Author’s response to reviews

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"

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Version: 1 Date: 26 Oct 2016

Author’s response to reviews:

São Paulo, October 27th, 2016

Dear reviewers

Peter Guy, Samantha Williams and Stephanie Messner

Editor and Editorial Board Members of the Journal of Foot and Ankle Research:

We, the authors, would like to resubmit the paper "The influence of gender and body mass on foot posture at different ages during adolescence: A cross-sectional study" (JFAR-D-16-00077), now entitled “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” in a second revised form, as suggested. We are also sending a cover letter that responds to the reviewers’ comments on a point-by-point basis. Bellow, we outline how we have followed your comments and answered each one, also on a point-by-point basis. The authors would like to thank you for your careful revision and for your comments and suggestions regarding our manuscript. Your feedback has certainly contributed to a better version of the article. We have also submitted the manuscript to a professional editing service: the Canadian company Scribendi Inc. We hope that this new and revised version fulfills the editor’s expectations.
Specific Comments of Peter Guy (Reviewer 1)

Abstract

1. The reviewer have suggested an alternative title: "The influence of gender and BMI on FPI evaluated foot posture of 11 to 14-year-old school children of Sao Paulo, Brazil: A Cross-sectional study".

Answer: We believe that this is an excellent title and have made the change (highlighted part*).

Methods

1. How did you arrive at such a disproportion between the 473 male and 921 female subjects evaluated? What was the protocol to result in these subject numbers? Did you use simple random, systematic, stratified, multi stage cluster or time based selection criterion from the remaining 2505 subjects after nonadherence? In my opinion, this disproportion needs to be addressed in Figure 1 or in the methods section.

Answer: Our sample was a convenience sample; that is, the study participants were adolescents who were interested in participating and for whom we had secured the prior permission of the parents. The total number of adolescent females able to participate was 1,490 (51.2%), and the total number of males was 1,072 (41.8%). These numbers reflect the fact that were more girls in the evaluated schools and that, in general, girls were more interested in participating in the study, perhaps out of their concern for physical appearance. However, both sexes were invited to participate. According to the IBGE* (Instituto Brasileiro de Geografia e Estatística [Brazilian Institute of Geography and Statistics]), women go to the doctor more frequently than men. Thus, it is possible that Brazilian females are more concerned about their health than Brazilian men.

Non-adherence was determined for each school using randomization criteria, according to the acceptance of the consent of the students' parents. We believe that Figure 1 was confusing; thus, this figure has been removed to facilitate the reader’s interpretation of the written text.


2. Can you include a picture of a subject positioned on your apparatus?

Answer: Yes. We have added such a picture (Figure 1).
3. I would like to know why the authors used separate models to address their questions instead of using a single model. A single ANOVA model would have been sufficient to address the questions. The model would use FPI-6 score as response; feet (Left or right), gender (male, female), age (10, 11, 12, 13, and 14 years) and BMI (underweight, normal, overweight and obese) together with the important interactions (feet, gender), (feet, age), (feet, BMI), (feet, gender, age) and (feet, gender, BMI) as factors in the model; and subject as a repeated measurement factor.

Answer: We thank the reviewer; however, the models were made separately because different t-tests were performed for each gender (male and female) and side of the foot (right and left). Furthermore, the various BMI subdivisions and age groups were examined using separate ANOVA models.

4. There is no mention in the paper regarding the need for adjustment of the p-value due to the multiple comparisons reported in the paper. There are 10 reported p-values and each test was assumed to be significant if the p-value < 0.05. To control for the probability of type I (reported a test as significant when it is not), only p-value < 0.005 would be considered significant based on a Bonferroni correction. Only one p-value in the paper was < 0.005 (FPI-6 differences in the Right foot for different BMI values)

Answer: The ANOVA models were developed to increase the strictness of the post hoc Tukey and to prevent Type I error. The Bonferroni analysis was not as efficient. The Bonferroni is likely the most commonly used post hoc test because it is highly flexible, very simple to compute, and can be used with any type of statistical test (e.g., correlations)—not just post hoc ANOVA tests. The traditional Bonferroni, however, tends to lack power. This loss of power occurs for several reasons: (1) the familywise error calculation depends on the assumption that, for all tests, the null hypothesis is true, though this is unlikely to be the case, especially after a significant omnibus test; (2) all tests are assumed to be orthogonal (i.e., independent or non-overlapping) when calculating the familywise error test, though this is usually not the case when all pairwise comparisons are made; (3) the test does not take into account whether the findings are consistent with theory and past research (if the findings are consistent, individual results are less likely to yield Type I errors); and (4) Type II error rates are too high for individual tests. In other words, the Bonferroni overcorrects for Type I errors.

5. My statistics colleague noticed that the label for Table 4 is incorrect. He thinks, this should read Table 4. FPI-6 comparison between the different BMI values (in adolescents with different age groups). Wording in brackets should be removed.
Answer: We apologize for the error and have removed the wording in brackets.

6. I don't see a table for the subject anthropometric characteristics? I think information in table format would be useful for the reader. Otherwise, the results of your study are clearly listed based on your protocol in the methods section.

Answer: We appreciate your comment and have added such a table (Table 1).

Specific Comments of Samantha Williams (Reviewer 2)

Abstract

1. Important and impact on clinical practice unclear.

Answer: We appreciated your comment and have made this change in the background session (highlighted part).

The text now reads: “Adolescence is marked by changes to the body, including the feet. The Foot Posture Index (FPI-6) stands out from other foot type classification methods as valid, reliable, and multidimensional. However, the current literature differs according to age group, with little consolidation of normative data in school children, largely due to the influence of such factors as sex, age and body mass index (BMI). Thus, this study assesses foot posture in adolescents according to age, sex and BMI.”

Introduction

1. Page 3 Line 5 change to 'compromises'.

Answer: We appreciate your comment and have made the suggested change (highlighted part).

2. Define context (line 9).

Answer: We appreciate your comment and have rewritten the sentence (highlighted part).

The text now reads: “The poor posture of the foot and its misalignment increases the risk of injury to the lower limbs…”
3. Line 22 could you expand on what you mean by 'the functional mechanisms of lesions' - intro jumps from talking about pain and discomfort to lesions - how does this link? Clearly focussed issue defined.

Answer: We appreciate your comment and have rewritten the paragraph (highlighted part).

The text now reads: “Postural changes in the feet can cause pain and discomfort in specific areas of the foot (e.g. forefoot, midfoot, and rearfoot) that, over time, can cause injuries due to changes in the force and pressure on the sole of the foot, resulting in areas of overloads. A lower MLA, or pronated foot, features a medial overload of the foot, which can lead to the transfer of large forces to proximal areas, such as the knee, hip and lumbosacral spine [8].”

4. Aims: Please clarify your aims and objectives. Did you have more than one aim? Did you have any objectives (primary or secondary)?

Answer: Yes, we pursued more than one aim. We have rewritten this part to improve its clarity (last paragraph).

The text now reads: “Thus, the primary aim of this study was to characterize foot posture in school children aged 10 to 14 years, and the secondary objective was to investigate the influences of age, sex and BMI on foot posture.”

5. Page 5 Line 3 please define 'school age' as this is your main aim.

Answer: We appreciated your comment and rewrite with age to facilitate understanding (highlighted part).

The text now reads: “Thus, the primary aim of this study was to characterize foot posture in adolescents aged 10 to 14 years…”

6. Line 7 please clarify what you are looking to verify the influence of age, etc. on exactly?

Answer: We examine the influence of biological and anthropometric determinants on foot posture. We have made this change in the text (highlighted part).

The text now reads: “… on foot posture …”

Methods
1. Recruitment method unclear / not stated. How were children recruited from this school?

Answer: The children were recruited through a convenience sample; that is, all adolescents aged 10 to 14 years with an interest in participating in the research and parental consent were eligible for the study. An evaluator went to the school and conducted the assessment in an isolated room. This explanation has been added to the text (highlighted part).

The text now reads: “Before conducting the evaluation, examiners traveled to the schools and presented the study to the principals, teachers and students. Next, informed consent forms were distributed to the adolescents, who delivered them to their parents. On another day, the informed consent forms, which had been signed by both the parents and the children, were collected, and the adolescents were evaluated in an isolated room in the school.”

2. No detail on recruitment timescale.

Answer: The children were recruited between 2013 and 2015. The sentence has been added (highlighted part).

3. Inclusion criteria very broad with only one main criteria and two exclusion criterions detailed. Any other exclusions (e.g. unable to consent, etc.)? Was assent of the children sought or were they given any study information? No demographic data available - please add.

Answer: The inclusion criteria were broad because were few restrictions on the participation of adolescents, except in the cases of foot deformities, discrepancies of greater than 1.5 cm in the lower limbs and neurological diseases. Information about the study was given to teachers and the school principal, and children received consent forms, which they gave to their parents. Only after both parents and children had signed the form was the assessment performed.

The demographic data have now been included (Table 1).

4. FPI Measurements: Validated tool. Please clarify who collected the data.

Answer: Data were collected by two previously trained physical therapists. We have added this information on page 7, lines 3–4.

The text now reads: “The FPI-6 assessment was conducted by two previously trained physical therapists.”
5. Clearly defined data collection method and inter-rater reliability tested although moderate when tested - any thoughts on this? Were steps taken to improve? Can you explain why this might be the case?

Answer: Perhaps the inter-rater reliability was moderate due to the fact that the FPI-6 includes aspects of subjectivity, including, principally, item 6 (the abduction/adduction of the forefoot on the rearfoot). Prior to the collection, the examiners were trained to maintain standardization; however, the reliability was measured following the collection dates.

Results

1. P Value good. Can't see if study team has accounted for any confounding factors (e.g. environmental / socio-economic) - please add if you have or explain why not done. How was effect of subjects refusing to participate evaluated?

Answer: All of the children had similar environmental and socio-economic conditions. The two cities have essentially the same level of human development. Those who refused to participate were not evaluated; thus, there was no negative effect. We have added information about the confounding factors (highlighted part).

The text now reads: "The two cities have essentially the same level of human development; thus, all studied adolescents had similar environmental and socio-economic conditions and came from urban areas."

Discussion

1. Good evaluation of data against current literature however unsure how this translates to other populations and what the impact of the findings are on clinical practice.

Answer: We appreciate your comment and have rewritten the two last paragraphs (highlighted part).

The text now reads: "In addition, an understanding of foot posture in adolescents according to FPI-6 criteria may yield normative values for reference concerning the anthropometric characteristics of the feet. We hope that the FPI-6 will serve as a basic instrument to detect postural changes, provide more accurate diagnoses, and support possible treatments for adolescents."
“A number of limitations must be acknowledged, including discrepancies in the sample sizes with respect to sex and BMI classifications, which made more direct and specific discussions about changes in foot posture challenging. In addition, the study was designed using a convenience sample, making it difficult to extrapolate the data; however, we believe that the data can be extrapolated to populations with similar characteristics: that is, adolescents in urban areas and public schools with similar levels of human development. For future research, we suggest studies verifying the changes that occur in the foot over time during adolescence to determine how the foot posture can change during this period of life and, thus, verify that, at this stage, children are more likely to have musculoskeletal disorders due to their foot posture.”

Specific Comments of Messner, Stephanie (Reviewer 3)

Abstract

1. Page 2 line 6: insert "the" in front of "foot posture index."

   Answer: We appreciate your comment and have made the suggested change (highlighted part).

2. 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.

   Answer: We appreciate your comment and have made the suggested change (highlighted part).

3. Page 2 line 6-9: remove (talar head…………Forefoot on the rearfoot) everything in brackets as this is extensive for an abstract.

   Answer: We appreciate your comment and have removed this part.

4. 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?

   Answer: We appreciate your comment and have specified this part (highlighted part).

   The text now reads: “Boys had higher scores than girls (p = 0.037) for the right foot, and the group with normal BMI values scored higher than the obese group (p = 0.001). For the left foot, 11- and 13-year-olds differed (p = 0.024) with respect to age in general.”
5. 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."

Answer: We appreciate your comment and have made the suggested change (highlighted part). The text now reads: “Therefore, a higher BMI in adolescence is not indicative of a pronated foot type.”

Introduction:

1. Page 3 line 3: Perhaps authors would like to comments on the use of misalignment vs. malalignment?

Answer: We appreciate your comment and have chosen misalignment because this is the term most commonly used in the literature.

2. Page 3 line 3: remove "the" in front of injury to lower limbs.

Answer: We appreciate your comment and have removed “the.”

3. Page 3 line 6: change "development pain" to "developmental pain". Are authors here referring to growing pains?

Answer: No, we do not refer to growing pains; instead, we refer to pain related to foot posture. The sentence has been rewritten to clarify this issue.

The text now reads: “Kotari [7] shows that children with flat feet, for example, are more susceptible to both the emergence of pain and discomfort in the ankle and knee”.

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

Answer: We appreciate your comment and have made the suggested change (highlighted part).
5. Page 3 line 9: replace "medial overload in the foot" with "medial overload of the foot".
Answer: We appreciate your comment and have made the suggested change (highlighted part).

6. Page 3 line 12: add and "s" on the end of "region".
Answer: We appreciate your comment and have added the “s” (highlighted part).

7. 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.
Answer: We appreciate your comment and have rewritten the sentence with examples.

The text now reads: “With regard to changes in plantar support and possible susceptibility to the development of lesions [4] (e.g. medial tibial stress syndrome, patellofemoral pain, bone stress reactions), the foot has been the object of many studies [1, 6, 7, 8, 11] covering the period from childhood into adolescence.”

8. Page 3 line 19: the paragraph starts with "Again" perhaps the use of "Furthermore".
Answer: We appreciate your comment and have made the suggested change (highlighted part).

9. Page 3 line 21: remove "the" before "boys" and perhaps change "higher rates of lower arches" with "increased rates of lower MLA’s".
Answer: We appreciate your comment and have made the suggested change (highlighted part).

10. 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.
Answer: We appreciate your comment and have made the suggested change (highlighted part).

11. Page 4 line 4: insert "the" in front of "MLA."
Answer: We appreciate your comment and have added “the” (highlighted part).
12. 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?

Answer: We appreciate your comment and have restructured the sentence.

The text now reads: “To evaluate foot posture, both direct and indirect methodologies are used. The indirect form most used from the clinical perspective is performed by taking a footprint on a paper sheet.”

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

Answer: We appreciate your comment and have made the suggested change (highlighted part).

The text now reads: “However, it is important to note that this form of evaluation considers only the midfoot and does not provide information about the positions of the rearfoot and the forefoot. Another approach to evaluating standing foot posture is offered by the FPI-6 [6, 15–17].”

14. 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.

Answer: We appreciate your comment and have made the suggested change (highlighted part).

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

Answer: We appreciated your comment and have restructured the sentence (highlighted part).

The text now reads: “This methodology is valid, reliable, multidimensional, and easily accessible for health professionals in a clinical context. Furthermore, its use does not require sophisticated equipment. In addition, the multidimensionality of this approach allows the evaluation of the hindfoot, the midfoot and the forefoot in all planes of motion [15].”

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

Answer: We appreciate your comment and have made the suggested change (highlighted part).
17. Page 4 line 13: replace "in" before adolescence with "for"

Answer: We appreciate your comment and have made the suggested change (highlighted part).


Answer: We appreciate your comment and have made the suggested change (highlighted part). This reference is now 18.

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

Answer: We appreciate your comment and have made the suggested change (highlighted part).

20. Page 4 line 22: delete "the" in front of important risk factors. Replace "involved in" with "related to"

Answer: We appreciate your comment and have made the suggested change (highlighted part).

21. Page 4 line 23: use of the word dysfunction. Could authors comment on these "dysfunctions", musculoskeletal disorders?

Answer: Yes, these dysfunctions are musculoskeletal disorders. We have now exemplified this in the text (highlighted part).

The text now reads: “Identifying the parameters that affect the normal development of the foot during adolescence facilitates the development of an understanding of important risk factors related to any misalignment of the feet, as well as of other dysfunctions (e.g. musculoskeletal disorders, such as sprains or patellofemoral pains) or foot injuries.

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

Answer: We appreciate your comment and have made the suggested change (highlighted part).
23. 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?

Answer: We appreciate your comment and have rewritten this paragraph (highlighted part).

The text now reads: “In addition, an understanding of foot posture in adolescents according to FPI-6 criteria may yield normative values for reference about the anthropometric characteristics of the feet. Knowledge of these parameters will support more accurate therapy treatments for the rehabilitation of foot anthropometric changes, such as pronation and supination.”


Answer: We appreciate your comment and have made the suggested change (highlighted part).


Answer: We appreciate your comment and have made the suggested change (highlighted part).

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

Answer: We appreciate your comment and have made the suggested change (highlighted part).

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

Answer: We appreciate your comment and have made the suggested change (highlighted part).

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

Answer: We apologize for the error and have corrected the word to “prevalence.”

Methods

Location and population study
1. 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.

Answer: The intention is only to characterize the feet regarding their anthropometric characteristics to prevent future injuries and support better performance in the rehabilitation of the base of support to minimize overloads during the march. This type of sampling is closely related to the adequacy of the situation and the objectives of the research (i.e. as an exploratory study) as a basis for generating hypotheses. Moreover, this sample represents greater operational ease and a low cost of sampling.

Data from this study can be extrapolated to populations with similar characteristics, including adolescents in urban areas and public schools with similar levels of human development.

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

Answer: The study is a cross-sectional descriptive study.

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

Answer: We selected all regional schools belonging to the teaching office of Mogi Mirim. In this way, schools were recruited one by one until we completed the sample. This explanation has been added to the text.

The text now reads: “Before conducting the evaluation, examiners traveled to the schools and presented the study to the principals, teachers and students. Next, informed consent forms were distributed to the adolescents, who delivered them to their parents. On another day, the informed consent forms, which had been signed by both the parents and the children, were collected, and the adolescents were evaluated in an isolated room in the school.”

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

Answer: We appreciate your comment and have added the comma (highlighted part).

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

Answer: We appreciate your comment and have made the suggested change (highlighted part).
6. 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.

Answer: We appreciate your comment and have made the suggested change (highlighted part).

Calculation of the sample size

1. Page 5 line 19: sample size assumes linear regression, could the authors elaborate on their sample size calculation. Linear regression vs. ANOVA.

Answer: We thank the reviewer and have added the calculation of the sample.

2. Page 5 line 19-20: "previously collected data" is there a reference for this? Which data from what study? How was this variance estimated?

Answer: The phrase “previously collected data” refers to the researchers’ database. A mathematician used the data that we had collected as a reference to calculate the sample size.

The variance was estimated in our database.

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

Answer: A factorial experiment is a kind of planned experiment that allows one to study the effects of various factors on a response. The reference to Neter et al.’s work was removed.

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

Answer: Yes, this term refers to the subgroup in this study (i.e. sex, age and BMI).

Foot Posture Index (FPI) measurements

1. Page 6 line 8: could the authors comment on why the convenience sample has so many more girls?
Answer: The total number of adolescent females able to participate was 1,490 (51.2%), and the total number of males was 1,072 (41.8%). These numbers reflect the fact that were more girls in the evaluated schools and that, in general, girls were more interested in participating in the study, perhaps out of their concern for physical appearance. However, both sexes were invited to participate. According to the IBGE* (Instituto Brasileiro de Geografia e Estatística [Brazilian Institute of Geography and Statistics]), women go to the doctor more frequently than men. Thus, it is possible that Brazilian females are more concerned about their health than Brazilian men.


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

Answer: We appreciate your comment and have made the suggested change (highlighted part).

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

Answer: We appreciate your comment and have removed the description of FPI-6.

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

Answer: We apologize for the typographical error.

Statistical analysis

1. 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.

Answer: We did not check the homogeneity of the data; we checked only normality for the comparative application of parametric tests.

2. Page 7 line 22: delete "the scores of FPI-6 items" replace with "FPI-6 scores".
Answer: We appreciate your comment and have made the suggested change (highlighted part).

3. Page 8 line 2: "SPSS version 21.0" insert a reference for SPSS.
   Answer: We have added the following reference: Field, Andy. 2013. Discovering Statistics Using IBM SPSS Statistics (4 ed.). p. 915.

4. 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.
   Answer: We appreciate your comment and have made the suggested change (highlighted part).
   In the methods section 2.3: Foot Posture Index (FPI) measurements were added, as follows: “Intra-rater reliability was tested in 248 adolescents with a seven-day interval. Inter-rater reliability was tested in 280 subjects on different days, according to the logistics of research.”
   In the statistical analysis section: “Reliability was based on Cohen’s Kappa coefficient and classified as previously described [23].”
   In the results: “Intra-rater reliability was classified as substantial (Kappa = 0.62) and inter-rater reliability was classified as moderate (Kappa = 0.52) [23].”
   In the discussion: “The intra-rater reliability was considered to be substantial and inter-rater reliability was considered to be moderate. Other authors have presented similar results; for example, Morrison et al. [17] found an excellent inter-rater reliability (kw = 0.86) for their study of 30 subjects between 5 and 16 years old, and Evans et al. [24] found a good intra-rater reliability (ICC = 0.93-0.94) and inter-examiner reliability (ICC = 0.79) for their study of 30 healthy subjects between 7 and 15 years old.”

5. 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.
   Answer: We appreciate your comment and have made the suggested change (highlighted part).
   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.
Answer: This is a descriptive study. We do not analyze prevalence, only the characterization of FPI in different age groups.

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.).

Answer: We appreciate your comment and have made the suggested change (highlighted part). The table has been added. The BMI criteria were taken from Cole et al.’s work.

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.

Answer: We appreciate your comment and have made the correction (highlighted part).

Results

1. Page 8 line 17: delete "male" and insert ", in males," after "right foot."
Answer: We appreciate your comment and have made the suggested change (highlighted part).

2. Page 8 line 17: replace "for misalignment in pronation" with "to pronate".
Answer: We appreciate your comment and have made the suggested change (highlighted part).

3. Page 9 line 1: "regard" add "s".
Answer: We appreciate your comment and have made the suggested change (highlighted part).

4. Page 9 line 1: insert "a" before "difference."
Answer: We appreciate your comment and have made the suggested change (highlighted part).

5. Tables 1-4: A baseline descriptive statistics table would be nice as mentioned in the general notes on "methods section above"
Answer: We appreciate your comment and have added the table (Table 1).
6. Table 1: the title includes age yet the table doesn't show any age categories.

Answer: We appreciate your comment and have removed age from the title.

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

Answer: We appreciate your comment and have added "Mean ± SD" (highlighted part).

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

Answer: We appreciate your comment and have removed age from the title.

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.

Answer: We thank the reviewer and have added the confidence interval to the tables.

Discussion

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

Answer: We appreciate your comment and have made the suggested change (highlighted part).

The text now reads: “The group classified as having normal weights had higher FPI-6 scores than other BMI groups, indicating a tendency towards pronation.”

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

Answer: Yes, the arch meant was MLA. We appreciate your comment and have made the suggested change (highlighted part).
3. Page 10 line 20: sentence starting "As a result……." consider restructuring to avoid the determiner "their".

Answer: We appreciate your comment and have made the suggested change (highlighted part). The text now reads: “As a result, males’ feet reach maturity later than girls’.”

4. 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.

Answer: We appreciate your comment and have rewritten this part to improve clarity (highlighted part).

The text now reads: “It is known that there is an asymmetry in the human body, such that the left foot is more related to the bearing function, while the right foot is more related to the propulsion of the body during locomotion [28]. In this sense, because postural assessments occur when a subject is in a static posture, the support foot is likely to take on more pronated features due to the increased weight-bearing function. However, this is only a theory, since it cannot be confirmed from our results.”

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

Answer: This may have been a problem in translation. What we meant is that increasing the BMI does not increase the pronation of the feet (highlighted part).

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

Answer: We meant only posture pertaining to the foot. This was an error in translation (highlighted part).

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

Answer: We appreciate your comment and have removed “to.”

8. Page 12 line 6: clinical approaches? Could authors be more specific?
Answer: We appreciate your comment have tried to be more specific (highlighted part).

The text now reads: “…treat or not treat a pronated/supinated child’s foot, for example.”

9. 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?

Answer: We apologize and have rewritten this part to correct for an error in terminology. You are right: The data can be extrapolated to populations with similar characteristics.

The text now reads: “In addition, an understanding of foot posture in adolescents according to FPI-6 criteria may yield normative values for reference about the anthropometric characteristics of the feet. We hope that the FPI-6 will serve as a basic instrument to detect postural changes, provide more accurate diagnoses and support possible treatments for adolescents.”

10. 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.

Answer: We appreciated your comment and rewrite this paragraph.

The text now reads: “A number of limitations must be acknowledged, including discrepancies in the sample sizes with respect to sex and BMI classifications, which made more direct and specific discussions about changes in foot posture challenging. In addition, the study was designed using a convenience sample, making it difficult to extrapolate the data; however, we believe that the data can be extrapolated to populations with similar characteristics: that is, adolescents in urban areas and public schools with similar levels of human development.”

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.

Answer: We appreciated your comment and rewrite this paragraph.

The text now reads: “For future research, we suggest studies verifying the changes that occur in the foot over time during adolescence to determine how the foot posture can change during this period of life and, thus, verify that, at this stage, children are more likely to have musculoskeletal disorders due to their foot posture.”
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.

Answer: We appreciate your comment and have made a specific comment about the second part of the hypothesis. We have also discussed future research in more depth (highlighted part, last paragraph).

The text now reads: “Thus, our hypotheses were only partially confirmed. Although there are differences between different sexes, ages and BMI groups, pronated feet are not necessarily experienced to a greater degree by younger adolescents or by adolescents with higher body mass.”

Conclusion

1. 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.

Answer: We appreciate your comment and have made the suggested change (highlighted part).

The text now reads: “The feet of most adolescents in this study were classified as normal with only some degree of pronation, particularly for the boys.”

2. 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.

Answer: We appreciate your comment and have rewritten the sentence more specifically (highlighted part).

The text now reads: “For the left foot, there were differences between the 11- and 13-year-old age groups, with the 11-year-old group presenting greater tendencies toward pronated feet when comparing posture with age.”
3. 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?

Answer: We appreciate your comment and have rewritten the sentence more specifically.

The text now reads: “In addition, adolescents with normal weights had higher FPI-6 scores than adolescents from the other BMI groups (i.e. underweight, overweight and obese). This suggests that increased BMI does not result in a prone foot posture. The data from this study contribute to the current literature by reporting normative FPI-6 values for the adolescent population.”

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.

Answer: We appreciate your comment and have rewritten the entire conclusion (highlighted part).