

PEER REVIEW HISTORY

BMJ Open publishes all reviews undertaken for accepted manuscripts. Reviewers are asked to complete a checklist review form (<http://bmjopen.bmj.com/site/about/resources/checklist.pdf>) and are provided with free text boxes to elaborate on their assessment. These free text comments are reproduced below.

ARTICLE DETAILS

TITLE (PROVISIONAL)	Supervised exercise delivered via telehealth in real-time to manage chronic conditions in adults: A protocol for a scoping review to inform future research in stroke survivors
AUTHORS	Ramage, Emily; Fini, Natalie; Lynch, Elizabeth; Patterson, Amanda; Said, Catherine; English, Coralie

VERSION 1 – REVIEW

REVIEWER	Michael Weinrich University of Maryland, Baltimore County, USA
REVIEW RETURNED	10-Nov-2018

GENERAL COMMENTS	<p>This paper proposes a protocol for a scoping review of telehealth supervised exercise for stroke patients. The problem with the proposal is with the authors' definition of supervision, i.e., an insistence on real-time monitoring. Most of the efforts that this reviewer is aware of utilizing telehealth for exercise do not employ real-time supervision, and the authors may well find that there are not enough completed studies for them to analyze. Moreover, there are studies that have demonstrated the safety of home exercise programs for stroke patients, as well as group community-based exercise programs supervised by exercise trainers, so the rationale for the authors' insistence is not clear. Perhaps the authors may wish to review telehealth exercise programs for stroke more broadly, characterize the types of monitoring and feedback provided to patients, and then seek to determine if these characteristics influence outcomes.</p>
-------------------------	--

REVIEWER	Zechen Ma McMaster University
REVIEW RETURNED	11-Nov-2018

GENERAL COMMENTS	<p>The authors of this review protocol address an interesting topic on use of supervised exercise delivered via telehealth in real-time to manage chronic conditions in adults.</p> <p>However, I would suggest the following considerations for the protocol.</p> <ol style="list-style-type: none">1. The intent of the review is to apply research from chronic conditions to a stroke setting. The authors have not justified how and which chronic conditions will be applicable to stroke survivors. I would recommend defining chronic conditions that will be included in the review.
-------------------------	---

	<p>2. With regards to the research question, I would recommend having one research question and listing the "6 specific research questions" (page 10, ln19-44) as outcomes during charting stage.</p> <p>3. With regards to refinements to the scoping review framework, Levac (2010, ref37) have recommended consultation with stakeholders as the 6th stage to Arksey and O'Malley (2005)'s framework. I would suggest considering this step during your review process.</p> <p>4. Page 11(line 50) and page 12, line 49. Consider adding a definition for chronic conditions.</p> <p>5. I have a question on the exclusion criteria on population: Why are healthy subjects determined on the basis of BMI? Please clarify.</p> <p>6. Scoping review methodology usually does not include risk of bias assessment. Please add in a reasoning for including the risk of bias assessment in the review.</p> <p>7. Consider identifying some specific limitations that may arise during your review process.</p> <p>Lastly, I would recommend careful proofreading for spelling and grammar.</p>
--	---

VERSION 1 – AUTHOR RESPONSE

Response to reviewer 1's comments:

Comment 1: This paper proposes a protocol for a scoping review of telehealth supervised exercise for stroke patients. The problem with the proposal is with the authors' definition of supervision, i.e., an insistence on real-time monitoring. Most of the efforts that this reviewer is aware of utilizing telehealth for exercise do not employ real-time supervision, and the authors may well find that there are not enough completed studies for them to analyze.

Moreover, there are studies that have demonstrated the safety of home exercise programs for stroke patients, as well as group community-based exercise programs supervised by exercise trainers, so the rationale for the authors' insistence is not clear. Perhaps the authors may wish to review telehealth exercise programs for stroke more broadly, characterize the types of monitoring and feedback provided to patients, and then seek to determine if these characteristics influence outcomes. Response 1: Our preliminary searches of the literature have confirmed there are sufficient numbers of studies available.

We have chosen to focus on studies of real-time supervised exercise delivered via telehealth for a specific reason. The current body of evidence around increasing physical activity in stroke survivors suggests supervision of exercise in real time may be an essential component, with studies that involve coaching or advice alone shown not be effective [1 2]. Supervising exercise via telehealth offers a solution to barriers such as distance to travel and cost. While there have been few studies specifically looking at real-time supervised exercise delivered via telehealth for people after stroke, this model of care has been used with other chronic conditions and will provide valuable information for future stroke research.

We have revised the introduction section of the scoping review to better articulate this rationale.

Response to reviewer 2's comments:

Comment 1: The intent of the review is to apply research from chronic conditions to a stroke setting. The authors have not justified how and which chronic conditions will be applicable to stroke survivors. I would recommend defining chronic conditions that will be included in the review.

Response 1: We plan to include all chronic conditions. However, as highlighted, it is important to focus on the most relevant information to meet the aims of the review. Therefore, the inclusion criteria are limited to two categories of exercise:

1. Exercise that impacts cardiovascular disease risk to capture the ability of supervised telehealth to impact secondary stroke risk.
2. Exercise involving lower limb weight bearing to identify safety issues related to falls risk which is highly relevant to stroke survivors.

Comment 2: With regards to the research question, I would recommend having one research question and listing the "6 specific research questions" (page 10, ln19-44) as outcomes during charting stage.

Response 2: To comply with the PRISMA-ScR [3], we have included "an explicit statement of the questions and objectives being addressed with reference to their key elements" [3] in our introduction. However, we have condensed the research questions to 5 rather than 6 (lines 168-179):

With regards to interventions involving supervised exercise delivered via telehealth in chronic conditions:

1. What population groups have been included in the research and what are the key characteristics of the interventions delivered (including frequency, duration and intensity, types of exercise included, telehealth modalities used)?
2. What are health professionals', participants' and carers' experiences of, or attitudes towards telehealth-supervised exercise interventions?
3. What strategies have been used to optimise safety, feasibility, delivery and adherence?
4. What are the barriers and limitations to these interventions and what strategies have been used to mitigate these?
5. What is the effectiveness and cost-effectiveness of telehealth-supervised exercise sessions for reducing secondary stroke risk factors?

Comment 3: With regards to refinements to the scoping review framework, Levac (2010, ref 37) have recommended consultation with stakeholders as the 6th stage to Arksey and O'Malley (2005)'s framework. I would suggest considering this step during your review process.

Response 3: Levac, et al (2010) [4] suggests the inclusion of the optional [5] consultation stage can increase rigour. The rigour of our scoping review is assured by:

- Preliminary searches indicating we will gather sufficient breadth and depth of information through the current process to effectively address our research questions.

- The author team which has significant research and clinical experience in exercise for stroke survivors, two in the area of supervised exercise delivered via telehealth. Therefore, we are confident that we will identify any additional relevant studies or information sources.

Furthermore, as stated in our paper (line 301) "Our scoping review will be reported using the PRISMA-ScR [3]". This checklist does not include a consultation phase, in recognition that it is not always necessary [3].

Comment 4: Page 11(line 50) and page 12, line 49. Consider adding a definition for chronic conditions.

Response 4: See response to comment reviewer 2, comment 1. In addition, we have specified excluding studies involving healthy people (lines 222-224) "The exclusion criteria includes otherwise healthy participants with a BMI<30 to ensure a consistent definition of the chronic condition obesity as a BMI of 30 or greater [6]."

Comment 5: I have a question on the exclusion criteria on population: Why are healthy subjects determined on the basis of BMI? Please clarify.

Response 5: Obesity (defined as BMI of 30 or greater) can be considered a chronic health condition [7]. In terms of engagement with exercise programs, people with obesity face additional challenges to people who are in the healthy or overweight ranges. Furthermore, many people with stroke are obese, and therefore information about telehealth delivered exercise in this population is directly relevant to our review aims.

Comment 6: Scoping review methodology usually does not include risk of bias assessment. Please add in a reasoning for including the risk of bias assessment in the review.

Response 6: The 'Methods and analysis' section of the scoping review protocol has been revised as suggested, it now includes the following lines (288-292):

"All papers included in the scoping review will be critically appraised. We have chosen to undertake critical appraisal for two reasons. The first, to facilitate accurate identification of evidence gaps which Brien, et al. (2010) highlights can be difficult without the assessment of evidence quality [8]. The second, is to optimise recommendations made for practice to ensure they are based on sound evidence [9]"

Comment 7: Consider identifying some specific limitations that may arise during your review process.

Response 7: The 'Methods and analysis' section of the scoping review protocol has been revised to include (lines 315-321):

"The breadth of research evidence included in this review enables the comprehensive mapping of interventions involving supervised exercise delivered via telehealth aimed at reducing cardiovascular disease risk factors. As such, caution should be taken when interpreting the findings for individual patient populations. Another potential limitation of the study is the oversight of relevant papers due to the exclusion of grey literature. This has been done to ensure research quality can be assessed to optimise recommendations for practice. These and any further limitations identified during the scoping review process will be acknowledged."

Comment 8: Lastly, I would recommend careful proofreading for spelling and grammar.

Response 8: Additional proofreading for spelling and grammar has been undertaken.

References

1. Deijle IA, Van Schaik SM, Van Wegen EEH, et al. Lifestyle Interventions to Prevent Cardiovascular Events After Stroke and Transient Ischemic Attack: Systematic Review and Meta-Analysis. *Stroke* 2017;48(1):174-79. doi: <https://dx.doi.org/10.1161/STROKEAHA.116.013794>
2. D'Isabella NT, Shkredova DA, Richardson JA, et al. Effects of exercise on cardiovascular risk factors following stroke or transient ischemic attack: a systematic review and meta-analysis. *Clin Rehabil* 2017;31(12):1561-72. doi: <https://dx.doi.org/10.1177/0269215517709051>
3. Tricco AC, Lillie E, Zarin W, et al. PRISMA Extension for Scoping Reviews (PRISMA-ScR): Checklist and Explanation. *Ann Intern Med* 2018 doi: <https://dx.doi.org/10.7326/M18-0850>
4. Levac D, Colquhoun H, O'Brien KK. Scoping studies: advancing the methodology. *Implementation science* : IS 2010;5:69. doi: <https://dx.doi.org/10.1186/1748-5908-5-69>
5. Arksey H, O'Malley L. Scoping studies: Towards a methodological framework. *Int J Soc Res Methodol: Theory Pract* 2005;8(1):19-32. doi: 10.1080/1364557032000119616
6. World Health Organization. Obesity and overweight [Fact Sheet of the World Health Organization]. 2018 [cited 2018 1.12.2018]. Available from: <http://www.who.int/en/news-room/fact-sheets/detail/obesity-and-overweight> accessed 1.12.2018.
7. Bray GA, Kim KK, Wilding JPH. Obesity: a chronic relapsing progressive disease process. A position statement of the World Obesity Federation. *Obesity reviews* : an official journal of the

International Association for the Study of Obesity 2017;18(7):715-23. doi: 10.1111/obr.12551
[published Online First: 2017/05/11]

8. Brien SE, Lorenzetti DL, Lewis S, et al. Overview of a formal scoping review on health system report cards. Implement Sci 2010;5:2. doi: 10.1186/1748-5908-5-2 [published Online First: 2010/03/09]

9. Peters MDJ, Godfrey CM, Khalil H, et al. Guidance for conducting systematic scoping reviews. International journal of evidence-based healthcare 2015;13(3):141-6. doi: <https://dx.doi.org/10.1097/XEB.0000000000000050>

VERSION 2 – REVIEW

REVIEWER	Zechen Ma McMaster University, Canada
REVIEW RETURNED	26-Dec-2018
GENERAL COMMENTS	Thank you for addressing the comments.