

4-1-2016

# Ingestion of a Nutritional Supplement Pre-Workout Will Increase Exercise Time-to-Fatigue

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## Recommended Citation

Bloomer, Allison D.; Chemmanchery, Beena R.; Liebowitz, Rachel; and Zalaker, Hannah M., "Ingestion of a Nutritional Supplement Pre-Workout Will Increase Exercise Time-to-Fatigue" (2016). *Kinesiology* 288. Paper 1.  
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# Ingestion of a nutritional supplement pre-workout will increase exercise time-to-fatigue

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## ABSTRACT

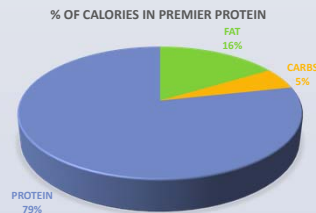
Everyone fatigues at the end of an intense exercise bout. However, previous research has indicated that ingestion of a mixed nutrient supplement one hour pre-exercise will increase exercise time-to-fatigue<sup>1</sup>. For this experiment, four females between the ages 20-50 participated in a controlled pilot study. Exercise was performed using a row machine, where time-to-fatigue was measured from a baseline of 80% max HR (220 minus age). The nutrient supplement was ingested 1 hour pre-rowing and contained 30g of protein, 5g carbohydrate, and 3g of fat. Results showed that pre-exercise ingestion of a mixed protein supplement did increase row time-to-fatigue.

## OBJECTIVES

- To determine if nutrition supplements ingested pre-exercise will affect exercise time-to-fatigue
- Use the information to recommend the use of nutrition supplements pre-exercise

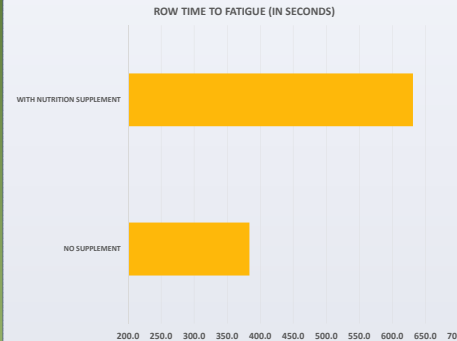
## METHODS

Subjects participated in a 6 week experiment, exercising on a row machine in both the control and test trials. Subjects followed a routine breakfast and morning exercise for at least 30 minutes and performed the trials around 1 pm. In the control trials, row exercise time-to-fatigue was performed without the ingestion of a nutrition supplement pre-exercise. In the test trial, subjects ingested a mixed protein supplement (Premier Protein) one hour prior to exercise. This product was chosen based on popularity, price and nutrient content.



Recording of time-to-fatigue (using iPhone stopwatch feature) began when subjects reached 80% of maxHR (calculated using 220-age) on the row machine. Subjects maintained 80% maxHR or higher during the exercise. Heart rate was monitored using Polar H7 heart rate sensors. Fatigue was determined by the individual's perceived exertion.

## RESULTS



100% of subjects who started, completed the experiment. Average time-to-fatigue in the control trial (no supplement) was 6 minutes, 40 seconds (383.7 seconds) compared to 10 minutes, 50 seconds (631.3 seconds) in the test trial (with supplement).



## CONCLUSIONS

As hypothesized, results showed that row time-to-fatigue did increase in the test trial. This relates to previous research where exercise time-to-fatigue was shown to improve with pre-exercise nutritional supplementation<sup>1,2</sup>. Possible errors in data could have occurred due to variation among the subjects' age, diet, sleep, lifestyle, and placebo effect since this was an open study. Time-to-fatigue was determined by each subject's perceived exertion. This is a subjective measure with possible variation from day to day. The nutrition supplement was determined unpalatable by 50% of the subjects.

Based on the findings of the study and previous research, we would recommend the consumption of a balanced nutritional supplement before exercise or athletic performance.

## REFERENCES

1. Alghannam, A. F. (2011). Carbohydrate-protein ingestion improves subsequent running capacity towards the end of a football-specific intermittent exercise. *Applied Physiology, Nutrition & Metabolism*, 36(5), 748-757 10p. doi:10.1139/h11-097
2. Smith-Ryan, A. E., Woessner, M. N., Melvin, M. N., Wingfield, H. L., & Hackney, A. C. (2014). The effects of beta-alanine supplementation on physical working capacity at heart rate threshold. *Clinical Physiology & Functional Imaging*, 34(5), 397-404. doi:10.1111/cpf.12111