

Endurance Performance After Caffeine Pill Ingestion

Sanaz Dokan, Morgann Robinson, Hang Dinh, Lenia Rodriguez, Jeanette Lopez

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Department of Kinesiology - The University of Texas at Arlington

ABSTRACT

Endurance is the capacity one can last during exercise and the time it takes to reach fatigue to a certain point. Caffeine is a mild stimulant drug providing many people with energy and/or alertness; it also stimulates the nervous muscles. Placebo is an experimental alternative to caffeine that was used. The study conducted compared caffeine pills to placebo pills (calcium) versus their VO₂ levels, these results were achieved using a Balke treadmill endurance test. The purpose of this research is to examine if caffeine pills help increase endurance levels. 17 subjects participated in the graded exercise test until fatigue was reached. All participants took both supplements on different testing days to create a counter balance effect. Caffeine VO₂ max of 31.29±6.93 (L/min). Placebo VO₂ max of 28.49±6.81 (L/min). T-value resulting in 38.43 (t=2.402, (df)=16). p=0.029. The study found evidence that caffeine pill intake when compared to the placebo pill intake that caffeine results in increased endurance performance. Caffeine consumption benefits anyone on a no-carb diet to receive the energy that would have been provided by consuming carbs but from the caffeine.

BACKGROUND & PURPOSE

- Endurance is the capacity one can last during exercise and the time it takes to reach fatigue to a certain point.
- Caffeine is a mild stimulant drug providing many people with energy and/or alertness, it also stimulates the nervous muscles.
- A Placebo (calcium) supplement was used as an experimental alternative to the caffeine supplement.
- The purpose of this research is to examine if caffeine pills help increase endurance levels.
- H_A: Caffeine pills will enhance their endurance to reach VO₂ max



METHODS

- There were total of 17 participants; 11 M and 6 F ages 18-30 varied in fitness background.
- The instruments used were: Caffeine Supplement, Placebo (Calcium) supplement, Treadmill, and Stopwatch.
- VO₂ max was measured using the following formula:
- Male: VO₂ max=1.444xT(total time)+14.99 (Pollock, et al, 1976)
- Female: VO₂ max=1.38xT+5.22
- The subjects were tested over 3 days with a one day rest in between.
- The subjects did a 3 minute warm up then they walked at a low intensity of 0 incline with a speed 3 mph. Following the 3 minutes there was an increase of intensity where the incline was now 1 and 3.5 mph. From here on out the incline increased by 1 every minute and the speed increased by .5 mph every 3 minutes.
- Dependent t-test
- The order was counter balanced.



DISCUSSION & CONCLUSION

- Calcium was chosen because it was not a nerve stimulant.
- Caffeine pills do not contain carbs or sugar compared to other forms of energy supplements.
- Although heart rates were measured in the subjects, the heart rate data was not used to determine if caffeine had any effect on endurance.
- Since endurance performance is measured, as the time it takes to reach a certain distance VO₂ max was the ideal form of measuring endurance.
- As expected, the subjects reacted more to the caffeine during performance than when they did to the calcium pill.
- The results, overall, show that caffeine can help aid in endurance and increased VO₂ max.
- Therefore, we can reject the null hypothesis H₀: caffeine pill= placebo pill.
- We concluded that caffeine does increase endurance and will ultimately give the athlete more push, fight and stamina to get through an intense workout.
- For future studies a more controlled environment is ideal with a larger sample size.



RESULTS

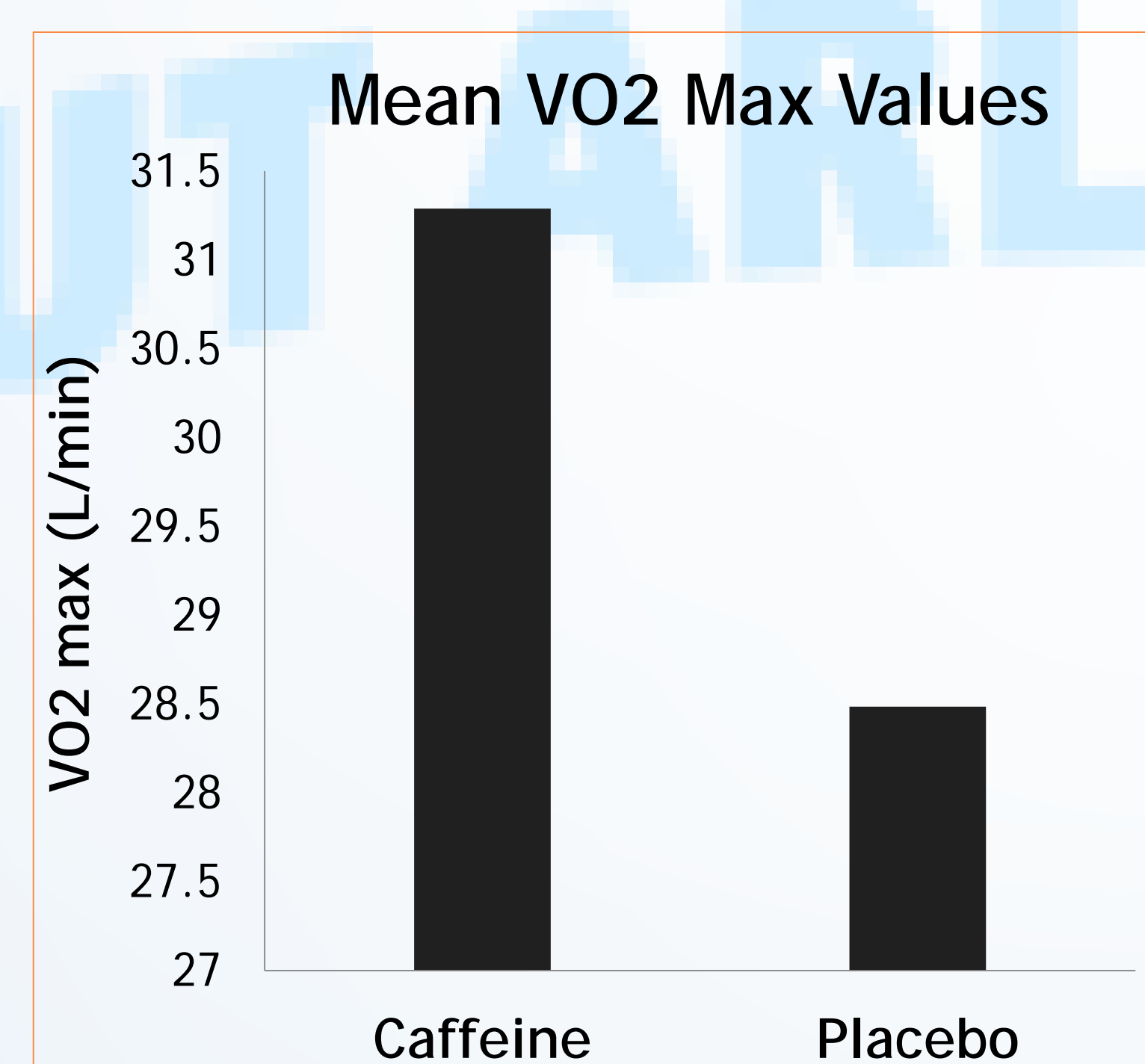


Figure 1: Graph depicts mean VO₂ max values of participants after both days of study, regardless of which supplement was consumed first and gender.

- Caffeine: VO₂max of to 31.29±6.93 (L/min)
- Placebo: VO₂max of 28.49±6.81 (L/min)
- Effect on endurance (p=0.029)
- 2.402(16)=38.43(p<.05)
- Time Means
- Caffeine 13.7 (mins)
- Placebo 11.4 (mins)

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