Reviewer's report
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.
Version: 1 Date: 17 November 2006
Reviewer: Greg D Myer
Reviewer's report:
Comments to the reviewer

Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)

I would first recommend that the authors perform a power analysis to determine if the current sample size is appropriate to determine neuromuscular training effects on biomechanics in this population. If the sample size is adequate, then I would recommend the authors consider utilization of a Bonferroni correction to the alpha level of their current statistics.

Response: We are well aware of the low number of subjects included in this study and the low power of some of the parameters studied. However, this is discussed and has been reflected by the conclusions drawn. We still think the results merits being published due to the constant tendencies seen in all evaluated parameters (Fig 4), although only significant in the most demanding test situation, the cross-over hop. Also, there is a lack of studies to help perform power calculations a priori. Thus, the data obtained in this study could help future investigators perform power analyses and thereby include a sufficient number of subjects.

When scrutinizing Table 2 giving the results, it became obvious that only kinetic and kinematic data should be included since isokinetic strength and KOOS are not designated outcomes. Thus, only 9 hypotheses are tested (compared to 19 previously), three for each testing situation (gait, step activity and cross-over hop).

Action: Only kinetic and kinematic data are given in the results table. Self-reported and isokinetic data are given separately in figures.

In addition, please clarify measures of knee flexion and why you report both landing and take-off during the crossover hop. Generally, this maximum value would be the same (or very similar time) for both phases of land and jump activities and you would not need to describe within two phases.

Response: The reason to include both values was that patients may use different strategies when jumping, some rest before taking the next jump and some do not. We have however found that you are right and thus excluded the parameter knee-flexion during take-off.

Action: The parameter knee-flexion during take-off has been excluded.

If the sample size is not adequate I would suggest that they target the appropriate study sample size with a more homogenous study group of either ACL reconstructed or ACL deficient subjects.

Response: See previous response.

I would also suggest that the authors use their matched reference group for both pre test and post test comparisons.

Response: In this study the intention was to use the data from the reference group to help interpret the direction of the changes introduced in the study group by the intervention.
Since the cross-sectional comparison of the study group to the reference group is previously published we do not want to publish duplicate comparisons.

**Action:** None

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**Minor Essential Revisions** (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

**Response:** The text has undergone thorough linguistic review including title change.

Key Words: “knee-specific training, kinetics, kinematics, and ACL” are all in the title; Select new key words.

**Response:** New keywords have been selected: Neuromuscular control, biomechanics, functional tests, knee

Lines 5 and 6: What is the standard deviation for the mean age, weight, and height?

**Response:** Has been added.

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**Discretionary Revisions** (which the author can choose to ignore)

Unable to decide on acceptance or rejection until the authors have responded to the major compulsory revisions

**Level of interest:** An article of importance in its field

**Quality of written English:** Needs some language corrections before being published

**Statistical review:** No

**Declaration of competing interests:**

I declare that I have no competing interests
Reviewer's report
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.
Version: 1 Date: 14 December 2006
Reviewer: Charles Swanik
Reviewer's report:

Comments to the reviewer

General
This manuscript presents unique data on injured subjects sixteen years after insult. Part of this may not be emphasized as well as it could be. The notion of a stiffening strategy also was not developed thoroughly and the introduction or discussion. Therefore because it was not directly measured should either be removed or explain in more detail.

Response: Has been explained in more detail in the introduction.

The discussion could be strengthened more by explaining why these results occurred, in addition to the comparison with other studies.

Response: The discussion has been partially re-written.

What was the underlying cause for initial presentation sixteen years after the injury, and then what changed anatomically or physiologically after the training.

Response: ACL injury is frequently associated with long-term consequences. The current study sample was recruited from a well-described larger cohort followed over time for evaluation of long-term consequences. This has been described in the methods section. It is beyond the scope of this paper to speculate on the mechanisms behind the changes seen in kinetics and kinematics.

Specific comments
Title: Sixteen year old injury from the title, possibly only long-term follow-up

Response: The title has been re-formulated.

Abstract: results, it would be better to report the biomechanics in the order that was presented in the methods gate, step activity …

Response: Has been changed.

Abstract: results, include the direction of the differences observed, for example increased knee extensor moment rather than saying improvement

Response: Has been changed.

Methods: stiffness can be calculated, rather than inferred , from this data based on joint power and knee flexion.

Response: Has been changed.

Methods: is it worth mentioning the statistics, for example sixteen years after injury were the pretest values compared and/or different from the control subjects

Response: These comparisons are previously published. A summary is given and the previous paper referred to.

Response to the below comments: A thorough linguistic review has been performed.

Background:” Injuries to the ACL is (are) treated”

Response: Background, line nine: joint stability is used twice in this sentence

Line fifteen gait, step activity or hop, change too “hopping?” if

Line Eighteen what about knee valgus
Materials and methods: a comparison of the subjects weight height, OA, BMI, and Tegner scores would be better presented in a table for matching purposes

**Response:** These comparisons are given in Table 1.

Materials and methods: it appears from the writing that only ACL group performed the training?

**Response:** This is correct and has been explained more clearly.

Materials and methods: no strength data was presented in the abstract

**Statistics:** consider using Tukey's HSD (Honestly Significant Difference) or another popular post hoc to reduce Type I error

**Response:** We are well aware of the low number of subjects included in this study and the low power of some of the parameters studied. However, this is discussed and has been reflected by the conclusions drawn. We still think the results merits being published due to the constant tendencies seen in all evaluated parameters (Fig 4), although only significant in the most demanding test situation, the cross-over hop. Also, there is a lack of studies to help perform power calculations a priori. Thus, the data obtained in this study could help future investigators perform power analyses and thereby include a sufficient number of subjects.

When scrutinizing Table 2 giving the results, it became obvious that only kinetic and kinematic data should be included since isokinetic strength and KOOS are not designated outcomes. Thus, only 9 hypotheses are tested (compared to 19 previously), three for each testing situation (gait, step activity and cross-over hop).

**Action:** Only kinetic and kinematic data are given in the results table. Self-reported and isokinetic data are given separately in figures.

Results: injured group line five, by stating the direction of change in these variables space can be saved explaining this and subsequent sentences.

**Results, PP. one last line:** the comments concerning stiffness should be reserved for the discussion because it was not measured directly.

**Response:** The comments on stiffness have been removed from the results section.

Discussion, line one: consider rewording “also a long time after injury “

**Response:** A thorough linguistic review has been performed.

Discussion, PP. one, last line: this argument would be strengthened by including references

**Response:** The discussion has been partially rewritten and additional references have been included.

Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)

Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

Discretionary Revisions (which the author can choose to ignore)