Reviewer’s report

**Title:** The association between physical activity and healthcare costs in children - results from the GINIplus and LISAplus cohort studies

**Version:** 1  **Date:** 16 December 2014

**Reviewer:** Alberto Alves

**Reviewer’s report:**

**Major Compulsory Revisions**

This cross-sectional study analysed the association between moderate-to-vigorous physical activity and healthcare costs in children aged 9 to 12 years. The aim of this study is clear and sample is large enough to conduct these analyses. However, there are several concerns concerning the limitations of this study, many of which have been properly recognized by the authors. My main concern is with the study design, as one-year physical activity has been recorded in one moment in time so that it could be associated with one-year hospitalization records. Besides the limitations previously recognized in recall physical activity bias, it hardly expected that physically activity patterns stay stable for one year, taking into consideration the seasonality, among other factors. Therefore, variation is not taken into consideration. Moreover, most children have shown to be quite active (~70% meet the recommendations) and more than 40% do more 10.5 hours per week of MVPA, which is hardly representative of the general population as stated in the introduction. Another issue of concern is the forced attempt, which is clear in the discussion, to pass the idea and explain why moderate to vigorous physical activity could be associated with lower probabilities of total and rehabilitation costs, but increased probabilities of physician, therapist, hospital and indirect costs, when there were no significant association between none of these variables. In addition, and also mentioned in the limitations, childhood might be too early in life, to detect significant preventive effects of physical activity on healthcare utilization and costs, as clinical manifestations of many diseases attributable to lacking physical activity might first occur later in life.

**Minor Essential Revisions**

1. The statistical analysis is quite extensive, and the results sometimes are not consistent between the logistic and linear regression analysis (for example age).
2. Given the continuous nature of physical activity and the skewed distribution of physical activity data in their sample, the authors should consider the inclusion of physical activity as a continuous variable rather than just separate into the physical activity recommendations cut points.
3. Costs of pharmaceuticals would be useful for determination of healthcare costs, as indirect costs related to work absence could not be imparted to health
costs but to loss of productivity, even though it could be misleading since these data cannot be put in context within the reasons that motivate parents to miss work.

4. The imputations were made taking into account the overall distribution or the physical activity categories distribution? Were there any differences in variables distribution before and after the imputations?

5. The authors should review table 1 relative frequencies as it would more useful to observe the different proportion of children with different BMI categories within each physically activity group.

6. What are the differences between the therapist, physician and hospital consultations?

7. Why did the authors decide to abbreviate significantly to sign.? It is award

**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 have no competing interests