Reviewer's report

Title: Construct validity of capacity tests in healthy workers: What are we measuring?: a cross sectional study

Version: 1 Date: 28 February 2013

Reviewer: Martin Descarreaux

Reviewer's report:

Title: Construct validity of capacity tests in healthy workers: What are we measuring?

General comments

This paper presents a validation of various tests currently used in the functional assessment of workers or future employees (screening tool). Its main purpose is to determine the factors related to the performance in five different physical tests in healthy adults. According to the authors conclusion results in functional tests such as the handling test are mostly explained by physical or personal factors. Moreover, none of the tests were related to psychological factors. Although the presented results are based on a large sample of workers and although I believe that there is a lot of relevant information that could be derived from the generated data, I have doubts regarding how the statistical analyses were conducted (please refer to the Major Compulsory Revisions for details). Until these issues are properly addressed, I cannot fully assess the manuscript. The manuscript should also be revised by an English speaking editor prior to re-submission.

Major Compulsory Revisions

Comment 1

The authors have clearly stated their goal and the purpose of the study which is to “to identify relationships between functional capacity and other ICF factors in a sample of healthy workers, and to determine how much statistical variance in functional capacity can be explained by these factors”. In the methods and results section, however, the authors introduce a new research question by conducting analyses to test “the mean differences in functional capacity between same-gender evaluator worker pairs and mixed-gender evaluator-worker pairs”. The backgrounds, current state of knowledge, purposes as well as a clear hypothesis regarding such analyses need to be addressed in the introduction.

Comment 2

Evaluations were conducted by inexperienced evaluators (although they received proper training). I don’t believe this invalidates the data but the authors should address this point in the limitation section of the manuscript as results may differ when evaluations are conducted by experienced clinicians or assessors.

Comment 3
My major issue with the manuscript is the statistical analyses and their interpretation. In each of their statistical models, the authors included Gender, Weight, Aerobic fitness and Strength. The rational for inclusion is clearly stated in the manuscript. However, I suspect these variables are highly correlated between each other which raise major concerns regarding multicollinearity in these models. Multicollinearity can be defined as a statistical phenomenon in which multiple predictors in a multiple regression model are highly correlated. In such cases the models may not give valid results about any individual predictor, or about which predictors are redundant with respect to others. I don’t feel fully qualified to comment on such issue but I would highly recommend that the manuscript be screened by a biostatistician prior to publication. At this stage, results obtained from the models where men and women were mixed seem to indicate that men perform differently than women in functional capacity testing. (Gender is a string predictor and men are heavier, have higher aerobic capacity and are usually stronger!)

Minor Essential Revisions
• Currently two different titles. Please select one.
• Manuscript needs to be revised by an English speaking editor

Abstract section
Comment 4
ICF is not defined in the abstract.
Comment 5
Changes should be done according to the different comments and changes performed throughout the manuscript.

Background section
Comment 6
“Lower or higher FC may be related to a range of factors such as gender, muscle strength or personal factors”. Please be more specific and include proper references.
Comment 7
“Furthermore, more attention should focus on the influence of the test evaluator himself during the test administration as an environmental factor” This sentence is meaningless unless more details regarding the role of the test evaluator are given.

Methods
Comment 8
The authors refer to a detailed description published elsewhere. This sentence stands alone at the end of the sample section of the methods and I cannot identify what it relates to?
Comment 9
The body function section needs to be clarified. It is currently written in a way that the reader is led to believe that the authors are presenting their results when they are in fact referring to published validity and reliability studies.

Results

Comment 10

The Material handling results section needs clarifications. The authors report data comparing subjects who performed “better” in various tests (one standard deviation greater than the mean). I do not understand the rationale behind these results. The standard deviations and related mean are not presented in the manuscript!

Discussion

Comment 11

The whole paragraph regarding psychological factors (second complete paragraph page 19) is vague and confusing. The authors refer to various classification and related results which are not described nor discussed in the manuscript.

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

**Declaration of competing interests:**

'I declare that I have no competing interests'