Reviewer’s report

**Title:** Cardiorespiratory responses to exercise are useful for muscular functional impairment characterization after knee anterior cruciate ligament reconstruction: a cross-sectional study

**Version:** 1

**Date:** 14 January 2014

**Reviewer:** Fábio Minozzo

**Reviewer’s report:**

- **Major Compulsory Revisions**
  I do not think there are Major revisions to be done. The MS is sound and worth publishing as long as the Minor Essential Revisions are performed.

- **Minor Essential Revisions**
  The article is interesting, although sometimes not so clear. I think some points should be clarified before recommending it for publication:

  1- I understand the MS is about assessing the cardiorespiratory parameters of patients who underwent ACL reconstruction. However, I think the main goal stated by the authors, “verify [sic] whether the cardiorespiratory responses to lower limb exercise display counter-lateral differences, and if they could be used to assist athletes and health professionals in the [sic] rehabilitation programs” is a bit confuse and, at the same time, too broad. The first part of the sentence is ok, but how this assessment could help these professionals in practice? Furthermore, why assessing strength deficit is not enough? The authors must agree that not everybody has a metabolic cart, while muscle strength is easier and more affordable.

  2- I have the impression that similar studies have been performed: several classic studies such as Astrand’s, Ekblohn’s, Sargeant’s, and many others have posed similar, but not identical, research questions. In other words, as far I am concerned the results presented were expected somehow. However, I am not an expert on the matter, and since I few more confortable with biophysics I would ask (recommend) the authors to better explain the novelty of their study. They have all the material needed, several studies were already cited… So, perhaps, they only need to emphasize what is new in a clearer way for the researchers that are not exactly from their field.

  3- In the first paragraph of the discussion the authors try to link the investigation of the cardiorespiratory parameters and their importance for rehabilitation programs. Although I think this point is extremely important, the authors fail to justify why and how such parameters could be used during rehabilitation. I suggest that either the authors drop this point, turning their paper merely into a individual-limb-cardio-respiratory characterization of ACL reconstruction patients, or specifically explain how to use these parameters during a rehab program.
4- At the end, the authors explore the fact that HR was exacerbated when the affected limb was tested… So, is the relationship between VO2, power output, and HR really broken? How large is this effect? Furthermore, these are only punctual values taken after 5 minutes. I was curious to know the entire behaviour of such parameters throughout the exercise. In other to assess “running economy”, the authors should have taken into account the 5-min-parameters’ behaviour instead.

5- The statistical analysis seems to be adequate, but I would like to know why two genders were used. Also, why did authors use only 2 women and 7 men? Wouldn’t that be better if only men or women were used? Since the number of women is only two, any interaction between the variables and gender is already compromised.

6- Finally, the language is not completely appropriate, although the MS is mostly clear, it is only fair to middling written. I made some grammar corrections, but since I am not a native English speaker myself I would suggest the authors to proof-read it with someone who is not only English-native speaker, but also is used to research papers.

Ln 2-4 – title – I think the title is a bit confuse I would suggest “Using cardiorespiratory parameters to assess functional impairment after knee anterior cruciate ligament reconstruction” or something similar. At least I would avoid the use of “are useful for”, that sounds awkward.

Ln 8 – replace surgery with surgical; drop “in order to”; replace previous with original

Ln 10 – “…there is no agreement in relation to a…”(sounds better)

Ln 11-13 – Consider reviewing the whole fragment (How does ACL affect metabolic? In which context?)

Ln 14 - …study was TO verify

Ln 16 – drop “the”

Ln 17 – this instead of “these” (it is singular). . . Fragment is also awkward.

Ln 18 – drop “it”

Ln 51- quickly and as safely – drop this “as” – quickly and safely

Ln 52 – replace consensus with agreement

Ln 53- …in relation to a… instead “regarding”

Ln 55- replace “since” with “because” and drop the coma

Ln 58 – link this paragraph with the previous – they must be a single paragraph

Ln 61 – Another way to test strength (or whatever you think) applying lower tension on… (sounds better)

Ln 62- replace “would be” with “could be”

Ln 99 – replace “In day” one with “On the first day”

Ln -103 – same – Same as above: “On the second day”
Ln-106- “…patient was allowed to recover…” (it is better)
Ln-123 – “standard deviation data.” (no apostrophe) –
Ln- 133-134- Consider reviewing… the fragment is very unclear!
Ln-139 – Consider reviewing…
Ln-146 – drop the coma
Ln-156- “to different types of exercise” (sounds better)
Ln-168-169- too vague
Ln-316-Table 1 – Vt or VT – both types were used in the MS. What is “FC (bpm)”? You meant HR (heart rate), right?

- Discretionary Revisions
- Is it possible to calculate/express “running economy” or “work efficiency” for each test? Quantity of energy spent per amount of work performed would be perfect!

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

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

**Statistical review:** Yes, and I have assessed the statistics in my report.

**Declaration of competing interests:**

I declare that I have no competing interests