Author's response to reviews

Title: Is the Nintendo Wii Fit really acceptable to older people?: A discrete choice experiment

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Author's response to reviews: see over
We would like to thank the reviewers for their expertise, thoughts and recommendations which have greatly assisted in improving the manuscript.

We have addressed all recommended changes as detailed below. The reviewer’s recommendation is briefly described following by our changes in italics. Line numbers have been added to the manuscript as well as ‘tracked changes’ to assist with the review process.

We have also amended the tables and added details of ethics approval as recommended by the editorial team.

**Reviewer 1 (Jennifer Nitz)**

Major revisions

1. Recommendation that a flow diagram of recruitment to the study should be included with clearer reporting of the number of participants included in the study

   *We have included a flow diagram (Figure 1) at the end of the document which shows the process of recruitment. We have also stated the number of participants in the ‘methods’ section (line 178).*

   “Participants (N=21) had a mean age of 85.4 years (SD 4.7) and the majority were female (86%)”

2. Recommendation that discuss the number of intervention sessions and whether 6 was sufficient for participants to make post-discharge decisions on.

   *We have added a paragraph on this in the discussion (lines 240-246)*

   “It is also possible that participants may have regarded the Wii Fit more highly if they participated in a greater number of therapy sessions. Participants took part in an average of six sessions using the Wii Fit; they may have required more sessions to become familiar with and engage with this approach to therapy. Increased familiarity with the program may have also enabled participants to choose their favourite activities rather than activities being selected for them by the physiotherapist which may have increased their level of enjoyment”

3. The reviewer suggested we need to include more information about our statement ‘the Wii fit is limited not only by the small proportion of people who are functionally able to use it....’

   *We have added further information about this in the introduction (lines 72-77)*

   “Use of the Wii Fit program in health or aged care settings is generally limited to individuals that are able to step on and off the balance board, hold the remote control, have sufficient vision to see the game displayed on a screen, understand the concept of the game and comprehend the instructions. Activities can be adapted by therapists to suit individuals (for example, sitting on the balance board rather than standing [10]).”

4. The reviewer suggested we need to identify areas for further research.
We have included suggestions for further research (lines 221-224 and 258-262)

“This study did not aim to explore the reasons as to why participants preferred a conventional approach to therapy and this is an area for further research. Exploring why participants felt that conventional therapy was more effective would also be valuable, as the use of technology in rehabilitation is likely to increase”

“One of the advantages of using a DCE to determine the acceptability of a therapy approach is that enables us to determine the relative importance of some attributes in comparison to others. In hindsight, it would have been useful to ask the participants simply whether they felt that the use of this sort of interactive gaming program was a useful therapy approach and compare this to the results of the DCE”.

5. The reviewer recommended that we clarify our description of ‘Wii fit as part of a therapy program’.

*We have clarified omitted ‘as part of’ so that it is clearer that the therapy program was just using the Wii fit rather than using it as a supplementary therapy. (lines 29 and 270).*

Minor revisions

1. Need to add (DCE) abbreviation after ‘discrete choice experiment’ in the abstract

*We have added this abbreviation (line 26)*

2. Spelling mistake in the reference list

*We have corrected this (reference 17)*

3. The reviewer said that reporting of FIM scores in the results was confusing as the FIM was not reported as a measurement taken in the methods. The reviewer suggested deleting this part of the sentence.

*We have deleted the reference to the FIM as suggested.*

**Reviewer 2 (Lee Graves)**

Major revisions

1. Need to explicitly state how many participants took part in the study

*We have stated this (line 178)*

2. The reviewers have stated that we need to inform the readers what a Mini Mental Score of 21/30 (the inclusion criteria) means and then discuss this in the discussion (ie participants may have had a degree of cognitive impairment).
We have added this information to the methods (line 139 with reference) and to the discussion (lines 246-248).

“Furthermore, the inclusion of participants that may have had mild cognitive impairment may have resulted in these participants finding the games too complex and resulting in reduced satisfaction.”

3. The reviewer wanted more information about the therapies.

(a) We have included information about the Wii Fit games (lines 158-161), the context in which they were played (lines 165-167) and that games were chosen by the physiotherapist (line 164).

“Activities included balance games in which the user has to shift their weight laterally on the balance board to (such as attempting to ‘balance on an iceberg’), strength tasks (such as sustained squats or single leg extensions) and light aerobic tasks such as walking on the spot”.

“The games were played with only the physiotherapist present and presented to the participant as a therapeutic task rather than a social activity.”

(b) We have added that the physiotherapist firstly familiarised the patients with the Wii (lines 163-164).

(c) We have added information about length of stay to the results (line 179-180). It was not possible to explore this as part of a sensitivity analysis due to the limited sample size.

“Participants’ mean length of stay on the geriatric rehabilitation unit was 12 days.”

(d) The reviewer wanted more information about the conventional therapy. The participants in this study did not have conventional therapy as part of the study. Conventional therapy was only hypothetically described to the participants in the DCE (with pictures shown) and the DCE included the attributes of intensity and duration (ie “Easy – 30 mins” or “Challenging – 1 hour”).

4. The reviewer wanted the statement about participants perceiving that conventional therapy would be more effective supported by direct quotations.

Unfortunately we did not capture direct quotations or find out why they thought this was the case. We have added information about this in the discussion as an area for future research (lines 221-224).

“This study did not aim to explore the reasons as to why participants preferred a conventional approach to therapy and this is an area for further research. Exploring why participants felt that conventional therapy was more effective would also be valuable, as the use of technology in rehabilitation is likely to increase”

5. The reviewer recommended that the attributes of ‘conventional therapy’, ‘no cost’ and ‘easy level of difficulty’ be added to Table 3.
As part of the analysis these attributes are considered the ‘base cases’. Therefore they are not presented in the analysis. However, the results of the other attributes are relative to the base case.

Minor revisions

1. The reviewer suggested we add areas for further research including that we simply ask older people whether they want this type of technology.

   We have added further areas for research (lines 221-224). We have also added a paragraph that it would have been interesting to compare simply asking participants whether they are interested in this approach with the DCE (lines 258-262).

   “One of the advantages of using a DCE to determine the acceptability of a therapy approach is that enables us to determine the relative importance of some attributes in comparison to others. In hindsight, it would have been useful to ask the participants simply whether they felt that the use of this sort of interactive gaming program was a useful therapy approach and compare this to the results of the DCE”

2. DCE should be abbreviated throughout the paper after first abbreviation.

   We have corrected this.

Reviewer 3 (William Young)

Major revisions

1. Need to explicitly state number of participants.

   We have stated this in the results (line 178)

2. Need further discussion on why patients may have preferred conventional therapy and some supporting references.

   We have added discussion on this in lines 221-231 with appropriate references and identified this as an area for future research.

   “This study did not aim to explore the reasons as to why participants preferred a conventional approach to therapy and this is an area for further research. Exploring why participants felt that conventional therapy was more effective would also be valuable, as the use of technology in rehabilitation is likely to increase. It is possible that the participants
preferred more interaction with therapy staff or felt that the technology was too complex. It is also possible that the characteristics of the Wii Fit hardware and software were disliked by the participants, for example, perhaps they found the games too childish or too challenging. Interactive gaming programs that are specifically designed for older people in rehabilitation may be more acceptable; this has been suggested by previous studies which reported high levels of participant satisfaction with specialised rehabilitation games [3, 24, 25].

Minor revisions

3. Reporting of participant characteristics should be moved to methods section

   *We have left the reporting of characteristics in the results section to make it consistent with other BMC Geriatrics papers.*

4. Include hypothesis

   *We have explicitly stated our hypothesis at the end of the introduction (lines 109-111)*

   “It was hypothesised that participants would regard the Wii Fit intervention more positively after exposure to the program.”

Discretionary revisions

We have made all suggested revisions to wording and grammar which are referred to below

5. changed (line 23)

6. changed (line 54)

7. changed (line 88)

8. Ensure consistency with numerals. We have made a couple of changes using the rule of spelling out numbers equal or less than ten and using numerals for numbers greater than ten.

9. changed (line 211)

10. changed (line 263)

11. changed (line 274)

12. changed (line 278)