Reviewer's report

Title: A repeated measurement study investigating the impact of school outdoor environment upon physical activity across ages and seasons in Swedish second, fifth and eighth grade pupils

Version: 1 Date: 21 May 2014

Reviewer: Brad Metcalf

Reviewer's report:

Statistical reviewer:

The authors used mixed effects modelling to test for differences in MVPA between schools (with varying outdoor environments), seasons, grades/years and gender. Season was entered as a random effect to allow for the clustering of MVPA measures within individuals. This approach is frequently used for analysing longitudinal data as it accounts for the correlation between repeated measures made on the same people and is therefore appropriate for this study.

Minor though essential additional analysis:

The authors assumed that there was no pattern to the correlation/covariance between repeated measures by defining the pattern as ‘unstructured’. This can be problematic when there are many measurement occasions resulting in many parameters, but with just three occasions this dataset has clearly coped. However, the unstructured approach, whilst the most accurate, may have compromised their power unnecessarily and therefore I would recommend that the authors repeat the analysis trying a couple of possible/candidate structures to see whether it makes any difference to their key findings. If this ‘sensitivity’ analysis makes little difference then there would be no need to report this in the manuscript.

The authors test for the main effects of season, school, grade and gender but do not formally test interaction terms of interest. For example, it seems intuitive to test the ‘school x grade’ interaction as presumably you would want to know whether the impact of ‘school outdoor environment’ on MVPA differed by age. If the ‘school outdoor environment’ only impacts on the MVPA of 11 and 14yr olds but not 8yr olds then this is an important message. ‘School x season’ may also be of interest.

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

Quality of written English: Acceptable
Statistical review: Yes, and I have assessed the statistics in my report.