Author’s response to reviews

Title: The typically developing paediatric foot: how flat should it be? A systematic review

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Author’s response to reviews:

Reviewer #1: Please convey my appreciation to the authors for undertaking this mammoth review. I look forward to seeing the review published. Please see my comments below. The authors will see I comment in a number of places on the use of the word 'normal'. Perhaps a section of the background can be dedicated to describing how normal is defined colloquially and statistically. The advice given on using the word 'normal' in the discussion can then be enhanced based on the definitions provided in the introduction.

- Absolutely! This is a concept that generally plagues me, I will enhance the message by adding to the background. Also thank you for the comments, this review has indeed been a large undertaken, so glad for the message to be shared, finally.

P3, Line 20 - 'consistently noted' implies more than one reference. As the reference provided isn't a review article, could the authors please provide more references?

- Actioned.

P3, Line 20 - After reading the abstract and being discouraged from using terminology which suggests ascension to 'normality', I was surprised in the background to read of 'flat feet being a normal developmental occurrence'. As many readers will not be confident in their understanding of normal distribution or the statistical definition of normality, perhaps the abstract conclusion can be explained in plain language, or the use of 'normal' in the background amended.

- Actioned, will review throughout doc. and replace with typical, all sections will be highlighted throughout.
P3, Line 26 - insert space 'pain [1, 4-6]. It'
   - Actioned.

P3, Line 27 - please remove the duplicate sentence 'It has been established that adults with flexible flat feet have a significantly increased likelihood of reporting back or lower limb pain, foot pain, hallux abducto-valgus, callus, hammertoes and degenerative joint disease.' The following sentence is the same but with references.
   - Removed.

P3, Line 36 - (Shibuya et al. 2010). Please amend reference format
   - Amended.

P3, Line 37 - readers familiar with Angela Evans' work may read the sentence 'Unfortunately, no guidelines exist to direct practitioners on whether or not presenting flat feet are, indeed, developing typically, or when management is, or is not, required.' and wonder whether you are unaware of that work. Perhaps you can provide an explanation of a 'guideline' so that readers can distinguish this from the flatfoot proforma.
   - Re-written to avoid the above.

P3, Line 54 - Evans, 2008 pg 392 - please amend reference format. I see that the page number is required for this reference. The coordinating editor might advise how best to refer to this.
   - Amended.

P4, Line 47 - I wonder about the use of the word 'pearling'. It may be unnecessarily jarongistic. Perhaps 'One author read reference lists of included studies to identify additional relevant studies'.
   - Re-written.
P5, Line 32 - Please change 'data was' to 'data were'. Please correct similar errors throughout. The word data is plural.
- Changed throughout.

Page 6 line 2 - The Cochrane collaboration discouraged the use of summing a score for risk of bias appraisal for a number of reasons. In the discussion please comment on the questionability of use of a summed score. The main problem is that a summed scored assigns equal weights to all domains of risk of bias, which is not necessarily fair.
- Thank you for the above. I have added a comment within our limitations section. We have chosen to keep this method to remain consistent with the tools use in previous published works and to give a quick objective appraisal for the clinical reader (who often doesn't read this area of reviews). I do keep the above in mind for future research though, thank you.

P6, Line 8 - was risk of bias appraisal performed independently by the two authors? I expect so. This is worth stating.
- Noted and added.

P7, Line 8 - participants are described as being from newborn to 18 years of age. In the eligibility criteria P5 Line 2 age is described as 12 months to 18 years. Please make a note why this varied from protocol.
- Thank you for the pick-up, that was a mistake, it should have read "new walkers" not "newborns". Changed to accurately reflect the youngest age, 10 months.

Was the protocol published or registered? If not, authors might in the future be interested in registering their systematic review protocols with PROSPERO https://www.crd.york.ac.uk/PROSPERO/
- This paper in concept had started some time ago, with some disjointed work time disrupting the flow (maternity leave etc....) thus, when I went to register with proper the paper had officially passed the milestone for which you could register. So I thought best not to, as it would have been incorrect to do so. Absolutely, for future research will be registered at the out-set, as all our honours students do.
P7, Line 20 - please correct spacing 'respectively'.

- No error in my current version, perhaps it altered in the up-load process?

P7, Line 40 - I am surprised that the following criteria were included in the EAI score: not randomising groups, not concealing randomisation, not blinding subjects to their grouping. Considering the inclusion criteria for the systematic review, I did not expect any randomisation or allocation of participants to groups. Perhaps the randomisation and grouping criteria should only be applied to RCT.

- We wrestled with this concept for a while. Some of the papers used groups, and did apply adequate grouping techniques etc., whilst other papers that utilised groups did not use these methods. As this tool allows for 'UTD' and 'NA' as responses we thought it best to leave these domains in for papers that had used grouping. I guess the summed score takes into account the 'NA' factor thus removing the weighting of this section where is was not relevant.

P8, Line 4-8 - It may be useful for the reader to have the reference numbers after measure. This would allow us to quickly look at the papers that used those measures. I see that the references are provided in each section following. If the authors do not wish to provide the references in the introductory paragraph I will not push the point.

- I feel leaving this out makes for 'smoother' reading, as with all the acronyms and terms + references it would be quite a clunky read. Hopefully readers will engage within each section and look at papers as relevant within each graphed section to help compartmentalise the data as they are reading each of the sections. This is just my opinion though, and happy to make the addition if it is still thought relevant to do so.

Additional file 1 - the search strategies would I think be better presented in a simple table or in lists, We do not need a screen shot with the various tabs. If the authors prefer the current format I am happy to leave this to the editor's discretion.

- We potentially did this for ease to be honest. Happy to re-type into a table format. Will up-load new version.

P9, Line 25 - I am not sure what 'normal foot posture' means here. Do the authors mean that the children by this age have grown out of their flatfeet?
When presenting data of each foot posture measure, the terms/categories/descriptions used by that measure are used verbatim. These terms, if reported are presented on the actual graph itself too. This is why these measures are so hard to compare and to talk about clinically, definitely a major issue in our reporting of foot posture and leading in to our next research project to use percentiles instead of categories.

The figure for Clarke's angle (figure 8) needs y and x axis labels

- The version I have does, not sure if was corrupted during up-load, I will add this to the re-upload documents too.

P10, Line 52 - I do not understand how 'normal foot' is defined.

- Good point, we have not provided this. Will amend in the additional file 3 which presents the cut-offs.

Throughout the results 'normal foot' is used quite often. I don't understand how this classification is reached. Is this being used to describe that the flatfootedness of childhood is gone? There isn't enough data to determine statistically normal scores for each measure at each age.

- As per the above comment regarding categories, I will add a comment within page 8 to describe the verbatim use of categories as provided by each measure.

P12, Line 29 - 'known' is unnecessary here. I recommended either stating 'known to the authors' or removing 'known' altogether. As is, it reads as if 'known to humankind' which is a bit funny.

- Agreed, removed.

At the start of the discussion before the prevalence of flatfeet is mentioned, perhaps discuss the limitations in defining flatfeet.

- A sentence added.

P 12 Line 42 - 'The data presented in this review shows that healthy normally developing children can be expected to have a flat foot type at some stage during their development'…can
the data be interpreted more precisely than this? Can you state that healthy normally developing
children can be expected to have a flat foot type in the early stages of their development? 'At
some stage' could mean that a child suddenly gets flatfoot age 6.

- Have altered this area of the review and removed 'at some stage'.

P12 Line 59 into P13 - I don't understand the sentence 'Whilst these authors use the term 'normal' to
represent this foot posture it would seem to be an improper description of the child's foot
given that these healthy normally developing children can also be seen to have a 'flat foot'
posture'.

Using the statistical definition of normal, it seems it is normal for children to have a flat foot
posture.

- yes this section does not read clearly. I have re-worked this section, I hope this is a better
   explanation of the 'normal is flat' concept.

Perhaps the change needs to also occur in our perception of the word flatfoot? This data
demonstrates that flatfoot is normal, and therefore not in itself pathological. Flatfoot in children
is not a diagnosis of a problem. It is the healthy developmental position. Of course, children can
have associated problems, which can be diagnosed and treated.

P13, Line 16 - do the authors think the current data sets provide enough data to establish
reference percentile values for measures of flatfoot? I would not have thought so, but if the
authors think otherwise I would like this to be specifically stated so that this can be pursued.

- Absolutely not, I can see where we have used the term "this study" is misleading, rather,
  "future study" exploring percentiles would be a better approach, this has been changed.

P 13, Line 25 - I would have though cessation of growth and closer of growth plates refer to the
same point in time. This could show my ignorance. If there was a difference could the authors
please explain this as other readers might also wonder about this.

- Absolutely connected, have modified this sentence as these concepts have been reported
  separately within the literature, although I absolutely take your point above.
P13, Lin 38 - many podiatrists have learnt this as Valmassey's rule. You might find an original reference through Valmassey.

- I did search for this reference, during the start of my PhD for a considerable time and could find it nowhere. Other than listed as expert opinion.

P13, Line 44 - does 'normal' in this instance refer to 'mature' or 'adult-like'?

- 'normal' as reported by the authors, reported in this instance verbatim from the reference. Yet another issue with the term normal.

P15, Line 41 - I am confused by the sentence 'The first being that the use of the term 'normal' in relation to foot posture is misleading in the categorisation of the paediatric foot, as indeed a 'flat' foot posture is a 'normal' finding at specific ages.' If 'normal' is used to mean 'what is to be expected' (a typically usage) then flat foot posture is normal in healthy children.

- I am not sure what the question is here, I have changed normal with typical? As you have written above is the meaning of this section.

P15, Line 54 - The meaning of the following sentence is unclear: 'As a result of this review many questions have also been focused.' Perhaps 'brought into focus'? Or, that questions have been raised.

- Changed to 'raised'.

P16 Line 10 - the final sentence is not complete 'Whilst providing a consensus approach to the reporting of the data in-line with other commonly reported children's measures, such as percentiles, and refrain from terminology which suggests ascension to 'normality'.'

- Have change the start of the sentence?

Reviewer #2: Thank you for the opportunity to review this interesting paper.

I believe that this extensive systematic review has been able to provide clarity around a very popular topic in podopaediatric and has offered interesting answers for clinicians that seek at
anatomical 'norms' in order to base their podiatric managements. Please note below few comments that should be addressed prior to publication:

- Thank you for your positive feedback.

TITLE:

The title states "A descriptive, comparative review"; however only in page 3 line 13 - the reader is informed about the actual methodology being a Systematic Review. I would suggest to substitute in the title "A descriptive, comparative review with 'systematic Review'.

- Changed.

ABSTRACT:

Very detailed and well written. The Conclusion section seemed disproportionately larger than the intro & main body. I would possibly suggest to reduce the wordage in the conclusion section and provide more details about the methodology of the paper

- Changed. Have also adjusted format as per editors request below. Not sure if length is now appropriate? Please advise.

KEYWORDS:

Please re-arrange the order of the 'key words', either by alphabetical order OR by relevance to this publication. Provided that it is not exceeding the max number of 'key words' available, please also there is no mention about 'children', 'podopaediatric' etc reflecting the word used during the 'search strategy'.

- Have changed to alphabetical order and changed terms as per above.

BACKGROUND:

Page 4 line 16: 'developing typically', please either remove it or rephrase it.

- Changed.
Page 4 line 26: please substitute 'pervaded' with effected / influenced/ jeopardised or similar...
- Have changed to impacted.

Page 4 line 37: please check if REF style is correct (Shibuya et al. 2010).
- Have corrected.

Page 4 line 54: please check if REF style is correct. Evans, 2008 pg 392.
- Changed.

METHODS:
Page 5 line 27-28 please provide REF to the statement.
- This line? The EAI has been validated for the appraisal of observational studies.

All line numbers and page numbers have now shifted with edits, sorry.
If so, I have provided reference for the Prisma statement?

Page 6 line 16-18 regarding 'any discrepancies in opinion. Was there a 3 impartial reviewer involved? If YES please specify within the text: "Disagreements between the two authors regarding full-text inclusion were resolved by a third reviewer (XXX). If disagreements were not resolved successfully by the third reviewer, study authors were to be contacted, though this was never required". like it was reported on page 7 line 10. If NOT - please explain why a third reviewer was not sought or possibly add it to the limitation section.
- I have tried to understand what is being requested, but I am un-sure. You will need to please re-explain or dictate what you require. All the page numbers and line numbers have shifted.

Page 6 line 54: please provide REF about the EAI.
- Added.
The author stated that "Studies needed to be of a quantitative design" - please provide further details of the methodologies of the included studies.

- Changed.

Page 7 line 22 - please substitute 'rule of thumb' ..too colloquial. Possibly substitute it with 'standard'!

- Changed

RESULTS:
Page 7 line 52. Possibly change 'would enable' with 'would have enabled'

- Changed

Page 8 line 20 - punctuation mistake

- I am sorry, can you please stipulate section, page numbers and lines have adjusted with edits to date.

DISCUSSION:
Page 13 line 29 please substitute compilation with summary or database

- Changed to summary.

Page 14 line 24-28 please provide the REF related to the 'three methods'

- Added.

Page 14 line 51 - please ensure that you call this manuscript Systematic Review and not 'Review'. It happens multiple time thought out this submission.

- Found and changed throughout entire document.
Page 15 line 38 - please provide REF 'has been shown'...by whom?

- By reference 57 + 58, as referenced.

Within the limitation section, please possibly consider the fact that it was not possible to differentiate data specifically in relation to gender. As female children typically tend to develop sooner than the boys at the same age, it might be useful to inform the reader and clinicians that they should not possibly expect the same values at same age between boys and girls. As you also investigated studies from multiple international sources, please possibly consider to make a statement indicating that it was not possible to ascertain any trends based on country / nationality/ race / place of origin. Alternatively through your search, it would be otherwise interesting to inform the readers if you found any significant results in biomechanical changes in feet structure based on where child was originally from (ie: Africa / Asian etc)

- It was hoped that there may be a difference shown as a result of ethnicity, but as you know ethnicity v place of origin are not the same thing, and the data presented did not go into enough detail to make any such conclusions. Although postulated clinically that there are foot posture differences between Asian and Caucasian clients, however could not be ascertained here with these papers. Still a pertinent question that may be shown in adult data published?

Have added both of these to the limitations section.

CONCLUSION:

It was not possible to find the subheading of Conclusion.

- Good point, added.

Very clear PRISMA chart. Well done.

- Thank you.

EDITOR'S COMMENTS

1. Please reformat abstract using standard subheadings (Background, methods, Results, Conclusions) and trim back substantially - it is far too long.
- Actioned, within 350 words.

2. Please use the attached JFAR template and refer to the document 'common formatting errors in JFAR papers'.

- Actioned, several changes made throughout, mainly replacing & with and, and Figure etc...