a competitive selection process, Dr Danilo de Oliveira Silva – a Research Fellow at the La Trobe Sport and Exercise Medicine Research Centre, as the new Social Media Editor for JSAMS and JSAMS Plus. Over the coming months, Danilo will work with the editorial team, *Sports Medicine Australia,* and *Elsevier* to develop an engaging and responsible social media strategy plan, while building and maintaining strong presence of JSAMS on Twitter and Instagram.

In this month's issue of JSAMS, we first highlight two papers that continue to demonstrate the strength of articles published in our journal on the topic covered by our recent special issue on Heat, Health and Performance [1]. Extreme heat as an environmental stressor can lead to significant decrements in the ability to optimally perform in both occupational and sports settings. However, in this issue, Soo et al [2] report that exposure to mild heat (35°C, 40% relative humidity) can potentially improve performance (as defined by average peak power) of repeated sprints, compared to the same activity – matched for initial mechanical output – in cooler temperate (24°C, 30% relative humidity) conditions. This study adds to the emerging body of evidence in different domains suggesting that heat stress, when used in the appropriate way, can also exert beneficial effects, leading to positive performance outcomes, and in some cases positive health outcomes.

Humans have an impressive capacity to physiologically adapt to withstand extreme heat. Acute (~1-2 h) extreme heat exposure for several consecutive days, either in a climate chamber (heat acclimation) or in a naturally hot environment (heat acclimatisation), and usually coupled with exercise, leads to a reduction in resting core temperature, a greater maximum sweat rate, and an expanded plasma volume. These physiological adjustments all serve to moderate physiological heat strain and substantially improve heat tolerance and thus exercise performance during subsequent exposure to hot climates. However, heat acclimation/acclimatisation effects can decay almost as quickly as they are acquired. So, an on-going challenge for sports practitioners and sport scientists working with athletes competing in hot environments is the optimal timing and dosage of heat adaptation sessions relative to scheduled competitive events. In our second heat-related study highlighted in this month's issue of JSAMS, Benjamin et al [3] explore different approaches to intermittently "top up" a previously attained heat acclimation or heat acclimatization using heat training sessions. The authors demonstrate that 60 minutes of exercise at a Wet Bulb Globe Temperature of ~33°C of an intensity sufficient to achieve hyperthermia (defined as a core temperature greater than 38.5°C) performed twice per week successfully maintained some of the key indicators of a physiological heat adaptation for at least 8 weeks after the original heat acclimation/acclimatisation regimen.

The third paper highlighted this month is our cover story. Development programs are essential for young athletes striving to attain their dreams of competing at the highest level, such as the Olympic Games. Traditionally, swimming development programs choose individuals based on their age-related competition performance. However, given the large variability in physical development at a young age, elite talent may be potentially passed over in favour of a swimmer who benefits from the kinematic advantages of a relatively larger body size, which eventually diminishes throughout the remainder of adolescence, but does not possess other qualities that ultimately define an elite competitor. Born et al [4] report new normative data and percentile curves for young swimmers to support objective talent selection and the evaluation of performance progression in favour of current competition performance. These data can be used to assist the selection and development of a wide range of swimmers from regional to international level, and enable the relative comparison of performance between various swimming strokes and race distances.

References

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