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Effect of Tyrosine Ingestion on Physical and Cognitive Performance during iSPT in a Warm Environment

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Prolonged exercise in the heat has a detrimental effect on both exercise performance and cognitive function. Tyrosine ingestion has been shown to be effective in partially alleviating this decrement, however its effects on physical and cognitive performance during soccer specific exercise in the heat are yet to be explored. **PURPOSE:** To determine the effect of tyrosine ingestion on both physical and cognitive performance during a soccer specific protocol (iSPT) (1) in a warm environment. **METHODS:** Eight recreationally active male soccer players completed the 90 min iSPT on a non-motorised treadmill on two separate occasions in an environmental chamber (25°C, 40% RH). Participants were supplemented with tyrosine (TYR; 250 mL of a sugar free drink plus 150 mg/kg TYR) at both 5h and 1h pre-exercise or a placebo control (PLA; sugar free drink only) in a double-blind, randomised, cross-over design. Cognitive performance (vigilance; PsychE Software) was assessed: pre exercise, at half time, immediately after half time and immediately post exercise. Physical performance was assessed using the distance covered in both halves of iSPT. Traditional physiological (HR), perceptual (RPE, TSS) and thermoregulatory (rectal and skin temperature) measures were recorded throughout exercise. Subject's perceived readiness to invest physical (RTIPE) and mental (RTIME) effort was assessed at the same time points as the cognitive tests. **RESULTS:** Positive vigilance responses were significantly increased (12.56 ± 1.74 v 11.5 ± 2.42 , $P = 0.015$) with negative responses significantly decreased (2.41 ± 1.76 v 3.5 ± 2.42 , $P = 0.013$) in TYR compared to PLA. No significant differences were observed in distance covered, HR, RPE or TSS between TYR and PLA ($P > 0.05$). RTIME scores were significantly higher in the TYR trial when compared to PLA (6.69 ± 1.23 v 5.91 ± 1.2 , $P = 0.039$) with no difference observed in RTIPE scores ($P > 0.05$). **CONCLUSION:** Tyrosine

had a beneficial effect on subject's vigilance and RTIME during iSPT in a warm environment, although no influence on performance was observed.

1. Aldous JWF, Akubat I, Christmas BCR, Watkins S, Mauger AR, Midgely AW, Abt G, Taylor L. The reliability and validity of a soccer specific non-motorised treadmill simulation (iSPT). *J Strength Cond Res.* 2013; In press.