Author’s response to reviews

Title: The effects of twelve weeks knee-specific training on knee kinematics and kinetics during gait, step and hop in male former soccer players with a 16-year-old ACL injury.

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Author’s response to reviews:

Title: The effect of twelve weeks knee-specific training on knee kinematics and kinetics during gait, step and hop in male former soccer players with a 16-year-old ACL injury.

Version: 2 Date: 9 March 2007

Reviewer: Charles B Swanik

Reviewers report:

Comments to the reviewer
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Major Compulsory Revisions

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Minor Essential Revisions

The author should provide additional comments reflecting the potential "neuromuscular" mechanisms whereby kinetics and kinematics were altered, not merely that they changed. Providing this information, even if it is theoretical, is evidence of a stronger hypothesis driven approach, i.e. why would manipulation of the IV's change your DV's. For example, there are many good studies in neuroscience and motor control that may clarify training adaptation in the sensorimotor system that could affect biomechanical measures, independent of strength.

Action: We have added a section about the neuromuscular mechanisms whereby the kinetics and kinematics were altered.

"Dynamic stability of the knee joint depends on the ability to react quickly to sudden situation's changes. Functional joint instability may develop due to the lesion of mechanoreceptors in the joint capsule and ligaments in and surrounding the joint (Konradsen, 1997 #478). Maintaining dynamic stability during different skills off movements is dependent on cortically programmed muscle activations and reflex-supplied muscle contractions (Albright, 2001 #479). ACL-injured subjects have significantly slower reaction times and processing speeds than non-injured subjects (Swanik, 2007 #480) and thus neuromuscular training have the potential to improve muscular reaction time and joint position sense leading to improved knee kinetics and kinematics."

What next?: Accept after minor essential revisions

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests': I declare that I have no competing interests.
The effect of twelve weeks knee-specific training on knee kinematics and kinetics during gait, step and hop in male former soccer players with a 16-year-old ACL injury.

Version: 2 Date: 2 March 2007

Reviewer: Greg D Myer

Reviewers report:

General
The authors have done a nice job responding to most of my concerns. I have a few minor suggestions.

Comments to the reviewer

Major Compulsory Revisions

Please add a limitations section indicating that the study subjects were not different from controls at pre-test and that this may contribute to the lack of significant changes with training focused to improve important kinetics and kinematics in this population.

Action: A section is added in the discussion.

"The study group consisted of only 12 subjects and although a similar direction of change was seen for all three evaluated functions, the changes were only statistically significant during the most demanding function, the cross-over hop, indicating that the t-test comparisons may be limited by the small number of subjects. Another limitation of the study may be that there were no significant differences between the ACL-injured subjects and the controls at baseline (von Porat, 2006 #405)."

Also please indicate that the multiple t-test comparisons may be limited with the small sample size. If this option is not preferable then you might consider less conservative post-hoc correction (Tukey's HSD) and then make your hypothesis one-tailed. This may allow you to maintain significant in the important variables. If these variables are not significant with this method then I think this limitation should be acknowledged.

Action: A limitation section is added in the discussion (see previous action). We had also changed our hypothesis to one-tailed in the statistic section.

Minor Essential Revisions

In the result section the please do not report the significant changes (peak knee flexion and internal knee extensor moment) more than one way. Currently, it is reported in the text, Table 2 and Figure 5.

Response: We have kept the text, refer to table 2 and removed figure 5.

Action: "The training program introduced changes in kinetics and kinematics making the ACL injured subjects more similar to the reference group (Table 2). The most indicative test situation was the cross-over hop, in which peak knee flexion during landing and internal knee extensor moment changed significantly after training, p < 0.015. Peak knee flexion during landing increased from 44 degrees before training to 48 degrees after training and approached the reference group with a mean peak knee flexion during landing of 49 degrees. The internal knee extensor moment during cross-over hop also increased after training from 1.28 to 1.55 Nm/kg, p=0.017. The VGRF during cross-over hop did not change significantly after training."

I suggest removing figure 2, 3 and 5. These figures contribute little to the manuscript and Figure 5 may ever detract from your significant results.
Response: Figures 2, 3 and 5 are removed.

What next?: Accept after minor essential revisions

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests': "I declare that I have no competing interests"