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Effects of Two Multi-ingredient Pre-workout Supplements on VO_{2peak} in Healthy Recreationally Active Males

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Multi-ingredient pre-workout supplements (MIPS) are used to improve aerobic and anaerobic performance, however numerous formulations on the market pose many questions about their effectiveness. **PURPOSE:** To assess effects of two MIPS, one with beta alanine and caffeine (BAC) and one without (NBAC) compared to placebo (PLA) on peak oxygen uptake (VO_{2p}), peak heart rate (HR_p), peak power output (PPO), and lactate. **METHODS:** Recreationally active males ($N=14$, 24.6 ± 5.0 y, 179.2 ± 5.9 cm, 84.3 ± 14.3 kg) participated in a randomized, counterbalanced, double blind, placebo-controlled cross-over study. During the first visit DEXA was used to assess body composition and subjects were familiarized to testing procedures. While controlling for diet and exercise, subjects returned for three experimental trials, separated by ≥ 7 days. The testing sessions included a series of anaerobic performance tests prior to assessing VO_{2p} . Participants cycled for 2 min at 50 Watts (W) before resistance increased by 30 W/min until volitional fatigue. Respiratory gases were collected using a metabolic cart. HR_p and PPO were recorded as well as lactate at 2-min post exercise. Separate repeated measures ANOVA were used to assess differences in VO_{2p} , HR_p , PPO, and lactate within subjects, between the three experimental trials, followed by Bonferroni adjusted pairwise comparisons as needed. **RESULTS:** There was a main effect of treatment on VO_{2p} ($p = 0.048$; BAC: 42.46 ± 8.73 , NBAC: 41.14 ± 9.01 , PLA: 40.66 ± 8.59) but none of the post hoc pairwise comparisons were statistically significant. There was no effect of treatment on PPO ($p = 0.875$). There was a main effect of treatment on HR_p ($p < 0.001$; BAC: 181 ± 6 , NBAC: 176 ± 7 , PLA: 175 ± 8), with difference between BAC vs PLA ($p = 0.008$), BAC vs NBAC ($p = 0.002$) but not for NBAC vs PLA ($p = 0.550$). There was main effect of treatment on lactate ($p = 0.003$; BAC: 11.3 ± 2.7 , NBAC: 9.8 ± 2.4 , PLA: 9.5 ± 2.6), with difference between BAC vs PLA ($p = 0.016$), BAC vs NBAC ($p = 0.031$) but not for NBAC vs PLA ($p = 1.0$). **CONCLUSION:** Preliminary data suggest BAC leads to increased HR_p and post-exercise lactate when compared to PLA or NBAC. These findings may be explained by the stimulatory effect of BAC or a higher intensity that is not yet apparent statistically in PPO or VO_{2p} .

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