

Implementation of group-based exercise programs in physiotherapy: a rapid scoping review

Mélanie Le Berre, MSc PT^{1,2}

Lauriane Forest, MSc PT^{1,2}

Chantale Dumoulin, PhD^{1,2}

¹Centre de recherche de l'Institut universitaire de gériatrie de Montréal, Montreal, Canada

²School of Rehabilitation, Université de Montréal, Montreal, Canada

Corresponding author:

Chantale Dumoulin,

Centre de recherche de l'Institut universitaire de gériatrie de Montréal,

4545 Queen-Mary road, office M5816, H3W 1W4, Montreal, Canada

Phone: +1 514-340-3540 extension 4153

Email: chantal.dumoulin@umontreal.ca

Authors disclosures:

The authors declare that they have no conflict of interest. The authors received no financial support for the research, authorship, or publication of this manuscript.

Authors contributions:

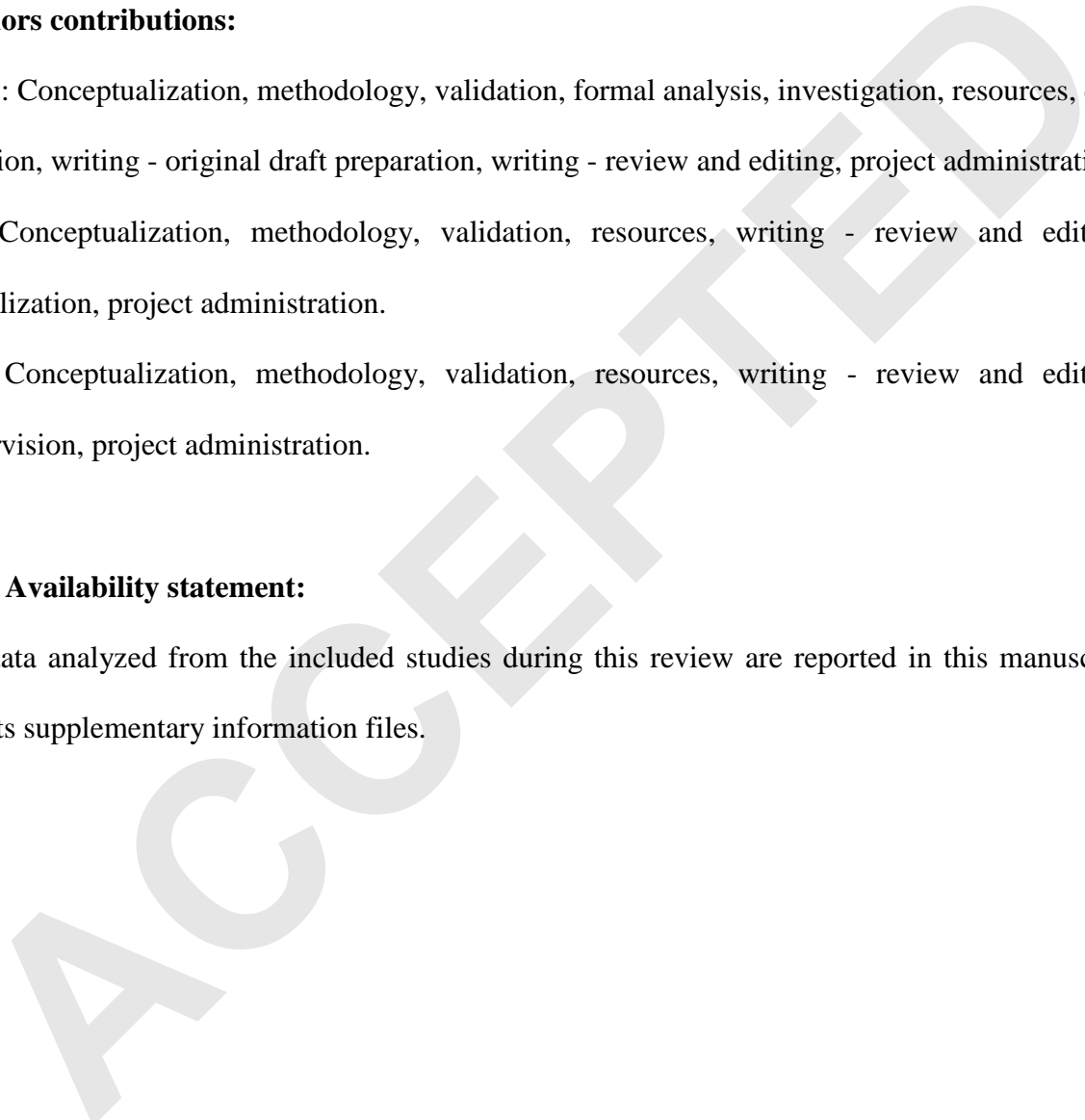
MLB: Conceptualization, methodology, validation, formal analysis, investigation, resources, data curation, writing - original draft preparation, writing - review and editing, project administration.

LF: Conceptualization, methodology, validation, resources, writing - review and editing, visualization, project administration.

CD: Conceptualization, methodology, validation, resources, writing - review and editing, supervision, project administration.

Data Availability statement:

All data analyzed from the included studies during this review are reported in this manuscript and its supplementary information files.



Downloaded from <http://journals.lww.com/ajpm> by BHD/MSep/PhKav1zEoum1tQINMa+kJLhEZgbsHh04XW10hCjwCXT1A VnYQp/llqH/D33D00dRy/7T/SF14Cj3VC1Y0abggQZXdwtwHkZBYtws= on 03/28/2024

Abstract

This review synthesized implementation literature on group-based exercise programs in physiotherapy. MEDLINE and EMBASE databases were searched for English and French articles published between 2000 and 2022. Through a two-step process (titles/abstracts and full text), two independent reviewers selected studies. The independent reviewers then extracted data and assessed study quality using the Mixed Methods Appraisal Tool (MMAT). A total of 31 studies involving 4,555 participants were included. Data on the group-based programs were extracted using the Consensus on Exercise Reporting Template (CERT) and reported narratively. Implementation outcomes were reported narratively. The most frequently reported constructs pertained to feasibility and acceptability. Overall, the implementation of group-based programs appeared to be feasible, yielding high rates of adherence and attendance (between 36% and 91%), moderate-to-high completion rates (between 46% and 100%), low-to-moderate dropout rates (between 4.5% and 35.9%), and high satisfaction (satisfaction scores generally ranging above 7/10). The present findings also indicate a high acceptability for group-based physiotherapy exercise programs among patients. This review provided an overview of the literature on the implementation of group-based exercise programs in physiotherapy. In addition, it identified the need for more evidence on fidelity and costs. Future research should address these gaps to better inform healthcare stakeholders.

Keywords: Implementation; Rehabilitation; Exercise; Group-Based

List of abbreviations:

CERT Consensus on Exercise Reporting Template

IOF Implementation Outcomes Framework

MMAT Mixed Methods Appraisal Tool

PRISMA Preferred Reporting Items for Systematic Reviews and Meta-Analyses

RE-AIM Reach, Effectiveness, Adoption, Implementation, Maintenance

ACCEPTED

Introduction

Physiotherapy is recommended for the management of multiple conditions.¹ However, healthcare services are impacted by the lack of both financial and human resources, which have been further aggravated by the coronavirus pandemic. To address this situation, some healthcare institutions have started using group-based approaches to reduce their patient waitlists, notably in physiotherapy.² As more patients can be seen by a single healthcare professional within a specific period of time, group-based programs may represent a cost-effective alternative to individual treatments, when appropriate.³

Furthermore, despite their current limited utilization, group-based approaches could offer additional benefits to patients. Sharing experiences could cultivate peer support, establish non-judgmental environments, and even contribute to the destigmatization of their condition.⁴ This support could have a transformative impact on patient motivation and enhance their adherence to a physiotherapy exercise program. Group-based approaches thus appear promising in effectively managing waitlists and delivering clinical benefits. However, they could pose the challenge of harmonizing the group format's advantages with the personalization needed in physiotherapy.

However, despite demonstrated effectiveness, implementing innovations within clinical practices is complex. Achieving sustainable implementation typically requires efforts from diverse actors following structured frameworks, models or theories. Systematic reviews on the implementation of group-based exercise classes for healthy older populations⁵ outside of physiotherapy are available in the literature. Yet, no clear guidelines exist to guide implementation efforts for group-based physiotherapy. Therefore, the aim of this rapid scoping review was to explore

studies reporting on the implementation of group-based physiotherapy exercise programs in adults with various health conditions. By considering a wide range of conditions, this review aims to uncover shared implementation challenges and successful strategies. Furthermore, it may enhance the generalizability of its findings, facilitating their integration into clinical practice.

Methods

This rapid systematic scoping review followed the methodological framework proposed by Arksey & O'Malley (2005)⁶ and the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement for scoping reviews⁷ (Supplemental Checklist, <http://links.lww.com/PHM/C343>). Scoping reviews provide a structured approach to reviewing literature, focusing on the breadth of evidence on a topic and identifying gaps in the evidence, rather than addressing a specific and narrow question.⁶

Inclusion criteria

Included studies: (a) were quantitative, qualitative or had mixed designs; (b) were published in English or French; (c) included an adult population with diverse health conditions; (d) reported the implementation of a group-based physiotherapy program with an exercise component, involving planned and repeated direct contacts with one or more rehabilitation healthcare professionals, with implementation explicitly mentioned in their aims or objectives; (e) explicitly measured outcomes related to implementation, following the classification of the expanded Reach, Effectiveness, Adoption, Implementation, Maintenance (RE-AIM) and Implementation Outcomes Framework (IOF) indicators.⁸ As prescription of exercise is a core clinical skill in physiotherapy, and past research has already established the relevance of therapeutic exercise in

physiotherapy practice,⁹ this rapid scoping review focused on group-based exercise programs within the field of physiotherapy. The ultimate goal was to make a valuable contribution to evidence-based practice in this field. The detailed list of eligibility criteria and corresponding exclusion codes can be found in Appendix 1, <http://links.lww.com/PHM/C349>.

Information sources and search strategy

Seminal articles on knowledge translation and implementation were first published in the early 2000s. The search thus focused on literature published from January 2000 to December 2022, identified through MEDLINE (PubMed) and EMBASE (Ovid). Through the help of a specialized librarian, the search linked the concepts of “implementation”, “physiotherapy” and “group-based” programs and their associated Medical Subject Headings (MeSH) terms and keywords. MEDLINE and EMBASE complete search strategies are available in Appendix 2, <http://links.lww.com/PHM/C350>.

Selection process

In an initial practice phase, two reviewers (MLB, LF) familiarized themselves with the exclusion codes by reviewing the first few studies. Both reviewers independently screened all remaining studies through a two-step process (titles/abstracts and full text). Discrepancies were resolved through consensus or by involving a third reviewer (CD).

Data collection process

Two independent reviewers (MLB, LF) extracted data from the first half of the pool of included articles using a standardized data extraction form (Appendix 3,

<http://links.lww.com/PHM/C351>). All discrepancies were resolved through consensus or by involving a third reviewer (CD). After this validation step, both reviewers independently extracted data from the remaining pool of included articles. Collected data included: a) study characteristics (authors, year, title, journal, language, funding source); b) study design (study objectives, study type, follow-up length); c) study sample and setting (country, inclusion/exclusion criteria, demographics of the sample); d) participant flow and attrition (number of recruited and randomized participants, withdrawals, drop-outs); e) details of the intervention, including relevant items from the Consensus on Exercise Reporting Template (CERT),¹⁰ and f) reported implementation outcomes, following the classification of the expanded RE-AIM/IOF indicators.⁸ The CERT is an internationally endorsed 16-item tool for developing reporting guidelines provided by the Enhancing the QUALity and Transparency Of health Research (EQUATOR) Network methodological framework, specifically designed for exercise program reporting.¹⁰ The expanded RE-AIM/IOF is a recent integration of the two highly-used frameworks of RE-AIM and IOF comparing and contrasting their respective indicators. This integration enhances the depth of the framework, providing valuable insights into the various constructs of implementation research.⁸

Risk of bias assessment

Two independent reviewers (MLB, LF) assessed the first half of the included articles for their methodological quality and risk of bias using the Mixed Methods Appraisal Tool (MMAT). This frequently used tool is grounded in the literature, offering criteria specific to each study design, including quantitative, qualitative and mixed designs.¹¹ Again, all discrepancies were resolved through consensus or by involving a third reviewer (CD). After this validation step, one reviewer

(MLB) independently assessed the remaining pool of included articles. Given the scoping methodology of this review,⁶ no study was excluded based on this assessment.

Synthesis methods

Due to the heterogeneous nature of the collected data, this review used a narrative synthesis approach rather than summary statistics to effectively describe and synthesize the characteristics and reported outcomes of the included studies.

Results

From the 506 references initially identified, 31 studies were included in the review (Figure 1).¹²⁻

⁴² The selection process generated a kappa score of 0.907 between both reviewers, indicating high agreement.

Characteristics of included studies

From the 31 included studies, 14 had a quantitative design,¹²⁻²⁵ nine had a qualitative design,^{26-33,41} two reported on a two-part study incorporating both quantitative and qualitative approaches,^{34,42} and six employed a mixed methods design³⁵⁻⁴⁰ (Supplemental Table 1, <http://links.lww.com/PHM/C344>). Studies originated from European (n=13),^{15,16,18,20,21,23,27,32,33,36,37,39,41} Oceanian (n=11),^{12,14,19,22,25,26,29-31,38,40} and North American (n=7)^{13,17,24,28,34,35,42} countries.

The mean or median age of the participants was available in 28/31 (90%) studies.^{12-26,28-35,38-42} It was also partially available in 2/31 (6%) studies,^{36,37} where the mean age was provided for one of the study steps but not the others. Overall, the reported mean age ranged from 44 to 83 years old.

Downloaded from <http://journals.lww.com/ajpm> by BHMfsePHKav1zEoum1QINMa+kLLHEZgbsHh04XW10hCjwCXT1A
VhYQp/llQH/D33D00dRy/7T/SF14C/3VC1Y0abggQZXdWnKZBYtws= on 03/28/2024

Targeted conditions were either: a) orthopedic: arthritis, osteoarthritis, axial spondyloarthritis, ligament reconstruction, and chronic pain (n=7)^{13,14,18,29,31,32,35}; b) associated with gait and balance: impaired mobility and risk of falling (n=7)^{20,22,25,33,34,36,37}; c) neurological: stroke, multiple sclerosis, Parkinson's disease, and neuromuscular diseases (n=5)^{21,24,38-40}; d) cardiorespiratory: overweight or obese, and other cardiovascular risk factors or general cardiac rehabilitation profiles (n=5)^{17,19,23,28,30}; or e) other types: specific surgery recovery (n=4),^{12,15,16,26} cancer survivors (n=2)^{41,42} and psychiatric conditions, such as bulimia nervosa (n=1).²⁷ Sample sizes ranged from only three participants to large cohorts of 1,945 participants. The gait and balance subgroup, along with the orthopedic subgroup exhibited the largest median sample sizes among the studies, with 59.5 and 59 participants, respectively. In contrast, the neurological subgroup had the smallest median sample size across the studies, with only 11 participants.

Supplemental Table 1 summarizes the characteristics of all included studies, <http://links.lww.com/PHM/C344>.

Exercise program descriptions and CERT items

The structure of the group-based exercise programs differed among studies. They comprised group training sessions held at various frequencies: less than once (n=4),^{17,20,33,40} once (n=11),^{12,13,16,18,19,22,25,26,31,32,37} between once and twice (n=6),^{14,27,29,36,38,39} twice (n=6),^{23,24,30,34,35,41} or three times or more per week (n=4).^{15,21,28,42} In comparison to other subgroups, neurological, cardiorespiratory and other conditions all exhibited a higher frequency of group training sessions held more than once a week, with over half of their studies reporting such training frequencies. The duration of exercise programs varied, ranging from five to 16 weeks, with the most frequent durations observed being 8-week and 6-week programs (n=8/31,

26%^{12,14-16,25,26,29,38} and n=6/31, 19%^{13,17,28,31,34,35} respectively). The gait and balance subgroup, as well as the cardiorespiratory subgroup, had the longest median program duration across studies, both lasting 12 weeks. The orthopedic subgroup had the shortest median program duration across studies, at seven weeks. One study from the orthopedic subgroup did not specify the program duration (Supplemental Table 1, <http://links.lww.com/PHM/C344>).¹⁸

The depth of the description of the various CERT¹⁰ elements reported varied among studies (Supplemental Table 2, <http://links.lww.com/PHM/C345>).

Regarding program delivery, all studies mentioned the profession of the instructor in charge of the program and 18/31 (58%)^{12,14,17-21,24-27,29,33-35,37-39,42} provided some level of detail on the expertise of the instructor. Group-based programs mostly involved physiotherapists (n=25/31, 81%).^{12-21,23,25,26,28,29,31-36,38-40} Compared to other subgroups, gait and balance more frequently engaged a team of rehabilitation professionals, with over half of their studies reporting this approach. Among the studies, 28/31 (90%) provided sufficient information to determine the level of supervision offered. Programs were most commonly delivered under supervision only, with mentions of an open gym space or a circuit of exercise stations for example (n=11/31, 35%),^{15,17,19,23,27,28,32,36,39,41,42} or with an instructor leading the program and more directly dictating the exercises throughout the program sessions (n=9/31, 29%),^{13,14,18,20,21,29,33,34,40} or through a combination of both (n=4/31, 13%).^{16,24,25,35} Only a few programs closely monitored the participants, with a more thorough surveillance of vital signs or other indicators throughout the program sessions (4/31, 13%).^{12,26,37,38} The most common mode of delivery varied among subgroups. Instructors led the classes for the orthopedic, gait and balance and neurological

subgroups. The cardiorespiratory and other types of conditions subgroups involved supervision only.

Regarding program settings, 29 studies (94%) mentioned the location of the program. Overall, most programs were offered either at a clinical or hospital-based facility (23/31, 74%)^{12-17,19-21,23,25,26,29-33,35,38-42} or at a community center or gym (6/31, 19%).^{22,24,28,34,36,37} The gait and balance subgroup most commonly offered programs at a community center or gym, with over half of its studies reporting this setting. Almost three out of four studies (n=23/31, 74%)^{13,14,16,17,19-23,25,27-29,31,33-36,38-42} reported the group size of their sessions, which ranged from three to 20 participants. The gait and balance subgroup had the largest group size, with a median of 10 participants, compared to eight for other types of conditions and six for the orthopedic, neurological and cardiorespiratory subgroups.

Regarding program content, all studies provided some level of detail on their program. Among them, 18/31 (58%)^{12,13,16-23,26,27,30,33,35,37-39} specified if the program included a home exercise component in addition to the group sessions, with 10/31 (32%)^{16-20,22,33,35,37,39} encouraging home exercises and 8/31 (26%)^{12,13,21,23,26,27,30,38} providing more support for home practice through either monitoring devices or provision of a specific home program. Home exercises were most commonly included in the cardiorespiratory subgroup, with 80% of their studies explicitly encouraging exercises at home. Half of the studies in this subgroup also included additional support or monitoring of the home exercises. In addition, 22/31 (71%)^{12-14,16,18-20,23,24,26,27,29-31,33-40} studies specified whether the program included a non-exercise component, with most incorporating an education component (18/31, 58%).^{12,14,16,18-20,26,27,29-31,33-36,38-40} Over half of the

studies in all subgroups included a non-exercise component. Five studies (16%) specified if the program included a remote component, with four (13%)^{17,20,30,33} offering follow-up phone calls and one (3%) providing telehealth.²⁹ None of the subgroups had over half of their articles including such component. Finally, seven studies (23%) explicitly mentioned motivation or adherence strategies within their program. Among them, two (6%) used the group-based format itself as a motivation strategy,^{21,32} and two leveraged the program environment either through music or pool activities (6%).^{23,24} The neurological subgroup most commonly mentioned explicit motivation or adherence strategies, with over half of its studies including this component.

Implementation outcomes reported

Only 10/31 studies (32%)^{14,17,19-21,33-36,42} included a framework or an explicit description of implementation steps or model within their methods section (Supplemental Table 1, <http://links.lww.com/PHM/C344>). The most frequently cited framework among the studies was the RE-AIM framework (n=3/31, 10%).^{14,17,35} The gait and balance subgroup most commonly relied on a framework or explicit implementation steps, with over half of its studies reporting this methodology.

Although the specific measurement tools and indicators used among the studies were heterogenous, many could be regrouped under the same constructs of the expanded RE-AIM/IOF classification⁸ (Supplemental Table 3, <http://links.lww.com/PHM/C346>). The most frequently reported outcomes were feasibility, which was assessed in 30/31 (97%) studies,^{12-21,23-42} and acceptability, which was assessed in 13/31 studies (42%).^{15,16,19,25-27,29,30,33,34,36-38} The majority of studies in all subgroups assessed feasibility. Acceptability was mainly assessed by the gait and

balance and other conditions subgroups, with over half of their studies reporting these outcomes. Effectiveness in a real-life clinical context^{17,19,21,23,34-37,42} and reach^{13,14,17,19,21,35,36} were assessed in 9/31 (29%) and 7/31 (23%) studies respectively, while fidelity^{17,19,35,42} and costs^{20,22,36} were both assessed in 4/31 (13%) and 3/31 studies (10%) respectively. Adoption,¹⁴ appropriateness³⁸ and maintenance¹⁴ were all assessed in only 1/31 (3%) studies. None of the studies reported findings on the other listed implementation constructs of the expanded RE-AIM/IOF classification.⁸

Among studies reporting on the construct of feasibility (Supplemental Table 4, <http://links.lww.com/PHM/C347>), the assessed variables were Adherence/Attendance, Barriers/Facilitators, Completion/Dropout, Experience, Safety and Satisfaction. Notably, the most commonly reported outcomes focused on adherence/attendance (n=17/31, 55%).^{12-15,17,19-21,24,25,27,29,34-36,38,39} Specifically, five studies^{12,17,21,27,35} reported on adherence to exercises and 16 studies^{12-15,17,19-21,24,25,27,29,34,36,38,39} reported on attendance to the exercise sessions within various programs. Over half of the studies in all subgroups, except for cardiorespiratory, reported on adherence/attendance. For adherence, 3/5 (60%)^{12,17,35} studies specified how they recorded the measure, with two studies using exercise diaries and one using a 5-point scale. Overall adherence ranged from 36% to 91%. For attendance, only 6/16 (38%)^{13,19,24,25,34,39} studies specified how they recorded the measure, with five recording it at the beginning of each session, principally by the program's instructor, and one relying on chart review. Overall, participants attended between 46% and 93% of scheduled sessions.

Completion/dropout and satisfaction were both reported in 14/31 (45%) studies.^{13,17,19,20,23-25,27,34-36,39,40,42} Over half of the studies in the gait and balance, neurological and cardiorespiratory

subgroups reported on completion/dropout. Additionally, over half of the studies in the gait and balance and neurological subgroups reported on satisfaction. While six studies^{13,19,20,25,34,35} reported on completion, only three^{13,19,20} defined it, using varying participation cut-offs. Overall, between 46% and 100% of participants were considered to have completed the program. Nine studies^{17,20,23,24,27,36,39,40,42} reported their dropout rates, ranging from 4.5% to 35.9% of their sample. For satisfaction, 12/14 (86%)^{13,17-20,23-25,34,35,39,40} studies specified how they recorded the measure, all of them using non-standardized questionnaires or questions. Overall, satisfaction appeared high in most studies. This was reflected in various ways. Indeed, the majority of participants registered high scores when describing their satisfaction, either using numerical scales (i.e. above 7/10 or close to 100%)^{18,24} or categorical answers (i.e. ‘complete’, ‘very’, ‘good’ or ‘excellent’),^{13,25,34,35}. In other studies, most participants responded positively to a ‘yes or no’ question about their satisfaction,¹⁹ expressed their willingness to recommend the program to others^{13,19,39} as well as their interest in continuing the exercises or the program^{21,24,42} and registered high satisfaction scores (between 8.7/10 and 9.7/10).^{23,39}

Patient experience within the various programs was reported in 11/31 (35%) studies.^{18,27,28,30-33,37,38,40,42} None of the subgroups had over half of their articles reporting on this outcome. To assess the participants’ experience, 10/11 (90%)^{27,28,30-33,37,38,40,42} studies used qualitative methods with either individual interviews or focus groups, and one (10%) used a non-standardized questionnaire.¹⁸ In all studies presenting qualitative findings, the participants portrayed the group format in a positive light. They often described enjoying the social interactions and bonding, from which they derived enhanced motivation, a feeling of being supported and a normalization of their condition. Eight articles also highlighted the crucial role of the program instructor, through their expertise and credibility, the support they provided, and

the therapeutic relationship they fostered through their close monitoring and individualized recommendations.

Lastly, safety and barriers/facilitators were the least frequently reported outcomes in the context of feasibility, with eight (26%)^{15,21,23,25,34,38,39,42} and five (16%) studies^{17,26,36,37,41} reporting on these outcomes respectively. The neurological subgroup assessed safety most frequently, with over half of its studies reporting on this outcome. None of the subgroups had over half of their articles reporting on barriers/facilitators. Safety was assessed through the occurrence of any adverse events in all eight studies.^{15,21,23,25,34,38,39,42} Two studies also assessed the participants' perception of safety, either through a 5-point Likert scale³⁴ or through individual interviews.³⁸ Overall, none to 33.3% of participants reported adverse events of various nature. However, no reports of major adverse events (e.g., hospitalization, severe injury, death, etc.) were found in any of the studies, and perceived safety was therefore high. The barriers and facilitators were all assessed using qualitative methods with either individual interviews or focus groups.^{17,26,36,37,41} All determinants varied among included studies, yet some pragmatic concerns emerged related to proximity and transportation in three studies,^{26,36,37} and proper space and materials in two studies.^{26,36} The participants' condition was also important to consider in four studies,^{17,26,36,41} as a barrier in itself, in conjunction with employment status and treatment's side effects or due to overly large physical disparities between participants.

Among the 13 studies reporting on acceptability, nine (69%)^{15,16,19,25,27,30,33,34,36} addressed it only in their conclusions based on their specific or overall findings, while four (31%)^{26,29,37,38} formally assessed it using qualitative methods with individual interviews or focus groups. None of the subgroups had over half of their articles reporting qualitative findings on acceptability. All

studies reported high acceptability for the reported programs in their conclusions. The qualitative findings on acceptability echoed the findings on general experience and barriers/facilitators, which were previously reported in the feasibility outcomes.

Risk of bias among included studies

Among the 16 studies with or including a quantitative design, three (19%) had a low risk of bias in all five methodological quality criteria, and 10 (63%) had a low risk of bias in at least four criteria. Among the 11 studies with or including a qualitative design, nine (82%) had a low risk of bias in all five criteria. Lastly, 4/6 (67%) studies with mixed methods designs had a low risk of bias in all five criteria. The orthopedic subgroup demonstrated the lowest risk of bias, with all its studies exhibiting a low risk of bias in at least four criteria. The detailed risk of bias assessment is available in Supplemental Table 5, <http://links.lww.com/PHM/C348>.

Discussion

This review included 31 studies of various designs to investigate the implementation of group-based physiotherapy exercise programs, which largely exceeds previous reviews on implementation. Prior reviews used a less transversal approach and targeted condition-specific physiotherapy programs (i.e. risk of falling⁴³). This review is also the first to cover a variety of implementation outcomes, as previous reviews on group-based exercise outside of the physiotherapy context only focused on adherence in healthy older adults.⁵ Overall, the implementation of a wide range of group-based physiotherapy exercise programs targeting diverse populations was reported, although the precision in describing these programs varied. The most frequently reported outcome constructs pertained to feasibility and acceptability. The

implementation of group-based programs appeared to be feasible, as evidenced by high rates of adherence and attendance, moderate-to-high completion rates, low-to-moderate dropout rates, and levels of high satisfaction. Additionally, the implementation of such program also appeared to be generally acceptable for patients.

Description of exercise programs

Included studies reported on a variety of programs and targeted populations with different conditions, involving a total of 4,555 participants. However, details on the programs' specificities were inconsistently reported on the CERT.

Program delivery was the most thoroughly described aspect, with all studies mentioning the profession of the program instructor, yet only 58% of studies further described their professional background. Most programs (81%) were delivered by a physiotherapist. In comparison, McPhate et al's (2013)⁴³ review investigated the factors associated with one specific feasibility outcome, namely adherence, in group-based exercise programs for fall prevention in older adults. The current review's findings diverge from McPhate et al's (2013),⁴³ in which 13/18 (72%) studies specified the profession of the program instructor, and only 2/18 (11%) programs were delivered by physiotherapists. While prevention programs, as those outlined by McPhate et al (2013),⁴³ often involve a diverse array of interventions and collaboration with instructors from non-clinical settings, the emphasis of this review is specifically on treatment programs. This led to a higher proportion of instructors from clinical backgrounds, such as physiotherapists.

In this review, 74% of studies reported on group size. Group size could have a significant impact on the delivery and reception of the program by participants. More data on this CERT item could help healthcare providers determine an adequate group size for their group-based practice. Optimal group size would allow for the development of mutual support between participants, fostering bonding based on their common experiences with their condition.⁴ It is also important to strike a balance to avoid overwhelming participants with a crowd effect. Optimal group size would also allow the instructor to keep safety concerns manageable. In this review, group sizes varied, ranging from three to 20. McPhate et al. (2013)⁴³ reported even greater discrepancies, with group numbers ranging from 10 to 148. However, in cases where no explicit numbers were available, McPhate et al. (2013)⁴³ considered the group size equal to the number of participants in the intervention group. This methodological difference could explain the higher values and wider range found by McPhate et al. (2013),⁴³ as the presented findings here only included group size when explicitly stated by the authors.

Additionally, less than one quarter of studies (23%) explicitly described motivation strategies. However, motivation is a key topic in implementation as it could have a direct influence on adherence and maintenance. Since both adherence and maintenance are major determinants of the success of exercise programs,⁴⁴ paying closer attention to motivation strategies could shed new light on the implementation of exercise programs. In comparison, Farrance et al's (2016)⁵ review investigated adherence in the context of group-based exercise programs provided in a community setting to promote healthy aging in older adults. Their conclusions also emphasized the importance of motivation.⁵ However, the authors did not report on specific motivation strategies integrated into the 10 included studies. This highlights the recurring issue of

underreporting motivation strategies in literature. In this review, the motivation strategies reported by the authors of the studies were primarily associated with the adoption of the group-based format itself.

Remote components were also seldom reported among included studies. However, in a post-pandemic era associated with a growth in telerehabilitation,⁴⁵ these components will need to be increasingly included in studies, as they are expected to assume an increasingly significant role in healthcare, possibly extending to group-based approaches as well. Furthermore, experts requested more evidence on hybrid models, which involve interventions offered both in-person and remotely.⁴⁶ With the emergence of this research, this CERT item is likely to become more important. Yet, it is still possible to take advantage of remote components without necessarily having to resort to advanced technologies. In this review, out of five studies that included a remote component, four used phone calls. Similarly, one study in Farrance et al's (2016)⁵ review mentioned telephone support.

Implementation of group-based exercise programs

Included studies reported on a wide range of implementation outcomes, both quantitatively and qualitatively. Despite this extensive reporting, less than one third of the studies mentioned a framework or at least an explicit description of implementation steps within their methods section. Grounding the implementation of a program in a conceptual or theoretical model is advised to ensure its adequate evaluation. Theory may also contribute to optimizing the implementation process itself. The theoretical basis of the interventions was not addressed in other reviews on the implementation of physiotherapy or group-based exercise programs.^{5,43} In

the present review, outcomes pertaining to both feasibility and acceptability constructs were the most frequently reported.

Feasibility studies aim to investigate “whether something can be done, should [be done], and if so, how”⁴⁷. Although the present review’s findings clearly outlined the variety of possible feasibility outcomes, adherence/attendance emerged as the predominant metric used to assess feasibility. The importance of adherence/attendance could stem from the review’s focus on exercise programs in the context of physiotherapy. Indeed, across a variety of conditions and even in complex multimodal programs, ensuring consistent adherence to the exercise regimen appears crucial for achieving the desired clinical outcomes.⁴⁴ The same principle may be applied to the outcome of completion/dropout of group-based programs, as it also supports a regular exercise practice. For the outcomes of satisfaction and experience, both were reported in 14 and 11 studies, respectively, highlighting their significance, which may stem from their association with motivation. Motivation, in turn, could play a pivotal role in sustaining consistency in completing the exercises.

Acceptability is defined in the literature as “how well the target population will receive an intervention and the extent to which the new intervention or its components might meet the needs of the target population and organizational setting”.⁴⁸ Most included studies only briefly addressed acceptability by drawing conclusions from their overall findings. Only four of the included studies directly reported on the acceptability of their group-based programs. However, acceptability carries key information on healthcare interventions. If a program is deemed acceptable, participants are much more likely to adhere to and benefit from it, follow its

recommendations, and notice significant improvements.⁴⁹ Therefore, evaluating acceptability appears imperative when developing and implementing new healthcare programs, yet very few studies formally report on this construct.^{48,49} This may stem from the lack of consensus regarding which scientific methods should be used to assess acceptability. Regarding this issue, Ayala and Elder (2011)⁴⁸ recommended using focus groups and interviews. Focus groups are usually more cost-effective and encourage the synergistic group effect, where participants from the same group can come together to share concerns, ideas and solutions.⁴⁸ Ayala and Elder (2011)⁴⁸ also introduced the concept of community-based participatory research, which guarantees the integration of acceptability into the research design. This may be an interesting concept to investigate when designing and implementing a new group-based program. In addition, to adequately assess acceptability, researchers may turn to specific frameworks, models or theories, such as the theoretical framework of acceptability.⁴⁹ Finally, successful implementation also depends on acceptability from the perspective of the clinicians delivering the program. Hence, future studies should address this aspect.⁴⁹

The inclusion of other less frequently reported implementation outcomes would further enhance this reflection on the implementation of physiotherapy group-based exercise programs, which is already well underway through this review. In particular, fidelity and costs are key assets that may help guide clinicians, managers and decision-makers in their organizational efforts when planning the delivery of physiotherapy services. When implementing a new program, an adequate evaluation of fidelity should accompany the assessment of effectiveness to ensure reliable findings and help determine whether any lack of impact is attributed to implementation issues or inherent inadequacies in the program itself, which is commonly referred to as a Type III

error.⁵⁰ An adequate evaluation of cost can inform realistic budget estimates and allow for prioritization of resource allocation, an especially important aspect to consider in the currently resource-limited healthcare context.

Building upon the insights from this review, several directions for future studies can be identified. First, using the CERT is of key importance to describe the programs being studied,¹⁰ particularly for reporting on the group size to help determine the ideal group size, motivation strategies to help inform the underlying mechanisms of adherence and completion, and remote components to remain up to date with current practices. Second, regarding study design, the use of a theoretical implementation model, such as the RE-AIM,⁸ could help guide implementation efforts and ensure its adequate evaluation. Given the considerable heterogeneity observed in healthcare systems and their financing worldwide, taking into account these specificities would also aid in grounding implementation research within a particular context. Third, selecting the relevant outcomes could help to gain a more accurate understanding of the implementation of group-based physiotherapy exercise programs. For now, feasibility and acceptability appear to be the most frequently reported outcomes. However, future research should aim to assess acceptability more formally, possibly using focus groups and interviews that are grounded in theory, such as the theoretical framework of acceptability,⁴⁹ as well as integrating the perspective of the clinicians.^{48,49} Additional outcomes, such as fidelity and costs, could also help provide key information for planning group-based physiotherapy exercise programs.

Strengths and limitations

This review has many strengths, starting with its solid search strategy, which was supported by a specialized librarian. This review also relied on a strong methodology,⁶ which closely followed

the PRISMA statement for scoping reviews.⁷ To minimize bias, this review also included a quality assessment of included studies using a validated tool, the MMAT.¹¹ Despite this scientific rigour and the richness of our findings, this review also has some limitations. Our search was limited to two databases and studies published in English or French, possibly restricting the scope of our conclusions. Despite covering a range of conditions, this review did not comprehensively investigate group-based programs for every rehabilitation population. Therefore, more research is needed to strengthen the robustness of these findings. Nevertheless, with 29 included studies, this review sheds an insightful light on crucial considerations in physiotherapy care. It mapped the existing group-based exercise programs in physiotherapy and identified the most frequently available indicators when describing their implementation. It also highlighted areas of focus for future research that could further strengthen the evidence on the implementation of group-based physiotherapy exercise programs.

Conclusion

This review provided an overview of the literature on the implementation of group-based exercise programs in physiotherapy. The most frequently reported outcomes pertained to feasibility and acceptability. Overall, the implementation of such programs appeared to be feasible, yielding high rates of adherence and attendance, moderate-to-high completion rates, low-to-moderate dropout rates and high satisfaction. The current findings also demonstrate a high level of acceptability of these programs. Future research should aim to incorporate an assessment of both fidelity and costs, to provide valuable insights for clinicians, managers, and healthcare stakeholders in their decision-making processes.

References

1. Bjarnason-Wehrens B, Mayer-Berger W, Meister ER, Baum K, Hambrecht R, Gielen S. Recommendations for resistance exercise in cardiac rehabilitation. Recommendations of the German Federation for Cardiovascular Prevention and Rehabilitation. *European Journal of Cardiovascular Prevention & Rehabilitation*. 2004;11(4):352-361.
2. Deslauriers S, Raymond M-H, Laliberté M, et al. Access to publicly funded outpatient physiotherapy services in Quebec: waiting lists and management strategies. *Disability and rehabilitation*. 2017;39(26):2648-2656.
3. Cacciari LP, Kouakou CRC, Poder TG, et al. Group-based pelvic floor muscle training is a more cost-effective approach to treat urinary incontinence in older women: economic analysis of a randomised trial. *Journal of Physiotherapy*. 2022.
4. Emslie C, Whyte F, Campbell A, et al. 'I wouldn't have been interested in just sitting round a table talking about cancer'; exploring the experiences of women with breast cancer in a group exercise trial. *Health Education Research*. 2007;22(6):827-838.
5. Farrance C, Tsofliou F, Clark C. Adherence to community based group exercise interventions for older people: A mixed-methods systematic review. *Preventive Medicine*. 2016;87:155-166.
6. Arksey H, O'Malley L. Scoping studies: towards a methodological framework. *International journal of social research methodology*. 2005;8(1):19-32.
7. Tricco AC, Lillie E, Zarin W, et al. PRISMA Extension for Scoping Reviews (PRISMA-ScR): Checklist and ExplanationThe PRISMA-ScR Statement. *Annals of Internal Medicine*. 2018;169(7):467-473.

8. Reilly KL, Kennedy S, Porter G, Estabrooks P. Comparing, Contrasting, and Integrating Dissemination and Implementation Outcomes Included in the RE-AIM and Implementation Outcomes Frameworks. *Frontiers in Public Health*. 2020;8.
9. Taylor NF, Dodd KJ, Shields N, Bruder A. Therapeutic exercise in physiotherapy practice is beneficial: a summary of systematic reviews 2002–2005. *Australian Journal of Physiotherapy*. 2007;53(1):7-16.
10. Hay-Smith EJ, Englas K, Dumoulin C, Ferreira CH, Frawley H, Weatherall M. The Consensus on Exercise Reporting Template (CERT) in a systematic review of exercise-based rehabilitation effectiveness: completeness of reporting, rater agreement, and utility. *European journal of physical and rehabilitation medicine*. 2019;55(3):342-352.
11. Hong QN, Fàbregues S, Bartlett G, et al. The Mixed Methods Appraisal Tool (MMAT) version 2018 for information professionals and researchers. *Education for Information*. 2018(Preprint):1-7.
12. Abo S, Ritchie D, Denehy L, Panek-Hudson Y, Irving L, Granger CL. A hospital and home-based exercise program to address functional decline in people following allogeneic stem cell transplantation. *Supportive Care in Cancer*. 2018;26(6):1727-1736.
13. Allen KD, Sheets B, Bongiorno D, et al. Implementation of a group physical therapy program for Veterans with knee osteoarthritis. *BMC Musculoskeletal Disorders*. 2020;21(1) (no pagination).
14. Barton CJ, Kemp JL, Roos EM, 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):100175.

15. Crevenna R, Schneider B, Mittermaier C, et al. Implementation of the Vienna Hydrotherapy Group for Laryngectomees - A pilot study. *Supportive Care in Cancer*. 2003;11(11):735-738.
16. Crevenna R, Zoch C, Keilani M, Quittan M, Fialka-Moser V. Implementation of a Physical Rehabilitation Group for Post-Prostatectomy Urinary Incontinence Patients and its Effects on Quality of Life. *Physikalische Medizin Rehabilitationsmedizin Kurortmedizin*. 2003;13(6):339-344.
17. Gibbs JC, McArthur C, Milligan J, et al. Measuring the Implementation of Lifestyle-Integrated Functional Exercise in Primary Care for Older Adults: Results of a Feasibility Study. *Canadian journal on aging = La revue canadienne du vieillissement*. 2019;38(3):350-366.
18. Hilberdink B, van der Giesen F, Vliet Vlieland T, van Gaalen F, van Weely S. Supervised Group Exercise in Axial Spondyloarthritis: Patients' Satisfaction and Perspective on Evidence-Based Enhancements. *Arthritis Care and Research*. 2020;72(6):829-837.
19. Howard Z, Ross L, Weir KA, et al. A group program for overweight and obese women with urinary incontinence (ATHENA): an implementation-effectiveness hybrid type 3 study. *International Urogynecology Journal*. 2022;33(4):991-1000.
20. Jansen C-P, Nerz C, Labudek S, et al. Lifestyle-integrated functional exercise to prevent falls and promote physical activity: Results from the LiFE-is-LiFE randomized non-inferiority trial. *International Journal of Behavioral Nutrition and Physical Activity*. 2021;18(1):1-12.

21. Joseph C, Leavy B, Franzen E. Predictors of improved balance performance in persons with Parkinson's disease following a training intervention: analysis of data from an effectiveness-implementation trial. *Clinical rehabilitation*. 2020;34(6):837-844.
22. McLean K, Day L, Dalton A. Economic evaluation of a group-based exercise program for falls prevention among the older community-dwelling population. *BMC Geriatrics*. 2015;15:33.
23. Nilsson BB, Lunde P, Holm I. Implementation and evaluation of the Norwegian Ullevaal model as a cardiac rehabilitation model in primary care. *Disability & Rehabilitation*. 2019;41(4):481-488.
24. Salem Y, Scott AH, Karpatkin H, et al. Community-based group aquatic programme for individuals with multiple sclerosis: a pilot study. *Disability and rehabilitation*. 2011;33(9):720-728.
25. Skinner EH, Dinh T, Hewitt M, Piper R, Thwaites C. An Ai Chi-based aquatic group improves balance and reduces falls in community-dwelling adults: A pilot observational cohort study. *Physiotherapy theory and practice*. 2016;32(8):581-590.
26. Abo S, Parry SM, Ritchie D, et al. Exercise in allogeneic bone marrow transplantation: a qualitative representation of the patient perspective. *Supportive Care in Cancer*. 2022;30(6):5389-5399.
27. Bakland M, Rosenvinge JH, Wynn R, et al. Patients' views on a new treatment for Bulimia nervosa and binge eating disorder combining physical exercise and dietary therapy (the PED-t). A qualitative study. *Eating disorders*. 2019;27(6):503-520.
28. Campelo AM, Katz L. Older Adults' Perceptions of the Usefulness of Technologies for Engaging in Physical Activity: Using Focus Groups to Explore Physical Literacy.

International Journal of Environmental Research & Public Health [Electronic Resource]. 2020;17(4):11.

29. Ezzat AM, Bell E, Kemp JL, et al. “Much better than I thought it was going to be”: Telehealth delivered group-based education and exercise was perceived as acceptable among people with knee osteoarthritis. *Osteoarthritis and Cartilage Open*. 2022;4(3):100271.
30. Gallagher R, Kirkness A, Armari E, Davidson PM. Participants' perspectives of a multi-component, group-based weight loss programme supplement for cardiac rehabilitation: A qualitative study. *International Journal of Nursing Practice*. 2012;18(1):28-35.
31. Pate JW, Tran E, Radhakrishnan S, Leaver AM. The Importance of Perceived Relevance: A Qualitative Evaluation of Patient's Perceptions of Value and Impact Following a Low-Intensity Group-Based Pain Management Program. *Medicina*. 2021;57(1):07.
32. Poget F, Blackburn T, Descoux F, Fiddler H. Patients experiences of participating in an exercise group after anterior cruciate ligament reconstruction (ACLR). *Manual Therapy*. 2016;25:e141-e142.
33. Reicherzer L, Kramer-Gmeiner F, Labudek S, et al. Group or individual lifestyle-integrated functional exercise (LiFE)? A qualitative analysis of acceptability. *BMC geriatrics*. 2021;21(1):1-12.
34. Brach JS, Francois SJ, VanSwearingen JM, Gilmore S, Perera S, Studenski SA. Translation of a Motor Learning Walking Rehabilitation Program Into a Group-Based Exercise Program for Community-Dwelling Older Adults. *PM and R*. 2016;8(6):520-528.
35. Davis AM, Kennedy D, Wong R, et al. Cross-cultural adaptation and implementation of Good Life with osteoarthritis in Denmark (GLA:D TM): group education and exercise for

hip and knee osteoarthritis is feasible in Canada. *Osteoarthritis & Cartilage*. 2018;26(2):211-219.

36. Frazer SWT, van der Veen R, Baan A, Hermans MEW, Olij BF. Evaluation of Implementing TOM: A Group-Based Fall Prevention Programme among Community-Dwelling Older Adults in The Netherlands. *International Journal of Environmental Research & Public Health [Electronic Resource]*. 2021;18(12):11.
37. Hawley-Hague H, Roden A, Abbott J. The evaluation of a strength and balance exercise program for falls prevention in community primary care. *Physiotherapy theory and practice*. 2017;33(8):611-621.
38. Koh JSG, Hill AM, Hill KD, et al. Evaluating a Novel Multifactorial Falls Prevention Activity Programme for Community-Dwelling Older People After Stroke: A Mixed-Method Feasibility Study. *Clinical Interventions In Aging*. 2020;15:1099-1112.
39. Veenhuizen Y, Satink T, Graff MJL, et al. Mixed methods evaluation of a self-management group programme for patients with neuromuscular disease and chronic fatigue. *BMJ Open*. 2021;11(8) (no pagination).
40. White JH, Bynon BL, Marquez J, Sweetapple A, Pollack M. 'Masterstroke: a pilot group stroke prevention program for community dwelling stroke survivors'. *Disability and rehabilitation*. 2013;35(11):931-938.
41. Raney MW, T. H. Thormodsen, I. Arving, C. Determinants of exercise adherence and maintenance for cancer survivors: Implementation of a community-based group exercise program. A qualitative feasibility study. *PEC Innovation*. 2022;1:100088.

42. Teranishi-Hashimoto CB, E. O. Conde, F. Lee, E. Yamada, P. M. Group-based Exercise Therapy Improves Psychosocial Health and Physical Fitness in Breast Cancer Patients in Hawai'i. *Hawai'i journal of health & social welfare*. 2021;80(11):263-269.
43. McPhate L, Simek EM, Haines TP. Program-related factors are associated with adherence to group exercise interventions for the prevention of falls: a systematic review. *Journal of Physiotherapy*. 2013;59(2):81-92.
44. Kim H, Yoshida H, Suzuki T. The effects of multidimensional exercise treatment on community-dwelling elderly Japanese women with stress, urge, and mixed urinary incontinence: a randomized controlled trial. *International journal of nursing studies*. 2011;48(10):1165-1172.
45. Caffery LA, Muurlink OT, Taylor-Robinson AW. Survival of rural telehealth services post-pandemic in Australia: A call to retain the gains in the 'new normal'. *Australian Journal of Rural Health*. 2022;30(4):544-549.
46. Grona SL, Bath B, Busch A, Rotter T, Trask C, Harrison E. Use of videoconferencing for physical therapy in people with musculoskeletal conditions: a systematic review. *Journal of telemedicine and telecare*. 2018;24(5):341-355.
47. Eldridge SM, Lancaster GA, Campbell MJ, et al. Defining Feasibility and Pilot Studies in Preparation for Randomised Controlled Trials: Development of a Conceptual Framework. *PLOS ONE*. 2016;11(3):e0150205.
48. Ayala GX, Elder JP. Qualitative methods to ensure acceptability of behavioral and social interventions to the target population. *Journal of public health dentistry*. 2011;71:S69-S79.

49. Sekhon M, Cartwright M, Francis J. Acceptability of healthcare interventions: an overview of reviews and development of a theoretical framework. *BMC health services research*. 2017;17(1):1-13.
50. Carroll C, Patterson M, Wood S, Booth A, Rick J, Balain S. A conceptual framework for implementation fidelity. *Implementation Science*. 2007;2(1):40.

ACCEPTED

Tables and figures legend

Supplemental Checklist: Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) Checklist

Legend: From: Tricco AC, Lillie E, Zarin W, O'Brien KK, Colquhoun H, Levac D, et al.

PRISMA Extension for Scoping Reviews (PRISMA ScR): Checklist and Explanation. *Ann Intern Med.* 2018;169:467–473. doi: 10.7326/M18-0850..

Appendix 1: Complete list of eligibility criteria and their associated exclusion codes

Legend: none.

Appendix 2: MEDLINE and EMBASE database search history

Legend: none.

Appendix 3: Standardized data extraction form

Legend: none.

Supplemental Table 1: Characteristics of the included studies

Legend: Y/N = 'Yes' or 'No'; N/R = Not reported.

Supplemental Table 2: Intervention description and Consensus on Exercise Reporting Template (CERT) elements from the included studies

Legend: N/R = Not reported.

Supplemental Table 3: Reported outcomes from the included studies categorized by the Implementation Outcomes Frameworks (IOF) and the Reach, Effectiveness, Adoption, Implementation, Maintenance (RE-AIM) indicators typology

Legend: Effectiveness was only considered as an implementation outcome if the authors explicitly reported it as effectiveness in a real-life clinical context, as a pragmatic effectiveness evaluation, or if the evaluated intervention was offered in the studied clinical settings and not only as part of a research project.

Supplemental Table 4: Findings on the main two most reported outcomes of feasibility (n=26) and acceptability (n=13) from the included studies

Legend: none.

Supplemental Table 5: Evaluation of the risk of bias using the Mixed Methods Appraisal Tool (MMAT)

Legend: ✓ = the paper adequately responds to the methodological quality criterion; X = the paper does not adequately respond to the methodological quality criterion; Can't tell = the paper does not report appropriate information to answer 'Yes' or 'No' or reports unclear information related to the methodological quality criterion.

Figure 1. Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) flow diagram of study selection

Legend: none.

Figure 1

