Author's response to reviews

Title: Volume, patterns, and types of sedentary behavior and cardio-metabolic health in children and adolescents: a cross-sectional study

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1.1 "The authors have addressed the concerns of the reviewers; only one minor misspelling was noted. I disagree with the authors regarding the rationale not to adjust the models by BMI, which is in stark contrast to at least two publications written by one of the authors assessing the independent contributions of BMI and waist with various health outcomes in adults, children and adolescents. It is obvious and well described that BMI and waist are highly correlated, but the correlation of BMI and the metabolic score is much more modest. It is also clear that adjustment by BMI is overadjustment. The analysis provides additional insight, however, because if after adjustment by BMI the association of sedentariness with cardiometabolic risk remains significant, this means that the association is not mediated by adiposity in general, which is important. This is analogous to what has been done in many of my own publications on the metabolic syndrome, and analogous to what one of the authors has previously done.

If the association is no longer significant after adjustment by BMI, the manuscript and findings are still of importance, but additional insight of the relative importance of obesity overall is gained. If the authors do not want to display the results in the Tables, that is OK, but the analyses should be described in the Results section and noted in the discussion".

We agree with the editor that this analysis will provide additional insight on the importance of obesity in these relationships. We thought it would be best to conduct this analysis similar to what other researchers in the field have done when examining the relationship between physical activity and the metabolic syndrome while controlling for obesity (examples: Ekelund U et al, PLoS Med 2006;3:e488; Ekelund U et al, Diabetologia 2007; 50:1832-40; and Rizzo NS et al, J Pediatr 2007;150:388-394). To be consistent with the approach used in these previous studies, we created a non-obesity cardiometabolic risk score (CRS) by removing waist circumference from the score. We then predicting high non-obesity CRS before and after adjusting for waist circumference.

Interestingly, moderate-to-vigorous intensity physical activity was associated with non-obesity CRS before and after adjusting for waist circumference. Conversely, television was associated with non-obesity CRS before adjusting for waist circumference but not after adjusting for waist circumference. Therefore we concluded that obesity mediates or confounds the relationship between TV use and clustered cardiometabolic risk factors.

Changes were made to reflect this new analysis in the abstract, data analysis section (pg. 9-10), results section (pg. 11), discussion section (pg. 15 ), and conclusion section (pg. 16)