Reviewer’s report

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

Version: 1 Date: 14 February 2013

Reviewer: Jan Kool

Reviewer’s report:

Major Compulsory Revisions

- External validity of results: In general, this cross-sectional research in healthy workers is important and the data basis (number of subjects studied and variables) is very rich. The result that non-physical factors do not concurrently explain FC is very surprising. My main concern is how these results should be interpreted. Are they valid for prognosis of future work disability? Probably not, this would have needed a longitudinal study. Are they valid for patients? This should also be discussed and included in the conclusion.

- Definition of construct validity is not appropriate (background, third paragraph): reference [14], which is used for the definition, investigates test-retest reliability and does not cover construct validity. The quoted article does not give a definition or description of construct validity. Generally, the quoted definition is questionable and should be reconsidered. Most readers may think about construct validity as it was defined by Portney and Watkins. According to these authors, construct validity reflects the ability of an instrument to measure an abstract concept, or construct [Portney & Watkins. Foundations of clinical research: applications to practice – 3rd ed. 2009].

- Type of validity: The use of the term ‘construct validity’ needs clarification. Which are the consequences of your results? Would you suggest not assessing other than physical factors? That might save time. But this cross sectional study is not suitable to determine predictive validity. A longitudinal study would be needed to determine whether non-physical factors assessed in pre-work screening are predictive for future work disability. And if this would be the case, not assessing these is not justified.

- Choice of FCE variables is unclear. Why are these FCE tests chosen? Do they cover FC? This could be explained in the background or discussed in the discussion.

- Reporting and description of variables and methodology is confusing and inconsistent: the paragraph ‘construct validity’ should be revised because of missing punctuations. Table 1 is unclear, because the numbers in column ‘factor’ are not related with the manuscript and table 3. Generally, description and reporting of variables should be consistent through the whole manuscript, figures
and tables.

- Table 1: Please place headers of the 2nd column consistently in an ‘empty line’ as you did with ‘Personal factors’. I don’t understand why ‘education’ is a physical factor. This seems not plausible to me and may not be in accordance with the ICF.

- Table 2 and limitations of a cross sectional design: non-physical factors did not explain FC. This is very surprising and I think, in the context of so many other findings, needs careful consideration in this publication. Do you think that the (limited) range on non-physical variables may have contributed to not finding associations? If there is insufficient variance in e.g. ‘perception of work’ factors, then associations cannot be detected. In addition, do you think, that a longitudinal design identifying patients who develop work related disability could identify some factors as predictive for future work disability? This might be valuable to discuss. Abbreviations r, p and rpbi should be clarified.

- Table 3: correlations, e.g. of muscle power, are much lower for different genders then over all. Could you explain why? The reason may be that women and men differ in weight and height. Why didn’t you use the gender specific correlations? Why didn’t you correct for body height and weight (partial correlations)? There probably is a good reason and I think it is important to explain this procedure. Classification or description of top line should be corrected, because correlation testing does not require dependent and independent variables.

- Motivation for the choice of potentially explaining variables is unclear. Why was back muscle strength not assessed? The fact that prolonged forward bending and overhead work could not be explained by physical factors raises the question whether other physical tests (aerobic static submaximal) might be more appropriate than strength.

- Healthy persons were evaluated in this cross sectional study. Physical factors explain FC. These results may contribute to pre work screening in healthy persons. Can these results be applied to patients? On p18, at the end of the 2nd par, you mention the ‘incongruence of the profile (please define what is meant by this) between healthy workers and patients. Therefore, could you please discuss whether you think the results from this study are also applicable to patients? This is probably not the case as non-physical factors appear to be more important in patients. So what I think is very important for this publication and its future interpretation in the work rehabilitation field is, whether you think the construct of FC is the same in healthy workers and in patients. If this is not clarified there is a risk of unintended misinterpretations by readers. I think an according remark that these results are applicable for pre work screening in healthy workers, but not for patients, should be included in the conclusion.

- Discrepancies between your study and previous research: Some references in the background mention the importance of non-physical factors. These studies may have used different designs and sampling then your study. Could you please discuss possible reasons for the discrepancies between your findings and those of other studies, e.g. those in the background?
Minor Essential Revisions

- Abstract should be fully revised: first sentence is incomplete. The methods should state what the variables of functional capacity and other ICF factors are evaluated.

- Background does not underpin the research hypothesis: the authors mention the assumed correlation between the different ICF components but do not explain why these associations are questionable. Please explain how the hypothesized low to fair relationships (Table 1) were defined.

- p6 2nd para 1st sentence: you may want to limit this statement to healthy persons. As this study and comparison with other research shows, the FC may be determined by factors that are very different in healthy persons and patients.

- P9 in the middle: ‘In this method …. [18,19]’: This sentence is incomplete.

- You use ‘good’ correlation on p 13, and ‘strong’ correlation, on p 15. Please use one term only.

Discretionary Revisions

- Title: using ‘:’ twice and ‘?:’ should be avoided.

- Language is generally good but needs checking. Examples:
  p4, Results: … was associated to … # either ‘with’ or, in context of regression, ‘explained by’.
  p5 last para: … be focusing for… … beliefs of being not healthy…
  p6 line 2: … attention should focus on …
  line 7: … is not studied before … # has not been studied before
  … should be operationalized… # does not seem a focus in this study. Omit sentence?

- ICF Figure: omit DOT (or explain)