Reviewer’s report

Title: A Stepped-Wedge Implementation and Evaluation of the Healthy Active Peaceful Playgrounds for Youth (HAPPY) Intervention

Version: 0 Date: 08 Jan 2018

Reviewer: Patti-Jean Naylor

Reviewer's report:

The school playground provides an important source of physical activity. Interventions to build the capacity for, and actual facilitation of, physically active play are novel and thus at the leading edge of the research. There is a modest amount of evidence supporting the use of playground markings but very little research on more comprehensive approaches like HAPPY which facilitate play through training, environmental modifications and peer support. This manuscript clearly adds to the existing school-based physical activity promotion literature, the playground physical activity literature specifically, uses a gold standard design (cluster controlled, step wedged) and is well written. Having said this I believe there are some revisions that could contribute to the strength of the manuscript.

Major revisions.

Although the discussion addresses the statistical challenges with the stepped wedge design the paper doesn't really identify how this was actually handled in the analysis. I went back to the protocol paper which stated the aim was to use a mixed models ANCOVA. The analysis section of the methods highlights that there was non-parametric data and thus non-parametric statistical techniques were used. Please provide the details of why the non-parametric approach was used and related references (was it skewed, uneven groups, or issues using percentages based on counts of categories, etc.) In addition, I felt there was a disconnect between the title, the design (cluster controlled) and the presentation of the data. I couldn't see the data from the comparison condition. The paper could be strengthened by using the additional baseline and follow-up measures in each step as the comparison condition (it is like a waitlist controlled trial where each waiting cohort step is measured and not intervened with so they essentially act as their own control - is it not?). If this couldn't be done for some reason this should be articulated or if it was carried out and showed no effect then all analyses (parametric or non-parametric and adjusted or unadjusted for cluster) should be included as well as a discussion about why the results may differ. I think just a non-parametric comparison between intervention and controls would add to the paper. I am sure the uneven sample sizes shown, the different numbers of repeated measures across steps in the wedge, the data collected through SOPARC (not individual child-based) all contributed to the challenges. I would like to see these described in the paper. As it stands currently the description of the design is strong but the analysis isn't matching the title or the design as stated. I completely understand that 'real world' trials often have issues. I think the data is of greater value with a more transparent discussion of why this paper doesn't present the more fulsome analysis or conversely the title and paper could be reframed as a feasibility trial or more cautious language used rather than 'effective'.

Minor revisions:

Is the n shown in Table 2 the number of scans of the identified areas? Please specify The power analysis conducted apriori and presented in the protocol paper shows that you needed 1644 students to show an effect. A comment about the power (the actual n in the study) and its potential impact on
the social support measure would be appreciated. Presentation of the effect sizes was a strength of the paper.

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.

No

Are the conclusions drawn adequately supported by the data shown?
If not, please explain in your comments to the authors.

No

Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

I am able to assess the statistics

Quality of written English
Please indicate the quality of language in the manuscript:

Acceptable

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