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Cooling strategies for elite athletes: Beneficial effects on exercise performance and practice considerations

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Cooling strategies prior to (pre-cooling) or during exercise (per-cooling) are known to improve exercise performance in the heat due to reductions in thermal strain and an increased heat storage capacity. Pre-cooling can be described as the rapid removal of heat from the body before exercise to create a larger heat storage capacity, whereas per-cooling is defined as any opportunity to reduce thermal stress during exercise by applying a cold stimulus. Possible cooling interventions include cold water immersion, cold water/ice slurry ingestion (also known as internal cooling), wearing a cooling/ice vest or cold packs, water spray or water dousing, and the application of menthol on the skin or by using a mouth rinse. Previous studies demonstrate that pre- and per-cooling improve exercise performance in the heat by 4.7% and 5.3%, respectively, with greater performance benefits for endurance exercise compared to intermittent sprint exercise protocols. Along with its effects on exercise performance, cooling reduces the risk of exertional heat-illness and may facilitate safer exercise performances during the Paris Olympics of 2024. Therefore, athletes and their coaches should focus on cooling interventions and practise different interventions in competitive settings to optimise performance and increase the chance of winning a gold medal! Sport-specific regulations, practical considerations and local environmental conditions are important determinants for the effectiveness and implementation of cooling interventions. For example, event-specific regulations do not always permit per-cooling strategies such as wearing a cooling vest or cooling packs. This suggests that athletes should adopt a customised cooling strategy that complies with the regulations, practical considerations and environmental conditions of their sport and event. This presentation will outline the effectiveness of different times (i.e. pre- or per-cooling) and types (i.e. internal and external) of cooling interventions on exercise performance and thermophysiological outcomes (i.e. core temperature, skin temperature, heart rate), and explain the different approaches that can be used by athletes during competition, while taking into account the effectiveness of the intervention and the practical feasibility. Physiologist, coaches, and athletes will benefit from this presentation by gaining a deeper understanding of the nuances associated with implementing cooling strategies into the pre-event preparation, warming-up and/or during competition of elite athletes.

Topic: **Nutrition**

Presentation **Invited**

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