28th ECSS Anniversary Congress, Paris/France, 4-7 July 2023

Acute Effects of Caffeine on Physical Performance and Level of Technical and Tactical Skills in Elite Judo Athletes

Kaszuba, M.1, Krawczyk, R.1, Michalczyk, M.1, Kostrzewa, M.1, Komarek, Z.2, Krzysztofik, M.1, Filip-Stachnik, A.1

1 Institute of Sport Sciences, The Jerzy Kukuczka Academy of Physical Education in Katowice, 2 Institute of Sport Sciences, University of Physical Education in Krakow

INTRODUCTION:
Several previous investigations assessed the effect of pre-exercise caffeine ingestion on judo-specific performance. However, the effects of caffeine on repeated technical-tactical skills and physical tests related to judo performances are unclear. Therefore, the aim of this study was to explore the effect of acute oral caffeine intake on physical performance tests and indicators of activeness, efficiency, and effectiveness of athletes during repeated judo combats.
METHODS:
Nine elite judo athletes of the Polish national team (4 men and 5 women, age: 22 ± 4 years, body mass: 70.7 ± 11.7 kg) habituated to caffeine (2.2 mg/kg/day) participated in a randomized, crossover, placebo-controlled and double-blind experiment. Each participant performed two identical experimental sessions after ingestion of (a) 3 mg/kg body mass of caffeine (CAF); b) a placebo (PLAC). After 60 min for substance absorption, the athletes performed the following 4 sets of tests: a) maximal isometric handgrip strength test; b) countermovement jump (CMJ) which were separated by three 4 min judo combats, on the basis of which indicators of activeness, efficiency, and effectiveness of attack and defense of the athletes were assessed. Additionally, blood lactate (LA) concentration was also measured before the testing, after each combat, and 30 minutes after the testing.
RESULTS:
A two-way repeated measures ANOVA indicated no significant substance × time interaction effect ($p=0.940$) as well as no main effect of a substance ($p=0.054$) but indicated a significant main effect of time ($p<0.001$) for LA concentration. Post-hoc analysis for time effect showed a significant increase in LA concentration at points II, III, and IV compared to points I and V ($p<0.02$ for all). No significant differences between a substance x time interaction effect, the main effect of a substance, and the main effect of time were observed in CMJ ($p=0.587$; $p=0.162$; $p=0.117$, respectively), handgrip test with the dominant hand ($p=0.684$; $p=0.150$; $p=0.295$, respectively) and with non-dominant hand ($p=0.242$; $p=0.324$; $p=0.479$, respectively). In addition, t-tests showed no differences in the Overall Activeness ($p=0.558$), Attack Activeness ($p=0.736$), Defense Activeness ($p=0.233$), and Final Effectiveness ($p=0.860$) between PLAC and CAF trials in judo combats. In turn, the Wilcoxon signed rank test showed no differences in the Attack Efficiency ($p=1.000$), Defense Efficiency ($p=0.779$), Attack Effectiveness ($p=0.575$), Defense Effectiveness ($p=0.326$) between PLAC and CAF trials.
CONCLUSION:
The present study indicates that 3 mg/kg body mass of caffeine is not an effective dose to improve physical performance and indicators of activeness, efficiency, and effectiveness during repeated judo combats in elite judo athletes habituated to caffeine.

Topic: Nutrition

Presentation Poster