Reviewer's report

Title: Abdominal obesity and low physical activity are associated with insulin resistance in overweight adolescents: A cross-sectional study

Version: 1
Date: 9 July 2014
Reviewer: Loreana Silveira

Reviewer's report:

Discretionary Revisions (which are recommendations for improvement but which the author can choose to ignore)

• The characterization of the sample and the care of the author in detailing the information must be highlighted. I would suggest the presentation of results comparing the prevalence of overweight and/or IR by this variables, such as socioeconomic strata.

• In the methodology, could also be included the Lohman’s equation used to calculate the %BF.

Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

• In the session of limitations of the study, the authors affirm the inexistence of a validated methodology of PA measurement. I would say that we do have some good instruments of quantification of PA, such as the accelerometer. (ref) The method used in the study was clearly a limitation, as highlighted by the authors, however it limitation can be explained by studies which has already compared both methodologies. (Anderson CB1, Hagström M, Yngve A. Validation of the PDPA as an adolescent diary: effect of accelerometer cut points. Med Sci Sports Exerc. 2005 Jul;37(7):1224-30.)

• One of the most important results of the present study was the non-association of calorie intake between the groups, as expected, but was the PA the major determinant in the IR. It should be well explored in the discussion, emphasizing the importance of PA even the intermittent daily exercise and its benefits in health and RI.

• Regard to the previous consideration, I would suggest the inclusion of a new multiple linear regression table having the PA or MET/day as the dependent variable and compare with HOMA index and IR-explicatory variables. It would help in the discussion of PA and prevention of IR.

• The substantial consideration about the manuscript is the possibility of identification of IR in adolescents using an accessible methodology. In other words, if there is the possibility of asses PA with a questionnaire instead of accelerometer, or identify RI by HOMA instead of oral tolerance glucose test, it means an easy measurement of risk factors in children and adolescents. I suggest the authors to emphasize the importance of their findings in
epidemiological prevention of metabolic syndrome risk factors.

Major Compulsory Revisions (which the author must respond to before a decision on publication can be reached)
• In table 1, the sex percentage of NW group should be corrected to 47.5.

**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 declare that I have no competing interests