



# **Conference Proceedings 2022**



## Foreword

The Research Institute is a sub-committee of ATRA's Conference Planning Committee. Each year, it provides TR/RT educators, practitioners, and students with the opportunity to share their research or application of research in practice during the annual ATRA Conference Research Institute in the form of an oral research presentation or poster presentation. Included in this issue of the *ATRA Annual in TR* are the abstracts that were accepted for the 2021 ATRA Conference.

You are encouraged to read each of the abstracts to learn more about what TR/RT colleagues are finding effective when providing services to clients, and the research currently being conducted to promote our professional field. If you have any questions about the abstracts, you should follow-up with the presentation or poster author(s) directly for additional information regarding the program or research study highlighted.

Many thanks to the external reviewers who volunteered their time and expertise in reviewing and providing feedback for each poster proposal submitted. This was a blind review process, with reviewers providing comments and feedback about each of the abstracts that was submitted to the Research Institute. We appreciate the ATRA Board of Directors and Conference Committee for their commitment to making the Research Institute presentations and poster session possible each year.

If you are interested in learning more about how you can submit a proposal for the Research Institute presentations or poster session at future conferences, please visit <https://www.atra-online.com/education/continuing-education/annual-conference>.

Sincerely,

**W. Thomas Means, PhD, CTRS**

*ATRA Research Institute Chair, Oral Research Presentations*

**Angie Sardina, PhD, CTRS**

*ATRA Research Institute Co-Chair, Poster Session*

**Katie Mitchell, MS, LRT, CTRS**

*ATRA Research Institute Co-Chair, Poster Session*



## 2022 Oral Research Presentations

### Assessing the Prevalence of Ageism and Gender Stigma among Long-Term Care Employees

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**Introduction:** The purpose of this mixed-method single case study was to explore long-term care (LTC) employees' attitudes toward age and gender. A theoretical framework of feminist disability theory (Garland-Thomson, 2002) and compulsory youthfulness (Gibbons, 2016) allows for an intersectional critique of ageism, sexism, and ableism and how each contributes to the oppression of long-living adults (age 80 and over) and disabled long-living adults.

**Methods:** Triangulation of data was achieved through surveys, interviews, and artifacts. Sixty employees completed an online survey consisting of demographic questions (age, race, gender, years employed in LTC, highest level of education, employment) and the Fraboni Scale of Ageism (Fraboni et al., 1990) during the Coronavirus pandemic between August 21, 2020 and September 22, 2020. Data were analyzed using an independent samples t-test, One Way ANOVA, and One Sample Median Test. Twenty-one of these employees also participated in a phone interview. Interview data were analyzed using open coding, axial coding, then thematic analysis. Cultural artifacts available to the primary researcher, and relating to the study, were noted. Considering the primary researcher was not allowed to enter the facility, the types of artifacts collected included social media posts via Twitter, Facebook, and the organization's blog. Blog and social media posts ranged from September 1, 2020 to February 1, 2021. Mixing of qualitative and quantitative data was completed for the final results by merging them via side-by-side comparison table.

**Results:** Quantitative findings indicated there was a statistical difference in FSA scores for younger adults ( $M=49.33$ ,  $SD=6.08$ ), adults ( $M=52.97$ ,  $SD=8.66$ ), and older adults ( $M=46.76$ ,  $SD=7.85$ ). Middle age adults had significantly higher FSA scores than younger adults and older adults. Qualitative data provided the strongest connection that sexist and ageist attitudes exist among employees as it demonstrated that some employees had different expectations of residents based on the residents' gender. A review of social media and policy artifacts concluded there was no resident perspective present in research topics, research trials, blog posts, or community events.

**Discussion:** Overall, findings indicated employees' interactions with, and attitudes towards, residents were influenced by themes of compassionate ageism, ableism, and identity, which resulted in meta-theme caregiver validation and reward. Although most employees felt a deep connection with residents, they detached themselves from the aging process. Results from this study indicated certain power dynamics and suggested that employees sought positive care interactions with residents. Most employees preferred to care for residents who appeared to need assistance, were appreciative, and interacted with the employee in a positive way. When this occurred, employees enjoyed relationships with these residents and caring for them on a continuous basis. Essentially, employees preferred to care for someone who conformed to that employee's expectations for care.

**Implications for RT:** The pandemic has brought attention to the global issue of ageism, the lack of cultural insight in providing LTC services, and how this deficit impacts older adult care needs (D'Cruz & Banerjee, 2020). Considering that a large portion of recreation therapists (RTs) work with the older adult population (NCTRC, 2021), it is imperative that education provided to current and future RTs address implicit ageism. RTs could place themselves at the forefront of anti-ageism work by requiring a course in gerontology to meet certification and professional standards.

## References

- D’Cruz, M., & Banerjee, D. (2020). An invisible human rights crisis: The marginalization of older adults during the COVID-19 pandemic: An advocacy review. *Psychiatry Research*, 292, 1–9.
- Fraboni, M., Saltstone, R., Cooper, D., & Hughes, S. (1990). The Fraboni scale of ageism. *Canadian Journal on Aging*, 9(1), 56–66.
- Garland-Thomson, R. (2002). Toward integrating disability, transforming feminist theory. *NWSA Journal*, 14(3), 1–32.
- Gibbons, H. M. (2016). Compulsory youthfulness: Intersections of ableism and ageism in “successful aging” discourses. *Review of Disability Studies*, 12(2&3), 1–19.
- NCTRC. (2021). *Job analysis report*. <https://www.nctrc.org/wp-content/uploads/2022/09/2021JobAnalysisReport.pdf>

## Testing the Flourishing through Leisure Model: Predictors of Well-Being through Recreation Therapy

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**Introduction:** A paradigm shift has been occurring in health and human services from a problem or deficits-based approach to a strengths or capability-based approach (Anderson & Heyne, 2012, 2021; Saleebey, 2016). This shift has prompted the development of a strengths-based practice model for the profession of therapeutic recreation called the *Flourishing through Leisure Model (FTL): An Ecological Extension of the Leisure and Well-Being Model* (Anderson & Heyne, 2012, 2021) (see Figure 1), based on the *Leisure and Well-Being Model* (Carruthers & Hood, 2007; Hood & Carruthers, 2007). The FTL depicts how a practitioner can utilize leisure to cultivate well-being across the domains of human functioning (i.e., leisure, psychological/emotional, cognitive, social, physical, and spiritual) by building upon a person’s internal strengths and their environmental strengths and resources (Anderson & Heyne, 2021). An important aspect of the FTL is that it considers both the person and their environment in designing and delivering services, in other words, an ecological strengths-based approach is used. The purpose of this study was to test the FTL with recipients of recreational therapy who represented the scope of the profession across clinical, community, and residential services. The FTL provided the theoretical framework to test what role leisure plays in promoting well-being in participants and which aspects of well-being most influence overall well-being. Ultimately, the study sought to determine that the FTL offers an evidence-based framework for providing recreational therapy services that support well-being holistically by intentionally addressing the leisure, psychological/emotional, cognitive, social, physical, and spiritual aspects of a person’s life in the context of their environment.

**Methods:** *Sample:* A voluntary sample of 180 adult participants were recruited from six different sites across the breadth of RT settings.

*Procedures:* As the study sites serve individuals with a diverse range of needs, the key contact person at each of the six sites was asked to share the study information and online survey link with participants who had the cognitive ability to consent to and complete an online survey during spring of 2021.

*Instruments:* The online survey was comprised of 110 closed- and open-ended questions. To assess each well-being domain in the FTL, the survey used nine existing brief instruments with established validity and reliability: Leisure Domain: Pittsburgh Enjoyable Activities Test (10 items) (Pressman et al., 2009), Leisure Diagnostic Battery (5 items) (Witt & Ellis, 1989); Psychological Domain: Subjective Happiness Scale (4 items) (Lyubomirsky, 2013);

Cognitive Domain: Langer Mindfulness Scale (14 items) (Pirson et al., 2013); Social Domain: Lubben Social Network Scale (6 items) (Lubben, 2011); Physical Domain: Rapid Assessment of Physical Activity Scale (9 items) (Topolski et al., 2006); Spiritual Domain: Meaning in Life Questionnaire (10 items) (Steger et al., 2006); and Overall Well-Being: Satisfaction with Life Scale (SWLS) (5 items) (Diener et al., 1985), The Well-Being Index (WBI) (18 items) (Witman et al., 2014). Because of a strong significant correlation between the SWLS and the WBI, these two scales were combined to create an Overall Well-Being score. The Cronbach's Alpha of the combined overall well-being scale was .926. Additionally, 8 questions were designed to assess environmental resources (e.g., accessibility, availability for recreation participation), 12 questions to understand the impact of the pandemic on each well-being domain, and 8 questions to collect demographic information from participants.

*Data Analysis:* Descriptive statistics, correlation, and stepwise multiple regression were computed using SPSS version 28 to examine the correlation between leisure and the different well-being domains and to determine which domains best predicted overall well-being.

**Results:** The total number of returned surveys was 210, of which 180 surveys were usable (30 surveys were incomplete). The percentage of respondents from each site was community parks and recreation district (2%), community recreation center that primarily served older adults (30%), adult inpatient behavioral health unit (37%), two inpatient physical rehabilitation units (12%), adaptive outdoor adventure sports center (12%), and a senior living community (8%). The mean age of respondents was 52 years, with a range of 17 to 98 years. The majority of participants reported that they completed the survey independently (95%) and identified as White (89%). About 59% of the participants identified as female and 47% of participants reported working more than 31 hours per week. A wide range of disabilities/conditions were reported. Results of the scale scores are reported in Table 1. Results showed a significant correlation between nearly all the scale scores and well-being (see Table 2). Results of the stepwise multiple regression indicated that the predictor variables that most contributed to overall well-being were psychological/emotional, social, leisure experiences, and spiritual (see Tables 3 and 4), with over 80% of the variance in well-being being predicted by these four domains. When the model was tested with the inclusion of environmental factors, other variables then entered the model as significant, with the environment being the second most significant predictor of well-being (see Tables 5 and 6). In this model, results of the stepwise multiple regression indicated that the predictor variables that most contribute to overall well-being are psychological/emotional, environmental factors, leisure participation, social, and leisure experiences, with over 70% of the variance in well-being being predicted by these five domains.

**Discussion:** Based on the results of this study, there appears to be support for the underlying assumption of the FTL—leisure contributes to well-being and the environment is significant as well. Nearly every domain of functioning was significantly related to each other and to overall well-being. The significant interrelatedness of functioning in the leisure, psychological/emotional, social, cognitive, physical, and spiritual domains further underscores another premise of the FTL—the whole person in their environment must be considered in order to effectively address goals for well-being and a high quality of life in recreational therapy practice.

**Implications for RT:** This study provides evidence that the FTL is a useful framework to support recreational therapy evidence-based practice and, because the FTL is based on the Leisure and Well-Being Model, it provides support for that model as well. However, the importance of the environment on well-being, as shown in the data and emphasized in the FTL, affirms the benefit of using an ecological approach in practice. The findings suggest that using the framework of the FTL to deliver services and design environments in the therapeutic recreation profession may help ensure outcomes of well-being for the participants we serve.

Figure 1

Flourishing Through Leisure Model: An Ecological Extension of the Leisure and Well-Being Model

Figure 4.3  
Flourishing through Leisure Model: An Ecological Extension of the Leisure and Well-Being Model

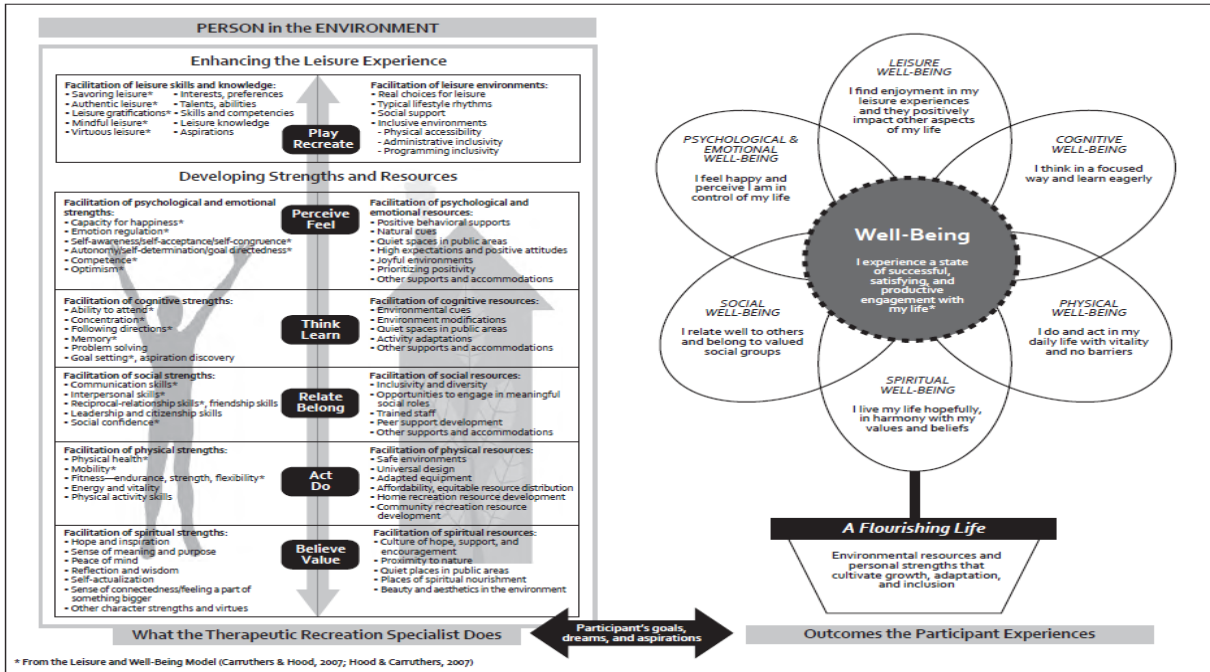


Table 1

Descriptive Statistics for Scale Scores

Domain	Scale	N	Min	Max	Mean	SD
Overall Well-Being	Combined Overall Well-Being (WBI and SWLS)	169	42	125	90.27	20.00
	Well-Being Index (WBI)	169	31	90	69.47	13.06
	Satisfaction With Life Scale (SWLS)	179	5	35	20.65	8.70
Leisure (Activity)	Pittsburgh Enjoyable Activities Test (PEAT)	111	14	46	31.89	6.60
Leisure (Experience)	Leisure Diagnostic Battery (LDB)	180	5	25	19.62	4.11
Psychological/Emotional	Subjective Happiness Scale (SHS)	180	6	28	16.36	3.96
Cognitive	Langer Mindfulness Scale (LMS)	173	26	98	75.25	11.82
Social	Lubben Social Network Scale (LSN)	179	6	36	20.68	5.61
Physical	Rapid Assessment of Physical Activity (RAPA)	164	1	1	6.86	2.53
Spiritual	Meaningfulness in Life Questionnaire (MLQ)	176	10	70	45.98	9.80
Environmental Influence	Environmental Factors	175	8	40	30.55	7.69

**Table 2***Correlation between Variables in the Flourishing through Leisure Model*

Variables	Overall Well-Being: <i>WBI/SWLS</i>	Leisure Domain (Activity): <i>PEAT</i>	Leisure Domain (Experience): <i>LDB</i>	Psychological/Emotional Domain: <i>SHS</i>	Cognitive Domain: <i>LMS</i>	Social Domain: <i>LSNS</i>	Physical Domain: <i>RAPA</i>	Spiritual Domain: <i>MLQ</i>
Overall Well-Being	1.0	.51*	.52*	.69*	.36*	.51*	.35*	.41*
Leisure Domain (Activity)	--	--	.39*	.40*	.38*	.46*	.44*	.34*
Leisure Domain (Experience)	--	--	--	.38*	.30*	.23*	.24*	.35*
Psychological/Emotional Domain	--	--	--	--	.15	.38*	.24*	.24*
Cognitive Domain	--	--	--	--	--	.18**	.08	.44*
Social Domain	--	--	--	--	--	--	.30*	.20*
Physical Domain	--	--	--	--	--	--	--	.09
Spiritual Domain	--	--	--	--	--	--	--	--

\*significant at the .01 level; \*\*significant at the .05 level

**Table 3***Results of Stepwise Multiple Regression with Outcome/Dependent Variable Overall Well-Being (Combined Score) –Model Summary<sup>e</sup>*

Model	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	Sig. F Change
1 <sup>a</sup>	.523	.518	14.26978	.523	<.001
2 <sup>b</sup>	.612	.603	12.94985	.088	<.001
3 <sup>c</sup>	.665	.654	12.09444	.053	<.001
4 <sup>d</sup>	.683	.669	11.83586	.018	.028

a. Predictors: (Constant), Total SHS (Psych/Emotional)

b. Predictors: (Constant), Total SHS (Psych/Emotional), Total LSN (Social)

c. Predictors: (Constant), Total SHS (Psych/Emotional), Total LSN (Social), Total LDB (Leisure)

d. Predictors: (Constant), Total SHS (Psych/Emotional), Total LSN (Social), Total LDB (Leisure), Total MLQ (Spiritual)

e. Dependent Variable: Combined Overall Well-Being

**Table 4***Coefficients for Model Summary<sup>a</sup>*

Variables	B	Significance
Psychological/Emotional Domain (Subjective Happiness Scale)	.453	<.001
Social Domain (Lubben Social Network Scale)	.291	<.001
Leisure Domain - Experience (Leisure Diagnostic Battery)	.213	.004
Spiritual Domain (Meaningfulness in Life Questionnaire)	.152	.028

<sup>a</sup>Outcome Variable Combined Overall Well-Being Score**Table 5***Results of Stepwise Multiple Regression with Outcome/Dependent Variable Overall Well-Being (Combined Score) With Environmental Factors Added –Model Summary<sup>f</sup>*

Model	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	Sig. F Change
1 <sup>a</sup>	.500	.495	14.42134	.500	<.001
2 <sup>b</sup>	.648	.640	12.17341	.148	<.001
3 <sup>c</sup>	.679	.668	11.68478	.031	.004
4 <sup>d</sup>	.696	.682	11.43761	.017	.030
5 <sup>e</sup>	.713	.696	11.18090	.017	.027

a. Predictors: (Constant), Total SHS (Psych/Emotional)
b. Predictors: (Constant), Total SHS (Psych/Emotional), Total Environmental
c. Predictors: (Constant), Total SHS (Psych/Emotional), Total Environmental , Total PEAT (Leisure)
d. Predictors: (Constant), Total SHS (Psych/Emotional), Total Environmental , Total PEAT (Leisure), Total LSN (Social)
e. Predictors: (Constant), Total SHS (Psych/Emotional), Total Environmental , Total PEAT (Leisure), Total LSN (Social), Total LDB (Leisure)
f. Dependent Variable: Combined Overall Well-Being

**Table 6***Coefficients for Model Summary<sup>a</sup> with Environmental Factors Added into the Model*

Variables	B	Significance
Psychological/Emotional Domain (Subjective Happiness Scale)	.416	<.001
Environmental Factors	.242	.001
Leisure – Activity (Pittsburgh Enjoyable Activities Test)	.121	.090
Social Domain (Lubben Social Network Scale)	.185	.011
Leisure Domain - Experience (Leisure Diagnostic Battery)	.167	.027

<sup>a</sup>Outcome Variable Combined Overall Well-Being Score

## References

- Anderson, L., & Heyne, L. (2012). Leisure and Well-Being Model: An ecological approach to therapeutic recreation strengths-based practice. *Therapeutic Recreation Journal*, 46(2), 129–152. <https://js.sagamorepub.com/trj/article/view/2675>
- Anderson, L., & Heyne, L. (2021). *Therapeutic recreation: A strengths approach*. Sagamore-Venture.
- Carruthers, C., & Hood, C. (2004). Building a life of meaning through therapeutic recreation: The Leisure and Well-Being Model, part I. *Therapeutic Recreation Journal*, 41(4), 276–297. <https://js.sagamorepub.com/trj/article/view/931>
- Diener, E., Emmons, R., Larsen, R., & Griffin, S. (1085). The Satisfaction with Life Scale. *Journal of Personality Assessment*, 49(1), 71–75.
- Hood, C., & Carruthers, C. (2007). Enhancing leisure experience and developing resources: The Leisure and Well-Being Model, part II. *Therapeutic Recreation Journal*, 41(4), 298–325. <https://js.sagamorepub.com/trj/article/view/932>
- Lubben, J. (2011). *Introduction to the Lubben Social Network Scale*. <http://www.bc.edu/content/bc/schools/gssw/lubben.html>
- Lyubomirsky, S. (2013). *Subjective Happiness Scale*. <http://sonjalyubomirsky.com/subjective-happiness-scale-shs/>
- Pirson, M., Langer, E., Bodner, T., & Zilcha, S. (2013). The development and validation of the Langer Mindfulness Scale - Enabling a socio-cognitive perspective of mindfulness in organizational contexts. *Fordham University Schools of Business Research Paper*. <https://ssrn.com/abstract=215892>
- Pressman, S., Matthews, K., Cohen, S., Martire, L., Scheier, M., Baum, A., & Schulz, R. (2009). Association of enjoyable leisure activities with psychological and physical well-being. *Psychosomatic Medicine*, 71(7), 725–732.
- Saleebey, D. (2012). *The strengths perspective in social work practice* (6<sup>th</sup> ed.). Pearson Education.
- Seligman, M. (2002). *Authentic happiness: Using the new positive psychology to realize your full potential for lasting fulfillment*. Free Press.
- Steger, M. F., Frazier, P., Oishi, S., & Kaler, M. (2006). The Meaning in Life Questionnaire: Assessing the presence of and search for meaning in life. *Journal of Counseling Psychology*, 53(1), 80–93. <https://doi.org/10.1037/0022-0167.53.1.80>
- Topolski, T., LoGerfo, J., Patrick, D., Williams, B., Walwick, J., & Patrick, M. (2006). The Rapid Assessment of Physical Activity (RAPA) among older adults. *Preventing Chronic Disease*, 3(4), 1–8.
- Witman, J., Jacob, S., Anderson, L., Heyne, L., & Malcarne, B. (2014). The Well-Being Index: A pilot project. *Therapeutic Recreation Journal*, 48(2), 188–198. <https://js.sagamorepub.com/trj/article/view/5913>
- Witt, P., & Ellis, G. (1989). *The Leisure Diagnostic Battery*. Sagamore-Venture.

## Trauma-Informed Care in Recreation Therapy Practice

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**Introduction:** Affecting 223.4 million adults in the United States (National Council for Behavioral Health, 2013), trauma is a public health issue that impacts recreation therapy (RT) clients from all populations as well as RT practitioners. Due to the widespread impact trauma has on communities and individuals, trauma-informed approaches to practice are critical for the success of recreation therapy services.

Trauma-informed care (TIC) is one approach developed by the Substance Abuse and Mental Health Services Administration (SAMHSA) to guide practitioners from all disciplines in providing care that not only prevents re-traumatization but promotes posttraumatic growth (2014). TIC has been researched by a number of disciplines including social work, art therapy, and music therapy but is still an emerging topic of research within recreation therapy. The topic of TIC has begun to emerge in writings and conference presentations, but most have focused on

specific RT interventions such as yoga. Little is known about the extent to which TIC is utilized in RT practice or in education of future professionals.

**Methods:** The purpose of this study was to identify a) the knowledge of TIC among Certified Therapeutic Recreation Specialists (CTRS), b) the extent to which TIC is incorporated in recreation therapy education, and c) the factors that influence the use of TIC in recreation therapy practice.

A random sample of 2500 active CTRSs were invited to participate in the study; the sample received an email invitation through NCTRC with a link to the survey. Two separate email blasts were sent approximately a week apart. The response rate was 549 participants (21.96%) with 541 completed surveys.

A 72-item online Qualtrics survey was developed based on a review of the TIC literature. The instrument consisted of four main categories of questions: demographics (7 items), education (7 items), trauma-informed care in RT practice (4 items), and knowledge-based questions about TIC (43 items). This survey included 43 original questions as well as subscales of questions from the Trauma-Informed Care Provider Survey © 2014 (updated as a 2.0 version in 2021) by the Center for Pediatric Traumatic Stress. Data were analyzed using SPSS V 27. Descriptive statistics described the sample; Chi-square determined differences in practice of TIC by population, training, t-tests determined difference in the knowledge, competence, comfort, and barrier subscale scores by practice/do not practice TIC, and ANOVA determined differences in TIC subscales by population and level of expertise. Significance was established at .05 level or higher and only effect sizes of medium or higher were reported to address practical significance.

**Results:** The average knowledge on the 13 TIC concepts for CTRSs was 3.02 ( $SD=0.23$ ) out of a possible 4.0 score; scores of 3 or higher indicate TIC concepts were answered correctly. There was no significant difference in knowledge of TIC by population served and no practical difference between self-rated expertise and TIC knowledge scores. An ANOVA indicated there were statistically significant differences in Competence, Comfort, and Barrier subscale scores by level of expertise. The Competence subscale (12 statements) has response options of 0 “not competent, 1 “somewhat competent” and 2 “very competent” and explored how competent respondents felt performing TIC principles including responding calmly to a patient’s strong emotional distress and educating patients about traumatic stress reactions. Results indicated those with no expertise ( $M= 0.86$ ) and Novice ( $M= 1.05$ ) had significantly lower mean scores on competence than those identified as Experts ( $M= 1.82$ ) and those with Advanced skills ( $M = 1.70$ ),  $F(5,376) = 54.37, p = .001$  and an effect size of .420 which is a large effect size.

The Comfort subscale (12 statements) had items similar to the competence statements but focused on the CTRSs comfort in providing TIC principles using the same 0 to 2 response options. Results of the ANOVA indicated those with No expertise ( $M = 0.93$ ) had significantly lower mean scores on comfort than those identified as Experts ( $M = 1.83$ ) and those with Advanced skills ( $M = 1.73$ ),  $F(5,373) = 39.32, p = .001$  and an effect size of .345 which is a large effect size.

The Barriers subscale (6 statements) had response options of 0 “not a barrier,” 1 “somewhat a barrier,” and 2 “significant barrier” which explored barriers to providing TIC principles such as time constraints and lack of training. Those with No expertise ( $M = 1.08$ ) and Novice ( $M = 0.99$ ) had significantly higher mean scores than Experts ( $M = 0.27$ ) and Advanced skills ( $M = 0.54$ ),  $F(5,372)= 19.92, p = .001$ ) and an effect size of .221 which is a large effect size. Over four in ten (44.4%) reported they did not receive training on TIC in their academic education.

Findings provide the discipline with a preliminary picture of the prevalence of TIC in RT practice. RTs indicated they did not have sufficient training in TIC. Approximately six in ten (59.5%) CTRSs rated their skill level as no expertise (9.7%), novice (28.7%), or advanced beginner expertise (21%) on the topic of TIC. While CTRSs are not confident in their skills regarding TIC approaches, scores on the Trauma-Informed Care Provider Survey indicated a somewhat higher competence level than their self-reported expertise.

**Implications for RT:** There is a need to provide training on TIC approaches for RTs. ATRA conferences have already begun to offer sessions on TIC and that should continue. RT academic programs should consider addressing TIC in their academic course(s) if it is not already taught.

## References

- Fette, C., Lambdin-Pattavina, C., & Weaver, L. (2019). Understanding and applying trauma informed approaches across occupational therapy settings. *American Occupational Therapy Association*, 1–7.
- Mikal-Flynn, J., Anderson, L. S., & Hoffman, J. (2018). Posttraumatic growth and metahabilitation in recreational therapy practice: A strengths-based pathway to recovery. *Therapeutic Recreation Journal*, 52(3), 269–287. <https://doi.org/10.18666/trj-2018-v52-i3-8675>
- National Council for Behavioral Health. (2013). *How to manage trauma*. <https://www.thenationalcouncil.org/wp-content/uploads/2013/05/Trauma-infographic.pdf?daf=375ateTbd56>
- Substance Abuse and Mental Health Services Administration. (2014). *SAMHSA's concept of trauma and guidance for a trauma informed approach*. HHS Publication No. (SMA) 14-4884.
- The Center for Pediatric Traumatic Stress. (2021). *Trauma-informed care provider survey - version 2.0*. Licensed under CC-BY-NC 4.0.

## Connecting Reflections: Narratives of Growth in Older Adults' Pandemic-Era Online Photovoice Participation

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**Introduction:** Adults age 65 and older were among the most highly affected population during the COVID-19 pandemic, comprising around three-fourths of all lives lost (CDC, 2022). Beyond and compounding the losses of life, older adults (OA) have been faced with complex challenges to well-being, including a wave of narratives positioning them as “at-risk” and “vulnerable” (Morrow-Howell et al., 2020). In turn, narratives centering on a “perpetuation of pre-pandemic [sic] negative stereotypes that all older adults are dependent, frail, sickly, weak, and a burden on society” provide a complex psychosocial narrative landscape for research on aging in the pandemic era (Monahan et al., 2020). Researchers supporting the health and well-being of OA have recognized the need to engage research participants not as subjects but as collaborative partners (Corrado et al. 2020; Hand et al., 2019). By addressing unequal power dynamics in research relationships and engaging marginalized individuals in collaborative, transformative projects, Participatory Action Research (PAR) methods are well suited to center the voices of OA during the pandemic (Wang & Burris, 1997). However, a recent review found that most PAR projects are completed with key limitations on the meaningful involvement of OA participants (Corrado et al., 2020). Studies of well-being during the pandemic have begun to report lived experiences, but few have engaged participants in purposeful reflection to understand the impact that may result from individuals sharing their stories about this global critical life event in research contexts (Dell et al., 2021; Hall et al., 2021; Todorova et al., 2021). For researchers engaging older adults in PAR-based projects, a narrative analysis approach may engage participants in reflective, collaborative conversations. Engaging with the narrative strategies OA participants use to reflect on their life experiences may provide another avenue to center participants' voices and create opportunities for meaning and positive growth.

**Methods:** This narrative analysis explored stories from five U.S. community-dwelling women age 65+ who participated in a 6-week online Photovoice research project using photography and focus group discussion to reflect on their well-being during the pandemic (Hsieh & Wilder, forthcoming). The researcher conducted 1:1 semi-structured program evaluation interviews with each of the 5 project participants within 1 week of the final focus group session to gather feedback and understand their experiences. The researcher worked with the Photovoice research team to design a 3-part semi-structured interview guide for program evaluation, including open-ended qualitative questions concerning participants' perceptions of the Photovoice study's research aims, as well as four reflective questions using photo-elicitation with participants' Photovoice portfolios to evoke memories from the project.

Employing a narrative analysis method developed by Seaman et al. (2022), the researcher engaged with interview data as a site of collaboratively constructed meaning-making (Kvale & Brinkmann, 2009). The researcher used a multi-step interpretive process to develop themes of participants' perceptions of "meaningful engagement" in the project through the construction and interpretation of narrative scenes (Seaman et al., 2022). The researcher identified "involvement strategies" participants used in conversation to make meanings clear, and strengths-based facilitation techniques that supported engagement (Tannen, 2008; Seaman et al., forthcoming). Themes of meaningful engagement were developed through narrative interpretation of scenes using three "involvement strategies": constructed dialogue (Tannen, 2008) signaled with tone shift, gestures, and phrasal markers (i.e., "it was like," "I thought/to think," "like they say," etc.), metaphorical language (Randall, 2011) signaled through figures of speech functioning as literary devices through expressive use of language (i.e., analogy, idiom, simile, metaphor, etc.), and storying format (Seaman et al., 2022) signaled with phrasal markers to frame story parts (i.e., beginning, middle, end, complicating action, resolution, summary, main point). Scenes were analyzed in context to determine a central point or "coherence principle" (Seaman et al., 2022) and condensed (Kvale & Brinkmann, 2009) into five emerging themes.

**Results:** Results include five themes constructed across scenes and related social-emotional processes: seeing a new point of view [perspective-taking], learning a new skill [discovery], finding "more of myself in someone else" [compassion and connection], understanding "how I coped" with a critical life event [growth], and embracing a "new kind of research" [surprise and embodiment]. Participant feedback helped the researcher identify facilitation approaches that contributed to their meaningful experiences, which support the incorporation of strengths-based therapeutic interviewing and PAR-based facilitation techniques in qualitative research that engages older adults in group processing of critical life events (Korte et al., 2011; Randall, 2011; Wong & Watt, 1991). Participants' perceptions of the research process and facilitation techniques may suggest that strengths-based approaches support collaboration with instead of service to older adults (Anderson & Heyne, 2012).

**Implications for RT:** The narrative analysis method provided a systematic process to enrich researchers' interpretation of qualitative interview data. Implications for narrative analysis of reflective interview data extend from research methods into reminiscence-based TR practice (Randall, 2011). Implications for TR researchers suggest that engaging with OA participants in PAR-based methods can support purposeful reflection, collaborative learning, and mutual benefits (Corrado et al., 2020; Hand et al., 2019). Further, the researchers' facilitation techniques, designed to center purposeful reflection between researchers and participants, may support shared therapeutic outcomes (Nelson et al., 2013; Rosetto, 2014). Implications for TR practice with OA populations support previous findings that group and 1:1 reminiscence can be a site of therapeutic growth (Korte et al., 2011; Wong & Wyatt, 1991). Through deliberate structuring of evaluation interviews to continue engagement with participants in meaning-making research teams can engage in processes that support individual therapeutic growth (Nelson et al., 2013). In turn, by engaging in collaborative approaches and applying co-created reflective data, researchers and practitioners may center participant voices, learn alongside them, and support valuable roles for participants across the lifespan.

## References

- Anderson, L., & Heyne, L. (2012). *Therapeutic recreation practice: A strengths approach*. Venture Publishing.
- Corrado, A. M., Benjamin-Thomas, T. E., McGrath, C., Hand, C., & Rudman, D. L. (2020). Participatory action research with older adults: A critical interpretive synthesis. *Gerontologist*, 60(5), e413–e427. <https://doi.org.unh.idm.oclc.org/10.1093/geront/gnz080>
- Dell, N. A., Brandt-Lubart, K., & Maynard, B. R. (2021). Photovoice, COVID-19, and the possibility of post-traumatic growth. *Reflections: Narratives of Professional Helping*, 27(2), 63–70.
- Hall, J., Gaved, M., & Sargent, J. (2021). Participatory research approaches in times of COVID-19: A narrative literature review. *International Journal of Qualitative Methods*, 20. <https://doi.org/10.1177/16094069211010087>

- Hand, C., Rudman, D. L., McGrath, C., Donnelly, C., & Sands, M. (2019). Initiating participatory action research with older adults: Lessons learned through reflexivity. *Canadian Journal on Aging/La Revue canadienne du vieillissement*, 38(4), 512–520.
- Hsieh, P-C., Wilder, A., & Gates-Milardo, M.(2022). *Older people's perception of health and well-being during COVID-19: A Photovoice study*. Unpublished manuscript. Recreation & Leisure Studies Faculty, Brock University and Recreation Management & Policy Faculty, University of New Hampshire.
- Korte, J., Bohlmeijer, E. T., Westerhof, G. J., & Pot, A. M. (2011). Reminiscence and adaptation to critical life events in older adults with mild to moderate depressive symptoms. *Aging & Mental Health*, 15(5), 638–646. <https://doi.org/10.1080/13607863.2010.551338>
- Kvale, S., & Brinkmann, S. (2009). *Interviews: Learning the craft of qualitative research interviewing*. Sage.
- Monahan, C., Macdonald, J., Lytle, A., Apriceno, M., & Levy, S. R. (2020). COVID-19 and ageism: How positive and negative responses impact older adults and society. *The American Psychologist*, 75(7), 887–896. <https://doi.org/10.1037/amp0000699>
- Morrow-Howell, Galucia, N., & Swinford, E. (2020). Recovering from the COVID-19 pandemic: A focus on older adults. *Journal of Aging & Social Policy*, 32(4-5), 526–535. <https://doi.org/10.1080/08959420.2020.1759758>
- Nelson, J. A., Onwuegbuzie, A. J., Wines, L. A., & Frels, R. K. (2013). The therapeutic interview process in qualitative research studies. *Qualitative Report*, 18(40), 1–17.
- Randall, W. L. (2011). Memory, metaphor, and meaning: Reading for wisdom in the stories of our lives. *Storying Later Life: Issues, Investigations, and Interventions in Narrative Gerontology*, 20–38.
- Rania, N., Coppola, I., & Pinna, L. (2021). Adapting qualitative methods during the COVID-19 era: Factors to consider for successful use of online photovoice. *The Qualitative Report*, 26(8), 0\_1,2711-2729. <https://doi.org/10.46743/2160-3715/2021.4863>
- Rossetto, K. R. (2014). Qualitative research interviews: Assessing the therapeutic value and challenges. *Journal of Social and Personal Relationships*, 31(4), 482–489. <https://doi.org/10.1177/0265407514522892>
- Seaman, J., Hartman, C., Coppens, A., Sharp, E., & Jusseaume, S. (2022). *Narrative analysis coding book*. Unpublished manuscript. Recreation Management & Policy, Education, and Human Development & Family Studies Faculty, University of New Hampshire.
- Tannen, D. (2008). “We’ve never been close, we’re very different”: Three narrative types in sister discourse. *Narrative Inquiry*, 18(2), 206–229.
- Todorova, I., Albers, L., Aronson, N., Baban, A., Benyamini, Y., Cipolletta, S., del Rio Carral, M., Dimitrova, E., Dudley, C., Guzzardo, M., Hammoud, R., Hani Fadil Azim, D., Hilverda, F., Huang, Q., John, L., Kaneva, M., Khan, S., Kostova, Z., Kotzeva, T., ... & Zlatarska, A. (2021). “What I thought was so important isn’t really that important”: International perspectives on making meaning during the first wave of the COVID-19 pandemic. *Health Psychology & Behavioral Medicine*, 9(1), 830–857. <https://doi.org/10.1080/21642850.2021.1981909>
- Wang, C., & Burris, M. A. (1997). Photovoice: Concept, methodology, and use for participatory needs assessment. *Health Education & Behavior*, 24(3), 369–387.
- Wong, P. T., & Watt, L. M. (1991). What types of reminiscence are associated with successful aging? *Psychology and Aging*, 6(2), 272–279. <https://doi-org.unh.idm.oclc.org/10.1037/0882-7974.6.2.272>

## Health Benefits of Nature-Based Immersive Virtual Reality (iVR) Programs for Older Adults with Dementia: A Qualitative Study

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**Introduction:** Natural environments have been found to have a positive impact on the health and well-being of older adults with dementia. However, practical challenges such as physical limitations and structural barriers often limit their participation in nature-based activities and programs. Virtual reality (VR) experiences offer an alternative to outdoor activities by minimizing or eliminating these barriers. Recent pilot studies have explored the potential health benefits of nature-based VR interventions for older adults with cognitive decline. These studies have reported positive effects on participants' mood states, apathy, and emotional health, with no adverse side effects. This study aims to explore the feasibility of using immersive VR program and potential health outcomes for residents with dementia.

**Methods:** This pilot study employed a qualitative research design to explore the perceptions of benefits and challenges associated with a nature-based VR program for older adults with mild or moderate Alzheimer's disease. Convenience sampling was used to recruit participants from a locally operated memory care facility. Inclusion criteria included clinical diagnosis of mild or moderate AD, no prior experience with any VR programs, and basic communication skills. Participants were selected in consultation with facility staff. The study involved pre- to post-intervention assessments of mental health status, as well as individual interviews with staff and participants. A physical therapist and program director helped to implement the sessions and assess emotional well-being during the VR sessions.

The research team conducted semi-structured interviews with two staff members and five participants in the final week of the program, ranging from 20 to 50 minutes. Open-ended questions were used to evaluate the overall VR experience, benefits, challenges, and satisfaction with VR usability. Creswell's five steps of qualitative data analysis were applied, including data creation, organization, generation of themes with direct quotes, articulation of themes/sub-themes, and data interpretation. All interviews were recorded, transcribed, and analyzed using analytic induction and comparative procedures to identify common themes. The team collaboratively identified similarities and differences among the themes to reach a final set of themes and sub-themes supported by direct quotes, following the constant comparative method.

**Results:** A study on a nature-based virtual reality (VR) program for older adults with dementia identified three main themes: (a) enjoyment, (b) novel experience, and (c) reminiscence as possible mental health outcomes. The participants reported enjoying exploring and interacting with different nature settings, finding the program interesting, and having new experiences. Some participants also experienced reminiscence as certain scenes brought back memories of their past experiences related to nature. However, some participants also experienced challenges related to the VR gear, such as discomfort while wearing goggles and operating the controllers.

**Discussion/Implications for RT:** The study findings suggest that nature-based VR programs can offer positive experiences and improve cognitive functions in older adults with AD. The implications of this study are significant as they suggest that nature-based activities in a virtual world can have similar positive effects on the enjoyment, cognitive functioning, and motivation of older adults with AD as real-world activities such as nature walks, gardening, and outdoor exercise. This suggests that nature-based VR programs can be used as an intervention to promote the psychological and emotional health of participants. However, the study also highlights the need to simplify the headgear and control operations for the geriatric population to minimize negative consequences and maximize positive outcomes. The study suggests that future VR programs for older adults with dementia should consider these challenges.

The study further extends the body of knowledge to include the potential of nature-based VR programs in promoting emotional health and quality of life by broadening the dimensions of the worlds of older adults with dementia. However, the study also identifies some negative effects of using the VR programs, such as cybersickness, anxiety, and other negative emotional responses. The findings of this study suggest that characteristics of VR users should be considered, and future researchers, VR developers, and instructional designers need to simplify the headgear and control operations for the geriatric population to minimize negative consequences and maximize positive outcomes. The study's limitations include the small sample size of a narrowly defined population, highlighting the need for future studies to recruit larger samples and consider different stages of AD and different types of dementia to gain deeper insight into the effects of the program on the mental health and well-being of older adults with AD.

**Table 1**

*Demographics*

Participant	Gender	Age	Marital Status	Education level
1	Male	73	Widowed	College graduate
2	Female	71	Divorced	Graduate school
3	Female	83	Married	College graduate
4	Male	85	Married	Graduate school
5	Female	90	Widowed	College graduate
6	Female	72	Married (Staff)	Graduate school
7	Female	26	Single (Staff)	Graduate school

**Figure 1**

*VR Nature Treks*



**References**

- Appel, L., Appel, E., Bogler, O., Wiseman, M., Reichel, U. D., & Shani-Sherman, T. (2020). Older adults with cognitive and physical impairments can benefit from immersive virtual reality experiences: A feasibility study. *Frontiers in Medicine*, 6, 329. <https://doi.org/10.3389/fmed.2019.00329>
- Benjamin, K., Edwards, N., Ploeg, J., & Legault, F. (2014). Barriers to physical activity and restorative care for residents in long-term care: A review of the literature. *Journal of Aging and Physical Activity*, 22(1), 154–165. <https://doi.org/10.1123/japa.2012-0239>

- Brett, L., Traynor, V., & Stapley, P. (2016). Effects of physical exercise on health and well-being of individuals living with dementia in nursing homes: A systematic review. *Journal of the American Medical Directors Association*, 17(2), 104–116. <https://doi.org/10.1016/j.jamda.2015.10.021>
- Creswell, J. W. (2016). *Qualitative inquiry research design*. Sage Publications.
- Cuevas-Trisan, R. (2019). Balance problems and fall risks in the elderly. *Clinics in Geriatric Medicine*, 35(2), 173–183. <https://doi.org/10.1016/j.cger.2018.11.006>
- Hewitt, P., Watts, C., Hussey, J., Power, K., & Williams, T. (2013). Does a structured gardening program improve well-being in young-onset dementia? A preliminary study. *British Journal of Occupational Therapy*, 76(8), 355–361. <https://doi.org/10.4276/030802213X13754092306477>
- Merriam, S. B. (1998). *Qualitative research and case study applications in education*. Jossey-Bass Publishers.
- Park, S. H., & Mattson, R. H. (2009). Therapeutic influences of plants in hospital rooms on surgical recovery. *Hort-Science*, 44(1), 102–105. <https://doi.org/10.21273/HORTSCI.44.1.102>
- Shanahan, D. F., Astell-Burt, T., Barber, E. A., Brymer, E., Cox, D. T., Dean, J., Depledge, M., Fuller, R. A., Hartig, T., Irvine, K. N., & Jones, A. (2019). Nature-based interventions for improving health and well-being: The purpose, the people and the outcomes. *Sports*, 7(6), 141. <https://doi.org/10.3390/sports7060141>
- Strauss, A. L., & Corbin, J. M. (1998). *Basics of qualitative research: Techniques and procedures for developing grounded theory*. Sage Publications.
- Whear, R., Coon, J. T., Bethel, A., Abbott, R., Stein, K., & Garside, R. (2014). What is the impact of using outdoor spaces such as gardens on the physical and mental well-being of those with dementia? A systematic review of quantitative and qualitative evidence. *Journal of the American Medical Directors Association*, 15(10), 697–705. <https://doi.org/10.1016/j.jamda.2014.06.018>
- Wright, A. (2018). Exploring the relationship between community-based physical activity and well-being in people with dementia: A qualitative study. *Ageing & Society*, 38(3), 522–542. <https://doi.org/10.1017/S0144686X16001490>

## Is There a Relationship between Perceived Health and Well-Being During Older Adults' Transitions into Assisted Living Facilities?

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**Introduction:** Older adults' well-being during a transition into an assisted living facility (ALF) may be associated with their functional abilities and perceived health conditions, but these associations are relatively unknown. The Mueller Assessment of Transition (MAT) is a new standardized assessment that assesses the impact of transition on older adults' well-being when relocating into ALFs (See Figure 1). Well-being is defined as the state when older adults have their needed social, physical, and psychological resources met (Dodge et al., 2012) yet the question of how it should be defined remains unanswered. This multi-disciplinary review explores past attempts to define well-being and provides an overview of the main theoretical perspectives, from the work of Aristotle to the present day. The article argues that many attempts at expressing its nature have focused purely on dimensions of well-being, rather than on definition. Among these theoretical perspectives, we highlight the pertinence of dynamic equilibrium theory of well-being (Headey & Wearing, 1989, and in this study is applied to the challenges associated with transitions into ALFs. In comparison, the Health Assessment Questionnaire Disability Index (HAQ-DI) measures older adults' perceived functional abilities. Functional abilities are described as the mental and physical tasks necessary for older adults to perform activities of daily living such as rising, eating, dressing, walking, hygiene, grip, reach, and engaging in the community (Wolfe, 1989) arising, eating,

walking, hygiene, reach, grip, and activities. There are two or three questions for each section. Scoring within each section is from 0 (without any difficulty). Many times, recreational therapists (RTs) in ALFs are responsible for implementing health-promoting interventions such as physical activity, community engagement, cognitive stimulation, and stress management to maintain or improve older adults' functional abilities and well-being (American Therapeutic Recreation Association, 2016; Fields et al., 2012; Leitner & Leitner, 2011; Mueller et al., 2021; Richeson & Sardina, 2016) "title": "Recreational Therapy and older adults: Fact sheet," "type": "webpage"}, "uris": [{"http://www.mendeley.com/documents/?uuid=dd945f02-1f1c-48f4-9dae-3997ae0a5c6a"}], {"id": "ITEM-2", "itemData": {"DOI": "10.1093/hsw/hls020", "ISBN": "0360-7283, 0360-7283", "ISSN": "03607283", "PMID": "23193730", "abstract": "This study explored key aspects of resident transitions to assisted living (AL). However, the associations between older adults' perceived health and well-being during transition are limited yet may be important knowledge for RTs implementing health-promoting interventions. Therefore, the purpose of this study was to understand the bidirectional relationships between older adults' perceived health and their well-being at the time of transition into ALFs.

**Methods:** A secondary analysis was conducted for a cross-sectional study with older adult participants transitioning into ALFs who met the following inclusion criteria: had English reading proficiency, became a resident of an ALF after March 2018, and scored a four or higher on the Six Item Screener (SIS) (Callahan et al., 2001). Each ALF site had an identified site liaison to help distribute the questionnaires to eligible participants. The questionnaire was composed of four components that included demographic questions, past/current perceived health conditions, functional abilities using the HAQ-DI assessment, and well-being at time of transition using the MAT assessment. Participants self-completed questionnaires in a private area of the ALF to ensure confidentiality. Data were entered into IBM SPSS version 28 for analysis (IBM Corp, 2021). Two multiple linear regression models were hypothesized. Model 1 stated that older adults' perceived health conditions are predictive of their well-being at time of transition and Model 2 detailed that older adults' well-being at the time of transition predicted their perceived functional abilities in the ALF.

**Results:** A total of 108 older adults across the United States completed questionnaires. See Table 1 for participants' demographic information. Results showed significant relationships between older adults' perceived health conditions, functional abilities, and well-being at time of transition. Model 1 showed significant findings for genitourinary health conditions such as incontinence, catheter usage, and kidney stones as predictors of older adults' well-being at time of transition ( $t(88) = 2.03, p = 0.024$ ). All other perceived health conditions as predictors of well-being at time of transition were non-significant. Model 2 yielded significant results ( $F(1, 106) = 6.66, p = 0.01, R^2 = 0.059$ ) as participants' functional abilities increased .243 SE for every 1 SD unit increase in well-being at time of transition.

**Discussion and Recommendations for RT:** Findings in this study indicated significant bidirectional relationships between older adults' perceived health conditions, functional abilities, and their well-being at time of transition into ALFs. Interestingly, genitourinary health conditions such as incontinence, kidney stones, or catheter usage were shown as predictors of well-being at time of transition. Prior literature found incontinence to decrease older adults' well-being, but this was not studied during the event of a transition (Pizzol et al., 2021). RTs and other allied health professionals in ALFs should be aware that new residents who experience genitourinary conditions may pose a threat to the older adults' well-being during their transition experience. Additionally, this study found that older adults' well-being during transition predicted their functional abilities in the ALF, indicating older adults with higher MAT scores showed significantly higher functional abilities to complete daily tasks. Although the research has explored the relationships between older adults' health and aspects like resilience, life satisfaction, and coping (Mayordomo et al., 2016; Ramos & Brown, 2020) the changes that occur in the second half of life require effort to adapt to the new reality. This study used a structural model to test the effects of coping strategies and resilience on well-being in a sample of 305 mid-life adults. Several constructs were measured: coping strategies, resilience, and well-being. A final model was obtained with good fit indices; psychological well-being was positively predicted by resilience and negatively by emotional coping. Moreover, positive reappraisal and

avoidance form part of both coping strategies (problem-focused and emotion-focused, no studies have used well-being to predict functional abilities. This finding may be of particular interest to RTs who often assess the physical abilities of new residents but may have not considered the relationship between those abilities and the older adults' well-being. In conclusion, their a relationship was presented between older adults' perceived health and their well-being during a transition into ALFs. Using standardized assessments like the MAT and HAQ-DI, RTs working in ALFs may use these findings to better quantify both older adults' perceived health and well-being to create person-centered, health promoting treatment plans and interventions for new residents.

**Table 1***Participant Demographics*

Age	<i>M</i> = 84.22; <i>SD</i> = 8.09; range = 57-97
Participant gender	
<i>Female</i>	81 (75%)
<i>Male</i>	22 (20%)
<i>Missing</i>	5 (5%)
Region of the United States	
<i>South</i>	67 (62%)
<i>Midwest</i>	26 (24%)
<i>West</i>	8 (7%)
<i>Northeast</i>	7 (7%)
Past/current health conditions	
<i>Musculoskeletal</i>	72 (67%)
back or joint pain, arthritis, artificial knee, or hip joints	
<i>Head, Eye, Ear, Nose, Throat</i>	67 (62%)
cataracts, macular degeneration, blind- ness, hearing loss, difficulty swallow- ing, migraines, seizures	
<i>Psychiatric</i>	49 (45%)
anxiety, depression, memory loss	
<i>Gastrointestinal</i>	43 (40%)
ulcer disease, heartburn, diarrhea and/ or constipation	
<i>Cardiovascular</i>	39 (36%)
chest pain, irregular heart rate, heart murmur, ankle swelling	
<i>Genitourinary</i>	38 (35%)
incontinence, kidney stones, catheter	
<i>Dermatologic</i>	24 (22%)
unhealed sores, skin caner	

<i>Endocrine</i>	22 (20%)
diabetes	
<i>Respiratory</i>	21 (19%)
COPD, asthma, oxygen dependent, tuberculosis	

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### References

- American Therapeutic Recreation Association. (2016). *Recreational Therapy and older adults: Fact sheet*.
- Callahan, C. M., Unverzagt, F. W., Hui, S. L., & Anthony, J. (2001). Six-Item Screener to identify cognitive impairment among potential subjects. *Medical Care, 40*(9), 771–781. <https://doi.org/10.1097/01.MLR.0000024610.33213.C8>
- Dodge, R., Daly, A., Huyton, J., & Sanders, L. (2012). The challenge of defining well-being. *International Journal of Well-being, 2*(3), 222–235. <https://doi.org/10.5502/ijw.v2i3.4>
- Fields, N. L. C., Koenig, T., & Dabelko-Schoeny, H. (2012). Resident transitions to assisted living: A role for social workers. *Health and Social Work, 37*(3), 147–154. <https://doi.org/10.1093/hsw/hls020>
- IBM Corp. (2021). *SPSS Statistics for Mac, Version 28.0*.
- Leitner, M., & Leitner, S. (2011). *Leisure enhancement*. Sagamore-Venture.
- Mayordomo, T., Viguer, P., Sales, A., Satorres, E., & Meléndez, J. C. (2016). Resilience and coping as predictors of well-being in adults. *Journal of Psychology: Interdisciplinary and Applied, 150*(7), 809–821. <https://doi.org/10.1080/00223980.2016.1203276>
- Mueller, K. E., Van Puymbroeck, M., Crowe, B. M., & Davis, N. J. (2021). Adjustment strategies for older adults transitioning into an assisted living facility: Implications for RT practice. *Therapeutic Recreation Journal, 55*(2), 204–220.
- Pizzol, D., Demurtas, J., Celotto, S., Maggi, S., Smith, L., Angiolelli, G., Trott, M., Yang, L., & Veronese, N. (2021). Urinary incontinence and quality of life: A systematic review and meta-analysis. *Aging Clinical and Experimental Research, 33*(1), 25–35. <https://doi.org/10.1007/s40520-020-01712-y>
- Ramos, M. D., & Brown, A. (2020). Outlook in life of older adults and their health and community condition. *Educational Gerontology, 46*(10), 1–13. <https://doi.org/10.1080/03601277.2020.1795788>
- Richeson, N., & Sardina, A. (2016). Recreational therapy competencies for working with older adults. *American Journal of Recreation Therapy, 15*(2), 39–48.
- Wolfe, F. (1989). The Health Assessment Questionnaire (HAQ) Disability Index (DI) of the Clinical Health Assessment Questionnaire. *Arthritis & Rheumatology, 32*(Di), 2–7.



## Determining the Outcomes of Camp Resilience Retreats, and Some Lessons Learned Along the Way

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**Introduction:** In 2018, there were around 20 million military Veterans, nearly 5 million of which have service-connected disabilities (SCD), including posttraumatic stress disorder (PTSD) (United States Department of Veterans Affairs, 2019). Improvements in body armor mean military personnel are more likely to survive, but with traumatic brain injuries putting them at greater risk for developing PTSD (Warden, 2006). Thus, the proportion of Veterans with SCD is increasing (United States Department of Veterans Affairs, 2019), and mental health disorders are now the top reason for hospitalization of military personnel (Thompson, 2011). The Veterans Affairs system is struggling to meet the demand of those needing services (Korb et al., 2009; Monk et al., 2017). In addition, the stigma of clinical treatment causes delays in seeking or avoidance of treatment, or dropping out before completion (Dustin et al., 2011; Schell & Tanielian, 2011). In short, traditional PTSD treatments are not meeting demand, and alternative models are needed.

Physical activity offers mental health and well-being benefits, especially if done outdoors (Caddick et al., 2015; Coon et al., 2011; Diaz et al., 2019; Mitchell, 2013). Community-based retreats are a promising treatment method for PTSD (Bennett et al., 2017; Bobrow et al., 2013; Monk et al., 2017), but outcomes are not routinely evaluated or published (Lundberg et al., 2011; Monk et al., 2017). Camp Resilience offers 3- to 4-day recreational therapy and adaptive sports retreats for Veterans and First Responders with PTSD. First responders are like Veterans in that they are regularly exposed to traumatic events, a known cause of PTSD, and as a result, develop PTSD at a higher rate than civilians (Haugen et al., 2012; Walker et al., 2016). Camp Resilience retreats include outdoor experiential learning activities (i.e., physical activities with adaptations as needed), peer-to-peer counseling, and life skills workshops designed to help participants “recover and maintain their physical, psychological, and emotional well-being” (Camp Resilience, 2022, para. 4). Camp Resilience partnered with the University of New Hampshire to develop retreat evaluations. This study addresses the gap in the literature and knowledge base by determining the outcomes of therapeutic retreats as a treatment model for PTSD.

**Methods:** Pre-retreat and post-retreat surveys were administered to measure retreat outcomes. Four psychometrically validated scales measured resilience (Connor-Davidson Resilience Scale 10 from Campbell-Sills & Stein, 2007), depression and anxiety (Patient Health Questionnaire-4 from Kroenke et al., 2009), sleep quality (Sleep Quality Scale from Snyder et al., 2018), and loneliness (Revised UCLA Loneliness Scale from Russell et al., 1980). Demographic items were collected on the pre-retreat survey. Both surveys were administered using Google Forms.

Research subjects were participants of Camp Resilience’s retreats in 2021. Camp Resilience surveyed all attendees, but inclusion criteria were consenting to be part of the study and having completed both the pre-retreat and post-retreat surveys.

Paired-samples *t*-tests were run on the four scales to determine how participant responses changed from the pre-retreat and post-retreat surveys. Data analysis was conducted using Statistical Package for the Social Sciences (SPSS) version 27.

**Results:** This study included 38 (53.5%) of the 71 attendees who met inclusion criteria (see Table 1). The CD-RISC 10 results indicated an increase in resilience score from pre-retreat ( $M = 27.06$ ,  $SD = 6.61$ ) to post-retreat ( $M = 28.42$ ,  $SD = 6.57$ ),  $t(30) = -1.49$ ,  $p = .15$ ). The results from the PHQ-4 pre-retreat ( $M = 3.74$ ,  $SD = 3.43$ ) and post-retreat ( $M = 3.55$ ,  $SD = 2.94$ ) showed a decrease in reported symptoms of depression and anxiety  $t(30) = 0.37$ ,  $p = .72$ ). The results from the SQS (5-point, non-standard version) pre-retreat ( $M = 4.85$ ,  $SD = 2.62$ ) and post-retreat ( $M = 5.09$ ,  $SD = 2.81$ ) surveys indicated an increase in sleep quality  $t(32) = -0.59$ ,  $p = .56$ ). The Revised UCLA Loneliness Scale (14-item, non-standard version) showed decreases in indicators of loneliness from pre-retreat

( $M = 30.47$ ,  $SD = 8.30$ ) to post-retreat ( $M = 30.33$ ,  $SD = 7.95$ ),  $t(29) = 0.13$ ,  $p = .90$ ). All results are in the desired direction, even with some irregularities in the data collection process, but none reached statistical significance (see Table 2).

**Discussion/Implications for RT:** Traditional PTSD treatment methods are not meeting the needs of Veterans (Dustin et al., 2011; Korb et al., 2009; Monk et al., 2017; Schell & Tanielian, 2011). The therapeutic retreat model is promising but lacks a robust body of literature demonstrating its effectiveness (Bennett et al., 2017; Bobrow et al., 2013; Lundberg et al., 2011; Monk et al., 2017). This study aimed to add to the knowledge base by determining the outcomes of Camp Resilience's retreats on the mental health and well-being of participants. A limitation of the study is discrepancies in the data collection process (e.g., errors in the SQS and Revised UCLA Loneliness scales in Google Forms, differing from the original scales). The problem has been fixed, and despite it, outcomes showed change in the desired direction but were not statistically significant. Since the direction of results matches previous research, these findings offer additional, tentative, support for the effectiveness of retreats as an alternate model to treat PTSD. Camp Resilience will continue to evaluate its retreats, allowing for deeper and more powerful statistical analysis over time.

This study yielded implications for the recreational therapy field. First, the discrepancies during data collection and low number of participants serve as reminders to program evaluators. Make sure to double-check the accuracy of instruments and the data produced to ensure quality, usable data for evaluating and improving the program. Be thoughtful about when and how participants complete necessary instruments. Either have research participants complete the surveys while they are a captive audience or send reminder emails to maximize the response rate.

Second, we encourage other retreat programs to implement similar evaluations to build the data, knowledge, and literature in this area. Camp Resilience will continue to collect data for future retreats, allowing for continually deeper and more powerful statistical analysis. Other programs using the same scales would be helpful for comparing results across organizations but using other scales or even measuring other dimensions would help get a broader look at the potential outcomes of therapeutic retreats and how to best measure them, with the end goal of identifying the best ways to support Veterans and First Responders with PTSD.

**Table 1**  
*Sociodemographic Characteristics*

	N	%	Mean	Range
<b>Gender</b>				
Female	9	23.7%		
Male	15	39.5%		
No Response	14	36.8%		
<b>Ethnic Origin/Race</b>				
White	20	52.6%		
Hispanic; LatinX	3	7.9%		
Native American; Indigenous	1	2.6%		
No Response	14	36.8%		
<b>Education</b>				
Some college credit, no degree	9	23.7%		
Trade/technical/vocational training	1	2.6%		
College graduate	14	36.8%		
No Response	14	36.8%		

**Table 1 (cont).**

<b>Affiliation</b>		
Air Force	2	5.3%
Army	13	34.2%
Coast Guard	1	2.6%
Marines	3	7.9%
Navy	7	18.4%
Law Enforcement Officer	6	15.8%
Firefighter	1	2.6%
Paramedic/EMT	1	2.6%
Other	1	2.6%
No Response	3	7.9%
<b>Length of Active Duty Service</b>		
Less than 2 years	2	5.3%
2-3 years	7	18.4%
4-6 years	5	13.2%
7-9 years	5	13.2%
10-15 years	2	5.3%
16+ years	9	23.7%
Prefer Not to Answer	1	2.6%
No Response	7	18.4%
<b>Annual Household Income</b>		
\$25,000 - \$34,999	2	5.3%
\$35,000 - \$49,999	3	7.9%
\$50,000 - \$74,999	8	21.1%
\$75,000 - \$99,999	6	15.8%
\$100,000+	2	5.3%
Prefer Not to Answer	3	7.9%
No Response	14	36.8%
<b>Marital Status</b>		
Single; Never Married	5	13.2%
Married; Domestic Partnership	17	44.7%
Divorced	2	5.3%
No Response	14	36.8%
<b>Group Memberships (Multiple Responses Allowed)</b>		
VFW	6	15.8%
American Legion	5	13.2%
DAV of America	10	26.3%
Marine Corps League	1	2.6%
Wounded Warrior Project	4	10.5%
Other	3	7.9%
No Response	22	57.9%
<b>Age (Years)</b>		
	49.0	29-76

Nota Bene: Response options that were provided but not selected by any participants were removed for simplicity

**Table 2***Comparison of Pre-Retreat and Post-Retreat Scores for Camp Resilience*

Outcome	Pre-Retreat		Post-Retreat		df	t	p
	M	SD	M	SD			
CD-RISC 10 (Resilience)	27.06	6.61	28.42	6.57	30	-1.49	0.15
PHQ-4 (Depression and Anxiety)	3.74	3.43	3.55	2.94	30	0.37	0.72
Sleep Quality Scale (5-point, non-standard version)	4.85	2.62	5.09	2.81	32	-0.59	0.56
Revised UCLA Loneliness Scale (14-item, non-standard version)	30.47	8.30	30.33	7.95	29	0.13	0.90

\*  $p < 0.05$ 

### References

- Bennett, J. L., Piatt, J. A., & Van Puymbroeck, M. (2017). Outcomes of a therapeutic fly-fishing program for veterans with combat-related disabilities: A community-based rehabilitation initiative. *Community Mental Health Journal, 53*(7), 756–765. <https://doi.org/10.1007/s10597-017-0124-9>
- Bobrow, J., Cook, E., Knowles, C., & Vieten, C. (2013). Coming all the way home: Integrative community care for those who serve. *Psychological Services, 10*(2), 137–144. <https://doi.org/10.1037/a0031279>
- Caddick, N., Smith, B., & Phoenix, C. (2015). The effects of surfing and the natural environment on the well-being of combat veterans. *Qualitative Health Research, 25*(1), 76–86. <https://doi.org/10.1177/1049732314549477>
- Camp Resilience. (2022, April 25). *About*. <https://www.camp-resilience.org/aboutus.html>
- Campbell-Sills, L., & Stein, M. B. (2007). Psychometric analysis and refinement of the Connor-Davidson Resilience Scale (CD-RISC): Validation of a 10-item measure of resilience. *Journal of Traumatic Stress, 20*(6), 1019–1028. <https://doi.org/10.1002/jts.20271>
- Coon, J. T., Boddy, K., Stein, K., Whear, R., Barton, J., & Depledge, M. H. (2011). Does participating in physical activity in outdoor natural environments have a greater effect on physical and mental well-being than physical activity indoors? A systematic review. *Environmental Science & Technology, 45*, 1761–1772. doi:10.1021/es102947t
- Diaz, R., Miller, E. K., Kraus, E., & Fredericson, M. (2019). Impact of adaptive sports participation on quality of life. *Sports Medicine and Arthroscopy Review, 27*, 73–82. <https://doi.org/10.1097/JSA.0000000000000242>
- Dustin, D., Bricker, N., Arave, J., Wall, W., & Wendt, G. (2011). The promise of river running as a therapeutic medium for veterans coping with post-traumatic stress disorder. *Therapeutic Recreation Journal, 45*(4), 326–340.
- Haugen, P. T., Evces, M., & Weiss, D. S. (2012). Treating posttraumatic stress disorder in first responders: A systematic review. *Clinical Psychology Review, 32*(5), 370–380. <https://doi.org/10.1016/j.cpr.2012.04.001>
- Korb, L. J., Duggan, S. E., Juul, P. M., & Bergmann, M. A. (2009). *Serving America's veterans: A reference handbook*. ABC-CLIO.
- Kroenke, K., Spitzer, R. L., Williams, J. B. W., & Löwe, B. (2009). An ultra-brief screening scale for anxiety and depression: The PHQ-4. *Psychosomatics (Washington, D.C.), 50*(6), 613–621.
- Lundberg, N., Bennett, J., & Smith, S. (2011). Outcomes of adaptive sports and recreation participation among veterans returning from combat with acquired disability. *Therapeutic Recreation Journal, 45*(2), 105–120.
- Mitchell, R. (2013). Is physical activity in natural environments better for mental health than physical activity in other environments? *Social Science & Medicine, 91*, 130–134. doi:10.1016/j.socscimed.2012.04.012

- Monk, J. K., Oseland, L. M., Nelson Goff, B. S., Ogolsky, B. G., & Summers, K. (2017). Integrative intensive retreats for veteran couples and families: A pilot study assessing change in relationship adjustment, posttraumatic growth, and trauma symptoms. *Journal of Marital and Family Therapy*, 43(3), 448–462. <https://doi.org/10.1111/jmft.12230>
- Russell, D., Peplau, L. A., & Cutrona, C. E. (1980). The revised UCLA Loneliness Scale: Concurrent and discriminant validity evidence. *Journal of Personality and Social Psychology*, 39(3), 472–480. <https://doi.org/10.1037/0022-3514.39.3.472>
- Schell, T., & Tanielian, T. (2011). *A needs assessment of New York State veterans: Final report to the New York State Health Foundation*. Rand Corporation. [http://www.rand.org/content/dam/rand/pubs/technical\\_reports/2011/RAND\\_TR920.pdf](http://www.rand.org/content/dam/rand/pubs/technical_reports/2011/RAND_TR920.pdf)
- Snyder, E., Cai, B., DeMuro, C., Morrison, M. F., Ball, B. (2018). A new single-item sleep quality scale: Results of psychometric evaluation in patients with chronic primary insomnia and depression. *Journal of Clinical Sleep Medicine*, 14(11), 1849–1857. <https://doi.org/10.5664/jcsm.7478ell>
- Thompson, M. (2011, April 29). Mental health ills now top cause of hospital visits in U.S. military. *Time*. <http://battleland.blogs.time.com/2011/04/29/mental-health-ills-now-top-cause-ofhospital-visits-in-u-s-military/>
- United States Department of Veterans Affairs. (2019, May). *Statistical trends: Veterans with a Service-Connected Disability, 1990 to 2018*. [https://www.va.gov/vetdata/docs/Quickfacts/SCD\\_trends\\_FINAL\\_2018.pdf](https://www.va.gov/vetdata/docs/Quickfacts/SCD_trends_FINAL_2018.pdf)
- Walker, A., McKune, A., Ferguson, S., Pyne, D., & Rattray, B. (2016). Chronic occupational exposures can influence the rate of PTSD and depressive disorders in first responders and military personnel. *Extreme Physiology & Medicine*, 5(1), 8–8. <https://doi.org/10.1186/s13728-016-0049-x>
- Warden, D. (2006). Military TBI during the Iraq and Afghanistan Wars. *Journal of Head Trauma Rehabilitation*, 21(5), 398–402.

## A Preliminary Feasibility Study of a Virtual Mentally Stimulating Activities Program for Older Adults

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**Introduction:** Between 25-50% of community-dwelling older adults (aged 60+) experience social isolation, and approximately 43% of older adults experience loneliness (National Academies of Sciences, 2020; Fakoya et al., 2020). Loneliness is an individual emotional response to the perceived discrepancy between desired and acquired levels of social contact (Peplau & Perlman, 1982); and, along with social isolation are linked to poorer cognitive functioning, decreased physical activity, impaired sleep, decreased physical activity, poorer mental health, and earlier mortality (Khosravi et al., 2016). COVID-19, specifically social distancing guidelines linked to the pandemic, exacerbated social isolation, and increased risk for experiencing loneliness, and poorer psychosocial health in community-dwelling older adults (Manca et al., 2020). Virtual programs (e.g., programs offered via Zoom or similar technologies) may be a viable alternative to address limited accessibility to in-person recreational therapy (RT) programs; however, there is a dearth of research that tests feasibility and efficacy of transitioning in-person, evidence-based programs (e.g., Mentally Stimulating Activities (MSA); Buettner et al., 2011; Sardina et al., 2019) to virtual delivery. This is despite the fact that up to 82% of those 65+ report using the internet (Anderson & Perrin, 2017), suggesting potential for feasible and efficacious virtual program delivery. Thus, the purpose of this pre-experimental case study was to: 1) Test the feasibility and satisfaction of a virtual MSA (VMSA), and 2) explore trends for positive changes in loneliness, depressive symptoms, and quality of life in community-dwelling adults (aged 60+).

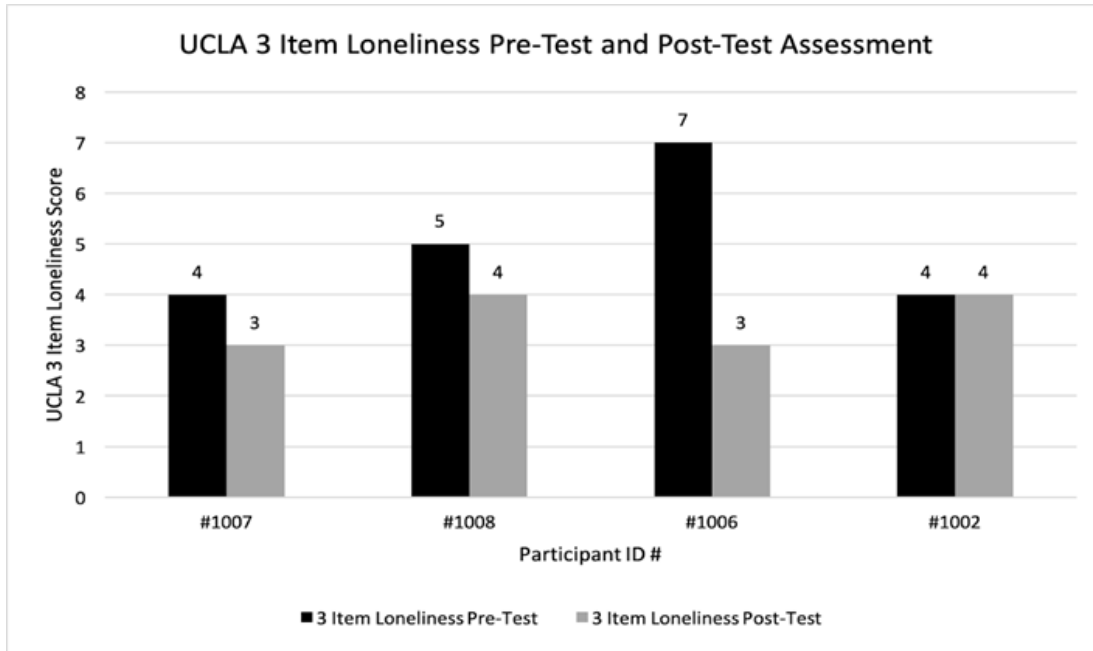
**Methods:** Four older adults (aged 60+), without cognitive impairment, were recruited, using convenience sampling techniques, from a local Senior Resource Center to participate in a VMSA program for 4 weeks, twice/week, for 60-minute Zoom sessions (8 total sessions). Existing MSAs tested for efficacy by Buettner et al., (2011), were revised for virtual delivery. To examine feasibility (aim 1) we evaluated five components: 1) acceptability (e.g., satisfaction), 2) demand (e.g., attendance), 3) implementation (e.g., factors in ease/challenge within the program), 4) practicality (e.g., quality of implementation), 5) and integration and expansion (e.g., cost of the program, program recommendations to others), and limited efficacy (e.g., examining whether the intervention can be delivered and yield trends in outcomes as compared to original works; Bowen, 2008; aim 2). The VMSA Participant Satisfaction Questionnaire (VMSA-PSQ) was developed to assess feasibility across the aforementioned six components. To assess positive trends in psychosocial outcomes, loneliness (total score on UCLA 3-Item Loneliness Scale; Russell, 1996), depressive symptoms (total score on Patient Health Questionnaire: 9-Item (PHQ-9); Kroenke et al., 2001), and satisfaction with life (Satisfaction with Domains of Life Scale (SWDLS); Loewe et al., 2014), were assessed at pre- and post-test. Frequencies (e.g., percentage of males/females, education level, race/ethnicity, etc.) and other descriptive statistics were calculated (e.g., average age and pre-and post-test assessment scores, among others). Mean change from pre- to post-test was calculated. Thematic analysis was used for qualitative data obtained from the VMSA-PSQ.

**Results:** Ten participants noted interest in participation, and 4 of 10 were eligible and agreed to participate (four individuals did not return calls, and two indicated they were unavailable during the study timeframe (e.g., other activities occurring same day/times or traveling). 100% of the final sample were retired, Caucasian females, ranging in age from 67-78 years (Mean age=72.3), who used the computer every day, and were very comfortable using the computer. 75% ( $n=3$ ) had more than high school education, and were widowed ( $n=2$ ) or divorced ( $n=1$ ). Findings from the VMSA-PSQ noted 100% satisfaction (10/10) rating (acceptability). The cost of the program (i.e., supplies, recruitment materials, etc.), totaled \$400; however, additional supplies remained for future programmatic use, suggesting acceptable cost efficiency. Of 8 total sessions, only one participant missed one session each, suggesting excellent attendance across participants (demand). 100% rated the program quality as “Excellent” (practicality), and indicated they would recommend this program to a friend (expansion). With regard to limited efficacy, participants demonstrated no change in loneliness scores (total score=4/9 pre- and post-test); slight negative change in PHQ-9 (0/27 (pre) to 1/27 (post); 1 point change); and positive change in SWL (13/40 (pre) to 11/40 (post); 2 point change), suggesting better SWL. Challenges surrounding participation were related to lower socioeconomic status and lack of access to computer/tablet and/or internet; as well as observed difficulty with Zoom technologies (e.g., participant navigation of Zoom, signing of informed consent). Factors associated with ease of implementation were related to modification of MSAs to virtual delivery, and integration of supportive software (e.g., PowerPoint, Google Docs).

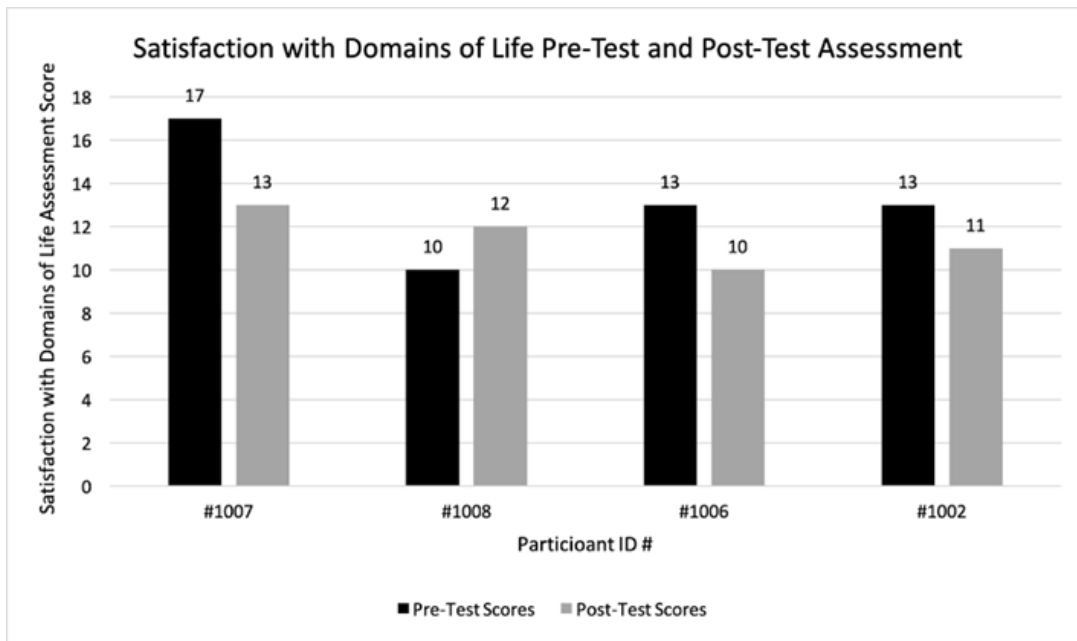
**Implications for RT:** Given the findings of the study, we identified that, amongst the four participants who completed the program, the VMSA was a feasible program that should be considered for implementation by RT professionals. While some positive trends were observed in psychosocial outcomes, larger studies are needed to examine efficacy, and further explore feasibility, as this study was constrained by a small sample size. This future research could provide the Recreation Therapy and Gerontology fields with a new virtual program to implement for a larger scale of community-dwelling older adults, which may address challenges surrounding accessibility, transportation, and social distancing guidelines. The researcher demonstrated an in-person EBP can be successfully transitioned into a virtual program. This transition to virtual delivery from an in-person EBP could be further explored using different interventions or programs.

**Figure 1a**

*Pre- and Post-Test Scores of the UCLA 3-Item Loneliness Scale for All Participants*

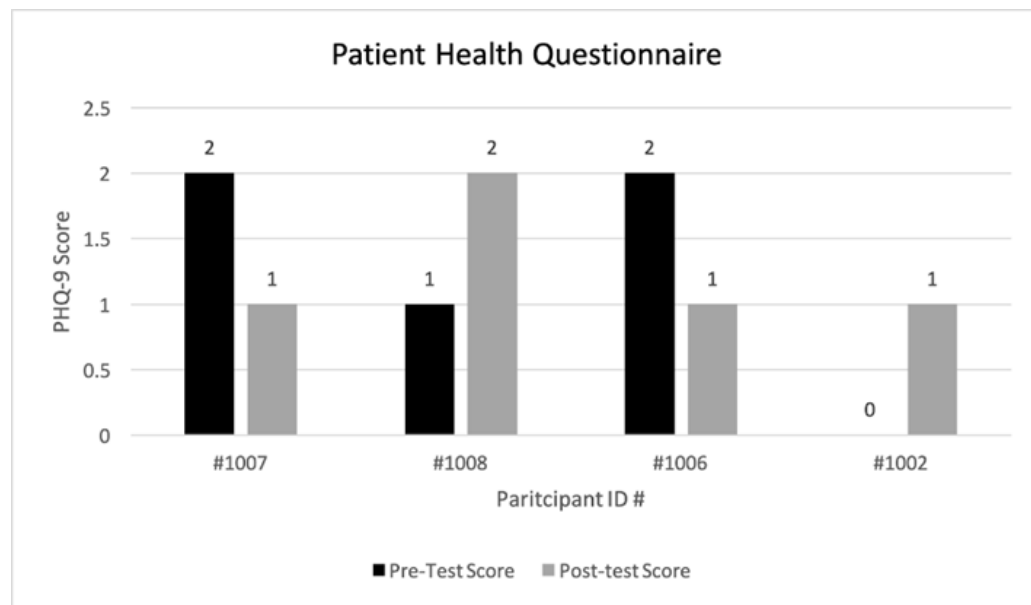
**Figure 1b**

*Pre- and Post-Test Scores of the Satisfaction with Domains of Life for All Participants*



**Figure 1c**

Pre- and Post-Test Scores of PHQ-9 for all Participants



### References

- Anderson, M., & Perrin, A. (2017). *Tech adoption climbs among older adults*. Pew Research Center: Internet, Science & Technology. <http://www.pewinternet.org/2017/05/17/tech-adoption-climbs-among-older-adults/>
- Bowen, A. M., Williams, M. L., Daniel, C. M., & Clayton, S. (2008). Internet-based HIV prevention research targeting rural MSM: Feasibility, acceptability, and preliminary efficacy. *Journal of Behavioral Medicine*, 31, 463–477. <https://doi.org/10.1007/s10865-008-9171-6>
- Buettner, L. L., Fitzsimmons, S., Atav, S., & Sink, K. (2011). Cognitive stimulation for apathy in probable early-stage Alzheimer's. *Journal of Aging Research*, 2011, 1–6. <https://doi.org/10.4061/2011/480890>
- Fakoya, O. A., McCorry, N. K., & Donnelly, M. (2020). Loneliness and social isolation interventions for older adults: A scoping review of reviews. *BMC Public Health*, 20(1), 1–14.
- Fitzsimmons, S. (2008). *Brain fitness: An instructor's Manual of 150 exercises for people with low to high cognitive function*. Venture Publishing.
- Khosravi, P., Rezvani, A., & Wiewiora, A. (2016). The impact of technology on older adults' social isolation. *Computers in Human Behavior*, 63, 594–603. <https://doi.org/10.1016/j.chb.2016.05.092>
- Loewe, N., Bagherzadeh, M., Araya-Castillo, L., Thieme, C., & Batista-Foguet, J. M. (2013). Life domain satisfactions as predictors of overall life satisfaction among workers: Evidence from Chile. *Social Indicators Research*, 118(1), 71–86. <https://doi.org/10.1007/s11205-013-0408-6>
- Manca, R., De Marco, M., & Venneri, A. (2020). The impact of COVID-19 infection and enforced prolonged social isolation on neuropsychiatric symptoms in older adults with and without dementia: A review. *Frontiers in Psychiatry*, 11. <https://doi.org/10.3389/fpsy.2020.585540>
- National Academies of Science. (2020). *Social isolation and loneliness in older adults opportunities for the health care system*. National Academies Press.
- Peplau, L. A., & Perlman, D. (1982). Perspectives on loneliness. In L. A. Peplau & D. Perlman (Eds.), *Loneliness: A sourcebook of current theory, research and therapy* (pp. 1–18). John Wiley & Sons.
- Sardina, A. L., Fitzsimmons, S., Hoyt, C.M., & Buettner, L. L. (2019). A mentally stimulating activities program for the treatment of neuropsychiatric symptoms in Alzheimer's disease. *American Journal of Recreation Therapy*, 18(4), 27–37. <https://doi.org/10.5055/ajrt.2019.0200>

## 2022 Research Posters

### The Impact of Neighborhood Conditions on Leisure-Time Walking, Mental Health, and Health Perceptions of Older Veterans

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**Introduction:** This study is an examination of differences in leisure-time walking, mental health, and health perceptions among veterans aged 65 and older according to their neighborhood conditions.

**Methods:** *Design:* Cross-sectional study. *Setting and participants:* Using the study used data from the 2017 California Health Interview Survey (CHIS), we extracted the 1,394 respondents who reported that they were veterans and aged 65 and older. *Measures:* As for independent variables, a K-means cluster analysis showed that a two-group solution is the most meaningful: (1) favorable ( $n = 988$ ) and (2) unfavorable neighborhood environments ( $n = 406$ ). As outcome variables, we measured leisure-time walking levels, mental health, and health perception. *Analysis:* A multivariate analysis of variance was conducted to test the group differences with regard to leisure-time walking levels, mental health, and health perception.

**Results:** Our results indicated that statistically significant differences exist regard to the leisure-time walking, mental health, and health perception between these two groups (Wilks' Lamda = 0.018,  $F(3,1390) = 8.57$ ,  $p < 0.001$ ).

**Conclusion:** This study suggests that older veterans who live in neighborhoods characterized by high social cohesion, social control, and safety neighborhoods reported higher levels of leisure-time walking and better mental health and health perceptions. These findings underscore the need for public infrastructural investments for developing safe and trustworthy neighborhood environments, which may, in turn, promote healthy behaviors and health. Additionally, our findings highlight the importance of designing and providing community-based programs and events that can assist older veterans in building social relationships and becoming better integrated in their communities. For example, participating in community-based outdoor walking programs can increase older veterans' opportunities to interact with their neighbors and, thus, feel safer in their neighborhoods. Also, other forms of social activities, such as volunteerism and community gardening, can assist older veterans in building social relationships and becoming better integrated in their communities, which may ultimately increase their leisure-time physical activity and improve their health and well-being. Recreational therapists are ideally positioned to educate older veterans and their caregivers about support and services available in their community and neighborhood.

**Table 1***Descriptive Statistics on LTPA, Mental Health, and Health Perception*

Neighborhood Conditions (N=1394)	Leisure-time walking		Mental health		Health perception	
	M	SD	M	SD	M	SD
	Favorable (n=988)	92.91	147.31	4.63	.50	3.43
Unfavorable (n=406)	75.95	117.04	4.52	.56	3.14	1.05
Total	87.97	139.35	4.60	.52	3.34	1.09

**Table 2***Significant Univariate Effects for Neighborhood Conditions*

Dependent Value	Type III Sum of Squares	df	F	Sig.	Partial Eta Squared
Leisure-time walking	82761.80 <sup>a</sup>	1	4.27	.039*	.003
Mental Health	3.58 <sup>b</sup>	1	13.28	.000***	.009
Health Perception	24.82 <sup>c</sup>	1	21.36	.000***	.015

\* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ ; <sup>a</sup>= R Squared = .003 (Adjusted R Squared = .002);<sup>b</sup>= R Squared = .009 (Adjusted R Squared = .009); <sup>c</sup>=R Squared = .015 (Adjusted R Squared = .014)

### References

- Carlson J. A., Sallis J. F., Conway T. L., Saelens B. E., Frank, L. D., Kerr, J., Cain, K. L., & King, A. C. (2012) Interactions between psychosocial and built environment factors in explaining older adults' physical activity. *Preventive Medicine, 54*(1), 68–73.
- Choi, N. G., Kim, J., DiNitto, D. M., & Marti, C. N. (2015). Perceived social cohesion, frequency of going out, and depressive symptoms in older adults: Examination of longitudinal relationships. *Gerontology and Geriatric Medicine, 1*, 1–11.
- Cramm, J. M., Van Dijk, H. M., & Nieboer, A. P. (2013) The importance of neighborhood social cohesion and social capital for the well-being of older adults in the community. *Gerontologist, 53*(1), 142–152.
- Echeverría, S., Diez-Roux, A. V., Shea, S., Borrell, L. N., & Jackson, S. (2008). Associations of neighborhood problems and neighborhood social cohesion with mental health and health behaviors: The Multi-Ethnic Study of Atherosclerosis. *Health Place, 14*(4), 853–865.
- Hill T. D., & Angel, R. J. (2005) Neighborhood disorder, psychological distress, and heavy drinking. *Social Science & Medicine, 61*(5), 965–975.
- Lee, H. S. (2016) Examining neighborhood influences on leisure-time walking in older Korean adults using an extended theory of planned behavior. *Landscape and Urban Planning, 148*, 51–60.
- Won J., Lee C., Forjuoh, S. N., & Ory, M. G. (2016) Neighborhood safety factors associated with older adults' health-related outcomes: A systematic literature review. *Social Science & Medicine, 165*, 177–186.
- Ziersch A. M., Baum, F. E., MacDougall, C., & Putland, C. (2005) Neighbourhood life and social capital: The implications for health. *Social Science & Medicine, 60*(1), 71–86.

## A Comprehensive Literature Review of Veterans with Lower Limb Amputations and Sled Hockey

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**Introduction:** During Operation Enduring Freedom and Operation Iraqi Freedom, soldiers have sustained over 1,600 major amputations. The purpose of this literature review is to identify sled hockey as a viable therapy for veterans with lower limb amputations to assist in the reintegration into civilian life and assist with additional comorbidities such as acute stress disorder and PTSD. For this analysis, research was used from 2011-2021, with the exception of a relevant article from 2010. There is potential research bias due to the lack of research done connecting sled hockey to veterans with lower limb amputations. However, research has found sled hockey to improve both physical and emotional aspects to the quality of life of individuals. The focus of this therapy is to help veterans reintegrate socially by finding the comradery they once had within the military, learning how to cope through an active lifestyle. while helping to cope with additional side effects that may come with Lower limb amputations (QoL). The purpose of this poster presentation is to discuss the positive effect that sled hockey can have on individuals with lower limb amputations (LLA), specifically the veteran population. This review focused on how veterans with LLA were affected emotionally and psychologically post traumatic amputation, and how this has changed the individuals' quality of life (QoL).

**Results:** It was found that motivation, self-confidence, and the adjustment to the veteran's disability had a large effect on the emotional state (Porter, 2015). It was found that the side effects veterans with LLA experience have a long recovery time and can then affect their QoL and overall well-being. Looking at research, it was found that physical exercise promoted growth in individuals with trauma yet found sled hockey to be an effective intervention for individuals with LLA. Sled hockey is found to be physically and emotionally enhancing to those with LLA. Sled hockey has shown to assist individuals in reintegrating back into society, improve self-esteem, and physical health (Napolitano et al., 2021).

**Implications for RT:** While there is evidence that shows sled hockey is beneficial for veterans with LLA, there are still a significant number of gaps in this research to state that this is a solid intervention. Sled hockey has been shown to assist individuals in reintegrating back into society, improve self-esteem, and physical health. However, future research needs to look at specific health benefits, how it helps in patients daily living, and how sled hockey impacts specifically the veteran population. There have been multiple studies that have proven sled hockey to be an effective intervention for individuals with LLA in general, yet prospective research shows promise for veterans.

### References

- Aytur, S., Craig, P. J., Frye, M., Bonica, M., Rainer, S., Hapke, L., & McGilvray, M. (2018). Through the lens of a Camera: Exploring the meaning of competitive sport participation among youth athletes with disabilities. *Therapeutic Recreation Journal*, 52(2), 95–125. <https://doi.org/10.18666/trj-2018-v52-i2-8774>
- Bell, D. (2019). 2019 National disabled veterans winter sports clinic a resounding success. *Vantage Point*, 1. <https://search.ebscohost.com/login.aspx?direct=true&db=mth&AN=142883263&site=ehost-live>
- Coffey, L., Gallagher, P., & Desmond, D. (2014). Goal pursuit and goal adjustment as predictors of disability and quality of life among individuals with a lower limb amputation: A prospective study. *Archives of Physical Medicine & Rehabilitation*, 95(2), 244–252. <https://search.ebscohost.com/login.aspx?direct=true&db=s3h&AN=94075963&site=ehost-live>

- Faraji, E., Allami, M., Feizollahi, Karimi, A., Yavari, A., Soroush, M., & Moudi, M. (2018). Health concerns of veterans with high-level lower extremity amputations. *Military Medical Research*, 5(36). <https://doi.org/10.1186/s40779-018-0183-4>
- Godfrey, B. W., Martin, A., Chestovich, P. J., Lee, G. H., Ingalls, N. K., & Saldanha, V. (2017). Patients with multiple traumatic amputations: An analysis of operation enduring freedom joint theatre trauma registry data. *Injury*, 48(1), 75–79. <https://doi.org/10.1016/j.injury.2016.08.008>
- Groth, J. (2015). Getting started: sled hockey. *Sports 'n Spokes Magazine*, 41(6), 22–27. <https://search.ebscohost.com/login.aspx?direct=true&db=s3h&AN=110610427&site=ehost-live>
- Howard, J. T., Kotwal, R. S., Stern, C. A., Janak, J. C., Mazuchowski, E. L., Butler, F. K., Stockinger, Z. T., Holcomb, B. R., Bono, R. C., & Smith, D. J. (2019). Use of combat casualty care data to assess the US military trauma system during the Afghanistan and Iraq conflicts, 2001-2017. *JAMA Surgery*, 154(7), 600–608. <https://doi.org/10.1001/jamasurg.2019.0151>
- Lee, K. K., & Uihlein, M. J. (2018). Adaptive sports in the rehabilitation of the disabled veterans. *Physical Medicine & Rehabilitation Clinics*, 30(1), 289–299. <https://doi.org/10.1016/j.pmr.2018.08.001>
- Mayo Clinic. (2021). *Phantom pain—Symptoms and causes*. <https://www.mayoclinic.org/diseases-conditions/phantom-pain/symptoms-causes/syc-20376272>
- Mazzone, B., Farrokhi, S., Hendershot, B. D., McCabe, C. T., & Watrous, J. R. (2020). Prevalence of low back pain and relationship to mental health symptoms and quality of life after a deployment-related lower limb amputation. *Spine* (03622436), 45(19), 1368–1375. <https://doi.org/10.1097/BRS.00000000000003525>
- Miller, M. J., Mealer, M. L., Cook, P. F., Kittelson, A. J., & Christiansen, C. L. (2021). Psychometric assessment of the Connor Davidson resilience scale for people with lower-limb amputation. *Physical Therapy*, 101(4), 1–9. <https://search.ebscohostcom.proxy195.nclive.org/login.aspx?direct=true&db=mdc&AN=33421074&site=ehost-live>
- Napolitano, J., Iliescu, D., Hoehn, J., Berner, T., Meyer, C., Jackson, K., & Kemp, E. (2021). *Athlete identity and common benefits and barriers to sport participation amongst adolescent sled hockey players*. Pediatric Research in Sports Medicine (PRiSM), 8th Annual Meeting, 28-30 January, 2021. *Orthopaedic Journal of Sports Medicine*, 19, 130–132. Retrieved on September 17, 2021, at <https://doi.org/10.1177/2325967121S00078>
- Pasquina, P. F. (2010). DOD paradigm shift in care of servicemembers with major limb loss. *Journal of Rehabilitation Research and Development*, 47(4), xi–xiv. <https://doi.org/10.1682/jrrd.2009.04.0059>
- Porter, H. R. (2015). *Recreational therapy for specific diagnoses and conditions*. Idyll Arbor, Inc.
- Schnurr, P. P., Lunney, C. A., Bovin, M. J., & Marx, B. P. (2009). Posttraumatic stress disorder and quality of life: extension of findings to veterans of the wars in Iraq and Afghanistan. *Clinical Psychology Review*, 29(8), 727–735. <https://doi.org/10.1016/j.cpr.2009.08.006>
- Sherman, K., Roberts, A., Murray, K., Deans, S., & Jarvis, H. (2019). Daily step count of British Military males with BILATERAL lower limb amputations. *Prosthetics & Orthotics International*, 43(2), 188–195. <https://doi.org/10.1177/0309364618806058>
- Sinha, R., van den Heuvel, W. J. A., & Arokiasamy, P. (2011). Factors affecting quality of life in lower limb amputees. *Prosthetics and Orthotics International*, 35(1), 90–96. <https://doi.org/10.1177/0309364610397087>
- Stewart, L., Shaikh, F., Bradley, W., Lu, D., BlyLee & Uihlein, D. M., Petfield, J. L., Whitman, T. J., Krauss, M., Greenberg, L., & Tribble, D. R. (2019). Combat-related extremity wounds: Injury factors predicting early onset infections. *Military Medicine*, 184(Supplement\_1), 83–91. <https://doi.org/10.1093/milmed/usy336>
- Ülger, Ö., Yıldırım Şahan, T., & Çelik, S. E. (2018). A systematic literature review of physiotherapy and rehabilitation approaches to lower-limb amputation. *Physiotherapy Theory & Practice*, 34(11), 821–834. <https://doi.org.proxy195.nclive.org/10.1080/09593985.2018.1425938>
- U.S. Department of Health and Human Services. (2019). *NIMH “post-traumatic stress disorder. National Institute of Mental Health*. <https://www.nimh.nih.gov/health/topics/post-traumatic-stress-disorder-ptsd>
- Veterans Administration. (2021). *What is a veteran? the legal definition*. VA.org. <https://va.org/what-is-a-veteran-the-legal-definition/>
- Walia, T., Baby, S., & Chaudhury, S. (2018). Evaluation of treatment of psychiatric morbidity among limb amputees. *Industrial Psychiatry Journal*, 27(2), 240. [https://doi.org/10.4103/ipj.ipj\\_69\\_18](https://doi.org/10.4103/ipj.ipj_69_18)

Williamson, R. (2017). Healing + hockey. *USA Hockey Magazine*. <https://www.usahockeymagazine.com/article/2017-11/healing-hockey>.

World Para Ice Hockey (formerly IPC Ice Sledge Hockey). (n.d.). International Paralympic Committee. <https://www.paralympic.org/ice-hockey/about>

## Water Activities for Individuals with Visual Impairments

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**Introduction:** A visual impairment is a condition defined as having a deficit in one's visual field, which for this research, includes everything from poor vision to complete blindness. An intervention commonly used for individuals with visual impairments are water activities such as kayaking, swimming, diving, and fishing. These specific water activities address the psychological and physiological treatment goals for individuals with a visual impairment.

**Methods:** This literature review aims to reduce the research gap of knowledge on the potential for water activities to assist commonly co-occurring conditions that individuals with a visual impairment often experience. A variety of research databases were used to obtain a baseline of information about both visual impairments and water activities and how they connect.

**Results:** From this baseline, we discovered the benefits of implementing water activities in the lives of those with visual impairments. Commonalities were found between kayaking, swimming, diving, and fishing in each physical and psychological domain. After researching both topics, there were clear positive outcomes such as an increase in physical and psychological well-being, self-confidence, trust, socialization, and an active lifestyle. Outcomes also include a decrease in anxiety and depression linked to participation in kayaking, swimming, diving, and fishing. However, it was found that there aren't any direct benefits from fishing for individuals with visual impairments, but through the similar criteria of posttraumatic stress disorder.

**Conclusion:** There were a few limitations that affected this research such as a lack of negative outcomes resulting in research bias and the need for further research for each water activity.

**Implications for RT:** This research is relevant to the field of Recreational Therapy because these professionals work to help their clients adjust to their diagnoses, whether acquired or congenial. Individuals diagnosed with a visual impairment are often encouraged to participate in a variety of leisure activities, one of these activities possibly being a water activity such as kayaking, swimming, fishing, and diving. The significance of this research for recreational therapists is to be aware of the wide range of possibilities as well as the specific safety considerations associated with water activities.

**Table 1***Literature Review Summary: Water Activities among Individuals with Visual Impairments*

Article Title	Brief Description	Authors	Search Words	Permalink	Search Engine	Used in Review	Year
Adaptive Kayaking: A Blind Paddler's Perspective	This article is about a man who is legally blind and his perspective on navigating the world with no vision. This man participated in an adaptive paddling program to help build his confidence, increase his independence, and integrate him into the community.	McCall, M.	Kayaking, Visual Impairments, Recreational Therapy, Blindness, Water Activities	<a href="https://www.angl.coar.com/post/adaptive-kayaking-a-blind-persons-perspective">https://www.angl.coar.com/post/adaptive-kayaking-a-blind-persons-perspective</a>	Google Scholar	yes	2020
Adaptive Kayaking for Persons with Physical Disabilities	Kayaking is a therapeutic intervention that can be adapted for individuals with physical disabilities. This article addresses the benefits, barriers, and future studies of kayaking with a physical disability.	Atkinson, B. S.	Kayaking, Visual Impairments, Water Activities, Physical Disabilities	<a href="https://doi.org/10.5055/ajrt.2010.0009">https://doi.org/10.5055/ajrt.2010.0009</a>	EBSCO	yes	2010
Adapted Surfing as a Tool to Promote Inclusion and Rising Disability Awareness in Portugal	Adapted surfing is seen as a more innovative sport than many others. This article highlights the benefits of using adapted surfing compared to other traditional water sports.	Lopes, J.T.	Water Activities, Physical Disabilities, Recreational Therapy	<a href="https://jsefd.org/2015/05/01/adapted-surfing-as-a-tool-to-promote-inclusion-and-rising-disability-awareness-in-portugal/">https://jsefd.org/2015/05/01/adapted-surfing-as-a-tool-to-promote-inclusion-and-rising-disability-awareness-in-portugal/</a>	Google Scholar	yes	2015

Table 1 (cont.)

An Introduction to Hydrotherapy in Rehabilitation	This article is used to review the benefits of using hydrotherapy, a safe and versatile modality, in rehabilitation settings and how water immersion meets therapeutic and fitness goals.	Goicoechea, A.	Water Activities, Hydrotherapy, Healing, Water Immersion Therapy	<a href="https://www.aanlcp.org/wp-content/uploads/2021/02/AANLCP-Feb2021.pdf">https://www.aanlcp.org/wp-content/uploads/2021/02/AANLCP-Feb2021.pdf</a>	EBSCO	yes	2021
Developing a Culture of Trust Among Novice Swimmers	This article is written to detail how trust is important and how it can be developed in a learning and teaching situation. Guidelines and suggestions are provided for instructors in how to adapt to the needs of different learners and swimmers.	Norris, M. L.	Swimming, Mental Health, Teaching Techniques	<a href="https://scholarworks.bgsu.edu/cgi/viewcontent.cgi?article=1053&amp;context=ijs">https://scholarworks.bgsu.edu/cgi/viewcontent.cgi?article=1053&amp;context=ijs</a>	Google Scholar	yes	2013
Does Swimming Exercises Improve Posture for Blind and Visually Impaired Children?	The article is used to show the positive effects that swimming has on improving sagittal deviations of the spine in children with visual impairments.	Maniu, E. A., Maniu, D. A., Grosu, V. T., & Grosu, F. E.	Visual Impairments, Swimming, Blind, Children	<a href="https://www.researchgate.net/profile/Vlad-Grosu/publication/349038677_Does_swimming_exercises_improve_posture_for_blind_and_visually_impaired_children/links/601c0a71a6fdcc37a801ee09/Does-swimming-exercises-improve-posture-for-blind-and-visually-impaired-children.pdf">https://www.researchgate.net/profile/Vlad-Grosu/publication/349038677_Does_swimming_exercises_improve_posture_for_blind_and_visually_impaired_children/links/601c0a71a6fdcc37a801ee09/Does-swimming-exercises-improve-posture-for-blind-and-visually-impaired-children.pdf</a>	Google Scholar	yes	2021

**Table 1 (cont.)**

Eight Months of Physical Training in Warm Water Improves Physical and Mental Health in Women with Fibromyalgia: A Randomized Controlled Trial	This article details a study that evaluated the feasibility of supervised exercise therapy in warm water for eight months in women with Fibromyalgia.	Tomas-Carus, P., Gusi, N., Häkkinen, A., Häkkinen, K., Leal, A., & Ortega-Alonso, A.	Physical Health, Mental Health, Water Activities	<a href="https://doi.org/10.2340/16501977-0168">https://doi.org/10.2340/16501977-0168</a>	Google Scholar	yes	2008
Enhancing Exercise for People Who are Blind or Low Vision Using Interactive Technology	This article details the many facets of person health: decision making, goal setting, celebration, discovery, reflection, and coordination, among others. Assistive innovations are described.	Rector, K.	Water Activities, Visual Impairments	<a href="https://doi.org/10.1145/3121359">https://doi.org/10.1145/3121359</a>	Google Scholar	yes	2017
Fitness for Individuals who are Visually Impaired or Deafblind	This article talks about the benefits that individuals with visual impairments can get from regular physical activity in terms of their physical and psychological health.	Lieberman, L. J.	Visual Impairment, Water Activities, Physical Activity, Fitness	<a href="https://go.gale.com/ps/i.d.o?p=AO NE&amp;u=anon~40d6e2ed&amp;id=GAL E A89146759&amp;v=2.1&amp;it=r&amp;sid=googleScholar&amp;asid=ab3c20">https://go.gale.com/ps/i.d.o?p=AO NE&amp;u=anon~40d6e2ed&amp;id=GAL E A89146759&amp;v=2.1&amp;it=r&amp;sid=googleScholar&amp;asid=ab3c20</a>	EBSCO	yes	2002
Health-Related Fitness of Children who are Visually Impaired	This article reviews the benefits of adapted aquatics for children with visual impairments.	Lieberman, L.J., & McHugh, E.	Water Activities, Visual Impairments, Rehabilitation, Adapted Aquatics	<a href="https://doi.org/10.1177/0145482x0109500503">https://doi.org/10.1177/0145482x0109500503</a>	Google Scholar	yes	2001

**Table 1 (cont.)**

Healthy Swimming: Health Benefits of Water-Based Exercise	This article details the relevance and benefits of swimming when used as physical activity, from physical benefits to immune health benefits.	Centers for Disease Control and Prevention	Water Activities, Swimming, Mental Health	<a href="https://www.cdc.gov/healthywater/swimmers/health_benefits_water_exercise.html">https://www.cdc.gov/healthywater/swimmers/health_benefits_water_exercise.html</a>	EBSCO	yes	2016
Insights Into the Feelings, Thoughts, and Behaviors of Children with Visual Impairments: A Focus Group Study Prior to Adapting a Cognitive Behavior Therapy-Based Anxiety Intervention	This article focuses on children with visual impairments. It shows how anxiety affects their lives and how traditional cognitive behavior therapy-based interventions can be used and adapted for this specific population.	Visagie, L. L.	Anxiety, Visual Impairment, Therapy, Cognitive Behavior Therapy	<a href="https://files.eric.ed.gov/fulltext/E1142803.pdf">https://files.eric.ed.gov/fulltext/E1142803.pdf</a>	Google Scholar	yes	2016
Modifications and Adaptations for Successful Inclusion in Aquatics for Individuals with Visual Impairments	The article focused on adapted aquatics and how this intervention can be successful and effective in treatment for individuals with visual impairments.	Lauren Bach	Water Activities, Visual Impairments, Adapted Aquatics, Swimming	<a href="https://js.sagamorepub.com/palaestra/article/view/11281">https://js.sagamorepub.com/palaestra/article/view/11281</a>	EBSCO	yes	2021
Opportunities for Psycho-Motor Skills Development in Children with Down Syndrome	This article explains how sport activities are beneficial for anybody's mind and body. The development of psycho-motor abilities is important, especially in children with Down syndrome.	Chera-Ferrario, B.	Sports Activities, Disabilities, Children, Swimming, Adapted Sports	<a href="https://journaldatabase.info/article/opportunities_for_psycho-motor_skills.html">https://journaldatabase.info/article/opportunities_for_psycho-motor_skills.html</a>	Google Scholar	yes	2012

**Table 1 (cont.)**

Physical Activity and Motor Skills in Children with and without Visual Impairments	This article examined the difference of activity levels between children with and without visual impairments. The results showed a significant gap, and the importance of promoting an active lifestyle in children was explained.	Houwen, S., Hartman, E., & Visscher, C.	Visual Impairments, Activity Levels, Physical Levels, BMI	<a href="https://doi.org/10.1249/MSS.0b013e318183389d">https://doi.org/10.1249/MSS.0b013e318183389d</a>	Google Scholar	yes	2009
Post-Traumatic Stress Disorder (PTSD)	PTSD is a mental health condition that is caused by either seeing or experiencing a traumatic event. Uncontrollable thoughts, flashbacks, nightmares, and severe anxiety are all symptoms of PTSD. This condition can be life-long or temporary, causing difficulty in adjusting, coping, or if it gets worse it can hinder day-to-day functioning.	Mayo Foundation for Medical Education and Research	PTSD, Fishing, Mental Health, Recreational Therapy	<a href="https://www.mayoclinic.org/diseases-conditions/post-traumatic-stress-disorder/symptoms-causes/syc-2035596Z">https://www.mayoclinic.org/diseases-conditions/post-traumatic-stress-disorder/symptoms-causes/syc-2035596Z</a>	EBSCO	yes	2018
Sink or Swim: Innovations in Aquatic Health	The article details the transformations and changes that have been made in the aquatic sports arena while also explaining how additional opportunities for transformation and change are important for the sport to evolve and adapt over time to serve a variety of individuals.	Hill, L., Mountjoy, M., Miller, J., & Burr, J.	Aquatic Sports, Health, Swimming, High Diving	<a href="https://doi.org/10.23736/S0022-4707.21.12697-0">https://doi.org/10.23736/S0022-4707.21.12697-0</a>	Google Scholar	yes	2021
Swimming as an Inclusion Tool for Autistic Subjects	This article explains the difficulties individuals with Autism face and how they can benefit and learn from getting involved in swimming, which is considered a valid tool.	Napolitano, S.	Disabilities, Aquatic Activities, Swimming, Recreational Therapy	<a href="https://jupiterpublishers.com/jpdf/JPFMTS.MS.ID.55575.pdf">https://jupiterpublishers.com/jpdf/JPFMTS.MS.ID.55575.pdf</a>	Google Scholar	yes	2017

**Table 1 (cont.)**

Teaching Recreational Activities to Children and Youth with Visual	This article is about how recreational activities are appropriate and beneficial for children with visual	Lieberman, L.J., & Linsenbigler, K.	Kayaking, Visual Impairments, Blindness, Interventions, Water Activities	<a href="https://js.sagamorepub.com/palaestra/article">https://js.sagamorepub.com/palaestra/article</a>	EBSCO	yes	2017
Impairments or Deaf blindness	impairments or deaf blindness that tend to have lower-health related physical activity delayed motor skills, and development.			<a href="https://js.sagamorepub.com/palaestra/article/view/8221">e/view/8221</a>			
Teaching Students with Disabilities: Visual Impairment and Blindness	This article discusses a fundamental component of agricultural instruction which is hands-on learning that encourages the development of a student's motor skills. Some students who are visually impaired or blind may have decreased hand-eye coordination and may need more accommodation than others when in a learning environment. The role of agricultural education can be beneficial to students with visual impairments because it helps them develop career readiness and life skills.	Colclasure, B., Thoron, A., LaRose, S.	Visual Impairment, Blindness, Recreational Therapy	<a href="https://edis.ifas.ufl.edu/publication/WC259">https://edis.ifas.ufl.edu/publication/WC259</a>	Google Scholar	yes	2016
The Benefits of Participation in Aquatic Activities for People with Disabilities	This article discusses how and why physical, social, emotional, cognitive, and leisure skills can develop when exercising in water.	Stan, A. E.	Aquatic Rehabilitation, Disabilities, Water Activities, Swimming	<a href="https://www.medicinasportiva.ro/SRoMS/RMS/29/benefits_aquatic_activities_people_disabilities.pdf">https://www.medicinasportiva.ro/SRoMS/RMS/29/benefits_aquatic_activities_people_disabilities.pdf</a>	Google Scholar	yes	2012

**Table 1 (cont.)**

Visual Impairment and Mental Health: Unmet Needs and Treatment Options	In this review, those with visual impairments are examined with the purpose of learning of their mental health needs.	Demmin, D. L. & Silverstein, S. M.	Water Activities, Visual Impairments, Mental Health	<a href="https://www.dovepress.com/visual-impairment-and-mental-health-unmet-needs-and-treatment-options-peer-reviewed-fulltext-article-OPHTH">https://www.dovepress.com/visual-impairment-and-mental-health-unmet-needs-and-treatment-options-peer-reviewed-fulltext-article-OPHTH</a>	Google Scholar	yes	2020
Visual Impairment, Blindness Cases in U.S. Expected to Double By 2050	This article lays out the possible trends expected to happen through 2050 for individuals with visual impairment for different races, ethnicities, and sexes.	U.S. Department of Health and Human Services	Visual Impairment, Blindness, African Americans	<a href="https://www.nih.gov/news-events/news-releases/visual-impairment-blindness-cases-us-expected-double-2050">https://www.nih.gov/news-events/news-releases/visual-impairment-blindness-cases-us-expected-double-2050</a>	USA.gov	yes	2016
Vitamin D Fact Sheet for Health Professionals	This article reviews the benefits that come from Vitamin D and how it is naturally integrated into one's body through the means of diet and sunlight.	U.S. Department of Health and Human Services	Fishing Benefits, Fishing, Outside Interventions	<a href="https://ods.od.nih.gov/factsheets/VitaminD-HealthProfessional/">https://ods.od.nih.gov/factsheets/VitaminD-HealthProfessional/</a>	USA.gov	yes	2021

**Table 1 (cont.)**

War Narratives: veteran Stories, PTSD Effects, and Therapeutic Fly-Fishing	The study reviews a therapeutic fly-fishing program that worked with veterans with confirmed diagnoses of posttraumatic stress disorder, who served in each branch of the Armed Forces overseas. Researchers systematically analyzed the stories of the veterans to form a narrative on the realities of being a veteran, program experiences, and perspective on treatment.	Mowatt, R., & Bennet, J.	Fishing, Recreational Therapy, PTSD	<a href="https://www.researchgate.net/profile/Rasul-Mowatt/publication/285800529-War_Narratives_Veteran_Stories_PTSD_Effects_and_Therapeutic_Fly-Fishing/links/601bffe945851589397e0e02/War-Narratives-Veteran-Stories-PTSD-Effects-and-Therapeutic-Fly-Fishing.pdf">https://www.researchgate.net/profile/Rasul-Mowatt/publication/285800529-War_Narratives_Veteran_Stories_PTSD_Effects_and_Therapeutic_Fly-Fishing/links/601bffe945851589397e0e02/War-Narratives-Veteran-Stories-PTSD-Effects-and-Therapeutic-Fly-Fishing.pdf</a>	Google Scholar	yes	2011
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### References

- Atkinson, B. S. T. (2010). Adaptive kayaking for persons with physical disabilities. *American Journal of Recreation Therapy*, 9(2), 7–12. <https://doi.org/10.5055/ajrt.2010.0009>
- Bach, L. (2021). Modifications and adaptations for successful inclusion in aquatics for individuals with visual impairment. *PALAESTRA*, 35(3), 18–21. <https://js.sagamorepub.com/palaestra/article/view/11281>
- CDC. (2016). Healthy swimming: Health benefits of water-based exercise. *Centers for Disease Control and Prevention*. [https://www.cdc.gov/healthywater/swimming/swimmers/health\\_benefits\\_water\\_exercise.html](https://www.cdc.gov/healthywater/swimming/swimmers/health_benefits_water_exercise.html)
- Chera-Ferrario, B. (December 2012). Opportunities for psycho-motor skills development in children with down syndrome—adapted swimming. *Sport & Society/Sport si Scietate*, 12(2), 190–195. [https://journaldatabase.info/articles/opportunities\\_for\\_psycho-motor\\_skills.html](https://journaldatabase.info/articles/opportunities_for_psycho-motor_skills.html)
- Colclasure, B., Thoron, A., & LaRose, S. (2016). Teaching students with disabilities: Visual impairment and blindness. *AskIFAS Powered by EDIS*. <https://edis.ifas.ufl.edu/publication/WC259>
- Cordellos, H. C., & American Alliance for Health, P. E. and R. W. D. (1976). *Aquatic Recreation for the Blind*. <https://files.eric.ed.gov/fulltext/ED146719.pdf>
- Demmin, D. L., & Silverstein, S. M. (2020). Visual impairment and mental health: Unmet needs and treatment options. *Clinical Ophthalmology*, 2020; 14, 4229–4251. <https://www.dovepress.com/visual-impairment-and-mental-health-unmet-needs-and-treatment-options-peer-reviewed-fulltext-article-OPHTH>

- Fernández-Vivó, M., & Cordero-Morales, I. (2015). Stand up paddle board for people with visual impairments. *PALAESTRA*, 29(1), 32–36. <https://js.sagamorepub.com/palaestra/article/view/6383>
- Goicoechea, A. (2021). An introduction to hydrotherapy in rehabilitation. *Journal of Nurse Life Care Planning*, 21(1), 26–32. <https://www.aanlcp.org/wp-content/uploads/2021/02/AANLCP-Feb2021.pdf>
- Hill, L., Mountjoy, M., Miller, J., & Burr, J. (2021). Sink or swim: innovations in aquatic health. *The Journal of Sports Medicine and Physical Fitness*, 61(8), 1104–1114. <https://doi.org/10.23736/S0022-4707.21.12697-0>
- Houwen, S., Hartman, E., & Visscher, C. (2009). Physical activity and motor skills in children with and without visual impairments. *Medicine & Science in Sports & Exercise*, 41(1), 103–109. doi: 10.1249/MSS.0b013e318183389d. PMID: 19092701.
- Lieberman, L. J. (2002). *Fitness for individuals who are visually impaired or deafblind* - Document - Gale Academic OneFile. GALE. <https://go.gale.com/ps/i.do?p=AONE&u=anon~40d6e2ed&id=GALE|A89146759&v=2.1&it=r&sid=googleScholar&asid=ab3c20>
- Lieberman, L. J., & Linsenbigler, K. (2017). Teaching recreational activities to children and youth with visual impairment or deaf blindness. *PALAESTRA*, 31. <https://js.sagamorepub.com/palaestra/article/view/8221>
- Lopes, J. T. (1 May 2015). Adapted surfing as a tool to promote inclusion and rising disability awareness in Portugal. *Journal of Sport for Development*, 3(5), 4–10. <https://jsfd.org/2015/05/01/adapted-surfing-as-a-tool-to-promote-inclusion-and-rising-disability-awareness-in-portugal/>
- Maniu, E. A., Maniu, D. A., Grosu, V. T., & Grosu, F. E. (2021). Does swimming exercises improve posture for blind and visually impaired children? *Human and Veterinary Medicine*, 13(1), 11–14. [https://www.researchgate.net/profile/Vlad-Grosu/publication/349038677\\_Does\\_swimming\\_exercises\\_improve\\_posture\\_for\\_blind\\_and\\_visually\\_impaired\\_children/links/601c0a71a6fdcc37a801ee09/Does-swimming-exercises-improve-posture-for-blind-and-visually-impaired-children.pdf](https://www.researchgate.net/profile/Vlad-Grosu/publication/349038677_Does_swimming_exercises_improve_posture_for_blind_and_visually_impaired_children/links/601c0a71a6fdcc37a801ee09/Does-swimming-exercises-improve-posture-for-blind-and-visually-impaired-children.pdf)
- Mayo Foundation for Medical Education and Research. (2018, July 6). *Post-traumatic stress disorder (ptsd)*. Mayo Clinic. <https://www.mayoclinic.org/diseases-conditions/post-traumatic-stress-disorder/symptoms-causes/syc-20355967>.
- McCall, M. (2020). Adaptive kayaking: A blind paddler's perspective. *Angle Oar*. <https://www.angleoar.com/post/adaptive-kayaking-a-blind-persons-perspective>
- Mowatt, R., & Bennett, J. (2011). *War narratives: Veteran stories, PTSD effects, and therapeutic fly-fishing*. *Therapeutic Recreation Journal*, 45, 286–308. [https://www.researchgate.net/profile/Rasul-Mowatt/publication/285800529\\_War\\_Narratives\\_Veteran\\_Stories\\_PTSD\\_Effects\\_and\\_Therapeutic\\_Fly-Fishing/links/601bffe945851589397e0e02/War-Narratives-Veteran-Stories-PTSD-Effects-and-Therapeutic-Fly-Fishing.pdf](https://www.researchgate.net/profile/Rasul-Mowatt/publication/285800529_War_Narratives_Veteran_Stories_PTSD_Effects_and_Therapeutic_Fly-Fishing/links/601bffe945851589397e0e02/War-Narratives-Veteran-Stories-PTSD-Effects-and-Therapeutic-Fly-Fishing.pdf)
- Napolitano, S. (2017). Swimming as an inclusion tool for autistic subjects. *Journal of Physical Education & Sport*, 17, 2339–2343. <https://juniperpublishers.com/jpfmts/pdf/JPFMTS.MS.ID.555575.pdf>
- Norris, M. L. (2013). Developing a culture of trust among novice swimmers. *International Journal of Aquatic Research & Education*, 7(1), 81–91. <https://scholarworks.bgsu.edu/cgi/viewcontent.cgi?article=1053&context=ijare>
- Porter, H. R. (Ed.). (2015). *Recreational therapy for specific diagnoses and conditions* (1st ed.). Idyll Arbor. Rector, K. (2017). Enhancing exercise for people who are blind or low vision using interactive technology. *Interactions*, 24(5), 68–71. <https://doi.org/10.1145/3121359>
- Stan, A. E. (2012). The benefits of participation in aquatic activities for people with disabilities. *Sports Medicine Journal / Medicina Sportiva*, 8(1), 1737–1742. [https://www.medicinasportiva.ro/SRoMS/RMS/29/benefits\\_aquatic\\_activities\\_people\\_disabilities.pdf](https://www.medicinasportiva.ro/SRoMS/RMS/29/benefits_aquatic_activities_people_disabilities.pdf)
- Tomas-Carus, P., Gusi, N., Häkkinen, A., Häkkinen, K., Leal, A., & Ortega-Alonso, A. (2008). Eight months of physical training in warm water improves physical and mental health in women with fibromyalgia: A randomized controlled trial. *Journal of Rehabilitation Medicine*, 40(4), 248–252. <https://doi.org/10.2340/16501977-0168>
- U.S. Department of Health and Human Services. (2016). *Visual impairment, blindness cases in U.S. expected to double by 2050*. National Institutes of Health. <https://www.nih.gov/news-events/news-releases/visual-impairment-blindness-cases-us-expected-double-2050>

U.S. Department of Health and Human Services. (2021). *Office of dietary supplements - vitamin D*. NIH Office of Dietary Supplements. <https://ods.od.nih.gov/factsheets/VitaminD-HealthProfessional/>.

Visagie, L. L. (2016, November 30). Insights into the feelings, thoughts, and behaviors of children with Visual IMPAIRMENTS: A focus group study prior to adapting a cognitive BEHAVIOR Therapy-based ANXIETY INTERVENTION. *Journal of Visual Impairment & Blindness*. <https://files.eric.ed.gov/fulltext/EJ1142803.pdf>

## Glyphs Not Spliffs: A Semiotic Analysis of #recoverytattoo for Individuals in Recovery From Substance Use Disorders

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**Introduction:** Tattoos may serve a range of different purposes that are often woven into a personal narrative that reinforces desirable identity elements (DeMello, 2000; Woodstock, 2014). Today, tattooing is more popular than ever with approximately 40% of millennials reporting at least one tattoo (Bertens et al., 2010) and the industry is estimated to be worth a reported \$1.4 billion a year (McCluskey, 2021). Despite this increasing popularity, gaps in our knowledge remain, including the intersection between leisure and tattooing, and the therapeutic benefits of leisure (Page & Bott, 2022). These areas of study are increasingly important given the rise of recovery tattooing over the past 40 years (DeMello, 2000). For this study, recovery tattoos were defined as a form of memorial tattoo that recognizes an individual's recovery from a range of illnesses including but not limited to breast cancer, eating disorders, mental health, and substance use disorders (SUDs). Recovery from SUD often involves an individual overcoming a range of adversities including learning how to manage difficult emotions or navigating difficult relationships (Kaskutas et al., 2014). The adversities experienced, and overcome, as part of the recovery process, may be the images recoverees choose to acknowledge by wearing recovery tattoos. Unfortunately, research on recovery tattooing in general and for SUDs specifically remains sparse leaving us with little understanding of recovery tattooing and its various meaning for individuals in substance use disorder (SUD) treatment and recovery. While there has been some scholarly attention paid to tattooing and its interpretation among therapists, this area of research remains limited. The purpose of this study was to develop a semiotic model of possible meanings of the imagery contained in SUD recovery tattoos.

**Methods:** This descriptive study used a semiotic analytical process to codify and categorize recovery tattoos and their central elements that convey recovery messages to other social actors. In the context of image analysis, semiotics utilizes a systematic approach to find out how images convey meaning (Penn, 2000). Data was collected in February 2022, following IRB approval from the investigators' institution (#212226). Data was collected using Instagram images found using the hashtag, #recoverytattoo. Research using Instagram remains novel but has been used for studies exploring street art branding and other topics (Lavoie, 2015; MacDowall & de Souza, 2018; Maclean et al., 2020; Russmann & Svensson, 2016). For inclusion posts had to (i) include a clear image of the feature tattoo, (ii) include one tattoo shown to avoid recording issues (iii) have clear reference to SUD recovery in the narrative, hashtags, or the tattoo itself, (e.g., words such as, addiction, sober/sobriety), and (iv) tattoo descriptions needed to be in English to avoid translation errors. From an initial dataset of Instagram images (n=321) that met the study criteria, 100 images were randomly selected for inclusion in this study. A denotational inventory was developed to analyze each image in the sample. Beyond basic tattoo information (e.g., placement and size of the tattoo, none of which was used in this study) the denotational inventory provided space for a detailed description of the tattoo included in the Instagram post. Once all images had been inventoried, tattoo descriptions were examined for cultural elements related to higher level meanings (e.g., AA/NA logo) or broader cultural significance (e.g., mythical creatures) (Penn, 2000). The notes on each tattoo were then used to develop a social index of assumed values that are being communicated by the presented images. The index drew on phonemes, words, or phrases,

and other common elements, such as presence of AA/NA symbology (Penn, 2000). Finally, the social index was mapped into a final model showing the relationship between the images (Penn, 2000).

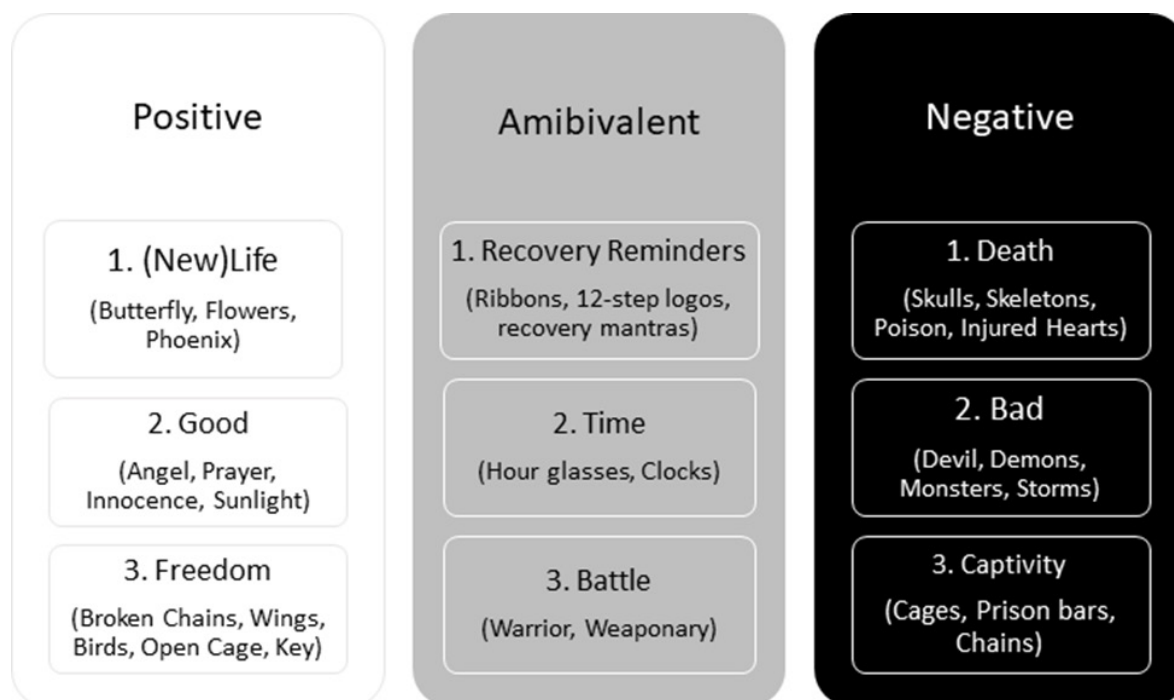
**Results:** The Tonal Model (Figure 1) reflects the relationship between the elements contained in the final social index and the nature of active SUDs and recovery as a possible life (positive) or death (negative) situation. The middle column is an expression of ideas related to the struggle of SUD recovery. Rather than judging individual images as either positive or negative, the Tonal Model demonstrates that for some recoverees darker or negative imagery may provide motivation to maintain recovery and to avoid the pitfalls their tattoos represent. Alternatively, other recoverees may be motivated by positive imagery that celebrates accomplishments. The ambivalent imagery reflects the ongoing struggle involved in recovery, and the potential need for reminders that the journey takes time, that it requires courage and fellowship. Recovery symbols and phrases, representations of time, and images of warriors and/or weapons may serve to remind the user of their strength; or these images may reflect a sense of vulnerability and unease surrounding recovery. See Table 1 for a collection of tattoo meanings and interpretations.

**Discussion:** Our understanding of recovery tattooing remains limited although it is becoming a more common practice that encompasses a diverse range of mental and physical illnesses (Page & Bott, 2022). This preliminary study identified patterns of semiotic meaning that reflect contemporary notions of SUD recovery as a struggle between the harmful behaviors that manifest during active substance use and the hope that people feel as they enter recovery. Further, other themes reflect the dichotomous nature of these ideas and the ongoing struggle to establish a recovery-oriented lifestyle.

**Implications for RT:** Contemporary tattooing continues the art forms long history of reflecting cultural norms and values (Barron, 2017). Moreover, the increasing popularity of tattooing is slowly reducing social stigma and providing an increasingly important space for personal expression (Page & Bott, 2022). As with other members of a treatment team the understanding of tattooed images may provide important insights into the motivations and experiences of the individuals RTs interact with (Crompton et al., 2020; Martin, 2013; Sparkes et al., 2020; Sundberg & Kjellman, 2018; Zackasee et al., 2004). Moreover, given tattooing's increasing popularity and leisure connection RTs could facilitate discussions on a range of topics including safe tattooing practice, tattoo related stigma, tattoo regrets, and removal strategies.

**Figure 1**

*The Tonal Model of Recovery Tattoo Iconography*



**Table 1**

*Glossary of Tattoo Meanings and Interpretations (Traditional meaning descriptions adapted from Aitken-Smith, (2016)*

Image	Traditional Meaning	Sample-based Interpretation
Angel	- Protectors and guardians, messengers of the gods. In Christianity, angels represent purity and innocence.	- Images appeared to represent protection and were often juxtaposed to negative imagery (e.g., demon).
Bird	- Expression of freedom, grace, and beauty. Different species may represent different facets and ideas to different cultures (e.g., ravens may denote death).	- Birds were brightly colored and flying suggesting more connection with freedom grace and beauty.
Bird Cage	- Birdcages may denote freedom or captivity depending on certain design aspects (e.g., cage door open or closed).	- Images showed open bird cages along with bird in flight.
Butterfly	- Representing change, transformation, and or rebirth.	- Connected with persistence and change
Dragon Fly	- In native American culture dragon flies are associated with healing. More widely dragon flies represent change or transition.	- Only image of a dragon fly was part of a design involving a stopwatch possibly suggesting time as a healer
Feather	- Most folk lore associates feathers with purity of the heart and soul. Feathers are also associated with similar traits to birds; freedom, grace, and beauty	- Limited motif in this sample used in opposition to “demons”.
Frog	- Symbol of transformation, good luck, and fertility.	- Deviating from more traditional forms the frog in this sample’s colors suggest danger and poison.
Key	- Symbol of protection and as a means of accessing higher wisdom. May also represent change and a future orientation.	- Key appears to represent freedom in its use to escape a cage.
Mandala	- Representing balance and the universe along with the individual’s place in it.	- Provided as supporting elements against 12-tep symbols and flowers.
Mermaid	- Another symbol with mixed meaning as both a bad omen related to temptation and seduction or as a symbol of fertility.	- Mermaid show as the lantern of a lantern fish luring people to their demise.
Phoenix	- A symbol of endurance, triumph, and rebirth.	- Rebirth/renewal.
Praying Hands	- A reflection of faith and a means of memorial.	- Prayer hands used in conjunction with recovery date.
Ribbon	- Traditionally used to insert script such as “homeward bound”, today ribbons are increasingly synonymous with support for individuals recovering from a range of illness or as a sign of <u>individual recovery</u> .	- Ribbon used both traditionally to highlight script or to show belonging in the recovery community.

**Table 1 (cont.)**

Image	Traditional Meaning	Sample-based Interpretation
Rose	- Symbol of undying love or representative of Christ's five wounds on the cross.	- Used in conjunction with religious symbols, connectedness (e.g., family) or as cover ups of drug use related images.
Semi-colon	- The semi-colon project was launched in 2017 in the US to raise awareness for mental health disorders. This is an example of a viral social media trend within tattooing.	- Only one tattoo demonstrating how the specific nature of the semi-colon did not necessarily transfer to other recovery communities.
Skull	- The skull often represents death or a sense of rebellion.	- Used to reflect death across a range of images.
Sobriety Circle	- The circle with a triangle inside is an ancient symbol that is commonly associated with AA today. Equally the presence of a diamond in the circle denotes NA.	- Widely used in this sample both overtly and covertly.
Sun	- Associated with life, energy, strength, and rebirth.	- Often shown through beams of light suggesting a clearing of the sky following a storm.
Waves	- A symbol common in tribal tattoos waves may represent life or death depending on context.	- Seen as both turbulence in life and as a means of coping with that turbulence.
Wings	- Associated with angles, birds, butterflies, and freedom wings typically represent beauty and a gentility and simultaneously power and strength.	- Mostly used for affirming ideas as traditional. One image showed demonic wings surrounding a person suggesting danger and entrapment.

### References

- Barron, L. (2017). *Tattoo Culture: Theory and contemporary contexts*. Rowman & Littlefield International.
- Bertens, K., Ohoitumur, J., Ghose, T., Kato, L., Taylor, P., & Keeter, S. (2010). Millennials: A portrait of generation next confident, connected, and open to change. In *Pew Research Center* (Issue February). <https://doi.org/10.1108/JCM-07-2013-0650>
- Crompton, L., Amrami, G. P., Tsur, N., & Solomon, Z. (2020). Tattoos in the wake of trauma: Transforming personal stories of suffering into public stories of coping. *Deviant Behavior*, 42(10), 1–15. <https://doi.org/10.1080/01639625.2020.1738641>
- DeMello, M. (2000). *Bodies of inscription: A cultural history of the modern tattoo community*. Duke University Press.
- Kaskutas, L. A., Borkman, T. J., Laudet, A., Ritter, L. A., Witbrodt, J., Subbaraman, M. S., Stunz, A., & Bond, J. (2014). Elements that define recovery: The experiential perspective. *Journal of Studies on Alcohol and Drugs*, 75(6), 999–1010. <https://doi.org/10.15288/jsad.2014.75.999>
- Lavoie, K. A. (2015). Instagram and branding: A case study of Dunkin' Donuts. *ELON Journal of Undergraduate Research in Communications*, 6(2). <http://www.inquiriesjournal.com/articles/1364/instagram-and-branding-a-case-study-of-dunkin-donuts>
- MacDowall, L. J., & de Souza, P. (2018). 'I'd Double Tap That!!': Street art, graffiti, and Instagram research. *Media, Culture and Society*, 40(1), 3–22. <https://doi.org/10.1177/0163443717703793>
- Maclean, J., Al-Saggaf, Y., & Hogg, R. (2020). Instagram photo sharing and its relationships with social rewards and well-being. *Human Behavior and Emerging Technologies*, 2(3), 242–250. <https://doi.org/10.1002/hbe2.207>
- Martin, C. W. (2013). Tattoos as narratives: Skin and self. *Public Journal of Semiotics*, 4(2), 2–46. <https://doi.org/10.37693/pjos.2013.4.8841>
- McCluskey, M. (2021). *Tattoo studios are booming while other businesses struggle*. *Time*. <https://time.com/6089991/tattoo-artist-boom-covid-19/>

- Page, J., & Bott, S. (2022). Cultural. Historical. Recreational? Making the case for tattooing's place in recreation research. *Unpublished Manuscript*.
- Penn, G. (2000). Semiotic analysis of still images. In G. Bauer & M. W. Gaskell (Ed.), *Qualitative researching with text, image, and sound: A practical handbook for social research* (pp. 227–245). Sage Publications. [https://books.google.com/books?id=gnCEgt0VopkC&printsec=frontcover&source=gbs\\_ge\\_summary\\_r&cad=0#v=onepage&q&f=false](https://books.google.com/books?id=gnCEgt0VopkC&printsec=frontcover&source=gbs_ge_summary_r&cad=0#v=onepage&q&f=false)
- Russmann, U., & Svensson, J. (2016). Studying organizations on instagram. *Information (Switzerland)*, 7(4), 1–12. <https://doi.org/10.3390/info7040058>
- Sparkes, A. C., Brighton, J., & Inckle, K. (2020). “I am proud of my back”: An ethnographic study of the motivations and meanings of body modification as identity work among athletes with spinal cord injury. *Qualitative Research in Sport, Exercise and Health*. <https://doi.org/10.1080/2159676X.2020.1756393>
- Sundberg, K., & Kjellman, U. (2018). The tattoo as a document. *Journal of Documentation*, 74(1), 18–35. <https://doi.org/10.1108/JD-03-2017-0043>
- Woodstock, L. (2014). Tattoo therapy: Storying the self on reality TV in neoliberal times. *Journal of Popular Culture*, 47(4), 780–799. <https://doi.org/10.1111/j.1540-5931.2011.00814.x>
- Zackasee, T. R., Zack, T. R., See, E., & Onwudie, C. (2004). *Prison gang tattoo recognition: A correctional officer's survival guide*.

## The Mueller Assessment of Transition (MAT) for Measuring Older Adults' Well-Being When Transitioning into Assisted Living Facilities: A Confirmatory Factor Analysis

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**Introduction:** Transition into assisted-living facilities (ALFs) for older adults are occurring at increasing rates due to older adults needing additional services (Canizares et al., 2016). The transition process has been reported to be most influential on older adults' health and well-being during the first month of moving into an ALF (Scott & Mayo, 2019). Past research has showed that older adults' well-being is often both positively and negatively influenced during transition to an ALF (Scott & Mayo, 2019; Tompkins et al., 2012; Tracy & DeYoung, 2004), and recent work has coined these influences as adjustment strategies and constraints to well-being (Mueller et al., 2021). Before the Mueller et al. (2021) study, limited research existed on measuring the impact of transition on older adults' well-being when moving into ALFs. Initial development and testing of the Mueller Assessment of Transition (MAT; see Figure 1) showed two constructs (Mueller et al., 2021), but validation of the MAT with the two hypothesized constructs warrants further investigation. Therefore, the purpose of this study was to confirm the factory validity of the MAT with a nationwide sample of older adults transitioning into ALFs.

**Methods:** This study included a nationwide sample of older adults to confirm the factory structure of the MAT. The target sample was 100 participants needed to perform a confirmatory factor analysis (Artino et al., 2014) from the four regions of the United States (Northeast, Midwest, South, and West). Participant inclusion criteria included being a resident who: transitioned into an ALF after March 2018, had English reading proficiency, and scored a 4 or higher on the Six Item Screener (SIS; Callahan et al., 2001). Participating ALFs each had an identified site liaison to help distribute questionnaires to eligible participants. Participants self-completed questionnaires with a writing instrument, and completed questionnaires were returned to research team by the site liaison. Questionnaires included demographic questions and the 12- MAT items. Descriptive statistics and internal reliability tests were run through IBM SPSS version 27 (IBM Corp, 2020) for

analysis, whereas a confirmatory factor analysis (CFA) was performed using JMP Pro 16 (SAS Institute Inc., 2021). A CFA tested the proposed factor structure of the constructs set by Mueller et al. (2021) in the original MAT development study where six MAT items loaded evenly onto each of the two constructs (adjustment strategies and constraints to well-being). Model fit was assessed using the following criterion: comparative fit index (CFI) close to .95 (Byrne, 2013), root mean square residual error of estimation (RMSEA) between 0.05-0.08 (Hu & Bentler, 1999), Tucker-Lewis index (TLI) close to 0.95 (Brown, 2015), and the standardized root mean square residual (SRMR) of <0.09 (Hooper et al., 2008).

**Results:** A sample of 108 older adults across the United States completed questionnaires, with 100% of participants completing all 12 MAT items. See Table 1 for participants' demographic information. Internal reliability using Cronbach's alpha ( $\alpha$ ) for the total MAT was .784, with adjustment strategy construct at .780 and constraints to well-being at .763. The results of the CFA are displayed in Figure 2 with strong fit to the data (CFI = .950, RMSEA = 0.056 (95%CI: 0.004 to 0.088), TLI= 0.933, and SRMR = 0.074).

**Discussion and Recommendations for RT:** The aim of this study was to confirm the factor structure of the MAT on a nationwide sample of older adults relocating into ALFs. The results from the CFA model demonstrated excellent fit of the data to the hypothesized model to affirm the 2-factor MAT for adjustment strategies and constraints to well-being. The internal reliability was also stronger in this study compared to the initial development testing of the MAT (Mueller et al., 2021). Prior to this study, no assessment quantified older adults' well-being when transitioning into ALFs, so this research fills that gap. Creating the MAT to measure a holistic understanding of older adults' well-being is an important contribution to the field of recreational therapy as there exists a need for more outcome-based measures, including standardized assessments, for therapists in practice (Porter et al., 2020). Recreational therapists (RTs) and other healthcare professionals can use the MAT responses to address older adults' areas of need during their move into an ALF. Examples of areas of need identified by using the MAT include social support, physical health, community engagement, and leisure hobbies. Based on the areas of needs that may influence older adult's well-being, intentional treatment planning can be implemented with person-centered interventions to address threats to older adults' well-being. Future research is needed to examine convergent validity of the MAT, establish cut-off scores for the MAT, and examine the relationship between well-being and other constructs like perceived health, feelings of independence, life satisfaction, and family caregiver perceptions. Limitations exist in this study with the possibility of recall bias with participants thinking back on their transition experiences, the lack of diversity in the sample, and lack of temporal reliability testing through test-retest analysis. Overall, the conclusion of this study is for RTs and healthcare professionals to use the MAT to address specific areas of need influencing older adults' well-being when relocating into ALFs.

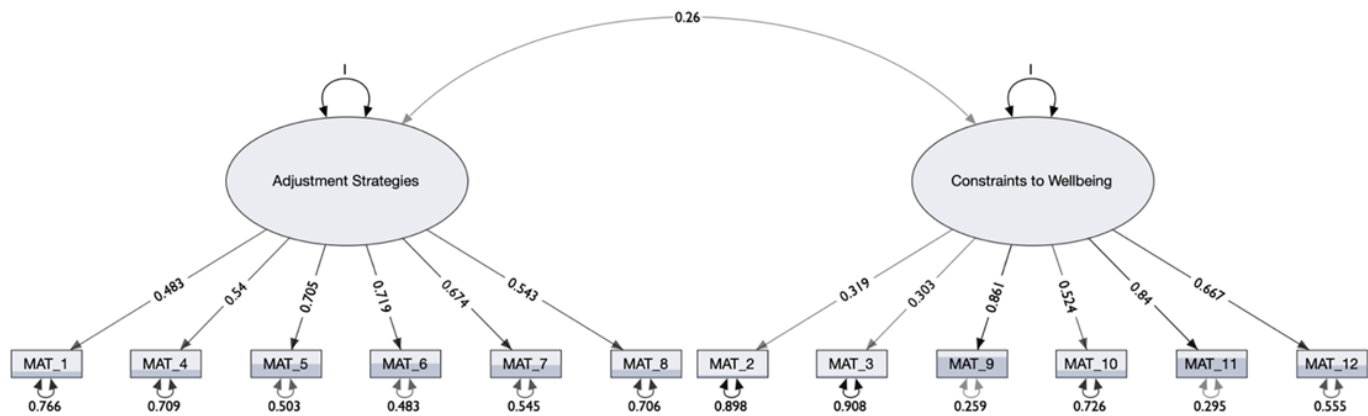
**Table 1**  
*Participant Demographics*

Age	$M = 84.22$ ; $SD = 8.09$ ; range= 57-97
Participant gender	
<i>Female</i>	81 (75%)
<i>Male</i>	22 (20%)
<i>Missing</i>	5 (5%)
Region of the United States	
<i>South</i>	67 (62%)
<i>Midwest</i>	26 (24%)
<i>West</i>	8 (7%)
<i>Northeast</i>	7 (7%)
Previous residence before ALF	
<i>Living in a residence in the community</i>	75 (69%)
<i>Living in another assisted living facility</i>	11 (10%)
<i>Living in the independent living area of this facility</i>	8 (7%)
<i>Living in another independent living facility</i>	4 (4%)
<i>Living in a family member's home</i>	4 (4%)
Number of times moved in lifetime	Mdn= 5
Participant marital status	
<i>Widowed</i>	72 (67%)
<i>Married</i>	13 (12%)
<i>Divorced</i>	11 (10%)
<i>Single, never married</i>	6 (6%)
<i>Member of unmarried couple</i>	1 (1%)
<i>Missing</i>	5 (5%)
Military veteran	13 (12%)
Spouse as military veteran	47 (43%)
Race/Ethnicity (White)	103 (95%)
<i>Missing</i>	5 (5%)
Transitioned during COVID-19 pandemic (after March 2020)	65 (60%)



## Figure 2

Confirmed Model of the CFA for the MAT in this study ( $n=108$ ). CFI, Bentler's comparative fit index ( $>.95$ ); RMSEA, Root mean square error of approximation (0.06 or below); TLI, Tucker-Lewis index ( $>.95$ ); SRMR, Standard root mean square residual ( $<0.09$ )



Fitting: CFI=.950; RMSEA=0.056 (95%CI: 0.004 to 0.088); TLI: 0.933, and SRMR= 0.074

## References

- Artino, A. R., La Rochelle, J. S., Dezee, K. J., & Gehlbach, H. (2014). Developing questionnaires for educational research: AMEE Guide No. 87. *Medical Teacher*, 36(6), 463–474. <https://doi.org/10.3109/0142159X.2014.889814>
- Brown, T. A. (2015). *Confirmatory factor analysis for applied research* (2nd ed.). Guilford Publications.
- Byrne, B. M. (2013). *Structural equation modeling with Mplus: Basic concepts, applications, and programming*. Routledge.
- Callahan, C. M., Unverzagt, F. W., Hui, S. L., & Anthony, J. (2001). Six-Item Screener to identify cognitive impairment among potential subjects. *Medical Care*, 40(9), 771–781. <https://doi.org/10.1097/01.MLR.0000024610.33213.C8>
- Canizares, M., Gignac, M., Hogg-Johnson, S., Glazier, R. H., & Badley, E. M. (2016). Do baby boomers use more healthcare services than other generations? Longitudinal trajectories of physician service use across five birth cohorts. *BMJ Open*, 6(9), e013276. <https://doi.org/10.1136/bmjopen-2016-013276>
- Hooper, D., Coughlan, J., & Mullen, M. (2008). Structural equation modeling: Guidelines for determining model fit. *Electron Journal of Buisness Research Methods*, 6(1), 53–60.
- Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling*, 6(1), 1–55.
- IBM Corp. (2020). *IBM SPSS Statistics for Mac, Version 27.0*. IBM Corp.
- Mueller, K., Van Puymbroeck, M., Brown, C., Davis, N. J., & Crowe, B. (2021). Development and factor structure of the Mueller Assessment of Transition (MAT): A tool for measuring older adults' well-being during transition into assisted living facilities [Unpublished manuscript]. *Department of Parks, Recreation, and Tourism Management; Clemson University*.
- Mueller, K. E., Van Puymbroeck, M., Crowe, B. M., & Davis, N. J. (2021). Adjustment strategies for older adults transitioning into an assisted living facility: Implications for RT practice. *Therapeutic Recreation Journal*, 55(2), 204–220.
- Porter, H., Hawkins, B., & Kemeny, B. (2020). Recreational Therapy Competencies, Part I: The ATRA Delphi Study. *Therapeutic Recreation Journal*, 54(4), 391–401. <https://doi.org/10.18666/trj-2020-v54-i4-10237>
- SAS Institute Inc. (2021). *JMP® Pro, Version 16*.
- Scott, J. M., & Mayo, A. M. (2019). Adjusting to the transition into assisted living: Opportunities for nurse practitioners. *Journal of the American Association of Nurse Practitioners*, 31(10), 583–590. <https://doi.org/10.1097/JXX.000000000000184>

## Shared Reading with Older Adults Who Have Dementia: A Pilot Study

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**Introduction/Literature Review:** Dementia affects millions of Americans, impacting memory, language, cognitive skills, social skills, and activities of daily living (Alzheimer’s Association, 2022). While dementia cannot be prevented or cured, research has shown that using cognitive skills reduces symptoms and prolongs cognitive function (Wilson et al., 2002). One cognitive intervention that has demonstrated an impact on memory, language, cognitive and social skills is bibliotherapy (Cohen-Mansfield, 2018; O’Sullivan et al., 2015; Willis et al., 2018).

Bibliotherapy is an intervention that involves the use of books and literature for cognitive and psychological benefits. Kanewischer (2013) wrote, “The main purposes of bibliotherapy are to share information, provide insight, promote the discussion of feelings, demonstrate new attitudes and values, show that others have similar problems, and to show solutions to problems” (p. 70). In this research project, a specific type of bibliotherapy known as shared reading was utilized.

Shared reading is a cognitive intervention developed in the United Kingdom that utilizes reading and memory while engaging participants in social interaction. Shared reading is defined as a “literature-based intervention... (that) brings people together and engages them with a variety of types of literature that has been shown to have positive outcomes in the areas of emotion, cognitive and interpersonal functioning” (DeVries et al., 2019, p. 58).

This research project engaged eight older adults living with dementia in a secure assisted living memory unit in shared reading. The study’s purpose was to examine the impact of shared reading on the social engagement and mood of older adults with dementia, as well as to test a previously published shared reading protocol. The primary research question was: does shared reading have an impact on the mood, cognition and/or social engagement of older adults with dementia? This original pilot study explored the effectiveness and benefits of shared reading.

**Methods:** Following IRB approval, families of residents on the memory care unit were invited to consider involvement in the pilot study. Informed consent was obtained from the designated power of attorney/guardian due to the resident’s cognitive impairment. Assent was also obtained from each participant for each session through the invitation to participate in the session.

The eight participants were engaged in a shared reading activity twice a week for approximately 45 minutes (the standard group time on the memory care unit) for eight weeks. The shared reading intervention followed a peer-reviewed published article and the protocol developed by DeVries et al. (2019). The DeVries et al. protocol was based on the UK research and adapted since there is little to no research published in the U.S. on shared reading. Therefore, this pilot study sought to contribute to research on shared reading and bibliotherapy in the U.S.

Each session followed the DeVries et al. (2019) protocol exactly as written, with each week having a theme around which poems were selected and props were provided to facilitate engagement. For example, one week focused on weddings; the “Wedding March” was played, and each participant’s wedding photo was shared. Other themes included sports, school days, camping, farming, and travel. Groups started with casual conversation and introductions, followed by examining the props and pictures. A poem was then introduced, and each resident read a paragraph until the poem was completed. Poems were read twice by participants, and then the facilitator asked residents for their thoughts on the poem—what they liked or disliked, what the poem meant or how it made them feel. On average, three poems were read and discussed each session.

Participants were assessed pre- and post-intervention using the Brief Interview for Mental Status (BIMS—cognitive assessment), short-form Geriatric Depression Scale (GDS – mood assessment), and the UCLA Loneliness Scale (social engagement/ interaction) to determine the effects of the shared reading intervention. In addition, the research team completed the QUALIDEM weekly based on observations that occurred during each group.

**Results:** Preliminary results show both quantitative and qualitative benefits to the shared reading intervention. The BIMS scores (cognition) for all participants remained the same with the exception of one 90-year-old female

who improved by one point (6 to 7) and one 90-year-old female who declined by one point (5 to 4). Any change in score indicates an improvement or decline. These changes were slight and do not change the category of impairment; for example, a score of 0 - 7 indicates severe cognitive impairment and 8–12 indicates moderate impairment.

Regarding depression, one participant's GDS score indicated depression prior to the intervention; post-intervention, the participant's score still indicated depression, but the 90-year-old's depression score dropped from 8 to 6 (>5 indicates depression). This finding appears to be significant for this participant.

On the UCLA Loneliness scale, the intervention seems to have had a positive impact as well. Three participants' scores were lower after the intervention indicating less loneliness. One 80-year-old female's UCLA score dropped from 54 to 37, a change of 17 points, which is significant. This same female demonstrated increased involvement and social interaction on the unit during non-intervention times.

Qualitative analysis showed several results. Observations show that as the group developed, participants assumed more ownership and engagement by initiating interaction with each other, sharing without prompts, supporting each other through touch when expressing emotion, and increased natural interactions with each other. More social interaction was observed as the participants gained a sense of familiarity. This is supported by data from the DEM-QOL.

Full data analysis will be completed by August 2022. Quantitative data shows slight changes in the area of cognition which may not be displayed in function; however, mood/behavior and quality of life scores show significance for several participants. Qualitative data indicates improvement that is being seen in daily functioning for 6 out of 8 participants.

**Discussion:** Shared reading appears to have a positive impact on loneliness as reflected by the UCLA Loneliness Scale, a slight impact on depression according to the Geriatric Depression Scale, and maintenance of cognitive function as evaluated by the Brief Interview for Mental Status. Observations during groups demonstrated increased engagement and participation by all participants from the beginning of the intervention to the end as documented on QUALIDEM. As sessions continued, the group participants began to display more group ownership as evidenced by initiating reading, sharing personal insights without facilitator prompts, and outreach to support each other. One participant who was significantly weepy and displayed significant anxiety at the beginning of the intervention gradually reduced these behaviors to the point where they ceased to occur during the group intervention.

In addition, the study showed that the protocol was accurate and applicable to shared reading. It can be utilized as a guide for the implementation of shared reading interventions with older adults.

While the results of this pilot study seem to show positive outcomes, it is difficult to generalize findings due to the small sample size. However, shared reading may be an appropriate intervention to address mood and behavior in older adults with dementia.

**Implications for RT:** This pilot study has a number of implications for practice for recreational therapists who implement shared reading with older adults who have dementia. Shared reading may provide benefits and outcomes related to mood and behavior, leading to increased engagement and social interaction.

- Specific considerations and suggestions that resulted from this study include: The shared reading technique can be applied to other groups that involve reading such as current events or reminiscing.
- Planning sessions around a theme and including props are particularly helpful for individuals with dementia.
- The use of props (an addition to the DeVries protocol that was not included in the UK version) is important and beneficial for older adults with dementia. Allowing participants to handle items and share their memories prior to beginning establishes a tone for the session.
- Integrating sensory experiences is also important, such as serving lemonade with poems about the beach, playing "Take Me Out to the Ballgame" on baseball day.
- Focusing themes on leisure interests and hobbies is positive, but more in-depth topics such as aging and life transitions may be appropriate as well.
- Selecting themes based on the individuals involved in the program can be beneficial. Picking a theme in which each participant is an "expert" allows participants to share, shine and lead.

- Having a home-like environment where participants can relax and be more casual leads to more informal engagement and interaction between participants.
- When a poem is completed, it is important to remove it so that participants do not get confused on what poem they are reading or focusing on.
- Rhyming poems seem to generate the most positive responses and perceived enjoyment

The preliminary findings appear to indicate positive outcomes on behavior and mood for older adults with dementia who participated in a shared reading intervention. Further data analysis is forthcoming, and additional research is warranted by the profession.

**Table 1**

*Pre and Post Test Data on Participants*

ID_#	Age	Dementia	Depression	Anxiety	Pre-Intervention Observed Behaviors	Pre-BIMS	Post-BIMS	Pre-GDS	Post-GDS	Pre-UC-LA	Post-UC-LA
1	80	X	X		Agitation	3	3	2	3	54	37
2	90	X	X	X	restless; hx of delusions & hallucinations	6	7	1	1	25	26
3	80	X	X		hx of delusions, paranoia episodes	2	2	2	3	41	43
4	90	X			occasional episodes of depression	3	3	3	4	29	24
5	84	X		X	hx of wandering, crying episodes	3	3	4	4	52	47
6	90	X		X	agitation, restless	5	4	8	6	49	49

YELLOW = significance

ORANGE = change

### References

- Alzheimer's Association. (2022). *2022 Alzheimer's disease facts and figures*. <https://www.alz.org/media/Documents/alzheimers-facts-and-figures.pdf>
- Cohen-Mansfield, J. (2018). The impact of group activities and their content on persons with dementia attending them. *Alzheimer's Research & Therapy*, *10*(37), 1–8. <https://doi.org/10.1186/s13195-018-0357-z>
- DeVries, D., Bollin, A., Brouwer, K., Marion, A., Nass, H., & Pompilius, A. (2019). The impact of shared reading groups on engagement and social interaction for older adults with dementia: A literature review. *Therapeutic Recreation Journal*, *53*(1), 53–75. <https://doi.org/10.18666/TRJ-2019-V53-I1-8866>
- Kanewischer, E. J. W. (2013). Do you ever feel that way? A story and activities about families and feelings. *Journal of Creativity in Mental Health*, *8*, 70–80. doi: 10.1080/15401383.2013.763686
- O'Sullivan, N., Davis, P., Billington, J., Gonzalez-Diaz, V., & Corcoran, R. (2015). "Shall I compare thee": The neural basis of literary awareness, and its benefits to cognition. *Cortex*, *73*, 144–157. <https://doi.org/10.1016/j.cortex.2015.08.014>

- Willis, E., Semple, A. C., & deWaal, H. (2018). Quantifying the benefits of peer support for people with dementia: A Social Return on Investment (SROI) study. *Dementia, 17*(3), 266–278. doi: 10.1177/1471301216640184
- Wilson, R. S., Mendes deLeon, C. F., Barnes, L. L., Schneider, J. A., Bienias, J. L., Evans, D. A., & Bennett, D. A. (2002). Participation in cognitively stimulating activities and risk of incident Alzheimer's disease. *Journal of the American Medical Association, 287*(6), 742–748.

## **Battery-Powered Social Engagement: Boosting Social Cognition and Social Functioning with Adolescents and Adults with Autism Spectrum Disorder Using Noninvasive Brain Stimulation**

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**Introduction:** Social cognition and social functioning deficits are core to ASD, impacting nearly every aspect of an individual with ASD's life (Reichow & Volkmar, 2010). Current treatments typically focus on behavioral interventions within a group setting (Myers & Johnson, 2007). RTs and SLPs often facilitate these groups, with RTs focusing on teambuilding, building strengths, social access and integration, and quality of life, and SLPs focusing on social pragmatic language (e.g., body language, facial expression, adjusting language to context). However, these interventions are extremely time and labor-intensive to implement. Non-invasive brain stimulation, such as transcranial direct current stimulation (tDCS) is a promising treatment option for improving these interventions. TDCS is a lightweight and safe method of brain stimulation that delivers weak electrical current to the brain using electrodes placed on the scalp (Nitsche & Paulus, 2000; Sellaro et al., 2016). TDCS has been shown to safely improve performance across many areas of performance, including learning (Ferrucci et al., 2013), facial emotion recognition (Boggio et al., 2008), and social functioning (Santiesteban et al., 2012). However, only minimal studies exist examining the use of tDCS with individuals with ASD for social cognition and social functioning.

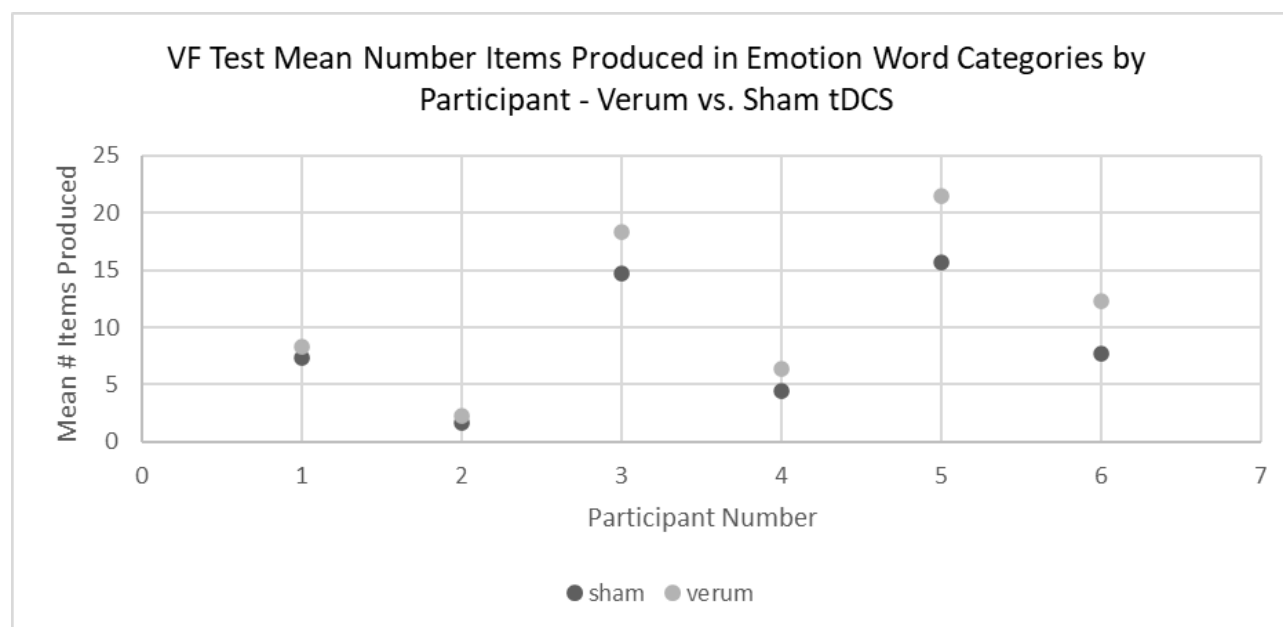
**Methods:** We will review three studies that utilize tDCS with adolescents and/or adults with ASD. These studies are completed by multi-disciplinary researchers from backgrounds including SLPs, an RT, a medical doctor (MD), and clinical and experimental psychologists. Two studies were completed with adults with ASD examining the effectiveness of tDCS paired with social cognition and social skills treatments as measured by tests of social skills, emotion verbal fluency (EVF) and the Autism Treatment Evaluation Checklist (ATEC) (Esse Wilson et al., 2018a; Esse Wilson et al., 2018b). The third study is in progress with adolescents and adults with ASD and investigates the use of tDCS as measured by magnetocephalography (MEG), structural magnetic resonance imaging (MRI), and diffusion tensor imaging (DTI).

**Results:** Study one showed participants received a significantly higher score on the EVF test after receiving tDCS (see Figure 1). For study two, the ATEC showed substantial improvement in social functioning from baseline to post-tDCS, (see Table 1). For study three, preliminary analysis has focused on the processing of facial features and responses to social videos with significant differences found in brain oscillations when comparing tDCS conditions.

**Implications for RT:** The fields of RT and SLP have strengths that are complementary to one another. This is particularly true when addressing social cognition and social functioning in individuals with ASD. Future interventions may also show benefit from the use of tools from the field of neuroscience, such as tDCS. TDCS has been shown to boost individual social abilities, indicating its potential for enhancing the group interventions both fields are already using.

**Figure 1**

A Significant Difference was Found between Verum and Sham conditions for Mean Scores on the Verbal Fluency (VF) Test for Emotion Word Portion ( $p < 0.00$ ). Verum and Sham Scores are Shown for Each Participant

**Table 1**

Assessment Results with Autism Treatment Evaluation Checklist (ATEC) Before and After tDCS and at 2-Month Follow-Up

<u>Before tDCS</u>	<u>After tDCS</u>		<u>2-Month Follow-Up</u>			
	Raw	%ile	Raw	%ile	Raw	%ile
Scores*						
Total:	42	20	20	6	11	3
Subscales:						
Speech	0	0	0	0	0	0
Sociability	7	19	1	2	2	5
Sensory	13	39	8	19	0	0
Behavior	22	50	11	16	9	10

\*Higher raw scores and percentiles (%ile) indicate higher levels of ASD symptoms

**References**

- Boggio, P. S., Rocha, R. R., da Silva, M. T., & Fregni, F. (2008). Differential modulatory effects of transcranial direct current stimulation on a facial expression go-no-go task in males and females. *Neuroscience Letters*, 447(2-3), 101-105. <http://doi.org/10.1016/j.neulet.2008.10.009>
- Esse Wilson, J., Quinn, D. K., Wilson, J. K., Garcia, C. M., & Tesche, C. D. (2018a). Transcranial direct current stimulation to the right temporoparietal junction for social functioning in autism spectrum disorder. *The Journal of ECT*, 34(1), e10-e13. <http://doi.org/10.1097/YCT.0000000000000445>

- Esse Wilson, J., Trumbo, M. C., Wilson, J. K., & Tesche, C. D. (2018b). Transcranial direct current stimulation (tDCS) over right temporoparietal junction (rTPJ) for social cognition and social skills in adults with autism spectrum disorder (ASD). *Journal of Neural Transmission*, 125(12), 1857–1866. <http://doi.org/10.1007/s00702-018-1938-5>
- Ferrucci, R., Brunoni, A. R., Parazzini, M., Vergari, M., Rossi, E., Fumagalli, M., Mamelie, F., Rosa, M., Giannicola, G., Zago, S., & Priori, A. (2013). Modulating human procedural learning by cerebellar transcranial direct current stimulation. *Cerebellum*, 12(4), 485–492. <http://doi.org/10.1007/s12311-012-0436-9>
- Lecavalier, L., Leone, S., & Wiltz, J. (2006). The impact of behaviour problems on caregiver stress in young people with autism spectrum disorders. *Journal of Intellectual Disability Research*, 50(3), 172–183. <http://doi.org/10.1111/j.1365-2788.2005.00732.x>
- Myers, S. M., & Johnson, C. P. (2007). Management of children with autism spectrum disorders. *Pediatrics*, 120(5), 1162–1182. <http://doi.org/10.1542/peds.2007-2362>
- Nitsche, M. A., & Paulus, W. (2000). Excitability changes induced in the human motor cortex by weak transcranial direct current stimulation. *Journal of Physiology*, 527(3), 633–639. [http://doi.org/PHY\\_1055](http://doi.org/PHY_1055)
- Reichow, B., & Volkmar, F. R. (2010). Social skills interventions for individuals with autism: Evaluation for evidence-based practices within a best evidence synthesis framework. *Journal of Autism and Developmental Disorders*, 40(2), 149–166. <http://doi.org/10.1007/s10803-009-0842-0>
- Santiesteban, I., Banissy, M. J., Catmur, C., & Bird, G. (2012). Enhancing social ability by stimulating right temporoparietal junction. *Current Biology*, 22(23), 2274–2277. <http://doi.org/10.1016/j.cub.2012.10.018>
- Sellaro, R., Nitsche, M. A., & Colzato, L. S. (2016). The stimulated social brain: Effects of transcranial direct current stimulation on social cognition. *Annals of the New York Academy of Sciences*, 1369(1), 218–239. <http://doi.org/10.1111/nyas.13098>

## 2022 Research to Practice Posters

### Virtual Reality Interventions for College Students with Anxiety: Possibilities for RT

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**Introduction:** Over a third of college students report having anxiety (Healthy Minds Network, 2021), making it a significant health issue. Furthermore, university mental health (MH) facilities indicate anxiety is the greatest concern among the individuals they serve (Center for Collegiate Mental Health, 2021). College students' need for MH interventions has risen in recent years and accelerated following the onset of the COVID-19 pandemic (Center for Collegiate Mental Health, 2021). This elevated demand for MH services has resulted in long wait times for appointments among students, and campus mental health clinicians who are overwhelmed by service demands (Gorman et al., 2020; Lipson et al., 2019). Therefore, innovative solutions are clearly needed to address this issue. Virtual reality (VR) is a growing technology that is popular among college students (Buckle, 2019). There is also preliminary evidence of VR interventions successfully treating anxiety in other populations and settings (Navarro-Haro, 2019). Therefore, VR interventions could represent an innovative way to address heightened anxiety in college students. The purpose of this project was to review the current literature to determine evidence for using VR interventions to address anxiety in college students.

**Methods:** Six databases (CINAHL, Google Scholar, MEDLINE, PubMed, PsycINFO, and SCOPUS) were searched using the search terms anxiety, stress, student(s), university, college, virtual reality, and VR. A team of five RT students and faculty identified and reviewed eight articles related to the project's central purpose. The eight articles reviewed all summarized intervention studies structured as randomized controlled trials (Modrego-Alarcon et al., 2021; Thompson et al., 2011; Weerdmeester, et al., 2021), randomized multi-group studies with no control group (Browning et al., 2020; Garcia et al., 2019; Richesin et al., 2021), and quasi-experimental designs (Frewen et al., 2020; Premkumar et al., 2021). Participants were all college/university students. However, several studies focused specifically on undergraduate students (Browning et al., 2020; Ferwen et al., 2020; Garcia et al., 2019; Richesin et al., 2021; Thompson et al., 2011; Weerdmeester et al., 2021). One study (Modrego-Alarcon et al., 2021) included both undergraduate and master's students, and another simply described participants as "college students" (Premkumar et al., 2021). The number of participants ranged from 32 (Premkumar et al., 2021) to 280 (Modrego-Alarcon et al., 2021), with the majority of studies including fewer than 100 participants.

**Results:** Researchers identified anxiety and/or stress as an outcome measure in all studies. This was assessed using the State Trait Anxiety Inventory (STAI) (Modrego-Alarcon et al., 2021; Richesin et al., 2021; Weerdmeester et al., 2021), Depression, Anxiety, and Stress Scale–Short Form (DASS-SF) (Thompson et al., 2011), Dutch Depression, Anxiety, and Stress Scale (DASS) (Weerdmeester et al., 2021), Speech Anxiety Thoughts Inventory (Premkumar et al., 2021), Public Speaking Anxiety Scale (Premkumar et al., 2021), Liebowitz Anxiety Scale (Premkumar et al., 2021), Perceived Stress Scale (PSS) (Modrego-Alarcon et al., 2021; Richesin, et al., 2021), Physical Appearance State Trait Anxiety Scale (PASTAS) (Garcia et al., 2019), Cortisol Assessment (Thompson et al., 2011), Heart Rate (Premkumar et al., 2021; Richesin, et al., 2021), and Skin Conductance + Salivary Alpha Amylase (Richesin, et al., 2021). While not the primary outcome focus of this project, the review team noted that several studies also documented outcomes related to affect and mood. These outcomes were assessed using the Positive and Negative Affect Schedule (PANAS) (Browning et al., 2020; Modrego-Alarcon et al., 2021; Richesin et al., 2021), Depression, Anxiety, and Stress Scale–Short Form (DASS-SF) (Thompson et al., 2011), Activation-Deactivation Adjective

Check List (AD-ACL) (Thompson et al., 2011), Modified Differential Emotions Scale (MDES) (Frewen et al., 2020), Maslach Burnout Inventory Student Survey (Modrego-Alacron et al., 2021), Emotional Regulation Questionnaire (Modrego-Alacron et al., 2021), and Self-Compassion Scale (Modrego-Alacron et al., 2021). Interventions were structured either as a single session (Browning et al., 2020; Frewen et al., 2020; Garcia et al., 2019; Richesin et al., 2021) or multiple sessions of varying amounts up to 10 sessions total (Thompson et al., 2011). Individual sessions typically lasted between 10–30 minutes (Premkumar et al., 2021; Richesin et al., 2021; Thompson et al., 2011; Weerdmeester et al., 2021). A variety of VR applications or programs were used in the studies and included both commercially available applications and clinical applications designed specifically for treatment and research purposes. The review team categorized interventions into four main types: (a) outdoor/environmental, (b) relaxation, (c) art-based, and (d) other. Outdoor/environmental applications included Google Earth (Frewen et al., 2020), Nature Treks (Frewen et al., 2020), and an outdoor nature video (Browning et al., 2020). Relaxation interventions included VR hypnosis (Thompson et al., 2011), a mindfulness application (Modrego-Alarcon et al., 2021), and an underwater experience called “DEEP” (Weerdmeester et al., 2021). The art-based application Google Tilt Brush was used in two studies (Frewen et al., 2020; Richesin et al., 2021). The remaining two VR applications included a body/self-image application (Garcia et al., 2019), and a public speaking application (Premkumar et al., 2021). Outcomes associated with both anxiety and affect/mood from each reviewed study are summarized in Table 1. These are accompanied by general information on the purpose of the studies for each of the corresponding VR applications and comparative treatment(s). Several studies were preliminary pilot studies limited by small convenience samples where not all participants presented with heightened anxiety. Thus, additional research is needed in this new line of research to better understand how best to structure VR treatments for college students experiencing anxiety.

**Implications for RT:** The current literature indicates that brief sessions (10–30 minutes) using a variety of VR interventions can benefit college students by managing and/or reducing their anxiety. These same interventions also hold potential to improve affect and mood in this population. Of note for RT practice are several VR applications that are commercially available and recreation-focused including Google Earth, Google Tiltbrush, and Nature Treks. While RT services are not typically offered as a part of college MH services, RT professionals are likely to encounter college students who are accessing treatment for anxiety in traditional MH facilities. Here, therapists may be able to introduce clients to VR activities that could be used for improved coping post-discharge. However, given the increased need for MH services on college campuses, RT professionals should also recognize a unique opportunity to expand service delivery in new areas. Educators in RT programs should also consider how VR treatment interventions might be introduced to RT students who could then practice facilitation using the APIE(D) process with other college students who may benefit from these interactions.

**Table 1**

*Overview of Studies: VR Application, Purpose of the Intervention, and Outcomes following VR*

VR Application	Purpose of Intervention	VR Outcomes
<b><i>Outdoor/Environmental Applications</i></b>		
Google Earth	Compare effects of (a) 3-D VR community exploration, and (b) 2-D community exploration, and (c) mental imagery (Frewen et al., 2020).	↑ Positive affect
Nature Treks	Compare outcomes following (a) 3-D VR nature experience, (b) 2-D nature experience, and (c) mental imagery (Frewen et al., 2020).	↑ Positive affect
Outdoor Video	Compare three interventions: (a) VR simulated outdoor exposure, (b) actual outdoor nature exposure, and (c) staring at a white wall (Browning et al., 2020).	↓ Negative affect

**Table 1 (cont.)**

<b>Relaxation Applications</b>		
Mindfulness Experience	Compare clinical outcomes from three groups: (a) mindfulness-based programs, (b) mindfulness-based programs + VR, and (c) relaxation (Modrego-Alarcon et al., 2021).	↓ State and trait anxiety ↓ Perceived stress ↓ Student burnout ↑ Emotional regulation
VR Hypnosis	Compare three interventions: (a) self-hypnosis with VR imagery, (b) standard self-hypnosis (verbal imagery), and (c) a relaxation intervention (relaxation instructions) (Thompson et al., 2011).	↓ Trait anxiety
Underwater Experience (DEEP)	Compare two groups: (a) VR application DEEP, and (b) a relaxation phone application (Weerdmeester et al., 2021).	↓ Trait anxiety
<b>Art Applications</b>		
Tilt Brush	Compare effects of (a) 3-D VR art, and (b) 2-D art combined with mental imagery (Frewen et al., 2020).	↑ Positive affect
Tilt Brush	Compare effects of (a) 2-D art making and (b) 3-D VR art making (Richesin et al., 2021).	↓ State and trait anxiety ↓ Stress ↓ Heart rate ↓ Negative affect
<b>Other Applications</b>		
Public Speaking	Explore effects of VR exposure therapy in a simulated public speaking environment (Premkumar et al., 2021).	↓ Public speaking anxiety ↓ Speech anxiety thoughts ↓ Heart rate
Self-Image	Compare two groups (a) VR showing actual size of person, and (b) VR showing distorted body (larger than person) (Garcia et al., 2019).	↓ Physical appearance anxiety

### References

- Browning, M., Mimnaugh, K., van Riper, C., Laurent, H., & LaValle, S. (2020). Can simulated nature support mental health? Comparing short single-doses of 360-degree nature videos in virtual reality with the outdoors. *Frontiers in Psychology, 10*, 2667. <https://doi.org/10.3389/fpsyg.2019.02667>
- Buckle, C. (2019, December 10). *AR vs VR: The challenges and opportunities in 2019*. GWI. <https://blog.gwi.com/chart-of-the-week/augmented-virtual-reality/>
- Center for Collegiate Mental Health. (2021). *Annual Report*. <https://ccmh.psu.edu/assets/docs/2021-CCMH-Annual-Report.pdf>
- Frewen, P., Mistry, D., Zhu, J., Kielt, T., Wekerle, C., Lanius, R., & Jetly, R. (2020). Proof of concept of an eclectic, integrative, therapeutic approach to mental health and well-being through virtual reality technology. *Frontiers in Psychology, 11*, 858. <https://doi.org/10.3389/fpsyg.2020.00858>
- Garcia, B. P., Garcia, M. F., Olszewska, A., Yilmaz, L., Ibañez, C. G., Blanes, M. G., Gültekin, G., Troncoso, E. S., & Maldonado, J. G. (2019). Is this my own body? Changing the perceptual and affective body image experience among college students using a new virtual reality embodiment-based technique. *Journal of Clinical Medicine, 8*, 925. <https://doi.org/10.3390/jcm8070925>
- Gorman, K. S., Burns, C., Chin, C., Fitzpatrick, N. Y., Koenig, L., LeViness, P., & Sokolowski, K. (2020). *Annual Survey: 2020*. Association for University and College Counseling Center Directors. <https://www.aucccd.org/assets/documents/Survey/2019-020%20Annual%20Report%20FINAL%20March-2021.pdf>

- Healthy Minds Network. (2021). *Healthy minds study among colleges and universities, 2021*. Healthy Minds Network, University of Michigan, University of California Los Angeles, Boston University, and Wayne State University. <https://healthymindsnetwork.org/research/data-for-researchers>
- Lipson, S. K., Lattie, E. G., & Eisenberg, D. (2019). Increased rates of mental health service utilization by U.S. College students: 10-year population-level trends (2007-2017). *Psychiatric Services, 70*(1), 60–63. <https://doi.org/10.1176/appi.ps.201800332>
- Modrego-Alarcón, M., López-del-Hoyo, Y., Garcia-Campayo, J., Pérez-Aranda, A., Navarro-Gil, M., Beltrán-Ruiz, M., Morillo, H., Delgado-Suarez, I., Oliván-Arévalo, R., & Montero-Marin, J. (2021). Efficacy of a mindfulness-based programme with and without virtual reality support to reduce stress in university students: A randomized controlled trial. *Behavior Research and Therapy, 142*. 103866. <https://doi.org/10.1016/j.brat.2021.103866>
- Navarro-Haro, M., Modrego-Alarcón, M., Hoffman, H., López-Montoyo, A., Navarro-Gil, M., Montero-Gil, M., Montero-Marin, J., Garcia-Palacios, A., Borao, L., & Garcia-Campayo, J. (2019). Evaluation of a mindfulness-based intervention with and without virtual reality dialectical behavior therapy and mindfulness skills training for the treatment of generalized anxiety disorder in primary care: A pilot study. *Frontiers in Psychology, 10*, 55. <https://doi.org/10.3389/fpsyg.2019.00055>
- Premkumar, P., Heym, N., Brown, D., Battersby, S., Sumich, A., Huntington, B., Daly, R., & Zysk, E. (2021). The effectiveness of self-guided virtual-reality exposure therapy for public speaking anxiety. *Frontiers in Psychiatry, 12*:694610. <https://doi.org/10.3389/fpsyg.2021.694610>
- Richesin, M.T., Baldwin, D. R., & Wicks, L. A. M. (2021). Art making and virtual reality: A comparison study of physiological and psychological outcomes. *The Arts in Psychotherapy, 75*, 101823. <https://doi.org/10.1016/j.aip.2021.101823>
- Thompson, T., Steffert, T., Steed, A., & Gruzelier, J. (2010). A randomized controlled trial of the effects of hypnosis with 3-D virtual reality animation on tiredness, mood, and salivary cortisol. *International Journal of Clinical and Experimental Hypnosis, 59*(1), 122–142. <https://doi.org/10.1080/00207144.2011.522917>
- Weerdmeester, J., van Rooij, M., Maciejewski, D., Engels, R., & Granic, I. (2021). A randomized control trial assessing the efficacy of a virtual reality biofeedback video game: Anxiety outcomes and appraisal processes. *Technology, Mind, and Behavior, 2*(2). <https://doi.org/10.1037/tmb0000028>

## Gaming for Upper Limb Management for Individuals Post-Stroke

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**Introduction:** Each year, more than 795,000 people in the United States sustain a stroke or recurrent stroke (Centers for Disease Control and Prevention [CDC], 2022, April 5). Stroke related costs were nearly \$53 billion between 2017 and 2018 (CDC). Indeed, stroke is the leading cause of serious long-term disability and reduces mobility in more than half of stroke survivors age 65 and older (CDC). Individuals who sustain a stroke may have lasting complications or impairments related to hemiplegia or hemiparesis, cognitive deficits, balance and gait concerns, and upper limb involvement. Approximately 70% of individuals with a stroke have lasting impairment to their upper limbs (UL; Adie et al., 2014; Hung et al., 2019). Lasting UL impairment can prevent individuals from being independent with their leisure time activities as well as activities of daily living (ADLs). Because many leisure activities utilize UL it may be helpful to individuals if recreational therapists focus treatment on UL functioning. One intervention that utilizes UL that may produce positive outcomes is video games.

**Methods:** After searching the databases CINAHL, Google Scholar, MEDLINE, PubMed, PsycINFO, and SCOPUS using search terms stroke, cerebral vascular accident, CVA, cerebral vascular event, gaming, video games, and exergaming 13 articles were found to have met inclusion criteria of 1) published between 2012 and 2022; 2) quantitative study; 3) used commercially develop gaming consoles and games; and 3) primary outcome measured UL.

**Results:** Of the 14 articles, 9 used Nintendo Wii Sports™ or Nintendo Wii Fit™ (Adie et al., 2017; Chen et al., 2015; Choi et al., 2014; da Silva Ribeiro et al., 2015; Kong et al., 2016; McNulty et al., 2015; Saposnik et al., 2016; Şimşek & Çekok, 2016; Trinh et al., 2019), 3 used Xbox Kinect (Hung et al., 2019; Kim et al., 2019; Lee, 2013) and 1 utilized Xbox Kinect and Sony PlayStation 2 Eyetoy (Rand et al., 2017). The gaming intervention groups ranged from 7–117 individuals post-stroke. The mean post-stroke duration ranged from 14.2 days to 60.4 months (Adie et al., 2017; Chen et al., 2015; Choi et al., 2014; da Silva Ribeiro et al., 2015; Hung et al., 2019; Kim et al., 2019; Kong et al., 2016; Lee, 2013; McNulty et al., 2015; Rand et al., 2017; Saposnik et al., 2016; Şimşek & Çekok, 2016; Trinh et al., 2019). Session lengths ranged from 30 minutes to 60 minutes, with 7 of the articles reporting 45-60 minutes sessions (Adie et al., 2017; da Silva Ribeiro et al., 2015; Kong et al., 2016; McNulty et al., 2015; Rand et al., 2017; Saposnik et al., 2016; Şimşek & Çekok, 2016). Six studies reported gaming intervention was in addition to conventional therapy (Addie et al., 2017; Chen et al., 2015; Choi et al., 2014; Hung et al., 2019; Kim et al., 2019; Kong et al., 2016; Lee, 2013). Three studies were conducted in participant's home without therapist supervision (Adie et al., 2017; McNulty et al., 2015; Rand et al., 2017). Two studies used the Action Reach Arm Test (Adie et al., 2017; Rand et al., 2017) to measure their primary outcome of UL function. Six studies used the Fugel-Meyer Assessment (Chen et al., 2015; Choi et al., 2014; da Silva Ribeiro et al., 2015; Hung et al., 2019; Kim et al., 2019; Kong et al., 2016) to measure their primary outcome of UL function. Three studies used the Wolf Motor Function Test (McNulty et al., 2015; Saposnik et al., 2016; Trinh et al., 2019) for their primary outcome of UL function. Five studies used Box and Block Test (BBT) to measure dexterity as a primary or secondary outcome (Chen et al., 2015; Choi et al., 2014; Kim et al., 2019; McNulty et al., 2015; Rand et al., 2017). Four studies used the Motor Activity Log Quality Movement (MALQM) to measure quality of UL movement as a primary or secondary outcome (Hung et al., 2019; McNulty et al., 2015; Rand et al., 2017; Trinh et al., 2019). All studies primary outcomes were related to UL function and saw significant improvement from pre- and post-testing and from pre and subsequent post-test.

**Implications for RT:** Commercial gaming systems such as Nintendo Wii, Xbox Kinect, and Sony PlayStation are readily accessible and cost-effective tools for recreational therapists to incorporate into their treatment of UL among individual's post-stroke. Gaming offers variety and novelty to treatment, which may increase the motivation for participation in patient's motivation for treatment. Additionally, gaming allows for repetitive task-specific movements. Games also allow the therapist to configure speed, difficulty, size and distance of targets, number of distractors, and visualization of scoring (Laffont et al., 2020), which enhances the client's experience as well as allow for more goal-oriented tasks and more intensity in the exercise. It is suggested that if a recreational therapist is going to implement gaming into their treatment process to schedule sessions for approximately 45 minutes 2-3 times a week for the duration of rehabilitation and 45 minutes 3-5 times a week for 10 weeks for outpatient and community-based recreational therapy. The majority of the primary and secondary assessment tools can be used by recreational therapist since they are not discipline specific; however, per da Silva Ribeiro et al.'s recommendation, therapists should have training in the specific assessment(s) they choose to use. The use of video games can be used successfully as a treatment intervention in conjunction with conventional therapies or a standalone treatment along the rehabilitation continuum for individuals post-stroke. Additionally, it can be used with a variety of adults from ages 48 years old to 71 years old. Lastly, providing gaming interventions during recreational therapy may offer individuals post-stroke with activities to do independently at home, which may reduce their risk of having additional strokes.

## References

- Adie, K., Schofield, C., Berrow, M., Wingham, J., Humfryes, J., Pritchard, C., James, M., & Allison, R. (2014). Does the use of Nintendo Wii Sports™ improve arm function and is it acceptable to patients after stroke? Publication of the protocol of the trial of Wii™ in stroke – TWIST. *International Journal of General Medicine*, 7, 475–481. <http://dx.doi.org/10.2147/IJGM.S65379>
- Adie, K., Schofield, C., Berrow, M., Wingham, J., Humfryes, J., Pritchard, C., James, M., & Allison, R. (2017). Does the use of Nintendo Wii Sports™ improve arm function? Trial of Wii™ in stroke: A randomized controlled trial and economics. *Clinical Rehabilitation*, 31(2), 173–185. <https://doi.org/10.1177/02692215516637893>
- Centers for Disease Control and Prevention (CDC). (2022, April 5). *Stroke facts*. <https://www.cdc.gov/stroke/facts.htm>
- Chen, M.-H., Huang, L.-L., Lee, C.-F., Hsieh, C.-L., Lin, Y.-C., Liu, H., Chen, M.-I., & Lu, W.-S. (2015). A controlled pilot trial of two commercial video games for rehabilitation of arm function after stroke. *Clinical Rehabilitation*, 29(7), 674–682. <https://doi.org/10.1177/02692215514554115>
- Choi, J. H., Han, E. Y., Kim, B. R., Kim, S. M., Im, S. H., Lee, S. Y., & Hyun, C. W. (2014). Effectiveness of commercial gaming-based virtual reality movement therapy on functional recovery of upper extremity in subacute stroke patients. *Annals of Rehabilitation Medicine*, 38(4), 485–493. <http://dx.doi.org/10.5535/arm.2014.38.4.485>
- da Silva Ribeiro, N. M., Ferraz, D. D., Pedreira, É., Pinheiro, Í., da Silva Pinto, A. C., Neto, M. G., Dos Santos, L. R., Pozzato, M. G., Pinho, R. S., & Masruha, M. R. (2015). Virtual rehabilitation via Nintendo Wii® and conventional physical therapy effectively treat post-stroke hemiparetic patients. *Topics in Stroke Rehabilitation*, 22(4), 299–305. <https://doi.org/10.1179/1074935714Z.0000000017>
- Hung, J. W., Chou, C. X., Chang, Y. J., Wu, C. Y., Chang, K. C., Wu, W. C., & Howell S. (2019). Comparison of Kinect2Scratch game-based training and therapist-based training for the improvement of upper extremity functions of patients with chronic stroke: A randomized controlled single-blinded trial. *European Journal of Physical Rehabilitation Medicine*, 55(5), 542–550. <https://doi.org/10.23736/S1973-9087.19.05598-9>
- Kim, W. S., Cho, S., Park, S. H., Lee, J. Y., Kwon, S., & Paik, N. J. (2018, June). A low cost kinect-based virtual rehabilitation system for inpatient rehabilitation of the upper limb in patients with subacute stroke: A randomized, double-blind, sham-controlled pilot trial. *Medicine*, 97(25), e11173. <http://dx.doi.org/10.1097/MD.00000000000011173>.
- Kong, K. H., Loh, Y. J., Thia, E., Chai, A., Ng, C. Y., Soh, Y. M., Toh, S., & Tjan, S. Y. (2016). Efficacy of a virtual reality commercial gaming device in upper limb recovery after stroke: A randomized controlled study. *Topics in Stroke Rehabilitation*, 23(5), 333–340. <https://doi.org/10.1080/10749357.2016.1139796>
- Laffont, I., Froger, J., Jourdan, C., Bakhti, K. van Dokku, L. E. H., Gouaich, A., Bonnin, H. Y., Armingaud, P., Jausse, A., Picto, M. C., Le Bars, E., Dupeyron, A., Arquizan C., Gelis, A., & Mottet, D. (2019). Rehabilitation of the upper arm early after stroke: Video games versus conventional rehabilitation. A randomized controlled trial. *Annals of Physical and Rehabilitation Medicine*, 62, 173–180. <https://doi.org/10.1016/j.rehab.2019.10.009>
- Lee, G. (2013). Effects of training using video games on muscle strength, muscle tone, and activities of daily living of chronic stroke patients. *Journal of Physical Therapy Science*, 25(5), 595–597. <https://doi.org/10.1589/jpts.25.595>
- McNulty, P. A., Thompson-Butel, A. G., Faux, S. G., Lin, G., Katrak, P. H., Harris, L. R., & Shiner, C. T. (2015). The Efficacy of Wii-based movement therapy for upper limb rehabilitation in the chronic poststroke period: A randomized controlled trial. *International Journal of Stroke*, 10(8), 1253–1260. <https://doi.org/10.1111/ijis.12594>
- Rand, D., Weingarden, H., Weiss, R., Yacoby, A., Reif, S., Malka, R., Shiller, D. A., & Zeilig, G. (2017). Self-training to improve UE function at the chronic stage post-stroke: A pilot randomized controlled trial. *Disability & Rehabilitation*, 39(15), 1541–1548. <https://doi.org/10.1080/09638288.2016.1239766>
- Saposnik, G., Cohen, L. G., Mamdani, M., Pooyania, S., Ploughman, M., Cheung, D., Shaw, J., Hall, J., Nord, P., Dukelow, S., Nilanont, Y., De Los Rios, F., Olmos, L., Levin, M., Teasell, R., Cohen, A., Thorpe, K., Laupacis, A., Bayley, M., & Stroke Outcomes Research Canada. (2016). Efficacy and safety of non-immersive virtual reality exercising in stroke rehabilitation (EVREST): A randomised, multicentre, single-blind, controlled trial. *Lancet Neurology*, 15(10), 1019–1027. [https://doi.org/10.1016/S1474-4422\(16\)30121-1](https://doi.org/10.1016/S1474-4422(16)30121-1)

- Şimşek, T. T., & Çekok, K., (2016). The effects of Nintendo Wii™-based balance and upper extremity training on activities of daily living and quality of life in patients with sub-acute stroke: A randomized controlled study. *International Journal of Neuroscience*, 126(12), 1061–1070. <https://doi.org/10.3109/00207454.2015.1115993>
- Trinh, T., Shiner, C. T., Thompson-Butel, A. G., & McNulty, P. (2017). Targeted upper-limb Wii-based Movement Therapy also improves lower-limb muscle activation and functional movement in chronic stroke. *Disability & Rehabilitation*, 39(19), 1939–1949. <https://doi.org/10.1080/09638288.2016.1213892>

## **Clinical Outcomes of Oncology Camp Programs for Youth: A Systematic Review Using the ICF**

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**Introduction:** Childhood cancer and its treatment can lead to a range of ill effects that negatively impact a child's physical and psychosocial development and reduce their overall quality of life (Langeveld et al., 2002). Therapeutic recreation interventions, both during and following treatment, could moderate these effects to restore functioning and address the psychosocial needs of children with cancer. One intervention which is becoming increasingly researched for children with cancer and other serious illnesses is camping programs. At camp, children diagnosed with cancer can experience a supportive environment where they engage in growth-enhancing activities aimed to improve their physical, social, and psychological functioning (Walker & Lippard, 2021). Research has linked oncology camp programs to a wide-range of outcomes including friendship, greater social and self-acceptance (Meltzer & Rourke, 2005), and improved health-related quality of life (Martiniuk et al., 2014). There is a pressing need within the disability-specific camp industry to strengthen its connection to health and demonstrate its validity as an effective community-based treatment setting (Devine et al., 2015). The International Classification of Functioning, Disability and Health (ICF) may present a promising framework that therapeutic recreation professionals can use to improve communication about the therapeutic outcomes of camp.

The ICF (World Health Organization, 2001) is a global model that provides a scientific basis for understanding and studying health, functioning, and disability (Porter, 2016). The ICF framework views disability as a complex interaction between a person's health condition (e.g., cancer), activity involvement (e.g., socializing with friends), environmental factors (e.g., family and community systems), and personal factors (e.g., age, gender, race, education, etc.). The ICF may be of particular benefit to recreational therapists and the oncology camp industry professionals that want to increase their visibility as a viable, community-based, therapeutic modality, and receive the support of external health providers, policy makers, and grant funders. However, research connecting oncology camps to clinical health outcomes as identified in the ICF is in its infancy. Therefore, the aim of this systematic review was to identify the health-specific outcomes of oncology camp programs and link them to the outcome language used in the ICF.

**Methods:** A systematic review of the literature was completed in accordance with the PRISMA framework (Preferred reporting items for systematic review and meta-analysis: the PRISMA statement) (BMJ, 2009). An electronic search of PubMed, PsychINFO, and EBSCO databases was conducted using the search terms oncology summer camp, cancer summer camp, and oncology camp. In addition, reference lists of relevant articles were reviewed for papers to include. The search was limited to peer-reviewed articles published between 1989-2021. Articles were systematically reviewed based on pre-determined criteria. Studies were included if they evaluated outcomes of residential camping programs specifically for youth with cancer (less than 18 years old) and involved original research collecting outcome data (quantitative and/or qualitative). Studies were excluded if they were a dissertation, not in English, the camp program was exclusively for siblings or adults, the study did not include original research, or the study was not on outcomes of camp programs. Studies using populations with multiple diagnoses were also excluded. Articles that met the search criteria were reviewed and coded using the ICF linking rules proposed by Cieza et al. (2005). Second-level ICF coding was used for the purpose of synthesis and analysis.

**Results:** The initial literature search produced 176 individual records that were screened based on inclusion criteria. A total of 16 studies met the inclusion criteria and were included in the systematic review. The studies included a combined 3,850 participants aged 5-18 years who engaged in residential camp programs lasting 6-10 days in length. They contained 135 outcomes which resulted in 29 second-level ICF codes (See Table 1). The most common ICF outcome codes included emotional functions (11 citations), informal and social relationships (8 citations), and temperament and personality functions (6 citations). The ICF code emotional functions, includes camp outcomes such as decreased anxiety, increased self-esteem, empathy, and happiness. The camp outcomes of forming friendships, social acceptance, and sense of belonging were linked to the ICF outcome codes “informal relationships with friends” and “informal relationships with peers.” Perseverance, adaptability, and coping fall under the ICF outcome code “handling stress.” These results suggest that camp achieves outcomes that align well with the ICF framework, thus supporting the notion that camp can play a critical role in the overall health of youth with cancer.

**Implications for RT:** The results of this systematic review suggest that oncology camp programs may offer a variety of clinical outcomes, particularly in the ICF areas of activities and participation. This finding supports the work of Devine et al. (2015) who also made the argument that disability-specific camps are a viable community-based setting within the healthcare delivery system as it offers people with disabilities to engage in life activities. At its core, the ICF is a communication tool that provides a common language across all facets of healthcare including service providers (e.g., doctors, nurses, recreational therapists, camp professionals), granting agencies, and policy makers. In clinical settings, recreational therapists can use the ICF language to guide assessment practices, goal setting, treatment planning, and clinical outcome evaluation. At camp, recreational therapists can use the ICF language to set camper goals, develop a camper care plan, select beneficial camp activities, and evaluate health outcomes. More research is needed to understand how summer camp can be used as a recreational therapy treatment modality. The ICF presents a promising tool that recreational therapists can use to research and develop camp programs to meet the clinical needs of this population.

**Table 1**

*List of ICF Outcome Codes and Associated Camp Outcomes*

<b>ICF Code</b>	<b>Name of Code</b>	<b>Citations (n)</b>	<b>Examples of Associated Camp Outcomes</b>
b152	emotional functions	11	Psychological wellbeing, moods and emotions, enjoyment, personal growth, gratitude/appreciation, positive attitudes, worries, feeling successful, happiness
d750	informal social relationships	8	Social acceptance, belonging, shared experience of illness, doing things with groups of kids
b126	temperament and personality functions	6	Self-esteem, confidence
d920	recreation and leisure	6	Sociability, freedom, outdoor challenge, fun, diversity of activities, trying new activities, break from routine
d599	self-care, unspecified	5	Escape, respite, finding a balance, independence
d240	handling stress and other psychological demands	4	Perseverance, coping, admitting to making mistakes, adaptability, illness-related stress
d710	basic interpersonal interactions	4	Understanding feelings and emotions, trusting, relationship skills
b164	higher-level cognitive functions	3	Self-efficacy, autonomy, creativity
d570	looking after one's health	3	Attitude toward taking medication, attitude toward medical professionals, physical wellbeing, knowledge of disease
d720	complex interpersonal interactions	3	Making friends, meeting new people

## References

- BMJ. (2009). *Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement*. doi: <https://doi.org/10.1136/bmj.b2535>
- Cieza, A., Geyh, S., Chatterji, S., Kostanjsek, N., Ustun, B., & Stucki, G. (2005). ICF linking rules: An update based on lessons learned. *Journal of Rehabilitation Medicine*, 37, 212–218. doi:10.1080/16501970510040263
- Devine, M. A., Piat, J. P., & Dawson, S. L. (2015). The role of a disability-specific camp in promoting social acceptance and quality of life for youth with hearing impairments. *Therapeutic Recreation Journal*, 49(4), 293–309. doi: 10.18666/TRJ-2015-V49-14-6240
- Martiniuk, A., Silva, M., Amylon, M., & Barr, R. (2014). Camp programs for children with cancer and their families: Review of research progress over the past decade. *Pediatric Blood Cancer*, 61, 778–787. doi:10.1002/pbc.24912
- Meltzer, L. J., & Rourke, M. T. (2005). Oncology summer camp: Benefits of social comparison. *Children's Health Care*, 34, 305–314. doi:10.1207/s15326888chc3404\_5
- Porter, H. R. (Ed.). (2016). *Recreational therapy basics, techniques, and interventions*. Idyll Arbor, Inc.
- Walker, K., & Lippard, C. (2021). Adolescent cancer survivors' oncology camp experience. *The Journal of Child Life: Psychosocial Theory and Practice*, 2(2), 1–8

## 2022 Practice Posters

### Community Outing Program for Inpatients at Spaulding Rehabilitation Hospital

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**Program Overview:** Review of literature supports that community outings are a beneficial component of inpatient rehabilitation. Outings can improve patients' confidence, perceived abilities and increase community involvement post discharge (Brown, 2017; Gassaway et al., 2019; Stumbo et al., 2015). A Certified Therapeutic Recreation Specialist (CTRS) is uniquely trained to organize a community outing program. For over 30 years, CTRSs at Spaulding Rehabilitation Hospital (SRH) have facilitated planning and implementing community outings. Outings serve all populations of inpatients including but not limited to; Spinal Cord Injury, Stroke, Brain Injury, Amputee and Burn. Community outing destinations are tailored to patient's goals and take place on an individual or group basis. Frequent destinations include; restaurants and coffee shops, museums, grocery stores and use of public transit. Outings frequently have a 1:1 staff-to-patient ratio. Clinical staff on the outing includes a CTRS and at least a Physical Therapist, Occupational Therapist, or Speech-Language Pathologist. Staffing varies based on the number of patients and level of assistance required. Patients are recommended for participation in outings by a member of their primary therapy team. The CTRS discusses the purpose of the outing with the patient including goals, destination of outing and ensures they would like to participate. CTRS obtains an outing order from the patients attending physician

**Program Goals:** 1. Safely navigate outdoor terrain including curb cuts, crosswalks, uneven terrain and ramps. 2. Safely navigate crowded environments 3. Demonstrate improved accessibility awareness in a community setting 4. Demonstrate ability to tolerate duration of outing 5. Demonstrate carryover of compensatory strategies/techniques for memory, attention and problem solving while on an outing. Patients must have three goal areas to address within the community. Prior to a community outing, goals are set for each patient by their primary CTRS. The level of assistance needed for mobility, completion of tasks or cues required for cognition while in the community are considered.

**Assessment:** Following the outing, the CTRS documents performance and progress towards goals in the patients' record. Over the past 18 months, the SRH team completed a quality assessment of community outing program goals and the impact on the level of patient perceived concerns and abilities. 36 patient interviews were conducted prior to outing, post-outing, and 2 weeks post-discharge from the hospital. During these interviews, patients were asked the same Likert-style questions, and responses were recorded. Quality metrics indicate that patients' self-reported level of concern decreased by 22% after participating in a community outing. Patients self-reported that they felt more confident and excited to be able to return to the community post discharge. Post discharge, 100% of patients reported the outing contributed positively to their ability to return to the community.

**Lessons Learned for RT:** A higher number of patients expressed concerns about going into the community once they returned home. Subjectively, patients mentioned lack of support, or their deficits were of concern. These findings are consistent with evidence that client perspectives highlighted the lack of support for transitions between rehabilitation programs and the community (Brouwer et al., 2018; Cott, 2004). This may suggest that Therapeutic Recreation Services post-inpatient rehabilitation in the community setting would be valuable to address these areas. Suggestions for Replication: Community outings can be replicated in many settings. Important steps for implementation are: 1) Garner support from a director or manager 2) Develop evidenced-based processes 3) Consider destinations within walking distance from facility with appropriate features (i.e., sidewalks) 4) Consider use of transportation within given entity, public transportation, contracted transportation company, or use of ride share 5) Provide a plan of staffing, budget, and safety considerations.

## References

- Brouwer, B. (2018). Effectiveness of client-centered “tune-ups” on community reintegration, mobility, and quality of life after stroke: A randomized controlled trial. *Archives of Physical Medicine and Rehabilitation*, 99(7) 1325–1332.
- Brown, A. (2017). Community reintegration programming in an inpatient rehabilitation setting. *SIS Quarterly Practice Connections*, 2(1), 23–25.
- Cott, C. (2004) Client-centered rehabilitation: client perspectives, *Disability and Rehabilitation*, 26(24), 1411–1442
- Gassaway, J., Sweatman, M., Rider, C., Edens, K., Weber, M., (2019). Therapeutic recreation outcomes during inpatient SCI rehabilitation. *Therapeutic Recreation Journal*, 53(2), 99–116.
- Stumbo, N., Wilder, A., Zahl, M., DeVries, D., Pegg, S., Greenwood, J., Ross, J. (2015). Community Integration: Showcasing the Evidence for Therapeutic Recreation Services. *Therapeutic Recreation Journal*, 49(1), 35–60.

## Outcome of a Pilot Study for a Chair Yoga Program within Geriatric Psychiatric Care

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**Introduction/Literature Review:** A single-subject mixed-methods approach was used to conduct a pilot study of a chair yoga program within North Baldwin Senior Behavioral. This pilot study was used to determine if chair yoga would be effective in decreasing falls and to improve patient outcomes. Participants were chosen from a census of admitted patients of a 23-bed geriatric psychiatric acute care unit. All participants were required to score at least 10 or higher on the Mini Mental State Examination which signified moderate dementia (Dementia Care Central, 2020). A pre-test using the Senior Fitness Test Battery was conducted of arm curl, chair sit-and-reach and back scratch stretches with post-test scores (Rikli & Jones, 2012). Through comparison of means, it was determined that chair yoga can improve strength and flexibility as well as decrease fall potential in patients who are hospitalized within an acute psychiatric unit.

### Chair Yoga and Geriatric Psychiatric Care

Geriatric psychiatry is the treatment and prevention of diagnoses related to emotional and mental health associated with older adults (American Psychiatric Association, 2022). Among those treatments are non-pharmacological approaches such as recreational therapy. Recreational therapy uses various forms of leisure to focus on well-being through approaches that are holistic including the emotional and physical functioning of the patient (NCTRC, 2022). An intervention that has displayed evidenced-based improvement in individuals who receive psychiatric care is chair yoga. The literature is limited in relation to geriatric psychiatry and chair yoga; however, various studies have displayed success in treating the symptoms associated with mental illness and older adults. Among those symptoms, chair yoga has provided benefits such as improved physical functioning, decreased falls, decrease pain, and well-being (Bonura, 2011; Chobe et al., 2020; Ikai et al., 2017; Sathyanarayanan et al., 2019; Park et al., 2012).

### Chair Yoga and Fall Reduction

Various antipsychotic medications such as benzodiazepines, antidepressants, neuroleptics, and anticonvulsants have had a history of causing falls in older adults (Landii et al., 2005). Fall statistics are higher in inpatient geriatric psychiatric units versus other units in the area of total falls and injuries (Turner et al., 2020). Chair yoga is a form of exercise that can offer the potential to strengthen and improve flexibility in patients with the comfort and safety of a chair for stability (McCaffrey et al., 2019). A study was conducted with 56 inpatient psychiatric patients in Japan utilizing chair yoga as part of their non-pharmacological treatment for a duration of 12 weeks, with improvements noted in strength, flexibility, and quality of life (Ikai et al., 2017). Park, et al. in their study of a chair yoga program's implementation with 34 participants over the age of 65, found improved balance and psychological symptoms

(2014). In a randomized control trial carried out by Tew et al. (2017), a yoga program with older adults displayed more improved scores than the control group on the short physical performance battery after a 12-week period. The chair yoga program group also displayed improved emotional well-being and satisfaction with the program (Tew et al., 2017). A study with 45 women over the age of 64 found evidence that 6 weeks of yoga displayed significant improvements in balance and strength (Koochboomi et al., 2015). A 12-week quasi-experimental study involving yoga intervention with adults over the age of 60, identified improved physical functioning such as strength, flexibility, heart function, and balance within the experimental group receiving yoga intervention (Fan & Chen, 2011).

### **Chair Yoga and Psychosocial Status**

Chair yoga can be beneficial in improving psychosocial functioning in older adults. Chobe et al. (2020) conducted a systematic review of 13 randomized control trials involving yoga to improve cognition and mental health in older adults and found evidence that yoga was helpful in improving these areas. A randomized control trial involving 98 adults over the age of 65 identified improved psychological outcomes such as anger, anxiety, mood, and self-efficacy over the course of 6 weeks of yoga treatment within the control group (Bonura & Tenenbaum, 2014). Bonura and Pargman noted in a comparison study of yoga and chair aerobics with 42 older adults that stress was less prominent over time within the yoga group (2009). Researchers from Florida Atlantic University found in a 12-week pilot study in older adults with various forms of dementia that chair yoga was more beneficial than musical intervention in improving quality of life with continued improvement over the course of the study (Mental Health Weekly, 2019). Park et al. conducted a qualitative study with 31 patients with dementia to determine that yoga displayed a significant quality of life improvement versus 2 other focus groups including increased cognitive function, mobility, mood, and relaxation (2020).

**Program Overview:** This program consisted of modified poses or stretches that were modified for use in a chair by 2 recreational therapists within the program at North Baldwin Infirmary Senior Behavioral Health. The poses or stretches were a consistent set of movements that were repeated during each session which were led by the two recreational therapists that work within the unit. The sessions were held 3 times per week for a duration of 30 minutes. The sessions were held 3 times per week for optimum benefit based upon recommendation from the North Baldwin Infirmary Physical Therapy Department (2020). The study itself was held within the same common area of the unit each time. In conjunction with the stretches, patients present were given the option to choose the imaginary setting for their yoga which was simulated through auditory stimulation from a blue tooth speaker based upon their chosen setting. For example, the beach would include “beach sounds”.

The participants of this pilot study were all patients of North Baldwin Infirmary Health. Of the 11 participants that were followed within this study, 4 were males and 7 were females. The average age was 69.2. The most common admitting diagnosis was neurocognitive disorder followed by Parkinson’s dementia, mood disorder, schizophrenia, and depression. The average length of stay was 13.5 days. The average attendance of patients within these sessions were 4.9.

### **Program Goals:**

1. After participating in chair yoga for at least 3 sessions, patients will display improved strength and flexibility.
2. After active involvement in at least 3 chair yoga sessions, patients will display decreased fall risk as exhibited by lack of fall incidents during hospitalization.
3. After active involvement in at least 3 chair yoga sessions, patients will display improved patient outcomes such as improved mood and attention span.

**Assessment:** Prior to implementation of the program each week, patients were selected to be evaluated with the Senior Fitness Test Battery based upon an MMSE score of 10 or higher (Wilacy, 2017) An initial recreational therapy assessment was conducted with each patient to determine physical ability to participate as well as other factors that might influence involvement. The Senior Fitness Test Battery’s arm curl, chair-sit-and-reach and back-

scratch stretches were used to measure strength and flexibility prior to beginning sessions and repeated when each of these patients were discharged (Langhammer & Stanghelle, 2015). The Senior Fitness Test Battery is a validated instrument that is over 60 years old and has been utilized in various experimental studies (Langhammer & Stanghelle, 2015). The yoga sessions were held 3 times per week for a duration of 30 minutes for 6 weeks. The number of sessions that each participant received varied related to hospitalization length. The same set of chair stretches were utilized during every session. In addition to scores received from the Senior Fitness Test Battery, qualitative data was collected in the form of observation by staff and by patient interviews (Langhammer & Stanghelle, 2015).

**Program Evaluation and Outcomes:** The implementation of this pilot study produced positive results. Of the 11 participants engaged, measurements were taken from the Senior Fitness Battery. The Arm Curls task measured upper body strength by requiring that a patient do bicep curls with 5 lbs of weight for a duration of 30 seconds (Langhammer & Stanghelle, 2015). Of the 11 patients that engaged, the mean of the Arm Curl measurement prior to beginning sessions was 24.3 and upon discharge, the mean increased to 28.82. The Chair Sit-and-Reach stretch measured flexibility of the lower body by measuring the distance a patient displays from their fingers to their toes with a lower score being ideal (Langhammer & Stanghelle, 2015). Upon admission, the mean stretch score was -3.36 and this mean score decreased to -1.90 at discharge. The Back-Stretch is utilized to measure upper body flexibility with a lower score being ideal (Langhammer & Stanghelle, 2015). The mean back-stretch score prior to program was -11.09. The mean of this score decreased to -8.90 upon discharge. All of these measurements display an improvement in upper body strength and flexibility.

Qualitatively, patients were observed during these sessions. Patients were observed to be calmer, more focused, and relaxed after 30 minutes of yoga. When group recreational therapy sessions were provided after the sessions, the groups were more productive, per patients presented as more focused and engaged. Patients also requested copies of the stretches to continue at home.

**Lessons Learned for RT:** This program identified the benefit of a holistic approach to recreational therapy interventions. Within this program, participants engaged in sensory stimulation, mindfulness, decision making, and physical movement. This program can be easily adapted to reflect various populations per the subjects of the study exhibited varying levels of disability. Finally, this program identified the benefit of RT within a behavioral health environment.

## References

- American Psychiatric Association. (2022). *Geriatric psychiatry*. <https://www.psychiatry.org/psychiatrists/practice/professional-interests/geriatric>
- Barradas, G. T., Juslin, P. N., & i Badia, S. B. (2021). Emotional reactions to music in dementia patients and healthy controls: Differential responding depends on the mechanism. *Music & Science*, 4, 205920432110101. <https://doi.org/10.1177/20592043211010152>
- Bonura, K. B. (2011). The psychological benefits of yoga practice for older adults: Evidence and guidelines. *International Journal of Yoga Therapy*, 21(1), 129–142. <https://doi.org/10.17761/ijyt.21.1.j4ll204h12535874>
- Bonura, K. B., & Pargman, D. (2009). The effects of yoga versus exercise on stress, anxiety, and depression in older adults. *International Journal of Yoga Therapy*, 19(1), 79–89. <https://doi.org/10.17761/ijyt.19.1.r4hw87m5x2171588>
- Bonura, K. B., & Tenenbaum, G. (2014). Effects of yoga on psychological health in older adults. *Journal of Physical Activity and Health*, 11(7), 1334–1341. <https://doi.org/10.1123/jpah.2012-0365>
- Chobe, S., Chobe, M., Metri, K., Patra, S. K., & Nagaratna, R. (2020). Impact of Yoga on cognition and mental health among elderly: A systematic review. *Complementary Therapies in Medicine*, 52, 102421. <https://doi.org/10.1016/j.ctim.2020.102421>
- Dementia Care Central. (2020, October 7). *Mini-mental state exam (MMSE) Alzheimer's/Dementia test: Administration, accuracy and scoring*. [www.dementiacarecentral.com](http://www.dementiacarecentral.com)

- Fan, J.-T., & Chen, K.-M. (2011). Using silver yoga exercises to promote physical and mental health of elders with dementia in long-term care facilities. *International Psychogeriatrics*, 23(8), 1222–1230. <https://doi.org/10.1017/S1041610211000287>
- Galoustian, G. (2019, October 14). Chair yoga more effective than music therapy in older adults with advanced dementia. *Mental Health Weekly Digest*. [https://link.gale.com/apps/doc/A602569267/ITOF?u=naal\\_usam&sid=bookmarkITOF&xid=8f8b7c57](https://link.gale.com/apps/doc/A602569267/ITOF?u=naal_usam&sid=bookmarkITOF&xid=8f8b7c57)
- Ikai, S., Uchida, H., Mizuno, Y., Tani, H., Nagaoka, M., Tsunoda, K., Mimura, M., & Suzuki, T. (2017). Effects of chair yoga therapy on physical fitness in patients with psychiatric disorders: A 12-week single-blind randomized controlled trial. *Journal of Psychiatric Research*, 94, 194–201. <https://doi.org/10.1016/j.jpsychires.2017.07.015>
- Jones, C., & Rikli, R. (2002). Measuring functional fitness of older adults. *The Journal of Active Aging*, 24–27. <https://www.dnbnm.univr.it/documenti/OccorrenzaIns/matdid/matdid182478.pdf> Kee
- Koohboomi, N., Norasteh, A., & Samami, N. (2015). Effect of yoga training on physical fitness and balance in elderly females. *University of Social Welfare & Rehabilitation Sciences*, 10(3), 26–35. <https://doaj.org/article/38878473341d49f99c6c4774f878b25d>
- Landi, F., Onder, G., Cesari, M., Barillaro, C., Russo, A., Bernabei, R., & Silver Network Care Study Group. (2005). Psychotropic medications and risk for falls among community-dwelling frail older people: An observational study. *Journal of Gerontology: A Biosocial Science Medical Science*, 60(5), 622–626. doi: 10.1093/gerona/60.5.622
- Langhammer, B., & Stanghelle, J. (2015). The senior fitness test. *Journal of Physiotherapy*, 61, 163. [https://www.researchgate.net/publication/277604612\\_The\\_Senior\\_Fitness\\_Test](https://www.researchgate.net/publication/277604612_The_Senior_Fitness_Test)
- Lindahl, E., Tilton, K., Eickholt, N., & Ferguson-Stegall, L. (2016). Yoga reduces perceived stress and exhaustion levels in healthy elderly individuals. *Complementary Therapies in Clinical Practice*, 24, 50–56. <https://doi.org/10.1016/j.ctcp.2016.05.007>
- Lindsey, P. L. (2009). Psychotropic medication use among older adults: What all nurses need to know. *Journal of Gerontological Nursing*, 35(9), 28–38. <https://doi.org/10.3928/00989134-20090731-01>
- McCaffrey, R., Taylor, D., Marker, C., & Park, J. (2019). A pilot study of the effects of chair yoga and chair-based exercise on biopsychosocial outcomes in older adults with lower extremity osteoarthritis. *Holistic Nursing Practice*, 33(6), 321–326.
- Moonaz, S., Bingham C., Wissow, L., Bartlett, S. (2015). Yoga in sedentary adults with arthritis: Effects of a randomized controlled pragmatic trial. *Journal of Rheumatology*, 45(7), 1194–1202.
- NCTRC. (2022). *About recreational therapy*. [www.Nctrc.Org](http://www.Nctrc.Org). <https://www.nctrc.org/about-nctrc/about-recreational-therapy/>
- Park, J., Howard, H., Tolea, M. I., & Galvin, J. E. (2020). Perceived benefits of using nonpharmacological interventions in older adults with Alzheimer's disease or dementia with Lewy Bodies. *Journal of Gerontological Nursing*, 46(1), 37–46. <https://doi.org/10.3928/00989134-20191217-01>
- Park, J., McCaffrey, R., Newman, D., Cheung, C., & Hagen, D. (2014). The effect of sit 'n' fit chair yoga among community-dwelling older adults with osteoarthritis. *Holistic Nursing Practice*, 28(4), 247–257. <https://doi.org/10.1097/HNP.0000000000000034>
- Park, J., McCaffrey, R., Newman, D., Liehr, P., & Ouslander, J. G. (2017). A pilot randomized controlled trial of the effects of chair yoga on pain and physical function among community-dwelling older adults with lower extremity osteoarthritis. *Journal of the American Geriatrics Society*, 65(3), 592–597. <https://doi.org/10.1111/jgs.14717>
- Park, J., Tolea, M. I., Sherman, D., Rosenfeld, A., Arcay, V., Lopes, Y., & Galvin, J. E. (2020). Feasibility of conducting nonpharmacological interventions to manage dementia symptoms in community-dwelling older adults: A cluster randomized controlled trial. *American Journal of Alzheimer's Disease & Other Dementias*, 35, 153331751987263. <https://doi.org/10.1177/1533317519872635>
- Santos, J., Martins, S., Azevedo, L., & Fernandes, L. (2020). Pain as a risk factor for suicidal behavior in older adults: a systematic review. *Archives of Gerontology and Geriatrics*, 87, 1–10. <https://www-sciencedirect.com.libproxy.usouthal.edu/science/article/pii/S0167494319302432>
- Sathyanarayanan, G., Vengadavaradan, A., & Bharadwaj, B. (2019). Role of yoga and mindfulness in severe mental illnesses: A narrative review. *International Journal of Yoga*, 12(1), 3. [https://doi.org/10.4103/ijoy.IJOY\\_65\\_17](https://doi.org/10.4103/ijoy.IJOY_65_17)

- Tew, G. A., Howsam, J., Hardy, M., & Bissell, L. (2017). Adapted yoga to improve physical function and health-related quality of life in physically-inactive older adults: A randomised controlled pilot trial. *BMC Geriatrics*, 17(1), 131. <https://doi.org/10.1186/s12877-017-0520-6>
- Turner, K., Bjarnadottir, R., Jo, A., Repique, R. J. R., Thomas, J., Green, J. F., & Staggs, V. S. (2020). Patient falls and injuries in U.S. psychiatric care: Incidence and trends. *Psychiatric Services*, 71(9), 899–905. <https://doi.org/10.1176/appi.ps.202000004>
- Wilacy, H. (2017). *Mini mental state examination*. Mental Health Psychiatry. Patient. <https://patient.info/doctor/mini-mental-state-examination-mmse>
- Wiles, A., Van Puymbroeck, M., Crowe, B., & Schmid, A. (2021). An investigation into the use of yoga in recreational therapy practice. *Therapeutic Recreation Journal*, 55(1). <https://doi.org/10.18666/TRJ-2021-V55-I1-10145>
- Yao, C.-T., & Tseng, C.-H. (2019). Effectiveness of chair yoga for improving the functional fitness and well-being of female community-dwelling older adults with low physical activities. *Topics in Geriatric Rehabilitation*, 35(4), 248–254. <https://doi.org/10.1097/TGR.000000000000024>

## Teletherapy or Just “Therapy”? Lessons Learned from Working Remotely with Students with Autism Spectrum Disorder During Covid-19 School Closures

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**Program Overview:** The sudden closure of brick-and-mortar public schools due to COVID-19 thrust school-based therapists into the world of teletherapy with little or no training. We were especially concerned for how our students with autism spectrum disorder (ASD) would respond to the abrupt changes, given that social interaction deficits are a key diagnostic feature for ASD (American Psychiatric Association, 2013) and the significant psychiatric comorbidities of ASD for depression and anxiety (Hofvander et al., 2009). Interventions in school-based settings develop routines, support transitions, and increase social engagement and skills for reading social cues. Everything had changed, and there were already reports of “Zoom fatigue”, the cognitive drain of trying to read social cues from faces in small boxes on a computer screen (Sklar, 2020). Our teletherapy program for students with ASD provided a Zoom session invite letter each week with three parts: (1) the same meeting time each week with simple directions for entering Zoom sessions independently, (2) photos and links to enjoyable, attractive activities, and (3) engaging with family and mentioning that there was no pressure—we just hoped they would connect with us and check in on a weekly basis.

**Program Goals:** The initial goal was to connect with our students using the new mode of service delivery, even if it was brief attendance to say “hi.” After a few sessions, we set goals for higher levels of social engagement: (1) story telling about something fun they’d done, (2) showing something interesting and appropriate (e.g., a screen shot of a video game they liked, showing us a virtual background on Zoom), (3) making a plan to interact with others through a remote platform, (4) using Zoom to improve turn-taking skills, and (5) developing a sense of belonging and a support.

**Assessment:** After assessing the current, individual needs of our students, we collaborated with families to continue services on a distance-learning platform. Our students with ASD attended our sessions at the highest rate of any of our students. While Zoom may have been draining for us, our students were comfortable with the evened social playing field found online. It’s difficult to talk over each other on Zoom, so our students improved at conversational turn-taking. They talked about recreation interests at each session and computer use, which was on-topic because everyone was sitting in front of a computer. We learned intricate ways to use Zoom from our students! And we got to know more of the whole child from seeing favorite posters, books, pets, and other sentimental items in their homes. Students voluntarily stayed in the sessions for up to three hours and joined

multi-player activities together. They enjoyed the new activities so much that they discussed meeting to play them in person when social distancing ends.

**Lessons Learned for RT:** During these unprecedented times, an online therapy platform represents a new frontier for RTs. Teletherapy adds a new tool in the toolbox for RTs to reach clients and improve outcomes. We began our journey thinking of Zoom sessions as “teletherapy” and worried about our students with ASD. We ended up thinking of Zoom as just “therapy,” where students became comfortable socially engaging and planning to generalize to in-person settings. Implications for RT include continued use of Zoom platforms, even after we are meeting again in-person.

### References

- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). American Psychiatric Publishing.
- Hofvander, B., Delorme, R., Chaste, P., Nydén, A., Wentz, E., Ståhlberg, O., & Leboyer, M. (2009). Psychiatric and psychosocial problems in adults with normal-intelligence autism spectrum disorders. *BMC Psychiatry*, 9(35), 1–9. <https://doi.org/10.1186/1471-244X-9-35>
- Sklar, J. (2020). *Zoom fatigue is taxing the brain. Here's why that happens.* <https://www.nationalgeographic.com/science/2020/04/coronavirus-zoom-fatigue-is-taxing-the-brain-here-is-why-that-happens/>