

POSTER PRESENTATION

Open Access

Effects of acute ingestion of a multi-ingredient pre-workout supplement on lower body power and anaerobic sprint performance

AR Jagim^{1*}, G Wright¹, K Schultz¹, C St. Antoine¹, MT Jones², J M Oliver³

From The Twelfth International Society of Sports Nutrition (ISSN) Conference and Expo
Austin, TX, USA. 11-13 June 2015

Background

Multi-ingredient pre-workout supplements (MIPS) are becoming popular dietary supplements among strength and power athletes. These products frequently include caffeine, creatine, beta-alanine, and branched-chain amino acids as the primary ingredients. When studied on an individual basis, several of these ingredients have been shown to increase muscular power following acute ingestion; however, little is known in regard to a synergistic effect when said ingredients are combined. The purpose of this study was to determine if short-term, MIPS ingestion influences muscular power and anaerobic sprint performance.

Methods

In a double-blind, randomized, and crossover design; 12 Division III male, football players (18.8 ± 1.2 yrs; 180 ± 12 cm; 89.3 ± 11 kg; 13.6 ± 4.9% BF) completed one baseline session and two subsequent testing sessions to determine the efficacy of acute ingestion of a MIPS. The initial baseline session consisted of body composition assessment and familiarization with the jump mat and non-motorized force treadmill. In testing Session 1, participants ingested either 1 serving of a commercially available MIPS (SUP) that contained 4g of carbohydrates, 2g of creatine hydrochloride, 3g of beta-alanine, 1.5g of betaine, 1g of taurine, 600mg of N-acetyl L-Cysteine, 150mg of Alpha-Glycerol Phosphoryl Choline, 6g of citrulline malate, 500mg of beet extract, 6g of BCAA's, 1.5g of L-tyrosine, 300mg of caffeine anhydrous, 50mcg of huperzine A and 5mg of Bio-Perine; or a placebo (PLA). Following a post-consumption

30-minute waiting period, participants completed a warm-up of 10 body weight exercises. Next, they completed a counter-movement vertical jump (CMVJ) test on a jump mat (*Just Jump System, Probotics, AL, USA*), which consisted of three attempts with the highest CMVJ being recorded for analysis and converted to power (W) using previously described methods [1]. Following the CMVJ, participants completed a 25-second maximal effort sprint test on a non-motorized force treadmill with the resistance set at 18% of their bodyweight. Session 2 followed a week later in which participants repeated the testing protocol under the opposite treatment condition (SUP or PLA).

Results

Mean values for CMVJ power and treadmill performance work under each treatment are included in Table 1. There were no significant differences in lower body peak ($p = 0.584$) or mean power ($p = 0.584$) as determined by CMVJ. A significant increase in mean power was observed in the MIPS condition ($p = 0.034$) during the anaerobic sprint test. No significant differences were observed for any of the remaining anaerobic sprint performance variables.

Conclusions

Results suggest that acute ingestion of a MIPS 30 minutes pre-exercise has no impact on lower body muscular power, but improves mean power output during a maximal-effort anaerobic sprint. Based upon the results of the current study, ingesting a MIPS prior to a training session may improve anaerobic capacity during bouts of exercise lasting < 30 seconds.

* Correspondence: ajagim@uwlax.edu

¹Exercise & Sport Science Department, University of Wisconsin - La Crosse, La Crosse, WI, 54603, USA

Full list of author information is available at the end of the article

Table 1

Variable	SUP	PLA	p value
Peak Power (W)	1934 ± 379	1918 ± 376	0.719
Mean Power (W)	1468 ± 304	1397 ± 257	0.034*
Total Work (m)	107.1 ± 4.8	106.7 ± 5.3	0.384
CMVJ (cm)	65.2 ± 7.0	65.8 ± 8	0.584
Peak Power (W)	6470 ± 895	6513 ± 898	0.584
Mean Power (W)	3415 ± 487	3438 ± 483	0.584

Values are presented as Mean±SD

*Significant difference between treatment conditions ($p < 0.05$).

Authors' details

¹Exercise & Sport Science Department, University of Wisconsin - La Crosse, La Crosse, WI, 54603, USA. ²Division of Health and Human Performance, George Mason University, Fairfax, VA, 22030, USA. ³Kinesiology Department, Texas Christian University, Fort Worth, TX, 76129, USA.

Published: 21 September 2015

Reference

1. Johnson DL, Bahamonde R: Power output estimate in university athletes. *Journal of Strength and Conditioning Research* 1996, **10**(3):161-166.

doi:10.1186/1550-2783-12-S1-P49

Cite this article as: Jagim et al.: Effects of acute ingestion of a multi-ingredient pre-workout supplement on lower body power and anaerobic sprint performance. *Journal of the International Society of Sports Nutrition* 2015 **12**(Suppl 1):P49.

Submit your next manuscript to BioMed Central
and take full advantage of:

- Convenient online submission
- Thorough peer review
- No space constraints or color figure charges
- Immediate publication on acceptance
- Inclusion in PubMed, CAS, Scopus and Google Scholar
- Research which is freely available for redistribution

Submit your manuscript at
www.biomedcentral.com/submit

