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Effects of a Single Dose Multi-Ingredient Pre-Workout Supplement on Aerobic and Anaerobic Performance in Men

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PURPOSE: To assess the effects of a single dose of a multi-ingredient pre-workout supplement (MIPS) on aerobic and repeated anaerobic performance tests. **METHODS:** Eight college-aged men were recruited to participate in a randomized, double-blind, placebo-controlled, crossover study. All participants were tested within the same week separated by 48 hours and were provided either the placebo (PLA) or the MIPS on each day. As per the manufacturer's instructions, the participants waited 25 minutes to begin the tests, following consumption of the drink. Aerobic exercise performance was assessed using the Modified Astrand Treadmill Protocol, during which maximal oxygen consumption ($\dot{V}O_{2max}$) and maximal aerobic exercise time were determined. Following this test, participants were provided a 20-minute seated rest period. After the rest period, participants completed a short warm-up which consisted of 2 minutes of cycling at 50 RPMs against a light resistance, followed by 3, 10-second sprints, to determine the max RPMs. After the warm-up, participants completed the repeated anaerobic power test, which consisted of 10, 6-second sprints, with 45 seconds of active rest in between each sprint. For each sprint, a resistance of 7.5% of the participant's body mass was applied at 90% of their max RPM. Peak power (PP) was determined for each sprint and the percent decline in PP from the first to the last sprint was calculated. $\dot{V}O_{2max}$, exercise time and the percent decline in PP for the sprints were analyzed using a dependent t-test. The peak power of the 10 sprints were analyzed using 2x10 ANOVA. The alpha level was set *a priori* to $p \leq 0.05$. **RESULTS:** There was no significant difference between the PLA and MIPS for $\dot{V}O_{2max}$. However, there was a significant difference in treadmill time ($p=0.005$) with MIPS (10.4 ± 1.6 min) performing better than PLA (10.0 ± 1.6 min). There were no significant differences between the PLA and MIPS when analyzing peak power during the 10 sprints or percent decline in PP. **CONCLUSION:** A single dose of this MIPS improved maximal aerobic exercise time despite no changes in $\dot{V}O_{2max}$. However, this MIPS did not improve performance during a repeated anaerobic power test.

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