Author’s response to reviews

Title: Formulation of Evidence-Based Messages to Promote the Use of Physical Activity to Prevent and Manage Alzheimer's Disease

Authors:

Kathleen Martin Ginis (kathleen_martin.ginis@ubc.ca)

Jennifer Heisz (heiszjj@mcmaster.ca)

John Spence (jc.spence@ualberta.ca)

Ilana Clark (clarkib@mcmaster.ca)

Jordan Antflick (jantflick@braininstitute.ca)

Chris Arden (carden@yorku.ca)

Christa Costas-Bradstreet (ccbradstreet@participaction.com)

Mary Duggan (mduggan@csep.ca)

Audrey Hicks (hicksal@mcmaster.ca)

Amy Latimer-Cheung (amy.latimer@queensu.ca)

Laura Middleton (lmiddlet@uwaterloo.ca)

Kirk Nylen (knynlen@braininstitute.ca)

Donald Paterson (dpaterso@uwo.ca)

Michael Rotondi (mrotondi@yorku.ca)

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Author’s response to reviews:

Dear Dr. Pavey,

Thank you very much for the opportunity to make minor revisions and resubmit our manuscript entitled, “Formulation of Evidence-Based Messages to Promote the Use of Physical Activity to
Prevent and Manage Alzheimer’s Disease”. My co-authors and I are appreciative of the praise and constructive feedback provided by yourself and the two reviewers.

In the space below, I have described how we have responded to each of the reviewers’ concerns:

Reviewer #1:

This paper describes the process which was used to develop a position statement on the role of physical activity in Alzheimer's prevention and management. The paper is very well written and easy to follow. Specifically, the methods are very clearly described and could be helpful to others looking to use a similar process.

We thank the reviewer for this kind feedback.

The only area that could possibly be addressed further is the selection of the lay population to review the findings (page 11, line 249). How/why were these individuals selected? The authors state that the primary users of the statement should be: 1.) older adults and their families, 2.) primary caregivers of Alzheimer's patients and 3.) health care providers. It seems that the 2nd group has been neglected here and might be the group most interested in using this information.

The reviewer raises an excellent point. We had neglected to survey caregivers in our original submission. In response to the reviewer’s concern, we have since collected additional data from a small sample of caregivers. The three groups sampled from the lay population were chosen based on these groups being likely users of the statement and resource but they were not represented on the expert panel. This information is now reported from lines 249-257. The results of the feedback from caregivers is reported in Table 2. Caregivers responded similarly favourably as the other two sampled groups.

Reviewer #2:

This was an outstanding manuscript -- both well-written and informative. I only have the following minor issues:

We are appreciative of the reviewer’s enthusiastic response to our paper.

1) I would have liked to see some idea of the breadth and types of physical activities in the studies under review.

The following sentences have been added to address this point:

Lines 323-324: “The reviewed studies captured virtually any type of physical activity or energy expenditure (see Table 4).”
Lines 338-341: “With regard to managing Alzheimer’s disease and other dementias, the reviewed studies included physical activity interventions involving structured exercise, group exercises, strength, balance and mobility exercises, walking and exercise therapy, and “any exercise” in general (see Table 3).”

2) page 10, line 220 -- What are the implications of combining AD and other dementias? I see you address briefly on page 26, line 584-588, but I would like more discussion, as this is an important caveat for your review.

We have added a new paragraph at line 531 to address this important point:

“It is important to consider the implications of including other dementias in our analysis of the effects of PA on Alzheimer’s disease symptom management. Although Alzheimer’s neuropathology is present in up to 80% of dementia cases, each form of dementia is associated with a different symptom profile and rate of symptom progression [1]. Such heterogeneity means that the benefits of PA may differ by dementia subtype. That said, all forms of dementia impact the health and functioning of the brain and interfere with the individual’s ability to perform activities of daily living [1]. Moreover, commonly used pharmacological therapies are prescribed for symptoms that can be shared across Alzheimer’s disease and other dementias, even though these therapies may not be very effective and are commonly associated with adverse effects [58]. Therefore, the evidence-based messages regarding the benefits of regular PA for mitigating certain dementia symptoms with minimal adverse effects has important clinical relevance for individuals with Alzheimer’s disease and other forms of dementia. Future research is needed to evaluate whether the benefits of PA for dementia symptoms depend on symptom origin, profile or severity.”

3) page 12, line 269 -- Does "review" refer to a review of reviews?

Yes. For clarity, this sentence (lines 270-273) has now been re-written as:

“Next, the chair presented the results from the systematic review of reviews on the use of physical activity to manage Alzheimer’s disease, followed by the systematic review of reviews on physical activity for prevention of Alzheimer’s disease.”

4) page 14, line 391+ -- What are the total # of studies that comprise the 7 and 20 systematic reviews analyzed?
This is a good question. There were 33 unique studies in the 7 systematic reviews on prevention, and 121 unique studies in the 20 reviews on management. This information has now been incorporated into the Results section of the manuscript (line 325-326 and line 341).

5) page 15, line 334 -- Clarify that many studies had more than one outcome of interest (e.g. affect and behavior)

We have clarified this point at line 344 with the following sentence:

“Many studies had more than one outcome of interest --- the effects of physical activity on cognitive, affective, behavioural, physical (physical fitness, performance, balance), ADL and QOL were the outcomes examined in this review.”

6) page 18, line 400 -- How often did studies include AD patients living in residential care facilities? What are the implications for dissemination and uptake of the consensus statement and resource guide for people in these environments (patients, providers, and other staff)?

At line 546, we have inserted a new paragraph to address this question:

“It is also important to consider the implications of the messaging statement and toolkit for Alzheimer’s disease patients living in residential facilities. Only one review focused exclusively on studies set in nursing homes with patients with mild to severe forms of dementia [12]. Although a limitation is that the 12 studies in that review had small samples, the authors of that review came to similar conclusions as the reviews involving community dwelling adults with Alzheimer’s. Thus, the messaging statement should be applicable to all individuals with Alzheimer’s disease regardless of their living arrangement. Of note, the review also concluded that interventions set in nursing homes had the greatest benefit when the PA program included a combination of aerobic, strength and stretching activities that were different from patients’ daily routine and were led by a trained physiotherapist. Programmers may find this information useful when implementing the messaging recommendations in nursing homes.”

7) page 26, line 592 -- define "grey literature"

The following sentence was edited to include an explanation of grey literature:

Lines 628-630: “And finally, we acknowledge that the literature search did not include grey literature (e.g., unpublished studies, organizational reports, materials not controlled by commercial publishers).”
Once again, my authors and I thank you for your consideration.