

Lipscomb University

## Carolyn Wilson Digital Collections

---

Undergraduate and Master's Projects

Department of Nutrition

---

Spring 4-26-2023

### Knowledge, Beliefs, and Practicies of NCAA Coaches and Sports Dietitians on Low Energy Availability

Laurel Card

*Lipscomb University*, laurelelizabethcard@gmail.com

Amy Banaszek

*Lipscomb University*, amybanaszek@gmail.com

Follow this and additional works at: [https://digitalcollections.lipscomb.edu/nut\\_ump](https://digitalcollections.lipscomb.edu/nut_ump)



Part of the [Dietetics and Clinical Nutrition Commons](#)

---

#### Recommended Citation

Card, Laurel and Banaszek, Amy, "Knowledge, Beliefs, and Practicies of NCAA Coaches and Sports Dietitians on Low Energy Availability" (2023). *Undergraduate and Master's Projects*. 1. [https://digitalcollections.lipscomb.edu/nut\\_ump/1](https://digitalcollections.lipscomb.edu/nut_ump/1)

This Masters is brought to you for free and open access by the Department of Nutrition at Carolyn Wilson Digital Collections. It has been accepted for inclusion in Undergraduate and Master's Projects by an authorized administrator of Carolyn Wilson Digital Collections.



## Introduction

Low energy availability in athletes, or Relative Energy Deficiency in Sport (RED-S), is chronic under-fueling while consistently overtraining. RED-S is not an eating disorder, but can impact training performance and reproductive health, compromise bone health, impact cognitive health and mental illness, and decrease cardiac health. Body weight alone is not an indication of RED-S, and both men and women are susceptible.

A literature review on RED-S indicates:

- NCAA coaches are lacking knowledge on the detrimental effect RED-S can have on their athletes.<sup>1-4</sup>
- The relationship between energy intake and various physiological responses has been explored, but to date no comprehensive screening tool exists, and education is needed among coaches and athletes alike.<sup>1</sup>
- In 2014, the female athlete triad was expanded to RED-S but a full understanding of RED-S in particular, the differences between it and the triad, along with education on RED-S are lacking.<sup>2</sup>
- Coaches may place more importance on body weight than the holistic well-being of the athlete. There is an assumption that if body composition meets sport-specific requirements and performance is unchanged, RED-S does not exist for that athlete.<sup>3,4</sup>
- Some screening tools for low energy availability exist, including the Low Energy Availability among Female Athletes Questionnaire (LEAF-Q) and RED-S Clinical Assessment Tool (RED-S CAT) questionnaires, but more evidence is needed to evaluate their efficacy.<sup>4</sup>

**Objectives of this study** were: (1) survey coaches on their current RED-S knowledge, inquire on their institutional protocols regarding identifying RED-S, determine how they believe it can affect athletes, and explore their referral protocol for treatment; (2) survey sports registered dietitians on protocols they have used and what they would prefer coaches start and/or stop doing in regards to RED-S.

## Methods

**Participants:** Study participants included ASUN coaches and sports Registered Dietitians (RDs). ASUN is a Division I member of the National Collegiate Athletic Association (NCAA) conference.

**Procedures:** An email database of ASUN coaching staff was generated by the researchers via publicly available website information. Coaches were recruited via individual emails and received a 15-question survey. Sports RDs were recruited via the Collegiate and Professional Sports Dietitians Associations' (CPSDA) listserv and sent a 10-question survey. The surveys were open for 8 weeks and took approximately 15 minutes to complete.

**Data Analysis:** Data was downloaded from the electronic survey (via Google Forms) into Excel (Microsoft Corporation) for statistical analysis. Descriptive statistics were generated. Initial qualitative review of the free response text by the researchers occurred and themes were independently generated based on participants responses. Once saturation occurred, themes analysis stopped.

**IRB Approval:** The research study was approved by the Lipscomb University IRB.

## Results

Ten Registered Dietitians (RDs) (3.79%, N = 264) and 9 coaches (3.6%, N = 246) responded to the survey. None of the collegiate institutions surveyed had either formal RED-S training nor referral program. Coaches and RDs were both asked to define RED-S in their own words. RDs most frequently used the words "energy," "health," "performance," "chronic," "demands," and "physical" (Figure 1), while coaches used the words "energy," "performance," "low," "high," "poor," "level," "nutrition," and "negatively" most frequently (Figure 2).

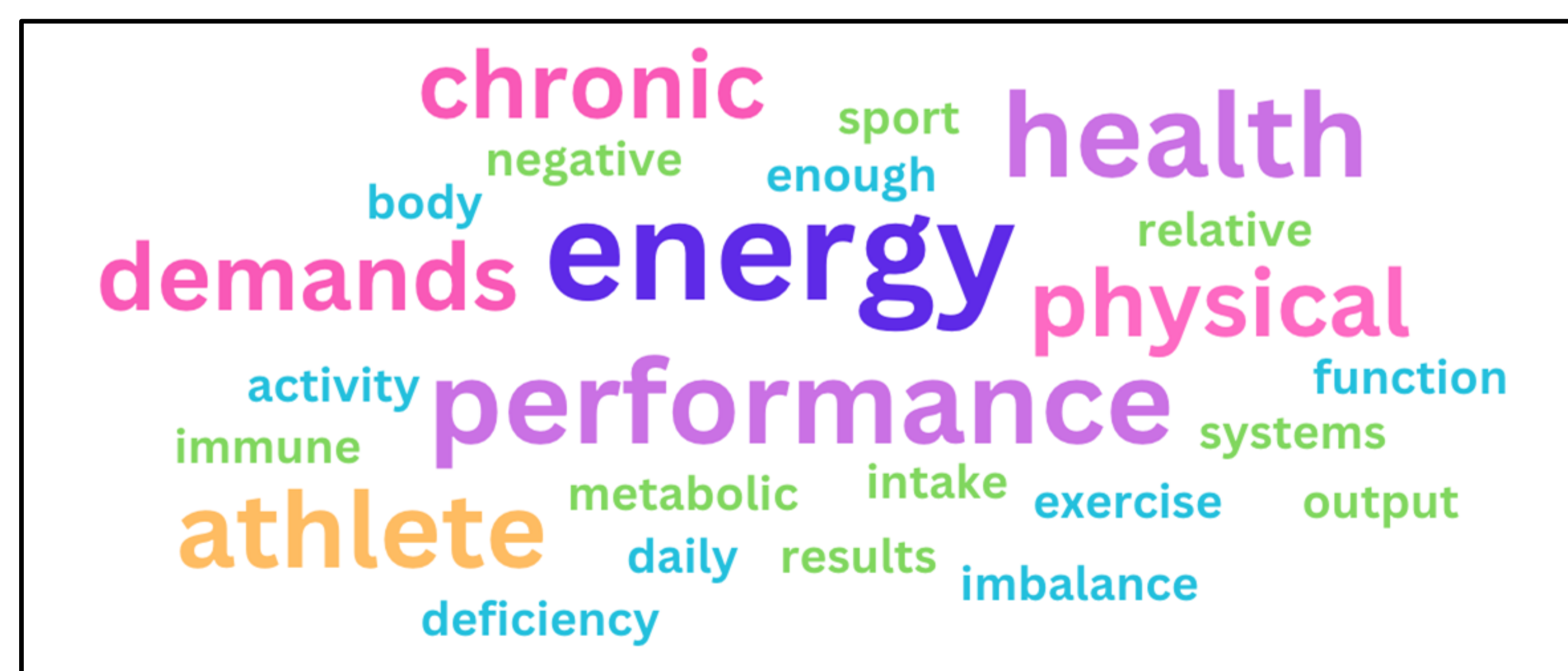


Figure 1. Registered Dietitians' (RDs) most frequently occurring words used in defining RED-S.

Responses from open-ended questions revealed several themes about RED-S. Of the RDs, 40% believe coaches falsely assume bodyweight alone indicates RED-S, 90% believe coaches place too much emphasis on body weight/size, 40% want coaches to emphasize nutrition education, 30% believe coaches assume males are not at risk, and 30% believe coaches wait to address a problem only after an injury occurs. Of the coaches, 66.67% defined RED-S as chronic under fueling which can lead to performance decreases and 33.3% were unsure of the definition, 77.8% had never received RED-S training and 22.2% were unsure, and 66.7% believe identifying RED-S symptoms is important. Coaches were asked which aspects of RED-S they thought were important, and RDs were asked which aspects they wished coaches knew (Figure 3).

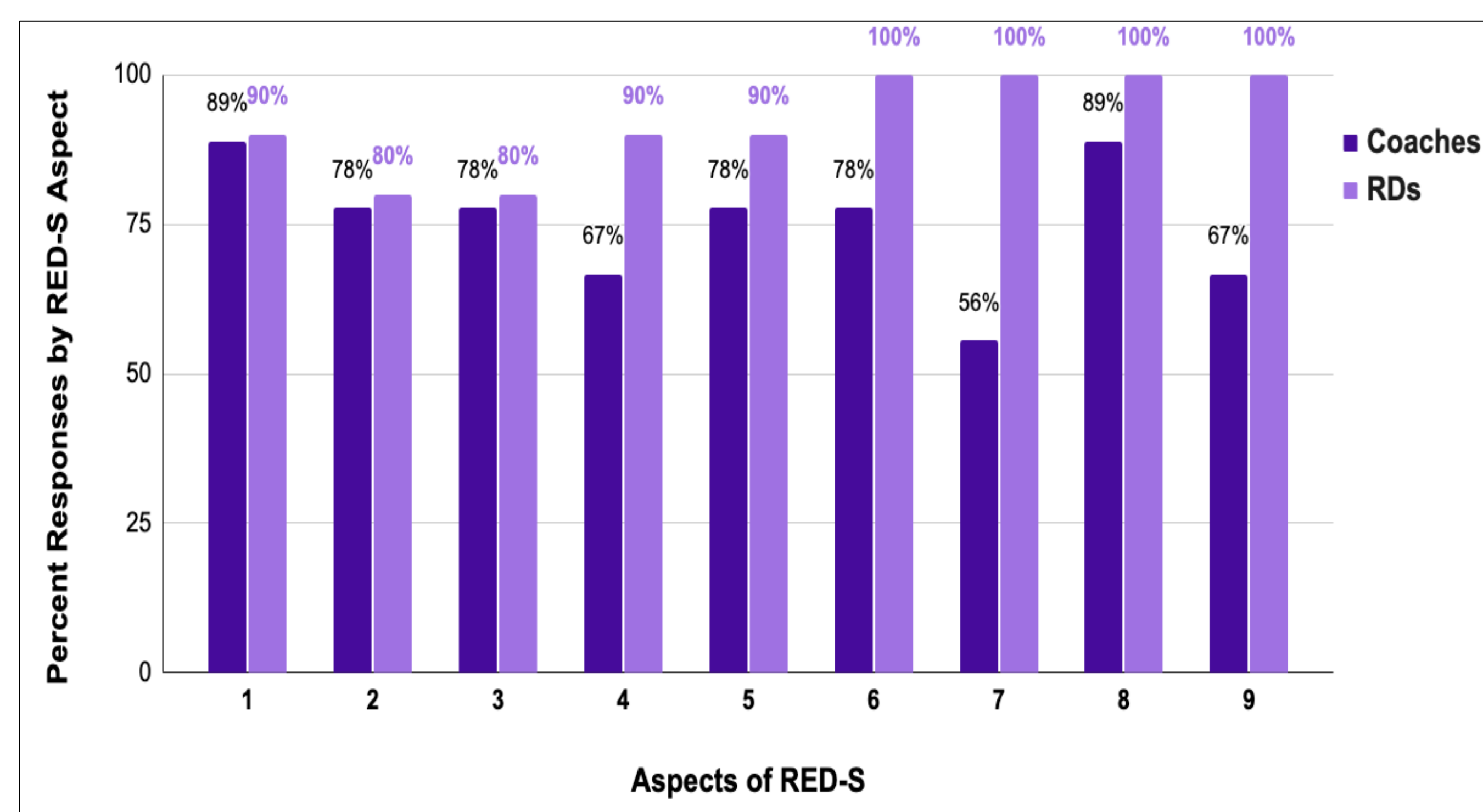


Figure 3. Responses of what coaches believe is associated with RED-S vs what Registered Dietitians wished coaches knew. Surveyed aspects were: 1=decreased athletic performance; 2=impaired reproductive health; 3=decreased bone health; 4=impact cognitive health and mental illness; 5=decreased cardiac health; 6=bodyweight alone is not an indicator of RED-S; 7=men are just as susceptible as women; 8=nutrition and training load need to be evaluated, 9=not necessarily an eating disorder.

## Results

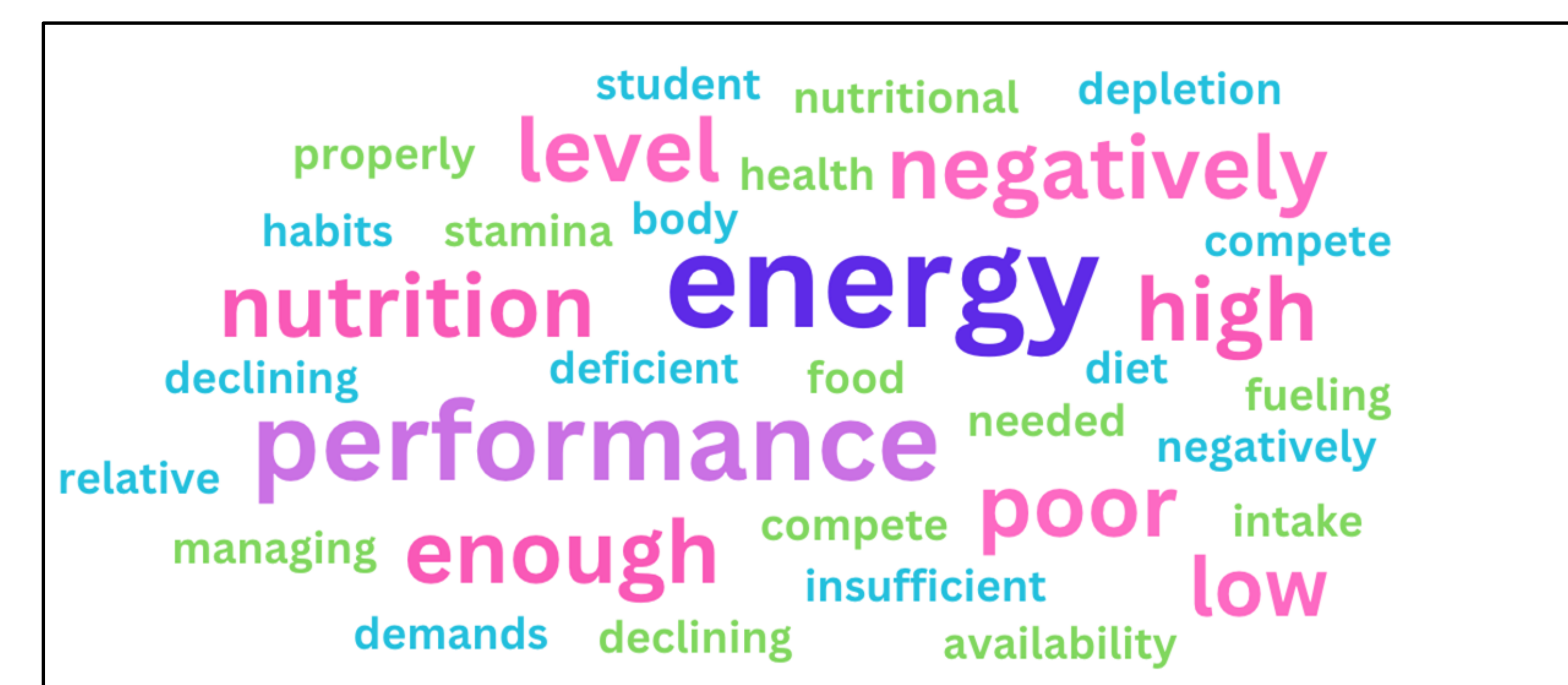


Figure 2. Coaches' most frequently occurring words used in defining RED-S.

## Discussion and Conclusions

**Results of the research study suggest that:**

- There is a significant lack of knowledge regarding RED-S in athletes. Notably, coaches often incorrectly assume that male athletes cannot exhibit RED-S and incorrectly believe that RED-S is only possible in the setting of an eating disorder.
- Universities do not have formal low-energy referral systems and are at a disadvantage for recognizing and treating it.
- RDs associate RED-S more frequently with aspects of health, while coaches associated RED-S more frequently with aspects of performance; however, both coaches and RDs associate performance and energy with RED-S.
- Coaches often assume RED-S is only correlated with body size.
- Coaches may falsely believe that overweight athletes or those with body sizes considered appropriate for their sport cannot have RED-S.
- RDs are concerned that coaches often fail to intervene before an athlete becomes injured.

**Limitations** of this study were its small sample size (N=19) and the coaches sampled were only from ASUN schools.

**Future research** should assess differences in knowledge among all registered dietitians and stratify coaches' knowledge based on sport. Further screening protocols could be explored and adequate programs for referral and treatment should be implemented. Educational materials and training could be developed to quickly inform coaches and staff regarding RED-S. The mutual understanding of a correlation between performance and energy can be expanded on in training programs with the face that performance does not necessarily reflect energy intake as is often assumed.

## References and Funding

1. Logue DM, Madigan SM, Melin A, Delahunt E, Heinen M, Donnell SM, Corish CA. Low Energy Availability in Athletes 2020: An updated narrative review of prevalence, risk, within-day energy balance, knowledge, and impact on sports performance. *Nutrients*. 2020 Mar 20;12(3):835. doi: 10.3390/nu12030835.
2. Kroshus E, DeFreese JD, Kerr ZY. Collegiate athletic trainers' knowledge of the female athlete triad and relative energy deficiency in sport. *J Athl Train*. 2018 Jan;53(1):51-59. doi: 10.4085/1062-6050-52.11.29.
3. Plateau CR, McDermott DJ, Arcelus J, Meyer C. Identifying and preventing disordered eating among athletes: Perceptions of track and field coaches. *Psychology of Sport and Exercise*. 2014 Nov;15(6):721-728. <https://doi.org/10.1016/j.psychsport.2013.11.004>.
4. Mountjoy M, Sundgot-Borgen JK, Burke LM, et al. IOC consensus statement on relative energy deficiency in sport (RED-S): 2018 update. *British Journal of Sports Medicine* 2018;52:687-697. doi: 10.1136/bjsports-2018-099193

Funding disclosures: None.