

Pre-exercise β -hydroxy- β -methylbutyrate free-acid supplementation improves work capacity recovery: a randomized, double-blinded, placebo-controlled study.

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Abstract

The purpose of this study was to investigate the effects of a single-dose of β -hydroxy- β -methylbutyrate free acid (HMB-FA) supplementation on muscle recovery after a high-intensity exercise bout. Twenty-three trained young males were randomly assigned to receive either a single-dose supplementation of 3 g of HMB-FA (n = 12; age, 22.8 \pm 3.0 years) or placebo (PLA; n = 11; age, 22.9 \pm 3.1 years). A muscle damage protocol was applied 60 min after supplementation, and consisted of 7 sets of 20 drop jumps from a 60-cm box with 2-min rest intervals between sets. Muscle swelling, countermovement jump (CMJ), maximal voluntary isometric torque (MVIT), and work capacity (WC) were measured before, immediately after, and 24, 48, and 72 h after the exercise protocol. Muscle swelling, CMJ, and MVIT changed similarly in both groups after the exercise protocol (p < 0.001), but returned to pre-exercise levels after 24 h in both groups. WC decreased similarly in both groups after the exercise protocol (p < 0.01). For HMB-FA, WC returned to pre-exercise level 24 h after exercise protocol. However, for PLA, WC did not return to pre-exercise level even 72 h after the exercise protocol. In summary, a single-dose of HMB-FA supplementation improved WC recovery after a high-intensity exercise bout. However, HMB-FA did not affect the time-course of muscle swelling, MVIT, and CMJ recovery.

KEYWORDS: HMB-FA; exercise-induced muscle damage; lésion musculaire induite par l'exercice physique; muscle recovery; nutrition sportive; récupération musculaire; sports nutrition; supplementation; supplémentation