Reviewer's report

Title: Aetiology and risk factors of musculoskeletal disorders in physically active conscripts: a one-year follow-up study in the Finnish Defence Forces

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Reviewer: Charlotte Leboeuf-Yde

Reviewer's report:

Dear authors and editors,

In answer to the nine points to consider for reviewing manuscripts for BMC, this is in general an excellent study and I shall mainly explain the four main problems I have with it. It is otherwise a relevant study, well executed, honestly reported and the language is smooth and clear. Doubtlessly, the manuscript could be published as is but I think that it would become more reader friendly if the following two comments were taken into account:

1. The tables containing the hazard ratios are supposed to have bold lettering for significant findings. You need to agree with yourselves if a confidence interval of 1.0 is or is not a significant finding, as you have been inconsistent throughout the tables on this issue. This is of course also relevant when you interpret your own data, which might need to be checked.

2. Your tables are fine but your result section is very confusing. May I suggest that you make it easy also for simple souls like me to read it without feeling stupid. I have two suggestions: For each table try to draw out some sort of overall pattern of findings instead of going straight into the details. It would be interesting to see if there is a story that repeats itself for both simple reports of MSD and the more longlasting ones. If there is a general picture that makes sense, it does not really matter if the findings are significant all over or not. If however, there is a marked difference between the two outcome variables, this difference should make sense in order to appear "real". This is my first suggestion.

Secondly, I would like a more systematic approach to what happens when you control for the various extraneous factors. In fact, it would have been useful to have your univariate findings in these tables (3-6) to be able to compare them with what happens when you do the controlling trick. And why did you do two models of control? Small differences of estimates, on such small subgroup numbers as you have, do not necessarily mean that there are real differences. Overlapping confidence intervals usually mean there is no real difference between estimates, unless of course the findings are consistent all over and are able to tell a "story". Would it not be possible to start the interpretation of each table, in the result section, by giving an overall picture as to what happens here? Thereafter, I would be willing to deal with the major details.
3. Your interpretation of data, the first paragraph in the discussion section ignores the various findings that you have throughout the study, all of which were not necessarily related to fitness. You do discuss it later but you are very enthusiastic about the fitness data in the beginning. This could be more balanced.

The Cooper’s test plus the standing long jump test that together give an odds ratio of 3.5 make well be measuring the same thing. You did not give any other variables the same chance of boosting the results, such as being a drinker, a smoker and having poor marks at school. What would happen if a person has one, two, three etc. of the significant risk factors?

4. Interpretation of results. You state somewhere that alcohol and and smoking may be indicators for risk taking behaviour rather than causal risk factors MSD. Then how could MSD be prevented by changing health habits? In order to change the risk taking behaviour you probably need to do some genetic manipulation! Unfortunately, people who exercise regularly out of own will, may also have a psychological profile that is causally linked with MSD, and perhaps seeking care for MSD. Changing their BMI and fat depots in the body, will not help on such a basic cause, if there is one. In a recent study, we have shown that the consequences of spinal pain (neck, thoracic as well as low back) has a strong genetic component, so it may be more complicated than just getting these young men to live a health life.

Minor issues: Please check the order of your tables and additional files. Have they all been correctly numbered and do they sit where they should in the text?

Question: Would it be possible to work out why the different companies have different outcomes? Some sort of explanation?

Why include the univariate tables and in one instance you even mention such a finding in the text? Not relevant, if you have taken your data the step further of adjusting for other variables.

Your title appears incorrect. It should be "Aetiology and risk factors of seeking care for musculoskeletal ....", as this is your main and only outcome variable.

Question: Last sentence first page in Discussion: You say that some variables were protective of MSD "in all companies". Did you really test this?

Hope these comments make sense and that they can help making this good paper a really excellent one. I shall tick the option "accept after minor essential revisions" well knowing that some of these changes are more than minor. My point is, though, that I leave to the judgement of the authors to do or not do these changes.

Charlotte Leboeuf-Yde

Level of interest: An article of outstanding merit and interest 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
Charlotte Leboeuf-Yde