

## **Previous concussions increase the risk of mental health disability in college athletes**

Karlee Burns, Karly Kerod, Jane McDevitt

Corresponding author

Karlee Burns

*Department of Kinesiology, Temple University, Philadelphia, PA 2Department of Health and Rehabilitation Sciences, Temple University, Philadelphia, PA*

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Handling editor:

Michal Heger

*Department of Pharmaceutics, Utrecht University, the Netherlands*

*Department of Pharmaceutics, Jiaxing University Medical College, Zhejiang, China*

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Journal of Clinical and Translational Research

Dear Ms Burns,

Reviewers have now commented on your paper. You will see that they are advising that you revise your manuscript. If you are prepared to undertake the work required, I would be pleased to reconsider my decision.

For your guidance, reviewers' comments are appended below.

If you decide to revise the work, please submit a list of changes or a rebuttal against each point which is being raised when you submit the revised manuscript. Also, please ensure that the track changes function is switched on when implementing the revisions. This enables the reviewers to rapidly verify all changes made.

Your revision is due by Apr 14, 2022.

To submit a revision, go to <https://www.editorialmanager.com/jctres/> and log in as an Author. You will see a menu item call Submission Needing Revision. You will find your submission record there.

Yours sincerely

Michal Heger  
Editor-in-Chief  
Journal of Clinical and Translational Research

Reviewers' comments:

Reviewer #1: Title: Previous concussions increase risk of mental health disability in college athletes

General Comment: This observational study explores an important topic and provides novel findings that meaningfully contribute to the existing literature base on concussions and mental health during youth and young adulthood. I have very minor comments. The only major concern relates the lack of information provided in the methodology section. There are outstanding questions related to sample size, missingness, measurement, and analytic approach. Those must be addressed for this study to demonstrate scientific rigor and validity. Once addressed, the rest of the concerns are minor.

Introduction: Overall, this section is well-written and does a nice job of providing background on the research topic. The only suggestion for this section is to state the aims and hypotheses of the study more directly. In doing so, provide more insights into the analytic approach that will be described below. By this, I mean add some discussion of how the sample is categorized based on mental health. As currently written, the final paragraph of the introduction provides almost no context for the methods that are to follow.

Methods: This section is off to a nice start missing some key information. A list is provided below.

1. For the study sample, please provide the sample size, the number of cases lost to missing data, and how cases with missing data were handled for the final regression models.
2. For the measures, please provide insights into how the covariates were coded. For example, was age continuous? By year or months or days? This needs to be exceptionally clear so that a reader could replicate your design.
3. Can the authors explain why they used a backwards logistic regression rather than conceptualizing a model with selected covariates, in the analysis section? Adding justification for the methodological approach is good epidemiological practice.

Results:

1. Report if, how, and to what extent the missing cases differed from complete cases. Explain the analytic technique used to gain this information. This should be in the methods, not the results.
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Authors' response

Dr. Heger,

Thank you for the opportunity to revise and resubmit our manuscript "Previous concussions increase risk of mental health disability in college athletes." We appreciate the time and thoughtful comments by you and the reviewer. We have incorporated the changes that have been suggested.

Here is a point-by-point response to the reviewers' comments and concerns.

**Introduction:**

Comment: Overall, this section is well-written and does a nice job of providing background on the research topic. The only suggestion for this section is to state the aims and hypotheses of the study more directly. In doing so, provide more insights into the analytic approach that will be described below. By this, I mean add some discussion of how the sample is categorized based on mental health. As currently written, the final paragraph of the introduction provides almost no context for the methods that are to follow.

Response:

The final paragraph was expanded upon to include more depth for the reader including categorization of mental health and the baseline scoring for the methodology in the paper.

### Results:

1. For the study sample, please provide the sample size, the number of cases lost to missing data, and how cases with missing data were handled for the final regression models. Report if, how, and to what extent the missing cases differed from complete cases. Explain the analytic technique used to gain this information. This should be in the methods, not the results.

Response: Moved the sample size and missing cases from results to methods, provided further clarification on how missing cases were handled.

“After providing informed consent approved by the institutional review board, student-athletes were included in the study if they were between the ages of 18 and 35 years old, were participating on a club sport team, and completed a health history questionnaire and relevant PROMs (n=404). Student-athletes were excluded and removed from analysis (i.e., listwise deletion) if they did not provide complete health history information or fully completed the PROMs (n=71). Of the 333 student-athletes included in the study, 283 student-athletes did not self-report a mental health disability and 50 (15%) did self-report.”

2. For the measures, please provide insights into how the covariates were coded. For example, was age continuous? By year or months or days? This needs to be exceptionally clear so that a reader could replicate your design.

Response: This was reworded to be clearer for the reader.

“Demographic data were calculated for all variables of interest to describe the student-athletes. Continuous variables (i.e., age [years], number of previous concussions, PROM scores) are presented as means and standard deviations. Sex, a categorical variable, is presented as percentages of the total population.”

3. Can the authors explain why they used a backwards logistic regression rather than conceptualizing a model with selected covariates, in the analysis section? Adding justification for the methodological approach is good epidemiological practice.

Response: The authors have added additional insight into the conceptual framework of the regression and the choices for removing some of the predictors after running the model.

“The predictors were statistically significant ( $p < 0.05$ ) and leaving the additional PROM scores in the model caused issues with collinearity and did not increase the variance explained by the model.”

23-Mar-2022

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Dear authors,

I am pleased to inform you that your manuscript has been accepted for publication in the Journal of Clinical and Translational Research.

You will receive the proofs of your article shortly, which we kindly ask you to thoroughly review for any errors.

Thank you for submitting your work to JCTR.

Kindest regards,

Michal Heger  
Editor-in-Chief  
Journal of Clinical and Translational Research

Comments from the editors and reviewers: