Reviewer’s report

Title: Relationship between lower-extremity defects and body mass among Polish children: A cross-sectional study.

Version: 1 Date: 24 Jun 2018

Reviewer: Angela Evans

Reviewer’s report:

Thank you for availing me the opportunity to review this work, which I understand is already revised following prior review.

In essence, the study could be useful, as a large-scale community cohort evaluation of lower limb findings and basic anthropometry in school children.

However, there are a number of design aspects that require clarification, and the results need better interpretation and appreciation of limitations and implications.

Language clarity requires attention throughout (appreciating ESL)

Specific points to note:

Background

- the authors have mixed studies pertaining to adults with those addressing children. Please separate and clarify.

- clearly identify what is expected regarding foot and leg alignment in this age group from previous works

Methods

- the details re age are unnecessary, just state that age in years at time of evaluation was recorded

- what is the Frankfurt plane?

- what instrumentation was used for height, weight?

- details required for linear compass, goniometer, footprint, podoscope apparatus - and for methods of physical assessment, and validity issues of said measures??

- who examined the children? Was inter-rater consistency assessed?
Results

- why were girls and boys not compared, given different musculoskeletal development expectations?

- the authors deem differences as 'deformities' - against what criteria?

eg given the findings of heel valgus in 21.8%, could this be within normal range of variation? (same for knees.., and were measures reliable?)

- what are flatfoot I, II, III, IV: these need descriptions (what footprint/podoscope analysis occurred - angular, visual?)

Table 2 - suggest replacing this with diagrams of assessment techniques

Table 3 = require actual values, as well as (eg varus/straight/valgus etc) categories

- given the large cohort, I also suggest this is expressed for each year group, ie 8,9, 10,11,12 and M/F

Table 4 - as above; premature to specify "defects" unless expected criteria are also included for reference basis (this will be a range of values)

Tables 5 and 6 - revise in light of above; but this will really be determined by re-visiting Methods to establish strength of findings

Discussion - needs to be re-framed in light of amendment to Methods and Results.

Assumption of defects when heel position is not vertical or knees are not straight, needs to be revised and discussed against previous population based samples.

What are expected findings at this age for feet, knees (normal populations have a range)

What is the value of static assessments (quick, simple), and how relevant is this to gait, future symptoms? Be careful to state what is known, rather than 'believed' please.

Were symptoms reported at any stage?

Further discussion regarding fat feet versus flatfeet given footprint basis to measures (you have made a good attempt on this within the discussion, but revise in light of Methods limitations)

Childhood overweight and obesity is a much wider issue that feet/knee positions in static stance. Better justification of this association and inquiry is needed.

Limitations: better detail in Methods should clarify this, and also modulate claims from results.
Reference 25 does not include year of publication

Overall - whilst this is a large study, it is not at written a clearly valuable study.

More detail is required, as stipulated above - especially Methods.

From this, Results need re-framing - with reference to expected population findings, previously described by others.

Further, the significance of findings needs elaboration - "so what?", needs to be answered [eg in children older than age 2 years genu varum is unexpected, and statistically abnormal...]

Finally, may I suggest that before launching into any future works, the authors spend time on better designing their study, so that results are more directly meaningful. This is said by way of both encouragement and constructive critique.

Good luck!

**Are the methods appropriate and well described?**
If not, please specify what is required in your comments to the authors.

No

**Does the work include the necessary controls?**
If not, please specify which controls are required in your comments to the authors.

Unable to assess

**Are the conclusions drawn adequately supported by the data shown?**
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No

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