

ABSTRACT

EFFECTS OF CAFFEINE ON THE VO₂ SLOW COMPONENT DURING HEAVY EXERCISE

The VO₂ slow component (SC) is a slow, time-dependent rise in VO₂ during constant-load exercise exceeding gas-exchange-threshold (GET). Approximately 86% of the VO₂ SC reportedly originates from working peripheral muscles, with the remainder originating from the central systems. The effects of caffeine on these systems during heavy exercise are unclear. Metabolic, cardiovascular, respiratory, and electromyographic parameters were evaluated in nine competitive cyclists (VO_{2max} = 57.5 ± 4.9 ml·kg⁻¹·min⁻¹) performing constant-load, heavy exercise in control and caffeinated conditions. No effect on muscular activation, arterial pressure, and respiratory exchange ratio was observed. VO₂ was ~200 ml/min higher (p < .05) throughout exercise in the caffeinated states, with no interaction (p > .05) relative to time (i.e., no effect on VO₂ SC). Elevated VO₂, in the absence of any other treatment effects, suggests that caffeine during heavy exercise may up-regulate metabolic processes related to cyclic AMP triggered by elevated catecholamines.

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