Author’s response to reviews

Title: Evidence-based practice in stroke rehabilitation: Knowledge translation and implementation

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Version: 2
Date: 2 May 2014

Author’s response to reviews: see over
Author's response to reviews

Title: A formative evaluation of the implementation of an upper limb stroke rehabilitation intervention in clinical practice: A qualitative interview study

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Version: 2 Date: 02 May 2014

Author's response to reviews: see over
02 May 2014

RE: MS: 4670537521162240 and 2004390023116617

Dear Dr O’Connor,

We are pleased to read that both submitted manuscripts were deemed to be of importance by the reviewers and are grateful for the very helpful and detailed comments provided. The manuscripts have been combined as advised and the reviewers’ comments have been incorporated in the revised manuscript. We have provided more information in the background section about how this piece of work fits within a three year project to develop and implement a structured upper limb exercise programme in the UK. To clarify the aim of the study, we have reframed the combined manuscript as a formative evaluation of the implementation of GRASP, and we expect that this will satisfy many of the reviewers’ queries about the select sample and issues surrounding generalisability of the results. We hope that the following information is sufficient and that the changes made within this revised manuscript will be positively received.

Kind regards,

Louise Connell

Editor’s comments

Given the reviewer comments (e.g. those relating to manuscript 2 esp. mismatch between study design and aim) and that the data is derived from the same participants (and there is some repetition of content across the 2 manuscripts) we would invite you to consider combining the two manuscripts into a single paper and resubmitting it. If this is of interest you would also need to address the peer review comments in the revised manuscript and provide a cover letter giving a point-by-point response to the concerns.

The two manuscripts have been combined into a single paper, the title and aims have been revised to better reflect the data presented in the paper.

- please ensure that a revised manuscript adheres to the COREQ reporting checklist (Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. Int J Qual Health Care. 2007;19(6):349-357. http://intqhc.oxfordjournals.org/content/19/6/349.long

The COREQ checklist headings have been used to structure the methods section of the paper.
- Please revisit the title of your revised manuscript, focusing more on the clinical intervention that has been implemented (i.e. GRASP) and also including the study design (qualitative interview study). One reviewer (McCluskey) has provided an example of how it could be rearticulated which you may like to consider.

_The title of the manuscript has been revised to include the type of intervention and type of study:_

“A formative evaluation of the implementation of an upper limb stroke rehabilitation intervention in clinical practice: A qualitative interview study”.

- Please include the details of ethics approvals in the methods (i.e. names of committees and study reference numbers) as outlined in the editorial by Martin Eccles and co (2011) [http://www.implementationscience.com/content/6/1/32](http://www.implementationscience.com/content/6/1/32)

_The following sentence has been included on page 12:_

“This study was approved by the University of British Columbia Behavioural Research Ethics Board (BREB), study number H13-00249.”

- For all included tables (in the main text) please ensure there is a reference to them in the narrative in the main body of the manuscript. Please also refer the reader to additional files as relevant.

Within the main text there is reference to the content of the three included tables.

- Please consider adding illustrative quotes or further evidence to the tables demonstrating that the identified constructs and themes are grounded in the data (e.g. tables 3-7 in manuscript 1). This additional detail could be included by using additional files.

Tables 3-7 from the original manuscript have been removed. Additional quotes have been provided in the main text of the results to ensure that summarised findings presented within Table 2 and Table 3 are grounded in the data.
The aim of this study stated within the abstract has been revised in line with the revised aim stated within the main text:

“The aim of this study was to conduct a formative evaluation of the implementation of GRASP to inform the development and implementation of a similar intervention in the UK.”

The number of participating sites is not stated within the methods section of the abstract and a short description of Normalisation Process Theory is included as this was the framework used to develop the interview guide:

“Twenty semi-structured interviews were conducted, across eight sites in British Columbia, Canada, with therapists who were involved in implementing GRASP at their work site, or who had experience of using GRASP. Normalisation Process Theory (NPT), a sociological theory used to explore..."
the processes of embedding innovations in practice, was used to develop an interview guide.”

*Descriptions of the Conceptual Framework for Implementation Fidelity and the Consolidated Framework for Implementation Research have not been included in the abstract due to word count limitations.*

(iii) Revise Table 2 – add column far left with letters A-H, and also consider changing the term in work setting ‘rehabilitation’ to ‘inpatient rehab’. Remove internal horizontal lines (also in Table 1)

*This table has been revised to include a column with letters A-H and “rehabilitation” has been clarified to be “inpatient rehabilitation” where appropriate.*

(iv) Table 3: Retitle column ‘Knowledge translation’

*Knowledge translation has been retitled throughout the manuscript to: “How therapists found out about GRASP”.*

(v) State (quote) what is stated in the CPGs, and if there is a statement specific to use of GRASP or if recommendations are more general broader

*A quote from the Canadian Clinical Guidelines has been included on page 3, paragraph 2:*

“Despite only one randomised controlled trial having demonstrated the efficacy of GRASP, a recommendation to “provide a graded repetitive arm supplementary program for patients to increase activity on ward and at home” was included in the 2010 update of the Canadian Best Practice Recommendations for Stroke Rehabilitation [8].”

(vi) The statement that ‘widespread clinical implementation of CIMT remains limited [9]’, requires revision. There is not supporting evidence to back up that statement

*This statement is no longer included in the “Background” section.*

(vii) acknowledge that only one RCT /Level 2 study exists/has been published on the effect of GRASP

*See point (v).*

**MAJOR ESSENTIAL REVISIONS:**

(i) **Describe both theoretical frameworks in methods**

*The three theoretical frameworks used in this study are described under the “Theoretical Framework” section of the methods (page 5, paragraph 4). The rationale for choosing the frameworks is provided, and how they relate to the individual study objectives is explained. The way in which the frameworks were used as part of the development of data collection tools, and during data analysis, is also clarified in the respective sections.*
Normalisation Process Theory (NPT) is a sociological theory that can be used to understand implementation, embedding and integration of innovation in healthcare settings [11]. NPT is made up of four constructs each of which has four components. Coherence is the first construct and describes the sense-making processes that people go through when introduced to a new innovation, cognitive participation describes the process of committing to implementing the innovation, collective action describes how the work to implement the intervention gets done and reflexive monitoring describes evaluation work that takes place. The emphasis of these components is on the dynamic and interactive processes that take place when attempting to embed a new innovation or practice. A recent systematic review found that in most cases NPT has been used as an organising framework for analyses and reporting of findings in health research [15]. It has also been used to inform study/intervention design, to generate research questions for fieldwork, and to create tools for investigating and supporting implementation [15]. In this study NPT was used in developing the interview guide and in data analysis to explore the processes involved in identifying, integrating and embedding GRASP in practice.

2. Conceptual Framework for Implementation Fidelity (CFIF)

Carroll and colleagues developed the Conceptual Framework for Implementation Fidelity (CFIF) to guide the measurement of implementation fidelity [16]. Within this framework the elements of implementation fidelity are (i) coverage (who should be receiving the intervention), (ii) content (the intervention itself) and (iii) dose (duration and frequency of the intervention). The degree to which these elements are delivered can be influenced by moderating factors e.g. intervention complexity, facilitation strategies, participant responsiveness. In this study the CFIF was used to analyse interview transcripts to explore how GRASP is being used in clinical practice, and how this adheres to intervention components outlined within the GRASP Guideline Manual.

3. Consolidated Framework for Implementation Research (CFIR)

The Consolidated Framework for Implementation Research (CFIR) has been developed by Damschroder and colleagues and is a pragmatic taxonomy of the factors that influence implementation [10]. CFIR has five domains (characteristics of the intervention, inner setting, outer setting, characteristics of individuals and processes) each of which contain a number of constructs. The framework can be used to guide assessments of implementation, evaluate implementation progress, and explain findings in research studies [10]. In this study CFIR was used in data analysis to identify emerging factors that influenced implementation and use of GRASP and to propose potential explanations for the research findings.”

(ii) Add info about number of sites in methods

More detailed information about the participating therapists and sites is included in the “Participant selection” section of the methods (page 8):
A table which shows how participants were identified across sites and the numbers that responded to be interviewed is now included as an additional file (see Additional File 2: Recruitment of participants).

(iii) State whether peer checking and member checking were used or not, and expand on how rigor/quality was maintained during interpretation and analysis

Member checking was not used in this study; however therapists in the research team provided feedback throughout the process which helped to ensure that findings were credible. The following sentence has been added on page 12, paragraph 2:

“Therapists in the research team provided feedback throughout the process which helped to ensure that findings were credible.”

(iv) Describe how quality was maintained by researchers coding the quotes and/or between primary researcher and co-researchers when two complex frameworks were being used

The coding frame used in this study has now been included as an additional file to illustrate how each of the frameworks were used during data analysis. The following statements have been included on page 12 to describe how quality in coding was maintained:

“Transcripts were first read for understanding to describe each case and to establish an initial coding frame. The coding frame was also informed by prior research which explored upper limb exercise prescription by UK therapists, and uptake of GRASP in the UK, as it was hypothesised that similar experiences would arise for both population groups [17, 18]. Transcripts were then re-read, by the first and second authors and separately coded.

The coding frame evolved as analysis progressed (see Additional File 3: Coding Frame). This was facilitated by regular team meetings to discuss and agree on emerging themes and resolve discrepancies in coding.”

(v) Indicate how many or what proportion of the 20 participants held the view about poor quality movement (see top of page 9)

The following statement has been included on page 13 to indicate the number of therapists that held the view about poor quality movement:

“However, all therapists interviewed also expressed some concerns about the quality of exercises that patients would be able to complete outside of therapy time:”

Throughout the results section, more detailed information about the numbers of respondents reporting particular experiences/opinions is reported.

(vi) Review use of the term ‘model’ for describing use of therapy/rehab assistants to help with delivery of GRASP

The word ‘model’ has been replaced with ‘strategy’.
(vii) revise the term ‘collective action’ on page 11 and/or quotes selected for that category, and ‘reflexive monitoring on page 12

*These terms are part of Normalisation Process Theory are can therefore not be revised.*

(viii) Consider removing the content about Chedoke/Fugl Meyer or make link with GRASP more evident/choose other quotes

*This content has been removed.*

(ix) move discussion on page 13 to discussion section

*This content of this section has been revised and moved to the discussion.*

(x) Provide key messages/ findings at the beginning of the discussion

*A summary of the key findings has now been included at the beginning of the discussion on page 19:

“The free online availability of the treatment protocol, along with well-established networks with the research team, enabled therapists to find out about GRASP. All therapists expressed having positive first impressions of GRASP, but also reported that they had some concerns about prescribing exercises to be completed outside of therapy time. At each site, key individuals were identified who were responsible for driving the implementation of GRASP, and in the majority of sites this individual was the practice leader or clinical supervisor. All components of the GRASP intervention were modified to some extent to alleviate therapists concerns about unsupervised exercises and also to fit with the available resources at each site. Coverage was wider, the content adapted and the dose, when monitored, was less. Therapists, although providing comprehensive appraisal of the implementation and use of GRASP from their own perspective, were often unable to detail how GRASP was being used at a team or departmental level. Factors which emerged as influential for the implementation and use of GRASP have been identified."

(xi) If one of the aims of the paper is to compare and contrast the 2 theoretical frameworks that aim is not apparent in the study aims, nor is a comparison provided

*Within the “Theoretical Framework” section (pages 5-7), an explanation is provided as to why three frameworks were used in the study. It was not an aim of the study to compare the frameworks as they each capture different elements of implementation (i.e. process, fidelity and factors) and therefore comparison of the frameworks did not take place.*

*However, as a recently published systematic review by McEvoy and colleagues (http://www.implementationscience.com/content/9/1/2) has encouraged authors to share and report experiences of using theoretical frameworks in implementation research we have included a paragraph in the discussion about our experiences of using three frameworks in this study.*
“As no one implementation framework was identified that could address all of the study objectives, three separate implementation frameworks were used to explore the processes of implementation, how GRASP is used in practice and emerging factors which influenced implementation and use. Using three implementation frameworks, although complicated, provided a systematic way of capturing the complex aspects of implementation.

NPT was useful in developing an interview guide to explore the implementation process at each site. However, using NPT alone did not allow for clear identification of the factors affecting these implementation processes or how the intervention was delivered, which are important for the purposes of a formative evaluation. Clarke and colleagues reported a similar finding when reflecting on their experience of using of NPT in a process evaluation of the Training Caregivers after Stroke (TRACS) Trial [34]. NPT was said to place undue emphasis on individual and collective agency without acknowledging contextual factors which impacted on this agency. An unexpected finding when using NPT was therapists’ difficulty in trying to recall the processes involved in implementing GRASP at their work site. Indeed, even the practice leaders who often initiated the implementation of GRASP struggled to recall when they had first heard about the intervention. Therapists could often remember only the processes in which they as individuals were directly involved e.g. a therapist would presume that it was the rehabilitation assistant that restocked the GRASP equipment box, but would report that they were not entirely certain. This fits with educational theories on learning in the workplace, which have found that ‘in everyday practices, learning takes place in the flow of experience, with or without our awareness of it’ [35].

Interviewing therapists in this study, as opposed to using audit or survey methodology, allowed us to get deeper insight into implementation fidelity and the reasons for adaptations to the intervention as opposed to just the way in which was adapted. The CFIF provided a comprehensive structure for reporting the use of the GRASP that enable greater comparison across settings in the future. Domains from the CFIR were used to explain the research findings. The CFIR has been used previously using a “menu of constructs approach” [36], where the focus has been on those factors relevant to the context of interest. When evaluating the implementation of a weight management program, using a cross-case comparison of ratings, ten CFIR constructs strongly differentiated the low versus high implementation facilities. The factors identified had parallels with our study, where networks and communications, leadership engagement, and relative advantage of the intervention where all found to influence implementation. This highlights the value of using such a framework, as consistent definitions allow for comparisons and synthesis of findings across studies.

Overlap between constructs was an issue, but the frameworks were not seen as mutually exclusive. Difficulties with commonality have been discussed by others, and it has been argued that irrespective of their coding, the use of frameworks helps to highlight important issues [15]. The flexible use of NPT has been applauded, as it demonstrates critical use of the constructs, rather than a ‘conceptual straitjacket’ [15, 37]. We found the frameworks to be useful in ensuring comprehensiveness, but used them as complementary rather than
restrictive guides to explore different aspects of the complex implementation elements. However, we did find the three frameworks were designed to be used from the perspective of the service provider without explicit consideration of the service-users. This is of particular importance for exploring implementation fidelity as characteristics of the recipients of interventions can often provide valid reasons for adaptations to interventions [24].”

(xii) Acknowledge that the interviews collected opinions and experiences of therapists retrospectively, and amend the discussion accordingly

_The study design was cross-sectional i.e. data collected at a single point in time and this has been clarified throughout the text. Although we were asking participants to recall events which occurred in the past, we were not retrospectively analysing data which had been previously collected._

(xiii) Remove discussion about outcome measurement unless this can be more closely connected to implementation of GRASP

_This has been removed._

(xiv) Add a section about future research and practice implications

_A section about future research and practice implications has been added into the discussion on page 16:_

“To facilitate translation of effective interventions into routine clinical practice, it is of value to identify existing networks through which detailed information on how to implement the intervention can be communicated. Free online access to this information, in the case of GRASP, has been found to be highly effective. Implementation fidelity is moderated by providers’ beliefs or concerns about interventions. Co-creation of interventions during development, ensuring they are evidence-based but also best-fit to the providers’ beliefs and context may help with implementation and fidelity. In addition to the intervention content, a behaviour change element and implementation strategy that facilitates the change in practice warrants further research. There is an urgent need for researchers to empirically test the “active ingredients” of package interventions so that the mechanisms of action can be communicated to those responsible for their implementation. It is known that adaptability of interventions facilitates implementation. Therefore creative solutions that allow adaptation of intervention components while still delivering the active ingredients of interventions are required. As non-adopters of GRASP were not included in this study, we can only hypothesise possible reasons as to why this evidence-based intervention has yet to be implemented in more stroke rehabilitation units. Future research objectively assesses actual uptake of interventions and explores factors influencing non-adopter adoption of evidence-based interventions would provide further valuable information as to how interventions can be designed and adapted to improve congruence with therapists across settings.”

(xv) Limitations section should also address why non-adopters of GRASP were not included, and acknowledge that no discussion seems to have occurred about fidelity of the GRASP program.
As the two manuscripts have now been combined the issue of fidelity is addressed. The very select sample is now addressed in the discussion and the following statement is included in the “Limitations” section:

“As participants in this study were volunteers, a self-selection bias exists where perhaps therapists with stronger opinions on the programme and/or its implementation are over represented thus limiting the generalisability of the study findings..
Reviewer 2

Discretionary revisions:

(i) GRASP appears to have been successfully implemented. Would research that investigates why some evidence e.g. CIMT has not been implemented also help to define what parameters need to be active for successful implementation?

See point (xiv) in Major Essential Revisions above.
Reviewer 3

Major comments:

(i) The research question is appropriate and the authors are applauded for applying two frameworks to their analyses. However, it appears that the frameworks were used to analyze the data post hoc but were not used to inform the interview guide apriori? It’s unclear whether the authors chose the CFIR constructs apriori. Thus, respondents may not have been prompted to consider other influential implementation factors.

See above. (Reviewer 1, Major Essential Revisions, Point (i))

CFIR constructs were not identified apriori. CFIR was used in data analysis only to identify and categorise factors which emerged from the interview transcripts as influencing the implementation and use of GRASP.

(ii) To be to understand the data, it would be helpful to know the reach of the sample into all clinics in the region etc that were exposed to the GRASP intervention. From the total clinics, how many participated? Do you have any way of declaring nonrespondent clinics as implementing GRASP vs Not Implementing? From the clinics that responded, what percentage of personnel responded?

In the “Participant selection” section of the methods (page 7-8), contextual information about the participating therapists and sites has been provided. Details regarding recruitment of participants across all contacted sites have been included as an additional file which shows the number of contacted therapists and the numbers that replied and agreed to participate. The following statements have been included to outline that it was not possible to determine whether non-responders were using GRASP or not:

“In total 42 potential participants across 12 sites were invited to take part. Of these, 23 replied to the email invite, and 20 therapists from eight different sites agreed to take part in an interview (2 were not using GRASP and 1 replied after data collected had ceased). Non-participants did not reply to the email invite. The reasons for non-participation are therefore unknown and it is not possible to determine whether or not non-responders were implementing GRASP.

(iii) Of the clinics interviewed, how many were not implementing GRASP and how many were? What factors from the two frameworks were related to implementation vs no implementation? This would give more insight into how clinics were able to implement GRASP into usual care.

As per the inclusion criteria, all therapists interviewed in this study were either involved in implementing GRASP at their work site or have experience of using GRASP. Therapists and sites not using GRASP were not included in the study as the purpose of the study was to inform the development of a future intervention as opposed to establishing uptake of GRASP and reasons for lack of implementation. It is acknowledged that this information would be of value and further inform the implementation of GRASP. This has been included in the ‘Practice implications and future research’ paragraph within the ‘Discussion’ section.
(iv) For the influence of leadership that is being reported, what level of leadership influenced the implementation after the intervention ended? That is, was it the hospital chief of staff, rehabilitation service chief? Individual clinician? How did leadership make the decision? Did you interview any leadership? If the program is free, why would the clinician not use it? It is best practice or just as good as usual practice? What exactly was leadership engagement?

Leadership engagement, in this case, referred to clinical supervisors and practice leaders within the therapy departments. The numbers of practice leaders and clinical supervisors interviewed is shown in Table 1. Table 2 now includes the following paragraph:

“The implementation of GRASP was facilitated by active engagement of practice leaders and clinical supervisors as they were responsible both for identifying the programme and introducing it at the work site by acquiring resources to support implementation e.g. funding for equipment.”

More detailed information and illustrative quotes have also been provided in the main text elaborating on the role of these individuals in initiating the implementation of GRASP at the interviewed sites and this point is developed further in the discussion.

(v) For networks, how exactly did the sites outside of the research trial decide to adopt GRASP?

Table 1 illustrates how therapists found out about GRASP in the first instance and how existing networks both within organisations and with the research team at GF Strong facilitated therapists in finding out about the intervention. Having found out about GRASP, the decision to adopt GRASP and initiate implementation of GRASP was most often made by practice leaders and senior therapists at the respective sites (see point iv).

(vi) Briefly present NPT and CFIR – why the need for two frameworks? Were each inadequate, in what ways?

See above. (Reviewer 1, Major Essential Revisions, Point (i))

(vii) Results: Did any factors emerge that were unrelated to two frameworks?

See above. (Reviewer 1, Major Essential Revisions, Point (xi))

(viii) A major limitation of the data is the variation in length of time from event to interviews (page 18 –few months to years). What is the average length of time since event?

The introduction of GRASP occurred at different times across sites. Therapists were relying on recall when asked about their earliest introduction to GRASP and most therapists (except for those involved in the RCT) were generally unable to pinpoint the exact time that GRASP was implemented at their work site.

(ix) It’s unclear what is in Tables 3, 4, 5, 6, 7?

These tables have been removed in the revised manuscript.
What is Figure 1 based upon? What do the arrows indicate?

This figure has been removed as it was not possible to restructure it with the inclusion of the fidelity data from the second manuscript.

Minor comments:

(xi) Abstract: Results: What does it suggest when therapists evaluated their own implementation rather than the department?

This point has been elaborated within the “Discussion”, page 22, paragraph 2:

“In recent years there has been a substantial increase in research studies seeking to influence professional practice. A number of Cochrane reviews exist which have aimed to establish the value of interventions such as computer generated reminders [29], printed educational materials [30], audit and feedback [31] and continuing education meetings and workshops [32]. An important finding in this study, when attempting to identify strategies to influence practice, was the level at which therapists appraised the implementation and use of GRASP. It was found that therapists were often unable to identify who in the department was using GRASP, and the way in which they were using the programme. Arguably it is difficult to influence service delivery, and therefore improve implementation fidelity, when service providers are not aware of what current practice is and do not benchmark or measure performance. This finding would suggest that there may be a role for self-monitoring, in the form of audit and feedback for example, to establish current practice and thus prompt fidelity to treatment guidelines. Audit and feedback has been shown to result in small but potentially important improvements [31] and recommendations as to how future empirical studies can further our understanding of the mechanisms of action of this complex intervention have been proposed [33].”

(xii) Abstract: Conclusions: Would delete first sentence as this is not a conclusion. What about “network” finding? Would delete “are modifiable” in last sentence.

The conclusion paragraph has been revised. The “network” finding is elaborated in the “Discussion” section. The focus of the results in the abstract is on the implementation of GRASP as opposed to how therapists found out about GRASP.

(xiii) Data Collection: What was length of time since GRASP trial ended and interviews were completed? Was it same for all in sample?

See above, point (viii).

(xiv) Results: Is GRASP replacing another practice or augmenting?

A sentence has been included on page 3, paragraph 2 to address this point:

“GRASP is a self-directed hand and arm exercise programme which is taught and monitored by a therapist, but carried out by the patient with the support of their family/carer where possible. The program is not meant to replace
existing therapy services, rather to augment current therapy; adding opportunities for more practice."

**(xv)** Page 9, is the concern by the therapist that the quality of the exercise movement outside of therapy have to do with the quality of the GRASP materials or the general thought that patient exercises done outside of therapy is of lesser quality in general?

*This sentence has been reworded to clarify that therapists felt that exercises completed outside of therapy would be of lesser quality:*

“However, all therapists interviewed also expressed some concerns about the quality of exercises that patients would be able to complete outside of therapy time:"

**(xvi)** Page 9, So the primary implementers were rehabilitation assistants but only 2 participants were assistants? What was the rationale for not including more? Was it the therapist who set the prescription?

*Only two rehabilitation assistants responded to take part in the study. Therapists were primarily responsible for the implementation of GRASP. Rehabilitation assistants were involved in supervising patients completing GRASP exercises and in organising the equipment at some work sites. Therapists set the prescription and the way in which GRASP was to be delivered.*

**(xvii)** Page 10 Again it would be helpful to distinguish implementation vs not implementation on professional judgment.

*See above, point (iii).*
RE: MS: 2004390023116617 - Evidence-based practice in stroke rehabilitation: Intervention fidelity

Reviewer 1

Major Compulsory Revisions:

(i) Introduction: The background includes some relevant research. I recommend that the structure and content of this section be revised to ensure better flow and argument. The first two paragraphs had me thinking I was heading toward a study of fidelity reporting in clinical trial research. The third paragraph did introduce more specific research on implementation fidelity (rather than clinical trial fidelity). However none of this was described or developed in order to understand the major implementation findings of these studies. I understand that these are not necessarily rehabilitation examples, however, if this is one of the first studies in rehabilitation, then findings from these implementation fidelity studies outside of rehabilitation are worth briefly summarizing rather than being used only to highlight the lack of rehabilitation examples. This should not affect word count significantly because there are opportunities for efficiencies in the subsequent paragraphs.

(ii) Additionally, the third paragraph moves from clinical trial fidelity to implementation fidelity without introducing implementation fidelity or highlighting that it is the clinical implementation that is the issue of focus. There is a contrastive statement at the beginning of paragraph 4 that might be better placed as a topic sentence for paragraph 3.

The introduction has been revised with the combining of the two manuscripts and the content on fidelity reporting within clinical trials has been removed.

(iii) Was the interview protocol piloted? If so include such as statement.

A statement has been included on page 11, paragraph 2 outlining that the interview protocol was piloted:

“The interview guide was reviewed and piloted with researchers (n=2) with previous experience of using implementation frameworks for semi-structured interviews, and with therapists (n=3).”

(iv) Were there any discrepancies between the coding of the two researchers? Recommend stating briefly how the coding process accounted for discrepancies and if present, how these were resolved?

See above. (Manuscript 1, Reviewer 1, Major Essential Revisions, Point (iv))

(v) Although it is a minor part of the method, briefly state what process you used to identify emergent themes.

As the two manuscripts have now been combined this section is no longer included in the revised manuscript.
(vi) Was member checking conducted to enhance rigor and credibility? If so, include in the method. If not, justify why it was not completed for this study.

See above. (Manuscript 1, Reviewer 1, Major Essential Revisions, Point (iii))

(vii) In the results section in the paragraph commencing “As therapists do…”, the sentence “therapists reported numerous barriers…” seems either unsupported or implied for such a definitive statement (this follows through to the discussion as well). I expected a specific list or outline of these numerous barriers with quotes but it appears it is implied from the quotes, or limited to the issue of incorrect completion and is this one barrier? Recommend addressing this point in both the results and discussion to increased clarity as this would seem to be a significant point for implementation.

This information is now included in Table 2, point 6:

“Nine therapists reported that stroke survivors, where able, would be advised to complete exercises outside of therapy time. Barriers to prescribing exercises to be completed outside of therapy time included therapists’ beliefs about patients’ ability to correctly complete exercises, patient safety awareness, cognitive impairment and lack of family support for self-directed exercise. As a result GRASP exercises were most often completed with the supervision/assistance of a rehabilitation assistant.”

(viii) Information for the participant description is very minimal (setting only). Why were no other potential variables included, e.g., how many years’ experience in rehabilitation? Inclusion of a richer participant section would also help future researchers compare their samples to the current study. I’m not sure I understand the reasoning for selective inclusion of setting? The interview protocol also includes questions on how the clinicians accessed the program and how long they were using it. This would be interesting context in relation to their implementation and I was expecting some data on this.

More detailed information has been provided about the participants and the sites in which they worked in the ‘Participant selection’ section and in Table 1. Although therapists were asked how long they were using GRASP, they were often unable to provide exact timescales for the introduction of GRASP at their work site so we unfortunately do not have accurate information to address this point.

(ix) In relation to MCR #1, the discussion would benefit from a little less emphasis on fidelity issues in reporting of clinical trials but also inclusion of how the current study’s findings relate to other studies, even if these are not in rehabilitation. Broadly, are there common findings for the science of implementation?

Discussion around fidelity has been revised to include common findings with educational research studies investigating fidelity. The following paragraphs have been added on page 20-21:
“It is of particular interest to note in this study, that although the implementation of GRASP was found to be generally good, i.e. all sites interviewed had successfully introduced GRASP to some extent into routine clinical practice, fidelity to the components outlined in GRASP Guideline Manual was lower than expected. It was found that all components of GRASP, when implemented in practice, were adapted to some extent to fit with therapists’ concerns about self-directed exercise and their working context. The multi-faceted nature of GRASP, and the design of the RCT in which it was tested, has meant that it has not yet been possible to determine which component(s), i.e. those listed in table 2, were the ‘active ingredient(s)’ and contributed to the overall success of the programme [7]. Harn and colleagues have recently discussed this topic with respect to educational research and outline that interventions designed as a package that have been empirically tested become evidence-based practice when it is still unknown which components of the package are critical for success. Different schools of thought exist on adapting evidence-based interventions but it is now known that adaptability of an intervention improves uptake and implementation [21-23].

In this study, therapists’ beliefs about self-directed practice emerged as one of the most influential factors for adapting GRASP when used in clinical practice. Despite the fact that the GRASP trial evidence showed that patients improved their function and movement quality [7], over half of the therapists expressed concerns that exercise completed without therapist supervision might result in poor quality movement. These concerns stem in part due to long-standing, but unfounded, beliefs that practice of abnormal movement patterns promote poor movement quality [25]. This finding has parallels with fidelity studies from educational research where teachers’ individual teaching philosophy and concerns about interventions were found to moderate fidelity i.e. teachers with more concerns about the value of the intervention demonstrated lower levels of implementation fidelity [26, 27]. Divergent views of how an intervention fits with the role of those responsible for its implementation have also been identified as a significant barrier to implementation in two recent process evaluation studies using versions of Normalisation Process Theory [28, 29]. It is becoming increasingly evident that the congruence or ‘fit’ of an intervention with the beliefs of those delivering the intervention will determine success. Although non-adopters were not interviewed in this study, one could hypothesise that this perceived lack of congruence could, in part, explain non-adoptions of GRASP in other sites. Is there a case to be made for addressing provider beliefs/concerns about evidence based interventions, or as Harn and colleagues suggest, is it time that empirically tested evidence-based interventions are adapted to better match individual contexts to optimise implementation fidelity [30]?

Minor Essential Revisions:

(i) The topic sentence for paragraph 3 seems awkward and unrelated and could be removed.

This sentence has been removed.
(ii) The statements in paragraph 3 and 4, both noting the need for further research in fidelity of practice and also the value of this, seems repetitive and requires refining.

_These sentences have been revised._

(iii) Under discussion, para 3, line 9: insert “a” between “as” and “good”.

_This section has been revised._

**Discretionary Revisions:**

(i) The current title suggests a much broader scope, recommend being more specific and identifying the treatment/ treatment area

_The title has been revised to include the treatment area and they type of study._

(ii) Although semi structured interviews and content analysis are identified and fairly straightforward, there is little justification of their appropriateness to the research question or embedding in a broader theoretical approach. This could be justified more clearly.

_The following sentence stating the theoretical approach more clearly and a providing a reference for this approach has been added on page 5:_

> “The approach used in this study was directed content analysis, a qualitative approach that is guided by a structured process underpinned by theory [14].”

(iii) The analysis section is concise but it requires some brief additional information to make the process of coding and checking of codes between researchers clearer. For example, the CFIF is named but not described until the results. I can see why this is an efficient way to describe its detail in relation to findings, however, it made it difficult for reads not familiar with it to appreciate the coding framework. Even if, the broader concepts of content, coverage and dose are mentioned in brackets after, this would anchor the section better.

_See above._
Reviewer 2

Major Compulsory Revisions:

(i) It is stated that the aim of the study is to explore the degree to which GRASP is being delivered as intended in clinical practice. However, I’m not sure that the study actually measures level or degree of fidelity. It seems to report users’ experiences of fidelity rather than making a judgment of degree of fidelity. It is stated that “The way in which GRASP is being implemented is not 100% reflective of the RCT protocol”. It is suggested that the authors rewrite the aim of the study so that it more correspondent to the content of the analysis and the results. It is also suggested that the authors in the discussion section rewrite the above-mentioned sentence so that it gives more exact information about how the authors rate or value the level of fidelity. Not being 100% doesn’t describe the results so much.

The aims of the study have been reworded. The sentence about not being 100% has been removed and replaced with a more detailed description of how the therapists included use GRASP in practice.

(ii) More explanation could be given for how the interview guide was developed based on the GRASP treatment protocol. For instance, are there certain core components that were mainly explored? Was the Conceptual Framework for Implementation Fidelity used when analysing the results (as stated in the methods) or also when developing the interview guide? Please clarify the process of developing the interview guide and the concrete use of the manual and the conceptual framework.

See above. (Manuscript 1, Reviewer 1, Major Essential Revisions, Point (i))

(iii) The result presentation in the text (not only in the table) should clearly highlight how the findings relate to the original intervention components. For instance, it is stated that the respondents made subjective assessment to decide whether they use the GRASP method or not for certain patients. In the same sentence it could be shortly stated whether this is in line with the intervention or an adaptation from the original program model.

This content on use of GRASP is now solely presented in Table 2 for clarity with quotes in the main text of the ‘Results’ section supporting findings presented.

(iv) In some parts of the result section long descriptions are given about the GRASP method. For instance, on p. 8 it is written “There are three graded levels of GRASP exercise manuals. Level one is the lowest level manual and consists of 21 exercises with a focus on more gross motor skills. Level three is the highest level manual and consists of 35 exercises with a focus on more fine motor skills and dexterity”. This description is unnecessary long in result section. The facts about the program should be described in the methods and just a short refereeing to whether the findings are in line with the program or not should be done in the results.
A description of GRASP is now provided in the “Introduction” section and details of how it was used in the development of the interview schedule are included in the “Methods” section.

(v) It is unclear what the Emergent themes from the interview analysis aims to highlight. The results in this part seems to give reason for low fidelity and should perhaps be more systematically analysed in terms of for instance CFIF moderating factors model. In fact, in the discussion it is stated that these factors” provide some explanation” for fidelity. Other option is to include these parts to the description of fidelity. For instance, patient characteristics described groups that receive different doses and could perhaps be included in that section of the results.

As recommended these themes have been included in the description of fidelity in Table 2. Factors influencing implementation and fidelity are presented as per the CFIR in Table 3 and discussed in the “Discussion” section.

(vi) The first paragraph of the discussion reports the prior RCT i.e the background for the current study rather than discussion the findings of the current study. Most often the discussions start with highlighting main findings and the implications of these. It is suggested that the first part of the first paragraph in the discussion is omitted. The last of the paragraph should be rewritten in relation to the study aim (see the comment number 1).

The first part of the discussion has been revised to discuss the study findings.

(vii) The authors make a nice discussion about the findings in relation to the prior RCT and intervention findings in general in relation to real life implementations. However, the discussion section doesn’t put the findings of the current study in relation to the implementation literature. For instance, how have prior studies described dose and coverage? Are there any common patterns what comes to fidelity in natural implementation? As the results and discussion is presented now, the study seems interesting for those involved in the GRASP method but not the implementation research society in large.

See above. (Manuscript 2, Reviewer 2, Major Compulsory Revisions, Point (ix))

Minor Essential Revisions:

(i) In the analysis section it should be mentioned what type of qualitative analysis of the texts was conducted.

The following sentence stating the theoretical approach more clearly and a providing a reference for this approach has been added on page 5:

“The approach used in this study was directed content analysis, a qualitative approach that is guided by a structured process underpinned by theory [14].”

(ii) There are some more recent studies using the CFIF that should be included in this paper.
References by Hasson et al (2010 & 2012) have been added on page 6.

(iii) It would be useful to know how long time the participants had worked with GRASP.

More detailed information has been provided about the participants and the sites in which they worked in the ‘Participant selection’ section and in Table 1. Although therapists were asked how long they were using GRASP, they were often unable to provide exact timescales for the introduction of GRASP at their work site so we unfortunately do not have accurate information to address this point.

(iv) The results section described CFIF. That description should be at suitable paragraph in the methods. It should also be stated that the part of CFIF that considers implementation fidelity were used and not for instance the part of moderating factors.

This has been corrected.

Discretionary Revisions:

(i) I’m not sure that the section of Research team and reflexivity needs to be explained in such a detail. Perhaps only those parts that have direct relevance to the current study can be mentioned? If not omitted, the sentence about the intervention should clarify what intervention the authors are referring to.

These details have been included as per the COREQ reporting guidelines Domain 1. The word intervention has been replaced with GRASP.
Reviewer 3

Major Compulsory Revisions:

(i) The aim of the study is stated as “…to explore the degree to which GRASP is being delivered as intended in clinical practice”. In my opinion, addressing this aim requires a different study design and would enrol a larger, more representative, sample of healthcare practitioners. I suggest modifying the aim to reflect that the study explored the experiences of some clinicians in implementing the GRASP intervention, but didn’t attempt to determine the “degree to which” GRASP is being implemented.

The aim of the study has been revised to more clearly articulate the purpose of the study and objective 3 has been reworded as follows:

“3. Explore therapists’ experiences of using GRASP in clinical practice and how this adheres to intervention components outlined within the GRASP Guideline Manual”

(ii) Generalisability #1. The recruitment method included approaching clinicians who participated in the original GRASP RCT. I assume that these clinicians would have had additional training about the intervention; hence their perspective may not be representative of the broader clinician population. Please indicate (in Table 2 perhaps?) how many of the clinicians in the final sample participated in the GRASP RCT, and make a comment in the Discussion about the implications of this regarding your study findings.

Only two therapists interviewed were directly involved in the GRASP RCT and this is now highlighted in Table 2. Using a snowball sampling technique these therapists identified further potential participants that were not involved in the original RCT and therefore are sample is more representative than it appeared in the original manuscript. Therapists involved in the GRASP RCT are identified in Table 2.

(iii) Generalisability #2. More comment is required in the Discussion under the limitations section about this issue. Currently only one sentence is provided related to data saturation. However, more detail is required, including the implications of this limitation on the results and the consideration of other study designs that could have provided a more representative sample.

The following statement has been included in the limitations section:

“As participants in this study were volunteers, a self-selection bias exists where perhaps therapists with stronger opinions on the programme and/or its implementation are over represented thus limiting the generalisability of the study findings.”

Minor Essential Revisions:

(iv) More detail is needed about the ethics approval obtained, see BMC editorial policies: http://www.biomedcentral.com/about/editorialpolicies#Ethics
This has been included at the end of the results section.

(v) Participant characteristics. It would be helpful if the text in this section included some summary statistics about the included participants.

Table 1 has been revised to include greater detail on the participants.

(vi) Results, second paragraph. This section commencing “The Conceptual Framework for Implementation Fidelity (CFIF)...” would be better placed in the Introduction and Methods.

The descriptions of the theoretical frameworks have been moved to the “Methods” section.