Reviewer’s report

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

Version: 2 Date: 4 February 2015

Reviewer: Alberto Alves

Reviewer’s report:

The manuscript improved and the authors have addressed many of the issues raised by the present reviewer. Nonetheless, there are a few concerns that still need to be addressed.

Total costs in euros are provided in the abstract but no information is provided in the results section

The results section improved significantly, but it remains slightly extensive and sometimes contradictory. For example:

• In page 12, it is difficult to understand the differences between the results described in the two main paragraphs.

• In page 12, it is stated: “For boys, odds ratio estimates for all cost components tend to be higher (therapist costs significant), but not for hospital costs.” as well as “boys tend to show increased costs for all healthcare services (total, therapist costs significant).” However, in page 13 the authors say concerning the sensitivity analysis that “If costs occur, boys show lower total costs”.

The sensitive analysis seems to be too extensive with too many variables and should be corrected for multiple analyses; otherwise alpha is much too higher than the traditional 0.05 for significance. Moreover, can the authors explain the differences between the variables “Combined effect of # 7 h/week MVPA” and “Effect of MVPA” introduced in sensitivity analysis and depicted in table 5? It seems that MVPA is introduced twice, as continuous and dichotomous variables.

It is very difficult to understand why the authors insist in stating in the discussion “Results indicate that more active children might show lower probabilities of total or rehabilitation costs, but increased probabilities of physician, therapist, hospital and indirect costs. Basically, physically active children are healthier in terms of fitness” after stating correctly “No statistically significant association between PA and healthcare utilization and costs was observed.” Either the authors assume that they have no power to detect significant differences or odds, which may justify they observe a trend to slightly lower odds among healthcare costs in active children, or they assume that sample size is large enough and the statistics they conducted are correct, and therefore there are no significant differences. If this is true, it makes no sense to advocate that children might show lower probabilities of total or rehabilitation costs, because this statement is not supported by the results. The authors should stick to their results avoiding going
along with their expectations. Furthermore, these results are hard to conciliate in terms of meaning, since physical activity is associated with greater total healthcare costs but lower therapist, physician and hospital costs.

This confusion is illustrated in page 14 where the authors state:

. Line 381: Results indicate that more active children might show lower probabilities of total or rehabilitation costs, but increased probabilities of physician, therapist, hospital and indirect costs.
. Line 389: Results indicate further, that in cases where children used healthcare services during the past 12 months, more active children might show slightly lower total, physician, hospital and rehabilitation costs, while their therapist and indirect costs might be higher.

Based on these confusion, I strongly recommend the authors to conduct less but more consistent statistical analysis. I think they should include only the logistic regression analysis and simplify considerably their sensitivity analysis, including MVPA only as continuous variable. It would be better for the authors to seek simplicity and clarity and be less ambitious in terms of results.

**Level of interest:** An article of importance in its field

**Quality of written English:** Acceptable

**Statistical review:** Yes, and I have assessed the statistics in my report.

**Declaration of competing interests:**

I have no competing interests