Reviewer's report

**Title:** Static foot assessments do not predict medial longitudinal arch motion during running

**Version:** 1  **Date:** 26 April 2015

**Reviewer:** Trevor D Prior

**Reviewer's report:**

This is an interesting paper which evaluates the use of static measures to predict dynamic function. In large, the findings concur with previous data although they have also evaluated dynamic arch motion. However, they need to be cautious with their interpretation, given the low numbers (this is acknowledged in the discussion).

**Major compulsory revisions**

The title of the paper states that static foot assessments do not predict dynamic arch motion. More accurately, the static measures they have assessed do not predict dynamic arch motion and thus the title and paper (for instance in the abstract – lines 35 & 38) should be amended to reflect this accordingly.

Furthermore, they should at least discuss how one would expect a single static measure to predict a change in motion? One could change the slant of the paper by stating that they wished to evaluate which of the static measures they utilised best predicted the MLAA in midstance and by reporting their dynamic data indicate that additional measures are required to predict dynamic motion. It may be quite possible to combine a static arch measure and a quasi static measure of arch motion to be predictive of function. They have not evaluated this aspect and it should be discussed.

Page 6, lines 115-123

The authors describe the measures used, including the tracking by the Vicon system. Am I correct in assuming that the subjects were static at this point? If so, this should be made clear.

Page 7 lines 149 – 158

I am slightly confused by the methodology described. The authors previously indicated that the foot classification was undertaken with the MLAA utilising a marker on the medial malleolus and Vicon. I assume this is the data that was used for the static measurements as per my previous comment? However, on line 154, the authors state that “...the MLAA calculated during the static trial using the medial projection of the lateral malleoli”. Was this process undertaken to identify the offset angle which was then applied to the dynamic measures? If so, the wording of the identified line should be modified to make this clear. I would suggest that they word this along the lines of “in order to determine the angular
offset, the MLAA was calculated during a static trial using…..”

I have some concerns regarding the method used and the angular offset. The authors rightly acknowledge this in the discussion and discuss this further in the additional file. Was the offset calculated for each subject?

Their evaluation of two subjects indicates that the offset remains uniform throughout the stance. However, evaluation of larger numbers is required to confirm the degree of offset and the potential variability with differing foot types and this should be acknowledged or the use supported by an appropriate reference / references.

Is there a particular reason they wished to use a lateral rather than medial marker?

Additional file

The authors state that there is a systematic upward shift of the MLAA using the lateral malleolus marker but the graph suggests the medial marker demonstrates a higher angle. Could the authors please clarify?

Discretionary revisions

Page 5, line 107

It would have been useful to have had navicular drop data as this would at least provide assessment of potential motion. Could the authors explain why they feel there assessment of navicular drop had low repeatability when it has been shown to be a repeatable measure in the literature? Did they use the Vicon system to measure this or was it a more traditional measure? Which technique for navicular drop did they use?

**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 that I have no competing interests