Reviewer's report

Title: Effect of children's shoes on gait. A systematic review and meta-analysis

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Reviewer: Meredith Wilkinson

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Effect of children's shoes on gait: A systematic review and meta-analysis.

For Podiatrists and other professions, this article draws some very interesting conclusions and provides substantial information for clinical consideration and further investigation.

Major compulsory revisions:

1. Inclusion of relevant studies
   My concern is that the paper and therefore the analysis are incomplete. This reviewer’s unpublished thesis
   “The Effects of Footwear on Selected Parameters of Gait in Early Independent Walking” LaTrobe University, January 1997, is not cited. The methods, variables and results from the thesis seem to address the inclusion criteria of this current paper.

   The findings in the unpublished thesis are consistent with some of the findings in this current paper including: an increase in total excursion of ankle joint range of motion, a trend toward increase in step and stride length and an increase in base of support and a decrease in cadence. I recommend that the authors, if they have not already done so, consider the unpublished thesis as it may provide additional support for their conclusions.

   I am unable to pass an opinion on the statistical analysis presented as my statistics knowledge is too rusty, however if it is confirmed by other reviewers that there is enough data to draw the conclusions and that the statistical analysis utilized is appropriate, the methodology appears sound.

2. Table 5 and sagittal ankle ROM:

   Sagittal plane ankle ROM is reportedly increased (Kinematics findings 1st paragraph). However, there is no inclusion of this variable from the Wegener et al. study in the corresponding Table 5. Furthermore, Table 5 in the study by Wolf et al. indicates a decrease in the Tibia-foot flexion variable. This appears to be inconsistent with the statement that ankle range of movement increased.

   It is not clear where the reporting of an increase in ROM was derived.

Minor issues not for publication:
1. Table 8. Query whether the caption below should read “shod running” compared with barefoot running?

2. Discussion. 1st paragraph last line states two variables, whereas under the subheading Walking, 4th paragraph, the last sentence lists three variables.

Discretionary revision:

Discussion, Clinical implications, 1st paragraph.

It is only in an ideal world where, in a clinical situation, a standardized shod condition could be available to assess in-shoe intervention. Given the variable nature of the shape of feet, even if a standard footwear type (across all sizes) was available, the practical problem of fit would still exist. Furthermore, it is important to evaluate any intervention in the footwear that the child is most likely to wear, as the differing characteristics of different footwear will affect function and the impact of in-shoe intervention will therefore vary across individuals. Although differences between footwear types in this current paper were largely not analysed.

Overall the paper is clearly written and the findings are of great interest.

**Level of interest:** An article of importance in its field

**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 I have no competing interests.