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: 07 Mar 2019

Reviewer: Lenore Dedeyne

Reviewer's report:

This is a well-written review that examined the effectiveness of nutritional and physical exercise interventions in a frail population. The review is registered in Prospero and reported following the prisma guidelines. It would be really good if the authors could apply following issues:

- Estimating the effect size of the outcomes found in the different analysed studies would, together with the risk of bias analysis, improve the outcome analysis.

- Physical activity is not the same as physical exercises. You use the term physical activity, but I think you mean physical exercises. Since physical activity is 'unstructured activities incorporated in daily life', you should switch the term you use to physical exercises.

- Typing mistakes in abstract (line 24 ; after activity, line 29 component(s)); Keywords: why not include nutrition?

- Introduction: P 3 Line 10: 4-60% adults are frail. Please explain this wide range; P 4 line 10: body mass and … (physical) activity levels

- Methods: Why is the search limited in time? March 2017 is 2 years ago, is a new search from then till now possible? Why not include studies before 2010? Please give a reason or perform a new search.
- Search strategy: very good to look for articles in a wide range of databases, although why frail had to be combined with both early intervention and health care is not clear. A lot of articles were found by other sources, maybe implying that the strict use of AND resulted in a lot of missed articles. I think of one article I am missing in this review: Tieland, M., et al. (2012). "Protein supplementation increases muscle mass gain during prolonged resistance-type exercise training in frail elderly people: a randomized, double-blind, placebo-controlled trial." J Am Med Dir Assoc 13(8): 713-719. This article was probably excluded. Can you please elaborate on the reason?

- Population targeted is frail population, however, several studies used a mixed population with also non frail participants. This leads to distortion of the results.

- In additional file 1: please change in the legend the Ab to AB and Ti to TI for consistency.

- Please rephrase eligibility criterium 2, P 6 line 52: why use an abbreviation (DEF) when you no longer use them further in the text, P6 line 52: capture details about study, (remove the comma).

- Physical performance is defined as a measure of body mass index, which is odd. The rationale to include BMI was not given.

- Bias assessment: when the classification of the bias was unclear, were the authors contacted? This is perfectly possible since all the studies are recent.

- Results: Figure 1: flow diagram: 38 records were found through other sources, however, the origin is not explained. Please elaborate on this.

- P 7 line 31: explain how you did the additional searches.
- P 7 line 58: I do not see how appendix 2 (with studies reported with low or unclear quality) lead you to the last sentence 'methodological quality (n = 3) ranged from adequate to excellent (n = 7)'. I do not understand how you included the studies labelled as 'unclear' are given an adequate or excellent quality.

- P8 line 44: 'the' Netherlands; line 46: Remove the sentence 'No studies originated from the UK'; line 51: please rephrase the sentence that frailty was not clearly defined; P9: please revise the use of the term 'physical activity'

- The results section is difficult to understand because the text is almost a textual rendering all the minute details normally provided in table format, of all the studies. The text is structured according to the care setting they were provided in, however, this does not contribute to the understanding of the text since the importance or results based on setting are not explained. To be more than a useful extraction of data, the author must also analyze the data in such a way that he/she highlight the overarching findings, and delete all the minute details. These details are already well covered in the tables provided, and need not be repeated in the text.
Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

No

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

Yes

Are the conclusions drawn adequately supported by the data shown?
If not, please explain in your comments to the authors.

No

Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

I recommend additional statistical review

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