



The Effect of Nutrient Intake by Collegiate Wrestlers Post-Weigh-in to Optimize Performance Intensity



Jha'Quan Quan'Darius Anderson

Department of Exercise Science

GARDNER-WEBB UNIVERSITY

GARDNER-WEBB UNIVERSITY

PURPOSE STATEMENT

- The aim of this study was to determine the importance of nutrient intake by collegiate wrestlers' post-weigh-in to optimize performance intensity by determining heart rate during a match, rate of perceived exertion after the match, rate of perceived fatigue after the match, and muscle glycogen levels based off the nutrition consumed post weigh-in.
- We hypothesized that wrestlers that intake carbohydrates post weigh-in will have a less rate of perceived fatigue, fair level of rate of perceived exertion, lower heart rate, and high muscle glycogen levels than wrestlers that intake any other form of nutrients post weigh-in, overall allowing them to optimize their performance.

ABSTRACT

The present study used a quantitative experimental design with outcome measures of hydration levels, heart rate (HR) during the match, rate of perceived exertion (RPE) after the match, rate of perceived fatigue (RPF) after the match, and muscle glycogen levels. Participants were split into two groups, 10 starters from both schools to simulate a dual meet style matchup. Each group went through two testing sessions which the first session was weight measurements five days before competition to test for rapid weight loss (RWL) and the second testing session was weight measurements, urine analysis, HR, RPE, RPF, and muscle glycogen.

INTRODUCTION

- Weigh-ins for collegiate wrestlers are always an hour before competition; therefore, the athletes only have one hour to get the proper nutrition in their body. Weigh-ins in collegiate wrestling is only for the 10-weight classes allotted for the wrestlers.
- A wrestler's diet can and will tell a lot about performance intensity. Wrestlers need high anaerobic energy capacity due to the intensity of the sport; however, they lose most of this energy through RWL methods, decreasing their muscle glycogen storage.
- Ingesting proteins after exercise are beneficial for muscle protein synthesis, and ingesting fats about 3-4 hours prior to an event are beneficial for energy storage. Wrestlers need carbohydrates before their warmup to give them energy to workout, proteins after their warmup in order to rebuild the damaged muscles, and fats at the top of the morning to give them energy throughout the day

METHODS

Subject Recruitment

- Individuals were recruited from Gardner-Webb University & Appalachian State University via email, tournament advertisements, and social media advertisements.

Criteria

- 18-25 y/o male collegiate wrestler
- Must be a starter for their respective team.
- No non-starters from both schools, which were wrestlers lower in rank that typically competed in open tournaments and occasionally competed in dual meets due to the injury of the starter, failure of starter making weight, or due to the coach's decision.

Research Design

- Competition Simulation
- Two subject Groups (n=10 per group; N=20 total)
 - Gardner-Webb Wrestlers, Experimental Group
 - Appalachian State Wrestlers, Experimental Group

Outcome Measures

- Nutrition Intake (MyFitnessPal measurement)
- HR Assessment (measuring HR Peak)
- RPE Scores (Exertion levels; 0-10 Borg scale)
- RPF Scores (Fatigue levels, 0-10 Likert scale)
- Blood Samples
- Urine Sample

Data Analysis

- ANOVA & Kruskal-Wallis
- Statistical significance was set at $P < 0.05$.



1 - 10 Borg Rating of Perceived Exertion Scale

0	Rest
1	Really Easy
2	Easy
3	Moderate
4	Sort of Hard
5	Hard
6	
7	Really Hard
8	
9	Really, Really, Hard
10	Maximal, Just like my hardest race

OPERATIONAL DEFINITIONS

Rapid Weight Loss (RWL): Weight loss that induces a decrease in muscle glycogen (Kondo et al., 2021).

Minimum Weight Program (MW): Program implemented by the NCAA that requires wrestlers to be weight certified 1-2 hours before competition in hopes of discouraging RWL methods (Lingor & Olson, 2010).

Weight Cycling (WC): Weight cycling is when a wrestler typically loses 5% of their body mass 48 hours before competition (Lingor & Olson, 2010).

Muscle Glycogen (mGly): Major energy source of moderate to high intensity exercise (Kondo et al., 2021).

ACKNOWLEDGEMENTS

A special thank you to both Dr. Hartman & Sophia Smith for their contribution to this project.

REFERENCES

- Finn, K.J., Dolgener, F.A., Williams, R.B. (2004). Effects of a carbohydrate refeeding on physiological responses and psychological and physical performance following acute weight reduction in collegiate wrestlers. *Journal of Strength and Conditioning Research*, 18 (2), 328-333.
- Kondo, E., Shiose, K., Osawa, T., Motonaga, K., Kamei, A., &...Takahashi, H. (2021). Effects of an overnight high-carbohydrate meal on muscle glycogen after rapid weight loss in male collegiate wrestlers. *BMC Sports Science, Medicine and Rehabilitation*, 13 (96). <https://doi.org/10.1186/s13102-021-00325-w>
- Lingor, R.J., & Olson, A. (2010). Fluid and diet patterns associated with weight cycling and changes in body composition assessed by continuous monitoring throughout a college wrestling season. *Journal of Strength and Conditioning Research*, 24(7), 1763-1772.