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Multi-ingredient Pre-workout Supplement Improves Cycling Anaerobic Power in Recreationally Active Men

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Multi-ingredient pre-workout supplements (MIPS) have become an increasingly popular ergogenic aid among fitness enthusiasts to improve explosive power. Previous research has primarily focused on the effectiveness of individual ingredients, rather than the complete supplement. **PURPOSE:** To examine the effectiveness of two MIPS, one with beta-alanine and caffeine (BAC) and one without (NBAC), vs. placebo (PLA) on anaerobic performance. **METHODS:** Fourteen recreationally active men (24.6 ± 5.0 years, 179.2 ± 5.9 cm, 84.3 ± 14.3 kg) participated in a randomized, counterbalanced, double-blind, placebo controlled cross-over design to assess anaerobic power and capacity. On three separate occasions (≥ 7 days between trials), subjects completed vertical jump (VJ), 30 repeated ballistic squats (RBS) with a load equal to 30% of their pre-determined one repetition maximum, and a 30 second Wingate anaerobic cycle test (WAnT) 30 minutes after ingestion of BAC, NBAC, or PLA. RBS peak power (RBS_{PP}) was determined as the highest peak power repetition (rep) and mean power (RBS_{MP}) was calculated as the average peak power across the 30 reps using a position transducer. Relative peak (RBS_{PPkg}) and mean (RBS_{MPkg}) power were also calculated. WAnT anaerobic power ($WAnT_{AP}$) was calculated as the peak power relative to body weight and anaerobic capacity ($WAnT_{AC}$) was calculated as the average power relative to body weight over the duration of the 30 second test. Comparisons across supplements were determined using one-way repeated measures ANOVA ($p < 0.05$) and Bonferroni adjusted pairwise comparisons when appropriate. **RESULTS:** $WAnT_{AP}$ was significantly different across supplements ($p = 0.019$). BAC $WAnT_{AP}$ (11.95 ± 0.85 W) was significantly higher than PLA (11.35 ± 0.66 W, $p = 0.037$), but not NBAC (11.54 ± 0.84 W, $p = 0.319$). There were no significant differences in $WAnT_{AP}$ between NBAC and PLA ($p = 0.703$). Additionally, no significant differences were observed across supplements in $WAnT_{AC}$, RBS_{PP} , RBS_{MP} , RBS_{PPkg} , RBS_{MPkg} or VJ. **CONCLUSION:** A MIPS can improve cycling anaerobic power during a Wingate test, however improvements in anaerobic power and capacity may be less apparent in squat jump and vertical jump type movements.

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