

THE EFFECTS OF NUTRITION AND ENERGY AVAILABILITY INFORMATION ON THE KNOWLEDGE AND EATING ATTITUDES OF NCAA DIVISION III STUDENT ATHLETES

Michaela Babineau, NHLAT, ATC; Advisor: Dr. Julie Bernier

Introduction

Decreased energy intake with or without disordered eating is one condition of the female athlete triad, a metabolic disease that also includes menstrual abnormalities and low bone mineral density. Relative Energy Deficiency in Sport (RED-s) is a more recent phenomena that refers to impaired physiological functioning in many major organ systems of the body caused by relative energy deficiency.¹ Emphasis on nutritional education and information on the diseases available to athletes could prevent further physiological impairments. Athlete knowledge on nutrition and physiological impairments due to decreased energy intake is questionable, and eating disorder behaviors can be prevalent in a variety of athletic settings as well as the general population. There is less research within the athletic population concerning disordered eating behavior prevalence and treatments using traditional strategies are typically unsuccessful. The research within the athletic population largely studies elite or NCAA Division I athletes. The purpose of this study is to investigate if education on nutrition specific to NCAA Division III athletes, as well as information about the female athlete triad and RED-s, will decrease incidents of disordered eating behaviors and increase proper energy intake for this athletic population.

Methods

All 538 student-athletes at Plymouth State University who participate on an NCAA Division III sponsored team were invited to participate in the study via email. Participation was voluntary; informed consent was given by willing subjects at the start of the study. The initial baseline survey contained a questionnaire derived in part by the Eating Disorder Exam Questionnaire (EDE-Q) and the Eating Attitudes Test (EAT). Participants were then tasked to review relevant nutrition and disordered eating presentations. Lastly, participants were asked to complete a conclusion survey. The conclusion survey also featured questions from the EDE-Q and the EAT, as well as questions that allowed participants to share their perceived changes since concluding the study.

TESTING TOOLS

- Eating Disorder Exam Questionnaire: A 28-item measure of eating disorder psychopathology ranked on a 6-point Likert scale. Questions assess the frequency or severity of core eating disorder symptoms and related behaviors over the previous 28 days. Scores of 2.3 or more are indicative of eating disorder pathology.
- The Eating Attitudes Test: A screening tool for eating disorder characteristics and behaviors. A score of 20 or more of a “yes” answer to one supplemental question indicates an at risk individual for eating disorder behaviors.

Results

Eleven (11) participants completed the initial survey and were then given the nutrition and eating behaviors presentation and link to conclusion survey. Of these participants, two (2) completed the conclusion survey. The two subjects who completed the survey both participated in cross country, indoor track and field, and outdoor track and field. One participant was a 21-year-old male who competed at the NCAA Division III athletics level for two years and was academically a senior. The other participant was a 19-year-old female who had two years of athletics experience and academically a sophomore. The female subject reported that she is taking oral contraceptive birth control pills and had no history of menstrual dysfunction or disordered eating behavior. Due to the lack of complete responses, there was no data analysis for this study and results were compared to previous research related to the topic.

Prior to this study, both subjects were unaware of both the female athlete triad and relative energy deficiency in sport. The subjects also reported being unaware of nutrition foundations such as basal metabolic rate, macronutrients, and micronutrients. Conclusion survey results reported that both subjects were comfortable with the female athlete triad, RED-s, and basic nutrition for the athletic population. Figure 1 charts the subjects and their respective EDE-Q and EAT scores at the beginning and conclusion of the study.

FIGURE 1

Gender	Age	Menstrual Hx	Eating Disorder Hx	Initial EDE-Q Score	Initial EAT Score	Final EDE-Q Score	Final EAT Score
M	21	N/A	None	2.4 (+)	14 (-)	2.0 (-)	5 (-)
F	19	Normal	None	2.1 (-)	6 (-)	1.4 (-)	5 (-)

Discussion

This study indicated that appropriate nutrition and disordered eating behavior information can decrease NCAA Division III student-athletes' negative eating attitudes. This study is in agreement with previous research from Becker et al.², where in-person discussion among female NCAA Division III student-athletes showed an increase in positive eating attitudes, subjects self-reporting signs of the female athlete triad and RED-s, and increased subject satisfaction with body image.

Some contributing risk factors for low energy intake such as timing of competitive season³ were not present within this specific athletic population. Other factors, such as athlete identity⁴, were present in the current study. Further research is needed to determine if these factors do or do not contribute to low energy intake in this athletic population.

Lastly, comparing this athletic population to the research that has been conducted with elite athletes, many of the signs and symptoms are the same. However, contributing factors and attitudes can vary based on not only skill level of previous research subjects, but genders as well. Further research is needed to determine the effects of low energy intake in male athletes at this competitive level.

Conclusion

Proper education of nutrition, disordered eating behaviors, consequences of decreased energy intake, and screening of student-athletes for disordered eating behaviors could potentially decrease the likelihood of disordered eating behaviors and the subsequent injuries and performance declines associated with decreased energy intake.

- **Limitations:** This study was limited in several factors, primarily its very small sample size. Distribution of the surveys and information was also limited due to busy sports schedules; because of this, contents were distributed online and a large number of participants did not complete the conclusion survey after completing the initial survey and receiving the information presentations. Lastly, both the EDE-Q and EAT tools are used to survey for signs of disordered eating, not diagnose these behaviors. Also, these tools are not specific to the athletic population.
- **For Future Research:** Proposing a similar study with more student-athlete interest by including the research as a part of NCAA Compliance Training could allow for a larger subject base. The use of screening tools specific to student-athletes as opposed to the general population could also benefit future findings in this field.

References

1. Mountjoy M, Sundgot-Borgen J, Burke L, et al. The IOC consensus statement: beyond the female athlete triad -- relative energy deficiency in sport (RED-s). *British Journal of Sports Medicine*. 2014; 48(7):491-497.
2. Becker, CB, McDaniel, L, Bull, S, et al. Can we reduce eating disorder risk factors in female college athletes? A randomized exploratory investigation of two peer-led interventions. *Body Image*. 2012; 9(1):31-42.
3. Sygo, J, Coates, AM, Sesbreno, E, Mountjoy, ML, & Burr, JF. Prevalence of indicators of low energy availability in elite female sprinters. *International Journal of Sport Nutrition and Exercise Metabolism*. 2018;28:490-496.
4. Gapin, JI & Petruzzello, SJ. Athlete identity and disordered eating in obligatory and non-obligatory runners. *Journal of Sports Sciences*. 2011;29(10):1001-1010.