Reviewer’s report

Title: Decreased levels of physical activity in adolescents with Down syndrome are related with low bone mineral density: a cross-sectional study

Version: 1 Date: 26 March 2013

Reviewer: Anna Egan

Reviewer’s report:

This article attempts to answer an important research question regarding bone density and physical activity in youth with Down syndrome and their comparison peers. The review of the statistical analyses (the focus of this review) revealed several areas of concern that should be addressed prior to publication.

Major Compulsory Revisions

• The authors examined for and reported no significant differences in age, weight, height, and BMI. The examination for differences in weight, height and BMI in youth of different developmental ages is inappropriate. BMI-z should instead be examined and reported. If no significant differences are found, this should be discussed and explained as youth with Down syndrome are known to have different growth parameters than youth without Down syndrome. If the growth parameters are not different, what does that say about the sample being representative either of the Down syndrome population or general population?

• With weight bearing physical activity being known to contribute to bone density, BMI z-score should included in the analyses as a covariate.

• There is no theoretical basis described for use of tertiles with total physical activity. While the ANCOVA was significant, the results cannot be interpreted without a theoretical basis or broader research literature to discuss why bone density would be different for the different tertiles of minutes. This needs to be further discussed in the manuscript.

• Statistical values (e.g., t-values, F-values) and corresponding means need to be reported throughout the manuscript, not just p-values.

Minor Essential Revisions

• Given the small sample size, a discussion of power to detect differences should be added as a limitation of the study.

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Needs some language corrections before being published
**Statistical review:** Yes, and I have assessed the statistics in my report.

**Declaration of competing interests:**

I declare that I have no competing interests