Author's response to reviews

Title: Validity and Relative Validity of a Novel Digital Approach for 24-h Dietary Recall in Athletes

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Author's response to reviews:

Responses to Reviewers' Comments

Reviewer #1: Thank you for taking the time to carefully review our manuscript. We have made edits as suggested and tracked the changes in the manuscript.

Comment: In Abstract – write “Registered Dietitian (RD)” first time (not just “dietitian”), then put “(RD)” for rest of abstract. Do this within the manuscript, too (starting with background).

Response: This change has been made.

Comment: First line under “background”, need to change “their” to “him/her” to match that you wrote “athlete’s” (singular).

Response: This change has been made.

Comment: You need to define even common abbreviations first time you use them, including “USDA”. Not everyone reading the manuscript will be from the United States.

Response: USDA is now written out the first place it appears in the document.

Comment: Throughout, should be “pre-testing” not “pretesting” (and it really should be “baseline testing”).

Response: “Pretesting” has been changed to “pre-testing”
Comment: In Methods, under “Ethics Statement”, your approval line should come before the participants’ consent line. You received approval before you could get consent.
Response: This change has been made.

Comment: Try to use “participant” more often than “subject” (this is something that National Institutes of Health have recommended).
Response: “Subject” has been replaced with “participant” throughout the paper.

Comment: Use “non-adherent” or “adherent” with research, not “non-compliant” or “compliant.
Response: This change has been made.

Comment: Section under Subjects, the sentence beginning “To be eligible to participate...” should begin a new paragraph.
Response: This change has been made.

Comment: Under sports – I am assuming you mean ice hockey and not field hockey, please specify. Additionally, what type of “dance”?
Response: Yes, we do mean ice hockey. Also, the type of dance included jazz, ballet, and modern. This information has been added to the manuscript.

Comment: What is “SCOFF”? Please spell out first.
Response: SCOFF is an acronym from the 5 questions that make up a screening tool for eating disorders. We’ve added text to describe that it is a screening tool for eating disorders. SCOFF actually stands for one word from each of the 5 questions (Sick, Control, One, Fat, Food).

Comment: Under Testing Sites – need to change “6 week” to “6-week”
Response: The change has been made.

Comment: What do you mean by a “traditional laboratory setting”? Some of us have wet and applied labs, and so, my “traditional laboratory setting” may look different than yours. Explain.
Response: The point we are trying to make here is that Site 2 is more of a “traditional laboratory setting” compared to Site 1 which is a campus where athletes live and train. So at Site 1 the study participants were recruited from surrounding schools to come into the lab and complete the DATA and INTERVIEW portion of the study. We have added text to explain.

Comment: Under Statistical Methods – what is “ICC”?
Response: “ICC” is intraclass correlation and is defined in the statistical analysis section.

Comment: Even “SPSS” should be spelled out first time.
Response: “SPSS” is now written out.

Reviewer #2: Thank you for taking the time to review our paper and provide insightful suggestions to improve the manuscript. We have conducted additional analysis, expanded on the discussion, and made edits as suggested. The changes have been tracked in the manuscript.

Major compulsory revisions

Comment 1. The exclusion of the 12 participants represents bias and at least some of the results of the data analysis should be presented both including them and not including them (whereas only the latter was done). It may be an important result that 12 of 68 (nearly 18%) of participants recalled eating episodes that were not observed.
Response: 6 of the 12 excluded participants had missing data because they failed to show up for the follow-up 24-h recalls or showed up late and had to leave (to go to practice or class) before completing both recalls (see description on page 11 of manuscript). Therefore, comparisons between DATA, INTERVIEW, and OBSERVATION cannot be made for these 6 subjects.

Only 6 of 68 (~9%) participants were excluded solely for recalling eating episodes that were not observed. These subjects failed to report eating episodes outside of the RDs observations. Some of these eating episodes included large snacks and even entire meals (usually dinner). For these 6 subjects, observed intake was substantially less than reported, not because of over-reporting but because of an incomplete observation. Therefore, comparisons between DATA, INTERVIEW, and OBSERVATION would be invalid for these 6 subjects. We have added text to the Quality Control section of the manuscript to clarify this point.

Comment 2. Please add Bland-Altman analyses which is conventional to do in studies such as these. This will give a description of the results on more of an individual basis and will show bias in reporting (if any) in relation to the magnitude of the outcome (for example, energy).
Response: Thank you for suggesting the additional analysis. Bland-Altman plots
have been added to manuscript for energy, carbohydrate, and protein to show results by individual subjects and to detect any possible bias between methods. Bland-Altman analysis indicated significant positive correlations between absolute values of the differences and the means for most method comparisons. There were also wide 95% limits of agreement for most method comparisons. Therefore, our conclusion has been modified to the following: DATA has good relative validity for group-level comparisons in athletes. However, there are large variations in the relative validity of individuals’ dietary intake estimates from DATA, particularly in athletes with higher energy and nutrient intakes. Overall, the results suggest that DATA can be a useful athlete-specific, digital alternative to conventional 24-h dietary recall methods at the group (e.g., team) level. Further development and testing is needed to improve DATA’s validity for estimations of individual dietary intakes.

Comment 3. Page 9 lines 4-5. Dietary intake was reported from the time the participants woke up the previous day to the time they woke up on the day of testing. However this is not necessarily a 24h period as is also stated. Please clarify.

Response: The description of the 24-h period has been clarified here and throughout the document. The time frame was from the time the athlete woke up on one day to the same time on the next day. For example, this was 6:00am to 6:00am for many athletes.

Comment 4. Results section. In various places in the results section where it is stated that paired differences were statistically significant, please add to the text the direction of the differences. Even though one can see this by looking at the table, it would be helpful to have it in the text and won’t take a lot of words since the differences tend to be in the same direction within each method comparison.

Response: This change has been made.

Comment 5. Page 15, middle paragraph. Please speculate WHY DATA overestimates energy and the nutrients mentioned. Is it something to do with the database used or something more with the participants as suggested on the next page?

Response: We’ve added speculation to the Discussion regarding why DATA overestimates energy and some nutrients. Since there were no significant mean differences between DATA and INTERVIEW, the discrepancies between DATA and OBSERVATION may not be due to the dietary recall method or the nutrient database used in the DATA tool. Perhaps the differences between DATA and OBSERVATION could be related to the participants in the present study, as is now discussed in the manuscript.

Discretionary revisions

Comment 6. Please compute energy requirements estimated from a prediction equation (such as the DRI equations for EER) and compare energy intake by the 3 methods (observation, interview and data). This will provide information on
whether the energy consumed was realistic in comparison to energy requirement, thus will provide more information on over versus underreporting. This is an important point to understand if these athletes tend to overreport in comparison to even observation. As pointed out in the manuscript, this is very different from that observed in other groups who have a tendency to rather underreport.

Response: The estimated energy requirements of the athletes are now provided in the results section. The estimated 24-h energy requirement (3546 ± 959 kcal/day) of the athletes in the DATA vs. OBSERVATION comparison (Site 1) was similar to the energy intake reported from DATA (3498 ± 1421 kcal/day). Thus, the athletes’ reported energy intake was realistic to what they may typically eat but overestimated compared to what was actually observed in the given 24-h period (3042 ± 1262). More discussion on this topic has been added to the manuscript.