PEER REVIEW HISTORY

ARTICLE DETAILS

TITLE (PROVISIONAL)	Using SUpported Motivational InTerviewing (SUMIT) to increase physical activity for people with knee osteoarthritis. A pilot, feasibility randomised controlled trial.
AUTHORS	Bell, Emily; O'Halloran, Paul; Wallis, Jason; Crossley, Kay; Gibbs, Alison; Lee, A; Jennings, Sophie; Barton, Christian

VERSION 1 – REVIEW

REVIEWER	Basaran, Sibel Cukurova University, Physical Medicine and Rehabilitation
REVIEW RETURNED	01-Jun-2023

GENERAL COMMENTS	General: In the current study, the authors aimed to determine the feasibility of conducting a fully powered trial to evaluate the clinical effectiveness of using Supported Motivational Interviewing (SUMIT) targeting physical activity following completion of an exercise-therapy program (GLA:D) in people with knee osteoarthritis. It is a well-designed study. However, some limitations due to Covid-19 restrictions partially prevented the study from being well-conducted. The main concern with the study is its administration after completion of a structured exercise-therapy program (GLA:D). Since only patients from centers that implement this program will be included, selection bias will occur and the results will be valid only for these patients. Please discuss its feasibility when proceeding to a large-scale RCT to evaluate the effectiveness of motivational interviewing. Please emphasize for which patients and clinical settings the intervention is applicable, as it is difficult to implement in routine. Minor recommendations: Please give brief information about the duration of GLA:D. Did the authors recorded the time between completion of GLA:D and the time of recruitment? Was it different between the groups?

REVIEWER	Stenner, Brad University of South Australia
REVIEW RETURNED	13-Jun-2023

GENERAL COMMENTS	Dear authors, Congratulations on both an innovative study and completing an RCT within the context of Victorian lockdowns. The role of motivational interviewing in improving physical activity levels, and related health measures, is an important topic. Your study provides evidence of the feasibility of this approach and

	preliminary data of it's effectiveness. These findings need to be tested in a much larger sample, and i do hope that you are able to do this/obtain funding in the future. I found the manuscript to be extremely well written, easy to read and presents the results in both clinical and meaningful ways. This is particularly important from an application point of view, whereby allied health clinicians are interested in how this can be used to inform patient care, rather than just statistically significant results with no context. Thank you for the opportunity to review this manuscript.

VERSION 1 – AUTHOR RESPONSE

Reviewer: 1

Dr. Sibel Basaran, Cukurova University

Comments to the Author:

General:
In the current study, the authors aimed to determine the feasibility of conducting a fully powered trial to evaluate the clinical effectiveness of using Supported Motivational Interviewing (SUMIT) targeting physical activity following completion of an exercise-therapy program (GLA:D) in people with knee osteoarthritis. It is a well-designed study. However, some limitations due to Covid-19 restrictions partially prevented the study from being well-conducted.
Author response: We thank you for your time to review our work, Dr Basaran.

3. The main concern with the study is its administration after completion of a structured exercise-therapy program (GLA:D). Since only patients from centers that implement this program will be included, selection bias will occur and the results will be valid only for these patients.
Author response: We agree and have added the following to our limitations section: "People who have completed GLA:D® report being more confident to participate in physical activities,[4] therefore, we chose to include this subset of the knee osteoarthritis population. It is important to note that this group has been willing to participate in an exercise-based intervention previously, and in many cases paid out of pocket and/or claimed private health insurance to support their participation. This selection bias may limit the external applicability of our findings to the broader knee osteoarthritis population. Recruiting for SUMIT following GLA:D® participation may be more successful due to their change in perception towards physical activity.[4] Nonetheless, our findings indicate SUMIT may be effective and feasible following a widely implemented education and exercise-therapy program (i.e., GLA:D®), which as at December 2022 had been provided to 12,884 people with osteoarthritis.[5]" (lines 385 to 394)

4. Please discuss its feasibility when proceeding to a large-scale RCT to evaluate the effectiveness of motivational interviewing.
Author response: Global osteoarthritis initiatives (including GLA:D®, "Better Management of Patients with Osteoarthritis" (BOA),[6] "My Knee Exercise", and "Enabling Self-management and Coping with Arthritis Pain using Exercise" (ESCAPE-pain)) are increasing in availability around the world. GLA:D® specifically is a widespread program in Australia and eight other countries around the world. In Australia alone, GLA:D® had 12,884 registered participants until December 2022, at a current rate of approximately 3,000-4,000 participants per year. This makes proceeding to a large

scale RCT highly feasible if the number of health services participants are recruited from are expected.

5. Please emphasize for which patients and clinical settings the intervention is applicable, as it is difficult to implement in routine.
Author response: We have added to the discussion "Compared to an evaluation of physical activity in Australian GLA:D® participants where 25% of participants were 'more' active at baseline, and 29% following GLA:D®, our cohort included 53% considered 'more' active based on UCLA criteria.[7] Further increases in physical activity in those already more active are still likely to improve health,[8,9] and increasing cadence[8,9] during walking as occurred in our intervention group also provides additional benefits. However, future RCTs may consider targeting 'less' active participants where there is a greater potential for improvement in physical activity participation and health benefits. People who have completed GLA:D® report being more confident to participate in physical activities,[4] therefore, we chose to include this subset of the knee osteoarthritis population. It is important to note that this group has been willing to participate in an exercise-based intervention previously, and in many cases paid out of pocket and/or claimed private health insurance to support their participation. This selection bias may limit the external applicability of our findings to the broader knee osteoarthritis population. Recruiting for SUMIT following GLA:D® participation may be more successful due to their change in perception towards physical activity.[4] Nonetheless, our findings indicate SUMIT may be effective and feasible following a widely implemented education and exercise-therapy program (i.e., GLA:D®), which as at December 2022 had been provided to 12,884 people with osteoarthritis.[5]" (lines 379 to 394)

Minor recommendations:
6. Please give brief information about the duration of GLA:D.
Author response: We have included the following to provide more detail about the GLA:D® program "GLA:D® involves two education and 12 supervised exercise-therapy sessions.[2] Education covers information about osteoarthritis, treatment options, exercise and physical activity, and self-management.[2] Exercise-therapy includes neuromuscular, resistance-training and functional exercises.[2]" (lines 107 to 110)

6. Did the authors recorded the time between completion of GLA:D and the time of recruitment? Was it different between the groups?
Author response: Participants were asked during screening when they completed GLA:D®, we have added the mean and standard deviation of months since completing GLA:D at enrolment into Table 2 (line 269). There was minimal difference between groups with the overall mean (SD) being 11 (8), SUMIT being 11 (9) and control being 10 (7).

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Reviewer: 2

Dr. Brad Stenner, University of South Australia

Comments to the Author:

Dear authors,
Congratulations on both an innovative study and completing an RCT within the context of Victorian lockdowns.

The role of motivational interviewing in improving physical activity levels, and related health measures, is an important topic. Your study provides evidence of the feasibility of this approach and preliminary data of it's effectiveness. These findings need to be tested in a much larger sample, and I do hope that you are able to do this/obtain funding in the future.

I found the manuscript to be extremely well written, easy to read and presents the results in both clinical and meaningful ways. This is particularly important from an application point of view, whereby allied health clinicians are interested in how this can be used to inform patient care, rather than just statistically significant results with no context.

Thank you for the opportunity to review this manuscript.
Author response: Thank you Dr Stenner, for reviewing our manuscript and for your kind words.

General changes: While this manuscript was under review, the lead author's PhD thesis was also examined, which included this manuscript as a paper. Based on feedback from thesis examiners, we have made two additional unsolicited changes to improve the clarity of information provided.

- We added "The proportion of 'more' active participants was 47% and 62% at baseline for SUMIT and control groups respectively (x^2= 0.71, p= 0.40), and 31% and 8% at 3-months (x^2= 0.99, p= 0.31) (Appendix 5a-c)." (lines 314 to 316). This important data was accidentally missing in our original submission.
- The text in the 5th paragraph of the discussion "However, further increases from this relatively high baseline are still likely to improve health,[8,9] and increasing cadence[8,9] during walking as occurred in our intervention group also provides additional benefits." was replaced with "Compared to an evaluation of physical activity in Australian GLA:D® participants, where 25% of participants were 'more' active at baseline, and 29% following GLA:D®,[7] our cohort included 53% considered 'more' active based on UCLA criteria. Further increases in physical activity in those already more active at baseline are still likely to improve health,[8,9] and increasing cadence[8,9] during walking as occurred in our intervention group also provides additional benefits. However, future RCTs may consider targeting 'less' active participants where there is a greater potential for improvement in physical activity participation and health benefits." (lines 379 to 385) which we believe is more clinically relevant for readers.

1. National Institute for Health and Clinical Excellence. NICE guideline on osteoarthritis: The care and management of osteoarthritis in adults. 2014;
2. Barton C, Kemp J, Roos E, et al. Program evaluation of GLA:D® Australia: Physiotherapist training outcomes and effectiveness of implementation for people with knee osteoarthritis. *Osteoarthritis and Cartilage Open*. 2021;3(3)doi:10.1016/j.ocarto.2021.100175
3. Exercise & Sports Science Australia. Adult pre-exercise screening system (APSS) V2. 2023. https://www.essa.org.au/Public/ABOUT_ESSA/Pre-Exercise_Screening_Systems.aspx
4. Bell E, O'Halloran P, Pazzinatto M, et al. "I feel more confident": A mixed-methods evaluation of the influence of GLA:D® on physical activity participation, capability, barriers and facilitators in people with knee osteoarthritis. [UNDER REVIEW]. *Braz J Phys Ther*.
5. Crossley K, Barton C, Kemp J, et al. *GLA:D® Australia 2022 Annual Report*. 2022. https://gladaustralia.com.au/wp-content/uploads/2023/05/GLAD-Annual-Report-2022.pdf
6. Jönsson T, Eek F, Dell'Isola A, Dahlberg L, Hansson E. The Better Management of Patients with Osteoarthritis Program: Outcomes after evidence-based education and exercise delivered nationwide in Sweden. *PLoS One*. 2019;14(9):e0222657. doi:10.1371/journal.pone.0222657
7. Bell E, Pazzinatto M, Wallis J, et al. Association of baseline physical activity participation with participant characteristics and outcomes following education and exercise-therapy in people with knee

osteoarthritis: A GLA:D® Australia prospective cohort study. [UNDER REVIEW]. *Musculoskeletal Care*.
8. del Pozo Cruz B, Ahmadi M, Lee IM, Stamatakis E. Prospective Associations of Daily Step Counts and Intensity With Cancer and Cardiovascular Disease Incidence and Mortality and All-Cause Mortality. *JAMA Internal Medicine*. 2022;182(11):1139-1148. doi:10.1001/jamainternmed.2022.4000
9. Saint-Maurice P, Troiano R, Bassett Jr D, et al. Association of Daily Step Count and Step Intensity With Mortality Among US Adults. *JAMA*. 2020;323(12):1151-1160. doi:10.1001/jama.2020.1382