Author's response to reviews

Title: Virtual Field Trips as physically active lessons for children: A pilot study

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Response to Review
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Title: Virtual Field Trips as physically active lessons for children: A pilot study
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Authors: Nicola Shelton, Dr; Sandra Dunmsuir, Dr; Oliver Duke-Williams, Dr; Emmanouil Stamatakis, Dr

Dear Dr. Brian Timmons,

Thank you for your decision letter regarding the above manuscript and for the opportunity to revise and resubmit our paper for consideration for publication in BMC Public Health.

We thank the two reviewers for their comments. We have made various required changes, with these highlighted in the manuscript and mentioned in bold notes below.

Reviewer 1: James JD Dunn
This is a very sound paper reporting the findings of a pilot study of the impacts on physical activity of a school-based 'virtual field trip' intervention. My only methodological concern about the paper is the sample size - was the study sufficiently powered to detect a meaningful difference in the primary outcomes? We recognise that the sample size for this one-off session pilot sample is small. We believe we are cautious about over-interpreting our findings and look forward to following up this work with a full-scale longitudinal study.

Apart from that, while the use of technology for a virtual field trip is certainly interesting, the intervention seems to not be very potent. I'm a little surprised that a VFT which is simply exploratory would be presumed to motivate much physical activity change. I would have thought some sort of gamification, like a quest game or some competitive aspect at various venues would be needed to effect much change. To that end, another thing that is missing from the manuscript is a description of the authors theory of change for the intervention. What behavioural mechanisms did they think the intervention would trigger to effect change in physical activity? We have added theoretical rationale in the introduction by including background on the Social Ecological Model (pg 3, lines 73-76). We have also commented on the need for Behaviour Change Techniques for sustained change in future longitudinal research (pg 14, lines 333-335).

Reviewer 2: Niels Wedderkopp
Major compulsory revisions are:
1. The use of the accelerometer data, it should be 15 seconds epochs in the analyzes, because that is what is used in the validation paper the authors cite, and they lose information when using 1 min epochs. We thank the reviewer for this comment. We have now applied 15 second epochs (noted in Methods- pg 6, line 142 and Results- pg 9, line 208 to pg 10 line 233) and re-run all the analyses (tables 2-5).

In addition the inclusion of the intervention time in the total time used for activity measurements should also be changed as it is both dependent and independent variable as it stands now. Thank you for this comment. The analyses were run in this way but were not explicitly described. We have now added detail to the Methods (pg 8, lines 184-185) and as a note in the relevant table (Table 3).

2. I suggest the discussion regarding sex and ethnicity should be changed according to the above.
We have edited the discussion to be more realistic given this pilot sample and recommend larger-scale research (pg 14, lines 336-338).

As well as suggestions made by reviewers, we have also added details of an issue affecting data collection. Two classes (one active, one control) were permitted extended play by their teachers due to good weather after the VFT session. This was beyond experimenter control as the researcher was not present in the classroom for the whole school day. As such, we have noted this in the Results (pg 10 lines 238-242) and analysed post-VFT with classes receiving regular teaching only (pg 11, lines 244-249; Table 4). School day data analysis also now takes into account this change (pg 11, lines 252-257). We have also raised the reduced sample size for post-VFT measurement in the discussion (pg 15, lines 344-347; pg 17, lines 400-402) and suggested strategies to avoid this issue in future work (pg 17, lines 403-405).

Thank you very much for giving us the opportunity to revise this paper.

We look forward to hearing your response.

Yours sincerely

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