Author's response to reviews

Title: Surface electromyography during physical exercise in water

Authors:

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Version: 2 Date: 3 April 2014

Author's response to reviews: see over
Answer to the Reviewer’s Comments

MS: 6202500912088680 –

Surface electromyography during physical exercise in water

Dear Editor

Please, find a revision of our manuscript entitled “Surface electromyography during physical exercise in water”. We would like to thank the Reviewers for their thoughtful and constructive comments. We have considered all suggestions, and have incorporated them into the revised manuscript. Changes to the original manuscript are with “track changes” to highlighted (in yellow background). We believe our manuscript is stronger as a result of the modifications. An itemized point-by-point response to the Reviewers’ comments is presented below.

EDITOR’S COMMENTS:
"Both reviewers saw substantial merit in the work that is represented in this manuscript. There are substantial concerns, however regarding potential issues of bias related to the search strategy and also article appraisal that need to be carefully considered. Both reviewers have offered very helpful suggestions for improving the quality of this manuscript."

AUTHORS. Thank you very much for the inputs.

EDITORIAL REQUIREMENTS:
*Please note that the title in your manuscript file differs from the title entered in the submission system - please correct so they are consistent with each other.

AUTHORS. Thank you for the corrections. We have replaced the title by the submission system.
*Acknowledgements: We strongly encourage you to include an Acknowledgements section between the Authors’ contributions section and Reference list. Please acknowledge anyone who contributed towards the study by making substantial contributions to conception, design, acquisition of data, or analysis and interpretation of data, or who was involved in drafting the manuscript or revising it critically for important intellectual content, but who does not meet the criteria for authorship. Please also include their source(s) of funding. Please also acknowledge anyone who contributed materials essential for the study.

Authors should obtain permission to acknowledge from all those mentioned in the Acknowledgements. Please list the source(s) of funding for the study, for each author, and for the manuscript preparation in the acknowledgements section. Authors must describe the role of the funding body, if any, in study design; in the collection, analysis, and interpretation of data; in the writing of the manuscript; and in the decision to submit the manuscript for publication.

AUTHORS. Thank you for the corrections. We have included an Acknowledgements section.

*We recommend that you copyedit the paper to improve the style of written English. If this is not possible, you may need to use a professional language editing service. For authors who wish to have the language in their manuscript edited by a native-English speaker with scientific expertise, BioMed Central recommends Edanz (www.edanzediting.com/bmc). BioMed Central has negotiated a 10% discount to the fee charged to BioMed Central authors by Edanz. Use of an editing service is neither a requirement nor a guarantee of acceptance for publication. For more information, see our FAQ on language editing services at http://www.biomedcentral.com/authors/authorfaq/editing.

AUTHORS. Thank you for the corrections. We have asked a native scientific colleague a proof reading services.
Reviewer 1

Reviewer’s report
Title: Surface electromyography during physical exercise in water
Version: 1 Date: 18 March 2014
Reviewer: Catherine Disselhorst-Klug

Reviewer’s report:
The authors present the results of a literature review on the state of the art on muscular activation during exercises performed in water and on dry land. With that, the authors address a major problem in an up-coming field of interest in rehabilitation sciences. The paper is clearly written and the results are discussed in detail.

AUTHORS. Thank you very much for the inputs.

• Major Compulsory Revisions
My most concern is about the description and the way the papers analyzed in this review have been selected. Within the manuscript, the reported numbers differ and it becomes not clear why. For example:
1) According to Figure 1, it was started with 316 potentially relevant studies and at the end only 9 studies have been included in the review.
2) According to the “study appraisal and synthesis method”: 42 relevant articles have been found initially, reduced to 31 after reviewing the abstract.
3) In the “Result” section, initially 92 articles are mentioned which were reduced to 24 relevant ones.
4) In Table 24 relevant articles are listed and
5) in the discussion the number of 21 articles is reduced to 9.
Additionally, the main tool for appraising seems to be the CASPe. However, no detailed information is given how this tool works and what are the main criteria. Even no reference is given, which somebody could use to understand the selection process a bit better.

AUTHORS. Thank you very much for your corrections. Two-step and number of excluded were lost in flow-chart. We have fixed the error into the manuscript. In
the methods section we have replaced Twenty-four in the fifth step, following the figure 1. In the discussion section we have replaced the type error about 92 where must be 42 and 21, where must be 24. Thanks for the corrections.

• Minor Essential Revisions
There is one arrow wrong in figure1.
Figure 1: When I exclude 92 from initially 316 relevant studies 224 are left not 24!

AUTHORS. Thank you very much for your corrections. New figure 1 have been included with more details about excluded.

• Discretionary Revisions
none
Level of interest: An article whose findings are important to those with closely related research interests
Quality of written English: Acceptable
Reviewer's report
Title: Surface electromyography during physical exercise in water
Version: 1 Date: 3 March 2014
Reviewer: Zuzana Machotka

Reviewer's report:
The title of this manuscript is ‘State of art in surface EMG during activities and exercise performed by humans in water.’ I congratulate the authors on submitting a review on this topic as it does address a gap in the research and will hopefully encourage future research into this area. However there are major aspects that need to be acknowledged before considering this review for publication (see below under major compulsory revisions). Although there are major revisions suggested, I strongly urge the authors to attempt these revisions as I believe this is a topic which would generate great interest. With changes the readability would improve and help guide the results, discussion and conclusion sections.

AUTHORS. Thank you very much for the inputs.

Thank you for the opportunity to review such a manuscript.

Major Compulsory Revisions
1. I suggest that the authors refer to a previously published review from this journal in order to improve the methods and results section. The PRISMA checklist (http://www.prisma-statement.org/2.1.2%20- %20PRISMA%202009%20Checklist.pdf) or something similar may prove to be useful in revising this manuscript.

AUTHORS. Thank you very much for your recommendations. A PRISMA checklist have been added how supplement.

2. The aim of the study should reflect the methods. Currently the aim reads: “The aim of this study is to present an updated review of the literature on muscle activity recorded using sEMG in activities and exercise performed by humans in water.” Consider rewording to something like ‘This review aims to
assess the effectiveness of surface EMG to measure muscle activity during aquatic exercise and compare its use to similar land based exercise situations.' This may give the readers more specific information on why they should read this review. Additionally the conclusion can then match the aim(s)

AUTHORS. Thank you very much for your recommendations, we have replaced the aims sentence.

3. Under methods; What data was collected in terms of EMG parameters and what statistical analysis was performed i.e. how did the authors assess the performance/effectiveness of EMG in water? This in my opinion is a major flaw in this manuscript and needs urgent addressing before publication consideration. For example signal strength, activation patterns were collected. Were point measures considered e.g. confidence intervals, standard deviations etc. What about reporting significance i.e. p values. Once this concern has been address the results can reflect the methods.

AUTHORS. The table 2 shown a summary of the differences between the aquatic and land exercises/activities, each study present differences task, and muscle, however the statistical analysis to assess the performance of EMG peak values were heterogeneous, but due to the heterogeneity of EMG parameters, this information was included with more details under clinical contribution in the table 2.

Minor Essential Revisions
1. Keep terminology consistent i.e. aquatic therapy, aquatic exercise, exercise in water, water-based exercise, aquatic physical therapy etc./ in water, in an aquatic environment.

AUTHORS. Thank you very much for your recommendations, we have tried to be consisted in aquatics terminology focus in aquatic exercise and therapy.
2. Consider ‘land-based exercise’ rather than ‘exercise on dry land’

AUTHORS. Thank you very much for your recommendations, we have replaced ‘land-based exercise’ by ‘exercise on dry land’

Abstract
3. The aim of the paper should be placed under the background rather than the methods section

AUTHORS. Thank you very much for your recommendations, we have placed the aim under the background.

Introduction
4. The sentence “The buoyant force acting in the opposite direction to the force of gravity and drag forces in the opposite direction to the movement of the body in water cause muscle activation to be different in intensity and degree of participation in complex movements in water compared to dry environments, depending on the hydrokinetic analysis of the different activities and exercises used.” Is too long, consider revising

AUTHORS. Thank you very much for your recommendations. We have rewritten as follow, “….The buoyant force acting in the opposite direction to the force of gravity and drag forces in the opposite direction to the movement of the body in water cause muscle activation to be different in intensity and degree of participation, depending of the activities and exercises used…..”

5. “Likewise, there is little understanding of muscle activity in water activities for use in sport, which are very useful for maintaining or improving the physical condition without placing excessive load on the spine and extremities[3]” Consider adding examples of water sports.
AUTHORS. Thank you very much for your recommendations. We have added physical activities in water how aqua-fitness, recreational swim, ...

6. “The effects of aquatic therapy have been used in pediatrics[4], orthopedics[5], rheumatology[6], neurology[7] and many others[8].” Consider removing ‘The effects of’ and start sentence with Aquatic therapy is often used in ....'

AUTHORS. Thank you very much for your recommendations. We have replaced “have been used” ....by “is often used”....

7. “Common measuring biomechanical parameters during locomotion in water is complicated because most of the instruments are not constructed to measure in an aquatic environment.” Consider rewording and referring back to original aim e.g. ‘Measuring muscle activity during exercise in the water is difficult and often not attempted as most instruments are not designed for this type of environment and are therefore are often unreliable or not valid.’

Methods

AUTHORS. Thank you very much, we have rewritten following your recommendations.

8. Could the authors please incorporate the dates the databases were searched?

AUTHORS. We have added in text the dates the databases were searched

9. Was there a hierarchy of evidence for study design that the authors considered e.g. NHMRC evidence hierarchy. If only studies that compared water versus land base exercise were included then this should be reflected in the aim.

AUTHORS. Thank you very much for your recommendations. We have rewritten the aim of the study focus in studies that compared water versus land
10. A flow chart of the process of inclusion of studies would be helpful

AUTHORS. Thank you very much for your recommendations. We have remade the flow chart with more step and counting all papers included and excluded.

11. ‘Forty-two relevant articles were found in the main databases.’ This type of information could be considered a result and therefore may be better placed in the results section and not the methods.

AUTHORS. Thank you very much for your recommendations. We have moved this and new information to the Results section.

12. ‘The final selection was made based on the abstract or title…’ How were disagreements between authors handled?

AUTHORS. There were no irresolvable disagreements between authors.

13. The ‘Critical Appraisal Skills Programme’ used to assess the quality of the included studies has many version depending on study design e.g. systematic reviews compared to cohort studies. Could the authors be more specific as to which CASP tool was used to assess the quality and how it was scored?

AUTHORS. Thank you very much for your recommendations. We have added some information as follow, “The studies were critically appraised using the Spanish Critical Appraisal Skills Programme [CASPe] tool for comparison studies; more details could be checked in the site http://www.redcaspe.org/moodle/.”

14. “Appraisal criteria were not applied to the conference proceedings or abstract-only reports because their brevity limited the provision of methodological detail.” If the authors state the study designs that were included then these types of publications could automatically be excluded (they are often
not considered in these types of reviews)

AUTHORS. Thank you very much for your recommendations. We have excluded this type of publication.

15. ‘Two independent reviewers [Cuesta-Vargas & Cano-Herrera]….’ Initials of the reviewers would be sufficient here in brackets rather than the full names. Also how were disagreements resolved between reviewers?

AUTHORS. Thank you very much for your recommendations. We have replaced the full names but initials.

16. Table 1: I do not understand why ‘dry’ is a keyword for this search. Was the term exercise not used as a keyword e.g. ‘aquatic exercise’ or ‘surface electrode’

AUTHORS. Thank you very much for your recommendations. Maybe dry or land-based exercise was keyword only with water or aquatics, but water exercise was include in water.

17. One limit to the search is that only studies published considered. Could the authors justify this limitation?

AUTHORS. Thank you very much for your recommendations. However we have considered only this type of publication in the review.

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