Reviewer's report

Title: What are the most effective interventions to improve physical performance in pre-frail and frail adults? A systematic review of randomised control trials.

Version: 0 Date: 18 Feb 2019

Reviewer: Dominique Van de Velde

Reviewer's report:

This article deals with an important societal issue. While the study has been performed rather well, it seems a little bit strange in the beginning that physical activity and nutrition have been combined. In addition, there is sometimes lack of coherence e.g. in the title the two aspects have been described, while in the discussion (in the abstract) there is only a reference to physical activity.

The rationale to focus on nutrition and physical activity however becomes clear in the introduction where it is clearly stated that the criteria of Fried have been used to operationalize frailty. I do agree with that, however, this is a very narrow way of looking at frailty, but from this perspective the combination of Physical activity and nutrition is logical. I would suggest to add some additional information regarding the bio-psycho-social phenotype (e.g. Gobbens) and put this in a broader picture. Certainly because the authors argument that there is a lack of clear criteria for frailty. It might be interesting to add in the title that it is about physical frailty. Certainly because in the included articles different definitions and operationalisations of frailty were used.

By the way; nutrition is not in the key-words, while physical activity is. I would suggest to add this to the key-words.

The method has been described well. Some remarks, how did the authors managed it to go from 2511 results to 33. The flowchart is clear, but how exactly did the authors screened 1709 records? That is a lot of work, and it seems that the search terms were not specific enough. This also shows the lack of coherence between the introduction and the method. From the introduction one could conclude that the search terms would have been 'nutrition' and 'physical activity', but this is not the case. The key-words have been kept very broad. While reading the article I did get confused and it seems as if the introduction has been written after the results were clear. Not vice versa. The research question is not about nutrition and physical activity, while the introduction leads to the expectation that it is.
This aspect should be clarified before the results can be interpreted correctly.

About study selection and screening, no kappa statistics have been used? the authors have used discussions in teammeetings. This seems very hard to get to a conclusion. See also remark about the amount of articles.

How was the pre-defined extraction form was developed?

It is unclear how the authors have included the studies and were sure that the studies were about frailty. In table 1 some frailty criteria were given, but not a real frailty measure. That questions whether all included studies were about frailty, or just about older persons having one or more physical problems.

The description however of the results is correct and in line with what can be expected from a systematic review.

Since the rationale is sometimes confusing, it is hard to get a real grip on the discussion section as well.
Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

Yes

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.

Unable to assess

Are the conclusions drawn adequately supported by the data shown?
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No

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I am able to assess the statistics

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