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The Prevalence of RED-S Among College Athletes

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The Prevalence of RED-S Among College Athletes

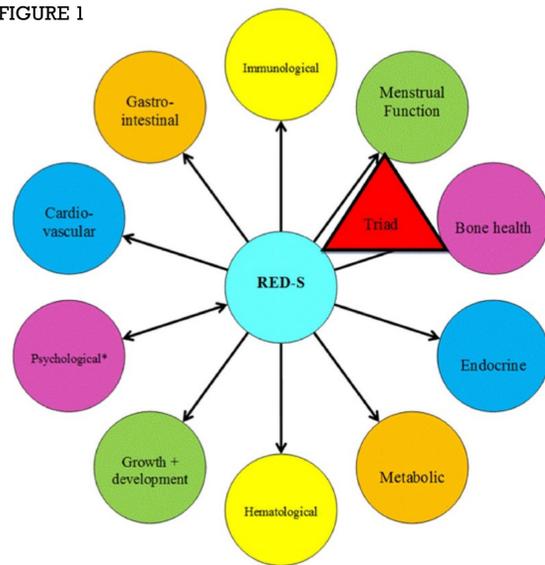
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Introduction

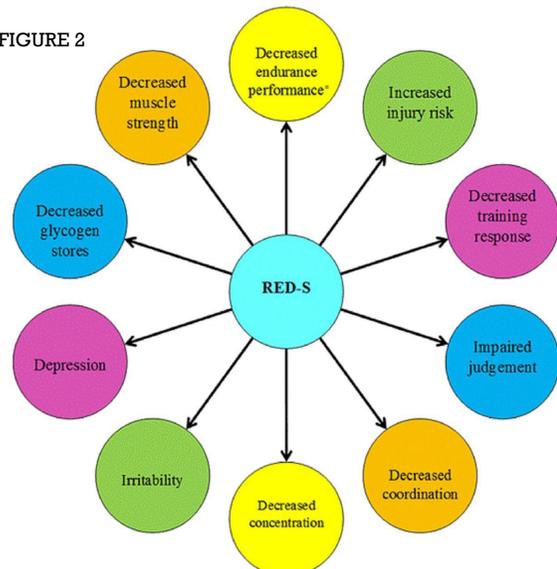
Collegiate student-athletes will have to handle multiple stressors that can significantly impact their health and performance. Student-athletes often deal with social, physical, mental, and spiritual stresses. While athletes focus on the training aspect of growth and development, recovery and nutrition are undervalued. Therefore, a poor recovery period and nutritional intake can lead to a condition known as Low-energy availability. In 2014, the International Olympic Committee established a condition known as Relative Energy Deficiency in Sports (RED-S).¹ Relative Energy Deficiency in Sports is an expansion on a previous condition known as Female Athlete Triad to include male athletes.

FIGURE 1



Relative Energy Deficiency can lead to severe physiological impact which is shown in Figure 1.² Performance impact is shown in Figure 2.²

FIGURE 2



Purpose

Relative Energy Deficiency in Sports are often studied in physique and endurance student-athletes. Therefore, the purpose of this study was exploring the prevalence of RED-S among a different sport sector, namely football and soccer collegiate athletes.

Methods

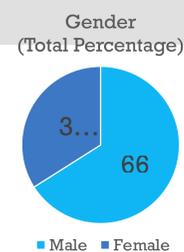
A survey was created through Qualtrics. The survey was distributed randomly to 120 collegiate athletic trainers/sports medicine directors across different institutions (NCAA DI, DII, DIII, NJCAA, NAIA members) in the United States. The athletic trainers and sports medicine directors was asked to share and forward the survey's links to their student-athletes. The survey consisted of a background and demographic screening, activity level attitude and behavior, nutritional attitude and behaviors, injuries history, and menstrual function history for genetic female athletes.

Inclusion Criteria: Male and Female collegiate student-athlete participating in a varsity athletic programs. Completed Survey Response.

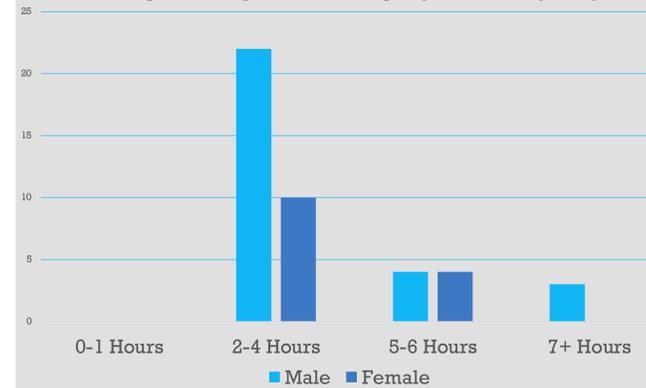
Exclusion criteria: Club and Intramural college athletes. Incomplete Survey

Results

There were a total of 50 responses to the survey. Among the 50 responses, 7 were excluded from the analysis due to incompleteness. The analysis of the results was based upon 43 responses (33 Male and 17 Female). All the participants in this study were male junior college football players and female junior college soccer players. An analysis of the responses were performed. 30% of the student-athletes in this study reported of being concerned about weight gain or being overweight either most of the time or always. 9% of the respondents reported of experiencing a stress fracture, however only one of the respondent reported of a stress fracture in the past 6 months. The same respondent who reported of the stress fracture in the past 6 months also reported of "always" purposefully throwing up after eating, along with indication of having body image issues, and "always" feeling pressured from others to lose weight. 51% of the respondents also admitted to worrying about gaining fat on their body either "most of the time" or "always." Ultimately, 47% of the athletes reported of "yes" they feel like their performance level has changed. Among the 47% only two individuals mentioned a negative change, and one student-athletes suggested that the changed in their performance is due to injury. Table 1 and 2 listed cases where participants responses are not in line with the typical responses. Subject #2 also reported consuming a special diet that mostly vegan, paleo, or vegetarian.



Average Hours Spent Performing Physical Activity Daily



History of Stress Fracture

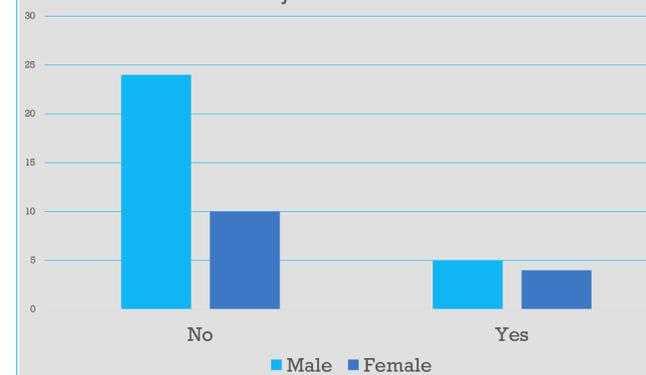


Table 1 and Table 2: Displayed the response for 6 participants which Signed of potential Disordered Eating

Table #1:						
Subject	Gender	Sports	Changes in Bodyweight	Worry about gaining weight or being overweight? (23)	Worried about what you are eating? (24)	Stress Fr? (26)
#1	F	Soccer	(-35)	Sometimes	About Half of Time	No
#2	F	Soccer	(+10)	Most of the time	About half	No
#3	F	Soccer	(+20)	Most of the time	Sometimes	Yes (<6m)
#4	M	Football	(-50)	Always	Most of time	Yes (n/a)
#5	M	Football	(-25)	Sometimes	About Half of Time	No
#6	M	Football	(-20)	Sometimes	Never	No

I-Intentional U-Unintentional

Table #2:						
Subject	Have you purposely thrown up after eating? (27)	How often do you feel guilty about eating? (31)	How often do you wish you were thinner? (33)	Emotional Check (34)	Are you worry about gaining fat on your body? (36)	How often do you feel pressured to lose weight (37)
#1	Never	Sometimes	Sometimes	1,2,3,4,5,6	Probably Not	Never
#2	Never	Sometimes	About Half the Time	1,2,3,4,5,6	Definitely Not	Never
#3	Always	Never	Most of the time	2,3,5	Definitely Yes	Always
#4	Never	Always	Always	1,2,3,4,5,6	Probably Yes	Sometimes
#5	Never	Never	Sometimes	3	Probably not	Never
#6	Never	Never	Never	2,3,4,5,6	Definitely Yes	Never

1-Sad all the time 2-Easily Annoyed 3-Hard to focus 4-Hard to make a decision 5-Stressed 6-Nervous

Conclusions

Low-Energy availability is defined as a condition where caloric expenditure exceeds total caloric intake for an extended period. Over-exercising or inadequate food consumption are two conditions that can lead to low-energy availability.³ The prevalence of RED-S in collegiate athletes could not definitively be defined in this study. Among the responses, football and soccer student-athletes demonstrated signs of unhealthy dietary habits along with high volume of physical activity. Healthcare providers need to address the importance of nutritional education with student-athletes. Referral for mental health disordered should be warranted with any signs or symptoms of Disorder Eating. To further assess for RED-S other screening and evaluation should be considered. Student-athletes should have a more intensive assessment to assess daily caloric balance, bone mineral density, in addition to the Disorder Eating and activity screening. Junior College athletic programs often time are underfunded and doesn't have as many resources (sport psychologists, nutritionist, scholarship money) as larger institutions so these other factors can add to the stressors of being a collegiate-athlete. An individual at risk of RED-S can lead to physiological and performance impacts. It is crucial to educate student-athletes, coaches, parents, and other healthcare providers who are involved in the athlete's care team. Therefore, the athlete should refer to the appropriate healthcare professional for proper diagnosis and management plan.

Signs of RED-S

Weight Loss

Restrictive Eating

Recurrent Injuries and Illnesses

Mood Changes

Decrease in Performance

Excessive Exercise

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