Reviewer's report

Title: Swimming performances in long distance open-water events with and without wetsuit

Version: 2 Date: 15 February 2014

Reviewer: Daniel Marinho

Reviewer's report:

The paper “Swimming performances in long distance open-water events with and without wetsuit” aimed to investigate the influence of wearing a wetsuit on swimming performances at the 26.4 km ‘Marathon Swim in Lake Zurich’ in Lake Zurich, Switzerland, and the 3.8km Lake Ontario Swim Team-Race (LOST-Race) in Lake Ontario, Canada”. Main data seems to suggest that wearing a wetsuit could have a positive influence on swimming speed for both women and men but the benefit of the use of wetsuits seems to depend on additional factors like race distance. Moreover, in long-distance open-water swimming women seemed to benefit more from wearing wetsuits than men.

This study is very interesting and is within the scope of the journal. However, there are some issues that should be addressed, that are not so clear during the paper.

- Major Compulsory Revisions:

1. Abstract. Please rephrase the results section in the abstract. It is somewhat confusing for the reader. Please check also the conclusion according to the final remark.

2. Introduction. Although the study focus on open-water events and the effects of wetsuits, when analyzing the effects of wearing suits on performance, even in swimming pool conditions, please discuss deeper this issue, referring to some recent studies regarding this aim.

3. Results. Data are very interesting and with very good figure presentation. However, data explanation is not so well written, and some parts may be difficult to follow.

3.1. For instance, when referring to figure 2b: “Male top three (401.6±7.2 min versus 396.4±28.8 min, 1.2%, p>0.05) and male top ten swimmers (412.6±9.02 min versus 434.2±31.8 min, 5.2%, p<0.01) without wetsuits swam faster than female swimmers without wetsuits”.

This sentence is not completely true. Male top three did not swim faster than female swimmers without wetsuits.

3.2. Please rewrite this section, allowing clear information for the reader, underlying main data from the figures, as reported in the Lost Race section.
4. Discussion. It has been reported that wetsuits lift the body in a more horizontal position by providing higher buoyancy. However, when we analyze the compression of the body due to the suit, one can expect that buoyancy could decrease (as body mass is the same but body volume is lower). Can you comment on that please?

5. Discussion. Authors presented an interesting explanation for different training and body profile of swimmers and triathletes. It would have been very interesting to characterize the participants in the study according to their specialized training, to understand if the ones participating without wetsuit would be better prepared for these race events. Is it possible?

This was mentioned in the limitations of the study, which is very important for the reader, although some comment on that (and possible solutions to solve the lack of available data) could complete the remark.

6. Discussion. Some explanation is presented to explain why female swimmers would benefit more of using the wetsuit (in LOST Race). Nevertheless, female swimmers have lower muscle mass and higher fat mass than male swimmers, so it would be expected to present a more stable horizontal position in the water, due to better buoyancy capability. So, maybe wetsuits could be more benefic for male swimmers. Don’t authors agree with this argument?

In the next paragraph, when referring to the Marathon swim, the statistical problem is a good argument, but one can wonder if the buoyancy question could be raised again.

Please comment on that, and rephrase this section accordingly, if required.

7. Conclusion. Authors started the conclusion with:

“The present results suggest that swimmers competing in long and ultra-long-distance open-water swims could benefit from wearing wetsuits. This is consistent with existing literature reporting better performances of swimmers wearing wetsuits while swimming in indoor pools on short to middle distances”.

However, Discussion section starts with:

“The most important finding was that open-water swimmers wearing a wetsuit were not generally faster in both the long and the ultra-long-distance swimming event than swimmers without wearing wetsuits. This finding contradicts existing literature [18, 20] reporting better performances for swimmers wearing wetsuits on short to middle distances between a standardized 500m test track and 1,500m”.

It seems there is a lack of coherent findings when it is presented like this. Please correct this concern, accordingly. See also the abstract.

- Minor Essential Revisions:

1. Results. Sometimes is used “vs.” and others “versus”. Please use always the same word/symbol.
2. Discussion. Please insert “to” after “the aim of the study was”.
3. Discussion. Change “therefor” to “therefore”.

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

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

**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.