Reviewer's report

Title: Empirical evaluation of the inter-relationship of articular elements in the pathogenesis of knee osteoarthritis using Magnetic Resonance Imaging

Version: 1 Date: 5 May 2009

Reviewer: David Hunter

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Major Revisions
Much of the classification and categorization is arbitrary and relies upon flawed assumptions of scale linearity and equal weighting of different regions. Alternate categorizations including analysis of count approaches may avert these concerns.
The methods rely upon an historical presumption that cartilage is the central pathology in OA whereas modern definitions assess the whole joint.

Minor comments

Introduction
Introduction 2nd paragraph-creates a sense that cartilage loss is the critical central feature of OA whereas this is just part of the picture. Apparent density may be increased but true bone density is reduced-irrespective it is unclear how this sentence contributes to the rationale for the study.
Page 3 first paragraph BLOKS was never designed to be summed into one score-Whilst both WORMS and BLOKS are comprehensive scoring systems most would not advocate given the non linearity of the scales and the multiple constructs measured that they should not be summed.

Methods
The methods don't speak to a population with OA. Was any OA definition met in recruiting the target population. If not please amend the title.
Please detail in this paper the reliability of assessments to save referencing the other paper. Who was the reader for this study and what is their level of expertise.

If all osteophytes were summed how then were they categorized on a 0-3 scale.
What evidence is there that the scales are linear- for example is there any validity to summing 3 grade 1 BM lesions and assuming that is equal to one grade 3 lesion? Likewise for the cartilage involvement. Once summed how were the 0-3 categories created?

Results
Is there any demographic difference between the 140 selected and the 216 they were selected from?
Please provide the BMI for the cohort and the prevalence of radiographic OA.

Conclusions
How specifically should this “serve as the basis for future studies of OA pathogenesis”?

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Not suitable for publication unless extensively edited

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

Declaration of competing interests:

No