Spring 5-14-2021

Stepping On Fall Prevention Project

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A doctoral project submitted in partial fulfillment
of the requirements for the

Doctor of Physical Therapy

Department of Physical Therapy
School of Integrated Health Science
The Graduate College

University of Nevada, Las Vegas
May 2021

UNLV | GRADUATE COLLEGE

Doctoral Project Approval

The Graduate College
The University of Nevada, Las Vegas

May 14, 2021

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entitled

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is approved in partial fulfillment of the requirements for the degree of

Doctor of Physical Therapy
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Abstract

Background: Falls are a major problem in the United States among the older adult population and provide opportunity for community outreach via student-led physical therapy projects.

Objective: The purpose of this project was to investigate the relationship between fall related outcome measures and questionnaires with the completion of the Stepping On Fall Prevention program along with evaluating the benefits of Physical Therapy student development with participation in service learning projects.

Methods: The research quantified the fall risk of 13 participants with assessment of: gait speed (Timed Up and Go), lower extremity strength (30-Second Chair Stand), balance (4-Stage Balance Test), and psychological factors (Stay Independent Questionnaire, Falls Efficacy Scale-International, and Geriatric Depression Scale).

Results: Of the functional measures, significant improvements were observed in the Timed up and Go (TUG) (Δ1.72s ± 1.66, p=0.003), the 30-second chair stand (Δ4.54 ± 4.27, p= 0.002), Stage 4 of the 4-Stage Balance Test (Δ3.37s ± 3.26, p= 0.003), and the Stay Independent questionnaire (Δ1.77 ± 2.52, p=0.026).

Conclusion: Stepping On demonstrated improvements in gait speed, strength, and balance. These improvements allow older adults to improve their overall safety in both their own homes and the community. More research is needed to evaluate the psychological benefits of completing Stepping On. Furthermore, service learning project opportunities should become more of a standard practice across physical therapy programs.

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Introduction

Every 19 minutes an older adult dies from a fall (Brody, 2019). Falls continue to be a major problem in the United States where more than one in four older adults age 65 and older experience a fall every year (*Important Facts about Falls CDC*, 2019). According to the CDC, fall-related injuries result in over 800,000 hospitalizations a year, most commonly for hip fracture (*Important Facts about Falls CDC*, 2019) and traumatic brain injury (Jager, Weiss, Coben, & Pepe, 2000). In 2015, fall-related healthcare costs in the United States totaled more than $50 billion (Florence, Bergen, Atherly, Burns, Stevens, & Drake, 2018).

Many of those who experience a fall will develop a fear of falling which is correlated with a self-imposed reduction in activity, balance impairments, gait deformities, and poor cognitive health (Vellas, Wayne, Romero, Baumgartner, & Garry, 1997). Gait is a complex task that requires sensory, motor, and cognitive functions to be intact. Cognitive deficits, specifically depressive symptoms, can lead to unsteadiness and increased fall risk (Iaboni & Flint, 2013). The Stepping On (SO) falls prevention program is an evidence-based program that is supported by the Wisconsin Institute for Healthy Aging and promoted by the National Council on Aging. The program confronts fall risk holistically by addressing strength and balance deficits as well as bringing awareness to other factors that increase the risk of falls. Previous research has shown that SO leads to a 31% reduction in falls (Clemson, Cumming, Kendig, Swann, Heard, & Taylor, 2004).

The goal of SO is to enable community-dwelling older-adults to remain living independently as long as possible. The program consists of 2-hour workshops for 7 consecutive weeks, covering strength and balance exercises as well as information about how certain medications, improper footwear, and home hazards can contribute to falls (Clemson & Swann,

2007). In addition to helping those who have recently fallen, it also increases confidence and independence in those at risk for falls (Clemson & Swann, 2007). Community-based programs, such as SO, are three times more cost effective than placing an older adult in a nursing home (Sandoval, 2016). The format of the workshops encourages a group learning environment that provides the participants with social support and a community striving for the same goal (Clemson & Swann, 2007). Among people who fall, 30% will lose the confidence to go out into the community, leading to social isolation, loss of strength, decreased balance, and additional falls (Clemson et al., 2004).

The need for such a program is particularly important in the state of Nevada which has the fastest growing older adult population in the nation with 397,474 people 65 years old and older in 2016. According to the Nevada Commission on Aging Elder Issues Report, this number is expected to grow to over 1 million within the next 15 years (Sandoval, 2016). With the rising number of older adults in Nevada, more programs such as SO, need to be provided.

Our project is unique in that it incorporated aspects of both traditional research and service-learning. In the research aspect of our project we aimed to identify additional benefits of SO through objective measures and questionnaires pertaining to fall risk that are not incorporated in the original SO program. The service-learning component of SO addressed UNLV DPT curriculum guidelines which state: "Students will be able to identify a community need for a service-learning project and use research methods to support the justification for and development of a service-learning project" (Turner, 2019).

The value of service-learning projects has been widely recognized by various researchers in the past. Neurerer and Rhodes suggest that service-learning, "serves as a vehicle for connecting students and institutions to their communities and the larger social good, while at the

same time instilling in students the values of community and social responsibility" (Neururer & Rhoads, 1998). Other researchers have also found that students who participate in service-learning projects are, "more tolerant, altruistic, and culturally aware; have stronger leadership and communication skills; and... have stronger critical thinking skills than their non-service-learning counterparts" (Mitchell, 2008). As current Doctor of Physical Therapy students and future healthcare clinicians, participating in an evidence-based fall prevention service-learning project incorporates the previously mentioned values, and prepares us to embody the core values set forth by the American Physical Therapy Association: accountability, altruism, collaboration, compassion/caring, excellence, integrity, professional duty, and social responsibility.

The overall aim of this project was to observe if the implementation of the Stepping On fall prevention program could decrease fall risk in factors with limited research, such as depression and confidence. The secondary aim was to reflect on the experience of student participation in a service-learning project directed towards decreasing fall risk in older adults in the greater Las Vegas community.

Methods

IRB approval was obtained from UNLV. All data obtained throughout the course of the project was stored in a locked cabinet on UNLV's campus.

Service-Learning

Before the start of the program in March of 2019, all student investigators participated in a SO leader training provided by the Nevada Goes Falls Free Coalition. This consisted of a 3-day orientation consisting of strategies and techniques on how to implement a successful SO program for older adults in the Las Vegas community. We were trained on proper exercise instruction, teaching techniques such as storytelling, facilitating group discussion, and how to involve local guest experts from the community to provide additional insight on fall risk for program participants. At the conclusion of the training program, we met the requirements needed to become official SO leaders, with the ability to conduct a SO Fall Prevention Program within the state of Nevada.

Frequent reflection is a pivotal component of service-learning projects, which provide opportunities for professional growth. For the SO service-learning project, participant reflections and testimonials, along with student investigator reflections, were gathered over the duration of the program. This was accomplished through written statements and group discussions. Participant feedback was collected at the end of the program to guide future studies on the effectiveness of the SO program. Participant testimonials were gathered from the participants during weekly group discussions throughout the course of the program. Formal student reflections were completed during landmark events throughout the project (See Table 1), focusing on the APTA core values: accountability, altruism, collaboration, compassion/caring,

excellence, integrity, professional duty, and social responsibility. These reflections provided opportunities for our growth as DPT students, Stepping On leaders, and future clinicians.

Table 1: Timeline and Corresponding Event for Each Reflection

Formal Reflection	Leader Training Reflection	Pre-SO Reflection	Cleveland Clinic Screening Reflection	Post-Program Reflection
Date Completed	3/4/19	9/20/19	9/26/19	11/22/19
SO: Stepping On				

Participant Recruitment

Per guidelines of SO, participants were deemed appropriate for the program based on the following criteria: ≥ 60 years of age, have fallen in the past year or have a fear of falling, walk independently, are cognitively intact, live in their own home or independent living facility, and speak conversational English (Clemson & Swann, 2007). Recruitment of participants took place at fall screening events located at the Cleveland Clinic Medical Center on National Falls Prevention Awareness Day, September 23, 2019, Osher Lifelong Learning Institute at UNLV (OLLI) on September 20, 2019 and Downtown Senior Center in Henderson (DSC) on September 27, 2019. For the three events, internal marketing including flyers, word-of-mouth, and email were used to recruit participants. We implemented the STEADI (Stopping Elderly Deaths and Injuries) Tool Kit, created by the CDC, during each fall screening event to determine the fall risk of each participant. Although not directly created for SO, the tool kit applies the American and British Geriatric Societies clinical practice guidelines to "screen, assess, and intervene to reduce

fall risk" (Public Health Foundation, n.d.). The STEADI toolkit contains functional assessment measures which were utilized to determine appropriateness for SO. In total, over 250 older adults were screened for fall risk, of which 32 became participants in SO.

Intervention

The SO program consists of:

Pre-SO - Participants were assessed for fall risk via questionnaires and functional outcome measures.

Session 1 - An introduction and overview of the program was given. A physical therapist taught participants exercises that emphasized lower extremity strength and balance. The participants were given exercise logs to track compliance with these exercises each week.

Session 2 - Participants were taught how to use assistive devices (AD) and were provided education on safety alarm systems.

Session 3 - Clothing and other potential home hazards were analyzed. Participants were given an assignment to assess hazards in their own homes.

Session 4 - Participants were educated on vision and footwear, and their relation to fall risk. Participants were given an assignment to bring in personal footwear to be analyzed in class. A guest optometrist provided additional education on how vision can affect fall risk.

Session 5 - Participants were taught about bone health, medications, sleep, and their relation to fall risk. Participants were given a handout to keep a list of all their medications. A guest pharmacist led a discussion on the relationship between medications and fall risk as well as the importance of keeping a medication list.

Session 6 - Participants were educated about hip protection and navigating adverse weather conditions. A guest expert on community safety provided education on how to safely navigate busy streets and prepare for adverse events within the community.

Session 7 - Participants were educated on communicating with health care professionals and community experts, as well as closing remarks and farewells. A guest physical therapist provided follow-up instruction on the prescribed exercises and was able to answer any questions that the participants had.

Post-SO: Participants were re-tested using questionnaires and test measures from Pre-SO to evaluate their progress over the course of the program.

3-Month Follow Up: Participants were given the opportunity to review exercises and discuss their progress since completing the program. A presentation on health wearables was provided to the participants, based on popular votes of interesting topics.

A display board was created to highlight the topic of discussion for each week with examples of tools relevant to decreasing fall risk. Some examples included various assistive devices, home safety tools, and safe versus unsafe clothing. Each session, participants were encouraged to engage in group discussion about changes that they had made or planned to make based on knowledge gained through SO.

Guest experts were incorporated into various sessions of the class to emphasize the importance of certain fall risk factors. These guest experts include a physical therapist, a pharmacist, a vision expert, and a community safety expert. To maintain fidelity to SO, the seven-week program and the 3-month follow-up booster session was not altered. Participants

were required to attend 5 total sessions throughout the course of the program to be included in the data analysis.

Our project included two additional sessions where measures of strength, balance, frequency of depression, and fear of falling were obtained. The first additional session, "Pre-SO", occurred one week before the first class of SO. The second additional session, "Post-SO", occurred after the last class. During these two additional sessions, the following was administered to each participant: three physical tests; the TUG, the 30-Second Chair Stand, and the 4-Stage Balance Test, and three surveys; Falls Efficacy Scale-International (FES-I), Geriatric Depression Scale-short form (GDS-sf), and Stay Independent Questionnaire. Each questionnaire and outcome measure were administered in varying order. Each student investigator was assigned to administer the same outcome measure at Pre- and Post-SO.

Table 2: Timeline of Each Stepping On Session

	Pre-SO	**Session 1**	**Session 2**	**Session 3**	**Session 4**	**Session 5**	**Session 6**	**Session 7**	**Post-SO**
OLLI	9/20/19	9/27/19	10/4/19	10/11/19	10/18/19	11/1/19	11/8/19	11/15/19	11/15/19
DSC	9/27/19	10/4/19	10/11/19	10/18/19	11/1/19	11/8/19	11/15/19	11/22/19	11/22/19

OLLI: Osher Lifelong Learning Institute at UNLV
DSC: Henderson Downtown Senior Center
SO: Stepping On

Data Collection

The TUG, 30-Second Chair Stand test, and the 4-Stage Balance Test were used to measure participants' strength and balance. The TUG assesses functional mobility by measuring the time it takes a participant to stand from a chair, walk 3 meters around a cone, return to the chair, and sit down. The TUG has been found to predict the risk of falls in older adults with a sensitivity and specificity of 87% (Shumway-Cook, Brauer, & Woollacott, 2000). The 30-Second Chair Stand assesses leg strength and endurance in older adults by recording the number of sit to stands completed in 30 seconds. The 30-Second Chair stand has age-based normative data with inverse relationships between performance and age (Jones, Rikli, & Beam, 1999). The 4-Stage Balance Test assesses static balance through four standing positions including romberg, semi tandem, tandem, and single leg stance with an estimated reliability of 0.66 (Rossiter-Fornoff, Wolf, Wolfson, & Buchner, 1995).

The FES-I, GDS-sf, and Stay Independent were the subjective questionnaires used to assess patient fear of falling, depression, and perception of fall risk. The FES-I questionnaire is composed of 16 items that measures fear of falling and balance confidence in older adults. The FES-I score ranges from a minimum score of 16 (no concern about falling) to a maximum score of 64 (severe concern about falling). The FES-I correlates the fear of falling to a functional decline in the older population (Tinetti et al., 1990). The GDS-sf is a 15-item questionnaire used to detect depression in older adults (Sheikh & Yesavage, 1986). A score of 0 to 5 is normal (>5 suggests depression, and >10 is almost always indicative of depression). Stay Independent is a 12-item questionnaire used to quantify fall risk in the older adult population. The maximum score is 14 with a score of ≥4 suggesting an increased risk for falls.

Statistical Analysis

All data was analyzed using the SPSS statistical package (SPSS® ver. 26.0, IBM Corp., NY, USA). Prior to conducting the statistical analysis, an alpha level of 0.05 was selected. Paired samples *t*-tests were used to compare baseline and Post-SO scores of the six outcome measures.

Results

There were 32 people recruited to participate in the Stepping On Fall Prevention program between the three designated locations. All 32 participants completed questionnaires and physical measures during Pre-SO. By the end of SO, 13 participants had met the requirements of attending a minimum of 5 sessions as well as completion of the Post-SO outcome measures to be included in the analysis. The remaining 19 participants were excluded due to not meeting these attendance requirements, limited transportation resources, or other factors.

Significant performance improvements were found in the TUG (Δ1.72s ± 1.66, p=0.003), 30-second chair stand (Δ4.54 ± 4.27, p= 0.002), and stage 4 (single leg stance) of the 4-Stage Balance (Δ3.37s ± 3.26, p= 0.003). Of the questionnaires, only the Stay independent significantly improved (Δ1.77 ± 2.52, p=0.026). (See Table 3)

Table 3: Analysis of Physical Outcome Measures and Subjective Questionnaires

	Pre-SO	**Post-SO**	**∆Pre - Post SO**	**∆ Std. Deviation**	**P-value**
Timed Up and Go	12.08s	10.36s	-1.72s	1.66	0.003
Stage 1 Balance (Romberg)	10.00s	10.00s	0.00s	0.00s	0.000
Stage 2 Balance (Semi-tandem)	10.00s	10.00s	0.00s	0.00s	0.000
Stage 3 Balance (Tandem)	6.87s	8.64s	+1.77s	3.53s	0.096
Stage 4 Balance (Single Leg Stance)	2.44s	5.81s	+3.37s	3.26s	0.003
Chair Stand	6.00 reps	10.54 reps	+4.54 reps	4.27	0.002
Geriatric Depression Scale	2.50	1.00	-1.50	3.70	0.476
Falls Efficacy Scale-International	26.27	26.18	-0.09	2.34	0.900
Stay Independent	5.77	4.00	-1.77	2.52	0.026
SO: Stepping On					

Participant Reflection

Throughout the program, participant feedback was collected regarding their SO experience. It was astonishing to hear that every single participant had at least one fall story, with

many that had fallen on a regular basis. These falls ranged from mild to severe repercussions. One participant told the group how a fall left them with a painful tailbone, a concussion, severe neurological issues, and a debilitating fear of falling. Another participant commented, “a fall in the state I’m in now would be it.” A third participant stated that, “the fire department had to break into my home three times to rescue me from the floor after a fall, before I moved states to live with my daughter.” Falls can significantly alter someone’s lifestyle which was apparent when a participant shared, “I haven’t driven in 6 months because I’m scared to go anywhere after my fall.” Talking about these experiences emphasized the psychological and physical toll of falls. The SO program worked as a support group, where participants were able to share their own stories and bond over mutual experiences.

A frequent topic of discussion among participants were their past experiences with medical providers. Many of them felt unheard and were not provided the care that they deserved. They believed that their care was generalized, rather than receiving an individualized care plan and proper provider education. Participants had positive feedback regarding the community experts, including comments such as, “The professionals that came in were very helpful… This is one of the best classes I've taken.” The disconnect in information pertaining to their health was apparent during a discussion focused on vitamin intake. One participant shared that they thought they had been receiving sufficient Vitamin D, but after learning how to properly read a Vitamin label from a pharmacist they realized they were not taking the correct amount. As SO leaders, we ensured that when we provided education, a rationale and real-life application was always provided.

Participants created positive habits by incorporating the exercises into their daily routines. During group discussion, one participant commented on their physical abilities stating,

"The front of my legs feel much stronger and much more toned… I'm going to print out a bunch of the exercise logs for after the program." This prompted many other participants to follow suit. Another participant stated that the exercises were fully integrated into their lifestyle as they performed balance exercises while cooking, walking around the house, brushing their teeth, and even while watching television. As a result of SO, many participants felt stronger and more confident in completing tasks that they could not prior to the program. Many referred back to the education they received on proper stair negotiation with the phrase, "up with the good, down with the bad." One participant wrote, "Ever since my knee replacements, I had trouble getting one foot in front of the other, but I feel like it's been getting much better… I feel more confident than I have since my fall thanks to you guys."

As a result of learning how to mitigate fall risk, through identification of home hazards, numerous participants made modifications to increase safety such as removing area rugs, adding lighting in dimly lit areas, installing non-slip pads, disposing of unsafe footwear, and installing grab bars in the bathroom. One participant voiced, "I had been using a towel rack as a handle for many years and am thankful that it never gave out on me." It was empowering to hear that participants saw great benefit in SO and were able to incorporate what they had learned into their everyday lives.

Student Reflections

Student investigators participated in personal reflections throughout the implementation of the SO program. The reflections were completed post-leader training, prior to beginning the program, after the screening event, and at the completion of the program. Each student reflection focused on encompassing specific APTA core values, as outlined in Table 4.

Table 4: Student Reflections

APTA Core Values	Student Reflections	Corresponding Event
Compassion/ Caring	There were many participants with gait impairments and neurological pathologies that I had only seen in textbooks. Getting to see these people in person is much more helpful in learning and understanding how these individual's function.	Leader Training Reflection
Integrity	The Stepping On program has to be carried out as outlined in the manual to maintain the integrity of the program and ensure that the participants will fully reap the benefits it has to offer. The home exercises utilized by the program are explained to the participants on how each exercise can help prevent falls and how to integrate it into their daily routines.	Leader Training Reflection
Duty	Beyond my reach as a physical therapist, there are even larger populations of people that aren't receiving the care, instruction, and knowledge needed to live at the highest level of function...Through the Stepping On program, we can help this population gain the skills and knowledge they need to hopefully prevent falls from ever occurring. Through instruction on balance, gait, flexibility, strengthening, medication awareness, and others, we can be a guide in allowing our elderly to live a more fulfilling life	Pre-Stepping On Reflection
Collaboration	There were specific instances where I think each group member stepped up and went above the call of duty. Looking back on this session helped me truly understand the value of working as a team. I feel like each of our group members bring different strengths to the class, and when we are able to utilize those strengths, the overall outcome will be much greater. Today helped me learn that whatever team setting we interact in in life, if we are able to recognize not only our strengths, but our weaknesses as well, we can better learn to lean on others when needed, and be able to step up when called upon.	Pre-Stepping On Reflection
Social Responsibility	I've never been a part of an event of that magnitude involving the older adult population. It was a truly humbling experience to be a part of an event that touched so many lives. Not only was it cool to see an organization like Cleveland Clinic put on an event like this, but it was even cooler to see so many older adults that either recognized themselves or had family members that recognized the importance of participating in a fall and memory screening...I think this screening event helped me realize how important the Stepping On fall prevention program truly is. This program provides great tools to help older adults be able to live their best life and implement different strategies to help them prevent potentially life-altering falls.	Cleveland Clinic Screening Reflection
Altruism	The fall prevention screening event was exactly what I needed to remind myself why I went into the field in the first place. I enjoyed working with so many different people and getting to know them all. Although I only got to talk to the participants for a short amount of time, I felt very connected to them and invested in their journey to better their lives.	Cleveland Clinic Screening Reflection
Accountability	As a group, we consistently strived for excellence during the planning, execution, and write up of this project. For example, we would meet up as a group with Dr. Nash after the first few weeks of the program and would brainstorm on how we could be better. We all recognized our strengths and weaknesses and worked together to help each other better ourselves as well as the execution of the program.	Post-Program Reflection
Excellence	One of the greatest compliments I received during this program was when a participant said that,"even though us as participants have seen a lot of changes in ourselves, we've noticed as well how much you all as leaders and teachers have progressed as well."	Post-Program Reflection

Discussion

The overall aim of this project was to observe if the implementation of the Stepping On Fall Prevention Program could show significant improvements in well-known objective measures and questionnaires related to fall risk. We observed that SO participants experienced significant improvements in the TUG, 30-second chair stand, and 4-stage balance test. Of the three questionnaires, improvements were only seen in the *Stay Independent.* Improvements in the TUG, 30-second chair stand, and 4-stage balance, suggest that participants who completed the Stepping On program will in turn have improved their gait speed, leg strength, and standing balance, as demonstrated in previous research (Clemson et al., 2004). Improvements in these three areas allow these older adults to improve their overall safety in both their own homes and the community. Improvements in Stay Independent score suggest a decreased fall risk. Decreasing the number of falls in older adults will lead to increased independence in the older adult population, decreased traumatic injuries leading to hospitalizations, and decreased overall fall-related healthcare costs.

At completion of SO, the average TUG time among participants was reduced from 12.08 seconds to 10.36 seconds. This finding is comparable to a study done by Jehu, Paquet, and Lajoie that took 44 participants and placed them in a 5-week balance and mobility training program, balance and mobility plus cognitive training, or no training. It was found that a decrease in TUG time by 0.8 seconds is clinically significant to improve functional mobility (Jehu, Paquet, & Lajoie, 2017). According to the CDC, a TUG score of ≥ 12 seconds indicates an increased risk for falls (Bischoff, Stähelin, Monsch, Iversen, Weyh, von Dechend, Akos, Conzelmann, Dick, & Theiler, 2003). A significant improvement was seen in the 30-second chair stand with the group average increasing to 11 from 6 repetitions performed; however, this is still below the normal

values for people of this age and gender (Jones et al., 1999). Overall significant improvements were also observed in stage 4 (single leg stance) of the 4-Stage Balance Test, yet, some participants were still at an increased fall risk since they were unable to maintain a tandem stance (stage 3) for 10 seconds (Phelan, Mahoney, Voit, & Stevens, 2015). Per CDC recommendations, a Stay Independent Questionnaire score greater than 4 indicates increased risk for falls. The average score of our participants decreased from 6 to 4, reducing their risk for falls.

The secondary aim for this project was to reflect on the experience of student participation in a service-learning project, such as SO. Performing frequent reflection throughout the course of the program provided numerous opportunities for growth as people, as well as future clinicians. We were given the opportunity to demonstrate altruistism by leading an intervention to address a main concern in the older adult population. It showed the duty that healthcare providers have to educate the public about information that improves wellness and quality of life. Although this program was directed at the older adult population, we gained knowledge that can be applied to our own lives and our future patients. In our future careers, practicing frequent reflection allows us to not only recognize our strengths, but more importantly, identify areas of improvement. This will result in better patient outcomes and quality care.

Limitations

The study, however, is not void of limitations. The participants were recruited through the internal marketing of three different facilities in Las Vegas, Nevada. It was later discovered that participants at the DSC location were attending other fitness-related classes throughout the week. This may have affected their overall compliance to the SO exercise program due to a possible feeling of sufficiency in the exercise performed in other settings. Since the program was

implemented in Nevada, the participants were given a week off in the middle of the eight-week study in observation of Nevada Day. Not all of our subjects attended every session which could be a factor in the observed varying levels of change in participant outcomes. The high attrition rate and varying participant improvement we observed could be attributed to the requirement of attending 5/9 sessions, the weekly time commitment, and limited transportation resources. This prevented some participants from being included in the analysis. Completing all components of the SO program has been shown to reduce falls (Clemson et al., 2004). Some participants did not fully complete the GDS and FES-I questionnaires, resulting in their data being omitted from the GDS and FES-I analysis.

Conclusion

This research has shown that completion of the Stepping On Fall Prevention Program led to significant improvements in TUG, 30-Second Chair Stand, stage 4 (single leg stance) of the 4 Stage Balance Test, and the Stay Independent Questionnaire. As a result of these findings, we can conclude that the SO Program facilitates increased leg strength, gait speed, single leg balance, and a decreased perceived fall risk. Each of these components play a significant role in decreasing fall risk in older adults. Additional research is required to evaluate the effects of the program on the participant's frequency of depression and its relation to fall risk. Future studies should work to confirm the initial findings of the current study, further evaluate the psychological effects related to completion of the SO program, and develop strategies to increase participant retention throughout the length of the program. Based on the findings of this study, the Stepping On Fall Prevention Program should be recommended to community-dwelling older adults that are identified as being at increased risk for falls.

Participation in the SO service-learning project led to the development of APTA core values including compassion, duty, social responsibility, and excellence. This project granted opportunities for personal growth and reflection through meaningful interactions with people of diverse backgrounds in the local community. Incorporating these core values into our future practice as physical therapists will lead us to becoming exceptional clinicians and representatives of our profession in the community. Student physical therapists will benefit from the inclusion of service-learning projects within the DPT curriculum to elevate the profession and provide experiences that cannot be obtained in a traditional research setting.

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