Reviewer’s report

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

Version: 0 Date: 01 May 2017

Reviewer: Fiona Hawke

Reviewer's report:

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.

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?

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.

P3, Line 26 - insert space 'pain [1, 4-6].It'

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.

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

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 mangement 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.
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.

P4, Line 47 - I wonder about the use of the word 'pearling'. It may be unnecessarily jarngistic. Perhaps 'One author read reference lists of included studies to identify additional relevant studies'.

P5, Line 32 - Please change 'data was' to 'data were'. Please correct similar errors throughout. The word data is plural.

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.

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

P7, Line 8 - participants are described as being from newborn to 18 years of age. In the eligibility criteria P5 Line2 age is described as 12 months to 18 years. Please make a note why this varied from protocol.

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/

P7, Line 20 - please correct spacing 'respectively'.

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.

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.

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.
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?

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

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

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.

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.

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

P12 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.

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.

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.

P13, 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.
many podiatrists have learnt this as Valmassey's rule. You might find an original reference through Valmassey.

does 'normal' in this instance refer to 'mature' or 'adult-like'?

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.

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.

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'.

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