Title: Perceived Personal Importance of Exercise and Fears of Re-injury: A Longitudinal Study of Psychological Factors Related to Activity after Anterior Cruciate Ligament Reconstruction

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Author’s response to reviews:

Dr. Jonathan Williams
BioMed Central
Re: Manuscript #1176971177136428

Dear Dr. Williams,

Thank you for the opportunity to revise our manuscript titled, “Perceived Personal Importance of Exercise and Fears of Re-injury: A Longitudinal Study of Psychological Factors Related to Physical Activity after Anterior Cruciate Ligament Reconstruction” for re-submission to BMC Sports Science, Medicine & Rehabilitation. We greatly appreciate the helpful comments provided by the reviewers. We have made the suggested changes to the manuscript and we respond to the reviewer comments in detail below.

Reviewer 1:

Major Compulsory Revisions

1. “Personal importance of exercise seems to be a reasonable choice for a predictor variable for the walking, household, and lower risk of knee injury physical activity criterion variables. It is, however, unclear why personal importance of sport was not selected as a predictor of higher risk of knee injury physical activity. As noted in the first paragraph of the Results section, a large portion of the ACL injuries were sustained in sport activities rather than recreational activities. Participants’ personal importance of exercise probably did not decline over the course of study because the importance of exercise (like good nutrition and other key health behaviors) across the lifespan is widely recognized. Research has shown that personal importance of sport (in the form
of athletic identity, just as exercise identity was used to assess personal importance of exercise) tends to decrease over the first two years after ACL surgery, with greater changes occurring among individuals who displayed low levels of progress in rehabilitation (Brewer et al., 2010). Documentation of such changes might have had predictive value (for higher risk of knee injury physical activity) in the current study. This issue warrants consideration in the manuscript.


Our thanks to the reviewer for these comments. The selection of a measure to assess perceptions of the personal value of physical activity to an individual was guided by several considerations. First, we wanted to be able to use the same measure across different domains of activity. This included not only sports, but also household activities and walking. In this way, we could compare whether the same perceptions were similarly associated (or not associated) with different types of activity. This necessitated selecting a fairly general measure of exercise perceptions as opposed to specific perceptions about sport. Second, at the time we were selecting measures (early 2005) many newer measures had not yet been published. Finally, our review of the literature yielded several possible scales. However, initial pre-testing yielded good internal consistency with the Exercise Identity scale compared to our other choices.

We were encouraged to find that the Exercise Identity scale actually yielded interesting results in this study, particularly related to predicting different types of sports activities (low and high risk of injury activities). At the same time, we agree with the reviewer that it’s important to recognize that there are other measures of the value of domain-specific activities like sports, particularly given the nature of our sample. We note this on page 16 of the discussion and in the limitations section on pg. 17.

2. “It is unclear why continuous variables (i.e., fear of re-injury, personal importance of exercise) were converted into categorical variables to predict physical activity in year 3. The findings of the analyses corresponding to Table 4 could be presented more parsimoniously (and with no loss of information due to categorizing the continuous variables) in the form of a multiple regression analysis with inclusion of the appropriate interaction term.”

Our apologies for the confusion. The variables “fear of re-injury” and “personal importance of exercise” were used as continuous variables in longitudinal modeling. These analyses were presented as part of Table 3. We did not expect the variables to interact with one another and, as a result, we did not include interaction terms in the analyses. Table 4 was only intended to provide a bit more descriptive information about the variables, not analytic information. We thought it might be useful to describe groups of individuals with varying degrees of fear of re-injury and perceived importance of exercise and present their mean levels of activity in lower and higher risk of injury activities. We clarify this on page 10 of the methods and page 13 of the results.
3. “Given the centrality of physical activity to the study, information pertaining to the validity of the MLPAQ should be provided in the Measures section.”

Thank you. We have added this information to page 8 of the methods, as well as several new references with additional information for readers (refs 33-36).

Discretionary Revisions.

4. “Given the limitations of single-item scales, it might be helpful to note that multi-item scales such as the recently developed Re-Injury Anxiety Inventory (Walker et al., 2010) can be used in future research to assess fear of re-injury.


Done. We have noted that future research on fear of re-injury would benefit from the use of multi-item scales looking at this concept on page 16 of the discussion, as well as in the limitations section on page 17.

Reviewer 2:

Major Compulsory Revisions:

1. “Define standard fixation method in methods. Was the BTB graft auto or allograft? Define the “standard protocol” for the rehab program in an appendix.”

Done. We have provided additional detail about the surgical procedure on page 7 of the methods. Unfortunately, the standard protocol for the rehab program has been copyrighted by the hospital and we do not have permission to re-print it. However, we also provide some descriptive information about the program on page 7. We hope this will be acceptable to the reviewer. This section now reads:

“ACL reconstruction procedures were performed by one surgeon (PM) using a single incision, arthroscopic bone patellar tendon bone, transtibial reconstruction. All concomitant intra-articular pathologies were dealt with at the time of surgery (e.g., meniscal tears, plica, cartilage lesions). Femoral sided ACL graft fixation was performed with two bioabsorbable crosspins through the bone plug fixed with the knee at 90 degrees. A metal press fit interference screw was placed to secure the tibial side with the knee at 20-30 degrees flexion and with a posterior directed force on the anterior tibia and counterforce through stay sutures in the tibial bone plug. On occasion, there was graft size mismatch resulting in a longer graft which required tibial fixation using a trough with press fit fixation of the bone plug and a staple over top. Patients underwent a nine-month rehabilitation program with standard protocols. Regular rehabilitation appointments were held (e.g., postoperatively; 2-4 weeks; 5-10 weeks; 3-4 months; 4-8 months; > 9 months). Rehabilitation included positioning and ambulation assessments (e.g., use of splints/braces), exercise activities that built toward sport-specific drills; and shared patient-practitioner goals for reducing swelling and pain, increasing range of motion, flexibility and cardiovascular fitness.”
2. “Who administered the questionnaires? One of the authors, a student, medical assistant, surgeon, PA?”

A trained research assistant administered all the questionnaires. We have added this on page 7 of the methods.

3. “Somewhere please indicate whether these questionnaires are validated or not.”

Done. We have noted in appropriate places in the measures section (pages 8-9) that measures used in the study are validated. We also have added additional references to the measures section for readers so that they can follow up on this information if they wish.

4. “Please make a flow diagram to explain the 36.4% of patients who were lost to follow up”

There may be some confusion about the percentage of respondents who were lost to follow-up. We reported that 21% not 36.4% of respondents were unavailable at Time 3. The only information we have available is that respondents either did not attend their follow-up appointment after being contacted repeatedly or they were unable to attend because they had moved a considerable distance away from the hospital. Because this information was relatively easy to report in the text and took up less space than a flow chart, we added it to the results on the bottom of page 11 and top of page 12. We hope this is acceptable.

5. “There is no mention of recall or reporting bias in the limitations section.”

Apologies - We have added this to the limitations section on page 17.

Minor Essential Revisions

6. “In the background of the abstract, use the term ACL reconstruction instead of ACL surgery. While not frequently performed, ACL repair is also a treatment option, so please clarify.”

Done. We have corrected the abstract.

7. “Please add in standard deviations where applicable (age in the results section of abstract etc)”

Done. We have added the SD’s in the abstract and appropriate places in the results section (pages 11 and 14).

8. “Add in references when you make statement such as, “anterior cruciate ligament (ACL) injuries are among the most common causes for surgical intervention in sports medicine”

We have modified this sentence slightly and added references on page 5 of the introduction.
9. “Numbers less than 10 should be spelled out”
We have corrected the manuscript throughout and spelled out all numbers less than 10.

10. “Please shorten the introduction. It gives good information, but should be shorter”
The introduction has been shortened while still providing necessary background information.

11. “Give exact dates of recruitment”
Month and year of recruitment start and finish have been added on page 6 of the methods (i.e., April 2005 to June 2007).

12. “Please make a chart describing the causes of injury. Please give the return to sport rate at each year. What was the revision rate of these patients?”
Information about the causes of injury has been added to Table 2 on page 26. Unfortunately, we don’t have the return to sport rate at each year. We only have information about activity levels in different domains. There were no revisions during the course of the study.

13. “Were patients who had worse clinical outcomes less likely to engage in higher risk activities?”
For this study, we only have reported pain and disability as possible clinical outcomes. Neither of these variables was associated with higher risk activities. See also Table 3.

14. “Overall would try to condense this article. It is very long”
We have shortened the article in a number of places, particularly in the introduction and discussion. The paper is now ~ 3800 words.

Discretionary Revisions

15. “I personally don’t like abbreviating physical activity with PA, but that is your choice. I would spell it out”
We have changed the manuscript throughout to avoid using the abbreviation PA.

Once again, we greatly appreciate the opportunity to revise our paper and all the work that you and the reviewers undertook to review this paper. We hope that these changes and responses meet with your approval.

Sincerely,

Monique A.M. Gignac, Ph.D.,
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