Author’s response to reviews

Title: Implementation of a behavioural medicine approach in physiotherapy: a process evaluation of facilitation methods

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COMMENTS TO THE REVIEWERS

We appreciate the time invested by the editor and reviewers for their thoughtful comments and for the opportunity given by the editor to improve our manuscript for publication. We provide detailed actions regarding specific comments below.

Reviewer #1 (R1) and authors’ changes (AC)

R1: If I am understanding things right, a previous study showed that initial uptake of the intervention was good but that behaviour change wasn't sustained - and that therefore this project studied another implementation of the same intervention to determine what about it might have factored into lack of sustainment. Further, that the current project studies only the implementation over six months. If that is correct, how confident are you that the behavior change related to this particular study would not have been sustained, and that the same factors are at play as were in the first study? I'm not understanding why you didn't also check this one at three and six months post-implementation.

AC: This project study the same implementation intervention and the same participants as was described in the previous study. Follow-up observations of the physiotherapists’ clinical behaviour where therefore performed at 3 and 6 month post-implementation. However, this was unclear in the manuscript and we have clarified that on page 6.
R1: Further, because there is no information about the interview questions, it is hard to tell what the participants in this study might have had to say about whether they would sustain the behaviour change. Were they asked their opinions at all about sustaining interventions? For example on page 19, you say "When the implementation intervention ended, the physiotherapists still perceived a need for time management support to maintain the new behaviour." This was helpful as it became clearer that you seemed to be asking them about sustainability, but I'm not sure to what extent the questions were focused on that as opposed to implementation.

AC: We have added an interview guide, see Additional File 3.

R1: Sustainability of practice change is a key issue and I commend you for tackling it. I think the reader needs to know more about the various timeframes and what it means to have something sustained. It sounds like the implementation (and the study) took place over six months. At what point can it - or anything - be considered "embedded" or "the way we do things now"? And to support getting to that point, how long are the elements of any facilitation event important? In the conclusion you note that "The lack of continued support after the implementation intervention period seemed to be one reason for the failure to maintain the behavioral change over time" (I'm assuming that refers to the previous study). How long does continued support need to be provided?

AC: The timeframe required for sustainable implementation is still unknown, which means that it is also unknown for how long continued support is needed. Lally et al. (2009) found that the time needed for making a behaviour change varied among people, but in median two months was needed. Time is needed to allow enough repetitions of the behaviour in question. We have added information about this on page 5, 8 and 18.

R1: Related to intrinsic motivation, I found myself wanting more information on what the physiotherapists thought of the behavioural medicine intervention. Were they taking part in the study because they understood the evidence of benefits for patients? Surely belief and commitment would have a huge impact on implementation and sustainability. What case was being made to them about the behavioral medicine intervention as opposed to the implementation intervention?

AC: The physiotherapists rated their expectations of the behavioural medicine approach before the implementation period. We have added this information on page 7.

We have also added a discussion regarding the expectations and attitudes reported in a previous study (Fritz et al. 2019) on page 21.

R1: On that note, a little more about the behavioral medicine approach would help…why is it complex to implement in the "real world"? That would help us understand why physiotherapists may or may not undertake it. You do get at some of this on page 8 when you talk about using previously identified determinants for using the BM approach, but I feel the reader needs more.
AC: We have expanded on the description of the behavioural medicine approach on page 4-5. We have also clarified on page 5 that the complexity of the behavioural medicine approach is caused by the multiplicity of clinical behaviours to adopt.

R1: What if the physios didn't like the BM approach itself…did you ask them after? I was interested to read on page 23 that "[in the previous study] The physiotherapists' self-efficacy alone seemed insufficient to provide the 'tip-over' effect for clinical behavior change to be maintained." To what extent would the intervention itself (in this case, the behavioral medicine approach and its benefits) weigh in here…if it brought about improvements in patient care (and was easier and better for the physiotherapists) would the tip-over be easier?

AC: Unfortunately, we have not asked the physiotherapists if they liked the behavioural medicine approach or not. We have only asked them about expectations and attitudes (Fritz et al, 2019).

R1: In the results, the same confusion between implementation and sustainment arises for me. For example on page 12, "the physiotherapists emphasized it was important that the facilitator was able to tailor the…" etc. Were they commenting on the initial implementation or for sustainability? Or both?

AC: The physiotherapists were mainly commenting on the initial implementation. The interview questions concerned the physiotherapists’ experiences of the facilitation intervention. One of the questions concerned maintenance of the behaviour change.

R1: It's a bit confusing (necessarily so!) that you have the implementation of a behavioral medicine approach for patients, AND behaviour change related to the physiotherapists. Making the distinctions clear up front would help. An example - I wasn't sure whether you involved the physiotherapists in the behavioral medicine intervention for patients as well as the implementation intervention (I think the latter is a strength of the study - did you discuss and explore the results afterwards with the same group?).

AC: We also struggle with this confusion 🤔. On page 4 we have added a description of what we meant by ‘implementation strategies’, and we hope that this will clarify the involvement of the physiotherapists.

We did not explore the results afterwards with the reference group. The reference group had no own experiences of the implementation intervention, so we do not think that this would have contributed with any further information other than speculations. However, discussing the results afterwards with the reference group could have been interesting and is a good idea to do the next time.
R1: It would be helpful to understand what "some" and "most" mean in terms of the study population, and if there were differences that could be important. For example did physiotherapists who had colleagues also involved rate things differently from those who were doing this on their own?

AC: We have replaced “some” and “most” with the accurate numbers of the sample. You find the changes in the results section.

We have added information on page 6 regarding differences between physiotherapists, clarifying that only one physiotherapist did not have any participating colleagues at the clinic. Since this is a single participant, comparisons with other participants are not valid.

R1: It would also be helpful to hear you say more about the important differences between context (e.g., high work load) and facilitation methods; I would think the former would have a huge impact on sustainability of an intervention (not to mention initial implementation).

AC: We have expanded on the discussion about high workload in the last paragraph on page 17.

R1: I'm wondering if some of my questions - and the answers - have something to do with the fact that this is "part of a quasi-experimental trial" (page 5, line 55)? For example are there parts of that study that need to be better explained for a full understanding of this study (e.g., did the physiotherapists involved in this study know about the behavioral medicine intervention in general).

AC: We hope that our clarifications in relation to your’s and reviewer 2’s comments will increase the understanding of this study and how it is linked to a former study (Fritz et al. 2019).

Reviewer #2 (R2) and authors’ changes (AC)

Abstract

R2: It would be helpful to briefly explain in the background what a 'behavioural medicine' approach involves and/or what the implementation intervention involved. This was not immediately clear and it is important that a reader understands a) what the intervention to be implemented in clinical practice is, and b) what strategies are being used to improve its implementation (i.e. the implementation intervention). This is needed to facilitate interpretation of the results and methods.

AC: We have expanded on the description on the behavioural medicine approach in the abstract and in the background on page 4-5.

We have also expanded on the description of the implementation intervention in the abstract and on page 7-8 and Table 1.
R2: Methods: Fifteen physiotherapists participated in the process evaluation. How many participated in the trial? To help clarify what % of the overall sample took part in the process evaluation? (This point also applies to the results).

AC: The same fifteen physiotherapists participated in the trial and the process evaluation. We have clarified that in the abstract and on page 6.

R2: Methods: At what time point were the data collected? Relative to intervention delivery and outcome evaluation in the quasi-experimental trial?

AC: Data were collected both during the implementation period and immediate after. This is added to the abstract and clarified on page 8.

R2: Methods: Semi-structured interviews: What question were these trying to answer? And were these based on any theories or frameworks of implementation and/or behaviour change?

AC: We have added an interview guide, see Additional File 3.

We have added an explanation on page 8 that the interview guide was structured around the Medical Research Council guidance for process evaluations. The interview questions concerned the physiotherapists’ experiences of the implementation intervention and contextual factors.

R2: Results: It is unclear which findings reported in the results come from which data sources (i.e. self-report, documentary analyses, interviews).

Furthermore, it would be helpful to add supporting statistics and figures for data from quantitative sources (e.g. 'physiotherapists participated most frequently in the following implementation methods:……' But no frequency data is presented alongside this?).

There is also reference to the mechanisms of impact in the first line of the conclusions but it is unclear in the abstract which data sources/findings the authors consider to represent the mechanisms of impact.

AC: We have clarified the results in relation to data sources, see page 10-11 and table 2.

Supporting statistics are presented in Table 2. Table 2 presents the frequency distribution of dose and reach. Could the reviewer please clarify if additional statistics are needed?

We have reformulated the aim, added a description of impact mechanism in the background (page 4) and reformulated the conclusion. We hope that the impact mechanisms are clearer now.
R2: Contributions to the literature (p.3). This section repeats the content of the results and conclusion of the abstract. Instead, it should present new content. Ideally this would be a good opportunity for the authors to explain how the methods and findings from this study address gaps in the broader physiotherapy and implementation science literature, and may of interest/relevance beyond the present study context.

AC: We have reformulated this section.

Background

R2: As per suggestion in abstract, a 'behavioural medicine approach' (i.e. the intervention to be implemented in practice) needs to be better explained- what is it that physiotherapists are expected to implement with patients in practice, and what is the evidence of its effectiveness.

Although the authors allude to an implementation gap in lines 7-15 on p. 4, this could be further elaborated. Is it that this approach is not implemented at all? Or there is inconsistency/variability in practice? Supporting evidence/statistics to help quantify the implementation gap (if available) would also be helpful.

AC: We have expanded on the description on the behavioural medicine approach on page 4-5.

The evidence is related to the patients’ ability to participate in daily activities, which is described in the last paragraph on page 4.

We have elaborated on the challenges when implementing the behavioural medicine approach on page 5. We have also added supportive evidence on page 5.

R2: Line 18 p. 4: Please define/clarify what is meant by 'facilitation' (i.e. the implementation strategy/intervention?).

AC: We have clarified what is meant by ‘facilitation’ on page 5.

R2: Line 25 p. 4: 'study showed a large effect size regarding immediate changes in physiotherapy' - can you add statistics to clarify the size of the effect, and also define the time period (i.e. immediate).

AC: The time period (immediate) is clarified and statistics are added on page 4.

R2: The background section moves quite quickly to discussing the present study and its aim. Prior to doing so it would be helpful to contextualise the present study in the broader implementation and physiotherapy literature, to help argue the need for the current study. There have been process evaluations of the implementation of behavioural interventions in the physiotherapy context, specifically focusing on fidelity of delivery, but these do not appear to have been cited or discussed in the introduction to this study (and the discussion also).
AC: Thank you for the suggested references! On page 4 we have contextualized the present study in the broader implementation context and physiotherapy literature, to help argue the need for the current study. We have also added references to previous research concerning process evaluations.

R2: P. 4 line 56: Please explain the main tenants/components of the 'Implementation of Change Model' and how it informed the present study process evaluation. This is expanded upon further in methods, but if introducing this model early in the manuscript in the Background, then perhaps worth explaining here instead?

AC: The implementation of Change Model did not inform the process evaluation. It was used as a framework for planning the total implementation intervention trial. Because of lack of space and the minor relevance for the current study, the model and how we have used it is removed from this manuscript.

R2: P. 5 lines 3-22. The theory-based intervention development is a strength of the implementation intervention design process. However, this paragraph appears to explain Social Cognitive Theory, but not precisely how the theory-based assumptions were addressed in the implementation intervention.

AC: This is described on page 7 and in Additional file 2. We have more clearly referred to the Additional file 2 on page 7.

R2: P. 5 lines 26-40: This repeats content presented in earlier paragraphs on p.4 and could potentially be deleted to make space for adding content to expand on suggestions above.

AC: Thank you for the advice. We have deleted parts of the paragraph.

R2: Aims (P. 5 lines 37-40): The author present the aims as 'explore the implementation process of a behavioural medicine approach in primary care physiotherapy'- This is quite vague/general. Could the aims be phrased more precisely in terms of what process evaluation questions are being explored? Is it the extent to which the intervention is delivered as intended/per protocol (fidelity)? Is it engagement with the different components of the implementation intervention (dose and reach)? Barriers/enablers to implementing the intervention? Mechanisms of action? The authors reference the MRC process evaluation guidance on p. 4- perhaps describe with components of this process evaluation framework this study aims to investigate? This point also applies to the way the aims are described in the abstract.

AC: The aim is revised and we have tried to make the aim more precise, both on page 5 and in the abstract.
Methods

R2: Please see suggestions for methods clarification in abstract- these apply to main manuscript text also. (e.g. 15 participants took part in the process evaluation- out of how many in the trial? How many clinics took part? P. 6 lines 23-26).

AC: The same fifteen physiotherapists participated in the trial and the process evaluation. We have clarified this on page 6.

R2: P. 7 lines 17-39: This could potentially be moved to introduction to address concerns over lack of description of key terms (i.e. behavioural medicine approach)

AC: Thank you for a good advice! We have moved it to the introduction.

R2: P. 8 lines 42-49: 'The selection of implementation methods was discussed in the reference group which influenced the content and structure of the implementation intervention resulting in the following facilitation methods offered by the facilitators to the support the physiotherapists: ….’ Does this mean that physiotherapists chose which strategies they wanted to receive?

AC: All physiotherapists were offered the same implementation methods described on page 7-8. Not all physiotherapist participated in all methods, and to the same extent for various reasons, and this is a part of the individual tailoring. So this is a part of the intervention. Therefore, dose and reach is an important part of the results of the process evaluation, as described in the Medical Research Council guidance for process evaluation.

R2: As such there were potentially different combinations of implementation intervention packages that varied across physiotherapists?

AC: We understand what you mean by “potentially different combinations of implementation intervention packages that varied across physiotherapists”, but that is how it looks like in real life. And we agree that we cannot say that for example video feedback is useless. But it did not contribute to support the implementation because it was not used. And that may be another problem to handle in future research.

R2: This arguably has implications for interpreting the results- which are currently presented across the sample as a whole/ for a single intervention. For example, Table 1 presents the amount of time spent with each type of facilitation methods, but is it fair to compare these equally if not everyone chose/received these methods?

AC: The amount of time spent on each facilitation method (Table 2) says something about how the physiotherapists’ perceived the value of each method.
R2: Again Table 2- the ranking of perceived value- if some physiotherapists did not chose/receive that facilitation method then they cannot rate its perceived value? So the denominator should change for each method depending on how many chose it?

AC: The physiotherapists were asked to rank the five most important methods to support the implementation (Table 3). The methods that were not used were thereby probably not included among these five. A few physiotherapists did not have any experiences of using a specific facilitation method, and did not contribute with any experiences of this method during the interview.

R2: P. 9- Data collection: It would be helpful here to clarify which metrics were used to measure time allocation (line 32). Table 1 is meant to present this data but presents a range of different metrics (time/hours, but also number of visits, number of participants?). Also Table.1 refers to 'Dose and Reach' and these can be conceptualised in measured in a number of ways- but these are not defined in data collection in methods, nor are the metrics used to assess these clear.

AC: We have added an explanation of dose and reach, and the metrics used to assess these on page 8. We also clarified Table 2.

R2: P. 9 line 39-42 'physiotherapists were asked to rank the five most valued facilitated methods from one to five, with five being the most valuable' - I was unclear about this- if the aim is to ask participants to rank the participation methods in terms of their value, then how were 'the five most valued methods' referred to in the first half of this sentence identified?

AC: We have obviously been unclear. We meant that the physiotherapists were asked to distinguish the five most valued facilitation methods and rank these from one to five. We have clarified this on page 8.

R2: P. 9 lines 45-47: 'Interviews were conducted four times during the implementation period and once after' - please clarify how many interviews in total? Was it 5 time points x 15 physiotherapists, n= 75 interviews in total? Was the topic guide structured and analysis around any theories or frameworks (i.e. Implementation Process Model, Social Cognitive Theory?)

AC: Yes, the interviews were conducted at five time points for all the participants. We have clarified this on page 8. The topic guide was structured around the Medical Research Council guidance for process evaluations. We have clarified this on page 8.

R2: P. 10 lines 18-24: It is unclear how the BCT taxonomy was used for the analysis- could the authors please clarify? Did they code participant responses deductively according to the BCT they were discussing? Then identified themes related to each BCT inductively? Was the topic guide structured around the BCTs in the intervention?
AC: The participants’ responses were inductively coded and mapped to categories according to the BCTs. We have clarified this on page 9. The topic guide was not structured around the BCTs, it was structured around the Medical Research Council guidance for process evaluations.

Results

R2: P. 10 line 54 'Dose and Reach'- see earlier comment about defining these.
AC: See earlier comment.

R2: P. 11 lines 1-24: I am unclear on where the data for these findings around goals set a) came from and b) are reported/summarised (i.e. which Table?).
AC: We have expanded on the data collection regarding goals on page 8 and added a new figure with the findings concerning goals (Figure 1).

R2: P.11 line 52-54: Include a brief comment/summary narratively as to which methods rated highest/lowest.
AC: We have included a comment about which methods that were ranked the highest, on page 10.

R2: P. 12 -18: The interview findings are of particular interest, and the quotes are very helpful. Could these be added to Table 3, to ensure there are quotes presented for each theme/heading (some currently do not have supporting quotes). Also, given Table 3 and the in-text headings are structured around BCT cluster headings, it would be helpful in the methods to explain that taxonomy v1 has 93 BCTs grouped into 16 clusters, representing the broad ways through which these BCTs may work to change behaviour.
AC: We do not want to double report the results by presenting the quotes both in the table and the text. However, we have added quotes for each heading in the text, see page 11, 12 and 13. We have added an explanation of the BCT taxonomy on page 9.

Discussion

R2: P. 18 line 58- the discussion starts with a comment about initiation vs maintenance of clinical behaviour change; yet (I may have missed it), but the results and analysis are not framed in terms of initiation vs maintenance. Either structure results around this, or start the discussion with a headline summary/statement that is more clearly linked to the results?
AC: We have moved parts of the paragraph in focus to the background. Other parts are deleted.
R2: P. 24- characteristics of the sample. Would be good to reflect here on the self-selecting nature and bias of the sample? Arguably they are more engaged with the intervention than those that declined to participate?

AC: We have added a reflection about the self-selecting nature and bias of the sample on page 23.

R2: My overall suggestion for the discussion is that it is very focused on the present study context and interpretation of findings. Whilst this is important, it would be good to contextualize the current findings in the broader physiotherapy and implementation literature by discussing what gaps in knowledge this study contributes, why the methods and findings may be of broader interest etc. How do the current study findings align with those of process evaluations looking at the implementation of other physiotherapist delivered behavioural interventions (see earlier papers). It would also be of interest to know what the research team think would be the implications of the present process evaluation findings for refining the existing intervention (i.e. facilitation methods) to improve dose/reach/ and maintenance?

AC: The knowledge gaps that this study contributes to is reformulated on page 3: ‘Contributions to the literature’.

On page 18 we have added further information about how the study findings align with earlier papers.

On page 22-24 we have added why the methods and findings will be of interest in a broader context.

In the conclusion on page 24 you can find the researcher team implications for refining the existing intervention.