Reviewer’s report

Title: Leisure time physical activity in middle age predicted the metabolic syndrome and diabetes in old age: A 28-year follow-up of men in the Oslo Study.

Version: 3 Date: 11 March 2007

Reviewer: David Laaksonen

Reviewer’s report:

General

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Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)

The paper has improved. I still have some major comments.

Because the authors did not exclude those with the metabolic syndrome at baseline, the study is partly cross-sectional in nature because some of those with the metabolic syndrome in 2000 had it at baseline. The same problem applies to diabetes, because reported diabetes misses a substantial number of subjects with diabetes at baseline. It is likely that only a small proportion of those with the metabolic syndrome or diabetes during the follow up had these conditions at baseline, and the authors adjusted for major risk factors. Even so, these issues are weaknesses that should be briefly addressed in the discussion under strengths and limitations.

Diabetes still seems to be problematic. At baseline only those with reported diabetes are excluded. The definition during follow up also included men who used diabetes medication and who had glucose levels >11 mmol/l.

The authors should also adjust for baseline use of blood pressure medication in addition to glucose, BMI, SBP and TG.

The classification of leisure-time physical activity should be rephrased. Those in the light category meet the current recommendations for moderate physical activity of at least 30 min/d. The sedentary category should be changed to sedentary or light physical activity, light should be changed to moderate, and moderate changed to moderately vigorous.

Again, the main focus of the paper is physical activity, but the discussion of physical activity in the discussion is superficial. A brief discussion of mechanisms is warranted. Relatively few prospective studies on physical activity (or cardiorespiratory fitness) and the metabolic syndrome have been published. Similarities and differences could be discussed in greater detail, although briefly.

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

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Discretionary Revisions (which the author can choose to ignore)

While smoking is obviously an important cardiovascular risk factor, this study focuses on physical activity, and the results on smoking are not even close to being statistically significant. I think that it is enough to use smoking as a covariate. Smoking can be removed from the results and discussion, because it adds little to the paper. Also, in contrast to the statement by the authors in the discussion, the relationship between smoking and development of insulin resistance or type 2 diabetes is not well established, because many studies show no independent association at all.

What next?: Unable to decide on acceptance or rejection until the authors have responded to the major compulsory revisions
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.