Reviewer’s report

Title: The fractionalization of physical activity throughout the week is associated with the cardiometabolic health of children and youth

Version: 1 Date: 25 October 2012

Reviewer: Gerald J Jerome

Reviewer’s report:

The authors examine the association among patterns of physical activity and cardiometabolic health among children and youth. Strengths of the study include a large representative sample, laboratory based physiological measurement of cardiometabolic factors and accelerometer based measurement of physical activity.

Major Compulsory Revisions:

A child could accumulate 350 mins/week of MVPA and be classified as inactive according to this paper. Consider alternative labels such as low active, or insufficiently active.

The authors should acknowledge the potential misclassification of participants with less than 7 days of valid accelerometer wear time.

Cardiometabolic risk factor percentiles and corresponding parameter estimates need to be explained further. The authors should also explain if there is clinical significance associated with percentile changes for any of the risk factors.

The authors should consider reporting averages for the cardiometabolic risk factor by activity groups.

The authors should revisit the alignment among the study objectives, the analyses and the points made in the discussion. The authors state that MVPA was associated with the outcomes and that more MVPA was better. Given the data available, analyses could have been performed to specifically test these relationships. The authors also indicate that fractional activity was associated with better outcomes yet there no statistically significant differences on 7 of the 8 outcomes and there were large CI.

The authors indicate that the paper may have been underpowered to compare the infrequently active group to the frequently active group. Careful consideration should be given to this issue given there were no statistically significant differences between groups on 7 of 8 outcomes.

Minor Essential Revisions:

Consider reporting if there were significant associations among sex or age and the cardiometabolic risk factors.
The authors should explain “fasted sample” (page 5).
The authors should condense the three sentences starting with “For participants with…” into a single compound sentence. (page 7).

**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:**

no competing interests to declare