EFFECT OF MODERATE ACUTE CAFFEINE SUPPLEMENTATION ON ANAEROBIC PERFORMANCE IN DIVISION III COLLEGIATE ATHLETES

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Introduction

- Caffeine (C) is widely considered an effective ergogenic aid in sport and exercise due to its ability to improve central nervous system activity and muscular contraction rate.
- Limited C research exists for female athletes.
- The potential role that C has on anaerobic performance in NCAA Division III collegiate athletes is not fully understood.

Purpose:

- To determine the effect of acute supplementation of a moderate dosage (6mg/kg) of C on a three-test anaerobic battery in male (M) and female (F) Division III collegiate athletes.

Methods

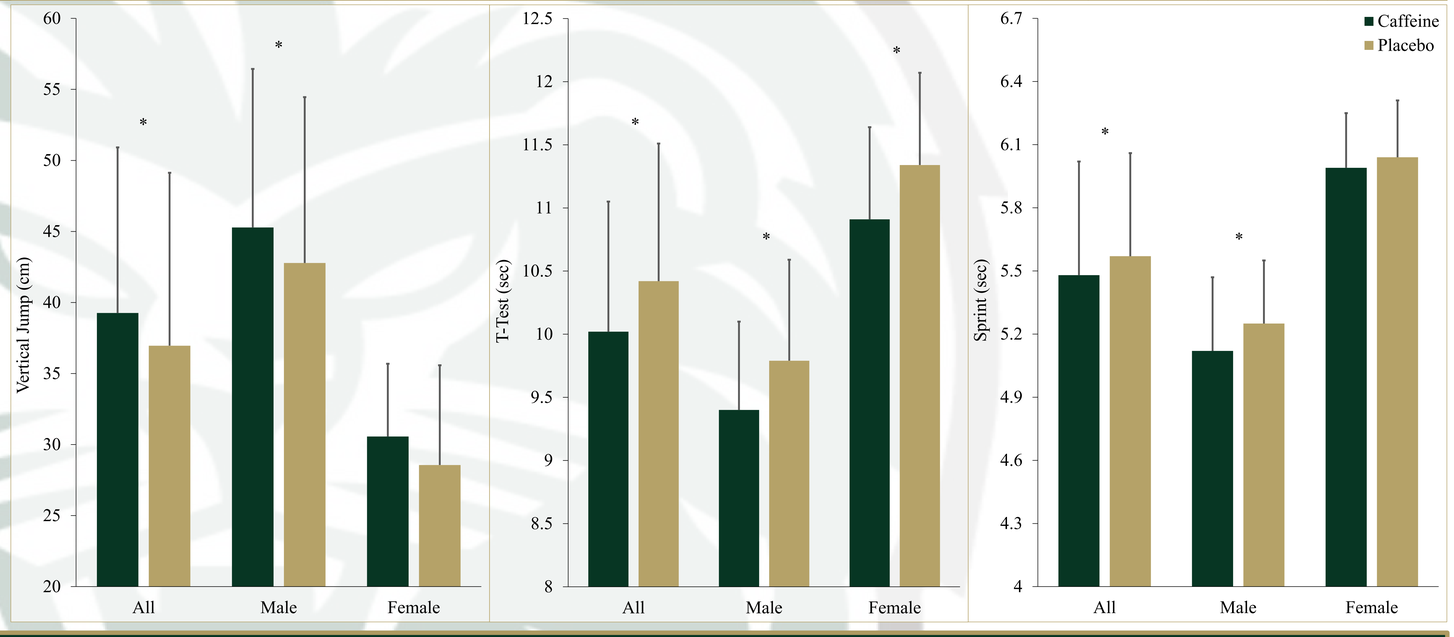
- 22 Division III athletes
  - Male (M) = 13; Female (F) = 9
- Athletes weighed in and the 6mg/kg dosage of C or Placebo was calculated.
- Athletes drank a 500ml bottle of water with the dissolved solution and waited for 60 minutes to allow for peak absorption.
- Following the wait period, Athletes warmed up for 5 minutes.
- All Athletes completed a three-test battery for both trials:
  - Countermovement vertical jump (VJ); T-test (T); and 40-yd sprint (S)
- Each Athlete was given three attempts at each test, with 60 seconds of rest between each trial.
  - The best performance of each test was used for analysis.
- This process was completed 24 hours later with the opposite solution.

Statistical Analyses:

- Paired samples t-test were run on each of the three anaerobic variables.
- This was conducted on all Athletes as a group and separated by gender.
- Significance set at $p \leq 0.05$.
- All data presented as Mean ± SD with Effect Size and 95% Confidence Intervals.

Results

	Vertical Jump (cm)				T-Test (sec)				Sprint (sec)			
	Caffeine	Placebo	*p*-value	ES [95%CI]	Caffeine	Placebo	*p*-value	ES [95%CI]	Caffeine	Placebo	*p*-value	ES [95%CI]
All (n = 22)	39.26 ± 11.66	36.96 ± 12.17	***< 0.01***	0.61	10.02 ± 1.03	10.42 ± 1.09	***< 0.01***	-1.27	5.48 ± 0.54	5.57 ± 0.49	***0.02***	-0.56
Male (n = 13)	45.28 ± 11.16	42.78 ± 11.68	***0.04***	0.65	9.40 ± 0.70	9.79 ± 0.80	***< 0.01***	-1.31	5.12 ± 0.35	5.25 ± 0.30	***0.05***	0.65
Female (n = 9)	30.57 ± 5.12	28.56 ± 7.02	0.15	0.53	10.91 ± 0.73	11.34 ± 0.73	***<0.01***	-1.18	5.99 ± 0.26	6.04 ± 0.27	0.13	-0.56



Conclusion

- Overall, an acute, moderate dose (6 mg/kg) of C does improve anaerobic performance in Division III collegiate athletes.
- However, F athletes did not see universal improvement as M athletes when looked at separately.
- The anaerobic ergogenic effect of an acute, moderate dose of C may be greater in M compared to F athletes.

Practical Applications

- **Strength and conditioning professionals and coaches may want to consider careful promotion of C as a low-cost, safe, ergogenic aid to improve speed, power, and agility in collegiate athletes, especially M athletes.**
- **However, caution to ensure that appropriate dosing, and careful monitoring of an athlete's current C consumption is paramount to avoid negative health side effects or potential failed drug test for NCAA athletes.**