Reviewer’s report

Title: Development of a conceptual framework for a group-based format of the Lifestyle integrated Functional Exercise (gLiFE) programme and its initial feasibility testing

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Reviewer: Elizabeth Steed

Reviewer's report:

This is a strong paper explaining the refinement of a 1:1 falls prevention programme to a group setting with the aim of increasing implementability and reducing costs. Whilst the intervention is well presented there are a number of elements which I feel should be addressed pre-publication.

A key issue is the use of theory. The intervention does appear to be informed by theory and there seems to be coherence to the theory used. However this may not be transparent to the non-theorist reader. I would recommend greater description of the theories used i.e. Habit Formation Theory, the HAPA, Self-determination theory and the BCT taxonomy (which isn't actually a theory but a method to translate theory into techniques to change behavior). How these models are used, how they were integrated and how they were translated into practice (via BCTs?) would be helpful.

Similarly there is much talk of didactics but with poor referencing or explanation of what the authors mean by this. I am unsure if there is a language issue as traditionally didactics is thought of as rather a traditional lecture based form of teaching in contrast to a more facilitatory, participant centered approach. gLiFE feels as though it would fall more in the later however it is described here as the prior?? Is it that the authors drew of pedagogy or adult learning theories? Some explanation would be helpful.

In both the introduction and background I felt more relation of how this study fits with current literature in the field would be helpful. I am aware there are numerous studies and systematic reviews in this field and it would be helpful to refer to them more to contextualise the work.

Phase 1

It is not clear if any methodology (e.g. Stirman 2019 FRAME or see Levati review 2016)) was followed for intervention refinement. Even if no specific methodology was used here it would be helpful to make reference to this emerging field within the discussion.

I am unclear on reading this section what the principles of gLiFE are - could these be added to either table 1 or Figure 1.

Again can you label the theories on group learning you used.
What was the methodology for coding BCTs - was this done by more than one person. It appears to me that there are some additional BCTs e.g. credible source, feedback on behavior, monitoring of behavior that may need to be considered and added if appropriate.

Phase 2

Pg 13 Quantitative feasibility measures (are you really measuring adherence or behavior?)

Didactics - note comment above.

Table 3 - the authors are to be commended on including measures of theoretical mediators through which they propose the intervention to act. If the theory were explained more initially (possibly through a logic diagram) then it would be easier for the non expert reader to see how these translate to the programme theory.

It does not appear that fidelity of delivery or other forms of fidelity were assessed? If this was not done it would still be appropriate to highlight the implications of this and importance within the discussion

**Level of interest**

Please indicate how interesting you found the manuscript:

An article of importance in its field

**Quality of written English**

Please indicate the quality of language in the manuscript:

Needs some language corrections before being published

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