Reviewer's report

Title: Relationship between physical activity and metabolic syndrome in middle-aged Japanese: a cross-sectional study

Version: 1 Date: 12 May 2011

Reviewer: Carla Moreira

Reviewer's report:

This is an interesting paper that addresses an important public health issue, i.e. the associations between physical activity and metabolic syndrome in middle-aged Japanese. However, I do have some questions and comments to further polish an already well-developed paper.

Minor Essential Revisions

Methods, Measurement of physical activity and sedentary time
More details should be given about the specific questions related to the accelerometer data processing. For example, what was the epoch length?

The authors state “Participants who did not record 600 min/day of activity for 7 days were excluded from further analyses”. This information needs a reference.

Methods, Components of MetS
This description needs a reference.

Statistical analysis
The authors state “In all logistic regression models, sex, age, low intensity activity, sedentary time, smoking, nutrient intake, and BMI were included as covariates.” However, some analyses were performed separately by sex. The authors must clarify when “sex” is used as a covariate.

Results
Page 9 - The authors state “Significant differences were found for age, body weight, and BMI between individuals with MetS and pre-MetS, and for those without MetS in both men and women (Table 2)”. However, in table 2 there is no difference in age among men with MetS and pre-MetS, and for those without MetS. Please, clarify.

Page 10 - The authors state “As shown in Fig 1, around 8 factors (MVPA, sedentary time, low intensity activity, sex, age, smoking, caloric intake and menopausal status) were evaluated in CART analysis”. However, the authors only present 3 factors in Fig 1. If the others covariates were not significant for the model that should be mentioned.
Discussion
Page 13 - The authors wrote 41.0% instead of 41.2%. Please correct the value.

Table 1
Sedentary time is presented in hours/day while the others two variables are presented in hours/week. Please, clarify.

Major Compulsory Revisions

Methods, Blood Pressure
How many measurements of the blood pressure were taken? How did the authors get the SBP and DBP values presented in Table 1?

Methods
The relation between physical activity and MetS was analyzed using logistic regression which was adjusted for sedentary time and low intensity activity. Why did the authors adjust the regression for both variables? Did they take into account the possible multicollinearity between these two variables?

When analyzing the data, the authors need to take into account different age groups because the age interval is too high (24 years old). There are some studies in adults that showed that the prevalence of MetS increases with age. Moreover, the results of the CART analysis revealed that “In the > 26.5 MetS-h/week group similarly, age was the most important factor for the split”.

Discussion
Page 11- The authors state "The results suggested that objectively measured physical activity was significantly associated with MetS in both sexes after adjusting the age". Please, clarify.

Page 11- The authors state "The relationship between MVPA and the prevalence of MetS in women was less clear (Table 2)". Please, clarify.

Page 14 - The authors state "For these reasons, determination of an objectively measured target physical activity level may present a possible strategy for preventing MetS, especially for middle-aged Japanese men". I do not understand what the authors want to highlight with this sentence. Indeed, precise measures of physical activity are more accurate to document the frequency and distribution of physical activity and also to determine the amount or dose of physical activity required to influence specific health parameters. How can “the determination of an objectively measured target physical activity level” be used as a strategy for preventing MetS? I think that a statement emphasizing the importance of promoting physical activity is necessary.

Conclusions
The authors state “Moreover, our cross-sectional study suggests that moderate physical activity of >26.5 METs h/week may contribute to decreasing MetS risk in
middle-aged Japanese men” The CART analysis also shows a decrease in the prevalence of MetS in women. Please, clarify.

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 declare that I have no competing interests.