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Article

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Résumé

La danse est de plus en plus utilisée comme un moyen de soutenir la santé et le bien-être des personnes âgées. Bien que la danse soit une activité agréable pour un grand nombre de gens, le fait d'en comprendre les bienfaits pour les personnes dont les capacités physiques et cognitives sont limitées peut éclairer la façon dont elle peut être utilisée dans ces contextes. Cette étude portait sur le programme *Dansons Ensemble pour les aînés Sharing Dance Older Adults*, qui offre des séances diffusées en ligne. Les données ont été recueillies auprès de 48 personnes âgées qui ont participé à la version « En position debout » (*On Your Feet*) du programme et de 38 personnes âgées qui ont participé à la version « En position assise » (*In Your Seat*). Les outils d'évaluation de l'étude comprenaient des entrevues, des tests de forme physique et des sondages sur l'humeur, la qualité de vie et la satisfaction à l'égard du programme. La forme physique s'est nettement améliorée dans les deux groupes, contrairement à l'humeur, au bien-être social ou à la qualité de vie. Cette constatation contredit les résultats qualitatifs, les participants ayant affirmé que le programme avait amélioré leur humeur, leurs interactions sociales et leur qualité de vie.

Abstract

Dance for older adults is increasingly being used to support health and well-being. While dance may be enjoyable for many, understanding its benefits for those with limited physical and cognitive abilities may provide further support for how dance may be used in these contexts. This was a study of *Sharing Dance Older Adults*, a dance program with remotely streamed sessions. Data were collected from 48 older adults who took part in the *On Your Feet* version of the program, and from 38 who took part in the *In Your Seat* version. Measures included interviews, physical fitness tests and surveys on mood, quality of life, and program satisfaction. Physical fitness significantly improved for both groups, unlike for mood, social well-being, or quality of life. This contrasts with qualitative findings, with participants reporting how the program enhanced their mood, social interactions, and quality of life.

Introduction

Implications of a Rapidly Aging Population in Canada

A recent Statistics Canada census in 2021 showed that there is greater than 860,000 people aged 85 and older, which was more than double that observed in the 2001 census (Statistics Canada, 2022). It is expected that the population of individuals ages 85 and older could triple to almost 2.5 million people by 2046. Considering that a significant proportion of these individuals have activity limitations or health-related problems, more than 25 per cent live in collective dwellings such as long-term care facilities, and this proportion increases with age. Older adults are the fastest growing age group in Ontario and as they age, there is a need for them to remain socially connected, engaged, and more active (“Aging with Confidence: Ontario’s Action Plan for Seniors,” 2017). This need for social connection is particularly poignant because, as individuals age, the capacity to engage in social activities is impacted by activity limitations or health-related problems.

As the Canadian population ages, there is also a rapid increase in the number of individuals living with dementia. Recent data have shown that over 500,000 individuals in Canada were living with dementia in 2020, with that number projected to increase to 1.7 million by 2050 (Alzheimer Society, 2022). This increase will result in over 650,000 family and friend care partners being needed to support people living with dementia, to provide unpaid care, including finding ways to alleviate the social isolation and negatively impacted quality of life that is commonly associated with a diagnosis of dementia.

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The rapidly aging population and expected increases in dementia prevalence in Canada suggest that there is a need to not only reduce the chance of developing dementia or delaying onset of dementia, but also to identify interventions or activities that can improve the quality of life of those living with dementia and also reduce the burden of care on family and friend care partners.

Benefits of Arts-Based Activities for Aging Older Adults

It is well established that participation in physical activity throughout life is associated with significant health benefits (Warburton, Nicol, & Bredin, 2006). Literature further supports that older adults who are actively involved in social and leisure activities report positive well-being (Kim, Yamada, Heo, & Han, 2014). Leisure activities with an arts-based component provide an opportunity for older adults to not only physically exercise but also socialize, expressing their thoughts and emotions and relating with others (Noice, Noice, & Kramer, 2014). Dance activities are a particularly good example of this, as older adults taking part in dance have been shown to report physical and mental health benefits as well as opportunities for social interaction that reduce feelings of isolation and depression (Centre for Policy on Ageing, 2011). An examination of the potential health benefits of dance programs is important, given that such programs provide easily accessible, non-stigmatizing, and low-cost interventions that may improve quality of life among older adults.

Benefits of Arts-Based Activities for Older Adults Living with Dementia

There is strong evidence supporting the benefits of arts-based interventions in people living with dementia. A scoping review by Ward, Milligan, Rose, Elliott, and Wainwright (2021) showed that participatory arts activities, including visual arts, music, literature, drama, dance, and comedy, have a positive impact on the overall health and well-being of people living with dementia (Ward *et al.*, 2021). Specifically, these interventions reported benefits in psychological, cognitive, emotional, social, and physical health of participants. The authors also reported that group-based arts activities were found to have benefits such as increased social motivation, in which participants demonstrated higher motivation to attend the activities, despite physical or health-related barriers.

Aside from the effectiveness of arts-based interventions, Schneider (2018) outlines five arguments supporting the use of arts for people living with dementia (Schneider, 2018):

1. People living with dementia may enjoy participating in art.
2. Arts-based activities can remain accessible for people living with dementia, as they are both multi-sensory and do not necessarily rely on memory.
3. Caregivers may enjoy participating in art and/or seeing their care recipient benefit from art.
4. Art can enhance culture and thus serve society at large.
5. Art does minimal harm.

Benefits of Music and Dance for Older Adults Living with Dementia

A systematic review and meta-analysis by Dorris, Neely, Terhorst, VonVille, and Rodakowski (2021) analysed a total of 21 randomized controlled trials. The authors found that music participation has a significant effect on cognitive function in older adults with

probable mild cognitive impairment or dementia, including a significant effect on mood and quality of life (Dorris *et al.*, 2021). Another systematic review by Moreno-Morales, Calero, Moreno-Morales, and Pintado (2020) also noted an improvement in cognitive function and quality of life in people living with dementia following music therapy (Moreno-Morales *et al.*, 2020). They found the greatest positive effect in cognitive function from interventions based on listening to music and noted that listening to music involves the integration of sounds, rhythms, and lyrics, which likely activates multiple regions in the brain. In a randomized controlled trial done by Särkämö *et al.* (2014), authors reported improvements in cognitive function and mood of people living with dementia, and in emotional well-being of their caregivers following musical activities when compared to usual care (Särkämö *et al.*, 2014).

Music has also been shown to be an effective way of keeping participants engaged. Camerlynck, Sedgwick, and Lister (2021) showed that a music intervention not only generates continued acceptance and engagement by people living with dementia and their caregivers, but also it is sought out by participants in between sessions. Furthermore, music and other creative interventions allow opportunities for self-expression, which in turn has psychosocial benefits. This includes social inclusion, sharing moments of bonding with other participants and families, and improving familiarity and trust with new staff (Camerlynck *et al.*, 2021; Irons, Garip, Cross, Sheffield, & Bird, 2020).

Emerging research in dance has found evidence of numerous psychological and social benefits for older people, including people living with dementia. A systematic review by Bennett, Fox, McLain, and Medina-Pacheco (2021) showed that, despite differences in study methods, dance is a physically safe activity that provides opportunities for socialization, allows for sensory stimulation, and thus contributes to alleviating agitation and anxiety – two categories of dementia-related symptoms that are often addressed with medications. In another systematic review by Mabire, Aquino, and Charras (2019), the authors found that dance offers multiple benefits, including emotional benefits, such as relaxation and meditation, physical and psychosocial benefits, and opportunities for creative non-verbal communication for people living with dementia (Mabire *et al.*, 2019).

While arts-based interventions show promise in supporting mental and emotional well-being in individuals living with dementia, the importance of physical activity in this population must also be emphasized. In a randomized controlled trial by Sanders *et al.* (2020), they studied how high-intensity and low-intensity exercise affects the physical health of people living with dementia. They found the greatest difference in gait speed (higher in the high-intensity group) and overall found similar results in physical health for both groups. In another randomized controlled trial, Hofgaard, Ermidis, and Mohr (2019) studied how dance affects the physical health of older adults. They found that dance provides numerous physical benefits, such as improves postural balance and physical function, as well as lowers blood pressure for older adults.

Considering the above literature, dance may function as an ideal wellness program for older adults, including those living with dementia, as it combines art, creativity, and physical activity. Indeed, several studies support this idea. For example, Guzmán-García, Mukaetova-Ladinska, and James (2013) reported that a dance intervention enhances positive emotional states and general levels of satisfaction for both people living with dementia and care staff. In addition, Cruz-Ferreira, Marmeleira, Formigo, Gomes, and Fernandes (2015) showed that older adults taking part in a creative

dance program had better physical fitness and life satisfaction when compared with a control group.

Sharing Dance Older Adults – Dance Program Description

In 2013, Baycrest and Canada's National Ballet School (NBS), respective leaders in brain health, aging, and dance training, embarked on a multi-year partnership with the intent of exploring the role of dance as a health innovation for older adults living with dementia. In addition to understanding the positive health outcomes of dance, the team was interested in understanding the unique qualities of dance as an art form, as distinguished from dance therapy where the intent of the intervention is to address a clinical need and evaluate the experience through symptom reduction (Kontos et al., 2020). We hypothesized that dance, when engaged in through the lens of an arts-based experience, may also be effective in eliciting outcomes related to health and well-being. This is in line with growing literature and part of a larger interdisciplinary discourse looking at arts-based innovations for people with dementia (McGreevy, 2016; Rylatt, 2012; Schmitt & Frölich, 2007).

Further, there is a call from the field of arts and health for innovations that are well described so they may be replicated consistently to build upon a knowledge base about how these innovations are effective. Baycrest and NBS were uniquely suited to combine their expertise to build a program of dance that could be based in a robust evaluation and well described to support replication and validity of the approach over time. This led to the creation of *Baycrest NBS Sharing Dance Older Adults*, a dance program designed to target older adults with a range of physical and cognitive challenges.

The program promotes the physical and psychosocial benefits of dance combined with the opportunity for meaningful connection and self-expression amongst a group. The program is delivered from the NBS studios through a video-streamed platform and facilitated in-person by non-dance specialists (known as *on-site facilitators*) to participants in their own communities. This approach leverages digital technologies to train facilitators with little to no dance experience, building capacity in organizations and communities, as well as overcoming challenges presented by Ontario's geographic expanse to provide high-quality dance programming, regardless of where older adults reside.

The *Sharing Dance Older Adults* program follows the format of a traditional dance class (Tafler, Sodums, Kim, & Bar, 2023, in preparation). Dances are learned and practised over the course of the program. For this study, the program was offered once a week over an 8-week term. All classes were pre-recorded at NBS studios and then streamed remotely to communities with the help of the on-site facilitator. Facilitators were trained prior to the outset of the program and learned the responsibilities of setting up the class environment and technology – ensuring the safety of the older adult participants (i.e., identifying hazards, ensuring safe movements), monitoring engagement (i.e., modelling movements, encouraging participation) – and how to provide feedback to NBS through an online questionnaire after each class to inform future classes.

The program offers two separate streams of programming: *In Your Seat (IYS)* and *On Your Feet (OYF)*. *IYS* is designed for older adults who experience more significant physical and/or cognitive limitations. These classes are 45 minutes, and dance movements are choreographed from a seated position. *OYF* is designed to make dance accessible to older adults who are more independent or living

with minor physical and/or cognitive limitations that would preclude them from participating in a standard dance class. These classes are 60 minutes, and dance movements start from a seated position then progress into a standing position with a seated modification always offered. Both streams are designed to be inclusive of varying capacities of the older adult participants with room for on-site facilitators to adapt the content based on any specific needs of their participants. A full description of these programs is presented in greater detail in a separate program profile paper (Tafler, Sodums, Kim, & Bar, 2023, in preparation).

The primary objective of this study was to investigate the impact that taking part in this dance program can have on older adults' physical fitness (balance, range of motion, and endurance), quality of life, mood, overall well-being, and social engagement. Hypotheses included that participation would lead to improvements in these various domains, and that certain characteristics (e.g., proficiency with technology, past experience with dance, presence of medical conditions) of the participants would influence the extent of these impacts.

Methods

Measures

Participant characteristics were collected via a demographics questionnaire. The primary outcome measure was the Senior Fitness Test (SFT; Rikli & Jones, 1999), a simple, easy-to-use battery of test items that assess the functional fitness of older adults and allows the identification of fitness levels that older adults need to achieve to be physically independent later in life (Sardinha, Santos, Marques, & Mota, 2015). The SFT is also sensitive to predicting impairments in balance, with those scoring higher having less chance of falls during everyday activities and increased confidence in certain daily activities that require more balance (Zhao & Chung, 2016).

The individual fitness test items involve asking participants to complete common activities such as getting up from a chair, walking, lifting, bending, and stretching. The tests were developed to be safe for older adults, while still meeting scientific standards for reliability and validity. The measures were collected by research staff who received training from a registered physiotherapist on the administration of the SFT. Specifically, *IYS* participants completed three SFT tasks that involved motions frequently involved in the *IYS* classes: the arm curl, sit and reach, and back scratch. The *OYF* group completed the same tasks and additional ones that involved lower trunk strength and endurance, the chair stand, step test, and up-and-go test. Rikli and Jones (1999) provides a complete description of the fitness tests administered.

Secondary outcomes included quality of life, social engagement, mood, and overall well-being. Measures of quality of life were assessed, using the 12-Item Short Form Health Survey (SF-12) for *OYF* participants and the quality of life in Alzheimer's disease (QoL-AD) for *IYS* participants. The SF-12 is a set of generic, coherent, and easily administered quality-of-life measures that taps into eight health concepts: physical functioning, bodily pain, role limitations due to physical health problems, role limitations due to personal or emotional problems, emotional well-being, social functioning, energy/fatigue, and general health perceptions. The QoL-AD is a 13-item questionnaire covering physical health, energy, mood, living situations, memory, family, marriage, friends, chores, fun, money, self, and life as a whole. Both caregivers and persons living with cognitive impairment or dementia can complete the measure.

Social engagement was assessed using the Duke Social Support Index (DSSI) – Abbreviated, an 11-item scale that asks participants about the size of their social network, the frequency of their social interactions, and amount of social support received.

The study also sought to explore changes in mood, as measured using the Visual Analogue Mood Scale (VAMS). The OYF group had additional measures, including engagement in daily activities, measured using the Engagement in Meaningful Activities Survey (EMAS); and older adults' confidence performing activities that require balance, as measured by the Activities-specific Balance Confidence (ABC) scale. All the primary and secondary outcome measures employed in this study have been validated in healthy, community-dwelling older adult populations (Eakman, Carlson, & Clark, 2010; Nyenhuis, Stern, Yamamoto, Luchetta, & Arruda, 1997; Powell & Myers, 1995).

In addition, participants were asked to complete a post-program survey after finishing the 8-week dance program, which included closed and open-ended questions about their satisfaction with the program and how the program impacted their physical health, mood, quality of life, and socialization. (See supplementary materials for a copy of surveys used.)

Research Design

This study employed an embedded mixed-methods design, where quantitative data comprised the primary data source, and the reported results were contextualized and supported by qualitative findings (Creswell & Plano Clark, 2017). Using a pre-/post-design, baseline quantitative data were collected 1–2 weeks before beginning the dance program, and post-program data were collected within 2 weeks of the final session of the 8-week dance program. All measures were completed in-person or over the phone (in the case that participants couldn't complete all measures during the in-person session). Ethical approval was obtained via the Baycrest research ethics board (REB #18-57). All participants or their substitute decision makers, where applicable, provided informed consent to participate in the research study.

There were some changes to the research design during the study implementation, based on participant feedback and interim analyses. The main changes were to remove certain questions from the post-program survey and replace them with ones that seemed more pertinent to the participants' experiences. This decision to edit the post-program survey was motivated by feedback from participants in the early stages of data collection, such as adding a question about difficulty of the dance movements.

Further, the SF-36 was replaced with SF-12 for OYF, and the SF-36 was replaced with QoL-AD for IYS to reduce participant testing burden, as the SF-36 was substantially longer than the SF-12 and QoL-AD, and the QoL-AD had an informant version in cases of participants with memory concerns. Also, for OYF, the University of California at Los Angeles (UCLA) Loneliness Scale, version 3, was replaced with the DSSI as its questions were more specific to social interactions and social networks, which were deemed to be more useful for capturing changes in social engagement and support.

Recruitment

Older adults were recruited from local community centres, long-term care (LTC) homes, adult day programs (ADP), and retirement homes. Recruitment was completed through a combination of e-mails, communication with LTC and ADP staff, and poster

advertisements. Potential participants were screened over the phone by study staff. Participants were enrolled in the study if they were 55 years of age or older, had registered for the *Sharing Dance Older Adults* program, and were willing to take part in the outcome measures. Participants were not enrolled in the study if they had communication difficulties that rendered them incapable of completing the necessary questionnaires and/or interviews.

Quantitative Analysis Methods

Descriptive summaries include means, standard deviations (SD), and proportions. Comparisons of groups at baseline were done using analyses of variance (ANOVA) for continuous variables and Fisher's exact tests for categorical variables. Mean item substitution was used to calculate total scale scores if some items were missing.

For the outcome measures, longitudinal linear mixed models were used to assess change across time (Fitzmaurice, Laird, & Ware, 2012). Time was entered as a categorical variable with the baseline value as the reference category. These models included separate random effects for the dance class and the participants (using a variance component correlation structure) to adjust for correlated responses within the dance class and across time. Model estimates were provided with 95 per cent confidence intervals (95% CIs). Effect sizes were calculated by dividing the model estimates by the standard deviation of the baseline measures. Statistical significance was defined as $p \leq 0.05$. Older adults who did not attend any of the dance classes were excluded from the analysed data sets.

The sample size for this study was calculated for the primary outcome, the SFT and specifically for the chair-sit-and-reach task, a measurement of flexibility. According to Cruz-Ferreira et al. (2015), they observed a significant improvement in flexibility, with a mean paired difference of 4.0, which equated to a medium effect size of 0.7. Using a sample size calculator for tests of paired differences between two means in a two-sided, paired t-test design, a total sample size of 40 (20 per group) has 82 per cent power to detect a mean of paired differences of this magnitude.

Not all study participants completed every survey (see [Supplemental Figure S-1](#) for the consort diagram) primarily due to loss to follow-up and changes to research design during study implementation as described above. The models described above included all completed surveys. The data analysis for this paper was generated using SAS software, Version 9.4, of the SAS System for Windows (Copyright © 2016, SAS Institute Inc.).

Qualitative Analysis Methods

Program attendees were invited to take part in audio-recorded, semi-structured interviews where they were asked about their experiences and self-reported outcomes associated with program participation (see Supplementary materials). Both IYS and OYF participants were asked to describe whether and how the program affected different outcomes associated with quality of life and overall well-being, such as social outcomes, physical outcomes, emotions, mood, and confidence.

Further, participants answered open-ended survey questions from a post-program feedback survey (see Supplementary materials). All data were transcribed, de-identified, and either uploaded into NVivo v. 11 (interview data; QSR International, Doncaster, Victoria, Australia) or inputted into Microsoft Excel (open-ended survey responses) for analysis.

Following the coding cycles detailed by Saldana (2016), in vivo coding was used as a first-cycle method, where initial codes were

developed using participants' own words to reflect their experiences. This was followed by the development of evaluative and concept codes to reflect data that reflected "judgments about the merit, worth, or significance" (Saldana, 2016, p. 140) of the IYS and OYF programs. Concept codes were also used to identify participants' self-reported outcomes. During second-cycle coding, pattern coding was performed as "a way of grouping [initial codes] into a smaller number of categories, themes, or concepts" (Saldana, 2016, p. 326).

Thematic analysis was performed using a deductive approach, where the codes were categorized based on topic/concept similarity, and the themes and subthemes were generated based on (a) key research and evaluation questions, in line with the project aims; and (b) the semi-structured interview question guide. Data and source triangulation were employed to explore the reliability of the findings. Aligned with an embedded mixed-methods design (Creswell & Plano Clark, 2017), the themes generated during the thematic analysis were aligned with the quantitative outcomes of interest. As the qualitative data corroborated the quantitative findings across outcomes of interest, the study team integrated and jointly reported on the quantitative and qualitative findings, as the qualitative findings provided support and context for the quantitative results. Participant quotes provided have been assigned a pseudonym to show the range of individuals who provided responses to the various types of quotes.

Results

Participant Characteristics

In Your Seat program

A total of 38 older adults at six sites (range: 4–8 per site) attended the dance classes and responded to at least one survey. Two of the sites were classified as ADP sites (32% of 38 respondents), and the remaining four were LTC sites (68% of 38 respondents). A total of 14 participants took part in the interviews. See Table 1 for a summary of participant characteristics.

The mean age of the older adults was 77.5 years (SD = 12.6 years, $n = 37$). Participants were mostly female (54%, $n = 37$), white (89%, $n = 37$), retired (97%), and likely to report speaking English as a primary language (78%, $n = 37$; others also listed English plus another primary language). Many of the older adults (56%, $n = 36$) were multilingual, reporting a range of two to six languages spoken and understood. Some had a post-secondary education (43%, $n = 37$); the mean years of education was 12.3 (SD = 5.0, $n = 37$).

Many older adults reported they had a caregiver (68%, $n = 37$) with a range of 1 to 2 caregiver hours per day for those not in LTC. Most of the older adults reported vision difficulties (81%, $n = 36$, all corrected for those with issues), and a minority reported hearing difficulties (41%, $n = 37$, with only 73% corrected for those with issues). Their medical histories indicated that memory concerns (46%, $n = 24$, Supplemental Table S1) and arthritis (43%, $n = 37$) had the highest prevalence among these older adults.

The older adults reported a mean of 3.9 hours of physical activities per week (SD = 5.2 hours, $n = 34$). Popular activities included stretching (76%, $n = 37$), walking (70%, $n = 37$), aerobics or fitness classes (32%, $n = 37$), yoga or Pilates (30%, $n = 37$), and weights (24%, $n = 37$). Few of the older adults participated in activity on the Internet (19%, $n = 37$), and their mean technology scale score (which has a possible range of 9–45) was low at 17.3 (SD = 9.8, $n = 37$). Most of the older adults (89%, $n = 37$) were

Table 1. Participant characteristics

Characteristic	Dance Program	
	In Your Seat (IYS, $n = 37^*$)	On Your Feet (OYF, $n = 48^*$)
	Mean (SD) / % Yes	Mean (SD) / % Yes
Age in years	77.5 (12.6)	76.2 (8.2)
Gender, female	54%	85%
Race, white	89%	79%
Employment status, retired	97%	98%
Primary language, English	78%	79%
Multilingual (IYS $n = 36$)	56%	60%
Education, post-secondary	43%	67%
Education, years	12.3 (5.0)	14.4 (3.1)
Had a caregiver	68%	13%
Vision difficulties, yes (IYS $n = 36$)	81%	73%
Hearing difficulties, yes	41%	33%
Memory concerns, yes (IYS $n = 24$, OYF $n = 29$)	46%	41%
Hours of physical activity per week (IYS $n = 34$)	3.9 (5.2)	6.8 (6.3)
Technology score (scale range 9 to 45, OYF $n = 46$)	17.3 (9.8)	28.9 (10.1)

Participant characteristics for the *In Your Seat* and *On Your Feet* Groups. Note: *the number of survey respondents unless otherwise noted.

attending the dance program for the first time. When asked if they had taken part in certain physical activities in the past month, which included dance classes, less than 5 per cent of participants reported having done so. The mean number of weeks attended was 6.0 out of 8 (SD = 2.3, $n = 23$, excluding three older adults who withdrew after attending less than four classes).

On Your Feet program

A total of 48 older adults at 10 ADP sites (a range of 2 to 10 per site) attended the dance classes and responded to at least 1 survey. Thirty-five (73%) older adults participated in the pre-/post-outcome assessment. The remaining (27%) completed the demographics and the satisfaction surveys only. A total of 33 participants took part in the interviews. See Table 1 for a summary of participant characteristics.

The mean age of the older adults was 76.2 years (SD = 8.2, $n = 48$). They were mostly female (85%, $n = 48$), white (79%, $n = 48$), retired (98%), and were likely to report speaking English as a primary language (79%, $n = 48$). Many of the older adults (60%, $n = 48$) were multilingual, reporting a range of two to five languages spoken and understood. Many had a post-secondary education (67%, $n = 48$) and the mean years of education was 14.4 (SD = 3.1, $n = 48$).

A few of the older adults reported they had a caregiver (13%, $n = 48$) with a range of 1–2.5 caregiver hours per day if they did not have a full-time caregiver. Most of the older adults reported vision difficulties (73%, $n = 48$, all corrected among those with issues) and a minority reported hearing difficulties (33%, $n = 48$, with only 50% corrected among those with issues). Their medical histories

indicated some memory concerns (41%, $n = 29$, [Supplemental Table S2](#)) and a high prevalence of arthritis (71%) and high blood pressure (50%).

Participants reported a mean of 6.8 hours of physical activities per week ($SD = 6.3$ hours, $n = 48$). Popular activities included walking (88%, $n = 48$), stretching (77%, $n = 48$), aerobics or fitness classes (52%, $n = 48$), weights (48%, $n = 48$), and dance classes (44%, $n = 48$). Some of the older adults participated in activities (such as video calls or watching online lectures) on the Internet (44%, $n = 48$) and their mean technology scale score (which has a possible range of 9–45) was moderate at 28.9 ($SD = 10.1$, $n = 46$). Most of the older adults (83%, $n = 47$) were attending the dance program for the first time.

Among a subgroup of the respondents, the mean number of weeks attended was 6.2 out of 8 ($SD = 1.9$, $n = 18$).

Dance Program Effects on Outcome Measures

In Your Seat program

For outcome measures for IYS, refer to [Table 2](#) for a summary of results embedded with supporting qualitative quotes, and to Supplementary Tables 1–2 for details of model estimates.

Physical outcomes. For the SFT, modelling results indicated that there was a significant increase in the arm curl ($p = 0.05$, effect size = 0.32), sit-and-reach ($p = 0.05$, effect size = 0.37), and back

Table 2. In Your Seat outcome measures, results, and supporting qualitative findings

Outcome Domain	Measure	Scale	Baseline*	Post-Program*	Difference*	Change	Quote
Strength	Arm curls, # in 30 sec	SFT	7.2	8.4	1.2	Significant improvement, small effect size	<i>Well [...] parts of [the program were] a little bit difficult for me just because I'm a little bit spastic and not coordinated very well for ballet. I'm more coordinated for sports, contact sports rather than ballet, but I enjoyed doing it, you know. It stretched out my muscles, and that's really the reason I did it because I felt it would have some positive impact on my overall health, so it did have that to a certain extent. That's it. – John</i>
Coordination and flexibility	Back scratch score, inches	SFT	–11.9	–9.0	2.9	Significant improvement, medium effect size	<i>[The program] just helped me fuel my body, it got the juices flowing, it got me loosened up and you know, it helps somewhat with balance a little bit. – John</i>
	Sit-and-reach score, inches	SFT	–7.4	–5.1	2.2	Significant improvement, small effect size	<i>[When I go to] hang up my coat, and it's all the way up with the handle, and I have no problem [now]. [...] I had sometimes to reach out more [before the dance program]. – Agnes</i>
Quality of life	QoL–AD score (range 13–52)	QoL–AD	36.8	37.2	0.4	No change	<i>Sometimes I underestimate myself and I think that I'm not going to give anything or get anything out of something, and here I was feeling like I was doing both. [...] I got to feel that my body was able to move. – Susan</i>
Mood	Tense, T-score	VAMS	53.4	54.1	0.7	No change	<i>Walked out [of the class] feeling alive! Like every sense had been enhanced. – Susan</i>
	Afraid, T-score	VAMS	55.8	53.8	–2.0	No change	
	Confused, T-score	VAMS	56.5	57.7	1.2	No change	<i>Feel more energetic. – Ellen</i>
	Sad, T-score	VAMS	57.8	57.3	–0.6	No change	
	Tired, T-score	VAMS	52.4	48.5	–3.9	No change	<i>Well, it's helped me – at times, it made me feel better. – John</i>
	Happy, T-score	VAMS	43.6	46.0	2.4	No change	
	Energetic, T-score	VAMS	44.5	48.0	3.6	No change	
	Angry, T-score	VAMS	50.3	50.6	0.3	No change	

Results of modelling analyses for outcome measures with supporting qualitative findings for each domain. Note: *Values presented are from modelling, not the raw values.

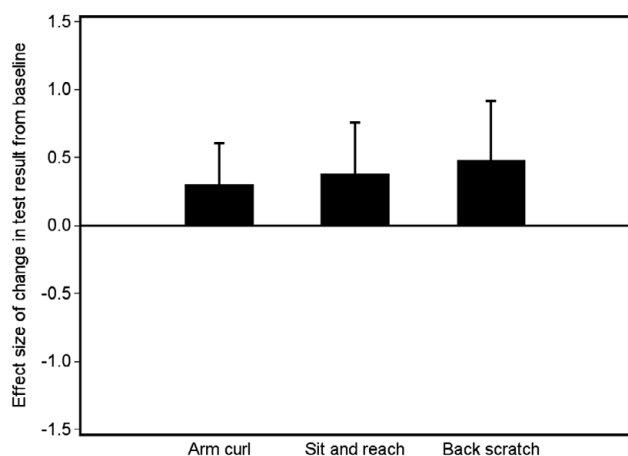


Figure 1. Effect sizes and 95 per cent CI for change in SFT scores from pre- to post-dance program for the IYS group, showing significant increases in the arm curl, sit-and-reach, and back-scratch tasks.

scratch ($p = 0.03$, effect size = 0.48) tasks. A graphical representation of the effect sizes and related 95 per cent CIs for the change in SFT scores can be found in Figure 1.

The qualitative data corroborated these findings regarding improvements in physical fitness, as participants described that the program led to perceived changes in their coordination and/or flexibility (see Table 2). Where the quantitative results highlighted statistically significant changes in mean back scratch scores, the analysis of the interview data demonstrated that participants perceived general changes in their flexibility – for instance, some participants found that the program improved their range of motion in their joints, such as in their hips. In other cases, IYS participants described that the program helped them become more effective at completing some activities of daily living, such as how they can now: *hang up my coat, and it's all the way up with the handle, and I have no problem. [...] I had sometimes to reach out more [before the dance program]* (Agnes).

An additional physical benefit reported by IYS participants is that they learned to modify certain movements and could complete the exercises at their own pace: *I have to be very careful about not doing wrong things. I have a lot of arthritis [...] So, I was careful about that, and I didn't have a problem with that and that pleased me. [...] If I felt tired, I just rested and put my eyes closed for a few minutes, and then joined the class again when I felt better* (Dolores). However, other participants with pre-existing conditions found it difficult to modify movements and to keep up during the class, particularly in instances where the instructor moved at a quicker pace:

The leg exercises, if they were slow, they were good. If they were fast, they weren't so good, and I couldn't get over fast enough. And then when [the instructor] went faster at the later exercises or towards the end, I was getting confused and wasn't able to do it as well. (Steve)

Many of the older adults from the IYS (68%, $n = 19$) reported their range of motion improved or greatly improved, whereas the remainder (32%) reported there was no change in their range of motion. Many in the IYS program found the dance movements somewhat challenging or very challenging (53%, $n = 19$).

Quality of life. For the QoL-AD, modelling results indicated that the QoL-AD total score did not change over time ($p = 0.70$, effect size = 0.05, Supplemental Table 1).

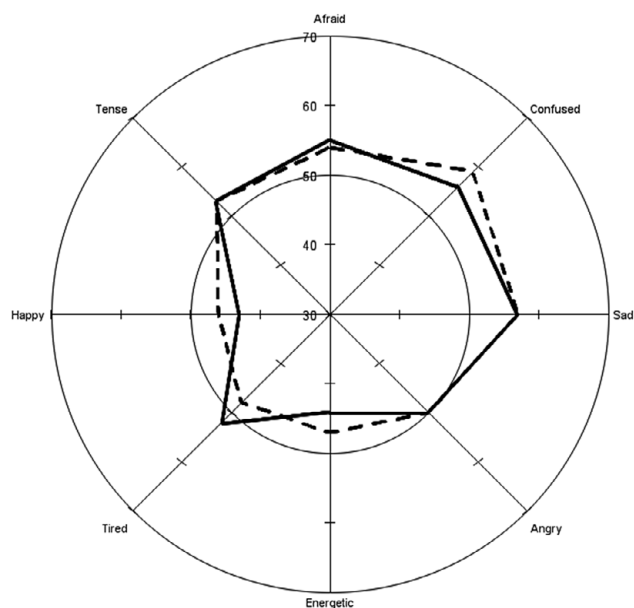


Figure 2. Mean VAMS T-scores for the IYS group, showing maintenance of scores across time points.

Mood. A summary of the VAMS items is presented as standardized T-scores in Supplemental Table 2. A visual presentation of the pre and post T-scores can be found in Figure 2. Modelling results indicated that none of the VAMS items changed over time. Similar modelling results were found for the raw scores (results not shown).

During the interviews and open-ended survey questions, all IYS participants who spoke about any perceived impacts of the IYS program on mood reported that the change was positive. Participants reported that the program made themselves and other group members *smile* (Steve) and described how the program *helped me – at times, it made me feel better* (John), or that *[...] I surprise myself sometimes, that Oh, I'm enjoying this and I'm kind of high* (Susan). This finding was reinforced by responses to the open-ended survey questions, as some IYS participants reported that they *walked out [of the class] feeling alive! Like every sense had been enhanced* (Susan) and that they *feel more energetic* (Deborah).

Most participants in the IYS program (84%, $n = 19$) reported in the post-program survey that their mood and overall well-being (74%, $n = 19$) improved or greatly improved.

Social outcomes. Several IYS participants described how the social component was perhaps the most salient aspect of the program. Participants described how the program provided them with an opportunity to connect with others in several ways. For instance, attendees reported that they were able to meet new people: *There are people that I did meet, but a little more, not a great deal more* (Steve); that they could help one another: *They're helping one another. Sometimes that one [person] couldn't seem to know what [the movement] was and I said, 'Like this' [...] And we help one another—that's what I liked seeing, is to help one another* (Cindy); and that they could be around others: *Social life, I got along with other people [...] That's what's really got to me* (Steve). Some participants did express, however, that the program had no impact on their social connectedness, as several participants already knew one other.

The largest proportion (47%, $n = 19$) of IYS participants reported in the post-program survey that they were neutral about the opportunity to socialize.

On Your Feet program

Refer to Table 3 for a summary of the outcome measure results for OYF embedded with supporting qualitative quotes, and to Supplementary Tables 3–4 for details of model estimates.

Physical outcomes. Modelling results for the OYF participants showed significant increases in the arm curl ($p = 0.02$, effect size = 0.55), chair stand ($p = 0.03$, effect size = 0.41), and step tasks ($p = 0.05$, effect size = 0.37), whereas there was no significant change over time for the back scratch, up-and-go, and chair sit-and-reach tasks (see Table 3 for an overview of results and Supplemental materials S1 for details of model estimates). A graphical representation of the effect sizes and related 95 per cent CIs for the change in SFT scores can be found in Figure 3.

During the interviews, OYF participants often commented on the physical demands or challenges of the program, with some providing mixed feedback. Some found the movements to be *easy* (Ellen, Olivia, and Sara) but described sometimes feeling sore later on in the day, elaborating that they: *Never thought [of the program] in the form of exercise, and that sort of surprised me, but good surprise to realize that in the form of movement, I was actually getting a real good workout* (Linda). Still others found that the program was not physically demanding enough, noting no physical impacts, and thus no changes in: *strength, not feeling tired or anything* (Melissa).

Further, several OYF participants reported experiencing reduced pain in their joints, as a result of taking part in the program: *A positive experience was actually – I feel my bones get not so in pain like before* (David). However, these results should be interpreted with caution, as some participants experienced increased pain by participating in the program, which was sometimes prevented by stretching beforehand.

Many of the older adults from the OYF program (67%, $n = 16$) reported in the post-program survey that there was no change in their balance, which was supported by the fact that modelling results for the ABC measure did not show any change (see Supplemental Table 2). Many reported their range of motion improved or greatly improved (73%, $n = 26$), whereas the remainder (27%) reported there was no change in their range of motion. Some participants in the OYF program found the dance movements somewhat challenging or very challenging (38%, $n = 16$).

Quality of life. Modelling results showed that there was no significant change in the SF-12 or EMAS measures (Supplemental Table 3).

Social outcomes. Modelling results indicated that none of the DSSI variables significantly changed over time (see Supplemental Table 3). However, when examining the open-ended survey and interview data, OYF participants often reported that the program had a positive influence on their social lives, as they were able to meet others and feel as though they belonged to a group (see Table 3):

[...] I was spending time with somebody instead of being alone at home because I'm single, and I'm retired [...] it's not always I have the opportunity to be with other people, with seniors or not seniors, and socialize, and have a good time together. I appreciate I have the possibility through this program. (Linda)

OYF participants were more likely to describe changes in their social lives when compared with the IYS participants. OYF attendees reported that there was a level of comradery that developed throughout the course of the program, as participants articulated how group members were able to laugh and talk with one

another on a regular basis. Further, participants noted how the connections extended beyond the program sessions:

[...] I always think it's a plus for something like this to be in a group environment because it's, well, number one, you can get to know and meet people in your community, which is good, and it's interesting to get a little bit of information and ideas about people's lives just in a little bit of conversation part within the program. (Olivia)

Some participants described how the group dynamics enhanced previously existing friendships, whereas others noted how they were able to reconnect with others. However, some in the OYF group also noted how this program did not influence their social connections or social engagement in any way, either because they already knew the other dance participants, or they attended only a few sessions.

Most participants in the OYF program (88%, $n = 26$) indicated in the post-program survey that they sometimes or often had the opportunity to socialize.

Mood. A summary of the VAMS model estimates is presented as standardized T-scores in Supplemental Table 4. A visual presentation of the pre and post T-scores can be found in Figure 4. Modelling results indicated that none of the VAMS items significantly changed over time (Supplemental Table 4), although the increase in the tiredness rating was marginally significant ($p = 0.06$). Similar modelling results were found for the raw scores (results not shown).

Unlike the quantitative measures, analysis of interview and open-ended survey response data identified that most participants described how the program uplifted their moods and spirits (see Table 3):

It's phenomenal. I recommend it very highly, very disappointed that it's come to an end. I looked forward to it every single time, and it was invigorating. It was uplifting. It was enlightening, enjoyable. I can't say enough adjectives about this program. It brought me to a level of sophisticated appreciation. First of all, I love ballet, and the music, and the instructors as well as the pianist. They gave you an alternative, whether to sit or to stand. If I could've stood, I would've. But because it gave me the opportunity to sit, I was able to participate wholly. It just gave me such a level of satisfaction. Uplifting emotionally and mentally, physically. I can't just say enough about it. I bless their hearts for thinking of it and I feel so fortunate being able to participate and to be able to verbalize my appreciation and gratitude. (Yael)

Many in the OYF program (56%, $n = 16$) reported in the post-program survey that their mood and overall well-being (50%, $n = 16$) improved or greatly improved.

Additional outcomes: IYS and OYF. Inductive coding of the qualitative interview and open-ended survey response data highlighted that the IYS and OYF participants identified several other outcomes that were influenced by the program and not captured using the quantitative measures reported above. In both programs, participants reported that the program increased their confidence, creativity, and motivation. For both IYS and OYF participants, participating in and completing the program were associated with a *sense of accomplishment* (IYS participant, Susan). As described by both IYS and OYF participants:

Sometimes I underestimate myself and I think that I'm not going to give anything or get anything out of something, and here I was feeling like I was doing both. [...] I got to feel that my body was able to move. (IYS participant, Susan)

Table 3. On Your Feet outcome measures, results, and supporting qualitative findings

Outcome Domain	Measure	Scale	Baseline*	Post-Program*	Difference*	Change	Quote
Strength	Arm curls, # in 30 sec	SFT	11.4	12.7	1.3	Significant improvement, medium effect size	<i>Never thought [of the program] in the form of exercise, and that sort of surprised me, but good surprise to realize that in the form of movement, I was actually getting a real good workout. – Linda</i>
	Chair stands, nearest ½ inch	SFT	9.2	10.6	1.4	Significant improvement, small to medium effect size	
	Steps, # in 2 min	SFT	42.9	51.1	8.2	Significant improvement, small to medium effect size	
	Up-and-go, # sec for 8 feet	SFT	11.9	11.9	–0.1	No change	
Coordination and flexibility	Sit-and-reach score, inches	SFT	–3.3	–3.8	–0.5	No change	<i>But for sure I can move better and I can do more reaching exercises, like with my arms. [...] This program, through the gentle exercise, really helped me to get rid of the fear to move my arms high up because I was in this moment, some month ago, I was at the stage when I have to ask somebody to take me for something from the higher shelf. I was afraid that when I moved my arm up, I will be in pain. But like I said, the regular, gentle exercise kind of diffused that fear because I think that I can do that without pain or minimum pain, and this made me more independent. – Brenda</i>
	Back scratch test, inches	SFT	–5.5	–5.2	0.3	No change	
	ABC scale, mean score, range 0–100%	ABC	77.8	76.8	–1.0	No change	
Quality of life	SF-12 Physical Health, mean score, range 0–100	SF-12 PCS	40.9	42.0	1.1	No change	<i>Oh, I think I'm more daring. And when I say that, in my building, where I'm living, like I love to walk the halls, but I walk now and I'm singing, and I'm doing some of the dance movements, and that sort of thing, there's more spring to my body. – Linda</i> <i>Yes, I find the feeling that's promoted by the program – this is about self-worth, and I think that is promoted through this kind of activity. – Howard</i> <i>The impact for me, and I'm being honest, it made me realize that despite my physical handicaps, I'm able to do anything I put my mind to. – Linda</i>
	SF-12 Mental Health, mean score, range 0–100	SF-12 MCS	53.2	51.5	–1.7	No change	
Mood	Tense, T-score	VAMS	51.6	48.8	2.9	No change	<i>If I was feeling low, it was just uplifting. It uplifted my spirits. I just wanted to participate with my whole body and my mind, my whole being. – David</i> <i>This program gives them a bit more energy and they find that the endorphins kick in, even though it's not high impact. – Marjorie</i>
	Afraid, T-score	VAMS	51.9	49.4	–2.5	No change	
	Confused, T-score	VAMS	51.7	48.5	–3.2	No change	
	Happy, T-score	VAMS	48	47.8	–0.1	No change	
	Tiredness, T-score	VAMS	50.8	56.2	5.3	Increase, small to medium effect size	
	Sad, T-score	VAMS	53.9	57.5	3.7	No change	
	Angry, T-score	VAMS	47.3	45.7	–1.6	No change	
	Energetic, T-score	VAMS	45.4	52.7	7.3	Increase, small to medium effect size	
Social	Social interaction, range 4–12	DSSI	6.9	6.9	0	No change	<i>Meeting with people, and I was spending time with somebody instead of being alone at home because I'm single, and I'm retired [...] it's not always I have the opportunity to be with other</i>

(Continued)

Table 3. Continued

Outcome Domain	Measure	Scale	Baseline*	Post-Program*	Difference*	Change	Quote
							<i>people, with seniors or not seniors, and socialize, and have a good time together. I appreciate I have the possibility through this program.</i> – Brenda
	Social support, range 0–14	DSSI	11.2	11.6	0.4	No change	<i>[The program] helped me to meet some new friends. So, in that way, it was very—it was beneficial.</i> – Sage <i>Although some acknowledged that friendships might not sustain beyond the program, others said, 'Well, let's call and get together,' so, you know [...] It might happen [...] We'll see how this goes, yeah.</i> – Olivia <i>[The program was] a very welcome part of my life, and therefore I think it had an impact in the sense that because many of us speak about [the program] during, let's say, dinner time [...] So, it seems [the connection with others] seems to have resonated beyond the hours when we're [attending the program].</i> – David

Results of modelling analyses for *On Your Feet* outcome measures with supporting qualitative findings for each domain. Note: *Values presented are from modelling, not the raw values.

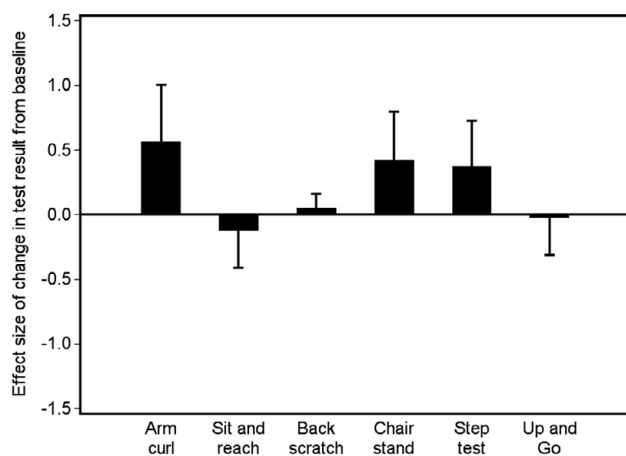


Figure 3. Effect sizes and 95 per cent CI for change in SFT scores from pre- to post-dance program for the OYF group, showing significant increases in the arm curl, chair stand, and step test tasks.

The impact for me, and I'm being honest, it made me realize that despite my physical handicaps, I'm able to do anything I put my mind to. (OYF participant, Linda)

In terms of creativity, IYS and OYF participants found themselves being more creative and experimental with their movements, as the program: *added to my creativity. [...] It showed me different aspects of my body, reaching out, and being able to express myself through the motions that we followed that was suggested to us* (OYF participant, Yael). Among those who identified as being inherently creative individuals, some described the program as an additional opportunity to engage in another form of art. In some cases, participants reported an increased appreciation for art and creativity: *[...] I'm doing painting and*

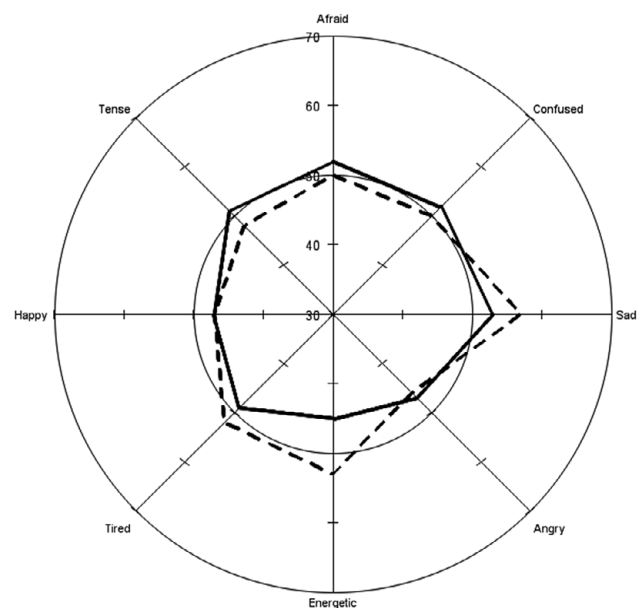


Figure 4. Mean VAMS T-scores for the OYF group, showing maintenance of scores across time points.

one of the first things I painted was a ballerina dancer [...] I'm now going to the Nutcracker as a gift for my brother because of this program (IYS participant, Morris). Further, others described the benefits of engaging in creative pursuits, expressing that: *dancing, and music, and art impact each other* (IYS participant, Anne), and that they are: *very important for the brain* (IYS participant, Anne). Some IYS and OYF participants reported that the program did not influence their creativity in any way ($n = 9$).

Finally, the IYS and OYF participants described how the program increased their motivation to perform daily activities and got them out of the house:

Well, I mean I think it keeps me going [...] Yeah, so just like my exercise classes. [...] Well, I mean, it was an obligation because it was a study. But you know, otherwise it's not choosing every day do I want to go? It's the way it was, you're going. [...] Well, you know, that's what gets me dressed in the morning, and out of the house for both of those classes. (IYS participant, Susan)

It has helped, yes. [...] Just getting out and doing things, the program makes you look forward to daily activity, dance, and things, or that Well, I'm a pretty active person, so it got me out of the house to do something outside of my house and into the community. (OYF participant, Sara)

Overall Program Satisfaction

Most adults from both programs reported in the post-program survey that they found the location (IYS: 90%, $n = 19$; OYF: 92%, $n = 26$) and the timing (IYS: 84%, $n = 19$; OYF: 85%, $n = 26$) of the dance program to be convenient or very convenient. Most participants in both programs enjoyed or very much enjoyed the dance program (IYS: 79%, $n = 19$; OYF: 88%, $n = 26$) and looked forward to attending the program (IYS: 79%, $n = 19$; OYF: 85%, $n = 26$). Most of the older adults (IYS: 95%, $n = 19$; OYF: 88%, $n = 26$) were satisfied or very satisfied with the dance program. Most of the older adults would recommend the dance program to a friend (IYS: 95%, $n = 19$; OYF: 94%, $n = 16$) and would register for the dance program again, if offered (IYS: 90%, $n = 19$; OYF: 80%, $n = 15$).

Discussion

The primary purpose of this study was to explore the impact of the remotely delivered *Sharing Dance* program on older adults' physical fitness, mood, social engagement, quality of life, and overall well-being. Results demonstrated that participation in *Sharing Dance Older Adults* led to improvement in some but not all domains measured, and that certain characteristics of the participants may have influenced the extent of these impacts.

Specifically related to physical fitness, results demonstrated physical benefit for participants from both the IYS and OYF versions of the program. Improvements related to both strength and flexibility were measured and further highlighted by participants' self-reports in both versions of the program. While this study did not directly compare IYS and OYF participants, differences in the specific physical improvements of IYS and OYF may reflect the different pace and areas of focus of the two versions of the program (i.e., seated movements versus standing movements) and/or differences in participant baseline levels of functioning between the two groups. In addition to the measured improvements in both versions of the program, qualitative data corroborated the ways in which the program improved participants' physical functioning, including improved ability to complete daily tasks independently and improved ease and comfort with movement generally.

An additional physical benefit reflected in participant interview/focus group comments included an understanding that movement and dance were still accessible even if some movements needed to be modified. While moderate to vigorous physical activity is most often the recommended dosage to improve measurable aspects of health, as reflected in these findings, even

modified movement can be beneficial (Tremblay et al., 2011). This finding suggests that the program may have helped participants understand that they continue to have movement/exercise options even if they also have physical limitations. Further, comments from participants suggested the program gave them confidence to move more independently, and, for some, allowed them to move without pain. It was noted that not all the dancers experienced pain reduction. This inconsistency in pain reduction in older adults who dance has been noted in a recent review of the dance in older adult literature as well (Liu, Shen, & Tsai, 2021). Further research exploring how *Sharing Dance Older Adults* may support physical pain reduction may therefore provide clarification of whether, how, and for whom the specific approach to dance used in this program might reliably support physical pain reduction.

It should be noted that, regarding social engagement, results did show that OYF participants were more likely to describe changes in their social lives when compared to the IYS participants. This difference could be attributed to the fact that OYF participants were usually taking part in a class at a community centre, library, and so on, where they would meet new people during the class. By contrast, the IYS participants took part in the classes at their retirement home or long-term care centre with other individuals who lived in those residences, limiting their opportunity to meet new people.

The measures used in this study did not detect significant changes in mood, quality of life, or social engagement scores. However, participants consistently reflected during interviews and focus groups that the dance program did support enhanced mood, quality of life, and social engagement. It is possible that the measures used to assess these variables were not suited to capture the ways in which dance supports well-being. Dance for people living with Parkinson's research has similarly found only limited quality of life improvements when measured quantitatively (Carapellotti, Stevenson, & Doumas, 2020), which contrasts significantly with what has been captured qualitatively (Hunter, Lovegrove, Haas, Freeman, & Gunn, 2019).

Recently, human flourishing has been proposed as a broader construct to understand well-being in older adults, including people living with dementia (e.g., Bar & Kontos, 2023; Kontos & Grigorovich, 2018; Magnussen, Alteren, & Bondas, 2021). Flourishment has been operationalized in a multitude of ways since the time of Aristotle (Oberholzer, 2019), but broadly is considered an optimal state of well-being. Positive relationships, accomplishments, meaning, and positive emotion are often considered key indicators of human flourishing (e.g., Seligman, 2011; Vanderweele, 2017). Participants' comments in this study reflected all these indicators. Participants described several ways the program fostered relationships, a sense of accomplishment, was meaningful, and facilitated positive emotion. Given that traditional measures of quality of life and mood have only minimally captured the ways in which dance supports older adults' well-being to date, future research should therefore consider how the benefits of dance may be better captured through human flourishing. Qualitative research may be best suited to capture the ways in which dance can support well-being, but to measure this impact, the Flourishment Scale or other validated measures of flourishing should be considered in future studies (Diener et al., 2010). Use of this approach would also help clarify whether flourishing or quality of life is a better lens through which to understand the non-physical benefits of dance in older adulthood.

Limitations and Strengths

Limitations to this study that were common to both the IYS and OYF groups were largely related to recruitment, loss of follow-up, and the use of measures that were not sensitive enough to the change experienced by participants engaged in either dance program.

While the initial intent was to collect data across Ontario from the wide range of sites that were running the dance program, recruitment and data collection were limited due to geographic and logistic factors. It was difficult to schedule participants for a pre-/post-design study as it required study staff to travel multiple hours to an external site to collect data on the first and last days of the dance program. In addition, private areas suitable for testing needed to be located at each site. This was a challenge as the external sites were often public places such as libraries or community centres, where private areas are limited and could be booked by other users. As a result, most of the data collection took place in Toronto at sites that were within a short distance of research offices. This impacted how diverse and heterogeneous the sample was that took part in the study, and future studies should be designed with this in mind to maximize the diversity of data collected.

Loss of follow-up was another limitation for both groups, even for sites within Toronto, as the sample size for some measures was small, such as for certain questions on the program evaluation survey. Those measures had small sample sizes also because of deciding to change or add questions to the program evaluation survey throughout the progression of the study. This decision was balanced against the interim analysis results and feedback from participants and seems justified; however, future data collection should include the same questions to further understand the strength of these results.

It could be argued that another limitation of this study was the lack of comparison between participants living with dementia and those not living with dementia. The study team chose not to make this comparison because feedback from recruitment sites during the planning process indicated that potential participants would be deterred from participation if there was cognitive testing involved. Future studies should consult with recruitment sites to understand whether this would be an issue.

Finally, it should be noted that because this study was completed just before the first wave of coronavirus disease (COVID-19), it is not clear how the same program would be experienced in a post-COVID-19 world. Participants had participated in the dance classes in person, as the study occurred before there were any restrictions put in place for in-person activities. Since then, the dance program has become available for individuals to take part in individually, in their own homes; however, such a format does not allow nearly the same level of social interaction as the in-person format. In the future, it will be worthy to investigate whether this difference in formats differentially impacts social engagement and other outcomes.

Balanced against these limitations are the study strengths, such as the use of a mixed-methods design, which allowed different approaches to exploring the research questions. Another strength was the collection of data from a wide geographic range across Ontario, resulting in a more heterogeneous study sample in this regard that included some older people from non-urban communities. This study also focused on a dance program with an articulated protocol, thus, promising findings from this work can be replicated and expanded in future research about this program.

Implications

Taken together, the learnings from this study provide theoretical, methodological, and practical implications for future work in this area. The impact of dance on participant well-being was clearly better reflected qualitatively than when measured. Given that participant comments aligned well with the concept of flourishing, researchers should consider whether the impact of dance is better understood as supporting flourishing or life enrichment rather than the often more health-centred concept of well-being. This shift should be further considered in the methodological approaches of future work in this area. In this study, mixed methods provided opportunity for qualitative data to corroborate and expand on quantitative findings, but it also helped capture findings that would have been missed if only quantitative measures were used. As new measures are considered to best capture the non-physical benefits of dance for older adults, mixed methods should continue to be used to support the most robust understanding of participant experience possible. Finally, this project demonstrated how accessible dance opportunities can safely and efficiently be implemented in Ontario communities to the benefit of its participants. In addition to future research to further explore these benefits, this work should encourage greater uptake of dance programs like *Sharing Dance Older Adults*.

Conclusion

This was a multisite research study that sought to understand the impact of participation in the *Sharing Dance Older Adults* program on the physical fitness and mental and emotional well-being of older adults. Two versions of the program were offered, one that was accessible to people living with significant cognitive and/or physical impairment and the other that was accessible to people with only minor physical and/or cognitive and physical impairment. Participants in both groups took part in a series of physical fitness and well-being measures before and after the 8-week program, completed a program evaluation survey, and participated in an interview on their experiences in the program. Analysis showed significant improvements in certain physical fitness tests for both groups but no significant change in any of the quantitative measures of well-being. Feedback from the program evaluation survey and interviews was largely positive and provided a range of comments, which supported the quantitative findings regarding physical fitness improvements and gave insight into ways in which well-being was supported, despite not being captured through quantitative findings.

Supplementary material. The supplementary material for this article can be found at <http://doi.org/10.1017/S0714980823000570>.

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