Reviewer's report

Title: Relationship between foot function and medial knee joint loading in people with medial compartment knee osteoarthritis

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Reviewer: Martijn Steultjens

Reviewer's report:

This is an interesting paper that aims to improve our understanding of how foot biomechanics might affect knee joint health. It is a timely and novel piece of work. Nevertheless there are three issues that need to be addressed:

Major compulsory revisions

1) The authors build their case on the relevance of the knee adduction moment (KAM) to osteoarthritis (OA), and cite a number of studies that have identified the association between KAM and OA-related parameters. Here, the authors should be careful not to cherry-pick their evidence. A recent systematic review of the KAM literature by Mills et al. (Arthritis Care Research 2013, epub ahead) concludes that there is no consistent evidence for elevated KAM in OA, or of clear relationships between KAM and OA-related parameters. As a bare minimum this should be acknowledged and discussed in the paper.

2) The study correlates various kinematic variables from different stages of the gait cycle, e.g. peak 1st KAM at on average 19% of the gait cycle with peak rearfoot eversion at 30%. The authors suggest this might explain lack of correlation between 1st peak KAM and foot kinematics. Would it therefore not make sense to correlate characteristics at the same point in the gait cycle, e.g. using amount of rearfoot eversion at the time of 1st peak KAM, rather than peak rearfoot eversion?

3) The system used to classify OA severity is unknown to me. The established system is the Kellgren and Lawrence grading scale; why did the authors not use this? It must be acknowledged that the K&L grading is flawed, but unfortunately the authors' own system appears to have the same flaws (focus on indirect evidence of cartilage loss and limiting the role of bone features to severe OA).

Level of interest: An article of importance in its field

Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:
I declare that I have no competing interests