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THE THERMOREGULATORY EFFECT OF CONSUMING A BEVERAGE CONTAINING PROTEIN DURING EXERCISE

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Lab based studies have demonstrated that adding a small quantity of protein to a typical CHO-electrolyte beverage is beneficial, e.g. improved recovery from strenuous exercise (St. Laurent et al. *Med Sci Sports Exerc* 38: S340, 2006) and increased thermoregulatory capacity (Goto et al. *FASEB J.* 21: 919, 2007). However, no study has investigated whether this will actually aid in constraining the rise in core temperature during strenuous exercise in the heat and, importantly, whether these physiological changes can affect performance in a real-life sporting event. **PURPOSE:** To determine the effect of consuming a standard CHO-electrolyte beverage containing a small quantity of protein during eight days of strenuous competition in a hot environment. **METHODS:** Twenty eight cyclists participating in the TransAlp eight day mountain bike stage race were recruited. They were assigned to fitness matched placebo (PLA: 76g CHO, 460mg Na⁺ and 120mg K⁺: all·l⁻¹) or protein (PRO: 20g Protein, 73g CHO, 552mg Na⁺ and 144mg K⁺: all·l⁻¹) groups based on $\dot{V}O_{2\text{ peak}}$ (submaximal cycle ergometer prediction). Immediately (<1hr) before and after each stage, core temperature, urine osmolality, creatine kinase concentration [CK], rating of muscle soreness and body mass were measured. Heart rate throughout competition and performance were recorded. **RESULTS:** Ambient temperature ranged from 29°C to 40°C during the race. There was no significant difference in [CK] between groups before the event (PRO: 130.9 ± 82.8 vs. PLA: 130.6 ± 82.6). Although [CK] was substantially elevated during the race, the rise was not different between the groups ($p = 0.36$). Both groups commenced the race with similar urine osmolalities (PRO: 753.5 ± 210.1 vs. PLA: 753.7 ± 185.1 mOsmol), this increased significantly in both groups (PRO: $p = 0.017$; PLA $p = 0.044$) although the rise was more marked in PRO (PRO vs. PLA $p = 0.002$). Core temperature was not significantly different between groups prior to the start of stage 1 (PRO: 37.0 ± 0.36 vs. PLA: 36.9 ± 0.39 °C) but was significantly lower post exercise throughout the race in PRO (PRO: 37.7 ± 0.32 vs. PLA: 38.0 ± 0.32 °C) ($p < 0.001$). Total race time was significantly shorter in PRO (2326 vs. 2591 minutes; $p = 0.04$) **CONCLUSIONS:** Core temperature was significantly lower and performance was significantly better in PRO despite no difference in muscle damage.

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