

Thank you for your thoughtful review. Our responses are in **bold**.

Reviewer 1

Thank you for giving me the opportunity to review this intriguing work. The topic addressed, which explores the link between reduced energy availability and anxiety in female collegiate athletes, is of great relevance to both sports research and the mental health of athletes. The care with which the study was conducted is evident from the rigorous methodology and presentation of the results. The work is distinguished by the clarity of the exposition and the scientific relevance of the subject matter. In particular, the focus on the association between anxiety and disordered eating behaviour in female athletes adds an important piece to the understanding of the Female Athlete Triad and RED-S. The use of validated instruments such as the GAD-7, the LEAF-Q and the DESA-6 for data collection is also appreciable, reinforcing their scientific validity.

Suggested modifications:

Lines 3-7 (author information and correspondence): Add any contacts or information to facilitate direct access to the data, if possible. In addition, specify if there are any further contributions, such as a figure managing the data.

We appreciate your diligence for future readers to have access to our data. The corresponding authors email and phone number will be posted. They will be the contact for access to the data.

Line 8 (abstract): The sentence 'The purpose of this study was to explore the association...' could be revised for clarity. Suggest: 'This study investigated the association between the risk of low energy availability, eating disorders and anxiety in female college athletes.'

Thank you for the clarity suggestion. We changed the sentence to state: "This study investigated the association between the risk of low energy availability, disordered eating, and anxiety in collegiate female athletes."

Line 13 (age of female athletes): The age of female athletes is expressed with a standard deviation ('19.9±0.1'). It might be more appropriate to round to a figure more understandable to the average reader, e.g. '19.9±1 years'. **We appreciated the reviewer's interest in clarity, however, the standard error of the mean needs to be presented with the same number of significant figures at the mean. If we rounded the number it would round to zero, which we feel would be even more confusing for readers.**

Lines 26-42 (Introduction): Good introduction, but I recommend further development of the part about the clinical implications for early intervention. Include a paragraph emphasising how these findings can influence the prevention and clinical management of athletes to improve their physical and mental health.

Thank you for the suggestion. We added the following to the introduction “Understanding the relationship between aspects of the Female Athlete Triad/RED-S and aspects of mental health, like anxiety, can help inform the prevention of these issues and the clinical management of athletes.”

Additionally, some specific intervention suggestions were added to the discussion:

“ . . . For example, athletes who are identified as at risk for anxiety should be referred to a mental health professional for psychotherapy and other potential treatments (e.g. medications in more severe cases). Athletes who are identified as at risk for low energy availability or the Female Athlete Triad should be referred to a sports medicine physician and/or a sports nutritionist who has experience working with female athletes. It may be necessary to increase daily energy intake (modestly 300-350 kcal/day) to reverse amenorrhea or oligomenorrhea that is often observed in female athletes with low energy availability [37]. Effective education, screening, and referral for athletes with at least one positive component of the Triad is an ongoing necessity in order to minimize future complications, including negative mental health and wellbeing outcomes.”

Lines 61-68 (Participants): Although ethics committee approval is indicated, it might be useful to mention any exclusion criteria adopted to select participants. This would improve the transparency of the selection process.

As long as the athletes were 18 years old and participated in college level athletics then they were eligible for the study. There were no exclusion criteria (other than not being at least 18 years old or not being a college level athlete).

Lines 91-92 (DESA-6 validation): The sentence ‘The DESA-6 is shown to be reliable and valid...’ should be revised for a more formal wording: ‘The DESA-6 has been validated as a reliable and valid instrument for measuring the risk of eating disorders in athletes.’

Thank you for the suggestion. The sentence was changed to “The DESA-6 has been demonstrated to be a reliable and valid instrument for measuring the risk of disordered eating in adolescent athletes [20] and has been used to measure disordered eating risk in university athletes [25].”

Lines 132-144 (Data analysis): It would be useful to specify whether robustness tests were performed to verify the stability of the results in case of small variations in the collected data. This would add credibility to the robustness of the results.

We did not perform robustness tests, rather we performed normality tests (Mishra et al., 2019), since some of the variables (EDE-QS and DESA-6) were not normally distributed, non-parametric tests were used.

Mishra, P., Pandey, C. M., Singh, U., Gupta, A., Sahu, C., & Keshri, A. (2019). Descriptive statistics and normality tests for statistical data. *Annals of cardiac anaesthesia*, 22(1), 67–72. https://doi.org/10.4103/aca.ACA_157_18

Lines 173-176 (Table 2, differences in psychometric scores): In the description of the results, a more detailed analysis of the clinical implications of the scores would be appreciated. I suggest elaborating briefly on the significance of these differences for the affected female athletes.

Thank you for the suggestion. In conjunction with your next comments some of the results were rewritten and two figures were added to the paper. We now elaborate briefly when reporting the eating disorder result: “. . . i.e. the athletes with moderate/severe anxiety also demonstrated higher risk for disordered eating and eating disorders (Figure 1)”

The section reporting risk of the female athlete triad was also rewritten and elaborated: “Participants in the Moderate/Severe Anxiety Group had higher LEAF-Q total scores compared to participants in the No/Mild Anxiety Group indicating a greater risk for the female athlete triad (Figure 2). Table 2 breaks down the components of the LEAF-Q scores into gastrointestinal scores, injury scores, and menstrual scores. LEAF-Q gastrointestinal scores and LEAF-Q injury scores were higher in the Moderate/Severe Anxiety Group compared to the participants in the No/Mild Anxiety Group (Table 2). However, there was no difference in LEAF-Q menstrual scores between the No/Mild Anxiety Group and the Moderate/Severe Anxiety Group (Table 2).”

Lines 196-201 (Table 3): Consider including a visual interpretation of the data, such as a bar graph or scatter plot, to facilitate understanding of the correlations that emerged between the different parameters.

Thank you for the suggestion. We have now included two new Figures to facilitate the understanding of the relationships in the manuscript.

Limitations and Parts to be Eliminated:

Lines 289-311 (Discussion of limitations): The authors did not elaborate on the potential bias due to the self-selection of participants or the fact that the study was only conducted in women. I would suggest more emphasis on how the specific nature of the sample (only female college athletes) may influence the generalisability of the results. Furthermore, eliminating any repetitions in the limitations already discussed in the previous paragraphs might make the reading more fluent.

Thank you for the suggestion. These points were added to the discussion: “It is important to note that our study had several limitations. Participants were only 115 female collegiate athletes who self-selected to participate in our survey. This limits the generalizability of our study to all female athletes or to the male athlete population. This study only represents one time point, i.e., the athletes were not monitored over time. In future studies, it would be important to replicate the study with a larger sample size including males and different sporting levels and following the athletes for longer time periods to attempt to capture the development of physical and psychological pathologies over time.”

Lines 305-308: Delete or rephrase the sentence 'it is currently unknown whether low energy availability causes anxiety...' to avoid redundancy, as such uncertainty was already discussed above.

Thank you. These lines were deleted.

Limitations of the study (not discussed by the authors):

Causality: As highlighted, the study is cross-sectional in nature, therefore it is not possible to establish the causal direction between low energy availability and anxiety.

We agree, for clarity, we added to the limitations section "The current study is cross-sectional in nature; therefore, it is not possible to establish the causal direction between low energy availability and anxiety"

Sample size: The sample of only 115 participants limits the possibility of generalising the results to all female university athletes or, more generally, to all female athletes.

Thank for pointing this out. We now clarified . . . "were only 115 female collegiate athlete participants who self-selected to participate in our survey. This limits the generalizability of our study to all female athletes or to the male athlete population."

Lack of follow-up: It is unclear whether female athletes were monitored over time. A longitudinal study would have offered more information on the development of the psychological and physical condition of the participants.

This is a good idea for future research. This limitation was added to the discussion: "This study only represents one time point, i.e., the athletes were not monitored over time. In future studies, it would be important to replicate the study with a larger sample size including males and different sporting levels and following the athletes for longer time periods to attempt to capture the development of physical and psychological pathologies over time."