Therapeutic Recreation Journal
Vol. LII, No. 4 ▪ pp. 368–380 ▪ 2019
https://doi.org/10.18666/TRJ-2019-V53-I4-9728

Yoga as a Community-Based Recreational Therapy Intervention for Older Adults

A Pilot Study

This article is published as part of the ATRA *Annual in Therapeutic Recreation* issue of the *Therapeutic Recreation Journal*.

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Abstract

The purpose of this multi-method pilot study was to explore the efficacy of a yoga intervention on the leisure constraints and functional fitness of community-dwelling older adults. Seven community-dwelling older adults engaged in 16, 60-minute sessions of hatha yoga conducted twice a week for eight weeks at a local continuing education center. Individuals enrolled in either a seated yoga class (n=4) or a standing yoga class (n=3). Pre-/post-measures included physical measures and a survey of leisure constraints. A focus group was conducted with each group to determine their perspectives of participation. Results indicated significant improvement in lower-body strength and endurance. Balance, upper and lower body flexibility, upper-body strength, and self-reported leisure constraints did not show significant improvements. Qualitative data showed that participants perceived psychosocial and physical benefits to yoga participation including increased energy and motivation to engage in other types of physical activities. Findings

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indicate the potential for the use of yoga to increase participation in other forms of leisure-time physical activity, but further evaluation of the influence of yoga on leisure constraints is warranted. Implications for recreational therapists are discussed, including helping clients identify community yoga classes that will best meet their needs based on class size, accessibility, and pace.

Keywords

Community programming, leisure constraints, older adults, recreational therapy, yoga

Introduction

Leisure time physical activity (LTPA) is physical activity that causes increased heart rate and calorie expenditure during one's leisure time. Examples of LTPA include walking, gardening, hiking, dancing, and swimming (Wiese, Kuykendall, & Tay, 2018). LTPA may help prevent loss of function and the onset of frailty in older adults (Kressig et al., 2001). The benefits of regular LTPA include decreased risk for chronic illness, increased functional fitness, and reduced risk of falls (Hawkins, Foose, & Binkley, 2004; Kim, Lee, Chun, Han, & Heo, 2017; Liu & Falk, 2014). However, leisure constraints (i.e., factors that inhibit or reduce participation in preferred leisure activities) may reduce participation in LTPA (Alexandris, Barkoukis, Tsorbatzoudis, & Grouios, 2003). Despite the many benefits, engagement in LTPA tends to decline with age (Schutzer & Graves, 2004). This decline in LTPA may be related to leisure constraints, such as decreased functional fitness, fear of injury, lack of time, lack of social support, and health restrictions (Alexandris & Carroll, 1997; Patterson & Chang, 1999).

Health-related leisure constraints may be particularly salient for older adults and may include reduced functional fitness, pain, fatigue, fear of injury, fear of falling, fear of aggravating health problems, and low self-efficacy (Alexandris et al., 2003; Murphy, Williams, & Gill, 2002; O'Brien Cousins, 2003). Functional fitness such as strength, cardiovascular endurance, gait speed, and balance are known to decrease with age (Milanović et al., 2013). A decrease in functional fitness can lead to decreased participation in physical activity, which in turn can lead to further declines in functional fitness. These factors may be especially impactful after a health event or diagnosis of a chronic illness, and may cause fear of injury or illness from LTPA (Shaw, Bonen, & McCable, 1991; Strain, Grabusic, Searle, & Dunn, 2002).

Leisure constraints do not necessarily inhibit LTPA completely; older adults can negotiate constraints by using strategies such as drawing upon social support and making modifications to activities and lifestyle to ensure continued participation (Son, Mowen, & Kerstetter, 2008). The literature indicates yoga may be an effective intervention for reducing leisure constraints in the form of functional fitness (Schmid, Miller, Puymbroeck, & DeBaun-Sprague, 2014; Schmid, Van Puymbroeck, & Koceja, 2010), and in improving leisure constraint negotiation strategies (Van Puymbroeck, Schmid, Shinew, & Hsieh, 2011; Van Puymbroeck, Schmid, Walter, & Hawkins, 2017; Van Puymbroeck, Smith, & Schmid, 2011). An overall reduction in leisure constraints may potentially lead to an increase in LTPA.

Yoga

Hatha yoga (referred to simply as yoga through the remainder of the article) is a general category of yoga that includes most styles practiced in the United States and consists of a combination of physical activity (*asana*), breathwork (*pranayama*), and mindfulness (*dyhana*) (Sovik & Bhavanani, 2016). Existing literature has demonstrated the effectiveness of yoga on reducing fear of falling among older adults recovering from a stroke and older adults in a retirement community (Schmid et al., 2014; Schmid, Van Puymbroeck, & Koceja, 2010). Additionally, yoga is associated with reduced leisure constraints among residents in a retirement community, individuals with Parkinson's disease, and women recovering from breast cancer (Van Puymbroeck et al., 2017; Van Puymbroeck, Schmid, et al., 2011; 2017; Van Puymbroeck, Smith et al., 2011). In general, yoga has been shown to positively impact potential leisure constraints related to functional fitness such as gait speed, balance, flexibility, and lower body strength among older adults, individuals with stroke, and individuals with Parkinson's disease (Roland, Jakobi, & Jones, 2011; Schmid et al., 2014, 2010; Van Puymbroeck et al., 2018).

Yoga is offered in a variety of settings including gyms, yoga studios, and community centers. Continuing education centers are another potential setting for yoga; they promote continued learning for older adults and offer a variety of educational classes ranging from current events to physical activity classes. This setting may be an appropriate place to reach older adults and has great potential for community-based recreational therapy interventions. Therefore, the purpose of this pilot study was to explore the efficacy of a Hatha yoga intervention on the leisure constraints and functional fitness of community-dwelling older adults.

Methods

The present study used a multi-method pilot study to explore the efficacy of a yoga intervention on the leisure constraints and functional fitness of community-dwelling older adults.

Sample

Individuals eligible for participation in the study were members of a continuing education center (CEC), between the ages of 55-85 (the age range allowed by this particular CEC), and deemed safe to participate in physical activity based on their Physical Activity Readiness Questionnaire (PAR-Q) responses. The PAR-Q includes nine items (e.g., "Do you feel pain in your chest when you do physical activity?" "Do you have a bone or joint problem that could be made worse by change in physical activity?"). If potentially eligible individuals answered "yes" to one or more questions, approval was required from their physician to participate in the study.

Procedure

Following Institutional Review Board approval from a university, seated and standing yoga classes were marketed through the CEC's course catalog. Interested CEC members registered and were contacted by a research team member to be informed about the study. Informed consent for participation in the study was obtained, but CEC members were not required to participate in the study in order to join the class. Prior to the eight-week yoga intervention, individuals completed pre-test measures that were administered at the CEC by trained research assistants. Following the eight-week yoga

intervention, individuals were tested again by the research assistants and focus groups were completed after the post-testing.

Yoga Intervention

Yoga was offered biweekly over the course of eight-weeks to individuals in the seated and standing classes (16 sessions). Each 60-minute yoga class was facilitated by either a yoga therapist or a yoga teacher who was trained or registered. The yoga intervention was developed from an evidence-based sequence to improve balance and fear of falling (Schmid et al., 2010), two common constraints of leisure activity among older adults. The yoga sequences were the same between the two classes, but the standing class included modifications for engaging in some postures from a standing, supine, or prostrate position. The yoga intervention took place in a large, quiet, multipurpose room on-site at the CEC. Mats, blocks, bolsters, and straps were provided by the research team. Yoga sequences progressively advanced in difficulty and involved breathing exercises, modified yoga postures, and meditation. The same yoga sequences were used for both seated and standing classes, and hands-on assistance was provided to participants as needed to ensure safe and proper form. Modifications were available for each posture, and postures were demonstrated by the assistants or instructor as needed.

Data Collection

Quantitative data collection. Prior to the start of the yoga intervention, participants were asked to complete a nine-item demographics questionnaire. The purpose of the questionnaire was to gather information related to participants' marital status, highest level of education, age, gender, race, perceived health, perceived fall risk, and use of assistive devices.

In an effort to determine the impact of yoga on physical outcomes among community-dwelling older adults, balance, gait, strength, and flexibility were assessed prior to and immediately following the yoga program. Pre- and post-data specific to perceived leisure constraints were also obtained. Each physical measure was administered by a research team member who had been trained to conduct and score each assessment.

Fullerton Advanced Balance Scale. The Fullerton Advanced Balance Scale (FAB) is a 10-item performance measure that requires participants to complete various physical tasks indicative of static and dynamic balance (Rose, Lucchese, & Wiersma, 2006). For example, participants were asked to stand on one leg for 20 seconds, and to step onto and over a six-inch block. Participants are scored on a 5-point Likert scale based on their ability to partially or fully complete each task. Participants may score up to 40 points on the FAB; the higher the score the greater their balance and decreased risk for fall. A score of less than 25 indicates a high fall risk (Hernandez & Rose, 2008). Rose et al. (2006) reported strong internal consistency (α=.81), and test-retest reliability (r=0.96) for this scale.

10-meter walk. To assess mobility and gait speed, using the 10-meter walk test (10MWT) participants were asked to walk 10 meters at a speed that was comfortable for them while being timed. Participants completed the 10MWT twice; the average of both timed walks was calculated and used for data analysis. Test-retest reliability for the 10MWT has been reported as r=0.75 to 0.90 (Watson, 2002).

Functional Fitness Test for Older Adults. The Functional Fitness Test for Older Adults (FFT; Rikli & Jones, 2013) consists of six performance tests: the chair stand, arm curl, two-minute step, chair sit and reach, up and go, and back scratch tests. The chair stand test (r=.77) measures lower body strength and requires participants to sit and stand from a seated position as many times as possible within 30 seconds. The arm curl test (r=.84 for males, r=.79 for females) measures upper body strength and involves participants completing as many arm curls as possible within 30 seconds. The two-minute step test (r=.73) measures endurance and requires participants to alternate lifting their knees to a pre-determined height as many times as possible within two minutes. The chair sit and reach test (r=.83) assesses flexibility and requires participants to stretch forward from a seated position and attempt to reach their toes. The up and go test measures agility and mobility and requires participants to stand from a seated position, walk around a designated mark, and return to a seated position as quickly as possible. Participants were allowed two attempts; their best score was used for analysis. Finally, the back-scratch test assesses flexibility and requires participants to place one hand over their shoulder with their other hand reaching behind their back. Participants are asked to attempt to touch the fingers of their two hands together and are scored on their ability to touch or overlap fingers of both hands behind their back. Test-retest reliability has been reported to range between .80 and .98 (Jones, Rikli, & Beam, 1999).

Leisure Constraint Scale. The Leisure Constraint Scale (LCS; Alexandris & Carroll, 1997; Van Puymbroeck, Smith, & Schmid, 2011) is a self-report questionnaire that asks participants to indicate the extent to which each of the 21 items representative of constraints (e.g., time, fear of injury, transportation) hinder their participation in physical activity. Participants respond using a 5-point Likert scale where 1=strongly agree and 5=strongly disagree. Total LCS scores range from one to 105, with higher scores indicating fewer constraints. Van Puymbroeck, Smith, and colleagues (2011) reported Cronbach's alpha for the LCS for older adults as .93. In the present study Cronbach's alpha= 0.83.

Qualitative data collection. Immediately following the last class of the eight-week yoga program, participants were invited to participate in a focus group. Separate focus groups were conducted for individuals in the standing and seated yoga classes for the convenience of participants. The audio-recorded focus groups were led by a research team member, with one additional research team member taking notes throughout each group's discussions. The semi-structured focus group protocol consisted of eight open-ended questions and was intended to inquire about participants' perceptions of, and experience with yoga. Specifically, participants were asked to comment on why they signed up for the class, what benefits they felt they received as a result of participation, what about the experience was not positive, whether yoga had impacted their everyday life, what they most and least enjoyed about the program, and whether they intended to continue participation in yoga post-study.

Data Analysis

Quantitative data were analyzed using Statistical Package for Social Sciences version 24. Descriptive statistics were used to analyze demographic information. Due to a non-normal distribution of data, a Wilcoxon Signed Rank Test was used to determine whether there were significant changes in participant scores on pre- and post-measures. As a result of the small sample size and statistically insignificant results, percent

change was also calculated to determine whether there were any trends in participant's pre- and post-assessment scores (Time 1-Time 2/Time 1 x 100), and percent changes were compared between the seated and standing groups using a Mann-Whitney U test.

Following verbatim transcription of audio-recorded focus groups, qualitative data were analyzed using conventional content analysis. Patterns within participant perspectives were coded; codes were then used to create final qualitative themes. Two research team members completed the analysis process independent of one another to ensure agreement in the interpretation of data and final results.

Results

Seven individuals (six females, one male) originally consented to participate in the seated yoga class, and six females consented to participate in the standing yoga class. Four participants from the seated class and three participants from the standing class completed the intervention and pre-/post-measures. Reasons for attrition included participants experiencing poor health, participants needing to fulfill caregiver roles, and scheduling conflicts (e.g., participants registered for other courses that overlapped with yoga classes).

Due to the small sample size, participants' data from the seated (n=4) and standing (n=3) classes were combined for analysis (N=7). Participants were Caucasian females, with a mean age of 68 ± 5.5. Regarding marital status, 57% of participants were married, 29% were single, and 14% were widowed. Several participants (57%) had received a graduate degree, while one had completed some college education, and another reported high school as her highest level of education. Two participants from the seated class indicated they "sometimes" used assistive devices (i.e., single point cane, rolling walker). On average, participants attended 12.85 out of 16 yoga sessions.

Quantitative Results

Changes between participants' FFT pre- and post-scores for the Chair Stand Test (Z=2.121, p=.034) and the Two-Minute Step Test (Z=2.207, p=.027) were statistically significant, indicating improvements in lower body strength and endurance (see Table 1 for a summary of quantitative measures). Differences in participants' scores for the FAB (Z=-.508, p=.611), 10MWT (Z=.845, p=.398), Arm Curl (Z=1.802, p=.072), Back Scratch (Z=1.892, p=.058), Chair Sit-and-Reach (Z=.210, p=.833), Timed Up-and-Go (Z=-1.352, p=.176), and LCS (Z=-.254, p=.799) tests were not statistically significant from pre- to post-assessments. However, percent change calculations indicated positive trends in improvement for participants' scores on the Arm Curl (increased by 17%), Back Scratch Test (increased by 45%), Timed Up-and-Go (decreased by 23%), and LCS (increased by 1.1%). Percent change calculations did not indicate a positive change in participants' FAB, 10MWT, or Chair Sit and Reach scores. While not statistically significant, percent change calculations indicated improvement in participants' upper body strength, upper body flexibility, agility and mobility.

Percent changes differed between the seated and chair groups, although most differences were not significant. The exception was upper body strength, as measured by the Arm Curl Test. On this measure, the percent change was significantly greater for the seated yoga group (see Table 2 for a summary of percent changes between seated and standing groups).

Table 1
Mean Scores and Percentage Change for Physical Measures

	Pre-Yoga Mean ± SD	Post-Yoga Mean ± SD	*p*-value (Wilcoxon)	% Change
FAB	32.40 ± 5.16	32.40 ± 4.99	.611	+0.00
10MWT	8.10 ± 1.80	9.73 ± 3.66	.398	-20.00
FFT – Chair Stand	11.29 ± 2.29	12.57 ± 3.10	*.034	+11.34
FFT – Arm Curl	15.29 ± 4.27	17.86 ± 3.63	.072	+16.81
FFT – Two Minute Step	63.50 ± 28.00	78.71 ± 22.17	*.027	+23.95
FFT – Chair Sit & Reach	-0.11 ± 1.87	-0.32 ± 3.91	.833	-200.00
FFT – Up & Go	6.87 ± 1.33	5.33 ± 2.51	.176	+22.41
FFT – Back Scratch Test	-2.71 ± 2.50	-1.50 ± 2.40	.058	+44.65
LCS	92.14 ±7.24	93.14 ±13.56	.799	+1.09

*significant at the $p \leq .05$ level,+ %change = improvement, -% change=decline

Table 2
Between Group Comparison of Percent Change

	Seated Yoga % Change	Standing Yoga % Change	p-value (Mann-Whitney)
FAB	-5.33	13.87	.417
10MWT	37.84	3.25	.428
FFT – Chair Stand	12.56	7.78	.463
FFT – Arm Curl	34.18	1.55	*.030
FFT – Two Minute Step	37.07	22.28	.327
FFT – Chair Sit & Reach	195.00	-83.65	.112
FFT – Up & Go	4.34	36.68	.343
FFT – Back Scratch Test	-15.56	-42.22	.484
LCS	-8.07	12.96	.057

*significant at the $p \leq .05$ level, + %change = improvement, -% change=decline

Qualitative Results

Upon completion of the eight-week yoga class, some participants from the standing (n=2) and seated (n=3) yoga classes each took part in a focus group that occurred immediately following the last yoga class (the other two participants were absent the day the focus groups took place). Three themes resulted: (a) motivation to engage in yoga; (b) benefits of yoga participation; and (c) program components that facilitated yoga participation.

Motivation to engage in yoga. When asked to comment on why they signed-up for yoga, participants identified reasons associated with physical and mental health. For example, one participant shared her motivation was "…to get my body back in

shape" while another indicated her desire to achieve "…peace of mind" through yoga. For another participant, her motivation to participate in the yoga program stemmed from positive outcomes she had experienced in a previous yoga class, sharing that she "…was really missing yoga because when I come out of yoga I feel like I've had a massage…but it lasts longer than when you have a massage."

Benefits of yoga participation. Participants perceived yoga to have physical, psychological, and social benefits. Specific to physical benefits, participants shared that yoga increased their energy and motivation to engage in other physical activities, stating: "I started walking…it [yoga]…push[ed] me to do more…I would say it motivated me…[the] resources … I have here and I should just move forward don't be afraid, walk." and:

> …I'm perky when I go home…this afternoon…I'm gonna get my wheelbarrow out and I'm gonna pick up [tree]limbs…I mean I feel energized when I leave…I feel like I can get out there and do some other things…usually I would just go home…sit down and watch TV.

One individual commented she experienced improved sleep, saying "…when I started the yoga about the second week I was sleeping through the night completely... that is major to me." Another commented on her ability to better manage pain associated with a pre-existing health condition: "…when I experience [sciatic nerve pain] at home now I do some of those stretches and it helps ease it a little bit…so that's helped."

Related to psychological benefits, participants commented on their improved mood during or as a result of yoga, saying "…I do think I'm in a better mood," and "…once I started doing this [yoga] then mentally I felt better…clearer minded less like, you know doom and gloom…I just feel much calmer when I'm exercising." For another, the social aspect of the group yoga classes was of benefit, as she shared "I liked it [yoga] and I hated to see it end…I loved it plus I loved these girls…you get to see them every week and they're like friends."

Program components that facilitated yoga participation. In both focus groups, participants commented on logistical aspects of the yoga program that facilitated their participation. For example, participants commented that they appreciated having a smaller class at the CEC as it allowed for more individualized attention. One participant shared, "…I am gonna check out the yoga schedule at [local exercise facility] but if yoga is offered here …I'm gonna sign back up for here 'cause…I like the small classes." Another stated:

> …I have taken a yoga class but I don't stick with it at [local gym]…because the room was big, there were…at least 50 plus people in that room…I didn't mind y'all coming around and saying you need to do this…I liked that 'cause I know…I had the wrong [postural] form …I didn't get any of that you know in the bigger class…you knew my name…I like the sense of community [in] the smaller class.

For others, the opportunity to participate in a seated yoga class, rather than a traditional standing class, appeared to make all the difference in their feeling confident in their abilities to engage in physical activity. One participant shared that "….another

exercise would be too difficult for me…when I read chair yoga, I thought…maybe I can do it." Similarly, another participant said "…what [local community yoga classes] have though is the stand-up yoga and I don't think I can physically do that…that's why I like the chair yoga…with my sciatica…and my knee I just know I couldn't do it [standing yoga]."

Conversely, some participants reported they would have enjoyed a slower paced class saying: "I don't think that you were rushing, but sometimes I get this impression yes that I just wanted to be like slow."

Discussion

The purpose of this pilot study was to explore the efficacy of a yoga intervention on the functional fitness and leisure constraints of community-dwelling older adults. While there were significant improvements in both lower body strength and endurance, no significant results were found for balance, flexibility, upper body strength, gait speed, or leisure constraints, likely due to the small sample size. Congruent with past literature, physical performance measures confirmed significant improvement in lower body strength and endurance (Hawkins et al., 2018; Schmid et al., 2012). Unlike other studies, balance did not improve with this group, nor was it mentioned in the focus groups. Although researchers have stated positive results from yoga interventions are similar across all types of interventions (including variations of Hatha yoga, breath practice only, and chanting only) (Cramer, Lauche, Langhorst, & Dobos, 2016), in this study all of the physical performance measures had a higher percent change in the seated group except for the two measures that assessed balance. While the sample size of each group was too small to yield significant differences or to draw meaningful conclusions, further examination of balance outcomes for seated yoga versus standing yoga are warranted.

Leisure constraints did not substantially improve. However, qualitative findings indicated that participants experienced increased energy, increased motivation to engage in other forms of physical activity, reduced fear of activity related injury, improved sleep, and improved pain management; these are all factors that could be considered leisure constraints. Thus, it is unclear if the LCS assessment did not address the relevant leisure constraints or if there was not enough time for perceptions of leisure constraints to change in a quantifiable way.

Qualitative and quantitative data had divergent results. Qualitative themes included perceived benefits, motivation for participation, and programmatic components. The qualitative results are consistent with past research indicating yoga leads to motivation to better negotiate leisure constraints and increased engagement in other forms of LTPA (Van Puymbroeck, Smith et al., 2011). In focus groups, participants reported increasing their engagement in other LTPA, but because there was no data collected about concurrent activity participation, comparison between qualitative and quantitative results for actual participation was not possible. The potential of using yoga as a strategy to increase other forms of physical exercise is promising and warrants further exploration (Roland et al., 2011).

Qualitative data highlighted the expectations that motivated participants to register for the program. Participants believed they would be capable of successful participation because of their past positive experiences with yoga or because the description

of the group seemed accessible. The chair yoga program, in particular, drew participants who were unsure of their ability to participate in other forms of exercise. Participants expressed there was a lack of accessible yoga in other community settings, such as the local fitness center. Finally, participants described programmatic elements they felt were beneficial including the small class size, individualized attention, and a desire for slow pacing of the class.

Limitations

Every study has limitations. Initial attrition was abnormally high in this pilot study. This may be due to participants being used to typical courses at the CEC taking place for no more than three sessions, making a 16-session yoga intervention in this setting challenging or very difficult, but these difficulties may be lessened if data are not collected and participation is only for the benefit of the individual. This study did not have a control group, had a small sample size, abnormally small numbers of participants in the focus groups, and included two different types of yoga. Thus, generalizations cannot be made from these data. Some participants mentioned having prior experience with yoga, but since we did not collect data regarding past experience, we cannot report if past experience had any impact on results. Finally, not everyone enrolled in the yoga program was enrolled in the research study; CEC members were able to enroll in the class and decline participation in the research, and while all participants were treated the same within the group, this may have had an unmeasured impact on group dynamics and potential outcomes.

Implications for Recreational Therapy Practice and Research

When conducting yoga programs, or referring clients to community yoga programs, recreational therapists (RTs) should assess and understand the programmatic elements that participants value and identify potential barriers to participation in community programs. When planning, RTs may specifically consider small class sizes, individual attention, accessibility, and a sense of community, as these were identified as important to the participants and may impact outcomes. Additionally, RTs may make special effort to be sure the pace of the class does not feel too rushed, providing participants time to feel comfortable with each posture. Participants expressed difficulty finding these types of accessible yoga classes in the community, and of note, after the study was completed, several individuals in the study hired (out of their own pocket) the yoga teachers to continue to teach them privately in the community. Thus, implementation of accessible yoga programs in this setting may fill a needed niche of programming. Based on the data, RTs should consider evaluating the leisure constraints (e.g., functional fitness, pain management), concurrent activity participation, mood, and stress levels of participants.

It is important also to understand that the expectations or constraints that may occur with a long-standing (16 session) intervention in a CEC setting. The research team was told by the executive director (following the study) that at this specific center, participation drops precipitously if more than three sessions are offered. This CEC offered many simultaneous classes and field trips, and many participants in this study also

engaged in these other programs, reducing attendance at yoga. While this may not be the case for all CECs, it will be important for RTs to work closely with the CEC director and carefully consider the number of classes offered concurrently when scheduling yoga programs. In light of the high attrition, it may be beneficial to offer a shorter introduction to yoga course as a prerequisite to a program with a longer duration.

Overall, older adults who access CEC programming tend to be active and engaged. There are many viable options for recreational therapy interventions with this population, and future research is encouraged to evaluate different doses and approaches to determine if attrition is reduced.

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