Author's response to reviews

Title: Life style and longevity among initially healthy middle-aged men: prospective cohort study

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Author's response to reviews: see over
Reviewer 1:

We agree. These statistical tests are included in the Statistical Analysis sub-section.

Reviewer 2:

Reviewer 2 and 3 differ in their comments about the statistical analysis presented in our manuscript. When they differ, we have chosen to follow the advices from referee 3.

According to the aim of the study, it was not appropriate to include individuals that could not reach the age of 85 during the observation period.

According to reviewer 2 people who were 51 years when they were examined in 1975 or 1974 could not have reached 85 years by the end of follow up. However, in the method section we have stated that the inclusion period started in August 1972. Thus it is possible to reach the age of 85 for a participant that was 51 years at inclusion.

We have clearly stated that the insignificant results regarding cholesterol and systolic blood pressure may be due to the relatively low sample size.

We consider the methods used to check the model assumptions to be appropriate. Further, referee 3 seems to have no objections to these methods.

We agree with referee 3 that post hoc calculation of sample size should be avoided.

Reviewer 3:

We are grateful for the support for our choice of analytic strategy.

Sample size was not calculated before the start of the original study (in 1972). We agree that that a post hoc calculation of sample size should be avoided.

In the revised manuscript we have included confidence intervals as suggested (tables 2 and 3).

We have described in greater detail the univariable and multivariable regression models under Statistical Analyses as suggested:

Further we confirmed that the univariate and multivariable logits of the continuous predictors were linear. This finding is included in the Statistical Analyses section.

In table 4 we split data in non-smokers and smokers. For smokers, we only have two categories ≥10 vs. <1-9. Unfortunately the category 1-9 was denoted “<10”. This is corrected in the revised manuscript. When smoking habits were recorded at baseline, number of cigarettes was registered in categories. Thus it is not possible to model number of cigarettes as a continuous variable. The n-tomization of the smoking data was determined by the categories used at baseline.

The median age of the sample at baseline was 55 years. We agree that it is better to model age as continuous, and have done so in the revised manuscript.
Our definition of fitness as work divided by body weight is in accordance with the literature. We corrected for age by linear regression because this was suggested by referee when we published our first fitness paper in New England Journal of Medicine in 1993. We have used this definition of physical fitness in our later publications. As regards presenting fitness data in tertiles or quartiles, this is quite common in epidemiological publications focusing on the relation between physical fitness and mortality.

Only 4 participants had BMI less than 18.5 kg/m2, two smokers and 2 non-smokers.

We have considered the possibility to analyse smokers and non-smokers in the same logistic regression model, with and interaction term for smoking. We choose not to do so because of recommendations in the epidemiological literature, and because we wanted to be able to compare our results with similar studies.

We agree that the wide confidence intervals for the association between fitness and longevity illustrate the relatively low test power in our study. Thus, further studies with larger number of subjects reaching 85 years are needed to provide more precise estimates of this association. This comment is included in the revised manuscript.