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: 4 Date: 17 May 2007

Reviewer: David Laaksonen

Reviewer's report:

Minor Essential Revisions
I only have a few comments. The manuscript is still confusing with respect to the definition of the metabolic syndrome. The authors state the definition of the metabolic syndrome in the year 2000, but not in 1972-1973. In the discussion on p. 13 the authors state that they did not exclude the MetS in 1972-1973. This should be stated explicitly in the methods, along with the reason it was not excluded (i.e., HDL cholesterol was not measured, for which reason definition of the MetS by the NCEP criteria was not possible). In the discussion on p. 13 and in the responses to the referee, the authors mention excluding the metabolic syndrome in Table 3 and obtained similar results. The authors could not define the Met S by the same definition as in 2000 because HDL was not measured at baseline. They should state briefly how the metabolic syndrome was defined, because defining it as 2 of 4 or 3 of 4 NCEP criteria will lead to either substantial underestimation or substantial overestimation of the metabolic syndrome by the complete NCEP criteria. Better yet, the authors could carry out an analysis restricted to lean non-diabetic individuals (see below).

Table 1 implies that subjects with the metabolic syndrome were excluded. The “-“should be replaced by NA (not applicable), with a footnote stating why the metabolic syndrome was not defined and excluded (i.e., inability to define it using NCEP criteria because HDL was not measured). “-“ should be replaced by NA also for HDL cholesterol. Use of hypertensive medication should also be shown in Table 1. Use of blood pressure medication obviously means fulfillment of the NCEP criterion for high blood pressure, and most studies include blood pressure medication in the definition of the metabolic syndrome, even though that is not explicitly stated in the ATPIII definition. Because this paper has undergone revision so many times, I would not consider this a change that must be made, but the authors should state explicitly in the methods on definition of the metabolic syndrome whether or not use of antihypertensive medication was considered as fulfilling the NCEP criterion of high blood pressure.

Discretionary Revisions
A subgroup analysis of men with BMI less than 25 or less than the median BMI would be more convincing for the analyses of the association of baseline physical activity with diabetes and the metabolic syndrome in the year 2000, because the MetS and DM will be very uncommon in such lean men in 1972-1973. The authors may have to combine the moderately vigorous and vigorous physical activity groups, but the statistical power is probably sufficient. This is a discretionary change, but one that would improve the paper.

What next?: Accept after minor essential 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'