Reviewer’s report

Title: "The influence of gender and body mass index on the FPI-6 evaluated foot posture of 10- to 14-year-old school children in São Paulo, Brazil: A cross-sectional study

Version: 0 Date: 27 Sep 2016

Reviewer: Stephanie Messner

Reviewer's report:

Guidance for the authors: I will refer to page numbers and physical in-text line numbers (headings will count as a line), as and when needed for clarification of comments I make.

The comments included below would be my suggestions for a first revision and for the authors to utilise as they see fit.

Abstract:
Page 2 line 6: insert "the" in front of "foot posture index."
Page 2 line 6: Change foot posture index to acronym "FPI-6" as the acronym has already been defined in Line 2 of the background section.
Page 2 line 6-9: remove (talar head…………Forefoot on the rearfoot) everything in brackets as this is extensive for an abstract.
Page 2 line 16: could the authors perhaps be more specific about the differences between 11 and 13 year old on the left foot. Perhaps re-structuring the sentence to be clearer. Difference between genders and age or just age in general or linked to BMI?
Page 2 line 21-22: "more pronated posture for the feet" terminology such as pronated foot type would be of better use than "pronated posture". Perhaps restructuring this sentence. Suggestion: "Therefore, a higher BMI in adolescence is not indicative of a pronated foot type."

Introduction:

Page 3 line 3: Perhaps authors would like to comments on the use of misalignment vs. malalignment?
Page 3 line 3: remove "the" in front of injury to lower limbs.
Page 3 line 6: change "development pain" to "developmental pain". Are authors here referring to growing pains??

Page 3 line 8: replace "the lower MLA" with "A lower MLA".

Page 3 line 9: replace "medial overload in the foot" with "medial overload of the foot"

Page 3 line 12: add an "s" on the end of "region".

Page 3 line 13-15: could the authors explain the relevance of these "lesions" and perhaps indicate some references for the "many studies" that are eluded to in this sentence.

Page 3 line 19: the paragraph starts with "Again" perhaps the use of "Furthermore".

Page 3 line 21: remove "the" before "boys" and perhaps change "higher rates of lower arches" with "increased rates of lower MLA's".

Page 4 line 2: "plantar arch" could the authors be more specific on which arch "MLA". As plantar arch can be used to describe the two arch components of the foot, longitudinal and transvers (bony element) but also the arterial arch.

Page 4 line 4: insert "the" in front of "MLA."

Page 4 line 4: could authors perhaps elaborate on the sentence starting "the foot print……clinical perspective". Is there an appropriate reference for this statement?

Page 4 line 7: change the sequence of "foot standing posture" to either "standing foot posture" or "static foot posture."

Page 4 line 7: delete "Foot posture index" and just leave the acronym "FPI-6." Once terminology has been defined by acronym use the acronym throughout the paper for consistency.

Page 4 line 7-9: Sentence starting "This methodology….. sophisticated equipment". Structure of the sentence should be changed to exclude "because" and "their"

Page 4 line 12: delete "form of assessment" replace with "tool"

Page 4 line 13: replace "in" before adolescence with "for"


Page 4 line 15: insert "the" before adult population.

Page 4 line 22: delete "the" in front of important risk factors. Replace "involved in" with "related to"
Page 4 line 23: use of the word dysfunction. Could authors comment on these "dysfunctions", musculoskeletal disorders?

Page 4 line 24: foot positioning? Perhaps the use of foot posture would be more suited.

Page 5 line 1-2: "standardization". Perhaps a little more depth on the need for standardisation and the advantages in terms of clinical comparisons. As well as comparisons of what? Type of physical therapy strategies? What is currently lacking in terms of strategies?

Page 5 line 3: insert "a" before school age.

Page 5 line 4: insert "the" before FPI-6.

Page 5 line 4: replace "verify" with "investigate"

Page 5 line 5: insert "the" before FPI-6.

Page 5 line 6: "incidence" how will incidence be calculated from a cross sectional design.

Methods:

2.1 Location and population study

Page 5 line 10: what is your reasoning for using a convenience sample? And how does this impact on the conclusions drawn from this study in terms of the generalizability of your adolescent population.

Page 5 line 10: What type of cross-sectional study is it?

Page 5 line 10-12: The data was obtained from adolescents at different schools. How were these schools selected? What this done at random?

Page 5 line 14: insert comma after "consent" and after "parents"

Page 5 line 15: replace "were" with "was". Delete "the" in front of adolescents. Delete aged.

Page 5 line 16-17: replace "and discrepancies in the length of the lower limbs…." To "…as well as a leg length discrepancy of more than or equal to 1.5 cm."

2.2 Calculation of the sample size

Page 5 line 19: sample size assumes linear regression, could the authors elaborate on their sample size calculation. Linear regression vs. ANOVA.
Page 5 line 19-20: "previously collected data" is there a reference for this? Which data from what study? How was this variance estimated?

Page 5 line 21: could the authors clarify what they mean by factorial design and the relevance of the Neter et al. reference.

Page 6 line 1: Furthermore, please explain the term "subgroup." In this study?

2.3 Foot Posture Index (FPI) measurements

Page 6 line 8: could the authors comment on why the convenience sample has so many more girls?

Page 6 line 17: insert after "six anatomical criteria" ", as previously outlined by Redmond and colleagues [14].

Page 6 line 19 to page 7 line 14: delete extensive description of FPI. This is not necessary if referenced to Redmond and colleagues.

Where is section 2.4 in your methods section? Or has the sequence been mislabelled.

2.5 Statistical analysis

Page 7 line 20: the data was assessed for normality, perhaps the authors would like to comment on homogeneity. As using the post hoc Tukey is dependent on the data having met the assumption of homogeneity of variance.

Page 7 line 22: delete "the scores of FPI-6 items" replace with "FPI-6 scores"

Page 8 line 2: "SPSS version 21.0" insert a reference for SPSS.

Page 8 line 3-5: Intra/inter reliability should be mentioned in the methods to be linked with the statistical analysis section as well as the results and discussion.

Page 8 Line 5-7: delete everything after "classified" and insert as previously described [20]. Again no need to illustrate all the Kappa cut offs.

General note on all sections in the methods section:

The authors mention the study design to be cross-sectional. What type of cross sectional study? This detail should be added to the manuscript. Is it descriptive or analytical? If either, are you
calculating prevalence, point prevalence or prevalence ratios? Your results do not indicate any relation to cross sectional analysis methods.

It would be nice if the authors included some reference to what BMI criteria you used to group the adolescents. Furthermore, it would be nice to have a table to illustrate the descriptive statistics with percentages to get a good overview (age, height, weight, BMI, etc.).

The introduction eludes to 2 hypotheses. The second hypothesis talks of "incidence" cross sectional studies as a methodology does not allow you to calculate and comment on "incidence." This needs to be reviewed perhaps the secondary hypothesis needs to be restructured/reworded.

Results:

Page 8 line 17: delete "male" and insert "in males," after "right foot."

Page 8 line 17: replace "for misalignment in pronation" with "to pronate"

Page 9 line 1: "regard" add "s".

Page 9 line 1: insert "a" before "difference."

Tables 1-4:

A baseline descriptive statistics table would be nice as mentioned in the general notes on "methods section above"

Table 1: the title includes age yet the table doesn't show any age categories.

Table 2: is missing the label "Mean±SD" for consistency in the age 10 categories.

Table 4: the title mentions age yet no age categories are present.

General notes on table:

It would be nice to see a summary table of the ANOVA results to better visually illustrate where the significance occurs between the groups. Furthermore, confidence intervals would also be of interest in the tables.

Discussion:
Page 10 line 5: "had a higher score" authors may be more specific about what score they are referring to.

Page 10 line 20: "arch" which arch? MLA? Again authors may wish to be specific.

Page 10 line 20: sentence starting "As a result......." consider restructuring to avoid the determiner "their".

Page 11 line 3-4: differences observed in left foot between age groups. Authors may wish to comment on why this is only seen in the left foot.

Page 11 line 20: "promote a more prone foot posture" could authors explain what they mean by this?

Page 12 line 1: "postural changes" do the others mean posture pertaining to the whole body?

Page 12 line 5: delete "to" before "BMI."

Page 12 line 6: clinical approaches? Could authors be more specific?

Page 12 line 10-11: "external validity" are the authors referring to the generalizability of this study? This would be linked to the selection of the school and the "convenience sample". How much external validity does it really have?

Page 12 line 15-17: Number of limitations - further depth is required to acknowledge all the limitation of a cross-sectional design, if indeed cross sectional. By depth perhaps elude to the effects of these limitation, rather than just a list of limitations.

Page 12 line 17-18: what kind of longitudinal studies? Why is the "cross-sectional study" not sufficient. Why is it important to track these changes? More depth is needed on further research commentary.

General comment

No specific comment is made about the second part of the hypothesis posed in the introduction. The section on limitations could do with some more depth as well as the comments on where future research should be heading to move the field forward.

Conclusion:

Page 12 line 20-21: The sentence reads, that all feet of adolescents in your study were classed as normal and all have some degree of pronation more so in boys than girls. Is this what you truly
mean? Or do most adolescence have a normal foot type and only some a degree of pronation. This sentence perhaps needs rewording for clarity.

Page 12 line 21-22: what percentage difference can be seem between 11 year olds and 13 year olds? What differences, in terms of pronation? FPI and BMI or gender? This sentence needs to have more depth.

Page 12 line 22-24: This sentence needs to be revised. "Higher score" what score FPI? Must be indicated. "Other BMI groups" what are the groups be more specific. "Feet with a more prone posture" this is not the correct terminology. "Prone foot posture" - what does that mean? Do u mean a pronated foot type?

General comment:

The conclusion could have slightly more in-depth commentary linking hypothesis, results and discussion highlighting the most important findings, linking back to the hypothesis posed, as well as how these contribute to the current literature available in terms of the development of normative values for FPI-6 in adolescence.

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An article whose findings are important to those with closely related research interests

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