Author's response to reviews

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.

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Author's response to reviews: see over
Editor,

Please find our following response to the reviewer. However, before embarking on that we detected that we had in some analyses used a definition of MS as at least 4 out of 5 criteria in stead of at least 3 out of 5 criteria. Results are thus changed to a certain degree due to the much higher power in MS analyses. Smoking now shows an association to MS.

Now for the comments to reviewers: It is correct that our diabetes definition misses a number of cases in 1972/3 since we did not ask for use of anti diabetic medication at that screening. For analysis purposes we excluded the subjects with MS in 1972/3 and reran the analysis of diabetes in 2000 with the same adjustment factors as in Table 3. Results were virtually identical and this is now mentioned in the Discussion under limitations as asked for. We should mention that both patients with self reported diabetes and subjects with non fasting glucose>=11,1 mmol/l were in fact excluded in the results you have seen. We have described this more clearly now. However, as mentioned, we had no information on use of anti diabetic medication in 1972/3. To stay in line with modern definitions of diabetes and to protect the statistical power of our study, we have not changed our definition of diabetes in 2000 excluding such use. However, we ran an additional analysis with diabetes defined as either self reported or with non fasting glucose>=11,1 mmol/l in 2000 as dependent variable and adjusted the ORs for PA as in Table 3. Results were similar. A statement of this issue is now mentioned in the limitation section in the Discussion.

In 1972/3 we had information on use of antihypertensive medication on file, so we were able to adjust additionally for use of antihypertensive medication which is now all over. The proposed classification wording of PA has now been put into the text and tables. Some comments on basic mechanisms are now mentioned in the Discussion. We see the reviewers point regarding smoking. However, by our detection of own errors in some analyses as mentioned above, smoking is now clearly associated to MS and the results are therefore given with discussion.

The following involvements of authors took place: IH was lead author and did all analyses and wrote major parts of ms. ST had major input on ms writing and had scientific input to ms. AJS had input to design, ms writing and had scientific input into ms. PGLL had input into design and data management. LLH had major input to design, data collection and had scientific input to ms.

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