Reviewer's report

Title: Unsupervised progressive elastic band exercises for frail geriatric inpatients objectively monitored by new exercise-integrated technology - a feasibility trial with an embedded qualitative study

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Reviewer: Lora Giangregorio

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Abstract:

- The feasibility criteria are 30% of total population performed at least 33% of # of sets. The way results are presented is confusing. Should present total #/% that completed 33% of number of sets (and therefore met both feasibility criteria), and then the average % of sets performed by total sample and by those who trained, for reference.

- It is not clear what "if adjusted" means in conclusion.

- What was the intensity and reps and sets for the program - was the focus on strength, endurance? It might be important to briefly mention in abstract methods.

- My take on the results is that you need to supervise exercise to ensure they do it, if to be used in a future efficacy trial, where adherence is critical to make accurate inferences.

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The rational for the intervention is that there are studies that show that high intensity training is effective. Most studies implement more of a moderate intensity strength training - high intensity would imply very low repetitions and high load e.g., lifting 85%+ of 1 repetition maximum. This distinction is important because it would be difficult to use elastic band exercises to deliver high intensity exercise. A more comprehensive review of the types of interventions that have been shown to be effective may be needed to inform the proposed future trial.

What is the primary outcome for the future trial? If the focus is strength, then low-moderate intensity elastic band exercises may not be very helpful, for example. If focus is function - multijoint functional exercises may be more relevant than exercises with a theraband. More detail is required on the nature of the proposed larger trial.
Provide some rationale for the selection of knee flexion and elbow flexion exercises. Are these the types of exercises you would include in the larger trial, or in clinical practice? Elbow flexion in particular, seems a strange choice. Inpatient rehab typically focuses on functional exercises like sit to stand, stairs etc, so is it possible to relate the choice of exercises to what would be done in the larger trial?

A target of 30% adherence seems low if the target is a future trial. It would be very hard to power an efficacy trial with an expected adherence of 30%. If the target was implementation, it might be more realistic. Although adherence to exercise IS low in older adults, if you were planning a trial you would have to put things in place to get higher adherence to be able to make inferences. Or focus on supervised exercise.

It is not explicitly stated if the qualitative work involved thematic analysis, content analysis or other type of analysis, if it was informed by theory e.g., behaviour change theory. Some of the questions were yes/no, or a bit confrontational, which is a bit concerning for qualitative analyses. It also seems odd that the qualitative analyses were done by the person instructing the exercises, given the nature of the questions - huge potential for social desireability bias. These are limitations that need to be acknowledged. What are artificial citations?

It is stated that the patients lost the will to live - would it be more appropriate to say they declined further participation?

It seems that feasibility of implementation or of a future trial may be more affected by the presence of dementia than willingness to do unsupervised exercise. This is perhaps an important finding that would inform any future trial of exercise in this population - the need for an intervention that can be used in individuals with cognitive impairment.

On the one hand the qualitative results are presented as positive, yet the adherence data suggest that it was not an activity people wished to engage in. what do you make of this? Is it possible there is some bias in the reporting of the qualitative data - either that you are focusing on the positive, or that only the positive comments came out (social desireability bias)? There is mention of this in the discussion. Consider discussing this in more detail, and perhaps consider the limitations of the study design.

The section on clinical implications is a bit confusing, and lacks detail. More detail in the discussion about how this relates to the future trial is needed. Provide more detail on what types of adjustments are needed. What would you change? Could you have a hybrid, where the intervention includes teaching others to coach the person to do their exercises, like family, or other hospital staff? Would you have designated times for exercise or prompts in the environment? Could the technology beep or flash to act as a reminder? Would that be realistic?
The limitations section needs to acknowledge more of the limitations, as mentioned above.

The conclusions section appears overly positive and focused on the qualitative data rather than the objective results.

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