



Canadian Association
for Long Term Care



RECREATION THERAPY TO PROMOTE MOBILITY AMONG OLDER ADULTS IN LONG-TERM CARE

Overview of Scientific Evidence and Current Practice

May 2018

RECREATION THERAPY TO PROMOTE MOBILITY AMONG OLDER ADULTS IN LONG-TERM CARE: OVERVIEW OF SCIENTIFIC EVIDENCE AND CURRENT PRACTICE

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FOREWORD

Recent research studies suggest that recreation therapy has an essential role in enhancing the mobility of older adults in long-term care. However, despite the high quality and professionalism of recreation therapy practitioners in British Columbia (BC), only 24.1% of long-term care residents receive regular recreation therapy.¹ A common concern that poses a barrier to the design and uptake of recreation therapy programs is the lack of clarity about the range of programs currently offered and the effectiveness of these programs for older adults of different physical and cognitive status. Throughout the development of this report we have remained cognisant to the purpose of recreation therapy as:

“to enable all individuals to achieve quality of life and optimal health through meaningful experiences in recreation and leisure.”

Although therapeutic recreation covers several domains, for the purpose of this document we focus on programs to **improve or maintain the mobility** of older adults residing in long-term care.

This summary report was developed in collaboration with Simon Fraser University, the University of British Columbia, and BC Therapeutic Recreation Association, to provide clarity on the effectiveness and suitability of recreation therapy for the diverse long-term care population. The report aims to support long-term care providers in selecting suitable recreation therapy programs for mobility for their residents. It has five sections:

1. **Background** on recreation therapy and mobility impairments in long-term care.
2. **Literature review** of the scientific evidence on the effectiveness of recreation therapy programs to improve or maintain mobility in long-term care residents.
3. **Results of a survey** of recreation therapy practitioners' opinions on the effectiveness and suitability of recreation therapy programs in long-term care.
4. **Interview responses** from recreation therapy practitioners on the barriers and facilitators of delivering the recreation therapy programs in long-term care.
5. **Considerations for implementation** of an effective and suitable recreation therapy program in the long-term care setting.

Ce document n'est pas disponible en français.

¹ MacKenzie. Making Progress. Placement, Drugs and Therapy Update. Office of the Seniors Advocate, Government of British Columbia, November 2016.

1.0 EXECUTIVE SUMMARY

Recreation therapy is a practice that uses recreation and leisure-based interventions to improve functioning and independence, as well as to decrease or eliminate the effects of illness or disability. For older adults in long-term care, participating in recreation therapy programs leads to improvements in their social, mental and physical health. However, the lack of clarity of the range of programs and their ability to achieve therapeutic goals is a barrier to their design and uptake. Therefore, we set out to review existing evidence on the nature of recreation therapy programs in long-term care and survey the current practice of these programs to enhance mobility outcomes (e.g., physical activity, performance of daily activities, falls) for different populations in long-term care.

In the first part of this report, we provide evidence on the effectiveness of recreation therapy programs on mobility. Through a comprehensive review of scientific literature, we identified 64 journal articles assessing the effectiveness of different recreation therapy programs. Tai Chi, walking programs, and ball games were identified as most promising to improve all aspects of mobility. Dancing, exergaming, and yoga were also commonly reported to improve mobility. However, the strength of the evidence in most studies was moderate to weak, which needs to be addressed by future controlled intervention studies. We complemented the systematic review with an electronic survey (e-survey) among 437 recreation therapy practitioners in BC, Alberta, and Ontario, where we probed their experience and beliefs of the effectiveness of the identified recreation therapy programs. Respondents considered structured group exercise programs most effective to improve mobility among most residents, followed by ball games and dancing. Group exercise programs and yoga were ranked high to improve the performance of daily activities and prevent falls. When asked about the suitability of these programs for specific groups of residents based on gender as well as cognitive and physical abilities, most programs were considered well suited, except for residents with severe physical or cognitive impairments.

Our literature review and e-survey summarize the range of programs currently offered in long-term care and their effects on mobility. However, the evidence from the review and e-survey on the effectiveness of recreation therapy on mobility is insufficient. In light of this, one of our key observations is that formal evaluation of the effectiveness of recreation therapy programs on mobility is required to advance this field. We advocate a comprehensive set of outcome measures to help standardize evaluations of the effectiveness of programs in long-term care populations.

Since the effectiveness of an intervention is always limited by the fidelity of its implementation, we dedicate the second half of this report to aspects of implementation. The recommendations and considerations provided throughout this section should aid long-term care providers and their Recreation Therapists to implement the selected programs in an optimal manner. We conducted in-depth interviews on the barriers and facilitators of the delivery of therapeutic recreation programs in long-term care. These interviews further highlight the complexity of providing and evaluating the effect of recreation therapy on mobility among the diverse population of older adults in long-term care. In addition, we provide an overview of the current best practice for implementation science. We also highlight important findings for the effective implementation of recreation therapy programs.

FINDINGS AND RECOMMENDATIONS

1. Scientific evidence suggests that Tai Chi, walking programs and ball games are effective for maintaining or improving mobility. Scientific evidence also indicates that dancing, exergaming and yoga are effective for some aspects of mobility, though evidence should be interpreted with caution due to inconsistent study designs and small sample sizes.

2. Future studies should develop a standardized definition of recreation therapy. Clarification should also be given to the types of physical exercise interventions delivered, so as to distinguish them from conventional physical or occupational therapy programs.
3. Consistency in measurement tools for evaluation of the intervention is required to compare their effectiveness across studies.
4. Group exercise programs such as “general group exercise”, “Sit and be fit”, “Modified Osteofit”, “Fun and fitness”, and yoga were frequently identified by recreation therapy practitioners to improve the performance of daily activities and prevent falls.
5. Therapeutic recreation programs need to be aligned to the sense of purpose of older adults to support engagement. Some gender differences in engagement may exist as older men may prefer smaller groups or individual programs.
6. Therapeutic recreation programs that aim to restore or maintain mobility are less suitable for older adults with severely cognitive or physical impairments.
7. Recognizing the quality of implementation may be more important than the selection of a specific recreation therapy program.
8. Delivery of therapeutic recreation programs can be improved by tailoring the programs to residents’ interest, cognitive status, and motivation.
9. Implementation strategies should include the choice of evidence-based programs, modification of the program, recreation therapy practitioner training, and identification of participants.
10. To evaluate the effects of the program, validated and feasible measures must be chosen to match the capacity of participants.

2.0 BACKGROUND

The American Therapeutic Recreation Association describes therapeutic recreation as the “*provision of treatment and recreation services to persons with illnesses or disabling conditions.*” The purpose of treatment is to restore, remediate, or rehabilitate in order to improve functional abilities, independence and quality of life using purposeful recreation and leisure activities. Recreation therapy spans the cognitive, emotional, physical, social, spiritual and vocational domains (Figure 1). Recreation therapy programs often include exercise, memory and language stimulation, and social interaction. Recreation Therapists are usually university-trained professionals who are certified to provide therapeutic recreation programs designed to improve the physical function, cognitive status, and quality of life for clients with acute or chronic disease or disability.

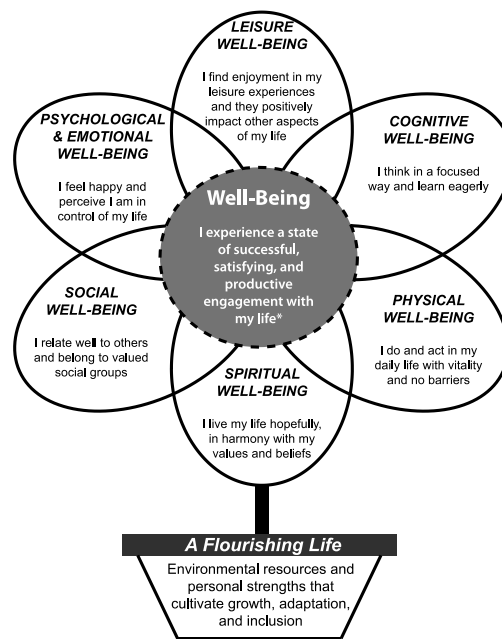


FIGURE 1: DOMAINS OF WELL-BEING (FROM ANDERSON & HEYNE, 2012²)

Participation in recreation therapy programs can help improve or maintain the social, cognitive, and physical status of older adults in long-term care. Recreation therapy programs expand residents' engagement in meaningful activities and reduce periods when residents are inactive³. Among individuals with early-stage dementia, recreation therapy programs improved cognition and physical abilities, reduced depression, heightened self-esteem, and enhanced communication ability⁴. Recreation therapy programs often incorporate exercises that promote safe mobility, contributing to a reduction in the frequency and cost to the health system of falls and fall-related injuries⁵. Over 50% of residents in long-term care fall each year, and about 20% of falls lead to injury. Over 90% of hip fractures and 60% of head injuries in older adults are caused by falls⁶.

² Anderson & Heyne. Flourishing through Leisure: An Ecological Extension to the Leisure and Well-Being Model in therapeutic recreation strengths-based practice. *Therapeutic Recreation Journal*, 2012, 46(2), 129-152.

³ Kolanowski et al. Factors that relate to activity engagement in nursing home residents. *Am J Alzheimers Dis Other Dement*, 2006, 21(1): 15-22.

⁴ Burgener et al. Review of exemplar programs for adults with early-stage Alzheimer's disease. *Res Gerontol Nurs*, 2008, 1(4): 295-304.

⁵ Buettner. Focus on caregiving. Falls prevention in dementia populations. *Provider*, 2002, 28(2): 41-3.

⁶ Cameron et al. Interventions for preventing falls in older people in care facilities and hospitals. *Cochrane Database Syst Rev*: CD005465, 2013.

Kolanowski⁷ randomly assigned 128 cognitively impaired residents to activities that were adjusted either to functional status or to personality/interests. Programs adjusted to personality resulted in improved engagement, alertness, and attention. In the 2013 Cochrane meta-analysis review⁸ on “Physical rehabilitation for older people in long-term care”, 21 interventions featured recreation or leisure activities (kicking or throwing and catching balls, balloons or bean bags), rhythmic movement to music or dancing, Tai Chi, arts and crafts activities, meal preparation activities, and indoor gardening. Nine of the interventions included exercise or practice in activities of daily living (ADLs; washing, dressing, eating, or grooming). Meta-analyses were conducted on 24 studies with 3,139 total participants and revealed significant improvements in activity of daily living (ADL) performance and mobility. These authors concluded that “*physical rehabilitation for long-term care residents may be effective, in reducing disability with few adverse events, but effects ... may not be applicable to all residents. There is insufficient evidence to reach conclusions about ... which interventions are most appropriate.*”

The Cochrane review conclusions also stress the challenge of identifying “*which interventions are most appropriate*” for a given client. Programs must meet the increasingly complex health status of residents in long-term care, including the high prevalence of dementia⁹. This creates the need for an increasingly personalized approach to the design and selection of recreation therapy programs in this setting.

Observations also suggest that, despite the benefits, recreation therapy workers face significant challenges in engaging and maintaining the involvement of older adults in long-term care. A 2016 report from the Office of the Seniors Advocate in BC¹⁰ indicated that only 24% of long-term care residents in BC received weekly recreation therapy, compared to 33% in Alberta and 6% in Ontario. 12% of clients in BC and 25% in Alberta received weekly physiotherapy, compared to 58% in Ontario. Provincial differences in participation may relate to differences in care administrators’ understanding of the role of recreation therapy as an effective complement to physical and occupational therapy. Lack of clarity and inconsistency at a local, provincial and national level lead to this overview of scientific evidence and current practice to better understand how recreation therapy can enhance mobility outcomes among older adults in long-term care. Recommendations based on scientific evidence and current practice are required to enhance worker productivity by highlighting the programs that recreation therapy workers could utilize depending on their client characteristics.

2.1 OBJECTIVES

The overall purpose of this report is to provide guidance on the most effective and feasible recreation therapy programs for enhancing mobility outcomes for older adults in long-term care.

Specifically, this report has two objectives:

- 1) Survey existing evidence on the nature and effectiveness of recreation therapy programs for enhancing mobility outcomes (e.g., physical activity, performance of daily activities, falls) for older adults in long-term care.
- 2) Provide insight and key highlights regarding the current recreation therapy practice of mobility enhancement among long-term care residents.

⁷ Kolanowski et al. A randomized clinical trial of theory-based activities for the behavioral symptoms of dementia in nursing home residents. *J Am Geriatr Soc*, 2011, 59(6): 1032-41.

⁸ Crocker et al. Physical rehabilitation for older people in long-term care. *Cochrane Database Syst Rev*: CD004294, 2013.

⁹ Robinovitch et al. Video capture of the circumstances of falls in elderly people residing in long-term care: an observational study. *Lancet*, 2013, 381(9860): 47-54.

¹⁰ MacKenzie. Making Progress. Placement, Drugs and Therapy Update. Office of the Seniors Advocate, Government of British Columbia, November, 2016.

2.2 KEYWORDS AND DEFINITIONS

Mobility is defined as the ability to move in one's environment with ease and without restriction (Medical Dictionary). In older adults, decline in mobility often leads to low physical activity, poor performance of daily activities, and risk for falls.

- **Physical activity** refers to any bodily movement produced by skeletal muscles that requires energy expenditure (World Health Organization). In long-term care, this can be assessed through observations, questionnaires or activity monitors.
- **Performance of daily activities** refers to how well someone performs the activities of daily living. This can be assessed using physical performance tests such as the Timed Up and Go (TUG) test, Berg Balance Scale or assessment of walking speed.
- **Falls** are defined as an unexpected event during which the person comes to rest on the floor or other lower level, with or without an injury¹¹. Assessment often uses the number of fall incidents within a certain period, such as one year.

Long-term care refers to a residential care home that provides 24-hour professional supervision and care in a protective, supportive environment for people who have complex care needs and can no longer be cared for in their own homes or in an assisted living residence¹².

2.3 COMPREHENSIVE APPROACH

We reviewed the scientific literature to identify the nature and effectiveness of recreation therapy programs for enhancing mobility outcomes of older adults in long-term care (Figure 2).

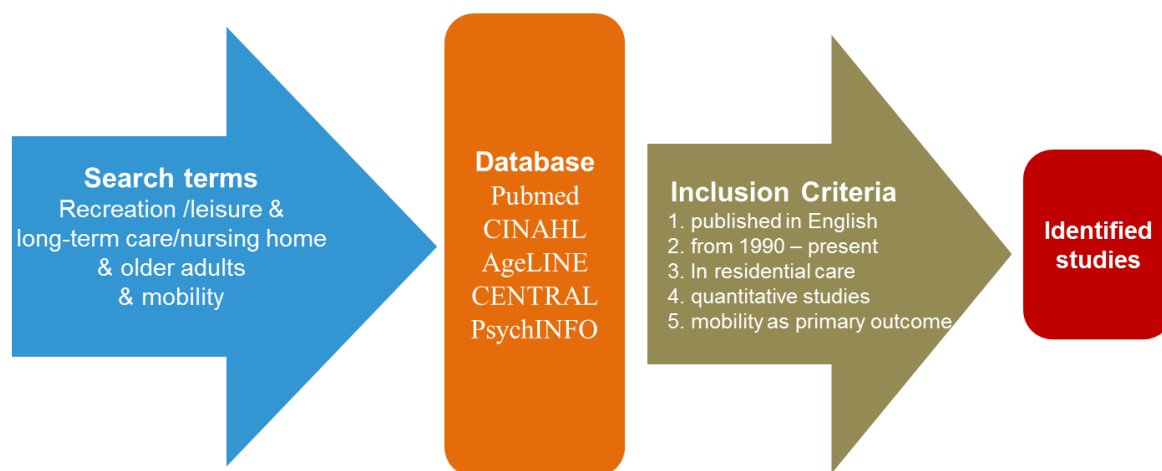


FIGURE 2. SEARCH STRATEGY OF LITERATURE REVIEW AND “APPENDIX B: SEARCH STRATEGY AND SELECTION LITERATURE REVIEW” CONTAIN THE EXACT SEARCH QUERIES OF THE REVIEW PROCESS.

The following inclusion criteria were used to select articles: (1) published in English; (2) within the range of publication date from 1990 to the present; (3) conducted in residential care home such as long-term care or assisted living; (4) quantitative studies that consisted of randomized controlled trials (RCT), quasi-experimental trials, and pre-test post-test designs; (5) programs that met the definition of

¹¹ Lamb et al. Development of a common outcome data set for fall injury prevention trials: The prevention of falls network Europe consensus. J Am Geriatr Soc, 2005, 53(9): 1618-1622.

¹² Government of BC. <http://www2.gov.bc.ca/gov/content/health/accessing-health-care/home-community-care/care-options-and-cost/long-term-residential-care>.

recreation therapy, which included any enjoyable leisure activities delivered by a Recreation Therapist or related care staff; and (6) with primary outcome measures that were related to physical performance and mobility.

Based on the inclusion criteria, our initial search resulted in a total of 963 articles. Of those, 82 were identified for full-text evaluation. 64 articles met the inclusion criteria and were subsequently included in this review. **Figure 3** outlines the search process, as well as the most common reasons for article exclusion.

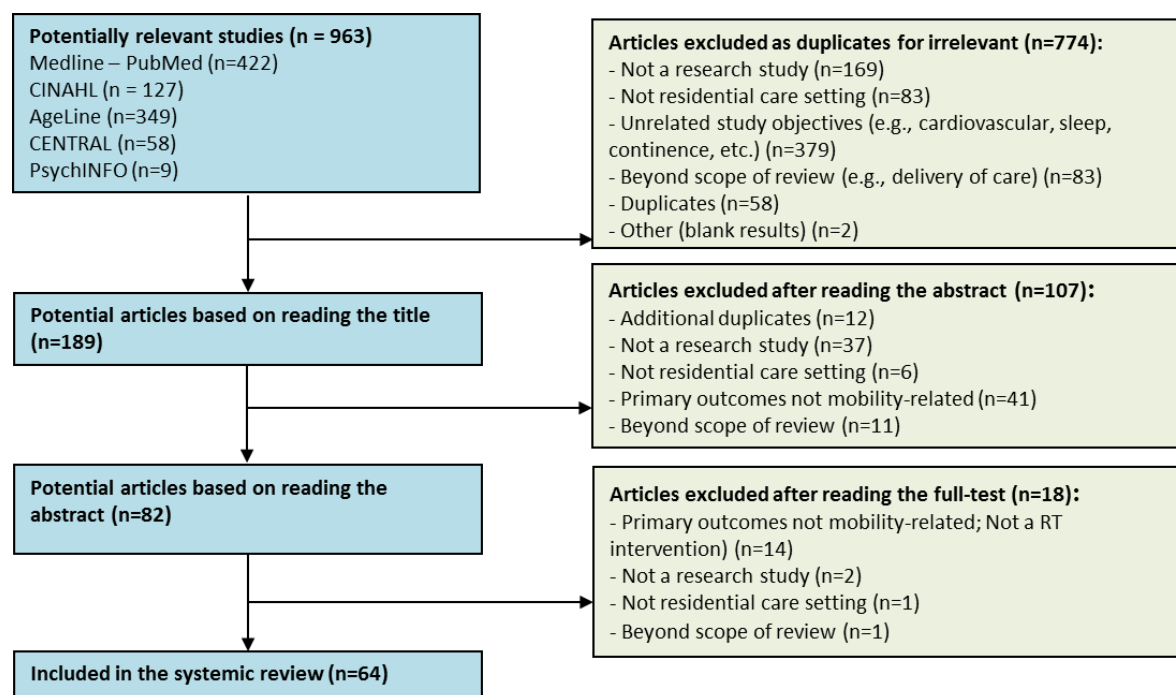


FIGURE 3: FLOW CHART OF THE SCIENTIFIC ARTICLE SELECTION

The literature review was complemented by an e-survey among 437 recreation therapy practitioners in BC, Alberta and Ontario. The survey was developed in collaboration with the BC Care Providers Association (BCCPA) and BC Therapeutic Recreation Association (BCTRA), and can be found in Appendix C: Online survey. The survey was designed to capture the background training and years of experience of the respondents, and probe their opinions on the recreation therapy programs (currently employed and best practice) that they perceive as “most successful” for improving the mobility (maintaining or slowing the rate of decline) of older adults in long-term care. Respondents were asked to rank seven recreation therapy programs that were identified from scientific literature based on their belief in the effectiveness of these programs to improve mobility among the general population of long-term care residents. For each of their three highest ranked programs, respondents were asked to describe their experience, the target population (gender and different levels of cognitive and physical function), required resources, and perceived benefits. The survey was conducted between August 2016 and November 2016, and distributed electronically through the networks of the BCCPA, BCTRA, Alberta Therapeutic Recreation Association (ATRA), and Therapeutic Recreation Ontario (TRO). After the e-survey, we further conducted in-depth interviews with Recreation Therapists to understand barriers and facilitators of delivering recreation therapy programs in long-term care.

3.0 SCIENTIFIC EVIDENCE ON THE EFFECTIVENESS OF RECREATION THERAPY PROGRAMS

Through a comprehensive search of scientific literature, we identified 64 journal articles that assessed the effectiveness of different recreation therapy programs. Tai Chi, walking programs, and ball games were among the most common recreation therapy programs that were shown to improve mobility (maintain or slow the rate of decline) of older adults in residential care. Dancing, exergaming, and yoga were also commonly reported to enhance some aspects of mobility. However, strength of the evidence was insufficient due to inconsistent study design and sample size. Below, we summarize the key findings from our literature review.

3.1 CHARACTERISTICS OF THE STUDIES AND PARTICIPANTS

Among 64 articles included in the review, twenty studies were conducted in the United States, five in Taiwan, four in New Zealand, three in each of Japan, Portugal, and Sweden, and two in each of Australia, Brazil, Canada, France, Hong Kong, Netherlands, Scotland, South Korea, and Spain. Others were conducted in Austria, Germany, Hungary, Switzerland, Turkey, the United Kingdom, and a combination of the Scandinavian nations (Figure 4). 56 studies were conducted in long-term residential care and eight studies were conducted in assisted living. Although not always reported in the studies, the number of beds offered by the care homes ranged from 28 to 550.

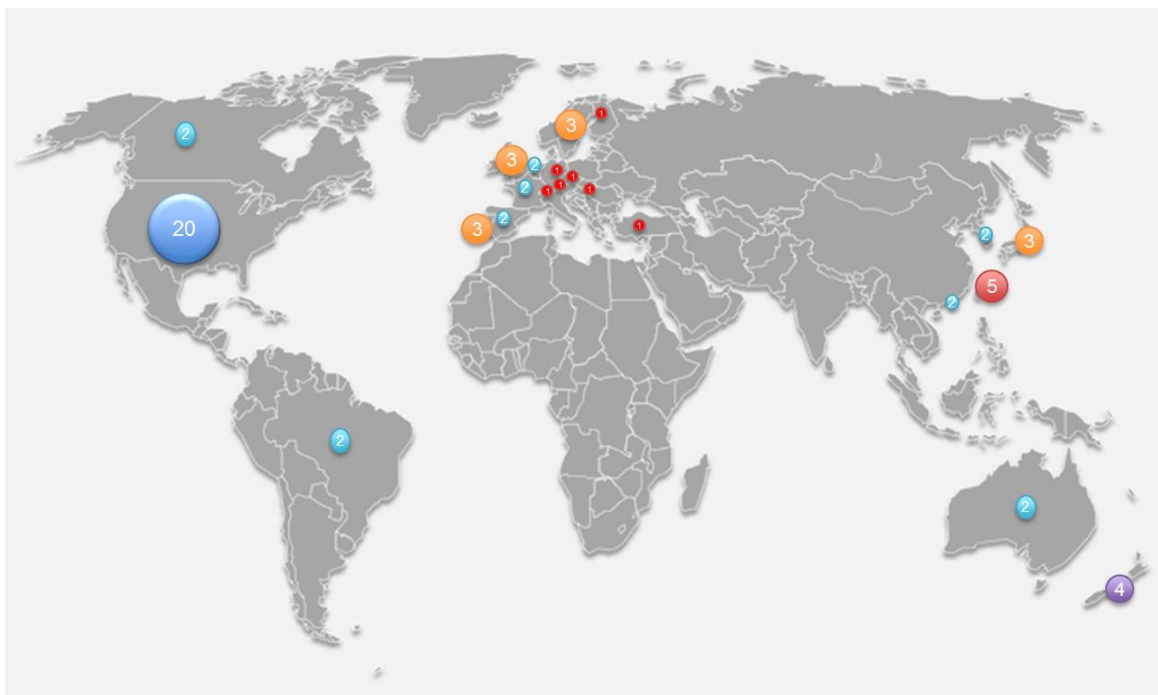


FIGURE 4: LOCATIONS OF THE STUDIES BEING CONDUCTED

In terms of research design, 38 studies were randomized controlled trials (RCTs), among which 17 included a blinding design. There were 14 other studies that included cross-over, quasi-experimental, longitudinal cohort, and time-series designs. The remaining 12 studies consisted of pre- and post-test design, often with a single group. For studies that included a control group, participants were typically instructed to follow their usual daily activities or advised to join a social or leisure activity such as arts, crafts, musical instruments, board games and singing, or to do some light physical activity and/or stretching.

Regarding the characteristics of participating long-term care residents, the reported mean age in the studies ranged from 67 to 93 years old. The proportion of sex among the studies was inconsistent. In most studies, approximately two-thirds of the participants were women. Four studies included only women, while two studies included only men. 67% (43 out of 64) of the studies only included residents who were able to understand and follow instructions, or had a Mini-Mental State Examination score higher than 25. In most studies, participants were required to have a life expectancy of longer than 6 months, be able to perform daily activities (e.g., stand, transfer, and walk) independently with or without a mobility aid, no uncorrected vision problems, stable on current medications, no neurological or cardiovascular disease, and no severe musculoskeletal impairment. However, two studies were fully inclusive of participants regardless of their cognitive status^{13,14} and six studies included participants with mild to severe dementia. The number of participants in each study ranged from 6 to 682. Although all studies performed post-intervention assessments, only eleven studies had a follow up longer than the intervention period.

3.2 COMMON RECREATION PROGRAMS

Among the 64 studies, the intervention periods lasted between 3.5 weeks to 2 years in length. 44 studies had interventions that were offered 2-3 sessions each week, eight studies with 4-5 sessions per week, and four studies with interventions performed on a daily basis. In terms of the duration, interventions generally lasted between 10 minutes to 90 minutes per session. 34 studies had sessions that lasted between 30-60 minutes, while 19 studies failed to mention the intervention duration. Below, we summarize common recreational therapy programs from the review.

Walking Programs. 19 studies included a supervised, moderate to high-intensity walking program. The sessions took place in outdoor walkways and in the common areas of the facility (e.g., dining room, patio, corridors). Participants were encouraged to walk at a safe and brisk pace for as long as possible before they needed a rest. A few studies included a goal-setting approach, in which the pace, distance, and duration of each walking session increased gradually over the course of the intervention. Such parameters were recorded on a weekly basis with a pedometer, and information was then used to set new goals weekly¹⁵.

Tai-Chi. Eight studies included Tai-Chi exercise programs, many of which have been adapted to the physically frail older adult such as the Simplified Tai-Chi Exercise Program (STEP), modified Yang-style Tai-Chi routine, Sun Style Tai-Chi, and other unspecified adapted Tai-Chi routines. Each Tai-Chi program incorporated a series of slow, weight-shifting movements that involved rotations of the head and trunk, knee bends, and specific hand gestures. Traditional music was played in the background to provide a sense of ambience, as well as to maintain the slow and continuous movements¹⁶.

Active Ball Games. Six studies included a series of seated mini-ball games in a group. These games involved the beach ball kick and toss, balloon volleyball, and a bean bag tossing game. One study did

¹³ Peri, et al. Does functionally based activity make a difference to health status and mobility? A randomised controlled trial in residential care facilities. *Age & Ageing*, 2008. 37(1): p. 57-63 7p.

¹⁴ Jensen, et al. Effects of a fall prevention program including exercise on mobility and falls in frail older people living in residential care facilities. *Aging Clin Exp Res*, 2004. 16(4): p. 283-92.

¹⁵ MacRae, et al. A walking program for nursing home residents: effects on walk endurance, physical activity, mobility, and quality of life. *Journal of the American Geriatrics Society*, 1996: p. 175-180 6p.

¹⁶ Choi, et al. Effects of Sun-style Tai Chi exercise on physical fitness and fall prevention in fall-prone older adults. *Journal of Advanced Nursing*, 2005, 51(2): p. 150-157 8p.

not specifically elaborate on the nature of the game, but the stated goal was to improve control of the small joints¹⁷.

Dancing. Seven studies included a dancing program or component for the intervention. Examples included ballroom (i.e., Foxtrot, Waltz, Rumba, Swing, Samba, and Bolero)¹⁸, circle or pair dance, folk dance, and other unspecified styles of dance.

Exergaming. Four studies offered technological-based exercise games to residents. Three used the Nintendo Wii console and related games such as Wii-fit Balance and Wii sports. One study used the CogniPlus computer program on residents, which trained their alertness and their selective and divided attention¹⁹.

Yoga. Two studies provided a group-based, yoga intervention. One was the modified Silver Yoga program, where residents held seven different postures for 4-5 seconds and repeated four times²⁰. The other was a chair-based program where participants learned a total of forty-six seated yoga poses, and each pose was held for 1-2 breaths²¹.

In most reviewed studies, the programs were delivered by physical therapists, external certified instructors, nurses, health care assistants and nursing aides. Only three studies mentioned the direct involvement of recreation therapy workers (i.e., therapeutic recreation leaders and programmers, program aides, and activity aides) in the delivery of the programs. Strength, balance, flexibility and cardiovascular exercises took up most of the session, in addition to the time spent on leisure activities.

3.3 EFFECTIVENESS ON OUTCOME MEASURES OF MOBILITY

Functional Assessments of Balance and Mobility. 53 studies provided at least one direct assessment on balance and functional mobility. 13 studies used the one-legged stance test, of which seven found an improvement of balance through interventions such as Tai-Chi, active ball games and yoga. 11 studies assessed performance using the Berg Balance Scale (BBS), of which eight found an improvement from interventions such as ball games, dancing and walking (Figure 5). Seven studies assessed a combination of parallel, tandem and semi-tandem stances, of which four found an improvement after the interventions such as ball games and a walking program.

With regard to functional mobility, the most common assessments include the Timed Up & Go (TUG), gait speed and the 6-minute walk test (6MWT). Of the seventeen studies that used the TUG, ten found an improvement from interventions such as walking, active ball games and dancing. 14 studies assessed gait speed, of which nine found an improvement after interventions such as walking and active ball games. Eight studies assessed the 6MWT, of which five found an improvement through interventions such as walking, dancing and active ball games.

Muscular Strength and Endurance. 15 studies assessed the grip strength test, of which nine found an improvement from interventions such as Tai-Chi, a walking program, active ball games and yoga. Nine studies assessed participants with the isometric knee extensor test, of which six studies found an

¹⁷ Ouyang, et al. Changes in activities of daily living, physical fitness, and depressive symptoms after six-month periodic well-rounded exercise programs for older adults living in nursing homes. Nagoya J Med Sci, 2009, 71(3-4): p. 115-26.

¹⁸ da Silva Borges, E.G., et al., Postural balance and falls in elderly nursing home residents enrolled in a ballroom dancing program. Arch Gerontol Geriatr, 2014. 59(2): p. 312-6.

¹⁹ de Bruin, E.D., E. van Het Reve, and K. Murer, A randomized controlled pilot study assessing the feasibility of combined motor-cognitive training and its effect on gait characteristics in the elderly. Clin Rehabil, 2013. 27(3): p. 215-25.

²⁰ Fan, J.T. and K.M. Chen, Using silver yoga exercises to promote physical and mental health of elders with dementia in long-term care facilities. Int Psychogeriatr, 2011. 23(8): p. 1222-30.

²¹ Litchke, et al., Benefits of Chair Yoga for Persons With Mild to Severe Alzheimer's Disease. Activities, Adaptation & Aging, 2012. 36(4): p. 317-328 12p.

improvement from interventions such as active ball games and Tai-Chi. Six studies assessed the isometric quadriceps strength test, of which four found an improvement through recreation interventions such as the Nintendo Wii-Fit and a walking program.

Flexibility. 15 studies assessed flexibility, considering mostly the hamstrings (often via the “Sit and Reach” test) and the shoulders. Of the eleven studies that assessed the Sit and Reach test, ten found an improvement through interventions such as Tai-Chi, active ball games, a walking program, dancing and yoga. Shoulder flexion range of motion was assessed in five studies, of which four found an improvement after interventions such as yoga, active ball games and Tai-chi. Shoulder abduction range of motion was assessed and improved in three studies. Other improvements included the toe touch and back scratch test, which were found in a walking program and a dancing program.

Observational Assessments. Four studies observed change in the ADL, with improvements were noted in two studies involving a Tai-Chi or a walking program. No changes were seen in either the Katz Index or Functional Independence Measure (FIM). Of the seven studies that used the Barthel Index, two found an improvement through a walking program. Five studies used the Tinetti Mobility Assessment Tool, of which only two found improvements in walking. In two other studies involving a walking program, improved mobility was found as measured by the Physiotherapy Clinical Outcomes Variables (COVS) and Performance Oriented Mobility Assessment (POMA). In studies using exergaming, improvements were found in the Nursing Home Physical Performance Test (NHPPT) and Rapid Assessment of Physical Activity Questionnaire (RAPA).

Falls. 15 studies assessed fall incidence, of which seven found a reduction, five found no changes and three were unclear. In three studies that involved a walking program, fewer falls were observed at the end of the intervention in one study, from 25% at the initiation to 5% at the end of the program. The other two studies failed to report any notable changes in fall incidence. For interventions that involved dancing, three studies reported a reduction in fall incidence. In two studies that implemented Tai-Chi interventions, changes in fall incidence were not statistically significant. Likewise, no changes of fall incidence were noted in a study that involved active ball games.

Finding

1. Scientific evidence suggests that Tai Chi, walking programs and ball games are effective for maintaining or improving mobility. Scientific evidence also indicates that dancing, exergaming and yoga are effective for some aspects of mobility, though evidence should be interpreted with caution due to inconsistent study designs and small sample sizes.

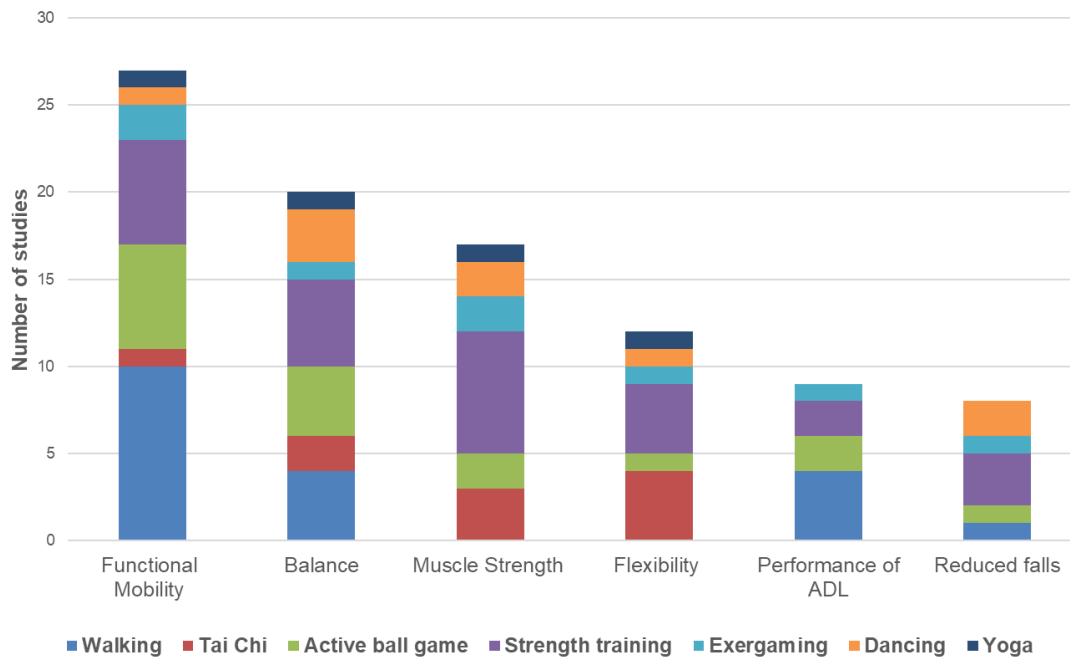


FIGURE 5: EFFECTS OF RECREATION THERAPY PROGRAMS ON THE MOBILITY OUTCOMES

3.4 EFFECTS ON OTHER OUTCOMES

Secondary measurements in the studies generally included quality of life, mood, depression, agitation and passivity. The measures of Quality of Life (QoL) included the Short Form-36 Health Survey, Life Satisfaction Index, Euro QoL, World Health Organization QOL – Brief Australian version, and a ‘benefits scale’. Only three studies found an improvement in QoLs, one of which used the Nintendo Wii for the intervention.

17 studies assessed level of depression. The common tool was the Geriatric Depression Scale (GDS). Two studies reported an improvement, of which one was a Tai-Chi intervention and the other was a yoga intervention. Fear of falling, measured by the Falls Efficacy Scale (FES) was captured in twelve studies, of which seven found improved outcomes after interventions such as walking, exergaming and Tai-Chi.

Changes in behaviour were rarely observed. The Clifton Assessment Procedures for the Elderly, Behaviour Rating Scale, and Neuropsychiatric Inventory (NPI) were used in three studies, of which two found an improvement at the end of the intervention. These two studies involved a Tai-Chi and yoga intervention. Self-esteem and enjoyment of physical activity were increased in an exergaming and dancing intervention, while agitation and passive behaviour improved in programs such as walking or active ball games.

3.5 LIMITATIONS OF THE STUDIES

There were important limitations regarding the methodology of the studies:

- None of the 64 studies provided a clear definition of recreation therapy. Instead, 12 articles explicitly stated that the activities of the intervention were ‘recreational’ in nature.
- Many studies were not sufficiently blinded. Single-group pre-test post-test study designs were often employed with convenience sampling. As a result, there may have been a risk of selection and performance bias. Those who took part in the interventions were self-motivated and had greater perceived health scores compared to their frail and less capable peers.

- The heterogeneous nature of the participants, inconsistent outcome measures and interventions did not allow for a meta-analysis to analyze the extent of the effects in a quantifiable manner. As a result, a narrative approach was taken to analyze the results in this review.
- Sample sizes were often small ($n < 30$ in 20 studies). As a result, many studies lacked the statistical power to draw conclusions on whether or not the interventions actually mediated a change in primary and secondary outcome measures.
- Finally, loss to follow-up was remarkably high. Approximately two-fifths of the studies reported an attrition rate of twenty percent or greater, with 20% considered as the threshold for issues in validity, as well as the high possibility of attrition bias²².

Findings

2. Future studies should develop a standardized definition of recreation therapy. Clarification should also be given to the types of physical exercise interventions delivered, so as to distinguish them from conventional physical or occupational therapy programs.
3. Consistency in measurement tools for evaluation of the intervention is required to compare their effectiveness across studies.

²² Dumville et al., Reporting attrition in randomised controlled trials. BMJ, 2006. 332(7547): p. 969-971.

4.0 PROFESSIONAL OPINION ON THE EFFECTIVENESS AND SUITABILITY OF RECREATION THERAPY PROGRAMS FOR MOBILITY

We complemented the scientific evidence with an electronic survey ([Appendix C: online survey](#)) among 437 recreation therapy practitioners in BC, Alberta and Ontario. The surveyed practitioners considered structured group exercises, such as “general group exercise”, “Sit and be fit”, “Modified Osteofit”, “Fun and fitness”, to be the most effective programs to improve mobility of older adults in long-term care. The survey results further highlight that the suitability of the program depends on a person’s interests rather than on their gender, ethnicity or age. Nevertheless, the programs that were considered in the survey, to maintain or improve mobility, were considered less suitable for residents with severe cognitive or physical impairments, indicating that this group is currently underserved.

4.1 CHARACTERISTICS OF THE RESPONDENTS

Of the 437 respondents, 92.2% identified as female, 7.5% as male and 0.3% as other. 65% of respondents worked full-time. Respondents worked in long-term care homes in BC, Alberta and Ontario (see [Figure 6](#)). Most respondents worked in urban areas, defined as an area with a population of at least 1,000 people where the density is no fewer than 400 persons per square kilometre. They had 10 to 20 years of work experience in the field of recreation therapy (25%). 51% of respondents indicated that they work as a Recreation Therapist, 40% worked as Recreation Therapy Manager. Respondents worked in a public-funded facility (health authority or other; 48%), not-for profit (21%), private (for profit) (30%) or other (1%).

Respondents stated that they were responsible for planning, leading and assisting in recreation therapy programs. 65% of respondents worked full time, and their most common job titles were Recreation Therapist (163 respondents) and Recreation Therapy Manager (128 respondents). 53% of respondents had a Therapeutic Recreation degree, were a Certified Therapeutic Recreation Specialist (CTRS) or equivalent 4-year program certification. 41% of respondents had a Recreation Therapy Diploma or equivalent 2-year program Certificate and 6% had a Recreation Therapy Certificate or (\leq 1-year program equivalent).

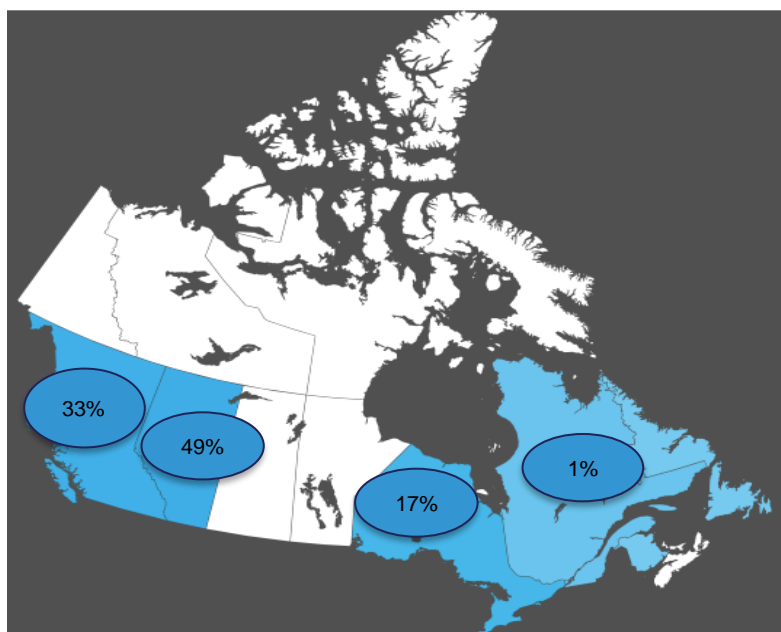


FIGURE 6: RESPONDENTS' LOCATIONS

4.2 EFFECTIVENESS OF THE PROGRAMS

We asked respondents to rank (using a likert 7-point scale from least to most perceived effectiveness) the programs identified in the literature review, based on their perception of the program's effectiveness to restore and maintain mobility among long-term care residents. Respondents considered structured group exercise programs most effective among residents, followed by cooperative ball games and dancing (Table 1). These group exercise programs consisted mostly of: "general group exercise", "Sit and be fit", "Modified Osteofit", and "Fun and fitness" (Figure 7). Only two respondents specified walking programs as a preferred structured group exercise program.

TABLE 1: RECREATION THERAPY PROGRAMS THAT WERE RANKED AS THE MOST PERCEIVED EFFECTIVENESS TO RESTORE AND MAINTAIN MOBILITY

1 st	Structured group exercise (36%)
2 nd	Cooperative ball games (17%)
3 rd	Dancing (12%)
4 th	Tai Chi (11%)
5 th	Yoga (11%)
6 th	Competitive ball games (10%)
7 th	Exergaming (3%)

respondents mentioned that it is more difficult to encourage men to start with and engage in programs. Examples of responses were:

“It is more of an individual difference based on personality, past leisure lifestyle and acceptance of current living environment, more so than gender. There are a couple of activities that are more attended by women, including shopping and manicures.”

“I do feel there is a difference between men and women and their engagement in daily activities. Women tend to enjoy larger social programs more than men. Men seem to enjoy the physical related programs, which tend to be smaller groups. Men need more encouragement to join in any type of recreation program.”

“Engaging men is a significant challenge in all programming. Men appear to have by and large changed their self-impression to that of no longer being able to contribute from a strong work ethic and “meaningless” activity has no value to them. Exceptions to this general statement are of course true. By and large it is difficult to motivate Men. Men's Breakfast or Animal Assisted Therapy are a couple of ways to effectively help men to start engaging.”

Finding

5. Therapeutic recreation programs need to be aligned to the sense of purpose of older adults to support engagement. Some gender differences in engagement may exist as older men may prefer smaller groups or individual programs.

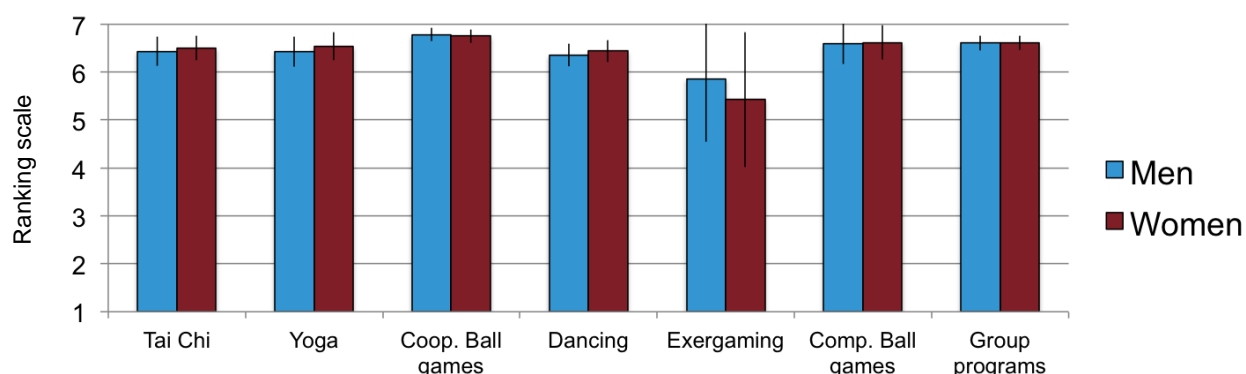


FIGURE 8: PERCEIVED SUITABILITY OF RECREATION THERAPY PROGRAMS TO RESTORE OR MAINTAIN MOBILITY AMONG MALE AND FEMALE RESIDENTS.

Respondents reported lower suitability for older adults with cognitive or physical decline, as determined by the Cognitive Performance Scale (CPS) and Activities of Daily Living (ADL) self-performance scale. This was consistent for all programs identified in the survey (Figure 9 and Figure 10). Both the CPS and ADL scales are assessed quarterly in long-term care as part of the Resident Assessment Instrument - Minimum Data Set (MDS 2.0; interRAI Corporation 1999)²³. Specifically, the CPS refers to the **Cognitive Performance Scale**²⁴, which is based on the resident’s cognitive performance in short-term memory, daily decision-making, ability to make self-understood, eating, self-performance and consciousness status. ADL self-performance refers to the **Activities of Daily living performance**

²³ Hawes C, et al. Development of the nursing home Resident Assessment Instrument. Age Ageing. 1997;26 (s2):19–25.

²⁴ Morris JN, et al. MDS Cognitive Performance Scale. J Gerontol. 1994;49(4):M174–M182.

scale²⁵, which is based on resident's physical performance in eating, locomotion, toileting and personal hygiene. Scores of both CPS and ADL range from 0 (intact) to 6 (very severe impairment). Based on the MDS instruction manual, CPS scores are categorized to "intact or mild impairment (0-2)", "moderate impairment (3-4)", and "severe impairment (5-6)"; and ADL scores are categorized to "independent (0-2)", "need assistance (3-4)", and "total dependent (5-6)". Respondents particularly identified lower suitability for residents with severe cognitive impairments (CPS score of 5 or 6) and with ADL dependence (score of 5 or 6), compared to less impaired residents. In addition, dancing, cooperative and competitive ball games were more preferred than Tai Chi for this severely impaired group.

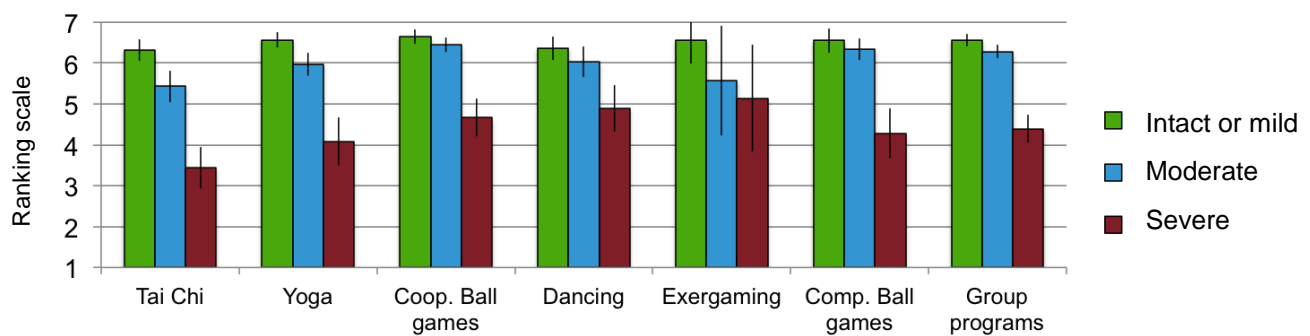


FIGURE 9: PERCEIVED SUITABILITY OF RECREATION THERAPY PROGRAMS TO RESTORE OR MAINTAIN MOBILITY FOR RESIDENTS WITH DIFFERENT LEVELS OF COGNITIVE FUNCTION.

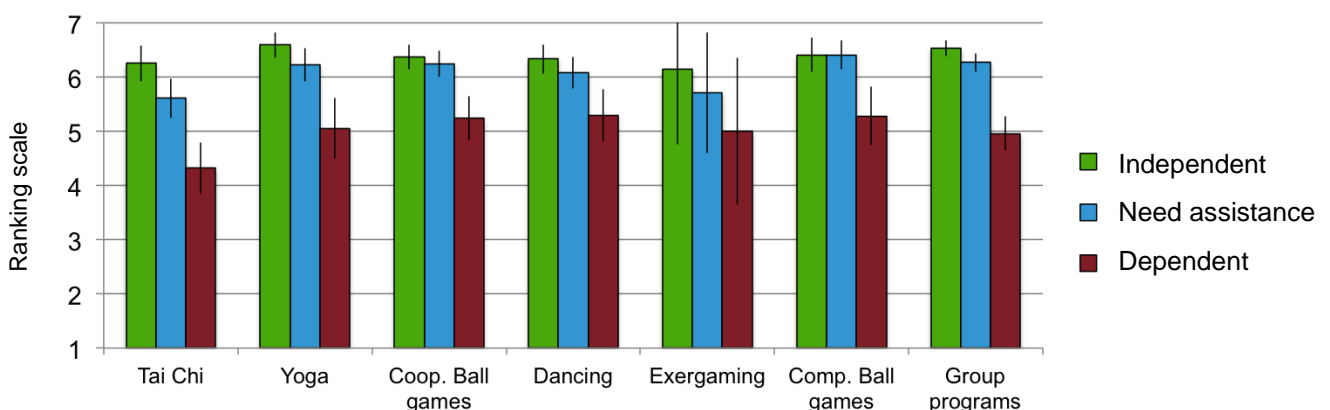


FIGURE 10: PERCEIVED SUITABILITY OF RECREATION THERAPY PROGRAMS TO RESTORE OR MAINTAIN MOBILITY FOR RESIDENTS WITH DIFFERENT LEVELS OF PHYSICAL FUNCTION.

4.4 SUMMARY OF KEY FINDINGS FROM LITERATURE REVIEW AND E-SURVEY

The literature review provided moderate to weak evidence on the effectiveness of Tai Chi, walking programs, ball games, dancing, exergaming and yoga on mobility of older long-term care residents. Our e-survey complemented the review by providing additional support for the benefits of group exercise programs and yoga on functional mobility improvement and fall prevention. While the focus of our study was on mobility, both review studies and e-survey suggest that recreation therapy programs enhance mental function and psycho-social well-being. In addition, there were consistent findings from both the literature review and e-survey on the effectiveness of structured group exercise programs on

²⁵ Morris JN, et al. Scaling ADLs within the MDS. J Gerontol A Biol SciMed Sci. 1999;54(11):M546–M553.

mobility. In general, Tai-Chi, competitive ball games, dancing, yoga, and walking programs are considered to be suitable for older adults in long-term care. However, no single program stood out in their suitability for a specific group of residents, such as men or women, or residents with different physical or cognitive function. This suggests that adaptation of the program and dosage of the exercise may play an important role in the delivery and effectiveness of the program. According to the American College of Sports Medicine²⁶, a minimum of 8-week exercise intervention with a frequency of at least two sessions per week and a duration of at least 45 minutes per session is required to improve mobility outcomes in older adults. Although different recreation therapy programs may provide different benefits, the quality of implementation (e.g., intervention plans based on needs and interests of clients) would help to ensure the success of the therapeutic recreation program delivery (see section 6.0 Implementation).

It is important to point out that most research studies excluded residents who were unable to understand instructions. Similarly, in the e-survey, respondents reported that the identified recreation therapy programs to restore or maintain mobility may not be best suited for residents with severe cognitive impairment or dependent physical function. However, there may be other recreation therapy programs (not identified in our survey) that are better suited for this population. These programs may not be beneficial for mobility, but may benefit other aspects of quality of life such as mood, spiritual, or social well-being.

Findings

6. Therapeutic recreation programs that aim to restore or maintain mobility are less suitable for older adults with severely cognitive or physical impairments.
7. Recognizing the quality of implementation may be more important than the selection of a specific recreation therapy program.

²⁶ Nelson, et al. Physical activity and public health in older adults: recommendation from the American College of Sports Medicine and the American Heart Association. *Med Sci Sports Exerc*, 2007. 39(8): p. 1435-45.

5.0 IN-DEPTH INTERVIEWS WITH RECREATION THERAPISTS

To supplement the survey results, we conducted telephone interviews with Recreation Therapists with a series of questions addressing the barriers and facilitators to the delivery of therapeutic recreation programs in long-term care.

Interview-guide Questions

1. What are some of the challenges in running programs for residents at your facility?
 - a. How do you overcome these challenges?
2. Do you modify your programs to meet the needs of the diverse population?
3. Which modifications to the program would you make in an ideal case?
4. In your opinion how could you get more residents involved in activity programs?
5. Is there anything else that you would like to add to our discussion today?

A total of 19 recreation therapy practitioners participated in the interviews. They were selected from the e-survey based on their expressed interest to be contacted for further information. Among these 19 practitioners, 17 (89.5%) were female and 2 (10.5%) were male. The average age was 44 years old. They had an average of 14 years of experience in their current care home and an average of 21.5 years of experience working in recreation therapy. More than 70% of them worked in a medium-size (80-120 beds) or large-size (>120 beds) facility.

5.1 COMMON THEMES THAT EMERGED FROM THE INTERVIEWS

Recreation therapy practitioners were asked to identify challenges in running programs for residents in long-term care. Several themes emerged that relate to infrastructure, funding and staffing, including: time to porter residents (a term used to describe moving residents around the facility), space/environment (too small, shared space, noise), and funding (frequency of programs and staff to run programs). Other challenges included lack of knowledge of what recreation therapy is (e.g. Recreation Therapists being used as activity aides), language barriers between staff and residents, incorrect outcome measures (e.g. program success based on number of individuals attending versus what the residents are getting out of the program).

When asked to identify ways to overcome these challenges, the responses included better communication and working in interdisciplinary teams. Better education for not only enhancing general practice knowledge of recreation therapy (by attending conferences and workshops), but also educating other disciplines on the role of the Recreation Therapist and benefits of recreation therapy (e.g. recreation therapy is not just attending activities and group programs, but rather setting personal goals and having therapeutic value). Participants mentioned the benefits of volunteers in all aspects of day-to-day activity including: portering, assisting on out trips, leading bingo, games and activities (walking) and conversation. This allows the program instructor to spend more time in small groups or personalized sessions.

When asked how recreation therapy practitioners modified their programs to meet the diverse needs of the long-term care population, they frequently mentioned using a more person-centred approach. This includes not rushing through explanations, developing programs around “tendencies” for cognitively impaired (e.g. familiar actions such as fishing or stirring a pot), ensuring individuals who liked to stay up late were not awoken for early morning programs, grouping people by skills and abilities and offering shorter, smaller programs more often.

5.2 SUGGESTIONS OF MODIFICATIONS OF RECREATION THERAPY PROGRAMS

Recreation therapy practitioners were also asked what modifications they would make in an “ideal” scenario. They suggested more one-on-one and small group activity tailored to the individual’s goals, better space which varied from large multipurpose rooms with activity stations to small sensory rooms for dementia residents, and well-trained staff (supported by volunteers) working in a collaborative environment. Sample creative ideas to assist with modifications included:

- Peer to peer mentorship amongst residents;
- Dog walking and pet visits;
- Community outings;
- Make “exercise” fun by making it a game;
- Make activities more attuned to movements they are familiar with, so they do not have to learn something new (e.g., golf, fishing, stirring a pot);
- Create small groups with individuals that are able to perform similar tasks;
- Walking and reading programs with school aged kids; and
- Recreation and music combined into a dance program.

Finding

8. Delivery of therapeutic recreation programs can be improved by tailoring the programs to residents’ interest, cognitive status, and motivation.

6.0 CONSIDERATIONS FOR PROGRAM IMPLEMENTATION

Throughout this document we focused solely on targeted recreation therapy programs designed to restore or maintain mobility. Programs were chosen based on our review of the literature and a review by Recreation Therapists via survey and interviews. Regardless of the program, however, a common theme emerged around implementation and its importance to program success. As mentioned in the above section, enhancing the participation and adherence of participants in the program may be more important to a program's success than the type of recreation therapy program. In this section, we describe the stages of implementation – how evidence is translated into practice within the health service and community sector.²⁷

Implementation success is determined by: i. characteristics of the intervention, ii. population in which the intervention is being introduced, iii. individual and organization readiness, and iv. other factors that influence the context where the intervention is carried out. Evidence of program effectiveness (Does the program work?) is merely the first step towards effective implementation-at-scale (How do we implement the effective program at a larger scale across different settings?). It should come as no surprise that a combined strategy of an effective intervention plus effective implementation (or scale-up) of the intervention, yields the greatest benefits.^{27, 28}

6.1 STAGES OF IMPLEMENTATION

Implementation is not a single event, but rather a process made up of several overlapping stages that occur over time. The process is fluid, with continuous adaptations and modifications as needed. A flexible program that can be readily adapted, increases the likelihood that it will yield positive benefits for participants. Stages of implementation are: exploration, installation, initial implementation, and full implementation (Figure 11).

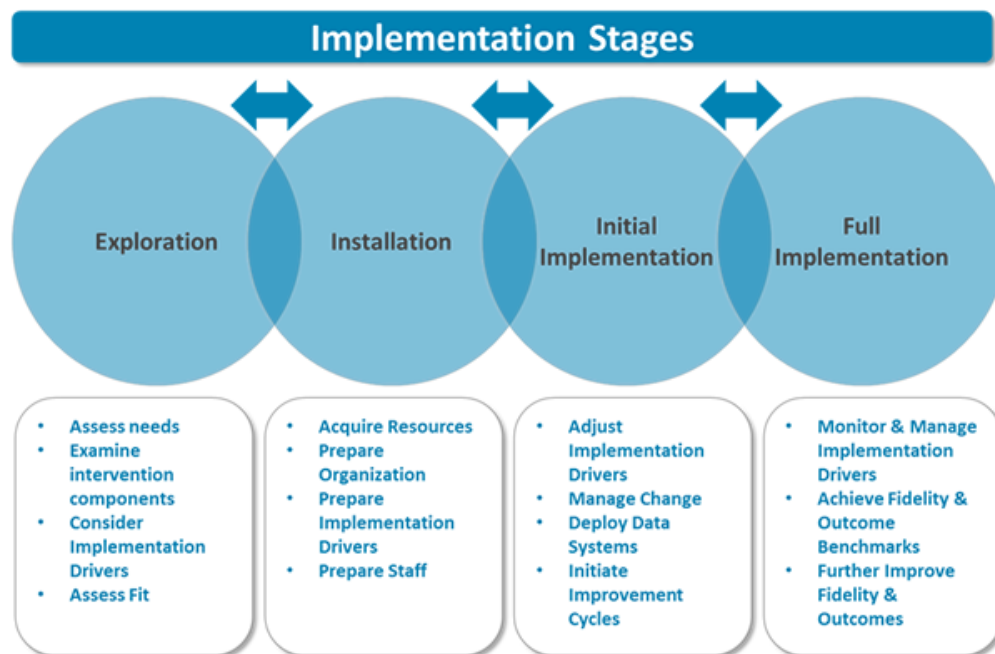


FIGURE 11: STAGES OF THE PROGRAM IMPLEMENTATION PROCESS (FIXSEN ET AL, 2008).

²⁷ Scott. Fall Prevention Programming: Designing, Implementing and Evaluating Fall Prevention Programs for Older Adults (2nd Edition). 184 pages. 2017.

²⁸ Fixsen and Blase. Drivers framework. Chapel Hill, NC: The National Implementation Research Network. 2008.

A tool that can be used to guide the initial implementation stage is the model developed by the Institute for Healthcare Improvement, the Plan-Do-Study-Act (PDSA, [Figure 12](#)).²⁹ This model will assist the Implementation Team to assess the interventions before moving into full implementation.

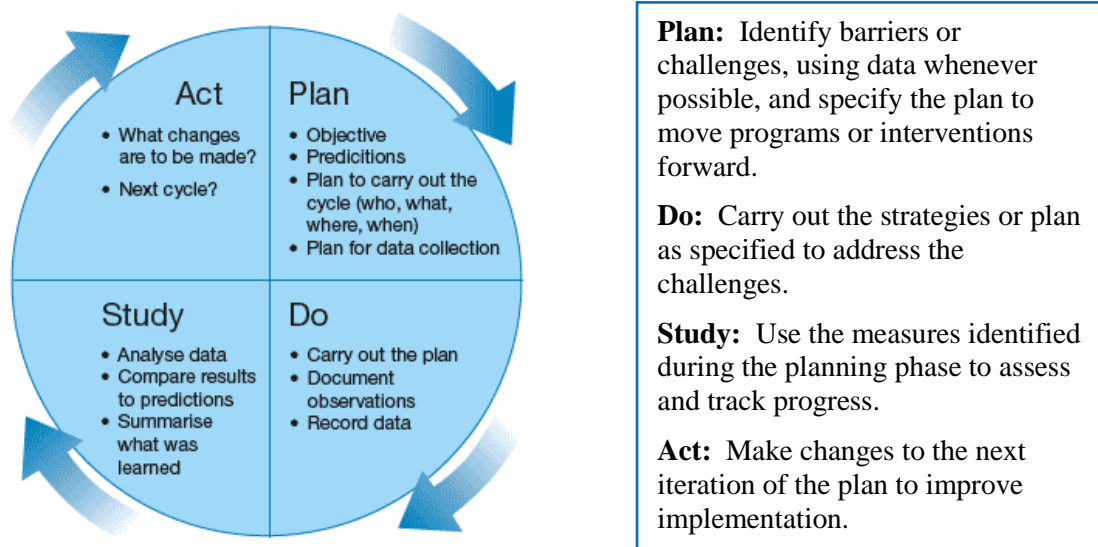


FIGURE 12: INITIAL STAGES OF THE PROGRAM IMPLEMENTATION (LANGLEY ET AL, 2009).

To guide the implementation of therapeutic recreation programs, the Canadian Therapeutic Recreation Association (CTRA)³⁰ provides the standards of practice:

Standard #1: Assessment. Upon receipt of a referral for service, a clinical process by which a client's strengths, needs, interests, medical condition, social history, legal status, ethnic values and the context in which they occur are identified to create an individualized intervention plan.

Standard #2: Intervention Plan Development. An individualized plan based on an assessment that outlines ways to help a client achieve goals and objectives to address his/her physical, social, cognitive, emotional and spiritual needs through leisure within the context of environmental consideration.

Standard #3: Intervention Plan Implementation. Facilitate participation in leisure education, leisure experiences or interventions in pursuit of achieving the stated goals and objectives from the intervention plan based on needs and interests of a client.

Standard #4: Documentation. A standardized system of recording information to produce legal and confidential records of care and to ensure accountability for actions.

Standard #5: Evaluation. The process of determining whether the goals and objectives from the intervention plan were met by analysing the effectiveness of the service or intervention and by receiving feedback from all involved.

²⁹ Langley, et al. *The Improvement Guide: A Practical Approach to Enhancing Organizational Performance* (2nd edition). San Francisco: Jossey-Bass Publishers; 2009.

³⁰ Canadian Therapeutic Recreation Association (CTRA) *Standards of Practice for Recreation Therapists & Therapeutic Recreation Assistants*, 2006 edition.

6.2 FIDELITY IN PROGRAM IMPLEMENTATION

The strength of evidence-based exercise programs is being able to replicate positive outcome across a number of studies.³¹ Policy makers and practitioners prefer programs that are flexible, adaptable and can be replicated in different settings. However, a program must have fidelity in order to also replicate benefits.³²

Implementation fidelity refers to “how the program is implemented in relation to its initial design, the delivery of all the program's key components, and the use of protocols and tools specific to the program.”³³ Fidelity typically includes the following five aspects.

- **Adherence:** Determines whether the program is implemented as designed (i.e., delivery of all of the key components to the appropriate population, staff training, use of protocols, tools and material, selection of replication sites, etc.).
- **Exposure:** Includes the following elements: number of sessions, length of each session, and frequency of using techniques of the program.
- **Quality of program delivery:** Refers to the manner in which the program is delivered by practitioners (e.g., teacher, volunteer or program staff); this can include the ability to use the prescribed methods or techniques of the program, the level of readiness, and attitudes.
- **Participant responsiveness:** Measures how engaged and involved participants are in program activities.
- **Program differentiation:** Identifies the unique characteristics of the program (when the program's reliability is distinguished from others).

6.3 CONSIDERATIONS FOR RECREATION THERAPY PRACTITIONERS

Instructor selection is the starting point to establish a qualified, experienced personnel to deliver the evidence-based exercise program. In our literature review, instructors who delivered the recreation therapy programs had a broad background and range of experience. They included Physical Therapists, external certified instructors, nurses, health care assistants and nursing aides. Only three studies mentioned the direct involvement of recreation therapy workers (i.e., therapeutic recreation leaders and programmers, program aides, and activity aides) in delivery of the programs.

To ensure the quality of the program delivery, it is crucial that care homes hire qualified and experienced practitioners. In addition to the degrees and previous experience, it is also important to consider personality traits and individual characteristics, which should be included in the selection criteria (e.g., knowledge of the field, ethics, willingness to learn, judgment, empathy). Some programs were developed with ease of delivery in mind in order to minimize the need for a rigorous instructor selection process (e.g., tutoring program staffed by volunteers). Other programs require an instructor with more complex qualifications and specific skills.^{34,35} Facility-based practitioners may be ideal as they have established good relationships with their residents and have assessed their suitability in physical performance.

Consistent with the literature review, our e-survey also indicates the broad certificate of the recreation therapy practitioners, with some having a university level of education and some having only a one-year certificate. Inconsistencies in education and training of instructors may lead to the inconsistency of

³¹ Nutbeam and Bauman. *Evaluation in a nutshell*. MacGraw-Hill, Sydney, 2008.

³² O'Connor, et al. Program fidelity and adaptation: Meeting local needs without compromising program effectiveness. *What Works, Wisconsin Research to Practice Series*, 4. Madison, WI: University of Wisconsin–Madison/Extension. 2007.

³³ Mihalic, et al. The importance of implementation fidelity. *Emotional & Behavioral Disorders in Youth*, 2004. 4(4), 83–105.

³⁴ Fixsen, et al. Core implementation components. *Research on Social Work Practice*, 2009. 19(5), 531–540.

³⁵ Canadian Therapeutic Recreation Association (CTRA) *Standards of Practice for Recreation Therapists & Therapeutic Recreation Assistants*, 2006 edition.

program delivery, which may impact the effectiveness of the program on outcome changes for the participants. Adequate training for recreation therapy practitioners is essential to delivering successful programs in long-term care. Effective training should consider the following components.³⁴

- Understanding the theory, philosophy and values of the program.
- Knowledge of the different levels of frailty of older adults in long-term care.
- Use of standardized assessments (e.g., Minimum Data Set (MDS) in long-term care) as a screening tool to identify residents with physical or cognitive impairment.
- Program design and modification to match the capacity of participants (e.g., standing, seated).
- Consistency of the program delivery.

6.4 PARTICIPANT IDENTIFICATION, SELECTION AND RETENTION

The concepts of implementation of recreation therapy programs discussed above may be generalizable. However, certain barriers relating to the target group, such as the identification, selection and retention of participants, indicate how and why the practice of implementation of recreation therapy programs is different. Although experienced recreation therapy practitioners are able to modify programs based on the need of participants, the ability to identify the “right” participants for a “suitable” program is key for the success of program delivery.

The process of identifying participants for a recreation therapy program can be a challenge, particularly for programs involving physical activity. Prior to the program, risk factors need to be assessed. Determinant of the eligibility to participate in a program, especially for a fall prevention program targeting an at-risk population in long-term care, should be evidence-based. From this point of view, validated tools should be used to assess the risk. The Minimum Data Set (MDS) is a standardized and comprehensive assessment for all residents in long-term care. The Activities of Daily Living (ADL) Self-Performance Hierarchy Scale and the Cognitive Performance Scale (CPS) have been validated as reliable measures of physical and cognitive status for long-term care residents. MDS also provides disease diagnosis, use of medication, and fall history. With the standardized information across facilities, it is beneficial to use MDS as a screening risk assessment tool to determine the eligibility of residents for a certain physical activity program.

For older adults in residential care (e.g., long-term care, assisted living), selection for attending the mobility-based recreation therapy program is generally based on the assessments. However, due to the high prevalence of dementia in long-term care, choosing participants into the program can present difficulties. As discussed above, identifying the capacity of participants will help them join the suitable program. In addition, short interviews with residents may help understand their preference in the certain type of recreation therapy programs (e.g., group-based, individual-based, aerobic or resistance). For residents with severe cognitive impairment, staff may determine whether they would benefit from some passive exercise programs under the consultation of the physiotherapists.

In general, participation in recreation therapy programs is voluntary and the length of participation varies depending on the program. For older adults in residential or long-term care, the involvement of staff members is essential, and this creates similar recruitment, engagement and retention problems. To encourage participation and program completion, retention strategies should be proposed prior to the program (e.g., mobility assistant). Maintaining a high retention rate is another key component to the success of program implementation.

6.5 FACILITATORS AND BARRIERS FOR MOBILITY-BASED PROGRAM IMPLEMENTATION

From the literature review and interviews, we identified factors associated with successful implementation of the intervention to participants. Factors that facilitated uptake of the recreation therapy programs were:

- (1) **Clear instruction and demonstration.** Among studies that included participants with dementia, short and simple explanations of the procedures made it possible for participants to perform the activity.
- (2) **Peer and facility staff encouragement.** For instance, care staff might remind older adults about the program and assist them to the activity rooms. In one walking program, older adults encouraged each other and walked together to the program.
- (3) **Use of an attendance record to monitor adherence and an activity log to monitor progress.** Tracking attendance at each exercise class may have fostered greater levels of motivation, engagement and social support among participants.
- (4) **Customized interventions, where participants progressed at their own pace and ability.** Personal goals were designed to meet the specific physical, cognitive, and functional capacity of each individual.
- (5) **Low cost and easy to implement.** For example, programs that targeted muscular strength often incorporated body weight exercises, ankle weights, dumbbells and resistance bands instead of specialized resistance machines, which may be costly.

Conversely, there were notable barriers encountered in program delivery:

- (1) **Difficulty in following instructions for participants with severe cognitive impairment.** Several studies noted that some sessions were interrupted occasionally as participants exhibited disruptive behaviors.
- (2) **Limited space.** As some facilities did not have activity rooms, recreation therapy programs were delivered in shared space (e.g., lobby, hallway). This distracted participants and may have interfered with the program delivery.
- (3) **Inadequate staffing.** The ratio of Recreation Therapists to residents made it difficult to provide a walking program more than once per week. In another study, participation rate was low due to insufficient personnel to assist residents to and from the program.
- (4) **Inadequate knowledge about how to deliver the recreation therapy program.** Some instructors use divisional activities but not consider the therapeutic value. This affects how they encourage residents to attend the recreation therapy programs and residents' goal-setting.

6.6 OUTCOME MEASURES FOR PROGRAM EVALUATION

To evaluate the effectiveness of a recreation therapy program on mobility, it is important to obtain measures of progress/change among participants (using pre/post-test measures). From our literature review, one of the major obstacles in the comparison of the effects of recreation therapy programs was the lack of consistency in outcome measurements used for the evaluation. Implementation of a comparable set of outcome measures for all recreation therapy programs provided in long-term care could contribute to the current body of evidence on the effectiveness of recreation therapy to improve not only mobility, but also quality of life, in older residents. This set of outcome measures should span the cognitive, emotional, physical, social, spiritual and vocational domains.

Commonly used tests of mobility/physical function identified in the review were the Timed Up and Go (TUG) and the Berg Balance Scale³⁶. The latter is a comprehensive test of dynamic and static balance, developed for older adults with impaired balance function. It comprises a 14-item scale and takes 15-20 minutes to perform. The test needs a 15ft walkway and requires equipment that should be readily available at facilities, i.e. a ruler, two standard chairs (one with and one without armrests), a footstool or step and a stopwatch. Participants receive a score between 0 and 56, with scores exceeding 41 indicating high fall risk. A recent study in Finland indicated that a change of 8 points is required to reveal a genuine change in function between two assessments³⁷. While TUG and Berg Balance Scale are validated tools for mobility, residents in long-term care may present some challenge to undergo the assessments. Alternative, Short Physical Performance Scale (SPPB)³⁸ and Barthel Index³⁹ may be more feasible for frail older adults in long-term care. SPPB includes the measures of a 4-meter walk, 5-time sit-to-stand, and quiet standing in three conditions (side-by-side, semi-tandem and tandem). The Barthel Index assesses the performance in activities of daily living (ADL) based on observations, which is feasible for residents with physical and mobility impairment.

Other outcome measures such as psychosocial well-being and quality of life are also important for the evaluation of recreation therapy programs. Common tools for measuring generic health status include EQ-5D⁴⁰ and The Short Form (36) Health Survey (SF-36)⁴¹. Both tools are questionnaires that evaluate general health including mobility, self-care, physical functioning, body pain, mental status and social health.

Recommendations

9. Implementation strategies should include the choice of evidence-based programs, modification of the program, recreation therapy practitioner training, and identification of participants.
10. To evaluate the effects of the program, validated and feasible measures must be chosen to match the capacity of participants.

³⁶ Berg, et al. Measuring balance in the elderly: validation of an instrument. *Can J Public Health*. 1992. 83 Suppl 2: S7–11.

³⁷ Hohtari-Kivimäki, et al. Predicting Value of Nine-Item Berg Balance Scale Among the Aged: A 3-Year Prospective Follow-Up Study. *Exp Aging Res*. 2016; 42(2):151-60.

³⁸ Guralnik, et al. A short physical performance battery assessing lower extremity function: association with self-reported disability and prediction of mortality and nursing home admission. *J Gerontol*. 1994 Mar;49(2):M85-94.

³⁹ Barthel, et al. Functional evaluation: the Barthel Index. *Md Med J*. 1965. 14: 61–65.

⁴⁰ Balestroni and Bertolotti. EuroQol-5D (EQ-5D): an instrument for measuring quality of life. *Monaldi Arch Chest Dis*. 2012 Sep;78(3):155-9.

⁴¹ Ware, et al. The MOS 36-item short-form health survey (SF-36). I. Conceptual framework and item selection. *Med Care*. 1992 Jun; 30(6):473-83.

7.0 CONCLUSIONS

There is insufficient scientific evidence for the effectiveness of recreation therapy programs to improve mobility among long-term care residents based on our literature review. Scientific evidence that is available suggests that Tai Chi, walking programs, ball games, dancing, exergaming and yoga have positive effects on physical function, physical activity, and falls. To strengthen the scientific evidence, future intervention studies need to improve reporting of participant characteristics and need to adopt standardized measurements for effect evaluation. Recreation Therapists identified group exercise programs and yoga as the most effective programs to improve mobility in the general long-term care population. To ensure the successful delivery of the recreation therapy programs, implementation strategies need to be proposed prior to the program, which include the choice of evidence-based programs, modification of the program, recreation therapy practitioner selection, and identification of participants. In order to evaluate the effects of the recreation therapy program, validated and feasible measures must be chosen to match the capacity of participants.

8.0 FINDINGS AND RECOMMENDATIONS

A summary of the highlights in this current-practice guideline can be found below.

1. Scientific evidence suggests that Tai Chi, walking programs and ball games are effective for maintaining or improving mobility. Scientific evidence also indicates that dancing, exergaming and yoga are effective for some aspects of mobility, though evidence should be interpreted with caution due to inconsistent study designs and small sample sizes.
2. Future studies should develop a standardized definition of recreation therapy. Clarification should also be given to the types of physical exercise interventions delivered, so as to distinguish them from conventional physical or occupational therapy programs.
3. Consistency in measurement tools for evaluation of the intervention is required to compare their effectiveness across studies.
4. Group exercise programs such as “general group exercise”, “Sit and be fit”, “Modified Osteofit”, “Fun and fitness”, and yoga were frequently identified by recreation therapy practitioners to improve the performance of daily activities and prevent falls.
5. Therapeutic recreation programs need to be aligned to the sense of purpose of older adults to support engagement. Some gender differences in engagement may exist as older men may prefer smaller groups or individual programs.
6. Therapeutic recreation programs that aim to restore or maintain mobility are less suitable for older adults with severely cognitive or physical impairments.
7. Recognizing the quality of implementation may be more important than the selection of a specific recreation therapy program.
8. Delivery of therapeutic recreation programs can be improved by tailoring the programs to residents’ interest, cognitive status, and motivation.
9. Implementation strategies should include the choice of evidence-based programs, modification of the program, recreation therapy practitioner training, and identification of participants.
10. To evaluate the effects of the program, validated and feasible measures must be chosen to match the capacity of participants.

APPENDIX A: REFERENCES

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APPENDIX B: SEARCH STRATEGY AND SELECTION

LITERATURE REVIEW

AGELINE search strategy:

(DE "Older Adults" OR DE "65 " OR DE "70 " OR DE "75 " OR DE "80 " OR DE "85 " OR DE "90 " OR DE "95 " OR DE "Centenarians")

AND

(DE "Recreation" OR DE "Recreation Programs" OR DE "Leisure Activities" OR DE "Games" OR DE "Hobbies" OR DE "Reading" OR DE "Recreation" OR DE "Travel" OR DE "Recreation Programs" OR DE "Games" OR DE "Hobbies" OR DE "Outdoor Activities" OR DE "Parks" OR DE "Recreation Therapy" AND DE "Movement Therapy" OR DE "Dance Therapy" OR DE "Exercise" OR DE "Physical Mobility" OR DE "Tai Chi" OR DE "Yoga" OR DE "Leisure" OR DE "Social Activities" OR DE "Sports")

AND

(DE "Long-Term Care" OR DE "Nursing Homes" OR DE "Skilled Nursing Facilities" OR DE "Special Care Units" OR DE "Homes for the Elderly" OR DE "Institutionalization")

Limiters:

- **Publication Year:** 1990-2016
- No “English” only filter available

PubMed (MEDLINE) search strategy:

("Recreation"[Majr] OR "Recreation"[Mesh] OR "Dance Therapy"[Mesh] OR "Exercise Therapy"[Mesh] OR "Recreation Therapy"[Mesh] OR "Exercise Movement Techniques"[Mesh])

AND

("Aged"[Mesh] OR "Geriatrics"[Mesh])

AND

("Residential Facilities"[Majr] OR "Assisted Living Facilities"[Mesh] OR "Group Homes"[Mesh] OR "Homes for the Aged"[Mesh] OR "Nursing Homes"[Mesh] OR "Long-Term Care"[Mesh] OR "Institutionalization"[Mesh])

Limiters:

- **Publication dates:** From 1990/01/01 – present
- **Languages:** English
- **Ages:** Aged: 65+ years; 80 and over: 80+ years

CINAHL search strategy:

((MH "Nursing Homes") OR (MH "Institutionalization") OR (MH "Long-Term Care") OR (MH "Assisted Living") OR (MH "Housing for the Elderly") OR (MM "Nursing Homes+") OR (MM "Residential Facilities") OR (MM "Residential Care"))

AND

((MM "Therapeutic Exercise+") OR (MM "Physical Therapy") OR (MH "Balance Training, Physical") OR (MM "Recreation Therapy") OR (MH "Dance Therapy") OR (MH "Rehabilitation, Geriatric") OR (MH

"Rehabilitation, Community-Based") OR (MM "Recreation") OR (MH "Dancing") OR (MM "Leisure Activities"))

AND

((MH "Aged+") OR (MH "Geriatrics")))

Limiters:

- **Published Date:** 19900101-20161231
- **Narrow by SubjectAge:** - 80 & over
- **Narrow by Language:** - English
- Tick the checkbox under "Exclude MEDLINE records"

CENTRAL search strategy:

1	exp *recreation/
2	dance therapy/ or exercise therapy/ or *recreation therapy/
3	Exercise Movement Techniques/
4	exp Aged/
5	assisted living facilities/ or homes for the aged/ or nursing homes/
6	institutionalization/ or long-term care/
7	Geriatrics/
8	group homes
9	1 or 2 or 3
10	4 or 7
11	5 or 6 or 8
12	9 and 10 and 11
13	limit 12 to (yr="1990 -Current" and english language)
14	from 13 keep 1-58
15	limit 14 to medline records
16	limit 13 to embase records

PsychINFO search strategy:

(DE "Recreation Therapy" OR DE "Dance Therapy" OR DE "Horticulture Therapy" OR DE "Movement Therapy" OR DE "Recreation" OR DE "Sports" OR DE "Dance" OR DE "Physical Activity" OR MM "Exercise" OR DE "Hobbies")

AND

(DE "Geriatrics" OR MM "Aging" OR MM "Aged (Attitudes Toward)")

AND

(MM "Nursing Homes" OR MM "Long-Term Care" OR MM "Institutionalization" OR MM "Group Homes" OR MM "Assisted Living")

Limiters:

- **Published Date:** 19900101-present
- **Language:** English
- **Age:** Aged (65 yrs & older); very old (85 yrs & older)

APPENDIX C: ONLINE SURVEY

Recreation therapy to restore or maintain mobility among long-term care residents

Welcome

Thank you for taking time to participate in this questionnaire that seeks your experience with different recreation therapy programs. The purpose of this questionnaire is to gain insight into current practice about mobility enhancement among long-term care residents. This questionnaire should take about 20 minutes and all responses will be kept strictly anonymous.

Do you have experience providing recreation therapy to older people in long-term care?

(Note: long-term care refers to residential care that provides 24-hour professional supervision and care in a protective, supportive environment for people who have complex care needs and can no longer be cared for in their own homes or in an assisted living residence (Government of BC)).

- ☐ Yes
- ☐ No

Section 1: Background Information

Please answer the following questions below to the best of your knowledge. Unless instructed otherwise, please select the most appropriate statement for each question.

Please specify your age range:

- ☐ under 18
- ☐ 18 to 24
- ☐ 25 to 34
- ☐ 35 to 44
- ☐ 45 to 54
- ☐ 55 to 64
- ☐ 65 and over

Please specify your gender:

- ☐ Female
- ☐ Male
- ☐ Other, please specify... _____

Please indicate the province and area where you work:

(Note: an urban area refers to an area with a population of at least 1,000 people where the density is no fewer than 400 persons per square kilometer; If you habitually work in more than one location, please select the one where you spend most of your time)

- ☐ Urban British Columbia (e.g. metro Vancouver, Abbotsford, Kelowna, Kamloops)
- ☐ Rural British Columbia (e.g. Hope, Bella Coola)
- ☐ Urban Alberta (e.g. Calgary, Edmonton, Rainier)
- ☐ Rural Alberta (e.g. Banff, Edson)
- ☐ Urban Ontario (e.g. Toronto, London)
- ☐ Rural Ontario (e.g. Lincoln, Collingwood)
- ☐ Other, please specify... _____

Please specify the postal code of the long-term care home where you work most often:

Please indicate how many years of experience you have in the area of recreation therapy for older adults:

- ☐ Less than 1 year
- ☐ 1 to 3 years
- ☐ 3 to 5 years
- ☐ 5 to 7 years
- ☐ 7 to 10 years
- ☐ 10 to 20 years
- ☐ 20 to 30 years
- ☐ 30 or more years

Please select the response that best describes the type of long-term care home(s) where you work in recreation therapy:

- ☐ Health Authority or Local Health Integration Network Owned/Operated
- ☐ Private for Profit
- ☐ Private Not for Profit
- ☐ Other, please specify... _____

Please indicate the title of your current role:

- ☐ Recreation therapy manager, leader or supervisor

- ☐ Recreation Therapist
- ☐ Recreation therapy programmer/worker
- ☐ Recreation therapy aid
- ☐ Physiotherapist
- ☐ Occupational therapist
- ☐ Rehabilitation therapist
- ☐ Kinesiologist
- ☐ Activity worker
- ☐ Health care assistant / care aide
- ☐ Rehabilitation assistant
- ☐ Other, please specify... _____

Please select the response that best describes the nature of your employment in long-term care:

- ☐ Part-time regular
- ☐ Part-time casual
- ☐ Full-time
- ☐ Other, please specify... _____

Please indicate the areas you are responsible for:

(Note: multiple answers are possible)

- ☐ Planning of recreation programs
- ☐ Leading in delivery of recreation programs
- ☐ Assistance in delivery of recreation programs

Please indicate your current level of education/certification:

(Note: multiple answers are possible)

- ☐ Recreation therapy degree / Certified Therapeutic Recreation Specialist (CTRS) or equivalent (4-year program)
- ☐ Recreation therapy diploma or equivalent (2-year program)
- ☐ Recreation therapy certificate or equivalent (≤ 1 -year program)
- ☐ Other, please specify... _____

Section 2: Recreation therapy programs that focus on physical domain

Please rank the programs based on your belief in their effectiveness to restore or maintain mobility among long-term care residents:

(Note: all numbers can only be selected once)

	1 Most	2	3	4	5	6	7 Least
Tai Chi	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Yoga	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cooperative ball games (e.g. balloon volleyball, passing beanbags)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Dancing (e.g. ballroom, folk)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Exergaming (e.g. Nintendo Wii)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Competitive ball games (e.g. floor bowling, shuffleboard)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Group exercise programs (e.g. otago, osteofit, get up go!)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please specify the name of the group exercise program to which you refer:

Section 2 - continued: Recreation therapy programs that focus on the physical domain

Please answer the following questions below to the best of your knowledge. Unless instructed otherwise, please select the most appropriate statement for each question and refer to the care home where you are currently spending most of your time.

Questions about {{ Programs }}

Please indicate if this program includes the following activities:

(Note: multiple answers are possible)

- ☐ Seated
- ☐ Standing
- ☐ Walking

Please indicate if this program is currently offered at your care home:

- ☐ No
- ☐ Yes

Please indicate if the program is offered during a specific period or ongoing:

- ☐ Ongoing program

- ☐ Scheduled for a certain period, duration in weeks: _____

Please indicate the frequency and duration of the program (including warm-up and cool-down):

minutes per session

sessions per week

Please indicate the time spent on average doing the program-specify exercises (excluding warm-up and cool-down):

minutes per session

Please indicate the number of residents per instructor per session:

residents (on average)

residents (maximum)

Please indicate if there are specific environmental resources needed for delivering the program:

- ☐ No special exercise room or equipment needed
- ☐ Requires special exercise room
- ☐ Requires special equipment
- ☐ Requires special exercise room and equipment

Please indicate if there are specific personnel resources needed for delivering the program:

- ☐ Requires specifically trained staff or contracted instructor
- ☐ No specially trained staff or contracted instructor required

In your opinion, is this program in the current format:

(Note: Please consider your experience with this program in the past few years, to provide us with up-to-date insight. CPS refers to the Cognitive Performance Scale, which is based on the resident's cognitive performance in short-term memory, daily decision making, ability to make self understood, eating self-performance, and consciousness status. ADL self-performance refers to the Activities of Daily living performance scale, which is based on resident's physical performance in eating, locomotion, toileting, and personal hygiene. Both the CPS and ADL scales are assessed quarterly as part of the Resident Assessment Instrument - Minimum Data Set (RAI-MDS) 2.0).

Strongly	Disagree	Slightly	Neutral	Slightly	Agree	Strongly
Disagree		Disagree		Agree		Agree

Suitable for men	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Suitable for women	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Suitable for residents with intact to mild cognitive impairment (CPS score 0 – 2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Suitable for residents with moderate cognitive impairment (CPS score 3 – 4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Suitable for residents with severe cognitive impairment (CPS score 5 – 6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Suitable for residents with independent ADL performance (ADL self-performance score 0 – 2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Suitable for residents who need assistance in ADL performance (ADL self-performance score 3 – 4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Suitable for residents with dependent ADL performance (ADL self-performance score 5 – 6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Suitable for residents with neurological disorder (e.g., stroke, Parkinson's disease)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Suitable for residents who use mobility aids (e.g., wheelchair or walker)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Suitable for residents with impaired vision or hearing loss	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Suitable for residents with different cultural backgrounds ☐ ☐ ☐ ☐ ☐ ☐ ☐

In your opinion, is this program beneficial for the majority of residents to promote:

(Note: For instance have you noted changes over the course of the program among your residents in these outcomes)

	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
Independence in ADL	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Safe mobility	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fall reduction	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Social interactions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mental health	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cognitive function	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Balance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Strength	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Endurance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Flexibility/Agility	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Section 3: Other recreation therapy programs commonly used in long-term care

The following questions seek your opinion and experience about recreation therapy programs that you consider most beneficial for long-term care residents. This could be a program focusing on the physical domain that you missed in the previous section, or a program that involves less physical activity. Examples to consider might include, but are not limited to: music, arts and crafts, gardening and games. Unless instructed otherwise, please select the most appropriate statement for each question.

Please select one of the following programs:

- ☐ Playing or listening to music
- ☐ Playing games (e.g. card games)
- ☐ Arts and crafts (e.g. painting, knitting)
- ☐ Workshop activities (e.g. wood working, metal working)
- ☐ Gardening
- ☐ Other, please specify... _____

Please indicate if this program is currently offered at your care home:

- ☐ No
- ☐ Yes

Please indicate if the program is offered during a specific period or ongoing:

- ☐ Ongoing program
- ☐ Scheduled for a certain period, duration in weeks: _____

Please indicate the frequency and duration of the program:

minutes per session

sessions per week

Please indicate the number of residents per instructor per session:

residents (on average)

residents (maximum)

Please indicate if there are specific environmental resources needed for delivering the program:

- ☐ No special room, equipment or tools needed
- ☐ Requires special room
- ☐ Requires special equipment or tools
- ☐ Requires special room and special equipment

Please indicate if there are specific personnel resources needed for delivering the program:

- ☐ Requires specially trained staff or contracted instructor
- ☐ No specially trained staff or contracted instructor required

In your opinion, is this program in the current format:

(Note: Please consider your experience with this program in the past few years, to provide us with up-to-date insight. CPS refers to the Cognitive Performance Scale, which is based on the resident's cognitive performance in short-term memory, daily decision making, ability to make self understood, eating self-performance, and consciousness status. ADL self-performance refers to the Activities of Daily living performance scale, which is based on resident's physical performance in eating, locomotion, toileting, and personal hygiene. Both the CPS and ADL scales are assessed quarterly as part of the Resident Assessment Instrument - Minimum Data Set (RAI-MDS) 2.0).

	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
Suitable for men	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Suitable for women	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Suitable for residents with intact to mild cognitive impairment (CPS score 0 – 2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Suitable for residents with moderate cognitive impairment (CPS score 3 – 4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Suitable for residents with severe cognitive impairment (CPS score 5 – 6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Suitable for residents with independent ADL performance (ADL self- performance score 0 – 2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Suitable for residents who need assistance in ADL performance (ADL self- performance score 3 – 4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Suitable for residents with dependent ADL performance (ADL self-performance score 5 – 6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Suitable for residents with neurological disorder (e.g., stroke, Parkinson’s disease)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Suitable for residents who use mobility aids (e.g., wheelchair or walker)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Suitable for residents with impaired vision or hearing loss ☐ ☐ ☐ ☐ ☐ ☐ ☐

Suitable for residents with different cultural backgrounds ☐ ☐ ☐ ☐ ☐ ☐ ☐

In your opinion, is this program beneficial for the majority of residents to promote:

(Note: For instance have you noted changes over the course of the program among your residents in these outcomes)

	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
Independence in ADL	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Safe mobility	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fall reduction	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Social interactions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mental health	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cognitive function	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Balance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Strength	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Endurance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Flexibility/Agility	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Section 4: Final questions

We will end with a few general questions on recreation therapy and gender differences. Please answer the questions below to the best of your knowledge. Unless instructed otherwise, please select the most appropriate statement for each question and refer to the care home where you are currently spending most of your time.

Are there innovative recreation therapy programs going on in your facility that we missed in this survey and that you would like to highlight?

Please provide the name of the program and a short description of its content and effectiveness on mobility. It would be great if you could also provide details on how interested parties would be able to contact you to learn more about these programs.

Which outcomes of recreation therapy do you, as a recreation therapy professional, value most?

(Note: multiple answers are possible)

- ☐ Emotional outcomes, e.g. enjoyment
- ☐ Social outcomes, e.g. social connectedness
- ☐ Physical outcomes, e.g. strength, mobility
- ☐ Cognitive outcomes, e.g. cognitive stimulation
- ☐ Spiritual outcomes, e.g. fulfillment

Do you feel that there are gender, ethnic, or age-related differences in interests and participation in recreation therapy programs?

In our research, we are also interested in the differences between men and women and their engagement in daily activities. Could you please indicate whether, in your experience, men and women differ in their interests and participation in recreation therapy programs, and how?

Are you willing to be contacted for an interview and/or would you like to enter for the prize draw?

This information is be confidential and will not be associated with your responses.

- ☐ No
- ☐ Yes