Author's response to reviews

Title: Effectiveness and feasibility of early rehabilitation programs for geriatric hospital patients: review of randomized controlled trials

Authors:

Nienke M Kosse (n.m.kosse@umcg.nl)
Alisa L Dutmer (a.l.dutmer@student.rug.nl)
Lena Dasenbrock (Dasenbrock.Lena@klinikum-oldenburg.de)
Jurgen M Bauer (juergenmbauer@web.de)
Claudine JC Lamoth (c.j.c.lamoth@umcg.nl)

Version: 3 Date: 27 September 2013

Author's response to reviews: see over
To the Editor of *BMC Geriatrics*

Groningen, the Netherlands
September 27th, 2013

Dear Dr Giulio Pioli,

Thank you for reconsidering our manuscript for publication in *BMC Geriatrics*. Please find appended our revised manuscript (MS: 1292620685994943), entitled “Effectiveness and feasibility of early physical rehabilitation programs for geriatric hospitalized patients: a systematic review”.

We have carefully considered the comments of the editor and the reviewers, revised our manuscript accordingly, and answered their questions in a point-to-point reply. In addition, we highlighted the changes made to the manuscript in the text.

In the revision, we took heed of the issues raised by the reviewers. A new search was performed in which the additional search terms, ‘physical performance’, ‘safety’ and ‘adherence rate’ were used. This resulted in one new study fulfilling the inclusion criteria. This study was added to the manuscript in both text and tables. Consequently, reference numbering was adapted.

The present literature review is a systematic review, therefore as suggested, we now applied the PRISMA guidelines, and a flow chart of the process is included according to the PRISMA guidelines.

We took heed of the very useful suggestions by the reviewers to specify information more clearly. Furthermore, the abstract was restructured and the English was checked carefully.

We sincerely hope that you find the present revised manuscript suitable for publication in *BMC Geriatrics*. We are looking forward to your reaction.

Yours sincerely,

Nienke Kosse, on behalf of all authors

Corresponding author: Nienke M. Kosse at University Medical Center Groningen, University of Groningen, Center for Human Movement Sciences, Antonius Deusinglaan 1, 9713 AV Groningen, The Netherlands. Tel: +31 50 363 2611 E-mail address: n.m.kosse@umcg.nl
Point-by-point reply to the comments of the editor and the reviewers to our manuscript (MS: 1292620685994943) entitled “Effectiveness and feasibility of early rehabilitation programs for geriatric hospital patients: review of randomized controlled trials.”

Comments to Authors and reply in italic font

The Editor

The paper is interesting but it needs some major revisions following the lines suggested by reviewers.

Please make the following formatting changes during revision of your manuscript. Ensuring that the manuscript meets the journals’ manuscript structure will help to speed the production process if your manuscript is accepted for publication:

1. Copyediting:
   After reading through your manuscript, we feel that the quality of written English needs to be improved before the manuscript can be considered further.

   We advise you to seek the assistance of a fluent English speaking colleague, or to have a professional editing service correct your language. Please ensure that particular attention is paid to the abstract.

   *The manuscript is carefully checked and revised. The abstract is almost completely rewritten.*

2. Please adhere to PRISMA reporting guidelines, including flowchart and checklist.

   *The PRISMA reporting guidelines are applied in the manuscript. The flowchart (figure 1) is adjusted to the PRISMA guidelines and the checklist is added as an additional document with the resubmission of this article.*

3. Figure cropping: It is important for the final layout of the manuscript that the figures are cropped as closely as possible to minimize white space around the image.

   *Figure 1 is cropped to minimize white space around the image.*
Reviewer #1

The authors of this review deal a highly relevant question and their manuscript merits publication after major revisions. The authors did an extensive literature search. Some of the methodological issues I am commenting on relate to the heterogeneity of the studies and the authors try to present the diversity of interventions comprehensively.

Thank you very much for taken the time to look so carefully to the paper and to provide us with very useful comments to improve the paper. Please find our point-to-point reply below.

General remarks
1. The manuscript would improve substantially after correction by a native speaker. I try to point out some mistakes but do not claim to revise the writing style / language completely. Probably the authors would have the opportunity to ask a native speaker to improve the writing. (Minor essential revisions)

The manuscript is carefully checked and revised were needed.

2. The title of the manuscript rather generally “effects” of geriatric rehabilitation. In their background the authors state that the aim of the review is to report on the effects on physical functioning. However, the search strategy included studies reporting only on mortality. Please be more precise. To my understanding, the effect of interest is physical functioning rather than mortality but I would leave it to the authors to report precisely. (minor)

Indeed, the aim of the review was to report on the effects on physical functioning and not on mortality. However, we used the information about study design and length of stay of two articles that reported on mortality [1, 2]. The same research groups reported on physical functioning in two other articles included in the review, but these articles lacked detailed information about the design of the study and the length of stay of the patients (the authors referred to their other articles [3, 4]).

3. The authors use exercise program and rehabilitation program synonymously. I do not think this is the same and would ask the authors to be more precise. To my understanding, there are three types of scenarios: Rehabilitation on a geriatric ward by a multi-professional team / Rehabilitation on a geriatric ward by a multi-professional team plus an exercise intervention / Care on a general ward plus exercise intervention. This means, there are single component and multi-component interventions at different settings. Probably, there are even more scenarios. In the light of the current discussion on how to organize care for orthogeriatric patients this distinction is highly relevant and needs to be addressed. For example, different types of interventions could be reported separately in the results section. (major)

We agree with the reviewer that we were not consistent in the use of the terms exercise and rehabilitation programs. Therefore we decided to rephrase early rehabilitation in to early physical rehabilitation and defined the latter more precisely as:

Page 5, line 15-18
‘Early physical rehabilitation in acutely ill patients refers to physical therapy, occupational therapy, and physical exercises initiated immediately upon achieving physiologic stability and continued throughout the hospital stay. Such activities start within 1 or 2 days after hospitalization.’
Two early physical rehabilitation program categories are included in the review: (1) multidisciplinary programs with an exercise component and (2) usual care with an additional exercise program.

Added to the Results section:
Page 9, line 14-16

‘Early physical rehabilitation programs could be divided into two categories, (1) multidisciplinary programs with an exercise component and (2) usual care with an additional exercise program’.

Throughout the paragraph “settings and interventions” this distinction is used. First multidisciplinary programs with an exercise component are described (page 9, line 16-23). Second, a description is given of the usual care with an additional exercise programs (page 9, line 23-25 and page 10, line 1-10). The text from page 10 until page 18 has been amended.

4. I have objections on the authors approach to review feasibility. In the Method section they do not specify what the end-point would be. Later in the results section (page 14) they do state the criteria. However, this information on end points is also included in some of the RCTs included. Yet, the authors do not consider the RCTs to answer questions on feasibility but focus on manuscripts identified by their search strategy. I would suggest to include ALL manuscripts reporting on some of the endpoints mentioned as criteria of feasibility. Again, I would ask the authors to be more precise on what type of interventions they included (exercise only?). (major)

Thank you for the feedback on the feasibility part. Indeed, the endpoints and criteria of feasibility were not described in the Method section and the RCT papers could have been included in reporting on feasibility. The endpoints handled are enrolment of patients into the study, the adherence rate during the intervention and the occurrence of adverse events.

We added the endpoint more clearly in the Method section

Page 7, line 2-3

‘Feasibility outcomes were the ability to enrol patients into the rehabilitation program, adherence rate and the safety of the patients during the therapy sessions.’

Several RCT’s contained information about the feasibility. Multidisciplinary (n=3) as well as usual care programs with an exercise intervention reported on enrolment of participants (n=3), adherence rate (n=2) and adverse events (n=5). In the revised manuscript the information available of all included articles is added to the feasibility paragraph in the Results section. From page 13, line 13 until page 14, line 18.

5. Abstract
Background: ...whether the implementation of these programs... This is not correct – feasibility is reported on other studies than the effects. In fact, there are two research questions that should be mentioned in two sentences. Currently, the reader thinks that feasibility was judged on those studies included in the first research question. (major)
There are indeed two different questions to be answered. Therefore, the abstract is revised. The two research aims are separately described to make the difference between physical functioning and feasibility clear.

Page 2, line 4-7

‘The first aim of this review was to investigate the effect of early physical rehabilitation programs on physical functioning among geriatric patients acutely admitted to the hospital. The second aim was to evaluate the feasibility of those early physical rehabilitation programs.’

Methods: The flow of the paragraph is not ideal with a jumping between the two research questions. I would suggest to reorganize the sentences (discretionary)

The paragraph is revised as follows:

Page 2, line 8-15

‘Two searches, one for physical functioning and one for feasibility, were conducted in PubMed, CINAHL, and EMBASE. Additional studies were identified through reference and citation tracking. To be included articles had to report on in-hospital early physical rehabilitation of patients aged 65 years and older with an outcome measure of physical functioning. Studies were excluded when the treatment was performed on specialized units other than geriatric units. Randomized controlled trials were included to examine the effect of early physical rehabilitation on physical functioning, length of stay and discharge destination. To investigate feasibility also non randomized controlled trials were added.’

Results: 1st sentence: “the” instead of “de”

The textual revision is made.

6. Especially frail patients seem.... I cannot understand how the authors came to this sentence (see later) (major)

This is right, there is no hard evidence for this statement, and therefore we removed the sentence from the abstract: Page 2, line 19.

In the discussion we changed the paragraph about frail patients to explain our suggestion (that frail people could benefit from early physical rehabilitation) more clearly.

Page 16, line 10-17

‘The studies presented in this review included very heterogeneous groups. Half of all studies excluded nursing home patients. Probably, due to the aim of those studies to facilitate discharge home. The studies in this review that targeted frail older patients, patients with increased risk for readmission or patients with a high risk for nursing home admission found positive effects of an exercise program on ADL, length of stay and discharge destination [3-5]. This result indicates that frail old adults and nursing home patients may benefit from early rehabilitation. Targeting the right population for early physical rehabilitation may be seen as crucial.’

7. Background
Page 4
3rd line: please add a “,” after countries
4th line: ... People who are admitted... could be changed to ...patients admitted
4th line: please add “years” after 65
7th line: found instead of have found
18th line: this sentence would better suit after the sentence in line 10
20th line: recurrent would better be replaced by “frequent” or “common”

Page 5
2nd line: please add “,” after years
2nd sentence: what do the authors mean by “patient and hospital outcomes”?  
6th line: please add a “,” after program
8th line: Thus... This sentence is not logical – what do the authors want to say?
11th line: .to include more recent data... - more recent than what?
4th line: “acute medical elderly patients” ? acutely ill geriatric / elderly patients

All above mentioned textual revisions were made.
The 8th line on page 5 is removed; this line did not add any new information to the manuscript. And ‘more recent data’ (line 11) is also removed. This review gives an up to date status of the randomized controlled trial about early physical rehabilitation. But ‘more recent’ data was not the right way to say this.

8. Results
This section of the manuscript is far too long and hard to follow. I would strongly recommend to include more information in tables, e.g. types of instruments used, settings etc. (minor)

The types of instrument used in the included studies are summed in table 3. A description of the instrument is given, the minimum and maximum scores are reported and the interpretation of a high or low score is described.

The large descriptive part about the instruments is now summarized in the table and removed from the text.

The setting of the included studies was described in table 2, column ‘population’. However, this is not clearly indicated in the column heading therefore, the column heading is changed into ‘Population and Setting’.

9. The authors should be careful not to bring in interpretations in the results section (e.g. page 10 3rd paragraph). (major)

There are indeed some interpretation parts in the results; The following sentence is removed: ‘However, four studies excluded nursing home residents, which could indicate that a frail patient population benefits more from an early rehabilitative intervention.’

10. 4th line: change “into” to “to”

The textual revision is made.

11. Selected studies
A flow-chart would help to improve the readers’ comprehension (discretionary)
New flowcharts, which also show the distinction between the two literature searches, are made according to the PRISMA guidelines (Figure 1).

12. Methodological quality
4th line: ... all ten studies... why ten? Earlier the authors report of 12 studies included. (minor)

It should indeed have been 12. With the addition of one extra paper after a new literature search, there are now 13 studies included. The line is changed to:

Page 8, line 15-16:
‘Randomization methods and eligibility criteria were clearly defined in all 13 studies.’

13. Inclusion criteria
“The living situation... varied....” Then “reasons for exclusion were .... Living in nursing homes...” Clearly there is a great heterogeneity of participants included in the studies and the results need to be interpreted in the light of the population included. This needs to be addressed. (major)

There is indeed a great heterogeneity of participants included in the studies. Although, some studies targeted a frail population (not defined as frail, however, patients with a high readmission risk are also considered frail) half of the studies excluded nursing home patients. The studies excluding nursing home patients had the goal to improve physical functioning and to discharge the patients back to home. On the other hand, the studies including nursing home patients mainly focused on improving physical functioning. However, those different goals had no influence on the study results.

We addressed this point on page 16, line 10-17
‘The studies presented in this review included very heterogeneous groups. Half of all studies excluded nursing home patients. Probably, due to the aim of those studies to facilitate discharge home. The studies in this review that targeted frail older patients, patients with increased risk for readmission or patients with a high risk for nursing home admission found positive effects of an exercise program on ADL, length of stay and discharge destination [3-5]. This result indicates that frail old adults and nursing home patients may benefit from early rehabilitation. Targeting the right population for early physical rehabilitation may be seen as crucial.’

14. Setting and interventions
See my comments earlier on the importance of settings. I would advise the authors to stratify accordingly and report the differences in results according to a stratification by setting.

The two categories of early physical rehabilitation included in this review are introduced in the paragraph “setting and intervention”. The results in this section are described according to this stratification. See general point 3 of this point-to-point reply.

15. “Supervised by ....” What do these sentences refer to – to the tailored exercise interventions? This is not completely clear. (minor)

‘Supervised’ refers to the exercise programs of the usual care studies.

The sentence ‘Supervised by …’ is changed:
‘The patients in the exercise programs were supervised by allied health assistants, a physiotherapist or an occupational therapist.’

16. 1st line: on these ward, 5th line: “very limitedly” could be changed to “little”

The textual revision is made.

17. Again a table would help to improve understanding (setting / intervention / follow up) (minor)

Table 2 contains information about the setting, intervention and follow-up.

18. The authors do not report on the length of the interventions. This information would be very useful for understanding differences in outcome (major).

Length of intervention is equal to the length of stay. This is described in the last paragraph of the background.

‘Early physical rehabilitation in acutely ill patients refers to physical therapy, occupational therapy, and physical exercises initiated immediately upon achieving physiologic stability and continued throughout the hospital stay. Such activities start within 1 or 2 days after hospitalization.’

Furthermore, length of stay is shown in table 2. And a paragraph is added to the results section about the length of stay:

‘All included randomized controlled trials reported about the length of stay, which varied between 4.7 days and 42.7 days. Four studies (three multidisciplinary programs) reported a significant difference shorter length of stay of the exercise group than for the usual care group [2, 4-7].’

19. The authors report on the different settings / interventions/durations but not on how this influenced the results (table!). (major)

This is indeed an important point, however, no relation was found between the results and the setting and duration of the interventions. The results and the relation with the kind of intervention are discussed according to the categorisation of multidisciplinary programs with an exercise part and usual care with an exercise program. Please see the result section.

Table 2 contains information about the setting, intervention, duration and results. However, to make the results clearer in the resubmission of this manuscript not only significant levels are reported but also test scores.

20. Physical functioning
Rather “physical performance”?
Physical functioning is defined as an individual’s ability to perform activities required in their daily lives [8]. Physical performance point on task such as walking, balancing, reaching, rising from a chair, and climbing stairs. The measures of physical performances are not direct measures of cardio-respiratory fitness, strength, or flexibility, but are indicators of these physical fitness measures [8]. Therefore, we decided to replace mobility for physical performance and use physical functioning in the manuscript to cover ADL and physical performance together.

21. In the first sentence for the first time mortality is mentioned – see my general comment.

Although the focus of the paper is on physical functioning and feasibility we used the information on study design and length of stay of two articles that reported on mortality [1, 2]. The same research group reported on physical functioning in two other articles included in the review, but these articles lacked detailed information about the design of the study and the length of stay of the patients (the authors referred to their other articles [3, 4]. Mortality is removed from the first sentence because the main aim is physical functioning in this section.

22. AdL
This paragraph is much too long – table with the different instruments used

We have amended the text. The types of instrument used in the included studies are now summed in table 3. A description of the instrument is given, the minimum and maximum scores are written down and the interpretation of a high or low score is described.

23. The paragraph does not report on the issue of floor and ceiling effects systematically. These effects are a major problem in many studies and may fraud the results. They create a massive methodological issue that the authors just briefly mention. I would strongly advice the authors to go into the manuscripts of the RCTs reported and try to find out the frequency of floor and ceiling effects. (major)

Floor and ceiling effects can indeed fraud the results. All articles were checked on floor and ceiling effect in ADL measurements. There were two studies mentioning the ceiling effect, in the other studies no floor or ceiling effect was found.

This text was added to the manuscript:
Page 11, line 6-7
‘Two studies reported a ceiling effect for the Barthel index and a floor effect for the Katz index [9, 10].

And in the discussion a paragraph is devoted to the ceiling and floor effect:
Page 16, line 18-25
‘The outcomes with regard to physical functioning were measured by a variety of instruments and at different points in time, some of these instruments demonstrated floor and ceiling effects. Floor and ceiling effects could influence the outcomes and distort the results. There were also cases in which information could only be collected with the help of close relatives and caregivers, because relevant information could not be obtained from the patients themselves. The limitations of the current used
measurement instruments implies that there might be a need for more sensitive instruments that measure aspects of physical functioning in hospitalized old adults.’

24. “However, four studies excluded NH residents...”. I cannot follow the interpretation of the authors regarding frail older patients. I think this is very speculative and should not be part of the Results section. (minor)

We agree with this, the interpretation is not based on convincing data presented in the review. Furthermore, interpretations do not belong in the results section. Therefore, we removed this part from the results section. In the discussion we added a paragraph about the exclusion of nursing home patients. Page 16, line 10-17 (see point 6 of this reply)

25. Page 11, 8th line: “These results suggest....” This is an interpretation and should not be in the Results section (major)

This part is removed from the results section.

26. The authors mention differences in follow up data and follow up interventions. Yet, it is not quite clear what the follow-up data was in RCTs with and without follow-up intervention. (major)

Table 2 contains information about the time of assessment and in-hospital intervention and follow-up intervention. Table 2, column 3: Intervention. The table is extended with the data available for all assessment moments and the scores are given from admission until last follow-up measurement.

On page 10, line 6-11 the interventions with follow-up are described.

‘Some exercise programs supported participants to continue exercise after discharge [1, 3, 5, 11]. This was achieved by educational materials, by (two or more regular) encouraging phone calls [1, 3, 11], or by a follow-up treatment, twice a week up to twice a day, including physical and occupational therapy [5]. The control groups of the studies generally received usual care according to the general routines of the hospital they were admitted to.’

27. Mobility
Again, a table would improve the understanding

Mobility is replaced by physical performance as described above. In table 2, 5th column, the outcome data of the included studies in presented. Table 3 gives an overview of the instruments used to measure physical performance.

28. The authors report on physical performance measures and physical activity without making a distinction. This is not the same and I would ask the authors to distinguish between PP and PA. Overall, I think “Mobility” is not the best title of this paragraph – why not PP and disregard PA? (major)

Physical performance and physical activity are indeed two different thinks. The manuscript is carefully revised to make the distinction between PP and PA. Furthermore, we changed ‘Mobility’, as suggested, to ‘Physical Performance’.
29. Again, the authors mention just two studies with floor and ceiling effects – see my comment with AdL. This is very much the same in PP measures. (major)

All articles were checked on floor and ceiling effect in PP measurements. There were two studies mentioning the ceiling effect, in the other studies no floor or ceiling effects were found.

This paragraph was added to the manuscript:
Page 12, line 1-4
‘For the TUG a floor effect was found. In one study, almost 40% of the patients were physically unable to perform the TUG at both admission and discharge [9], whereas in another study 23% of all patients were unable to perform the TUG at admission to the hospital [10].’

30. Page 12 5th line: “...intervention groups improved more than...” Was there really improvement or rather slowing of decline?

Unfortunately, there is not much information about the level of physical functioning before admission. The intervention groups improved more or declined less compared to the control groups. However, if the outcomes decline or improve varies between the studies. There is no explanation found why some decline and others improve on physical performance. The sentence is changed by adding the less decline:

Page 11, line 20-23 and page 12, line 1-2
‘Four (2 multidisciplinary programs and 2 exercise programs) of the five studies describing physical performance at time of admission and discharge found that the intervention groups improved more or declined less than the usual care groups [1, 3, 9, 12, 13].’

31. Last line: “these studies” – which studies?

This is indeed confusing; the paragraph is handling two articles. ‘These studies’ is referring to those two articles. To make the sentence clearer the line is changed to:

Page 12, line 10-12
‘Similar contradicting results were found on more general outcome measures of physical functioning, provided by a health questionnaire that contained physical well-being and physical activity.’

32. Discharge destination
This endpoint is mentioned in the manuscript for the first time here. It can be regarded as an indirect marker of performance. Why not mention it as an end point earlier in the manuscript? (minor)

Thank you for the suggestion; it is indeed an indirect marker for physical functioning. The discharge destination is added as outcome measure to the endpoint in the method:

Page 6, line 24-25 and page 7, line 1-3
‘Data were extracted against pre-defined categories by two researchers. The data compiled from the studies included information on: study design, characteristics of
participants and setting, the intervention and control group treatment, time of assessment, ADL, physical performance, length of stay and discharge destination.’

33. Feasibility
Please see my earlier comments.
It needs to be clear if there are differences in feasibility between exercise interventions and multifactorial interventions. I have no access to the three studies included here but my impression is that this refers to exercise interventions – what about the others? (major)

The three studies perform indeed exercise interventions. Table 4 is added to give an overview of the interventions in the feasibility studies. However, in the feasibility section also the RCT’s with multidisciplinary interventions are included. These multidisciplinary studies reported on enrolment of participants (n=3), whereas usual care programs with an exercise intervention reported on enrolment of participants (n=3), adherence rate (n=2) and adverse events (n=5). In the revised manuscript the information available of all included articles is added to the feasibility section in the Results. There is no difference found between the enrolment of participants in multidisciplinary interventions and usual care programs with an exercise component.

34. Discussion
First sentence: Not correct – it was not only the identification of such studies but their effect.

The first sentence is changed:
Page 15, line 2-3:
‘The first aim of this review was to evaluate the effect of early physical rehabilitation programs for geriatric hospitalized patients on physical functioning.’

35. The authors summarize their finding nicely after an exhausting results section.

Thank you

...”seem to increase physical functioning...” really? Or rather prevent functional decline?

Unfortunately, there is not much data available from before the admission. It seems that between admission and discharge physical functioning is in most studies improving. However, it would be interesting to know how physical functioning was before hospital admission.
Reviewer #2
This is an interesting paper that reviews an issue that is of importance in the field.

Thank you very much for taking the time to read the paper and give us useful feedback to improve the paper.

- Major Compulsory Revisions
1. The title should be revised as the review also included non randomized controlled trials.

There are indeed also non-randomized trials included. The title is revised:

Page 1, line 1-3
‘Effectiveness and feasibility of early physical rehabilitation programs for geriatric hospitalized patients: a systematic review’

2. The authors should ensure the review conforms to the PRISMA guidelines for a systematic review.

The manuscript and flowchart (figure 1) are adapted to the PRISMA guidelines. The checklist for the PRISMA guidelines is added with the resubmission.

3. I think the authors also need to more clearly articulate that two separate reviews have been conducted.

The two separate reviews were indeed not clearly described in the old version of the manuscript. First the aim of the study was changed to point out the two different goals in the study.

Page 5, line 13-19
‘Therefore, the first aim of this review is to evaluate the effects of early physical rehabilitation programs on physical functioning of geriatric patients acutely admitted to a hospital. In this review early physical rehabilitation in acutely ill patients refers to physical therapy, occupational therapy, and physical exercises initiated immediately upon achieving physiologic stability and continued throughout the hospital stay. Such activities start within 1 or 2 days after hospitalization. The second aim of the present review is to evaluate the feasibility of early physical rehabilitation programs in the hospitalized geriatric patients’

Second, two separated flow charts were made to display the two different search strategies. Please, see figure 1.

4. Method: The authors are presenting two related reviews; a review of the effect of exercise and a review of the feasibility of implementing these programs. Do the authors think they may have missed important information about feasibility by limiting the search for this review to articles that included the key word ‘feasibility/feasible’; not all relevant studies would have this as a key word.

Thank you for the suggestion, the key words for feasibility were extended with ‘adherence rate’ and ‘safety’. A new search with the additional key words was conducted. This resulted in one new article added to the review. To extend the information about the feasibility of early
physical rehabilitation the feasibility information available in the RCT’s was also taken into account. Those RCT’s reported on the enrolment of patients \( (n=6) \), the adherence rate during the intervention \( (n=3) \) and the occurrence of adverse events \( (n=5) \).

5. Figure 1 should more accurately reflect that two separate reviews have been conducted, 1 with 14 papers and 1 with 3 papers.

*Figure 1 is adapted conform the PRISMA guidelines and the differences between the separate reviews is made more clear. Furthermore, the numbers in the figure are changed after the new literature search (see point 4).*

6. The authors should consider a meta-analysis for length of stay. While for many other outcomes, the differing outcome measures may have prevented this, it is possible for length of stay and would strengthen the results.

*Thank you for the suggestion. A meta-analysis for length of stay could unfortunately not be computed, since not all the data needed is available in the included studies. Standard deviation and range are not available for all studies. Especially the studies with a large study population do not report the standard deviation of length of stay. Furthermore, the focus of our study is on physical functioning and feasibility, not on length of stay. Therefore, we decided not to include a meta-analysis.*

7. Results: Feasibility: As discussed above, I think the review strategy selected has resulted in the exclusion of articles that should be included. For example, I would anticipate that some of the reported RCTs would have described recruitment rates.

*As discussed above, the key words for feasibility are extended with ‘adherence rate’ and ‘safety’, see point 4.*

8. Discussion: I think the discussion overstates some of the findings. For example, First paragraph. The sentence ‘Overall, inpatient rehabilitative programs....’ is misleading, as 2/7 studies looking at ADL found no improvement.

*That’s true, most studies indicated a trend but showed no significant effect. This sentence is changed:*

Page 15, line 5-6

‘The present review shows that early physical rehabilitation programs might be beneficial to prevent rapid decline in physical functioning.’

*In addition we added that the results were not always significant.*

Page 15 line 17-20

‘At time of discharge, results on physical performance were to some extent contradicting, but the majority of the included studies showed that patients in the exercise groups had better ADL and physical performance than patients in the usual care groups, although those results were not always significant.’

9. Third paragraph. The study that included telephone follow up also include home visits (see Table 2), therefore it is not clear that telephone calls alone can lead to improvements in functional capacity.
The follow up included indeed telephone calls as well as home visits, therefore the sentence is changed:

Page 16, line 3-5

‘These results suggest that the recovery of patients could further benefit from a community based or in-home intervention programs which build on in-hospital programs.’

10. Fourth paragraph: I am not convinced there is enough evidence to support the statement that more frail people are more likely to benefit. One issue that was acknowledged is that some measures demonstrated a ceiling effect, thus the impact of the intervention may not have been measureable. This issue should also be addressed in the abstract.

Indeed, there is not much evidence to support the statement that frail people are more likely to benefit. In the discussion we changed the paragraph about frail patients to make our suggestion (that frail people could benefit from early physical rehabilitation) clear.

Page 16, line 10-17

‘The studies presented in this review included very heterogeneous groups. Half of all studies excluded nursing home patients. Probably, due to the aim of those studies to facilitate discharge home. The studies in this review that targeted frail older patients, patients with increased risk for readmission or patients with a high risk for nursing home admission found positive effects of an exercise program on ADL, length of stay and discharge destination [3-5]. This result indicates that frail old adults and nursing home patients may benefit from early rehabilitation. Targeting the right population for early physical rehabilitation may be seen as crucial.’

The ceiling effect is more precisely investigated, as also suggested by the other reviewer. The results contain the following text:

Page 11, line 6-7

‘Two studies reported a ceiling effect for the Barthel index and a floor effect for the Katz index [9, 10].

Page 12, line 1-4

‘For the TUG a floor effect was found. In one study, almost 40% of the patients were physically unable to perform the TUG at both admission and discharge [9], whereas in another study 23% of all patients were unable to perform the TUG at admission to the hospital [10].’

And in the discussion a paragraph is devoted to the ceiling and floor effect:

Page 16, line 18-25

‘The outcomes with regard to physical functioning were measured by a variety of instruments and at different points in time, some of these instruments demonstrated floor and ceiling effects. Floor and ceiling effects could influence the outcomes and distort the results. There were also cases in which information could only be collected with the help of close relatives and caregivers, because relevant information could not be obtained from the patients themselves. The limitations of the current used
measurement instruments implies that there might be a need for more sensitive instruments that measure aspects of physical functioning in hospitalized old adults.’

Furthermore, the abstract was totally revised and the sentence about the frail people is removed.

‘Especially frail patients seem to benefit from the in-hospital rehabilitation programs.’

- Minor Essential Revisions
11. Abstract: Results. Typographical error first sentence: ‘de’ should be ‘the’

Page 2, line 17
The textual revision is made.


The sentence is reworded into:
Page 4, line 17
‘Due to immobilisation, muscle strength and aerobic capacity tend to decline rapidly.’

13. Paragraph 4. Sentence beginning ‘Therefore, in a relevant percentage..” needs to be reworded.

With the revision of the manuscript this sentence is removed.

14. Paragraph 4. Sentence beginning ‘This, determining which patient...” needs to be reworded.

Because this line did not add any new information to the manuscript the sentence is removed.

15. Paragraph 4. The aim needs to be reworded

The two research aims are separately described to make the difference between physical functioning and feasibility clear.

Page 5, line 13-19
‘Therefore, the first aim of this review is to evaluate the effects of early physical rehabilitation programs on physical functioning of geriatric patients acutely admitted to a hospital. In this review early physical rehabilitation in acutely ill patients refers to physical therapy, occupational therapy, and physical exercises initiated immediately upon achieving physiologic stability and continued throughout the hospital stay. Such activities start within 1 or 2 days after hospitalization. The second aim of the present review is to evaluate the feasibility of early physical rehabilitation programs in the hospitalized geriatric patients’

16. Method: Setting: reword “Strength exercises were building up...” to “Strength exercises where progressed by increasing ....”

The line is changed:
Page 10, line 1-4
**Strength exercises were progressed by increasing the number of sets and repetitions and walking exercises were progressed in intensity (from slow to moderate pace) or duration (from 5 to 30 minutes).**

17. Paragraph 4. Reword ‘Some studies let...’ to “Some studies supported participants to exercise......”

*The sentence is changed:*

Page 10, line 6-11

‘Some exercise programs supported participants to continue exercise after discharge [1, 3, 5, 11]. This was achieved by educational materials, by (two or more regular) encouraging phone calls [1, 3, 11], or by a follow-up treatment, twice a week up to twice a day, including physical and occupational therapy [5]. The control groups of the studies generally received usual care according to the general routines of the hospital they were admitted to.’

18. Table 2. Study by Slaets. What outcome measure was used to determine an improvement in mobility.

*Indeed, it is not mentioned in Table 2 what outcome measure was used in the Study by Slaets to determine an improvement in Mobility. Slaets used to SIVIS dependency scale which can be divided into three parts, two of those parts represent ADL and Mobility. In table 2 we added the outcome measure of Sleats and in table 3 an overview is given of the used measurement instruments.*

19. Results: Activities of daily living. Paragraph 2, last sentence is not clear.

*During the revision of the manuscript this sentence is removed.*

20. Paragraph 3, last sentence. I do not think there is sufficient evidence to support this statement; only two studies showed an improvement with in hospital intervention, and in the next paragraph authors state that one of these studies did show an effect at 3 months. .

*This statement is removed from the results also because it is an interpretation that not belongs in the results section.*

- Discretionary Revisions

21. Discussion, paragraph 4. The authors should consider discussing why many studies did exclude people from nursing home. Presumably, in many of these studies, the aim was to reduce length of stay and facilitate discharge home; or prevent discharge to residential care; thus people from nursing home were excluded.

*Thank you for this remark, this is an important point. The included studies did not mention why they excluded nursing home patients. However, the aims of the studies excluding people from nursing homes were to facilitate returning home, independent ADL and reduction of inpatient rehabilitation. On the other hand the studies including people from nursing homes had the goal to improve and maintain physical functioning.*

Page 16, line 10-17
‘The studies presented in this review included very heterogeneous groups. Half of all studies excluded nursing home patients. Probably, due to the aim of those studies to facilitate discharge home. The studies in this review that targeted frail older patients, patients with increased risk for readmission or patients with a high risk for nursing home admission found positive effects of an exercise program on ADL, length of stay and discharge destination [3-5]. This result indicates that frail old adults and nursing home patients may benefit from early rehabilitation. Targeting the right population for early physical rehabilitation may be seen as crucial.’
References


