Reviewer’s report

Title: The paediatric flat foot and basic anthropometry in 140 Australian school children. Fatter children not found to have flatter feet.

Version: 1 Date: 28 July 2010

Reviewer: Karen J Mickle

Reviewer’s report:

Minor issues not for publication (e.g. typos)
1. Background, 1st sentence: Replace ref #2 with a more suitable reference as this is not an epidemiological or review paper.
2. Background, 3rd sentence: Replace “continues to be” with ‘is’.
3. Methods, 1st sentence: Replace “paediatric subjects” with children
4. Methods, 3rd sentence: Reword to begin the sentence with “Thirty-one children were found to have a FPI-6…”. Remove ref # 30 as it does not mention flat foot classification for children.
5. Methods, paragraph 3: Join to previous paragraph.
6. Data analysis: Reverse paragraph order.
7. Discussion, paragraph 3: The word “viz.” is not commonly used in scientific text, replace with that is, or whereby.
9. Table 1: Superscript the “2” under BMI.
10. The maximum BMI for the n = 109 needs to be checked, I am assuming that it should be 37.94.
11. Table 3: Remove the “c” and superscript the “2” under BMI.

Major Compulsory Revisions
1. Title: the use of the phrase “Fatter children not found to have flatter feet” is misleading. The analysis of the data presented in the manuscript did not lead to this conclusion. The data would have needed to be grouped by the child’s obesity status to determine this finding.
2. Abstract: Based on the above comment, the use of the term “fat children” in the results is inappropriate. Again the final sentence in the results needs to be rewritten as “heavy children” were not found to “have less flat feet”.
3. Background, 4th paragraph: The concluding paragraph of the introduction is very disjointed. There are no clear aims or hypothesis stated and should be rewritten.
4. Heading “The Port Pirie flat foot study”: This should be moved to the methods section.
5. Methods, 1st paragraph: Please confirm the reason behind using a FPI score # 6 to classify a child has having flat feet. Based upon the normative values for minors provided by Redmond et al., [1], a FPI of 6 is in the normal range, while a FPI of 12 would be potentially abnormal. Redmond et al., [1] also reported normative ranges for logit transformed FPI scores, whereby a FPI logit score of 6.2 was the upper end of the normal range for individuals aged under 18 years. Can you confirmed whether raw or transformed FPI scores were used for the classification of foot type?

6. Data analysis: What statistical tests were used to compare variables for the flat foot group to the remaining children? I would suggest non-parametric due to the large sample size difference between groups. Similarly, was the FPI normally distributed (doesn’t appear to be in the histograms)? If not, Spearman correlation coefficients or logit transformations (see comment above) would be more appropriate.

7. The use of BMI in children should not be used as a continuous variable, as a higher BMI does not necessarily indicate greater adiposity. BMI should be used to classify whether a child is overweight or obese using the age and gender cut-off points proposed by the International Obesity Task Force [2]. For example, two children could have the same BMI of 21.0, however of one child is 7 years old, they would be classified as obese, whereas a 8.5 year old child would be classified as overweight. Therefore the relevance of the relationship between BMI and FPI is questionable. A correlation between BMI z-scores and FPI would be more appropriate.

8. Results: Please report the mean age of the subjects in the flat foot and non-flat foot groups. Age is an important cofounding factor of medial longitudinal arch development in this age group. It is likely that it has not fully developed in the younger children, but may be completed in the oldest children assessed. It may be necessary to add age as a covariate into the statistical analysis.

9. Discussion, 2nd paragraph: Give further details of the similarity of findings between the current study and that of the children with growing pains (ref #35).

10. Discussion: It is consistently mentioned throughout the manuscript that all other previous studies have found that overweight and obese have flatter feet and the finding of this study conflict the prior studies. The current study design is completely different from all the other studies and this should be discussed, as it is probably the main reason for the conflicting results.

11. Reference list needs considerable editing for consistency, spacing and spelling. Eg. Ref # 2, 6, 7, 8, 18, 20, 21, 24

Minor Essential Revisions

1. Background, 2nd paragraph: Insert reference after last statement.

2. Results, last paragraph: Not sure what is meant by “this atypical/age subject”. Is age a typo or was the child older than all the other participants. Although the means with the outlier removed was similar, please confirm whether it changed the significance level for any variables in the comparisons between the flat- and non-flat feet children.
3. Discussion, 3rd paragraph: Reword the first sentence as “the average” can’t “indicate a broad range”.

4. Table 1: Indicate the variables that differ significantly between groups (e.g. *).

5. Table 2: This is the first use of the abbreviation FPIRTS and FPILTS, however they are not defined and differ from the table heading. FPI(R) and FPI(L) would be clearer.

6. Figure 1: Again, I suggest using FPI(R) and FPI(L).

7. Figure 2: Please use axis titles. Also use different symbols for the right and left scores.

Discretionary Revisions

1. How many children were classified as overweight or obese? Did these children have flatter feet than the children in the normal BMI category?

2. Background, 3rd paragraph: Reference to studies from several countries (Austria, Germany and Taiwan) is made when looking at the association between flat feet and overweight/obesity in children. Given that the title of the paper refers to Australian children, it would be worthwhile mentioning the previous studies conducted on overweight and obese Australian children [3-5].

3. Villarroya et al., [6] also reported a flatter foot type in overweight and obese children compared to normal weight aged 9-16 years 9 (n = 245). This should be added to evidence for the association between obesity and flatter feet in the introduction/discussion.

4. Discussion, final paragraph: Villarroya et al [7] found a strong correlation between their footprint and x-ray parameters in obese children, while Mickle et al [5] found that excess soft tissue did not explain flatter footprints in overweight and obese young children. Please discuss.

5. Table 1: The table could be simplified by removing the population sample (N = 140) group as it mostly replicates the n = 109 group. What does the Variance row refer to? Not sure whether this is needed.

References


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

**Quality of written English:** Acceptable

**Statistical review:** Yes, but I do not feel adequately qualified to assess the statistics.

**Declaration of competing interests:**

I declare that I have no competing interests.