Reviewer’s report

Title: A case-control study of physical activity patterns and risk of non-fatal myocardial infarction

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Reviewer: Wojciech Kazimierz

Reviewer’s report:

This is an interesting study analyzing the association between various physical activity patterns and the risk of acute myocardial infarction in a large sample of inhabitants of Costa Rica.

The method of principal component analysis related to physical activity assessment could be useful for other authors and similar studies. Results of Jian Gong et al study showing U-shaped association between rest/sleep pattern and risk of AMI is of great practical importance similarly as data demonstrating plateau between total energy expenditure and AMI risk at high levels of physical activity. There are relatively few studies analyzing association between various physical activity domains and cardiac risk especially from countries outside Europe and North America.

In my opinion several minor essential revisions or additional comments are needed before printing the paper in BMC Public Health:

1. The authors use a statistical method "natural cubic spline models" not widely used in similar studies analyzing relationship between risk factors and AMI incidence. Thus I think more clear explanation is needed to justify the use of this statistical method. Probably the method description presented in the paper (page 8-9) is not clear for most readers being not professional statisticians.

2. For many readers of the BMC Public Health especially from Europe and Asia, the health situation in Costa Rica is not known, thus a short description of the mortality reasons due to CVD diseases and recent trends of AMI mortality would be useful.

3. The numbers given in Table 3 are not enough clear for me and should be better described. Probably a short description of one row components - for example for work in construction - describing precisely what the positive and negative numbers really mean would be helpful.

The overall assessment of the whole study is positive and I think the paper should be published after minor corrections/complementary information.

Level of interest: An article of importance in its field

Quality of written English: Acceptable
Statistical review: Yes, but I do not feel adequately qualified to assess the statistics.

Declaration of competing interests:
I declare that I have no competing interests.