Heat acclimation for competition in the heat

01. Acute exposure to hot and/or humid ambient conditions results in the development of thermal strain during prolonged exercise and consequently impair aerobic performance.

02. When repeatedly exposed to conditions that elicit profuse sweating and elevate whole-body temperature, adaptations develop that reduce the deleterious effects of heat stress.

03. Heat acclimation and acclimatization lead to improved submaximal exercise performance, increased VO2max and improved thermal comfort in the heat.

04. These benefits are achieved through enhanced sweating and skin blood flow responses, plasma volume expansion, better fluid balance (hydration) and cardiovascular stability, as well as acquired thermal tolerance.

05. Heat acclimation/acclimatization is relatively rapid, with a substantial fraction of the adaptations developing during the first week of heat exposure, and 10-14 days being optimal for complete or near-complete acclimation/acclimatization.

06. The rate of decay for the main adaptive benefits (i.e. lowered heart rate and core temperature during exercise) is 2.5% per day without heat exposure.

07. As such, athletes tapering for a major race after a heat acclimation/acclimatization regimen, may lose 35% of their adaptations after two weeks without heat exposure.

08. Therefore, it is recommended to complete an acclimatization regimen as close as possible to the competition being held in the heat.

Reference: Saunders et al. IJSNEM 2019

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