

The Effects of Energy Drinks on Division 1 Female Soccer Midfielders

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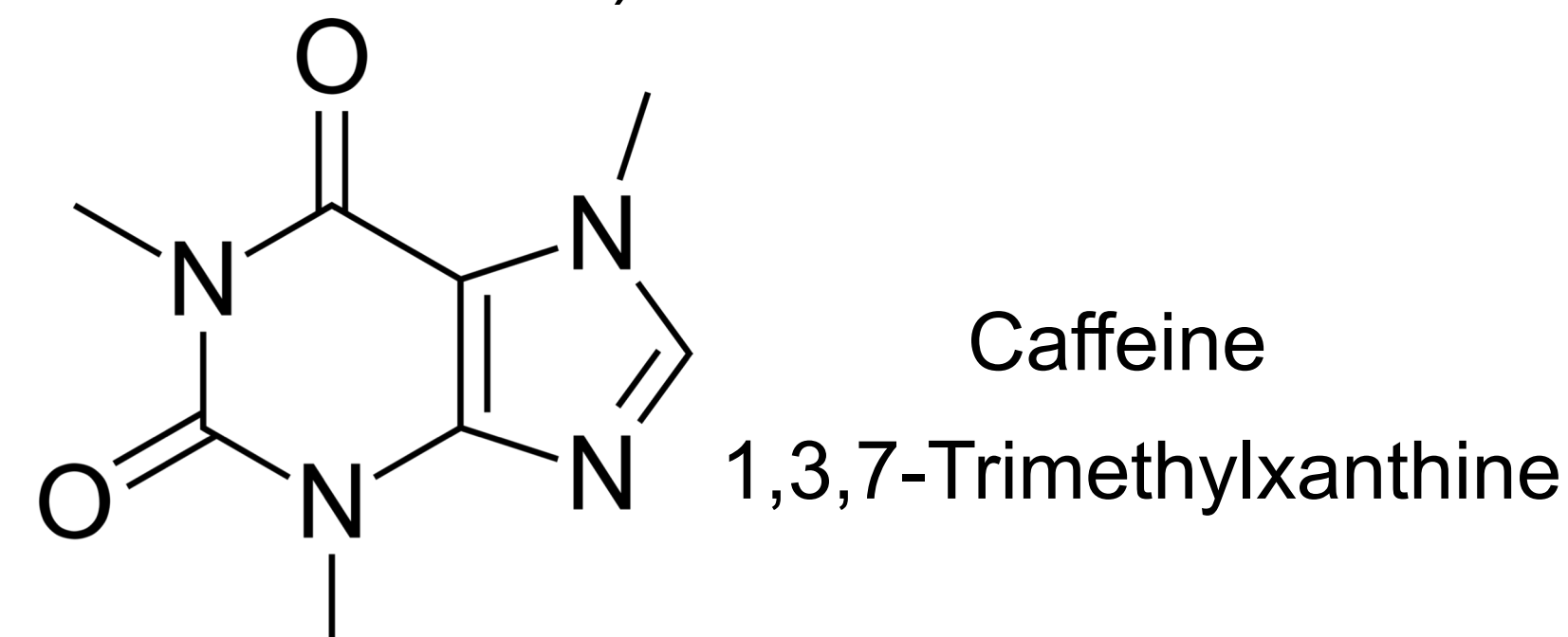


Abstract

Caffeine is a popular aid that is commonly used in young athletes to improve performance. Energy drinks are just one of the many ways that caffeine can be consumed. Most studies that examine the effects that caffeine may have on exercise performance have mixed results, therefore making it unknown whether energy drinks are actually beneficial to sports performance. The studies that do exist focus primarily on the effects that caffeine has on males. Therefore, there is very little research on the effects of caffeine on females, especially during anaerobic exercise.

Introduction

- 85% of the United States adult population consumes at least one caffeinated beverage per day (Mitchell, Knight, Hockenberry, Teplansky, & Hartman, 2014).



<https://en.wikipedia.org/wiki/Caffeine>

- Caffeine that is contained in energy drinks has ergogenic potential that is associated with an increase in power and aerobic activity by approximately 4% (Higgins, 2018).
- Forbes, Candow, Little, Magnus, and Chilibeck (2007) conducted a study that tested sixteen healthy participants on a bench press test and a Wingate test, both with and without the consumption of a Red Bull® energy drink prior to testing. The results of the study showed an increase in bench press repetitions, but no change in the Wingate test.
- Most research on caffeine ingestion has focused primarily on aerobic exercise, therefore making anaerobic exercise an area of interest (Forbes et al., 2007).

Operational Definitions

- Caffeine**- a nervous system stimulant that manipulates the release of energy into the blood from body stores by blocking normal energy cut-off systems that would stop certain body activities (Hafen, 1981).
- Ergogenic**- an aid that is supposed to improve physical work capacity or athletic performance. Examples include drugs, nutritional supplementation, caffeine, steroids, vitamins, sugar, etc (McArdle, Katch, & Katch, 1981).
- Anaerobic Exercise**- oxygen independent exercise where energy is drawn from sources other than oxygen. (Mougios, 2006).
- Aerobic Exercise**- oxygen dependent exercise where energy is drawn directly from biochemical processes involving oxygen either directly or indirectly (Mougios, 2006).

Purpose & Hypothesis

Purpose: The purpose of this study is to expand the known effects that energy drinks have on anaerobic exercise performance and explore a new population of female soccer midfielders through the use of a Wingate test.

Hypothesis: It is hypothesized that the consumption of an energy drink prior to a Wingate anaerobic test would result in overall better anaerobic performance, specifically with increased power and a lower fatigue index.

Methods

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10 female soccer midfielders from the same D1 college team were used for this study. Participants visited the laboratory on three separate occasions.



Caffeine Consumption Survey

- How old are you?
- Are you a member of a division 1 collegiate women's soccer team? (If no, leave the rest of this survey blank and submit).
- What is your position on your division 1 collegiate women's soccer team?
- Do you consume caffeinated substances? (If no, leave the rest of this survey blank and submit).
- What types of caffeinated substances do you consume? (coffee, tea, energy drink, pre-workout, chocolate, energy bars, etc.)
- Would you say that you consume caffeine on a regular basis?
- Do you consume a low (<400 mg), moderate (about 400 mg), or high dose (>400 mg) of caffeine each day?
- Why do you consume caffeinated beverages? (energy, sports performance, to feel awake, etc.)
____ To stay awake
____ For enhanced exercise performance
____ Because of the taste
____ Other: _____

Discussion

- It was assumed that the participants did not pose any major health risks due to the fact that they were all division 1 collegiate athletes.
- The main limitation of the study resulted from the small and convenient population size. More participants would enhance the results of the study because it would provide more accurate and reliable results.
- Further research could be done to improve population size and test participants in another type of fitness test, such as a muscular strength test. The addition of a strength test could improve results because it would provide results for muscular strength in addition to anaerobic fitness.

Acknowledgments

I would like to thank all of the participants that volunteered for this study and their coaches for being flexible and allowing them to participate. I would also like to thank Dr. Hartman and Dr. Granniss for assisting me and giving me the knowledge and tools necessary to conduct this study.

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