Reviewer's report

Title: Effects of a physical education intervention on cognitive function in young children: a randomized controlled pilot study.

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Reviewer: Mai Jeanette Maidy Chinapaw

Reviewer's report:

This is an interesting and informative study examining the suitability of cognitive measures and feasibility of a PE intervention in young children. The paper is in general well written and I have only a few minor comments or suggestions for clarification of the text.

Abstract
The intervention is not clearly described in the abstract
Last sentence: ‘RCT, which test for effects of physical activity on cognition’ add ‘of physical activity’ and the last in young children can be omitted from this sentence

Introduction
Page 4, line 13: I think the authors mean:.. effect sizes and information to calculate sample size and ensure adequate power...

Participants: how many children were available in the 6 schools?

Study design
suggestion: The present study involved two phases
You could omit that both phases are conducted at 6 schools since you already explained that before.

Measures
For readers not familiar with these tests I propose to explain the CAS and CANTAB a bit more. It would have been interesting to test the reliability of the CAS again since only one study on reliability is meagre.

Intervention
It is not completely clear why in the control schools also 1 additional PE hour was implemented. Was this additional class taught by the same PE specialists?

Accelerometers
Why did the authors chose a 1 minute epoch instead of 15 sec epoch that is more suitable for young children
The lack of consensus on the accelerometer cut points should be added to the
discussion. The authors chose a quite high cut point for sedentary behaviour.
Trost et al. evaluated the classification accuracy of cut-points and reported that 100 cpm as a cut-point for sedentary behaviour showed good to excellent classification accuracy. The higher cut point in the present study may explain the high

Results
Page 10 2nd paragraph: the 12 and 5 minutes MVPA in the PE sessions does not correspond with the numbers given in table 1.

Page 11: please change to …between group differences in any of the CAS scales….
The authors only provide p-values instead between-group differences and confidence intervals would be more informative

Page 12:
1st paragraph: acceptable reliability of the CAS was already established…. However, this was only once and was that population similar in terms of gender, age, SES, education, ethnicity, culture etc? was the time between test and retest also 3 weeks? What difference between the CAS and the other two tests could explain different findings regarding reliability?

2nd paragraph: Earlier in the paper the author write that Davis et al included 92 children in total (ie 20 per group) and not 100 children per group

3rd paragraph: the first sentence is very long, breaking this up would increase the readability.
Line 5: power to detect effects of biological significance. Please elaborate, what effect size would be biological significant?

Table 1 is not clear it is titled baseline characteristics but also describes PA in the PE classes during the intervention period. Further footnote 1 states that there were no differences between groups at baseline (), delete swhile # 7 notes sign differences
Please add the measurement unit
How can the 3% in MVPA in intervention and control group be significantly different? And also the 78 and 80% in sedentary behaviour?

Footnote 6 should be < 1100 counts/min

Table 2
Measure 1 is baseline and measure 2 is 3 week retest. This may be confusing since in the text it is mentioned that the first test was 3 weeks before the baseline.

Table 3
Please provide between group differences and confidence intervals instead of
p-values this is much more informative

Figure 1 what were the reasons for non response?

**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