



Effects of Advocare Spark Supplementation On Submaximal Cycling Test

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Abstract

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INTRODUCTION: Submaximal Exercise is one of the most common forms of physical activity and is prevalent in both the advanced athlete's training regimen as well as the everyday exerciser. Utilizing the consumption of different pre-workout drinks in order to optimize submaximal exercise has been studied for years. It is well documented that the caffeine in pre-workout beverages effect physiological responses to exercise. There has also been many studies showing the effects of vitamin and nutrient supplementation on submaximal exercise. Advocare Spark is a multi-nutrient supplement developed as a nutritional source of energy and enhanced mental focus. It contains both an effective amount of caffeine as well as various vitamins and minerals. Combining these ingredients begs the question of how it may effect physiological factors during submaximal exercise.

PURPOSE: The purpose of this study was to evaluate the effects of Advocare Spark consumption on physiological factors during a submaximal cycling test.

METHODS: Five men (M; age 21.2 ± 1.3 yrs) of the UTA Kinesiology department, with a history of exercise training volunteered to participate in this study. Each subject had demographic data recorded. Each subject consumed either the experimental supplement (S) or placebo (P) thirty minutes prior to testing. Each subject performed a steady state submaximal test on the cycle ergometer with consistent speed and resistance maintained throughout thirty minute bout. During each test, heart rate (HR), rate of perceived exertion (RPE), and blood pressure (BP) were recorded along with relative oxygen consumption (VO_2) values measured by the Sensormedics Metabolic Cart. Total distance cycled was also recorded.

RESULTS: The HR with the placebo was 102 ± 13.9 bpm while it was 98 ± 15.2 bpm after consuming Spark. The heart rates resulted in a significant difference ($p = 0.00017$) between the two submaximal rides. The RPE for the placebo was 10.6 ± 2.2 and 9.7 ± 2.0 for Spark. This difference approached a significance ($p = 0.057$). There were no significant changes observed in the subject's blood pressure during testing ($p > 0.05$) regardless of supplementation. However, a significant difference ($p = 0.0028$) was seen in total distance cycled between supplement and placebo groups (P: 13.7 ± 0.2 km; S: 13.8 ± 0.2 km). Lastly, VO_2 values approached a significant difference ($p = 0.042$) during cycle ergometer testing (P: 14.4 ± 5.8 ml/kg/min; S: 15.2 ± 5.9 ml/kg/min).

CONCLUSION: The results of this study indicate that the consumption of Advocare Spark did have an effect on several factors during submaximal exercise when compared to the placebo. These differences may be further attributed to other factors such as the subject's sleep, dietary consumption, and physical activity several hours before testing and many more.

Purpose

The purpose of this research study was to assess the effects Advocare-Spark supplementation had on submaximal aerobic exercise.

Methods

- Subjects
 - 5 College-age students at UTA
 - Highly active males
 - English-speaking
 - Low to moderate daily caffeine consumption
- Instrumentation
 - Polar Heart Rate Monitor, Sensormedics Metabolic Cart, Borg Scale of Perceived Exertion, Monark Cycle Ergometer, Advocare-Spark Fruit Punch, Gatorade-Fruit Punch
- Subjects consumed either 8oz. of Spark supplement or 8oz. a similar tasting placebo 30 minutes prior to testing. Single Blind
- The RHR, VO_2 , and resting BP for each subject was taken 5 minutes after arrival for testing. Age, Height and weight also recorded.

Methods (cont'd)

- Testing
 - Seat Height adjusted to fit subject
 - 1 minute warm-up
 - 30 min submaximal pedaling
 - Resistance of 1.5kp
 - RPM between 55-60 maintained
 - HR monitored throughout testing. RPE noted every 5 minutes
 - VO_2 and BP taken every 10 minutes
 - Total Distance Cycled (TDC) observed upon cessation of exercise
- Cool Down
 - 3 minute cool down to assure a decrease in HR and SBP
- Subject returned on separate day, consuming opposite drink
- Testing protocol repeated



Variable	Mean (SD)
Age (yrs)	21.2 (\pm 1.30)
Height (cm)	183.6 (\pm 7.91)
Weight (kg)	88.4 (\pm 9.49)



Results

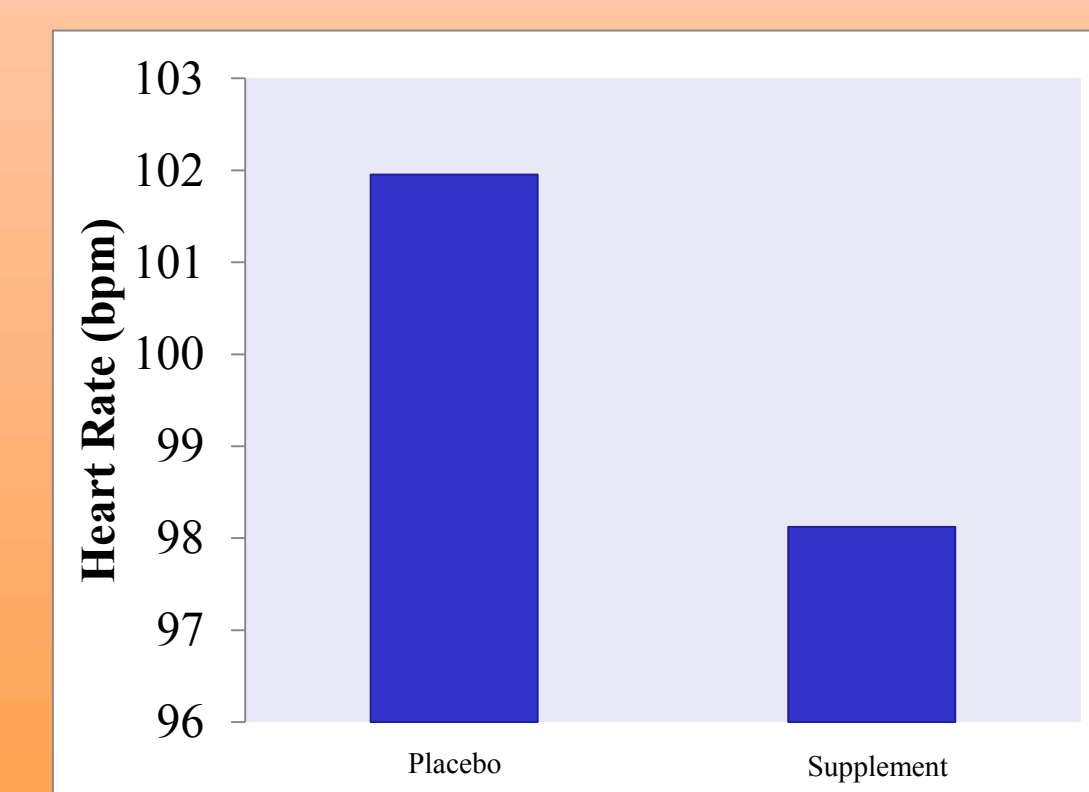


Figure 1: Difference in Heart Rate Between Placebo And Supplement Groups

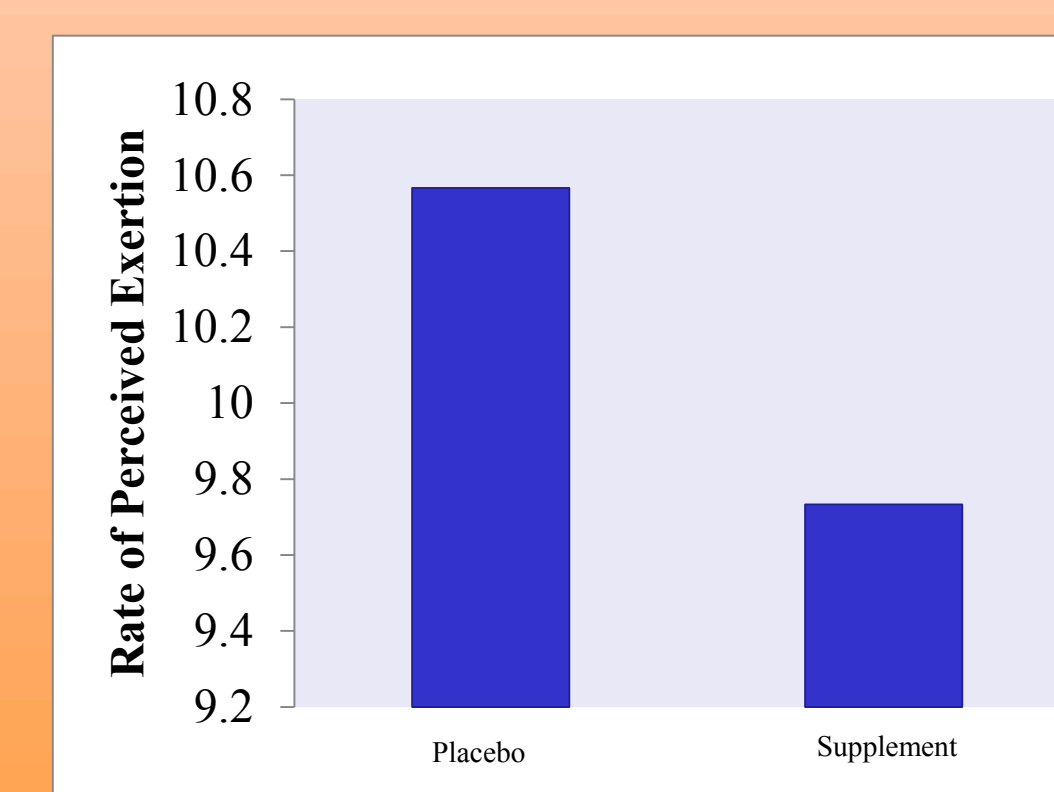


Figure 2: Difference in RPE Between Placebo And Supplement Groups

Results (cont'd)

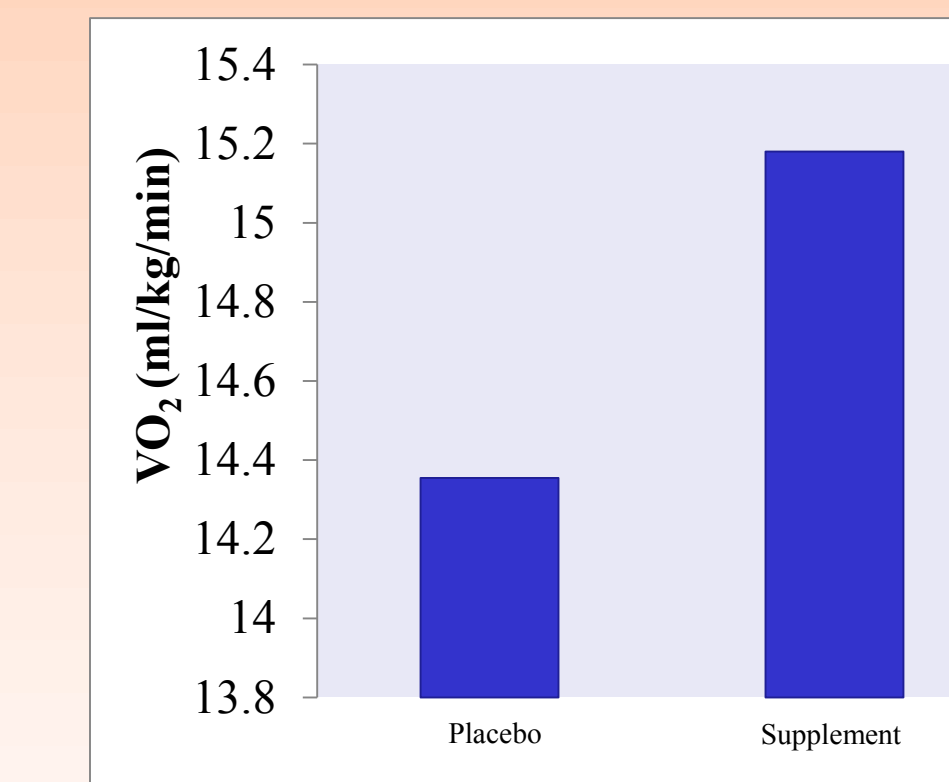


Figure 3: Difference in VO_2 Between Placebo And Supplement Groups

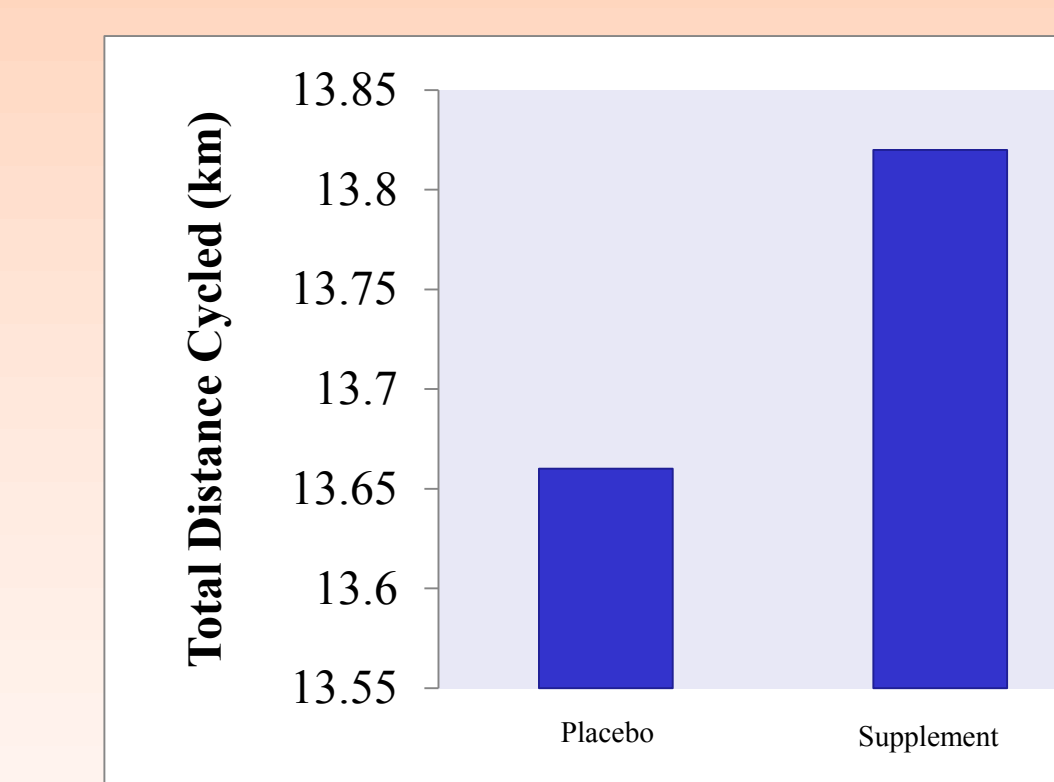


Figure 4: Difference in Total Distance Cycled Between Placebo And Supplement Groups

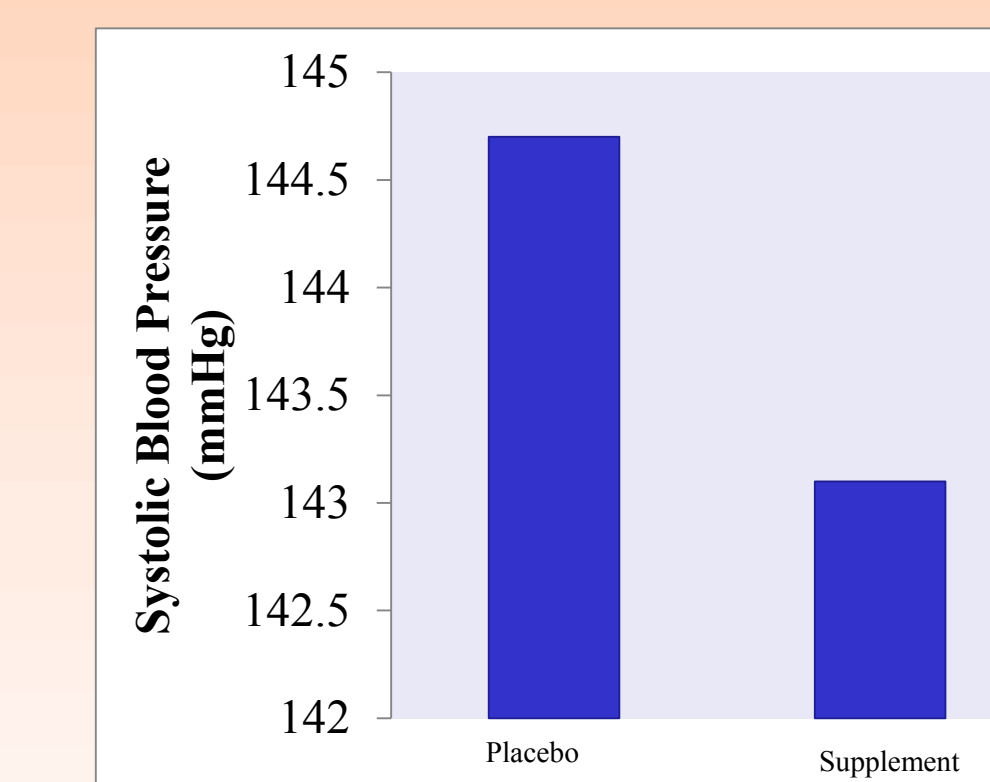


Figure 5: Difference in Systolic Blood Pressure Between Placebo And Supplement Groups

- HR- significant decrease ($p = 0.00017$) from 102 ± 13.9 bpm in Placebo (P) to 98 ± 15.2 bpm in Supplement (S).
- RPE- values approached a significant decrease ($p = 0.057$), seeing a difference from 10.6 ± 2.2 (P) to 9.7 ± 2.0 (S).
- BP- No significant changes were seen in blood pressure ($p > 0.05$) despite supplementation.
- TDC- a significant increase ($p = 0.0028$) is seen P: 13.66 ± 0.19 km; S: 13.82 ± 0.16 km
- VO_2 - values approached significant ($p = 0.042$) increase seeing increase from 14.4 ± 5.8 ml/kg/min (P) to 15.2 ± 5.9 ml/kg/min (S).

Conclusions

This experiment yielded a significant decrease in Heart Rate when consumption of Spark prior to testing was present. Research included in the discussion suggests similar findings from caffeinated supplements. BP saw no significant change. RPE values were not classified as significant decrease, but very close. VO_2 saw an increase which approached significance. TDC yielded a significant increase which may suggest the subject was able to subconsciously maintain a higher RPM when taking the Supplement. Testing in a more regulated environment, where secondary factors such as sleep and diet can be controlled may yield more conclusive results.