Author's response to reviews

Title: A cross-sectional study of low physical fitness, self-rated fitness and psychosocial factors in a sample of Finnish 18- to 64-year-old men

Authors:

Karoliina S Kaasalainen (karoliina.s.kaasalainen@student.jyu.fi)
Kirsti Kasila (kirsti.kasila@jyu.fi)
Jari Villberg (jari.villberg@jyu.fi)
Jyrki Komulainen (jyrki.komulainen@likes.fi)
Marita Poskiparta (marita.poskiparta@jyu.fi)

Version: 3 Date: 18 October 2013

Author's response to reviews: see over
Author’s response to reviewers

Title: A cross-sectional study of low physical fitness, self-rated fitness and psychosocial factors in a sample of Finnish 18- to 64-year-old men (MS: 2004602331013687)

Authors:
Kaasalainen Karoliina: karoliina.s.kaasalainen@student.jyu.fi
Kasila Kirsti: kirsti.kasila@jyu.fi
Villberg Jari. jari.villberg@jyu.fi
Komulainen Jyrki. jyrki.komulainen@likes.fi
Poskiparta Marita. marita.poskiparta@jyu.fi

Version: 3 Date: 18 October 2013
To Editorial board of BMC Public Health,

The authors would like to thank the Editorial board of BMC Public Health for considering the manuscript “Low fitness and perceived physical activity skills. A cross-sectional study of psychosocial factors and physical fitness in a sample of Finnish men”. We appreciate the opportunity to revise the manuscript according to the reviewers’ comments. The revised manuscript has been entitled as “A cross-sectional study of low physical fitness, self-rated fitness and psychosocial factors in a sample of Finnish 18- to 64-year-old men”. We would like to thank reviewers for the constructive feedback that has helped us to improve the manuscript. We have considered reviewers’ all comments and paid attention to the fluent English.

The revised version of the manuscript is focuses on results of self-rated physical fitness and psychosocial factors in relation to the estimated physical fitness index among the low-fitness working-aged men. We took account into reviewers’ comments, which underlined the need for more specific age group analyses and comprehensive clarification of used Physical Fitness Index. The revised results extend the knowledge on psychosocial characteristics that are related to low fitness among the men aged 18-64. The manuscript also displays a description of Physical Fitness Index as a new estimate of health-related physical fitness and possible counseling tool in physical activity promotion.

Following is a point-by-point response to the comments made by the editorial office and the reviewers. Authors’ responses are in bulleted paragraphs and related changes in the text are in italics.

On behalf of the authors,

Karoliina Kaasalainen
Doctoral student in Health Sciences
University of Jyväskylä, Faculty of Sport and Health Sciences
Editors’ comments

Copyediting: After reading through your manuscript, we feel that the quality of written English needs to be improved before the manuscript can be considered further.

- We have taken notice of fluent English and used a native English-speaking language editor.

Reviewer's report

Title: Low fitness and perceived physical activity skills. A cross-sectional study of psychosocial factors and physical fitness in a sample of Finnish men
Version: 2 Date: 16 September 2013
Reviewer: Tomi E Maki-Opas

Reviewer’s report:

General
The study examines an interesting topic, whether individuals’ psychosocial characteristics are associated on their fitness level, both measured and self-assessed. This important topic from the PA counseling point of view, as it would beneficial to understand which kind of personal factors should be emphasized on different fitness groups when we want to improve individuals’ fitness and, in the end, their wellbeing. The data is cross-sectional in nature and very limited in number and only among men, but include information from fitness tests and self-reported PA as well as psychological background information. The study has utilized cross-tabulations and regression models as statistical methods. The interesting result is that health aspects might not be some important in PA promoting in low-fit group whereas more important might be exercise skills, goals and social support.

1 Major Compulsory Revisions
1.1 The authors have focused their study on “working-aged” men. This is well-justified as they are especially unfit and in the need of PA-counseling. I wonder whether results might be biased on the fact that the “working-aged” group is so heterogonous as it includes those who are in the very beginning of working-age (18-25 years) and also those who near official retirement age (60-64 years)? Did you examine the associations stratified with different age-groups? Finally, it would useful to have age group associations in the “first” Table, or in separate table.

- Based on reviewer’s comment we have reanalyzed the associations between psychosocial factors and physical fitness index (PFI) stratified by three age groups. The men were classified in to young (18-34 years-old), middle-aged (35-49 y) and old (50-64 y) working-aged men. Age specific results of self-rated fitness and psychosocial factors are presented in the tables 2 and 4, and described also in the text.
Self-rated fitness by age, on page 11: When self-reported and measured PFI were compared in the different age-groups, poor PF was most frequently reported by the middle-aged men. Almost 80 per cent of the low-fit men in the youngest group self-estimated moderate or good PF. The youngest low-fit men also the most often reported engaging sufficiently in PA (Table 2). One-third (29 %) of the youngest low-fit men self-reported less than one hour of PA per week, while among the middle-aged and oldest group the corresponding percentages were 50 and 41.

Psychosocial factors by age, on pages 11-12: The results of the logistic regression analyses revealed several age-specific differences in the odd ratios for high scores in the psychosocial variables (Table 4). In both logistic regression models, the results showed that, in the youngest group, the moderate-fit men were more likely to have a higher knowledge score than the low-fit men. Although the youngest moderate-fit men did not report better skills than their low-fit peers, among the middle-aged and the oldest groups the likelihood of having good skills was higher in the moderate and high PFI classes. Also in the stepwise model, the ORs for a high score in skills across ages 35-64 remained statistically significant between the low and high-fit men.

The moderate-fit younger men scored higher in goal setting than their youngest low-fit counterparts, while among the middle-aged and older men only the high-fit were likely to have a high goal-score. In the stepwise model, goals showed no statistically significant association with high PFI in any age group. There were self-efficacy differences between the low- and high-fit men in the youngest group and differences in all the PFI categories in the middle-age and oldest groups. Moderate fitness was not related to better self-efficacy in the youngest group. The youngest men in the moderate and high PFI groups were likely to score well on social support, but no statistically significant differences between the PFI categories were found in the oldest group.

1.2 As one cannot estimate well how well the study sample represents the general working-age men and low fit men population, I am skeptical whether the results can be utilized in improving PA-counseling among low-fit and low PA men as these groups might be underrepresented in the data. The authors should discuss more about the whether the data supports this kind of conclusions.

- Data selection has been taken account and discussed more comprehensively in page 16: This study has limitations that restrict the generalizability of the findings. First, the participants were working-aged men who voluntarily engaged in the testing events. It is probable, therefore, that the study did not include men with the lowest fitness status. Unfit and inactive populations do not usually engage in PF studies owing to the challenging nature of the fitness tests used and lack of motivation [12]. However, the present data were obtained in public events that were free of charge and the fitness tests were easy to perform. Notwithstanding, the data were restricted to motivated men, as only 16 per cent of the participants were sedentary. Second, the study was cross-sectional in nature. Generation and age cohort differences in PA patterns and attitudes may influence the differences in the results for PF and the psychosocial factors.

- Age group analyses revealed more accurate results of study participants and the validity of the PFI-classification. This has been discussed in page 13: ....in this study, the proportion of PF overestimators should be interpreted with caution. Self-rated
fitness was compared with PFI, which has not been established as a measure of PF in previous studies. Thus, PFI may be a fairly accurate measure for men aged 35-49, but underestimate PF in younger or older men.

- In the pages 13-14 have been discussed about the relevance of self-report measures among the low-fit men: The percentage of men aged 35-64, who self-estimated sufficient PA, was almost the same as the percentage who reported at least 3 hours PA per week. Although overestimation may be an obstacle to PA change [13, 15, 45], the present results suggest that most low-fit men have a realistic perception of their need to increase their PA.

- In the conclusion, we have summarized the main results of this study and pointed out suggestions that reside more on current results: Poor exercise skills, self-efficacy and social support were related to the low PFI. Physical activity promotion for the low-fit men should take into account age differences in the relationship between psychosocial factors and physical fitness. Thus, new and effective ways to establish social support and motivation for physical activity among low-fit men in all working-age groups are needed. Further research is also warranted on whether estimation of PFI could be used as a practical health counselling tool.

1.3 Methods: As the Polar Fitness test (PFT) is also based on the participants self-reported level of long-term physical activity, would that cause bias as you examined how self-reported physical activity is associated with fitness? Especially as in the Borodulin et al. (JPAH 2004), the PFT was associated with condition and commuting PA, but not with non-conditioning PA. The methods is useful in large populations but how does if fit into specific groups such as participants in the specific groups such as in this study? Can the authors give more justification for this?

- The relevance of Polar Fitness-test (PFT) has been discussed in the method part (page 6). These fitness tests were chosen, as the aim of the campaign was to encourage sedentary men to participate in the tests and help them to become familiar with their PF. Exercise tests demanding strenuous physical effort were not deemed suitable for health counselling purposes. Previous studies suggest that hand grip-strength, Polar Fitness test and body composition analysis by bioelectrical impedance (BIA) are feasible tests for population-based studies and the results correlate strongly with other assessment methods [1, 31].

- The use of the PFT as a part of Physical Fitness Index was argued in the text with following additions: Page 8: The final physical fitness index (PFI) described health-related fitness with a numeric scale. The PFI was computed from the results of the following fitness test variables: estimated aerobic capacity (VO$_{2 \text{max}}$), hang grip strength (kg/kg), percentage of total body fat (fat %), SSM (kg/m) and VFA (cm$^2$). All the test results were converted to standardized points and then weighted with the following equations: Aerobic fitness (VO$_{2 \text{max}}$), points = 0.5 x [10 x (ml/kg/min - (-0.2835 x age + 50.307)) / 30], body fat (%), points = 0.1 x [ - (10 x fat% - (0.143 x age + 15.264))/ 24], VFA (cm$^2$), points = 0.15 x [ - (10 x (cm x age + 56.031)) / 140], Hand grip strength (kg/kg), points= 0.15 x [10 x (kg/kg – (-0.036 x age + 22.33)) / 10], SSM (kg/m), points = 0.1 x [10 x (kg/m - (-0.0037 x age + 0.83)) / 0.5]. The final PFI ranges from -5, +5', where < -3= very poor, < -1 = poor, < +1=
acceptable, < +3 = good and > +3 = very good PF. For the statistical analyses, the PFI was recoded into low PF (PFI ≤ -1), moderate PF (PFI < 1) and high PFI (PFI ≥ 1) classes.

Moreover, in low fit men, one would assume that the non-conditioning PA would be very relevant in terms of promoting fitness and wellbeing.

- In Discussion, we have pointed suggestions for PA promotion for low-fit men as follows (page 16): Compared to other health behaviour changes, regular PA requires more time and also, to some extent, special skills [23, 26]. Good physical fitness may be related to one sort of physical activity capital that promotes engagement in PA and provides the ability to obtain social support from the environment [43]. While easy access to exercise groups and good sport facilities could be enough to increase PA in moderately-fit men, low-fit men may need more individual counseling, social support and PA alternatives that are perceived as agreeable and fun. Further research is needed to determine whether the PFI used here could form one component of a practical tool-kit in health counselling.

1.4 Statistical analyses: the statistical modeling procedure should more clearly described to the readers, so that he/she can evaluate the models.

- The statistical models and procedure have described more accurately in page 10: Bivariate and multivariate logistic regressions were used to test associations between the psychosocial variables and PFI in three age categories (18-34, 35-49 and 50-64). Main effects of the psychosocial variables were analysed in logistic regression analyses. The psychosocial variables were entered in the models first individually and subsequently by the stepwise method. Only statistically significant results of the stepwise models were reported. The results of the logistic regression analyses are presented as odds ratios (OR) and 95% confidence intervals (CI). Low-fit men were used as a reference group in all models.

1.5 Discussion: Social support was show to be critical factor in success in this study, as the “the low fit men were not well aware of possible sources of social support”. However, the authors have neglected this from the conclusions, was this deliberate choice?

- Re-analyses revealed more accurate results on social support and age-specific associations between psychosocial factors and PFI. The results have been presented in the page 12 and in the table 4: The youngest men in the moderate and high PFI groups were likely to score well on social support, but no statistically significant differences between the PFI categories were found in the oldest group.

- In the revised discussion, social support was brought out in several contexts:
Page 13: Low fitness was related to lower scores in skills, goal setting and self-efficacy, regardless of age. However, knowledge was not related to high PFI in the youngest group and social support was not related to better PFI in the men aged 50-64.

Page 14: Social support was also higher in the youngest moderate and high-fit men than low-fit men. Moderately fit young men may have a greater tendency to cite health benefits and feeling refreshed as reasons for their engagement in PA than those who are either sedentary or athletic. The moderate-fit youngest men were also more likely to have set themselves exercise goals than their low-fit peers. This result indicates that moderately-fit young men invest effort in planning their engagement in PA, which also serves to underline the importance of social and environmental support in promoting PA.

Pages 15-16: Social support is a key factor for successful PA change [14]. However, social support was not related to better PFI in the oldest men. A recent review also concluded that social support is not a determinant of PA [21]. The present results suggest that social support appears to have more impact on PA in younger than older men. Lack of self-efficacy, motivation or PA skills may be more notable obstacles to engagement in PA in the later than earlier working years, and hence related to poor PA history. Previous research indicates that a positive social environment increases self-efficacy towards behaviour and mediates PA changes [12, 16]. Social factors have been emphasized as an important component of PA programs for middle-aged men [12]. However, the specific form of social support should be targeted to low and moderately fit men differently.

2 Minor Essential Revisions
2.1 Tables: The numbering of the tables are confusing, as there are two table 1:s? Some of the headlines inside of the tables are unclear such as Table 3: “Low”, “Moderate” and “High”? and the second Table 1 such “Low RE” and “Low OE”; what does these groups mean? Authors should improve their tables to be more easily readable.

- The numbering of the tables has been corrected. After analyzing three age groups separately, major changes have been made in the tables and the confusing table has been removed. Currently, table 2 displays results of self-rated fitness. Demographics and physical activity are presented in the table 1, self-rated fitness in the table 2, scale of psychosocial factors in the table 3 and odd ratios for psychosocial factors in the table 4.

2.2. Tables: Some of the markings are unclear to the readers such as “f(%)”, and “X2” as well as “CI”. These should be explained for example as a footnote.

- Markings and abbreviations in the tables have been explained in footnotes: e.g. in Table 2: f=frequencies, %=percentage, p=significance tested by chi square-test, X^2= chi square

2.3 Tables: The statistical models should be presented in tables when OR:s are
counted so that the readers can evaluate what are adjusted in the models and what are not.

- The statistical models of logistic regression analyses are presented in the table 4 and the procedure of model construction in the method part: page 10: Main effects of the psychosocial variables were analysed in logistic regression analyses. The psychosocial variables were entered in the models first individually and subsequently by the stepwise method. Only statistically significant results of the stepwise models were reported. The results of the logistic regression analyses are presented as odds ratios (OR) and 95% confidence intervals (CI). Low-fit men were used as a reference group in all models.

**Level of interest:** An article of limited interest

**Quality of written English:** Not suitable for publication unless extensively edited

**Statistical review:** Yes, and I have assessed the statistics in my report.

**Declaration of competing interests:**
I declare that I have no competing interests

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**Reviewer’s report**

**Title:** Low fitness and perceived physical activity skills. A cross-sectional study of psychosocial factors and physical fitness in a sample of Finnish men

**Version:** 2  **Date:** 15 September 2013  
**Reviewer:** Lars E Sørensen

**Reviewer’s report:**

The object of the study is important and relevant considering the vast majority of sedentary people all over the world. The Physical fitness Index is interesting and because there is no reference to it, I understood that it is used for the first time in this study. This Physical fitness index would be worth an independent article.

- In the revised version, we have considered the nature of Physical Fitness Index (PFI) as a novel measurement tool for health-related fitness and discussed about the PFI more comprehensively. We have also focused the whole manuscript on examining self-rated physical fitness and psychosocial factors in three age groups of working-aged men. These revisions gave more accurate results on relevance of PFI as a measure of health-related fitness in working-aged men and demonstrated better age group differences in the psychosocial factors.

**Major Compulsory Revisions**

1. This article is based on the very straightforward thinking, that physical activity leads to better physical fitness. There is one short notation that genetics may be the primary reason for low PF, but the reference is not very updated. This question
needs more thorough discussion, because it is the major confounding factor of this study.

- The influence of genetics on physical fitness has been taken into account in the background paragraph (p. 5) and in the discussion (pages 15 and 17).

Page 5: Modifiable and non-modifiable factors both have an influence on individuals’ enjoyment of physical activities and exercise. Genetics is a central non-modifiable factor determining PF, although PA history and health behaviour also have a considerable impact on PF [21].

Page 15: Skills and self-efficacy are important long-term predictors for PA maintenance [26, 49, 50], and therefore genetics may have a stronger role in determining low PF than long-term PA in young adults. The likelihood of adopting PA habits increases if one has good motor skills for exercise activities or a genetic predisposition to good aerobic capacity and muscular strength [51, 52]. The influence of PA history, overweight and chronic diseases broadens the gap between the fit and unfit during middle-age and the later working years [38, 49].

Page 17: Physical fitness was used as an outcome measure instead of PA, because it has been suggested that PF may more accurately describe peoples’ general tendency to PA than self-reported PA [56]. However, chronic diseases or genetics may be the primary reasons for low PF, and not inactivity [3, 21, 51].

2. In the Abstract of the article the Conclusions are different than in the article itself. In the abstract the conclusions are far too straightforward considering that the study is a cross-sectional one.

- The conclusions in the abstract (page 3) and in the article itself (page 18) have been rewritten. In the revised version, both conclusions are equal and we have put more emphasis on the current results: “Poor exercise skills, self-efficacy and social support were related to low PFI. Physical activity promotion for low-fit men should take into account age differences in the relationship between psychosocial factors and physical fitness. Thus, new and effective ways to establish social support and motivation for physical activity among low-fit men in all working-age groups are needed. Further research is also warranted on whether estimation of PFI could be used as a practical health counselling tool.”

3. The Physical fitness index needs more clarification. Is it used before? If it is used here for the first time, why are the variables of PFI weighted like this? In the Methods paragraph there should be the references how body fat, visceral fat of skeletal muscle mass contributes to health.

- Physical fitness index (PFI) has been described more accurately in the methods paragraph.
Page 6: PFI has not been used in before, which has been brought out in the revised text: The fitness tests included hand grip strength (Saehan dynamometer), the Polar Fitness test (Polar Electro, Kempele, Finland) and a body composition analysis (InBody 720-analyser). To our knowledge, this is the first time that this combination of fitness tests has been used to evaluate health-related PF. These fitness tests were chosen, as the aim of the campaign was to encourage sedentary men to participate in the tests and help them to become familiar with their PF. Exercise tests demanding strenuous physical effort were not deemed suitable for health counselling purposes. Previous studies suggest that hand grip-strength, Polar Fitness test and body composition analysis by bioelectrical impedance (BIA) are feasible tests for population-based studies and the results correlate strongly with other assessment methods [1, 31].

Page 8: The equations behind the PFI formulation have been presented in their whole entity: The final physical fitness index (PFI) described health-related fitness with a numeric scale. The PFI was computed from the results of the following fitness test variables: estimated aerobic capacity (VO₂max), hand grip strength (kg/kg), percentage of total body fat (fat %), SSM (kg/m) and VFA (cm²). All the test results were converted to standardized points and then weighted with the following equations: Aerobic fitness (VO₂max), points = 0.5 x [10 x (ml/kg/min - (-0.2835 x age + 50.307)) / 30], body fat (%), points = 0.1 x [ - (10 x fat% - (0.143 x age + 15.264))/ 24], VFA (cm²), points = 0.15 x [ - (10 x (cm² - (1.326 x age + 56.031))) / 140], Hand grip strength (kg/kg), points= 0.15 x [10 x (kg/kg – (-0.036 x age + 22.33)) / 10], SSM (kg/m), points = 0.1 x [10 x (kg/m - (-0.0037 x age + 0.83)) / 0.5]. The final PFI ranges from ‘-5, +5’, where < -3= very poor, < -1 = poor, < +1= acceptable, < +3=good and > +3 =very good PF. For the statistical analyses, the PFI was recoded into low PF (PFI≤ -1), moderate PF (PFI <1) and high PFI (PFI ≥ 1) classes.

Body composition, in the Methods paragraph, has been complemented with references (7, 31, 38, 39): page 7: Body composition was measured by using an InBody 720 analyser. The body composition analysis estimates body weight, percentage of total body fat (fat %), visceral fat area (VFA) (cm²) and skeletal muscle mass (SMM) (kg/m). VFA describes abdominal obesity, which has been associated with increased risk for mortality and metabolic diseases [7, 38]. Obese individuals with good PF have had less internal fat than obese and unfit individuals [1, 39]. SSM describes fat-free mass, which has positive associations with functional ability and energy metabolism [40]. In comparison to the other body composition assessment methods (e.g. DEXA and MRI), the BIA has reasonable validity [31].

4. In the beginning of the Discussion is a sentence ‘.63 per cent of them (men with low PFI) overestimated their fitness status’. There is no discussion about the relevancy of the PFI index.

- We have paid more attention to the relevance of PFI as an estimate of physical fitness. This issue has been discussed in the following parts of the text.
Previous studies have found that 50-60 per cent of the inactive population overestimate their PA [13, 16, 45]. In this study, almost 80 per cent of the young low-fit men reported moderate or good PF. A recent study reported that PA overestimators tended to compare their activity level to people who were even more sedentary than themselves [15]. Similarly, low-fitness men may use a downward comparison with more unfit people. However, in this study, the proportion of PF overestimators should be interpreted with caution. Self-rated fitness was compared with PFI, which has not been established as a measure of PF in previous studies. Thus, PFI may be fairly accurate measure for men aged 35-49, but underestimate PF in younger or older men.

Pages 17-18: Assessing peoples’ PA in free-living conditions is challenging. Therefore, PF is a better predictor of health status than PA. PF was assessed in the present study with a PFI that comprised several dimensions of health-related fitness. The PFI did not indicate functional ability alone, but also risk for adverse health conditions. The PFI described PF (aerobic capacity and skeletal muscle strength) and indicated risk factors for functional disability and chronic diseases (fat % and VFA). However, this was the first time that this PFI has been used for research purposes. The reference values of the PFI tests were adjusted for the population of Finnish middle-aged men, which restricts its use in other populations. Further research should examine the validity of the present PFI in different age groups and on different fitness levels.

Minor Essential Revisions

1. In the Abstract Background paragraph the PF is mentioned for the first time without clarification. Also in the Abstract Conclusions paragraph PA is mentioned for the first time without clarification.

- Clarification of physical fitness (PF) has been inserted in the Abstract. In the revised abstract physical activity has been mentioned only once, and thus an abbreviation has not been used.

2. In the Methods Sample and study design paragraph the purpose of the Fit for Life Program was described as to 'activate sedentary working-aged men'. How a campaign held in the market squares help in this? Is there any studies to show that sedentary men are met at market squares more often than physically active men? The result show (Table 1) that only 15.6 % of the men were sedentary (less than 1 h/week exercise) so the program was quite a failure, but of course it is very difficult to find these men as mentioned in the article. In the Discussion is mentioned ‘Recruiting participants from publically held events may have reduced selection bias' This seems not to be true, better move out this sentence.

- We have discussed more critically on data selection and pointed out that issue in the text on page 16: This study has limitations that restrict the generalizability of the findings. First, the participants were working-aged men who voluntarily engaged in the testing events. It is probable, therefore, that the study did not include men with the lowest fitness status. Unfit and inactive populations do not usually engage in PF studies owing to the challenging nature of the fitness tests used and lack of motivation [12]. However, the present data were obtained in public events that were free of charge and the fitness tests were easy to perform. Notwithstanding, the data were restricted to motivated men, as only 16 per cent of the participants were sedentary.
3. In the Methods Self-rated physical fitness... paragraph the Likert scale is not opened for the statement 'I exercise sufficiently' as for the other statements and questions. This should be made.

- Clarification of the assessment scale of perceived sufficiency of PA have been inserted on page 9: Furthermore, perceived sufficiency of PA was elicited with the statement “I am sufficiently physically active”. The response alternatives were given on a 5-point scale (1=totally agree...4=totally disagree, 5= I don’t know). The responses were assigned to one of three classes (1=agree, 2=disagree and 0= I don’t know). The categories were dichotomised for the statistical analyses into two classes (1=agree, 2=disagree or I don’t know). We used this categorization because there were only a few cases who were classified to the “I do not know”-category.

4. In the Methods Psychosocial factors paragraph a 5-point Likert scale is also used, but this time 5 is given to answer don't know. Why is this? Is there a error in dichotomizing the responses in two classes (I agree/disagree or don't know). Should the classes be 'I agree' and 'I disagree' and the don't know answers should be analyzed separately

- Response alternatives of statements of psychosocial have been described in the method part on pages 9-10: Participants were asked to assess how well the statements matched their situation. The original response alternatives were given on a 5-point scale (1=totally agree, 2=somewhat agree, 3=somewhat disagree, 4=totally disagree 5= I don’t know). The responses were subsequently assigned to three classes (1=agree, 2=disagree and 0= I don’t know or missing. The categories were dichotomised for the statistical analyses into two classes (1=agree, 2=disagree or I don’t know). In the further analysis, the psychosocial items were divided into five sub-dimensions (knowledge, skills, goal setting, social support and self-efficacy). Those who agreed with all the score-related items formed the high-score group.

5. In the Methods Barriers to and factors promoting PA paragraph a Table should be added to list the 10 items of barriers to PA and 8 items promoting PA.

- Barriers and promoting factors have been left out of the analysis in the current manuscript. We decided to concentrate examining psychosocial factors and self-reported fitness in three different age groups of working-aged men. This change was made because we considered reviewers’ notions that PFI itself and its relations to self-rated fitness and psychosocial factors need more comprehensive analyses.

6. In Results Psychosocial factors and physical fitness paragraph there seems to lack one OR ('low PFI was associated with the perception that a pleasant environment' only one OR here).

- This part of the results has been replaced with the age-specific associations between PFI and psychosocial factors (Table 4). Promoting factors for PA
(e.g. a pleasant environment) were not included in revised manuscript and those results were not presented.

7. In Results Overestimated physical fitness paragraph in the first sentence ci should be in capital letters.

- This part of results has been replaced with the age-specific associations between PFI and self-reported fitness (Table 2).


- We have noticed the suggested reference (Aittasalo et al. 2004) and discussed the effectiveness of fitness tests on health behavior changes in the text.

Page 4: Physical fitness testing and individualized feedback have been used in health counselling in order to increase awareness of current PF and motivation for health behaviour changes [17-19]. However, comprehensive fitness tests have not improved counselling outcomes [17-19]. The results suggests that PF tests and feedback are not likely to contribute to the desired behaviour change process if individuals are already well aware of their current PF status or lack the confidence to implement the target behavioural change [18]. Hence, the reasons for low PF and inactivity do not reside in knowledge alone.

Page 16: Good physical fitness may be related to one sort of physical activity capital that promotes engagement in PA and provides the ability to obtain social support from the environment [43]. While easy access to exercise groups and good sport facilities could be enough to increase PA in moderately-fit men, low-fit men may need more individual counseling, social support and PA alternatives that are perceived as agreeable and fun. Further research is needed to determine whether the PFI used here could form one component of a practical tool-kit in health counselling.

9. In the Discussion Strengths and limitations paragraph is mentioned that 'Primary purpose of events was not data collection'. How can the writers JK, KK and MP inform that they have contributed to the data collection, if the data was collected before the study was designed?

- The data were collected from the fitness test events. The study was conducted together with Fit for Life Program, which offered us a possibility to reach a wide range of working-aged men. The study was designed beforehand but the original purpose of Adventure of Joe Finn- campaign and fitness tests were not to conduct a research. The way of data collection had influenced in the sample and therefore it is likely to be selected differently as it would have been if the target group had been recruited otherwise. We have
considered this issue in the text on page 16: This study has limitations that restrict the generalizability of the findings. First, the participants were working-aged men who voluntarily engaged in the testing events. It is probable, therefore, that the study did not include men with the lowest fitness status.

10. Table 2. Skills 'I have seek, should be sought? Social support 'People close to me have a high regard for exercise' Should be PA?

- Errors in spelling have been corrected (Table 3). As the Reviewer suggested, the item 'People close to me have a high regard for exercise' was replaced with the item 'People close to me have a high regard for PA'. The original Finnish version refers to leisure time PA or exercise, but not particularly to sport.

11. Table 4, the number is wrong 1, should be 4. Somewhat unclear table. Using more words would made it easier to read, e.g. 'Low PF realistic estimators.'

- The old table has been removed and in the revised version the self-rated fitness is presented in table 2.

Level of interest: An article whose findings are important to those with closely related research interests
Quality of written English: Needs some language corrections before being published
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.