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# Aerobic Physical Exercise Increases the Health-Related Quality of Life in Older Adults

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# Aerobic Physical Exercise Increases the Health-Related Quality of Life in Older Adults

A Scholarly Project Presented to the Faculty of the School of Nursing

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Abstract

**Problem Description:** Globally, the older adult population is expected to substantially increase in number throughout the next few decades. The aging process causes the body and mind to undergo many detrimental changes. Typically, older adults succumb to a more sedentary lifestyle due to factors such as decreased musculature and skeletal changes, chronic pain, socioeconomic and psychological stressors, and memory changes. Inevitably, health-related quality of life and overall independence dwindles in this population negating their perception of happiness and life satisfaction. There is significant research on preventing and/or managing cognitive disabilities in the older adult; however, Western medicine approaches, such as prescription medications are unsuccessful in reducing cognitive decline. Research suggests that engaging in routine physical exercise is an alternative, cost-effective method to reduce the effects of aging, cognitively and physically.

**Interventions:** An aerobic walking program was instituted in an Assisted Living Facility, where most of the older adults had begun to lead sedentary lifestyles. Older adults (>60 years) with mild cognitive impairments and decreased quality of life factors were invited to join the walking program. The residents were asked to walk a minimum of three times per week for 30 minutes over a five-month period. A walking log and the National Institutes of Health endorsed Cognitive and Positive Affect/Well-Being short form surveys were completed by the residents at specific time intervals throughout the project assessing whether improvement in cognitive abilities and quality of life factors occurred with increased physical activity.

**Results:** Initially, 28 residents volunteered to participate in the walking program. Illness and personal reasons caused six residents to drop out, resulting in 22 active participants. A paired t-test, using a confidence interval of 95%, was used on the Cognitive short form survey results at

project start and end. The mean values of all eight variables significantly increased over the course of the project ($p < 0.001$). Pearson's Correlation Coefficient test was used to identify strengths in the relationship between minutes walked each month and the Positive Affect/Well-Being survey variables. By engaging in routine, aerobic physical activity, all residents gained significant improvements in their cognitive factors and health-related quality of life factors.

**Interpretation:** In this project, aerobic walking significantly improved cognitive domains, such as concentration, reading comprehension, thinking speed, managing time, planning activities, and learning new instructions and/or tasks. Although this project was of short duration, the results substantiated that maintaining active lifestyles is necessary for older adults to preserve independence, combat cognitive deterioration, while sustaining happiness and life satisfaction in both physical and cognitive realms.

**Conclusions:** Older adults, who keep physically and mentally fit as they age, enjoy longer, healthier, happier lives. Health care systems will benefit from decreased health care costs. Providers will benefit by not enduring patient-load strain. Families/caregivers will experience less financial and emotional burden caring for ill, older adults in the future. Engaging in routine, physical exercise throughout aging is a simple, cost-effective measure in preserving numerous cognitive and quality of life factors.

*Keywords*: older adults, mild cognitive impairment, aerobic exercise, quality of life

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## Problem Description

### Introduction

Worldwide, during the years 2000 – 2030, persons over 65 years of age will increase from 550 million to 973 million, from 6.9% to 12% respectively (Centers for Disease Control and Prevention [CDC], 2003). Statistics show that in the United States (U. S.), the older adult population over the age of 65 will increase from 12.4% (35 million) in 2000 to 19.6% (71 million) in 2030, which is higher than global increases (CDC, 2003).

People who are over 65 years of age often experience health issues including physical and cognitive decline. Cognitive decline includes diagnoses such as Alzheimer's disease (AD), dementia, and mild cognitive impairment (MCI). Over the age of 65, persons with co-morbidity disease states, such as hypertension, diabetes, and hyperlipidemia, prove to be more at risk for developing mild cognitive impairment and dementia (Duke Medicine, 2008; Gorelick et al., 2011; Richie & Tuokko, 2010). Additional secondary comorbidities contribute to cognitive decline, such as vascular anomalies, family history, development of the apolipoprotein A, head trauma, and depression. Twenty-five percent of persons in the United States, with memory loss without dementia, had heart disease and diabetes (Petersen, et al., 2014; Ritchie & Tuokko, 2010).

### Problem Background

Cognitive impairment, in older adults over the age of 65, has significantly increased and is a major concern due to additional hardships placed on the individual, family/caregivers, and health care system (Davis, Hsuing, & Liu-Ambrose, 2011). The definition of MCI has been redefined as the individual and/or family member/caregiver subjectively reporting an increase in sporadic memory loss without the loss of activities of daily living (ADL) functioning. Further

definition divides MCI into two main categories, amnestic-where the person tested positive for poor memory function on a neuropsychological test (aMCI), and non-amnestic- where the person has tested poorly in other cognitive domains (not including memory), such as executive functions, visuospatial, and language abilities (naMCI) (Petersen, et al., 2014). Researchers estimate that 5.4 million persons over the age of 70 have memory loss with MCI that does not affect daily functioning, but does impede their daily routines (Duke Medicine, 2008).

MCI impedes daily routines, causing a disruption in health-related quality of life (HRQoL). HRQoL correlates with health and disease constructs, relative to one's social, mental, physical, and emotional functioning. Examples of interference in daily routines include forgetting the following: appointments, to pay a bill, to attend a social event, words in conversation, and where one left car keys, dentures, or eyeglasses (Department of Health and Human Services, 2010).

Providers treat MCI with the same medications as dementia, not truly distinguishing between the two diseases. Therefore, there is a critical need and urgency to develop treatments to decrease the incidence of cognitive impairments in older adults to ensure they maintain health-related quality of life factors throughout the aging process (Hildreth & Church, 2015). Exercise is one strategy that has been proposed to improve cognitive functioning and Ahlskog, Geda, Graff-Radford, and Petersen (2011) suggest that regular exercise reduces the risk for developing age-related cognitive impairments and dementia. Therefore, the purpose of this Scholarly Project was to implement an aerobic exercise program and to describe cognitive function and HRQoL for individuals (>60 years) with mild cognitive impairment (MCI), living in an assisted living facility (ALF). The Scholarly Project evidence-based problem question (EBP) was as follows: For older adults, (> 60 years) with MCI, what is the effect of an aerobic

exercise program on the person's health-related quality of life and cognitive functions?

### Local Problem

In 2014, Citrus County, FL. had one of the highest adult populations over the age of 65 in the state of Florida, numbering approximately 46,588 males and females, including all races (Florida Community Health Assessment Resource Tool Set, 2014). In 2011, 21 states in the U. S. identified their aged population over 60 years of age to have increased confusion and memory loss happening more often or getting worse over a 12-month period (CDC, 2011). In 2011, 12.2% to 15.7% of persons over the age of 60 in Florida reported increased memory loss or confusion that occurred more often or was getting worse in the past 12 months (CDC, 2011).

## Available Knowledge

### Literature Review

A systematic search was performed between 2005 and 2015 in CINAHL, MEDLINE, PsycINFO, and Science Direct databases using the keywords: cognitive impairment, dementia, aging, exercise, and quality of life. Articles in all databases were limited to the English language. The results were analyzed and a synthesis of the 18 articles was performed. (Refer to Appendix A).

### Synthesis of the Evidence

The aging population (>60 years) will reach an estimated 1.2 billion persons worldwide by 2025. The primary risk factor for developing cognitive impairments is aging (Ritchie & Tuokko, 2010). Recent research indicates modern medicine approaches are not effective in treating or deterring the incidence of mild cognitive impairments and dementia (Cooper, Li, Lyketsos, & Livingston, 2013; Frantzidis, Ladas, Vivas, Tsolaki, & Bamidis, 2014, Petersen et al., 2014). However, the use of complementary and alternative medicine (CAM) approaches,

such as exercise, has shown to improve cognitive abilities in older adults (Ahlskog, Geda, Graff-Radford, & Petersen, 2011; Cooper, Li, Lyketsos, & Livingston, 2013; Frantzidis, Ladas, Vivas, Tsolaki, & Bamidis, 2014; Gates, Singh, Sachdev, & Valenzuela, 2013; Hart, Swartz, Cashin, & Strath, 2011; Jeon, Han, Jeong, & Fregni, 2014; Law, Barnett, Yau, & Gray, 2014).

Research has shown that engaging in routine physical activities provides a neuroprotective effect in the brain by increasing oxygenation, neuronal synapsis, and decreasing cerebrovascular risks (Ahlskog, Geda, Graff-Radford, & Petersen, 2011). Bielak's (2010) study posits engaging in physical activity enhances mental capacities and emotional well-being in older adults. Engaging in physical activities with others benefits psychosocial behaviors in aging by increasing support systems, decreasing physical and mental stress, promotes well-being, and increases quality of life. Engaging in regular physical activity promotes overall physical health (e.g. especially in the musculoskeletal and cardiopulmonary systems), which decreases the chance of developing other age-related diseases, such as osteoarthritis, cardiovascular problems, and hormone deficiencies (Bielak, 2010). In addition, improvements occurred in physical and cognitive functioning, especially in memory, processing speed, and executive functions in persons who are considered frail (Langlois, et al., 2013). Frailty in the aged population is linked to increase in falls, hospitalizations, physical disabilities, and possibly death (Bherer, Erickson, & Liu-Ambrose, 2013).

One systematic review by Voss et al. (2013) supports physical exercise interventions being cost-effective in reducing cognitive decline. Specific modalities of exercise should be individualized to the abilities of the person. If a person leads a sedentary lifestyle and begins participating in an aerobic exercise program, it is presumed that any amount of exercise, with or without assistive devices, would benefit increasing oxygenation to the brain. Exercise, as a

complementary medicine modality, is attainable, cost-effective, acceptable, and is a powerful alternative for combatting cognitive decline in older adults (Mathersul & Rosenbaum, 2016).

## Rationale

### Theoretical Model

Pender's *Health Promotion Model "...*defines health as a positive dynamic state rather than simply the absence of disease" (Petiprin, 2016, para 1). Pender speaks of health promotion related to the person's overall level of well-being and categorizes relevant personal factors as socio-cultural, psychological, and biological. These factors contribute to Pender's model focus, in that each person has specific individual characteristics and life experiences, which foster particular behavioral actions in the environment in which they live to pursue good health or poor health (Petiprin, 2016). The person's behavioral outcomes stem from behavior-specific cognitions and affect, which guide the person's motivation to gain improvement in their health status, functional abilities, and health-related quality of life or remain in ailing health (Current Nursing, 2012). (Refer to Appendix B).

### Project Framework

The logic model is comprised of the program processes involving the resources, activities, and outputs used in planning for implementation of the Scholarly Project (Refer to Appendix C). Outcome evaluation methods are included, along with programmatic impacts. The data table specifies outcomes, resources, data indicators, data gathering methods, technical assistance needed, and potential costs (Refer to Appendix D). The logic model outcomes drive the project and includes elements such as securing the project facility and communication with the project partner administration, staff, residents, and community healthcare members.

## Specific Aims

The purpose of this Scholarly Project was to implement an aerobic exercise program and to describe improvement in cognitive function and HRQoL for individuals (>60years) with MCI living in an assisted living facility (ALF). Older adults participating in the walking program were expected to exercise three times a week for thirty minutes. The use of assistive devices was acceptable for resident safety throughout the exercising session. The expected outcomes were the resident would experience a 10% increase in positive affect/well-being in their quality of life and cognitive factors, over five months, by program end.

## Context

### Population

Cedar Creek ALF has 63 residents living in the facility, ranging in age from the late 60s to 100 years of age and the majority of the residents are females (H. Fritz, personal communication, April 12, 2017). The primary medical diagnoses for the residents are heart disease, chronic obstructive pulmonary disease, essential hypertension, gastroesophageal reflux disease (GERD), hyperlipidemia, hypothyroidism, major depressive disorder, osteoarthritis, diabetes, and dementia. Twenty percent of the residents are independent in ADLs and 80% need some type of caregiver assistance with ADLs, e.g., assistance in the shower for safety and medication administration. Approximately, 80% use an assistive device, e.g., cane, walker, or wheelchair (H. Fritz, personal communication, April 12, 2017).

### Local Care Environment

Cedar Creek ALF is located in downtown Crystal River, FL. The facility is privately owned and is managed by local community members. It has apartments for resident living space, activity rooms, kitchen and dining rooms, sitting rooms, laundry and housekeeping personnel and facilities, office space for staff, a medication room, and outside spaces for resident

enjoyment and parking. In addition, transportation is provided to doctor appointments, shopping, and dining in the local area via facility handicapped vans. The living accommodations are configured as studio, one-bedroom, and two-bedroom apartments (M. Schubert, personal communication, July 16, 2016). The residents are allowed to bring their own cars, furniture items, and small pets into the facility when they move in. Three meals are provided by a chef and dietary staff and the residents can enjoy an array of beverages and light refreshments twenty-four hours a day.

**Relevant Elements of Project Setting**

The ALF has a recreation department with two exercise instructors and a manager. Prior to the start of this Scholarly Project, recreational activities at the facility involved chair exercise activities promoting strength and range of motion. There were no aerobic exercise programs for the residents.

The facility is staffed with two to four patient care technicians twenty-four hours per day, seven days per week. Technicians on the day and evening shifts were asked to volunteer to participate in the program to assist the residents for safety. In addition, there are two licensed practical nurses (LPNs) on day shift (7am to 3pm), and one LPN on the evening shift (3pm to 11pm). In Florida, ALFs are not required to hire licensed nursing staff to attend to the residents' needs, but the owners of this ALF chose to have nurses present to provide a higher level of quality care (Carder, O'Keeffe, & O'Keeffe, 2015).

**Organizational Culture and Readiness for Change**

Identifying a need and readiness for change is one of the preliminary elements in developing a Scholarly Project. In collaborating with the ALF facility staff and administration, a common health disparity among their residents was identified--sedentary lifestyles. Most of the

residents lacked routine engagement in physical activity, specifically aerobic activity. "Many of the residents are taking the easy road and using wheelchairs for mobility more in recent months. It is sad to see them settle for living below their functional levels" (H. Fritz, personal communication, June 9, 2016). A Memorandum of Agreement was signed in June 2016, acknowledging the relationship between the Project Leader and ALF, to move forward with the aerobic walking program in Spring 2017 (Logic model outcome 1) (refer to Appendix E).

Invoking team collaboration is one of the essential elements in leadership. Wong, Cummings, and Ducharme (2013) speak to the congruence of leadership, staff performance, and patient outcomes, by embracing effective relational leadership using clear communication strategies, collaborative staff engagement in decision-making, and a vision of change for quality in health care for all. The ALF administration acknowledged a need for change in the facility to promote healthier lifestyles for the residents and was actively engaged in discussing wins and obstacles in the project planning and implementing phases.

### Strengths and Weaknesses

The strengths of the project included the following: (1) high engagement levels of ALF administration and facility staff; (2) open communication channels between the Project Leader and facility staff; (3) engaged residents; (4) reliable and valid instruments; and (5) minimal expenses.

The weaknesses of the project included the following, (1) attrition; (2) summer heat in Florida; (3) staff shortages to assist residents that need assistance for safety reasons (4) unavailability of residents to complete surveys when the Project Leader was able to meet with them and (5) small sample size.

## Interventions

Educational sessions were held at the ALF for residents, (> 60 years of age), who were interested in participating in the walking program (Logic model outcome 3). Facility staff (administrative and direct care staff), who were interested in assisting the residents in the walking program, were invited to participate (Logic model outcome 2). All attendees signed an attendance sheet (Refer to Appendix L) and an educational handout and a "benefits of walking poster" were given to all attendees (Refer to Appendices M & N). A copy of the Boise State University Internal Review Board (IRB) Letter of Intent was given to all attendees and explained that participating in the program would be strictly voluntary and anyone could opt out of the program at any time (Refer to Appendices O & P). All attendees were instructed on how to complete The Neuro-Qol Cognitive and Positive Affect/Well-Being surveys and the weekly walking log (Logic model outcomes 5, 6, 7, & 8) (refer to Appendices F, G, & Q). Residents interested in participating in the program were asked to complete the two surveys as baseline data (Logic model outcome 4). The volunteer staff were asked to put the word *volunteer* after their name on the attendance sheet if they were interested in assisting the residents.

The walking program was conducted for five months, from May 1, 2017 through September 30, 2017. Recreation department staff delineated Monday and Tuesday of each week as the Walking Club times to meet at 0900, outdoors (weather permitting) and indoors, for those residents wanting to walk in a group. Additional staff was present to provide standby assist for those needing one-on-one for safety concerns. The minimum amount of walking sessions per week was proposed at three times throughout the project. The residents were responsible for completing the other walking session/s in the week, either by themselves, with staff, or with friends. The weekly walking log data was filled out each day of the week, as well as the minutes the resident walked, and kept through the entire program. A few residents elected to keep their

own walking logs, but most resident information was kept in one binder in a locked cabinet, in order to keep data from being lost, to maintain privacy of personal information, and maintain accuracy of the data obtained (Logic model outcome 12).

Each month, the Project Leader reviewed the results and three $25.00 Visa gift cards were awarded to the residents with the most improvement, most days, and/or minutes walked in the month. Pictures of the winners were taken and posted on the facility events board and in the Cedar Creek Life newsletter each month. Starting in June, due to increasing progress of the walking times and days per week by the residents, the addition of Honorable Mention Residents was added to the monthly congratulatory meeting and an Honorable Mention Certificate was given to each qualifying resident.

The Project Leader collected the survey data from the residents in a private location. The Cognitive survey data was collected at baseline and at the end of the program in early October 2017. The Positive Affect/Well-Being survey data was collected at baseline and collected each month through the end of the program (Logic model outcome 9).

The resident volunteers decided to commemorate their goals as a walking team in the project. A large, flat world map was obtained and secured on a large wall outside the activity room in the ALF, where everyone could see the progress of traveling to different countries throughout the program. Resident walking volunteer pictures were taken and displayed as a team alongside the map, so that all team members could stay connected and inspire each other to reach their personal walking goals. At project conclusion, a celebration was held with refreshments from the different countries visited during the walking program for all to enjoy. In October 2017, data collection was completed.

**Logic Model**

Developing the components of the logic model were completed in the planning phase and include short-term outcomes and long-term outcomes/impacts of the Scholarly Project from project assessment to completion of the project (Refer to Appendix C). The following list comprises the short-term outcomes: (1) by July 2016, ALF Administrators agree to collaborate and sign Memorandum of Agreement; (2) by May 2017, 75% of the facility direct care staff attended the education session; (3) by May 2017, 50% of the facility residents attended the education session; (4) by May 2017, 90% of the residents complete the initial baseline surveys (Positive Affect and Cognitive tools); (5) by May 2017, 20 residents volunteer to be in the Scholarly Project walking program; (6) by May 2017, 80% of residents are educated on how to fill out the Positive affect and Cognitive surveys, along with time increments in the project; (7) by May 2017, 75% of the resident volunteers are educated on how to fill out the weekly exercise log; (8) by May 2017, 90% of the volunteer facility staff are educated on how to fill out the weekly exercise log; (9) by October 2017, 90% of the residents completed all survey tools throughout the project; (10) by October 2017, 50% of the volunteer residents reported a 10% increase in health-related quality of life; (11) by October 2017, 50% of the volunteer residents reported a 10% increase in cognitive function; (12) by October 2017, 75% of the residents completed 80% (50 out of 63) of the exercise sessions; and (13) by June 2018, an abstract will be submitted to a professional conference. The long-term outcomes/impacts of the Scholarly Project can be referred to in Appendix C.

**Correlation of Interventions with the Theoretical Model**

Pender's *Health Promotion Model* aligns directly to the Scholarly Project emphasis of engaging in healthy behaviors that are sustainable to improve cognition, functional abilities, and increase well-being in the older adult, through the aging process (Petiprin, 2016). Pender's

model has 13 theoretical statements, which guide work on promoting healthy behaviors. All of these statements relate to the Scholarly Project. A few of the major components are (1) people engage in behaviors they believe will positively benefit them, (2) the person will be more committed to changing behaviors if they are confident they have the ability to perform the behavior, (3) if family or caregivers model the expected behavior or expect healthy behaviors to happen, the person will be more committed to engage in the behavior, (4) the more serious the person is about committing to an action plan, the probability of changed behaviors becoming sustainable over a long time will increase, and (5) people can adjust their behaviors by changing their cognitive thoughts, affect, personal interactions, and the environment they live in to start engaging in healthier behaviors (Current Nursing, 2012). Refer to Appendix B (Stokes, n.d.).

## Timeline

Project planning involves using a timeline for setting project milestones. Project management and stakeholders use the timeline to keep on track throughout project implementation, evaluation, and disseminating the results (Haughey, 2013). The Scholarly Project timeline includes all of the preliminary target milestones from initial planning endeavors in 2016 through dissemination of project results in 2018. (Refer to Appendix H).

## Measures

The measures for evaluating this project included an attendance sheet, weekly walking log, Neuro-QoL Cognitive Short Form survey, and Positive Affect/Well-Being Short Form survey (refer to Appendices F, G, L, and Q). The attendance sheet captured the number of residents and staff present for the education session prior to project start. Throughout the project, residents used the walking log to tally their minutes per day and days per week walked. The Project Leader developed the attendance sheet and walking log.

The two survey tools chosen for use in the project are sponsored through the National Institutes of Health subsidiary group called HealthMeasures. HealthMeasures (2016) comprises a team of "...psychometricians and measurement science experts at Northwestern University and five additional research and education institutions" (para 2). These tools are reliable, valid, and have been used extensively over the past decade. The tools are free to use through public domain (HealthMeasures, 2016).

For ease of survey administration with the older adult who may have sensory deficits and MCI, a paper format was used. The Positive Affect and Well-Being Short Form is a nine question survey and takes less than five minutes to complete (Logic model outcome numbers 4, 5, 6, 9, and 10) (Refer to Appendix G). The Positive Affect and Well-Being Short Form survey used a Likert Scale of 1 to 5 (1 = Never; 5 = Always) referencing nine categorical questions related to quality of life. The Cognitive Function Short Form survey has eight questions and takes less than four minutes to complete (Logic model outcome numbers 4, 5, 6, 9, and 11) (HealthMeasures, 2016) (Refer to Appendix F). The Cognitive Short Form survey used a Likert Scale of 1 to 5 (1 = Never; 5 = Always) referencing eight cognitive attributes. The Project Leader designed the attendance sheet and the weekly walking log. The attendance sheet was completed on the initial encounter with staff and residents (Logic model outcomes 2 & 3). The weekly walking log was completed by staff or residents denoting the number of days and minutes walked each week throughout project implementation (Logic model outcomes 7, 8, & 12) (refer to Appendices L & Q).

There were two main areas in the proposed budget plan for the project that were updated to reflect the actual costs, e.g., the data analyst cost (in kind) and the Project Leader mileage cost. The data analyst cost was found to be much more than anticipated at $350.00. The actual cost

was $689.00 for 16.42 hours at $42.00/hr. (United States Department of Labor, 2017). The mileage cost was estimated to be $37.00 for data collection and celebratory times traveling to and from the ALF. The number of trips completed through the project totaled 76 times (9 miles each to and from the ALF), equating to 684 miles at .54 cents per mile. The total expenditure for mileage was $369.36 by project end using the United States Internal Revenue Service mileage allowance (Foundeo, Inc., 2018). The 3-5 Year Budget Plan and Statement of Operations tables were updated to reflect these changes (refer to Appendices I, J, & K).

## Analysis

A quantitative design was performed, using survey designs, attendance sheets, and a walking activity log. The surveys, activity log, and attendance sheets use numeric values to describe trends, behaviors, attitudes, and ideas of the sample population (Creswell, 2013). The Cognitive Short Form evaluation is a two-step, pre-/post intervention design. The Positive Affect/Wellbeing Short form is a longitudinal, performance measurement/monitoring design. This Scholarly Project did not include a control group (Issel & Handler, 2014).

Descriptive statistics were used to describe the participants (age and gender) and analyze the data, e.g., number (N), mean (M), and/or standard deviation (SD) on each of the two Likert Scale survey subscales. Inferential statistics, such as a paired t-test was used to determine if there were significant statistical differences between the baseline scores and project end scores on the Cognitive Short Form. Inferential statistics, such as analyzing correlation coefficient factors between the mean of monthly minutes walked and the mean of Positive Affect/Well-being Short Form variables, was performed to determine if there were significant statistical relational differences in the positive affect/well-being of the residents over time (Logic model outcomes 4, 6, 9, 10, & 11).

The number and percentages of staff and residents were calculated on the attendance log quantifying their presence at the education session, along with residents' completion of surveys and walking sessions throughout the project (Logic model outcomes 2, 3, 9, & 12). Run charts and a table was used to display results of completed exercise sessions and average minutes walked by all residents throughout the project (Logic model outcomes 7 & 8) (refer to Appendices R, S, & T). Minitab 17 (Minitab 17 Support, 2017) was used to extract the data, along with consulting a data analyst periodically throughout the project.

## Ethical Considerations

### Ethical Considerations and Protection of the Participants

The Project Leader completed the Collaborative Institutional Training Initiative (CITI) Program to understand ethical requirements in protecting human subjects involved in the Scholarly Project (Collaborative Institutional Training Initiative [CITI], 2016) and the project was approved by the Boise State University Institutional Review Board (IRB) (Refer to Appendix O). Confidentiality was one of the biggest risks to this project and several measures were taken to ensure confidentiality. Numerical identifiers were used on the survey questionnaires that residents and caregivers use to protect personal identity throughout the project, along with the walking logs. All surveys and logs were stored in a locked box off site and electronic data was de-identified and stored in a password-protected server maintained by Boise State University (BSU).

### Conflicts of Interest

There were no conflicts of interest between the Project Leaders and Cedar Creek ALF administration, facility staff, or residents. The Project Leaders did not receive any monetary gains for instituting the Scholarly Project from the ALF owners or administration.

### Bias

Minimizing sources of bias in research is important for the project results to be validated and sustainability of the project to be considered (Indrayan, 2012). The following is a list of potential bias factors in this Scholarly project, as suggested by Indrayan (2012): participant selection, recall bias, response or information bias, and non-response bias. Additional positive factors include having a mindset of being truthful and objective in the use of tools in the project and analyzing the results, minimizing response and non-response bias, and using a statistical, non-biased approach in evaluating the information and disseminating the results (Indrayan, 2012).

### Threats to Quality

Acquiring and using invalid survey tools could jeopardize the quality of the project results. The two main survey tools in this project are from NIH and are considered evidence-based, and are reliable and validated tools. The attitudes of the residents, towards project engagement, may change through the implementation phase and cause skewed survey results. Several attitude problems to be aware of are volunteers who speed through filling out the survey, those who want to be overly positive in their remarks, and those who just mark down any response to get through the survey (Sauro, 2015). The Project Leader was with each resident as the surveys were filled out. Therefore, these threats were eliminated. Additionally, resident volunteers may decide to drop out of the program before completion.

## Results

Initially, 32 of 63 residents (51%) joined the educational session on the aerobic walking program. However, only 28 completed the initial Cognitive and Positive Affect/Well-Being surveys, indicating their interest to participate in the project. All 28 residents were found to meet

the criteria for participation of being over 60 years of age, had some degree of MCI, and decreased HRQoL (n = 28; 100%). In addition, 19 (79%) of the caregiver staff attended the education session and volunteered to participate in assisting the residents (Logic model outcomes 2, 3, & 5). One hundred percent of participating residents and staff were educated on filling out the walking log and all participating residents were educated on the Cognitive Short Form and Positive Affect/Well-Being Short Form surveys (Logic model outcomes 6, 7, & 8). The average age of the residents was 89 and the majority of residents were female (n = 25) (Refer to Appendix U).

The Cognitive Short Form Survey was used as a pre-post project survey (cognitive factors were identified pre-project intervention compared to post-intervention, aerobic activity, cognitive factors) and a dependent sample, paired t-test was performed. The pre-project survey items on 28 residents that scored the highest included managing time for daily activities (M = 3.96; SD = 0.84) and planning/keeping appointments (M = 3.57; SD = 1.29). The items that scored the lowest included understanding something read (M = 2.82; SD = 1.06) and slow thinking (M = 3.36; SD = 0.87). The post-project survey items that scored the highest on the remaining 22 residents in the project included following complex instructions (M = 4.95; SD = 0.21) and planning/keeping appointments (M = 4.91; SD = 0.29). The items that scored the lowest included understanding something read (M = 4.59; SD = 0.66) and slow thinking (M = 4.45; SD = 0.85) (Refer to Appendices V & W).

The Confidence Interval was set at 95% on all eight variables in the Cognitive survey paired t-test. The mean values of all eight categories significantly increased over the course of the project. The data produced a P value of <0.001 for all eight variables. Frost (2014) suggests a lower P value greatly decreases the chance of a false positive occurring in the results (refer to

Appendix W). Short-term outcome number 11 in the logic model proposed 50% of the residents would report a 10% increase in cognitive factors. Ninety-five percent (N = 21) of the resident walkers reported more than a 10% increase (refer to Appendix W). This achievement may be directly related to increased aerobic activity levels providing increased oxygenation to the brain. Increased oxygenation promotes increased neuronal generation and neuronal synapsis speed (neuroplasticity), increased hippocampal tissue, while decreasing small vessel disease, as proposed in studies by Ahlskog, Geda, Graff-Radford, and Petersen (2011), Bielak, (2010), and Langlois, et al. (2013).

Pearson's correlation coefficient test was used to identify strengths in the relationship between minutes walked each month and the Positive Affect/Well-Being survey variables. Seventy-three percent (N = 16) of the residents reported a 10% increase in their Positive Affect/Well-being over the five-month period (refer to Appendix Y). Short-term outcome number 10 in the logic model proposed 50% of the resident walkers would report a 10% increase. Therefore, an additional 23% was achieved, which may be related to the increase in days per week walked and the social connection between walkers. The initial Positive Affect/Well-Being survey items that scored the highest included life had meaning (M = 3.53) and life was worth living (M = 3.64). The items that scored the lowest included sense of well-being (M = 3.00) and felt hopeful (M = 3.10). The post-project items that scored the highest included life was worth living (M = 4.86) and life had meaning (M = 4.77). The post-project items that scored the lowest included well-being (M = 4.36) and life was interesting, satisfying, and being cheerful (all had an M = 4.45). All survey variables showed a positive increase from project beginning to end (refer to Appendices X, Y, & Z).

The total number of walking sessions during the project and the amount of minutes walked each week was recorded on weekly walking logs. Refer to Appendix R for the mean minutes walked per week for the 22 residents in the program. Short-term outcome number 12 in the logic model proposed 75% of the resident walkers would complete 80% of the proposed exercise sessions (50 out of 63) over five months. The overall trend for the five months shows an increase in the amount of time walked. There was a significant drop in September, which was most likely due to a major hurricane hitting the area and the residents had to evacuate the ALF, disrupting their routines. Twenty-one (N = 95%) residents submitted documentation on their walking logs showing they exceeded the proposed number of exercise sessions throughout the program (Refer to Appendices S & T). Twenty-one (21) of the 22 residents completed all eight surveys throughout the project (n = 21 [100%]; n = 1 [88%] due to illness; 95% total).

**Contextual Interactions of the Project**

There was no change in the processes of the project or project interventions. The summer heat and rain showers in Florida are unfavorable factors with engaging in outside activities. However, to overcome this, the residents tried to walk outside early in the mornings and if they were inclined to walk more during the day, they walked the long hallways inside the ALF, at a shopping mall, or other facility. Residents with vision problems, walked inside the ALF or outside with one-on-one assistance of staff for safety.

After the start of the walking program, three residents left the project for personal reasons. Resident health issues, ranging from falls, deterioration of health, and death of a family member, affected three residents' ability to continue in the program. Twenty-two residents participated through project end. The majority of resident walking logs were kept in one binder under lock and key in the facility until the Project Leader gathered them for data compilation.

The caregiving staff noted the day and amount of minutes walked for each resident, who opted not to keep their own data. However, a couple residents opted to keep their own logs. One resident lost some of them and did not log all walking sessions, due to illness. On a positive note, the more experienced walkers encourage others in the project to walk more routinely, exhibiting a supportive team effort to increase health and wellness, as identified by Pender's *Health Promotion Model* (refer to Appendix B).

### Differences in Project Revenues/Expenses Compared to the Budget Plan

Supplies were cut to a minimum as no office supplies were needed for resident use. The ALF staff offered to cover all copying costs (in kind). However, the Project Leader underestimated the number of trips to the ALF to collect data, which increased auto gas mileage cost. The data analyst cost (in kind) was underestimated, due to not realizing the normal hourly rate for this service is $42.00/hour (United States Department of Labor, 2017; refer to Appendix I). No external funding was appropriated for the project (refer to Appendix I).

## Discussion

### Summary Points

The effects of a five-month aerobic walking program were evaluated in older adults (> 60 years) living in an ALF. Two primary aims of the project were to assess whether the benefits of walking a minimum of three times a week for thirty minutes each day would increase cognitive functioning and health-related quality of life factors for each resident over time. Although a few residents did not meet the goal of walking thirty minutes each day, the number of days walked increased routinely to between five and seven days each week for all residents in the program, equating to most residents walking over four hours in a month to thirty-one hours a month. The average minutes walked by all residents increased substantially over the project duration. This is

a promising, positive effect of the project, as most residents were physically sedentary in nature before the project began. Individual abilities of the residents varied, but the positive results of the project indicated these residents were beginning to take their health status seriously and started to make changes in their health behaviors, as identified in Pender's *Health Promotion Model* (Petiprin, 2016). Results of project outcomes 2 through 12, as depicted on the Logic Model, exceeded the expected level of achievement (ELA) by project end (refer to Appendix C).

**Interpretation Points**

It is not known if the increase in time and days spent walking was due to social interactions with a group, the fact that a reward would be given each month to three exceptional walkers, or if the residents generally began to physically feel better enhancing their motivation to walk, as these particular aspects were not measured. Past studies have shown that by increasing social interactions and daily physical activity, older adults experience positive benefits in behavioral, cognitive, and physical adeptness, while gaining protection against cardiovascular, hormonal, and neuronal insults common in aging (Ahlskog, Geda, Graff-Radford, & Petersen, 2011; Bielak, 2010). It is noteworthy that 17 of the 22 residents' ages were in the 90s.

Walking is a cost-free method of exercise and is one factor the residents found rewarding. The residents were especially delighted that the recreational staff team incorporated two days out of the week in the ALF activity agenda for the Walking Club to meet and walk together. Staff engagement with the residents increased, as they both enjoyed the neighborhood walks together. Staff assisted those who needed standby assistance for safety and interacted more with them in gathering data on the amount of minutes walked on specific days of the week. Successes were shared between staff and residents building self-esteem and comradery. These positive encounters assisted the residents to be successful in the project, along with heightened team spirit

of the individual walkers with other residents. Logic model outcomes 2 through 12 are reflected in positive behaviors (refer to Appendix C).

Positive contextual considerations were the buy-in of the staff and residents, as mentioned above. Two designated days were built into the residents' weekly recreational schedule. Residents scheduled other days to exercise. Monthly congratulatory meetings were held to honor the walkers, along with a project end celebration. HRQoL constructs include not only physical and functional abilities, but also community involvement and participation in healthy behaviors of individuals. Experiencing a state of well-being and social participation often help to define a person's sense of HRQoL (American Psychological Association, 2006: Office of Disease Prevention and Health Promotion, 2018).

Negative contextual considerations were the heat and rainy summer weather in Florida. A major weather disruption occurred in September, as Hurricane Irma came through town and the residents had to evacuate their coastal facility. Health issues are potentially negative factors with this aging population, so the fact that three residents left the project with health issues, was less than 11% of the total resident project volunteers.

**Policy Implications**

Regarding policy development instituting aerobic exercise for older adults in aggregate living facilities, it is doubtful that an actual policy will be developed. Adults have the right to decide whether or not to engage in healthy behaviors. However, the positive results of this quality improvement project does imply that community dwelling adults will enjoy overall health benefits by increasing aerobic physical activity in their daily activities. After completing this community-based project, the Project Leader gleaned a greater understanding of the importance of professional accountability and responsibility in identifying social determinants of health

relative to the health care system. Community, specific interest groups, and workplace environments are three spheres of influence where nurses can strive to influence policy-making to improve health outcomes, reduce health care costs, decrease many health disparities, and enhance quality health care for all (Mason, Gardner, Outlaw, & O'Grady, 2016).

Recent investigation found existing health insurance policy endowments supporting health promotion with physical activity. The StayWell Company offers innovative strategies to employers in developing health promotion incentives. One of their most successful programs is the Million Step Challenge (Anderson, 2016). Insured recipients, who walk over 700,000 steps per year, are offered a $100.00 reduction in their annual health policy premium and those who walk over 1.4 million steps per year, enjoy an annual premium reduction of $200.00. The insured person's steps are monitored through a health tracker application that is downloaded on the insured's cell phone. The insured synchronizes this application to a Fitbit or other health tracking devices, such as a smart watch. The annual accumulation of steps walked information is forwarded to the health insurer, in this case StayWell, verifying physical activity accomplishments (Anderson, 2016; P. Parker, personal communication, December 8, 2017).

Prince et al. (2015) suggest ageism is very complex, due to older adults having many disease co-morbidities, lack appropriate age-related care, are faced with increased medical fees, lack adequate monetary income, and lack social support. Appropriate age-related, primary care services need to be reorganized to meet their medical needs. Policy reforms might include cost-effective assessments and holistic, integrated, continuity of care that may identify and promote the needs of this population; ultimately, decreasing physical and cognitive disabilities and increasing independence (Prince et al., 2015). Enhanced technology, web and social media platforms, and smart phone applications allow the populous easy access to health information

and evidence-based research. Twenty-first century Medicare, Medicaid, and private insurance recipients would definitely benefit from technology-based, health promotion, incentive programs incorporated in their benefits package to enhance health outcomes, physically, mentally, emotionally, and socially to maintain optimum, health-related quality of life factors in aging.

**Limitations**

The ALF populous gender count was females (49) and males (19). Gender bias could be a limitation, as more females (F) participated than males (M) in the project (F = 20 or 40%; M =2 or 11%). Although this is may be viewed as a discrepancy, the participation was representative of the residents' gender living in the ALF. The sample size was small (< 30). Age may be a limitation, as 17 of the 22 residents were in their 90s; although, it could be viewed if 90 year-old adults can routinely engage in exercise routines, anyone of lesser age could. There were no confounding factors, or design, method, measurement, or analytical issues that hindered the project constructs, processes, and outcomes. Therefore, the project was internally valid. Generalizability of the project (external validity) is global in relation to the older adult population's increasing growth and continuance of need for cost-effective, medical interventions to promote healthier physical and HRQoL outcomes in the aging process (Kukull & Ganguli, 2012).

## Conclusion

Research indicates that by routinely exercising throughout adulthood, the deleterious effects of numerous physical and cognitive deficiencies could be minimized or avoided in aging (Ahlskog, Geda, Graff-Radford, & Petersen, 2011; Bielak, 2010). If the adult population ages in a healthier state, the health care community will benefit by decreased heath care costs and less burden on health care services. Additionally, families/caregivers will not endure emotional,

physical, and financial burdens placed on them to care for their disabled loved ones. Worldwide, communities catering to the needs of older adults should consider investing in cost-effective, enjoyable physical activity interventions and environments in order to promote independence, health, and well-being of this population. There are a limited number of studies investigating aerobic exercise on health and wellness in aging. Therefore, it is recommended that future research efforts be conducted in this specific area and research results disseminated in worldwide, peer-reviewed, health-related publications for interested health care workers to benefit from.

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Appendix A

## Johns Hopkins Nursing Evidence-Based Practice
## Appendix G: Individual Evidence Summary Tool

**EBP Question:** (revised [4] In older adults, over the age of 60 with mild cognitive impairment, what is the effect of an aerobic exercise program on the person's health-related quality of life (HRQoL) and cognitive functions?

Table 1

| Article # | Author & date | Evidence type | Sample-sample size & setting | Study findings that help answer the EBP question | Limitation/s | Evidence level & quality |
|---|---|---|---|---|---|---|
| 1. | Ritchie, 2010, Inter-national Encyclopedia of Rehabilitation<br><br>Mild Cognitive Impair-ment: Case Defini-tions, Age, and other Risk Factors | Non-experimental /descriptive | No sample | Aged persons 60+ to be 1.2 billion by 2025<br><br>Risk factors—gender (women to AD & men with vascular deficiencies), age, education & biologic factors—secondary co-morbidities of HTN, diabetes, family history, development of the apolipoprotein A, and trauma; depression.<br><br>Protective factors—active lifestyle and cognitive stimulation | Data is over five years old, but Key Symposium was in 2003 that came out with new definition of MCI and data supports this | Level IV<br><br>High |

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| | | | | Needs to be a gold standard of testing; longitudinal testing is recommended; other research says caregiver reports should be used over time.<br><br>Normal Model of Aging definitions and Cognitive Decline as disease process definitions.<br><br>No drugs are recommended---no evidence in assisting with healing and some may cause unwanted side effects. | | |
| 2. | Duke Medicine, 2008,<br><br>Duke Medicine News and Communications<br><br>One in Three People Over 70 Have Memory Impairment | Non-experimental /descriptive | No sample | 1 in 3 persons over 70 have MCI<br><br>3.4 million Americans have dementia and another 5.4 million have MCI<br><br>12% of those with MCI will progress to dementia<br><br>25% with memory loss | Information is over 5 years old, but holds key evidence of the prevalence of MCI and dementia | Level IV<br><br>High |

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| | | | | without dementia had other comorbidities—diabetes & heart disease<br><br>Mortality rate of those diagnosed had an 8% mortality rate annually varying across various types of cognitive impairment | | |
| 3. | Centers for Disease Control & Prevention, 2011,<br><br>Healthy Aging Data Portfolio | Non-experimental /descriptive<br><br>Data retrieved from 21 states in America on adults over age 60 | No sample | 21 states identified numbers of their aged over 60 having increased confusion and memory loss that is happening more often or getting worse in the past 12 months.<br><br>Includes changes in attention, memory, learning, executive function & language capabilities affecting quality of life, personal relationships, and making informed decisions about health care and other life matters | None except that there was no data for 29 states | Level IV<br><br>High |

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| 4. | Cooper, C., 2013,<br><br>British Journal of Psychiatry<br><br>A Systematic Review of Treatments for Mild Cognitive Impair-ment | Systematic Review of 41 RCTs | Studies included any study with persons with MCI and the aim was to identify best current treatment evidence | No modern medicine interventions were found effective for treatment of MCI. Only one non-pharmaco-logical intervention proved promising for reminiscence, memory training, and cognitive stimulation, along with recreation and social interaction improved cognition over a 6-month period. | No limits for language or time published | Level 1<br><br>High |
| 5. | Grundman, M. et al, 2004,<br><br>Archives of Neurology<br><br>Mild Cognitive Impair-ment Can Be Disting-uished from Alzheim-er's Disease and Normal Aging for Clinical Trials | Descriptive /comparative study in a multicenter clinical trial in the U.S. and Canada…<br><br>cohort study | 769 MCI patients, 107 cognitively normal elderly controls, 122 patients had very mild AD (Clinical Dementia Rating [CDR] 0.5), and 183 patients had mild AD (CDR 1.0) and were patients in the MIS met operational criteria for amnestic MCI | Comparing with the control group, MCI patients were most impaired with memory tasks, but less impaired in other cognitive domains. MCI patients had less impairment caused by the alolipoprotein E than those with mild AD. | Participants were from Alzheimer's Disease Cooperative Study sites in Canada and the US. Participants had to meet specific criteria to be involved in the study of MCI.<br><br>Information was over five years old. | Level II<br><br>High |

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| 6. | Morris, J. C., 2012,<br><br>Archives of Neurology<br><br>Revised Criteria for Mild Cognitive Impair-ment May Compro-mise the Diagnosis of Alzheimer's Disease Dementia | Retrospective systematic review –clinical practice guidelines and consensus statement of ratings regarding functional impairment across diagnostic categories of normal cognition, MCI, and Alzheimer's disease | 17, 535 partici-pants with normal cognition, MCI, and AD dementia files were reviewed for functional abilities from data retrieved from 33 Alzheimer's Disease Centers, (National Alz-heimer's Coordinating Center data retrieval) according to the revised criteria on MCI. Those participants with MCI and possible AD were compared with those with normal cognitive aging. | The recently published revised criteria for MCI require:<br><br>1) change in cognition recognized by the affected individual or observers;<br><br>2) objective impairment in one or more cognitive domains;<br><br>3) independence in functional activities; and<br><br>4) absence of dementia.<br><br>The revised criteria operationalize "independence in functional activities" more expansively than before. For example, "mild problems" in performing daily activities such as shopping, paying bills, and cooking are permissible, as is dependency on aids or assistance to complete such activities. | Assessment of those participating in the Alzheimer's Disease Centers that had clinical and cognitive data entered in the National Alzheimer's Coordinating Center database. | Level III<br><br>High |

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| | | | | This interpretation of "independence in functional activities" thus has the potential to characterize as MCI some individuals who now are diagnosed with very mild and mild Alzheimer's disease (AD) dementia.<br><br>It was found that up to 60% of providers do not diagnose dementia or MCI due to AD due to thinking of the catastrophic effects on patients and caregivers of the diagnosis. Patients and caregivers, would like to know the diagnosis so they can plan for the future. Providers treat MCI with the same dementia medications, as they are not truly distinguishing between the two diseases.<br><br>Ninety-nine percent of those with very mild AD and 92% of those with | | |

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| | | | | mild AD could be reclassified with a diagnosis of MCI. | | |
| 7. | Hildreth, K. L., 2015,<br><br>Medical Clinics of North America,<br><br>Evaluation and Management of the Elderly Patient Presenting with Cognitive Com-plaints | Non-experimental /descriptive | No sample | This article was information based on expert opinion on the definitions of MCI, current and proposed evaluation methods, current treatment options (pharmacological and non-pharmacological), primary provider concerns and resources for the provider for referral depending on the individual patient complaints.<br><br>For all patients with cognitive complaints, primary goals include maintaining function and independence, preventing further cognitive decline, and ensuring quality of life. | None discussed | Level IV<br><br>High |
| 8. | Bodeker, G., 2002,<br><br>American Journal of Public Health, A Public Health Agenda | Non-experimental /descriptive<br><br>There are 25 out of 191 WHO member states | No sample identified | Questions are related to public health agendas needed for support and research on traditional and complementary | Information is over 5 years old, but is an important contribution to setting policies for | Level IV<br><br>High |

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| | for Traditional, Complementary, and Alternative Medicine | that have national policies related to T/CAMs | | medicine (T/CAMs). Numerous questions were identified in the following areas: (1) National policy and regulation, (2) safety, efficacy, and quality, (3) access, and (4) rational use. Establishing regulatory and policy guidelines will ensure the safety, quality, and efficacy of T/CAMs. Call for a public health agenda is needed. | use of T/CAMs globally.<br><br>Most research has focused on clinical and experimental medicine (safety, efficacy, and mechanism of action) and regulatory issues, to the general neglect of public health dimensions. | |
| 9. | Hart, T. L., 2011,<br><br>International Journal of Behavior-al Nutrition and Physical Activity,<br><br>How Many Days of Monitoring Predict Physical Activity and Sedentary Behaviour in Older Adults | Quasi-Experimental | 52 older men and women; age = 69.3 ± 7.4 years, range= 55-86 years—commun-ity dwelling | This study was performed to see how many days a week would physical activity, using several measurement modalities, be needed to improve health in older adults. (Predicting physical activity that becomes habitual vs sedentary behavior)<br><br>The higher the intensity of physical exercise, the less days needed per week to increase health status (minimum three | Participants were homogeneous in age and health, which could cause a skew of the external validity. More females participated than males. No power calculation for the study. | Level II<br><br>High |

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| | | | | days/week). This study was important to plan for the number of exercise days needed for participation in the Scholarly Project. | | |
| 10. | Petersen, R. C., 2014,<br><br>Journal of Internal Medicine,<br><br>Mild Cognitive Impair-ment: A Concept in Evolution | Descriptive/Systematic Review with meta-analysis | Over 162 studies were reviewed | There is certain time period between normal cognitive functioning and clinical dementia when individuals experience cognitive decline.<br><br>Not all those who experience cognitive decline, especially in advanced ages, will develop AD, and some classified as having MCI will not even progress to clinically defined dementia. Many people may have cognitive decline due to causes other than neurodegeneration, such as depression, anxiety, drug use, | Authors list 9 inconsistencies in defining MCI in research studies—<br><br>> settings in which the criteria are used<br><br>> age of subjects<br><br>>operational criteria<br><br>>implementation of the diagnostic criteria<br><br>>retrospective versus prospective data collection | Level III<br><br>High |

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| | | | | comorbidities, and other treatable conditions. The identification of different types of MCI, is made easier by new diagnostic criteria and by some promising biomarkers, which are available for testing in different clinical settings. | >algorithmic versus clinical application of the criteria<br><br>>blindness with respect to previous diagnoses<br><br>>length of follow-up of subjects when assessing outcome<br><br>>stability of the construct. | |
| 11. | Gates, N., 2013,<br><br>The American Journal of Geriatric Psychiatry<br><br>The Effect of Exercise Training on Cognitive Function in Older Adults with Mild Cognitive Impairment: A Meta-analysis of Random Control Trials | Meta-analysis of RCTs | Fourteen RCTs (1,695 partici-pants; age 65–95 years) were reviewed. These older adults had MCI or a MMSE score of 24-28. | To evaluate the effectiveness of physical activity on cognition in older adults with MCI. Supports increasing physical activity to improve cognitive abilities. | The authors thought the quality of the RCTs was "modest" and "underpowered for the small effects" noted. | Level 1<br><br>Good |
| 12. | Frantzidis, C. A., 2014, | RCT using cognitive training with Brain | 103 older adults — (53 were in | This unique approach of using cognitive and | None listed, but factors not | Level 1 |

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| | International Journal of Psycho-physio-logy,<br><br>Cognitive and Physical Training for the Elderly: Evaluating Outcome Efficacy by Means of Neuro-physio-logy Synchroni-zation | Fitness software, physical training using the Nintendo Wii and a balance board and neuropsychological testing before and after the training | the training group & 50 were in the active control group) 75% were women—age over 60 in 5 EU countries, age factors were matched between the males and females along with cognitive status. | physical training proved to be useful in increasing synchronization of brain function between the two hemispheres of the brain in 43 out of the 53 participants. Supports using holistic approaches to measuring brain and cognitive functioning in older adults. | supported in the study were sample individual differences such as, education, personality, intervention — duration, and dose longer than what was in this study to bring optimal results. | High |
| 13. | Ahlskog, J. E., 2011,<br><br>Mayo Clinic Pro-ceedings<br><br>Physical Exercise as a Preventive or Disease-Modifying Treatment of Dementia and Brain Aging | Systematic review | 1063 articles related to keywords of "cognition" and exercise"—mostly RCTs—on Seniors | This systematic review looked at the benefits of physical activity in animals (rats) and humans in a large number of studies, mostly RCTs in the senior population. Physical activity is shown to increase neuroplasticity, increase hippocampal volume in the brain, and has a neuroprotective feature by decreasing small vessel disease in the brain. Improved cognitive scores and | Mention of some studies having gender bias, prescribed exercise routines varies, along with length of the programs in particular studies. | Level II<br><br>High |

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| | | | | spatial memory were proven.<br><br>Overall, physical exercise was beneficial and should not be overlooked as a therapeutic intervention. | | |
| 14. | Davis, J. C., 2011,<br><br>British Journal of Sports Medicine<br><br>Challenges Moving Forward With Economic Evaluations of Exercise Interven-tion Strategies Aimed at Combating Cognitive Impairment and Dementia | Non-experimental /descriptive | No sample identified; speaks to older adults aged 65+ | The authors address the importance of economic evaluations applied to exercise interventions (costs and consequences) promoting cognitive function in older adults.<br><br>Need for efficiency, due to limited healthcare resources, to facilitate efficient medical decision-making by using cost-effectiveness analysis (CEA).<br><br>The thought is that exercise interventions are more cost-effective and are beneficial to overall health. Health outcomes are quantified in terms of health | Clinical trials are not long enough to show the cost-effectiveness.<br><br>CEAs-units to express health benefits may have limited comparability across certain disease states—outcomes verses intervention.<br><br>More research to be conducted on the direct effect of exercise on cognition. | Level V<br><br>High |

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| | | | | benefits (number of life years saved). | | |
| 15. | Rajan, K. B., 2012,<br><br>The Journals of Gerontology,<br><br>Disability in Basic and Instrumental Activities of Daily Living is Associated with Faster Rate of Decline in Cognitive Function of Older Adults | Non-Experimental /longitudinal population-based cohort observational study in the clients' homes. | 6,678 non-disabled adults over the age of 65 were interviewed at 3-year intervals from 1993 to 2012 in a defined area in Chicago, IL. | The study was to see if a correlation between physical disabilities increased the rate of cognitive decline in older adults. The study started with clients before physical disability occurs and assessed 2-6 times at 3-year time periods over a 12.6 year period, specifically looking at IADLs and ADLs functions. A correlation was identified proving that physical disabilities enhance cognitive decline and, thus, is a risk factor. Cognitive function was decreased 158% after an ADL disability occurred and 115% after an IADL disability occurred.<br><br>Therefore, minimizing physical disabilities could minimize cognitive impairments in older adults. | Although the sample size was more than sufficient, the geographic area was restricted to one area of the US. | Level V<br><br>High |

| | | | | | | |
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| 16. | Jeon, S. Y., 2014,<br><br>Neurorehabilitation,<br><br>Effect of Exercise on Balance in Persons With Mild Cognitive Impairment | RCT | 42 male and female subjects 65 years of age and older who had subjective memory com-plaints | To research whether physical exercise changed balance control abilities in persons who complained of subjective memory impairment, as falls are increased in persons with advanced age and, even more in persons with mild cognitive impairment or dementia.<br><br>There were positive results in this study on improving balance. | Small sample size. Should have considered splitting the MCI group in two—those that did the exercises and those who did not.<br>The setting of a community medical service.<br>The degree of compliance compared to the degree of improvement in balance should have been accounted for.<br><br>Four exercises were used and might have been more helpful if certain groups of subjects were told to use a certain exercise or two. | Level I<br><br>High |
| 17. | Law, L. F., 2014,<br><br>Ageing Research Reviews | Systematic review | Of 474 potential studies, 4 RCTs & 4 non-RCTs were finally reviewed | To assess studies combining cognitive training and physical exercise to improve cognitive functioning in | Small study size<br><br>Some of the studies had rater and subject blindness; 7 of the studies were | Level II<br><br>Good |

| | | | | | | |
|---|---|---|---|---|---|---|
| | Effects of Combined Cognitive and Exercise Interventions on Cognition in Older Adults With and Without Cognitive Impairment: A Systematic Review | | that met the selection criteria | older adults with and without cognitive complaint. Assess the quality of the methodologies used in studies, and report latest results in these projects.<br><br>Four of the five studies found significant improvements in executive functions and attention in MCI, general cognitive abilities, language, memory, and functional status in MCI. | of medium quality and 1 was high; results were conflicting-with the cognitively impaired subjects-one study found no benefit, while four others had significant assistance. | |
| 18. | Voss et al. (2013),<br><br>Human Brain Mapp<br><br>The influence of aerobic fitness on cerebral white matter integrity and cognitive function in older adults: Results of a one-year exercise intervention | RCT | 70 sedentary, com-munity dwelling older adults between the ages of 55 and 80 years of age. | To investigate whether a one-year aerobic fitness program would increase the white matter in the brain of older adults, thereby increasing cognition in healthy subjects.<br><br>The effects of aerobic exercise was found to increase white matter in the brain and specific | Although, white matter density was examined, specific fiber tracts and brain networks were not examined; the effect sizes were small | Level 1<br><br>High |

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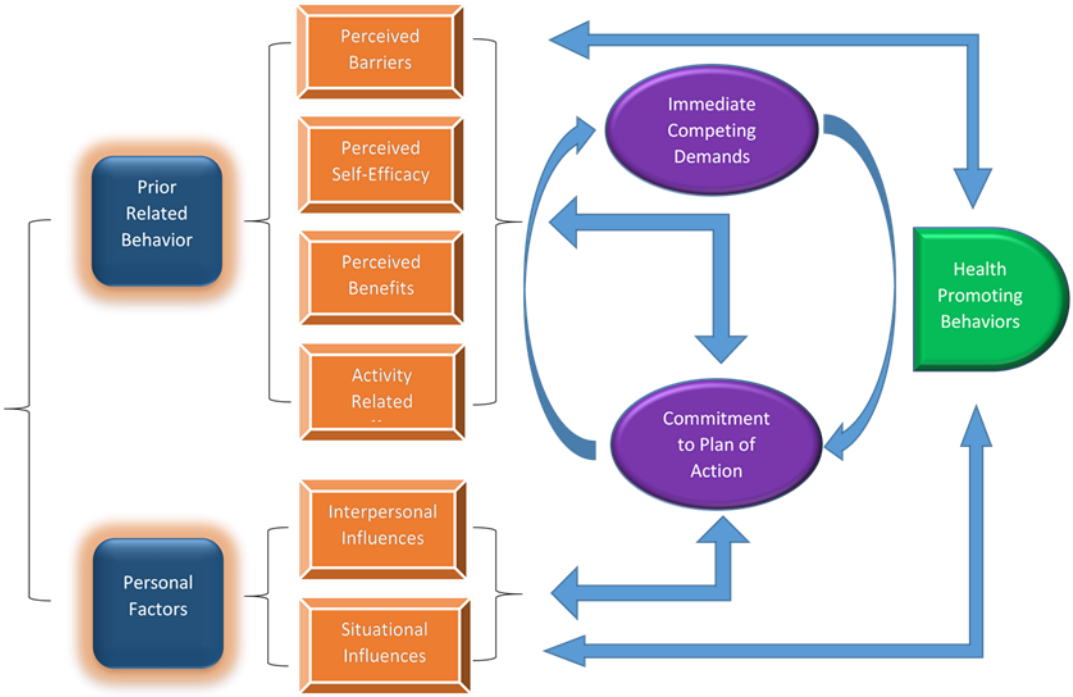
| | | | | executive functions, but not processing speed. | | |

Appendix B

Figure 1

Pender's Health Promotion Model Success




(Stokes, n.d.)

Appendix C

Table 2

Logic Model

| **Resources/Inputs** | **Activities** | **Outputs** | **Outcomes: Short term** | **Out-comes: Long term** | **Impact** |
|---|---|---|---|---|---|
| 1. Facility staff and administration in Citrus County, Fl. Facility | 1. Contact community project partner/s | 1. Project partners secured | 1. Project partners (Administrator & Assistant Administrator) verbally agree and sign memorandum of agreement for ALF to collabo-rate by 7/2016. | | Scholarly Project exercise program com-pleted (09/2017) |
| 2. DNP student, ALF facility staff and residents | 2. Develop education session materials<br>• Aging process | 2. Education materials completed | 2 Seventy-five percent of ALF direct care facility staff attended the education session by 5/2017. | | ALF facility staff and residents verbalized understanding the importance of aerobic |

| | | | | | |
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| | • Mild cognitive impairment<br>• Health-related quality of life<br>• Effects of exercise | | 3. Fifty percent of ALF residents attended the education session by 5/2017. | | activity increasing health-related quality of life in the aging process (5/2017) |
| 4. Sch. Project mentor & DNP student<br><br>NIH PROMIS survey tools – cognitive and health-related quality of life ALF project residents | 4. Secure approval for cognitive survey and health-related quality of life survey tools. | 4. Survey tools approval secured | 4. Ninety percent of volunteer exercise program residents completed the baseline NIH Survey tools (HRQoL & cognitive survey) by 5/2017. | | |

| | | | | | |
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| 5. Project residents, possibly their medical providers, facility staff, facility administration, DNP student, resident caregivers/family members, Sch. Project mentor, and Boise State University faculty<br><br>Facility<br><br>Media resources<br><br>Survey tools<br><br>Exercise program resources (walking equipment, technology, office supplies, auto gas) | 5. Contact community-dwelling ALF residents for project (target number 20+) | 5. Twenty volunteer ALF residents enroll into the project<br><br>6. Walking program residents complete NIH PROMIS cognitive and HRQoL surveys | 5. Enrolled 20 ALF residents over the age of 60, who document having cognitive impair-ments in working memory, attention, and processing speed, along with decreased HRQoL factors on the NIH PROMIS HRQoL & cognitive surveys into the project by 5/2017.<br><br>6. Eighty percent of ALF residents involved in the walking program were educated on NIH PROMIS | | Scholarly Project program completed 09/2017: (Impacts from program A-D)<br><br>A. The benefits of aerobic exercise increased the HRQoL of older adults by 10% over a five month period, by 10/2017.<br><br>B. The benefits of aerobic exercise increased cognitive function-ing in older adults, related to executive function- |

| | | | | | |
|---|---|---|---|---|---|
| Logic model, timeline, and budget | 7. Exercise logs distributed to all exercise program residents | 7. Residents complete weekly exercise logs | survey tools (Health-related quality of life [HRQoL] and cognitive) admini-administered throughout the project by 5/2017 project start. (Administration times prior to start (both tools), Monthly (Positive affect and well-being survey), and end of project (both tools) from 5/2017 to 10/2017).<br><br>7. Seventy-five percent of ALF residents involved in the walking program are | | ing of working memory, attention, and process-ing speed, 10%, over a five month period, by 10/2017.<br><br>C. Congregate-dwelling older adults, over the age of 60, verbalize under-standing the importance of engaging in regular, aerobic exercise to improve and maintain overall cognitive health and health-related quality of life through-out the aging process. Thereby, the |

| | | | | | |
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| | | | educated on how to complete the weekly exercise log before program start 5/2017.<br><br>8. Ninety percent of ALF facility staff members involved in assisting residents in the walking program, are educated on how to complete the weekly exercise log before program start 5/2017.<br>9. Ninety percent of the survey tools (HRQoL & cognitive survey) were completed by each ALF exercise program resident | | older adult remained in their own residence function-ing safely and indepen-dently. (1-3 year attain-ability)<br><br>D. Sustain-ability of active engage-ment in aerobic physical exercise benefit-ting cognitive health and health-related quality of life in older adults is recognized and documented in peer-reviewed journals and |

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| | | | throughout the Sch. Project by 10/2017.<br><br>10. Fifty percent of the 20 ALF exercise program residents reported a 10% increase in HRQoL on the NIH PROMIS survey by 10/2017.<br><br>11. Fifty percent of the 20 ALF exercise program residents reported a 10% increase in cognitive functioning, in execu-<br>tive functions of working memory, attention, and | | research studies. (4-6 year attain-ability) |

| | | | | | |
|---|---|---|---|---|---|
| | | | processing speed on the NIH PROMIS cognitive survey by end of project 10/2017.<br><br>12. Seventy-five percent of ALF exercise program residents completed 80% of the walking exercise sessions (50 out of 63 sessions) through-out the project implementation period (5/2017 to 10/2017) | | |

| | | | | | |
|---|---|---|---|---|---|
| 13. DNP student, area healthcare providers | 13. Scholarly Project informa-tion compiled for poster presentation to professional conference attendees and ALF consor-tium group | 13. DNP student presented Scholarly Project information to professional conference attendees via poster board presentation. | 13. Sch. Project. Abstract submitted to professional conference by 6//2018 (if possible). | | Dissemination of program results to area and state healthcare providers gave credence to project sustain-ability (2-4 year attain-ability). |

Appendix D

Table 3

Data Table

| Outcome(s) | Resources | Data (Indicators) | Method to gather data | Technical assistance needed | Potential cost |
|---|---|---|---|---|---|
| **1. Project partners signed memorandum of agreement to support project 100% by 7/2016.** | DNP student, ALF Administrator and Assistant Administrator | Memorandum of agreement | Memorandum of agreement signed by project partners (DNP student, Administrator, and Assistant Administrator) before project begins. | Memorandum of agreement typed by DNP student | In kind printer use & one sheet paper cost from ALF<br><br>Administrative facility staff participation in planning @ $15.00/hr x 4 hrs = $60.00 (in kind) |
| **2. Seventy-five percent of ALF facility staff attended the education session by 5/2017.** | DNP student, ALF facility staff and residents | Education session attendance sheets | Education session attendance sheets signed by ALF facility staff before | Education session attendance sheets made by DNP student | One dollar for printer toner and paper<br><br>Facility administration participation in |

| | | | | | |
|---|---|---|---|---|---|
| **3. Fifty percent of ALF exercise program residents attended the education session by 5/2017.** | | | presentation begins | | implementation 6 hrs @ $15.00/hour = $90.00 (in kind); facility staff 66ssistance in implementation = 20 hrs at $10.00/hr = $200.00 (in kind); facility exercise leader 5 months @ $45.00/wk = $900.00 (in kind) |
| **4. Ninety percent of exercise program residents completed the baseline NIH Survey tools (HRQoL & cognitive survey) by 5/2017.** | DNP student, ALF project residents | NIH PROMIS<br>Health-related quality of life & cognitive surveys | NIH survey tools completed for baseline information before the project begins | NIH PROMIS<br>Health-related quality of life & cognitive surveys | Free down<br>loads from NIH<br>Subsidiary HealthMeasures |

| | | | | | |
|---|---|---|---|---|---|
| **5. Enrolled 20 ALF residents over the age of 60, who document having cognitive impairments in working memory, attention, and processing speed, along with decreased HRQoL factors on the NIH PROMIS HRQoL & cognitive surveys into project by 5/2017.**<br><br>**6. Eighty percent of ALF residents involved in the walking program were educated on NIH PROMIS survey tools admini-stered throughout the project by 5/2017 project start. (administration times-** | DNP student, ALF project residents and staff | NIH PROMIS<br><br>Health-related quality of life & cognitive surveys | NIH survey tools completed for baseline information before the project begins | NIH PROMIS<br><br>Health-related quality of life & cognitive surveys | Free down<br><br>loads from NIH<br><br>$30.00 in paper and printer toner (in kind)<br><br>$10.00 in printer toner & paper (in kind)<br><br>Included in cost above for residents<br><br>Facility administration and staff pay are included in outcome #2 |

| | | | | | |
|---|---|---|---|---|---|
| **monthly, and end of project from 5/2017 to 10/2017).**<br><br>**7. Seventy-five percent of ALF residents involved in the walking program are educated on how to complete the weekly exercise log before program start 5/2017.**<br><br>**8. Ninety percent of facility staff members, involved in assisting residents in the walking program, are educated on how to complete the weekly exercise log before program start 5/2017.** | | Weekly exercise logs<br><br>Weekly exercise logs | Residents receive education on how to fill out weekly exercise logs to verify time spent three days per week.<br><br>Facility staff receive education on how to fill out weekly exercise logs to verify time spent three days per week, in case residents need assistance | Weekly exercise logs made by DNP student<br><br>Weekly exercise logs made by DNP student | |

| | | | | | |
|---|---|---|---|---|---|
| **9. Ninety percent of survey tools (HRQoL & cognitive survey) were completed by each resident throughout the Sch. Project by 10/2017.**<br><br>**10. Fifty percent of the residents reported a 10% increase in HRQoL on the NIH PROMIS survey by 10/2017.**<br><br>**11. Fifty percent of residents reported a 10% increase in cognitive functioning on the cognitive survey by end of project 10/2017.**<br><br>**12. Seventy-five percent of ALF exercise program residents completed 80% of the walking exercise** | DNP student<br><br>NIH PROMIS survey tools – cognitive and health-related quality of life<br><br>ALF project residents | NIH PROMIS<br><br>Health-related quality of life & cognitive surveys | NIH PROMIS cognitive survey completed by ALF project residents before project begins and at the end of the project.<br><br>NIH PROMIS HRQoL survey completed by ALF project residents before the project begins, then, monthly through project implementation, and at the end of the project. | NIH PROMIS<br><br>Health-related quality of life & cognitive surveys | 73 hours of DNP student time each month @ 35.00/hr x 7 = $2,555.00 through-out the project<br><br>(in kind)<br><br>Benefits: $826.25<br><br>Auto gas: $30.00 for DNP student to facility(in kind)<br><br>Cell phone:<br><br>$50.00 |

| | | | | | |
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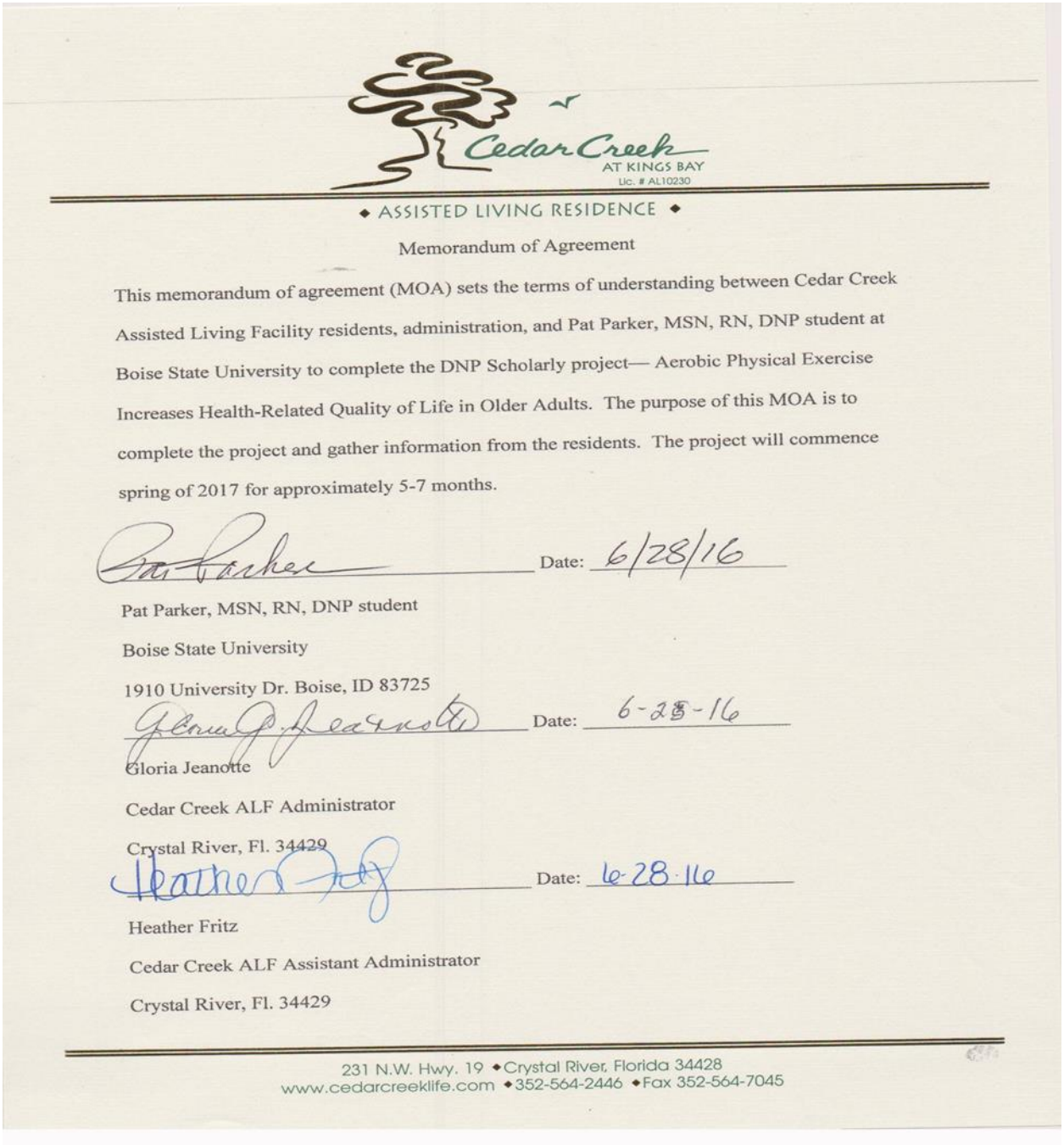
| **sessions (50 out of 63 sessions) through-out the project (5/2017 through 10/2017).**<br><br>**13. Abstract submitted to professional conference by 6/2018.** | DNP student<br><br>NIH PROMIS survey tools – cognitive and health-related quality of life<br><br>ALF project residents<br><br>DNP student<br><br>Area health care professionals, DNP student | Presentation materials (poster board/handouts) | DNP student to present project results | Presentation materials (poster board/handouts) | This infor-mation will be captured in the same time period listed above at end of project (Refer to DNP student hourly rate)<br><br>$100.00 for poster presentation printing; auto gas $7.00 |

| | | | | | |
|---|---|---|---|---|---|
| | | | | | Handout printed by DNP student<br><br>$10.00 for paper and printer toner<br><br>Two hours of presentation time for DNP student @ $35.00/hr = $70.00 (in kind) |

*Note:* Data Template designed by Kellogg Logic Model Development Guide; Outcomes retrieved from current copy of Logic Model.

Appendix E

Memorandum of Agreement



Cedar Creek
AT KINGS BAY
Lic. # AL10230

◆ ASSISTED LIVING RESIDENCE ◆

Memorandum of Agreement

This memorandum of agreement (MOA) sets the terms of understanding between Cedar Creek Assisted Living Facility residents, administration, and Pat Parker, MSN, RN, DNP student at Boise State University to complete the DNP Scholarly project— Aerobic Physical Exercise Increases Health-Related Quality of Life in Older Adults. The purpose of this MOA is to complete the project and gather information from the residents. The project will commence spring of 2017 for approximately 5-7 months.

Pat Parker Date: 6/28/16

Pat Parker, MSN, RN, DNP student

Boise State University

1910 University Dr. Boise, ID 83725

Gloria Jeanotte Date: 6-28-16

Gloria Jeanotte

Cedar Creek ALF Administrator

Crystal River, Fl. 34429

Heather Fritz Date: 6-28-16

Heather Fritz

Cedar Creek ALF Assistant Administrator

Crystal River, Fl. 34429

231 N.W. Hwy. 19 ◆Crystal River, Florida 34428
www.cedarcreeklife.com ◆352-564-2446 ◆Fax 352-564-7045

Appendix F

# Cognition Function– Short Form

**Please respond to each question or statement by marking one box per row.**

**In the past 7 days…**

| | | Never | Rarely (once) | Sometimes (2-3 times) | Often (once a day) | Very often (several times a day) |
|---|---|---|---|---|---|---|
| NQCOG64r1 | I had to read something several times to understand it…….. | ☐ 5 | ☐ 4 | ☐ 3 | ☐ 2 | ☐ 1 |
| NQCOG75r1 | My thinking was slow…… | ☐ 5 | ☐ 4 | ☐ 3 | ☐ 2 | ☐ 1 |
| NQCOG77r1 | I had to work really hard to pay attention or I would make a mistake……. | ☐ 5 | ☐ 4 | ☐ 3 | ☐ 2 | ☐ 1 |
| NQCOG80r1 | I had trouble concentrating……. | ☐ 5 | ☐ 4 | ☐ 3 | ☐ 2 | ☐ 1 |

| | How much DIFFICULTY do you currently have… | None | A little | Somewhat | A lot | Cannot do |
|---|---|---|---|---|---|---|
| NQCOG22r1 | reading and following complex instructions (e.g., directions for a new medication)?..... | ☐ 5 | ☐ 4 | ☐ 3 | ☐ 2 | ☐ 1 |
| NQCOG24r1 | planning for and keeping appointments that are not part of your weekly routine, (e.g., a therapy or doctor appointment, or a social gathering with friends and family)?..... | ☐ 5 | ☐ 4 | ☐ 3 | ☐ 2 | ☐ 1 |
| NQCOG25r1 | managing your time to do most of your daily activities?..... | ☐ 5 | ☐ 4 | ☐ 3 | ☐ 2 | ☐ 1 |
| NQCOG40r1 | learning new tasks or instructions?..... | ☐ 5 | ☐ 4 | ☐ 3 | ☐ 2 | ☐ 1 |



Appendix G

## Positive Affect and Well-Being — Short Form

**Please respond to each question or statement by marking one box per row.**

| | Lately… | Never | Rarely | Sometimes | Often | Always |
|---|---|---|---|---|---|---|
| NQPPF14 | I had a sense of well-being……. | ☐ 1 | ☐ 2 | ☐ 3 | ☐ 4 | ☐ 5 |
| NQPPF12 | I felt hopeful…… | ☐ 1 | ☐ 2 | ☐ 3 | ☐ 4 | ☐ 5 |
| NQPPF15 | My life was satisfying…… | ☐ 1 | ☐ 2 | ☐ 3 | ☐ 4 | ☐ 5 |
| NQPPF20 | My life had purpose…… | ☐ 1 | ☐ 2 | ☐ 3 | ☐ 4 | ☐ 5 |
| NQPPF17 | My life had meaning……. | ☐ 1 | ☐ 2 | ☐ 3 | ☐ 4 | ☐ 5 |
| NQPPF22 | I felt cheerful…… | ☐ 1 | ☐ 2 | ☐ 3 | ☐ 4 | ☐ 5 |
| NQPPF19 | My life was worth living…… | ☐ 1 | ☐ 2 | ☐ 3 | ☐ 4 | ☐ 5 |
| NQPPF16 | I had a sense of balance in my life……. | ☐ 1 | ☐ 2 | ☐ 3 | ☐ 4 | ☐ 5 |
| NQPPF07 | Many areas of my life were interesting to me…… | ☐ 1 | ☐ 2 | ☐ 3 | ☐ 4 | ☐ 5 |

Appendix H

Table 4

Project Timeline

Color Key: Light red—completed

| **Scholarly Project Title: Aerobic Physical Exercise Increases Health-Related Quality of Life in Older Adults** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Activity** | **Mo/Yr** | **Mo/Yr** | **Mo/Yr** | **Mo/Yr** | **Mo/Yr** | **Mo/Yr** | **Mo/Yr** | **12/17 end** |
| Begin project planning and writing Scholarly Project paper-*DNP student* | **5/16** | | | | | | | |
| Literature review (continued through project) & timeline (Initial and review dates)—*DNP student* | **5/ 16** | **9/ 16** | **12/16** | **2/ 17** | **5/17** | **8/ 17** | **10/17** | **12/17** |
| Project outcomes and impacts-*DNP student* | **6/ 16** | | | | | | | |
| Theory of change model, theoretic framework, logic model, initial budget proposal-*DNP student* | **6/ 16** | | | | | | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Secure community project partner/s (facility administration) –*DNP student* | **7/16** | | | | | | | |
| Decide on project survey tools (may revise) PROMIS HRQoL and cognitive surveys-*DNP student* | **Ini-tial-5/16** | | | | **12/16 Re-view** | | | |
| Start working with project mentor throughout the project-*Dr. Gallegos and DNP student* | **5/ 16** | | | | | | | **3/18 End** |
| Develop education session materials, brochures, fliers for project and marketing-*DNP student* | **4-5/ 17** | | | | | | | |
| Project proposal session-*DNP students and Boise State University faculty* | **4/ 17** | | | | | | | |
| Begin to secure facility for project; review budget; finalize budget and facility –*DNP student, facility staff, and project partner* | **5/16** | **12/16** | | | | | | |
| IRB process—*DNP student, facility administration, & IRB members* Submit IRB | **11/16** | **1/17** | **2/17** | | | | | |
| Start project; participants selected and memorandum of agreement signed by all; providers permission secured for project subjects to participate or liability | **5/ 17** | | | | | | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| waiver signed; initial surveys completed; train the exercise instructor, if needed; teach initial educational class to participants and staff-*DNP student, facility staff, residents, and project partners* | | | | | | | | |
| Meet with participants monthly to administer HRQoL survey; Last exercise session—participants to complete HRQoL survey and cognition survey; celebration at the end of the project—*DNP student, residents, and project partners/staff* | **6/17** | **7/ 17** | **8/ 17** | **9/17** | **10/17** | | **End proj-ect** | |
| Data collected and analyzed (from –to)-*DNP student and possible data analyst* | **11/17** | **12/17** | | | | | | |
| Copy editor, DNP student, and third person reader possibly engaged in final submission. | **01/18** | | | | | | | |
| Final project presentation-*DNP student and Boise State University faculty* | **3/18** | | | | | | | |
| Final Report submitted—*DNP student and Boise State University faculty* | **3-4/ 18** | | | | | | | |

Appendix I

Table 5

Preliminary Budget

| | Year 1 | Year 2 |
|---|---|---|
| Staff Salaries and Benefits | DNP student- 25 hrs at $35.00/hr = $875.00 (in kind); administrative facility staff participation in planning @ $15.00/hr x 4 hrs = $60.00 (in kind); $0 for facility staff<br>DNP student benefits @ 31.5% of invested time = $275.00 (in kind) | DNP student @ 50 hrs @ $35.00/hr = $1750.00 (in kind); facility administration participation in implementation 6 hrs @ $15.00/hour = $90.00 (in kind); facility staff assistance in implementation = 20 hrs at $10.00/hr = $200.00 (in kind); facility exercise leader 20 weeks @ $45.00/wk = $900.00 (in kind); DNP student benefits @ 31.5% of invested time = $551.25 (in kind) |
| Consultants | none | Data analyst expert-(in kind)<br>estimating $350.00<br>Actual cost = $689.00<br>(16.42 hrs. x $42/hr.)<br>(+$339.00) |
| Travel<br>(@. 54/mile) | Auto gas for DNP student = $7.00 | Auto gas for DNP student = $30.00<br>Actual mileage cost: $369.36<br>(76 trips to ALF and back x 9 miles each way = 684 miles x .54/mile)<br>(+$339.36) |
| Communications (phone, postage, etc.) | DNP student cell phone cost $15.00 | DNP student cell phone cost $35.00 |

| | | |
|---|---|---|
| Printing | $10.00 by DNP student (Toner and paper) | Poster presentation and handout = $100.00; printing by DNP student $65.00 (in kind) |
| Printed materials | NIH cognitive and HRQoL surveys-free online | NIH cognitive and HRQoL surveys-free online; weekly exercise logs (included in printing costs); Benefits of Physical Activity poster |
| Supplies and equipment | none | Fluids for residents $0 (in kind at facility) |
| Gift cards/celebration costs | none | Estimating $575.00<br>Actual cost: $86.85 3 gift cards x 5 months = $434.25<br>$79.40 celebration party<br>Total = $513.65<br>**(-$61.35)** |
| Marketing costs for project | none | $300.00 estimated (In kind through facility: $60.00/mo.) |
| External Project Funding | none | none |
| | | |
| Total: | $1,242.00 | Est. total cost: $4,946.25<br>Actual cost: 5,563.26<br>($617.01 over budget) |

*Note*. This preliminary budget is subject to change throughout the project planning and implementation time. After project completion, data analyst, mileage, and project celebrations costs were added to the table as *actual costs*, which changed the overall project cost

Appendix J

Table 6

3-5 Year Budget

| **ALF Walking Program for 25 residents** | | | | | | |
|---|---|---|---|---|---|---|
| **Revenues** | **Project Budget Year 1** | **Budget Year 2** | **Budget Year 3** | **Budget Year 4** | **Budget Year 5** | **Rationale** |
| This is a subsidized program with no anticipated organizational revenue [current assets]<br><br>DNP in kind contribution<br><br>Total: | $0.00<br><br>$1,250.00<br><br>$1,250.00 | $5,000.00<br><br>$5,000.00 | $5,000.00<br><br>$5,000.00 | $5,000.00<br><br>$5,000.00 | $5,000.00<br><br>$5,000.00 | Years 2-5 Grant funding possibly from National Institutes of Health or Institutes of Healthcare Improvement |
| **Expenses** | | | | | | |
| Administrative and project management salaries (in kind) | $4501.25 | $1,050.00 | $1,102.00 | $1,157.00 | $1,214.00 | Minus DNP salary and benefits years 2-5 ; with 5% pay raise each year [moderate inflation rate |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | | included plus 2.8% conservative rate included] (Statista, 2016) |
| Other personnel (in kind) | Project (20 hrs. total) $200.00 | $1,040.00 | $1,092.00 | $1,148.00 | $1,205.00 | Post-project-years 2-5 1 hr. 2 x wk annually 5% raise each year of facility staff [moderate inflation rate plus 2.8% conservative rate included] (Statista, 2016) |
| Walking program supplies for residents | $525.00 | $1,105.00 | $1,163.00 | $1,223.90 | $1,287.85 | Toner cartridges Copy paper Gift cards (3 residents per month) celebration party, and fluids [moderate inflation rate plus 2.8% conservative rate included] (Statista, 2016) |

| | | | | | | |
|---|---|---|---|---|---|---|
| DNP Cell phone cost | $50.00 | $52.50 | 0 | 0 | 0 | X 1 month of air time total annually w/ 5% inflation rate included for year 2 [moderate inflation rate plus 2.8% conservative rate included] (Statista, 2016) |
| DNP travel costs | $369.36 | 0 | 0 | 0 | 0 | $0.54/mile 5% inflation rate included for year 2 [moderate inflation rate plus 2.8% conservative rate included] (Statista, 2016) |
| Initial Project Marketing (in kind) Biannual marketing | $300.00 ---------- | $600.00 | $630.00 | $661.50 | $694.57 | Facility cost 5% inflation rate years 2-5 included [moderate inflation rate plus 2.8% conservative rate included] (Statista, 2016) |

| | | | | | | |
|---|---|---|---|---|---|---|
| Consultants | $689.00 | 0 | 0 | 0 | 0 | Project only |
| DNP Professional Poster Board printing cost | $100.00 | 0 | 0 | 0 | 0 | Project only |
| Total: | $6,734.61<br>-$5,563.26<br>(project costs + in kind)<br>$1171.35 | $3,847.50 | $3.987.00 | $4,190.40 | $4,401.42 | |
| **Operating Income (Revenue minus actual expense cost)** | $1,250.00<br>-$1,171.00<br>**$78.65** | $5,000.00<br>-$3,847.5<br>**$1,152.5** | $5,000.00<br>-$3,987.00<br>**$1,013.00** | $5,000.00<br>-$4,190.40<br>**$809.60** | $5,000.00<br>-$4,401.42<br>**$598.58** | |

*Note.* Table format adapted from Boise State University NURS 622 course, 2016. With the new Presidential Administration beginning January 2017, it is uncertain how economic factors, oil prices, and commodities will affect the current national average inflation rate of 2.2%, which occurred over the past five years. Taking a very conservative approach, a 5% inflation rate was added in the appropriate areas over the next two to five years. The national inflation rates were taken from Statista (2016), *Projected Annual Inflation Rate in the United States 2010-2020,* Statista web site: https://www.statista.com/statistics/244983/projected-inflation-rate-in-the-united-states/

Appendix K

Table 7

Statement of Operations Table

| **Statement of Operations** | |
|---|---|
| Project Budget Year 1 of Project Implementation | |
| **Revenues** | |
| No organizational revenue (current assets) | $0.00 |
| DNP contribution (in kind) | $1,250.00 |
| Salaries and benefits (DNP, Administrative, and facility staff in kind) | $4,701.25 |
| Project supplies costs (fluids, toner, paper, in kind) | $90.75 |
| Marketing Costs – (through facility in kind) | $300.00 |
| Consultant fee (in kind) | $689.00 |
| | ***Total:*** **$7,031.00** |
| **Expenses** | |
| DNP Travel | $369.36 |
| DNP Communication | $50.00 |
| DNP Project supply costs | $513.65 |
| | ***Total:*** **$933.01** |
| **Operating Income** | ***Total:*** **$6,097.99** |
| **Revenues minus expenses** | |

*Note*. Table format adapted from Boise State University NURS 622 course, 2016.

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## Appendix L

Attendance Sheet for Education Session

Education Session Attendance Sheet for Benefits of Aerobic Exercise, Neuro-QOL Survey Tools, and Walking Log

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Appendix M

Educational Handout

# Boise State University Doctor of Nursing Practice Scholarly Project

By

Patricia L. Parker, MSN/Ed., RN,
Doctoral Student

## Aerobic Physical Exercise Increases Health-Related Quality of Life in Older Adults

(East Renfrewshire Council, n.d.)

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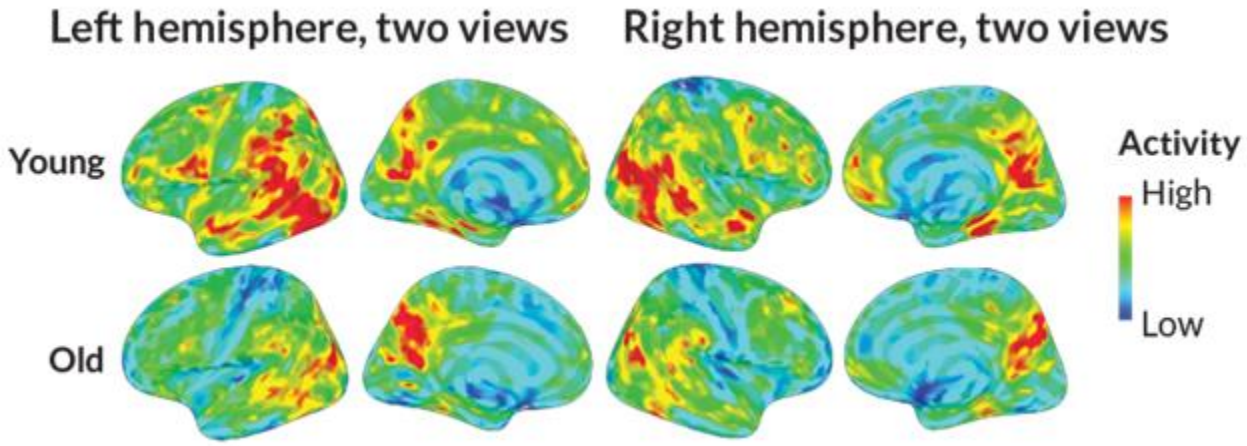
# FACTS ABOUT OUR BRAIN IN THE AGING PROCESS




(Sanders, 2016)

- In our late 20s, the brain actually starts to decrease in size and continues to shrink throughout life.
- By the time we reach our 40s, we start to notice memory lapses, e.g. why did I go into this room?, where did I put my car keys?
- Nerve cells in our brains are shrinking and the *firing ability* (or neuro-synaptic activity) of these cells decrease
- Blood flow to the brain decreases in older adults, decreasing the oxygen flow to the brain (American Psychological Association, 2006).
- All of these factors lead to the brain working less efficiently and cause memory loss (mild cognitive impairments and dementia) (Gorelick et al., 2011).

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› Memory loss causes disruption in daily activities, decreased ability to enjoy a productive lifestyle, and impairs health-related quality of life (Department of Health and Human Services, 2010)!

## Statistical Relevance of Brain Aging

Older Adult Population Statistics:

* Worldwide, during the years 2000 – 2030, persons over 65 years of age will increase from 550 million to 973 million, from 6.9% to 12% respectively (Centers for Disease Control and Prevention [CDC], 2003).

* Statistics show that in the United States (U. S.), the older adult population over the age of 65 will increase from 12.4% (35 million) in 2000 to 19.6% (71 million) in 2030, which is higher than global increases (CDC, 2003).

* In 2014, Citrus County, Fl. had one of the highest adult populations over the age of 65 in the state of Florida, numbering approximately 46,588 males and females, including all races (Florida Community Health Assessment Resource Tool Set, 2014).

* Life expectancy has also significantly increased in the past 60 years from an average of 58 years for men and 62 years for women to 76-80 years of age, with women outliving men by an average of seven years (CDC, 2003; National Institute of Aging [NIA], 2006).

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* People who are over 65 years of age often experience health issues including physical and cognitive decline. Cognitive decline includes diagnoses such as Alzheimer's disease (AD), dementia, and mild cognitive impairment (MCI). Over the age of 65, the prevalence of Alzheimer's disease (AD) doubles every 5 years (CDC, 2011).

* The older adult will experience frequent episodes of memory loss, especially in executive functions of working memory, attention, and processing speed (Ahlskog, Geda, Graff-Radford, & Petersen, 2011; Richie & Tuokko, 2010). Executive functions regulate higher functioning abilities, such as "…attention, memory, and motor skills" (Encyclopedia of Mental Disorders, 2016, para 2). Decreased executive functioning abilities will negatively affect a person's HRQoL.

* In 2011, 12.2% to 15.7% of persons over the age of 60 in Florida reported increased memory loss or confusion that occurred more often or was getting worse in the past 12 months (CDC, 2011). Additionally, research has shown older adults with physical disabilities present with an increased rate of cognitive decline (Rajan, Hebert, Scherr, Mendes de Leon, & Evans, 2013).

* Cognitive impairment, in older adults over the age of 65, has significantly increased and is a major concern for the health system with increased burden placed on the individual, family/caregivers, and health care system (Davis, Hsuing, & Liu-Ambrose, 2011).

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# WHAT CAN WE DO TO INCREASE BRAIN ACTIVITY, COMBAT COGNITIVE IMPAIRMENTS, AND INCREASE QUALITY OF LIFE?

## Aerobic physical activity provides the brain with a neuroprotective effect:

* increases oxygen delivery to the brain
* increases *firing* of the neurons in the brain- improves memory, attention span, motor skills
* decreases risk of vascular problems in the brain
* enhances mental capabilities

## Additional benefits:

* enhances emotional well-being
* increases support systems
* decreases physical and mental stress
* promotes physical health by decreasing the chance of developing other age-related diseases (osteoarthritis, cardiovascular diseases, & hormone deficiencies) (Ahlskog, Geda, Graff-Radford, & Petersen, 2011; Bielak, 2010).

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# What is the best way to enjoy HEALTHIER AGING?

WE HAVE TO GET MOVING ON A REGULAR BASIS!

Protect your body and your brain!

# JOIN OUR WALKING PROGRAM!

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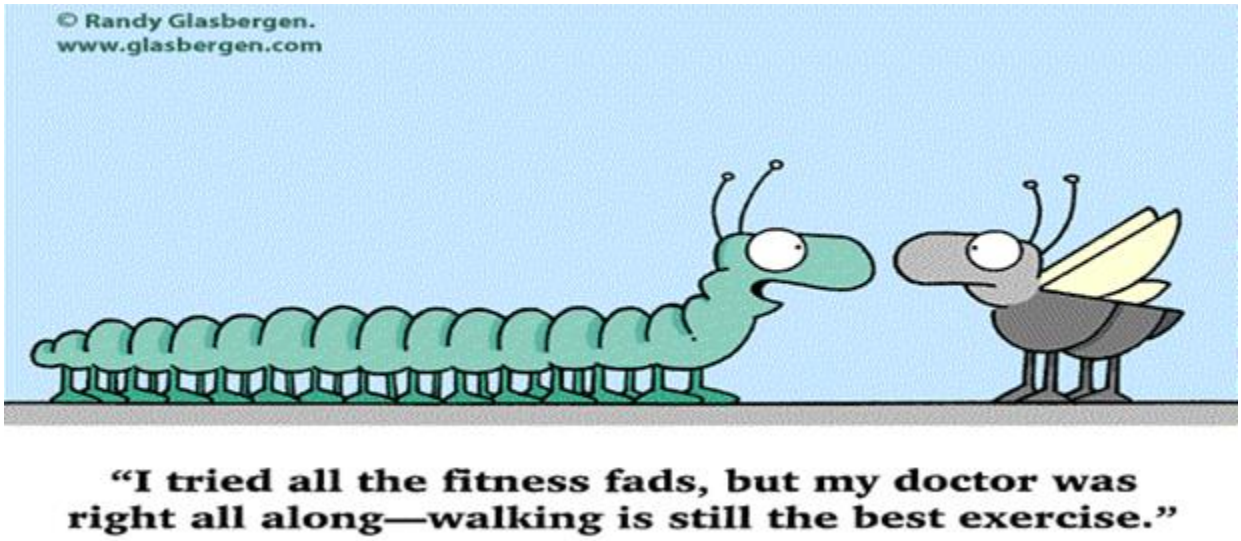


(Glasbergen, 2011)

* Present participation letter and attendance sheet

* Present Neuro-QOL survey forms

* Present walking log

* Speak to project details, protection of human rights, and data collection/analysis

* Motivational rewards throughout project and ending celebration

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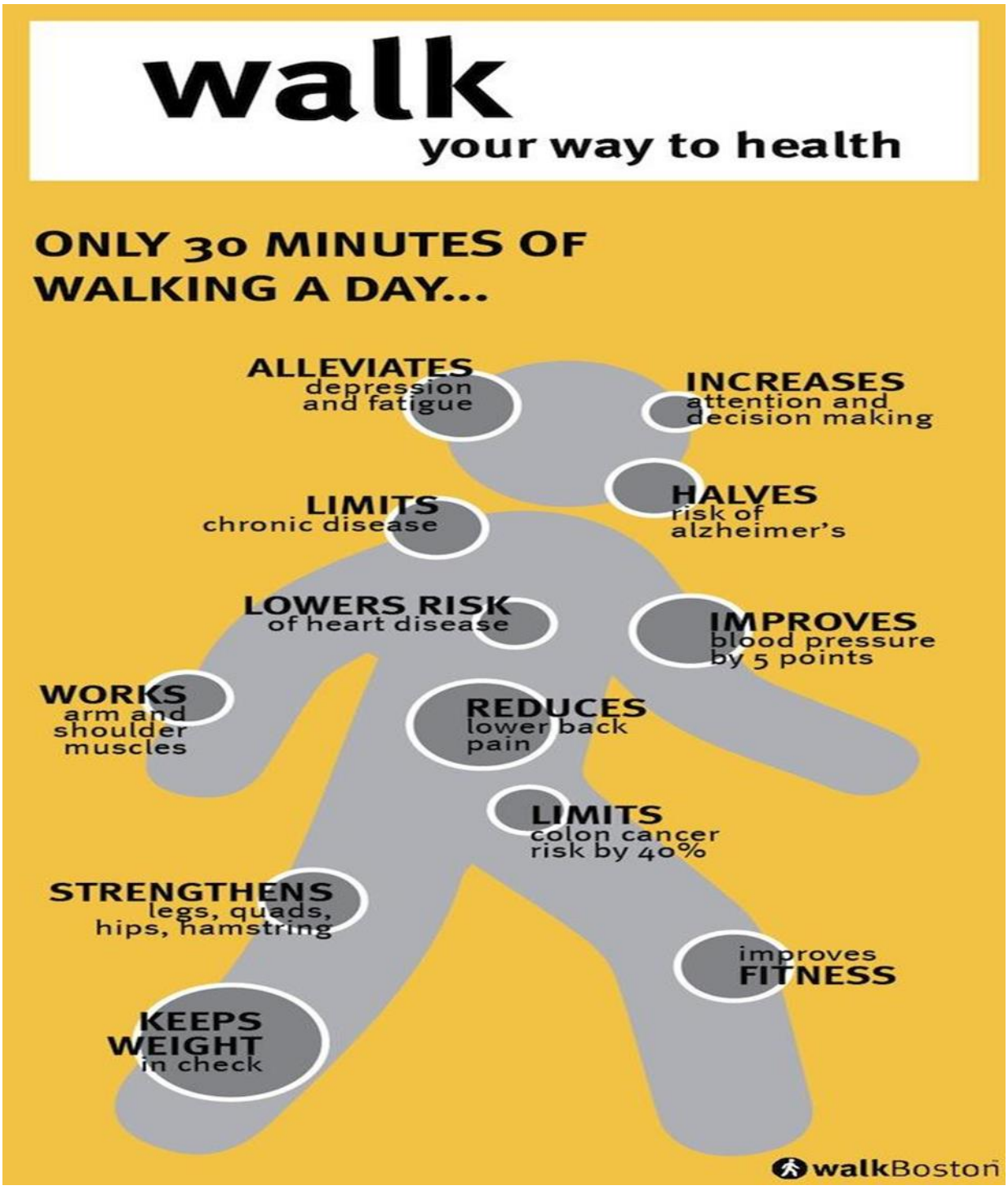
Appendix N

Benefits of Walking Educational Poster



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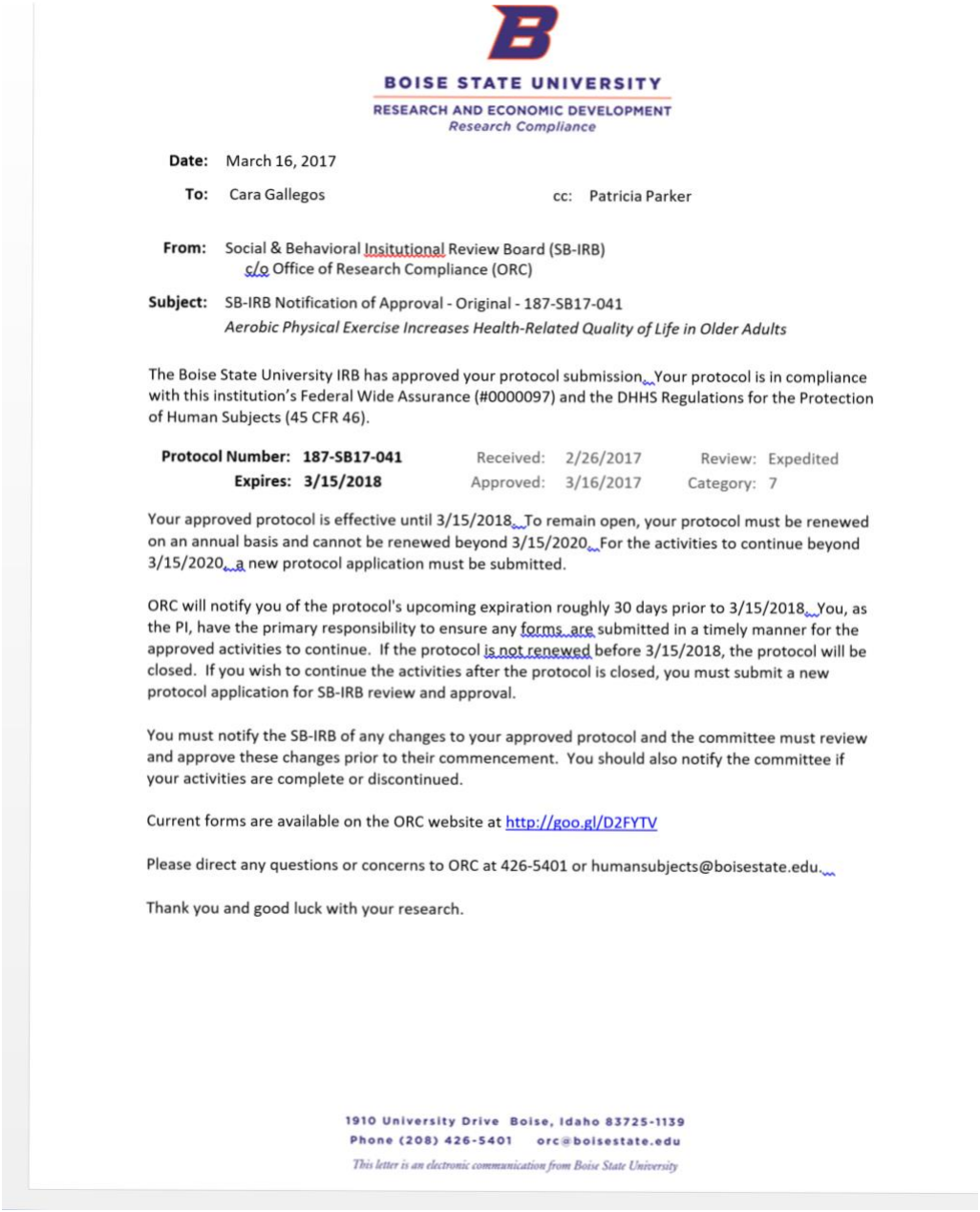
# Appendix O

## Original Internal Review Board Notification of Approval



BOISE STATE UNIVERSITY
RESEARCH AND ECONOMIC DEVELOPMENT
*Research Compliance*

**Date:** March 16, 2017

**To:** Cara Gallegos cc: Patricia Parker

**From:** Social & Behavioral Insitutional Review Board (SB-IRB)
c/o Office of Research Compliance (ORC)

**Subject:** SB-IRB Notification of Approval - Original - 187-SB17-041
*Aerobic Physical Exercise Increases Health-Related Quality of Life in Older Adults*

The Boise State University IRB has approved your protocol submission. Your protocol is in compliance with this institution's Federal Wide Assurance (#0000097) and the DHHS Regulations for the Protection of Human Subjects (45 CFR 46).

**Protocol Number: 187-SB17-041** Received: 2/26/2017 Review: Expedited
**Expires: 3/15/2018** Approved: 3/16/2017 Category: 7

Your approved protocol is effective until 3/15/2018. To remain open, your protocol must be renewed on an annual basis and cannot be renewed beyond 3/15/2020. For the activities to continue beyond 3/15/2020, a new protocol application must be submitted.

ORC will notify you of the protocol's upcoming expiration roughly 30 days prior to 3/15/2018. You, as the PI, have the primary responsibility to ensure any forms are submitted in a timely manner for the approved activities to continue. If the protocol is not renewed before 3/15/2018, the protocol will be closed. If you wish to continue the activities after the protocol is closed, you must submit a new protocol application for SB-IRB review and approval.

You must notify the SB-IRB of any changes to your approved protocol and the committee must review and approve these changes prior to their commencement. You should also notify the committee if your activities are complete or discontinued.

Current forms are available on the ORC website at http://goo.gl/D2FYTV

Please direct any questions or concerns to ORC at 426-5401 or humansubjects@boisestate.edu.

Thank you and good luck with your research.

1910 University Drive Boise, Idaho 83725-1139
Phone (208) 426-5401 orc@boisestate.edu
*This letter is an electronic communication from Boise State University*

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Appendix P

Cover Letter of Intent


Aerobic Physical Exercise Increases the Health-Related Quality of Life in Older Adults

Patricia Parker, MSN, RN, a graduate student at Boise State University, is conducting a Scholarly Project in the Doctor of Nursing Practice Program. The purpose of the project is to evaluate the benefits of aerobic exercise, specifically a walking program instituted at Cedar Creek Assisted Living Facility, on the health and well-being of older adults. You are being asked to engage in the walking program, which consists of walking routinely three days a week for the next few months. During this time, you will be asked to fill out two survey forms at specific times throughout the project. Additionally, you will be asked to complete a weekly walking log.

Participation is voluntary. Each survey will take less than three to four minutes to complete, as well as the weekly walking log. You must be at least 60 years old to take the surveys.

This project involves no foreseeable serious risks. We ask that you try to answer all the questions on the surveys. If there are any questions that make you uncomfortable or that you would prefer to skip, please leave the answer blank. Your responses are anonymous and data collected will be kept strictly confidential.

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If you have any questions or concerns, feel free to contact Patricia or her faculty mentor. Dr. Cara Gallegos, PhD, RN at the following phone and email addresses:

Patricia Parker, Graduate Student
School of Nursing at Boise State University
Phone: (352) 212-7029
Email: patparker965@u.boisestate.edu

Dr. Cara Gallegos, Assistant Professor
School of Nursing at Boise State University
Phone: (208) 995-6633
Email: caragallegos@boisestate.edu

If you have questions about your rights as a Scholarly Project participant, you may contact the Boise State University Institutional Review Board (IRB), which is concerned with the protection of volunteers in research and Scholarly Projects. You may reach the board office between 8:00 am and 5:00 pm (Mountain Standard Time), Monday through Friday, by calling (208) 426-5401 or by writing: Institutional Review Board, Office of Research Compliance, Boise State University, 1910 University Drive, Boise, ID 83725-1138.

If you would prefer not to volunteer to participate in this project, please do not fill out a survey.

If you consent to participate in the project, please complete the initial surveys.

Thank you for your interest in this Scholarly Project!

Sincerely,

Patricia Parker, MSN/Ed., RN
Boise State University Graduate Student
BSU Internal Review Board Protocol Approval Number: 187-SB17-041

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Appendix Q

Weekly Walking Log


# Weekly Walking Log Month:_____

Record the week and check the amount of minutes you walked each day: If you are certain you walked 8 minutes one day, just write this in the square on the day.

| Monday<br>Date: | Tuesday<br>Date: | Wednesday<br>Date: | Thursday<br>Date: | Friday<br>Date: | Saturday<br>Date: | Sunday<br>Date: |
|---|---|---|---|---|---|---|
| 5 min. | 5 min. | 5 min. | 5 min. | 5 min. | 5 min. | 5 min. |
| 10 min | 10 min | 10 min | 10 min | 10 min | 10 min | 10 min |
| 15 min | 15 min | 15 min | 15 min | 15 min | 15 min | 15 min |
| 20 min | 20 min | 20 min | 20 min | 20 min | 20 min | 20 min |
| 25 min | 25 min | 25 min | 25 min | 25 min | 25 min | 25 min |
| 30 min | 30 min | 30 min | 30 min | 30 min | 30 min | 30 min |

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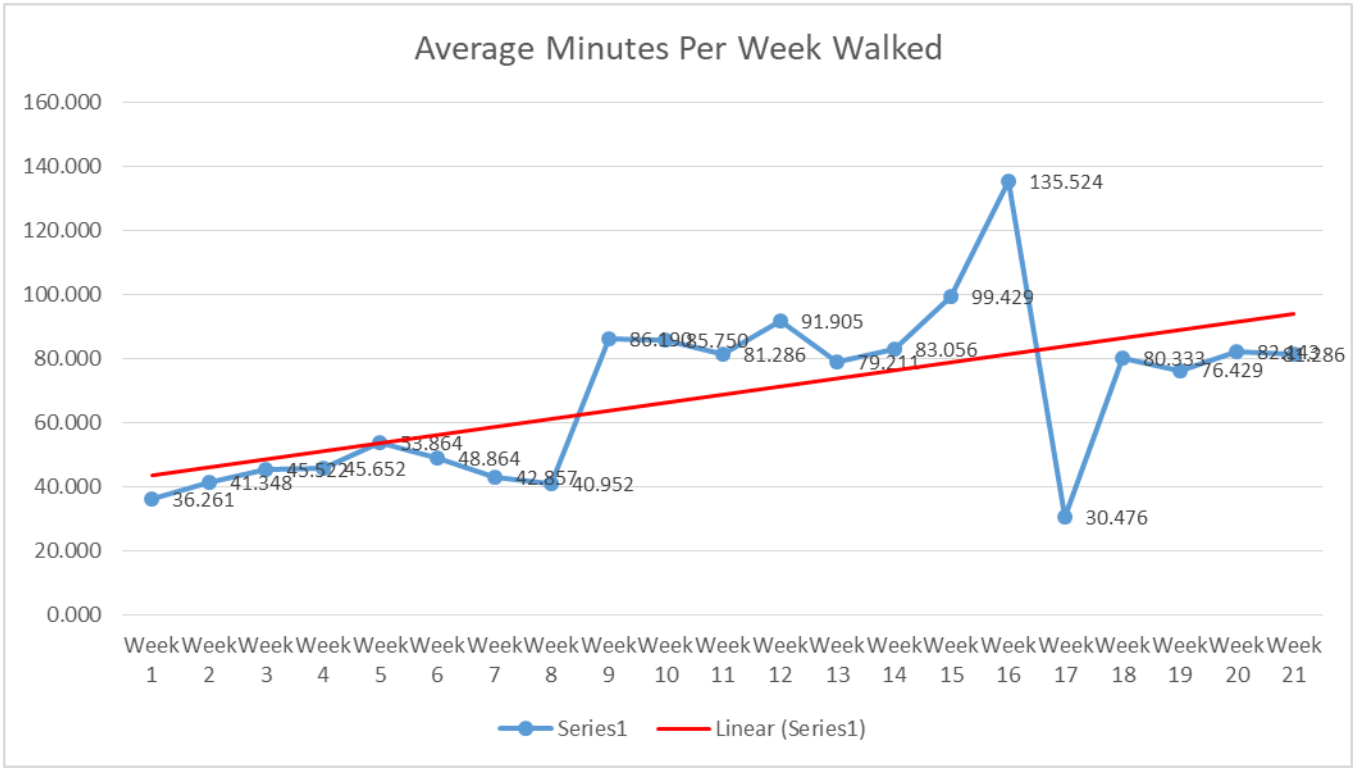
Appendix R

Average Walking Minutes Per Week of All Residents in May through September




*Key: Series* indicates the mean minutes walked by all residents in the applicable week. *Linear* indicates the trending of all walkers' minutes over the twenty-one weeks in May through September 2017.

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Appendix S

Table 8

Number of Walking Sessions for each Resident

| Number of Walking Sessions Throughout the Project | Percentage Compared to Outcome for completing 80% of Exercise Sessions |
|---|---|
| 91 | 144% |
| 156 | 248% |
| 116 | 184% |
| 90 | 143% |
| 140 | 222% |
| 108 | 171% |
| 136 | 216% |
| 118 | 187% |
| 105 | 167% |
| 89 | 141% |
| 115 | 183% |
| 129 | 205% |
| 100 | 159% |
| 18 (lost the data) | 29% |
| 94 | 149% |
| 72 | 114% |
| 121 | 192% |
| 118 | 187% |
| 125 | 198% |
| 98 | 156% |
| 123 | 195% |
| 102 | 162% |
| Final project resident count =22 | > 50 sessions documented = 21<br>< 50 sessions documented =1<br>95% exceeded 80% of sessions |

*Note:* The outcome achievement level was 75% of the residents would complete 50 out of 63 walking sessions throughout the project (3 times per week for 21 weeks).

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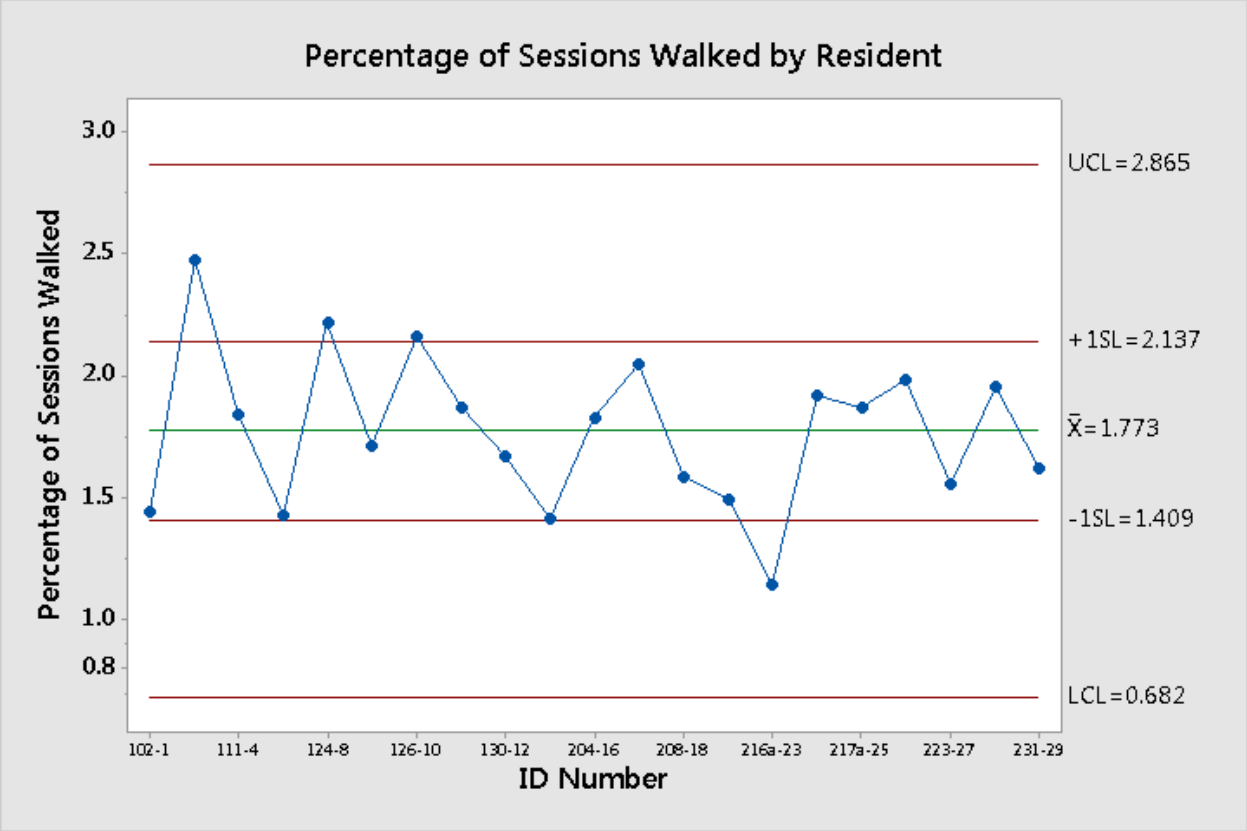
Appendix T

Percentage of Walking Sessions by Resident




*Note:* Mean sessions walked by all residents = 177% (X = 1.773) of the outcome of walking 50 out of 63 sessions throughout the project or 80% (0.8 on chart).

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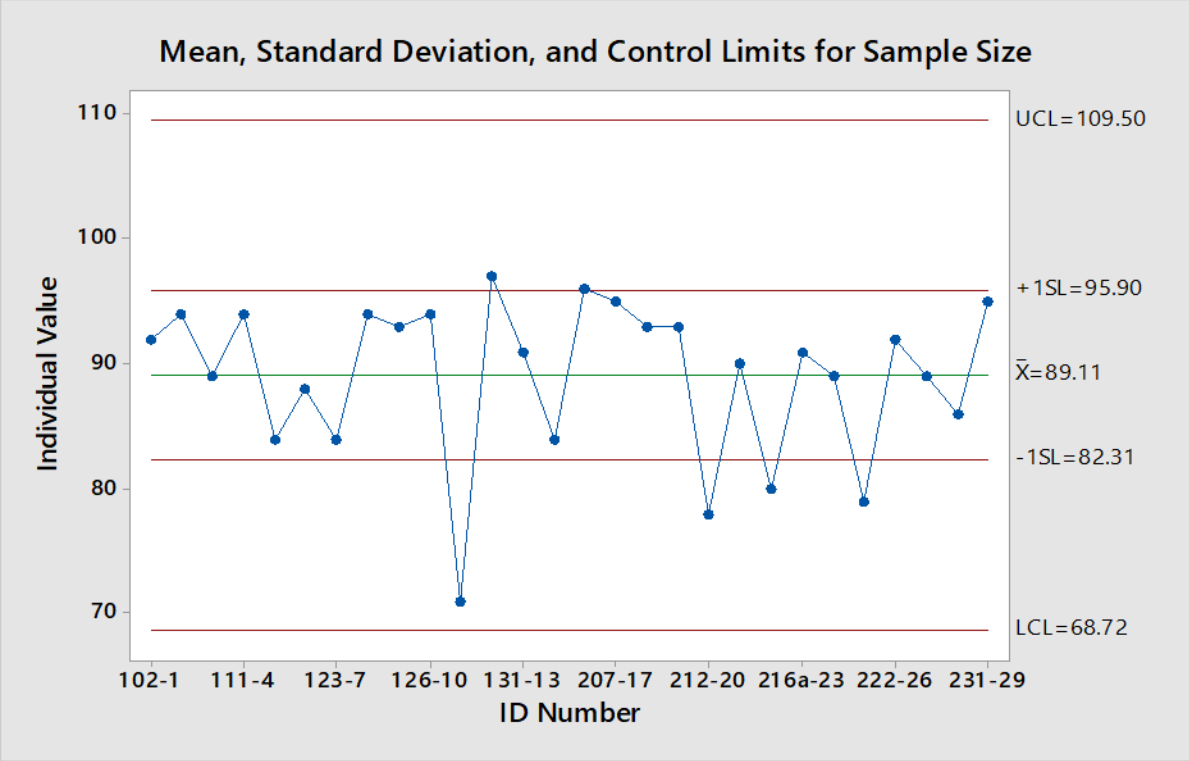
Appendix U

Sample Size Age Mean and Standard Deviation for Each Resident



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Appendix V

Table 9

Cognitive Short Form Pre/Post Project Outcome Results

| Pre-Project results | Post-Project results | 10% Outcome number indicator needed | Outcome met? Yes/ No |
|---|---|---|---|
| 4.500 | 4.750 | 4.950 | No |
| 3.250 | 4.625 | 3.575 | Yes |
| 3.500 | 4.750 | 3.850 | Yes |
| 2.875 | 4.750 | 3.163 | Yes |
| 3.375 | 4.875 | 3.713 | Yes |
| 3.000 | 4.000 | 3.300 | Yes |
| 3.750 | 4.625 | 4.125 | Yes |
| 2.125 | 4.000 | 2.338 | Yes |
| 2.625 | 5.000 | 2.888 | Yes |
| 2.375 | 4.000 | 2.613 | Yes |
| 3.500 | 4.875 | 3.850 | Yes |
| 4.250 | 5.000 | 4.675 | Yes |
| 2.250 | 4.250 | 2.475 | Yes |
| 4.250 | 5.000 | 4.675 | Yes |
| 3.750 | 5.000 | 4.125 | Yes |
| 4.250 | 5.000 | 4.675 | Yes |
| 4.250 | 5.000 | 4.675 | Yes |
| 2.375 | 4.750 | 2.613 | Yes |
| 4.000 | 4.875 | 4.400 | Yes |
| 4.000 | 5.000 | 4.400 | Yes |
| 3.625 | 5.000 | 3.988 | Yes |
| 2.500 | 5.000 | 2.750 | Yes |
| | | | No's = 1; Yes's = 21<br>Total % = 95% |

*Note:* Ninety-five percent of the residents who finished the project met the estimated level of achievement for the 10% increase in cognitive factors.

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Appendix W

Table 10

Comparison of Baseline and Post-Test Cognitive Paired T-Test Scores

| | Baseline | | | Post Test | | | | |
|---|---|---|---|---|---|---|---|---|
| Survey Variable | N | Mean (SD) | 95% CI | N | Mean (SD) | 95% CI | T Value | P Value |
| Understand | 28 | 2.82 (1.06) | (2.412, 3.231) | 22 | 4.591 (0.666) | (-2.263, -1.276) | -7.22 | 0.00 |
| Thinking | 28 | 3.36 (0.87) | (3.020, 3.694) | 22 | 4.455 (0.858) | (-1.593, -0.602) | -4.46 | 0.00 |
| Attention | 28 | 3.43 (0.88) | (3.088, 3769) | 22 | 4.636 (0.658) | (-1.645, -0.770) | -5.56 | 0.00 |
| Concentrating | 28 | 3.36 (0.91) | (3.004, 3.711) | 22 | 4.682 (0.646) | (-1.768, -0.881) | -6.01 | 0.00 |
| Instructions | 28 | 3.50 (1.20) | (3.034, 3.966) | 22 | 4.955 (0.213) | (-1.928, -0.981) | -6.28 | 0.00 |
| Planning | 28 | 3.57 (1.29) | (3.072, 4.071) | 22 | 4.909 (0.294) | (-1.851, -0.824) | -5.32 | 0.00 |
| Managing | 28 | 3.96 (0.84) | (3.639, 4.289) | 22 | Error-all values in column are identical | | | |
| Learning | 28 | 3.57 (0.88) | (3.231, 3.912) | 22 | 4.636 (0.581) | (-1.482, -0.648) | -5.14 | 0.00 |

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Appendix X

Table 11

Positive Affect/Well-being Variable Monthly Mean, Correlation Coefficient, and P value

| Month | Well-being | Hope-ful | Satisfy-ing | Purpose | Meaning | Cheerful | Worth Living | Balance | Inter-esting |
|---|---|---|---|---|---|---|---|---|---|
| May | 3.962 | 4.038 | 4.154 | 3.769 | 4.192 | 3.769 | 4.385 | 3.885 | 4.192 |
| June | 3.864 | 4.136 | 3.909 | 3.955 | 4.136 | 3.909 | 4.227 | 3.909 | 3.955 |
| July | 4.273 | 4.227 | 4.136 | 4.182 | 4.364 | 4.000 | 4.591 | 4.227 | 4.318 |
| August | 4.318 | 4.227 | 4.409 | 4.455 | 4.545 | 4.000 | 4.773 | 4.455 | 4.364 |
| Septem-ber | 4.364 | 4.591 | 4.455 | 4.682 | 4.773 | 4.455 | 4.864 | 4.727 | 4.455 |
| Correla-tion Coeffi-cient | 0.844 | 0.364 | 0.603 | 0.687 | 0.606 | 0.344 | 0.746 | 0.668 | 0.644 |
| P-Value | 0.072 | 0.547 | 0.281 | 0.200 | 0.278 | 0.57 | 0.148 | 0.218 | 0.24 |

*Note:* The Pearson's correlation coefficient is the strength of the relationship between the mean minutes walked each month and the monthly mean variable results of the Positive Affect/Well-Being Short Form survey. The best results would be +1. The P value represents statistical significance between the two groups of data.

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Appendix Y

Table 12

Positive Affect/Well-Being Survey Results for Each Resident for Five Months

| Initial results | May results | June results | July results | August results | September results | 10% Outcome number needed | Outcome met. Yes/no |
|---|---|---|---|---|---|---|---|
| 4.667 | 5.000 | 4.889 | 4.889 | 5.000 | 4.778 | 5.133 | No |
| 4.000 | 3.556 | 4.444 | 4.000 | 4.111 | 4.222 | 4.400 | No |
| 4.111 | 3.667 | 3.778 | 3.667 | 4.111 | 4.667 | 4.522 | Yes |
| 2.889 | 3.778 | 2.778 | 3.444 | 4.333 | 4.333 | 3.178 | Yes |
| 2.778 | 4.556 | 4.889 | 5.000 | 5.000 | 5.000 | 3.056 | Yes |
| 2.556 | 3.000 | 3.222 | 4.111 | 3.667 | 4.667 | 2.811 | Yes |
| 2.333 | 4.556 | 3.556 | 4.444 | 4.222 | 4.778 | 2.567 | Yes |
| 2.111 | 4.000 | 3.889 | 4.111 | 4.444 | 4.667 | 2.322 | Yes |
| 2.444 | 4.778 | 5.000 | 5.000 | 5.000 | 5.000 | 2.689 | Yes |
| 2.778 | 5.000 | 4.556 | 4.778 | 5.000 | 4.556 | 3.056 | Yes |
| 4.222 | 4.222 | 5.000 | 5.000 | 5.000 | 5.000 | 4.644 | Yes |
| 3.889 | 3.667 | 3.333 | 3.556 | 4.111 | 4.333 | 4.278 | Yes |
| 2.778 | 3.889 | 4.000 | 4.667 | 4.667 | 4.778 | 3.056 | Yes |
| 4.667 | 0.000 | 4.333 | 4.667 | 4.556 | 4.667 | 5.133 | No |
| 3.444 | 2.222 | 3.111 | 4.333 | 4.333 | 4.000 | 3.789 | Yes |
| 4.556 | 5.000 | 5.000 | 5.000 | 5.000 | 5.000 | 5.011 | No |
| 4.111 | 4.444 | 4.778 | 4.667 | 4.222 | 4.444 | 4.522 | No |
| 2.444 | 1.556 | 1.889 | 1.667 | 3.333 | 3.667 | 2.689 | Yes |
| 3.556 | 5.000 | 4.556 | 5.000 | 5.000 | 5.000 | 3.911 | Yes |
| 3.889 | 3.889 | 2.556 | 3.333 | 3.667 | 4.222 | 4.278 | No |
| 3.778 | 4.889 | 4.111 | 3.889 | 4.000 | 4.667 | 4.156 | Yes |
| 3.333 | 4.222 | 4.333 | 4.444 | 3.889 | 4.667 | 3.667 | Yes |
| Grp. M 3.424 | 3.859 | 4.000 | 4.258 | 4.394 | 4.596 | 3.767 | Yes |
| | | | | | | Final resident count = 22 | 6 = No 16 = yes 73% |

*Note:* Grp. M stands for the Mean data point of all residents at each time interval.

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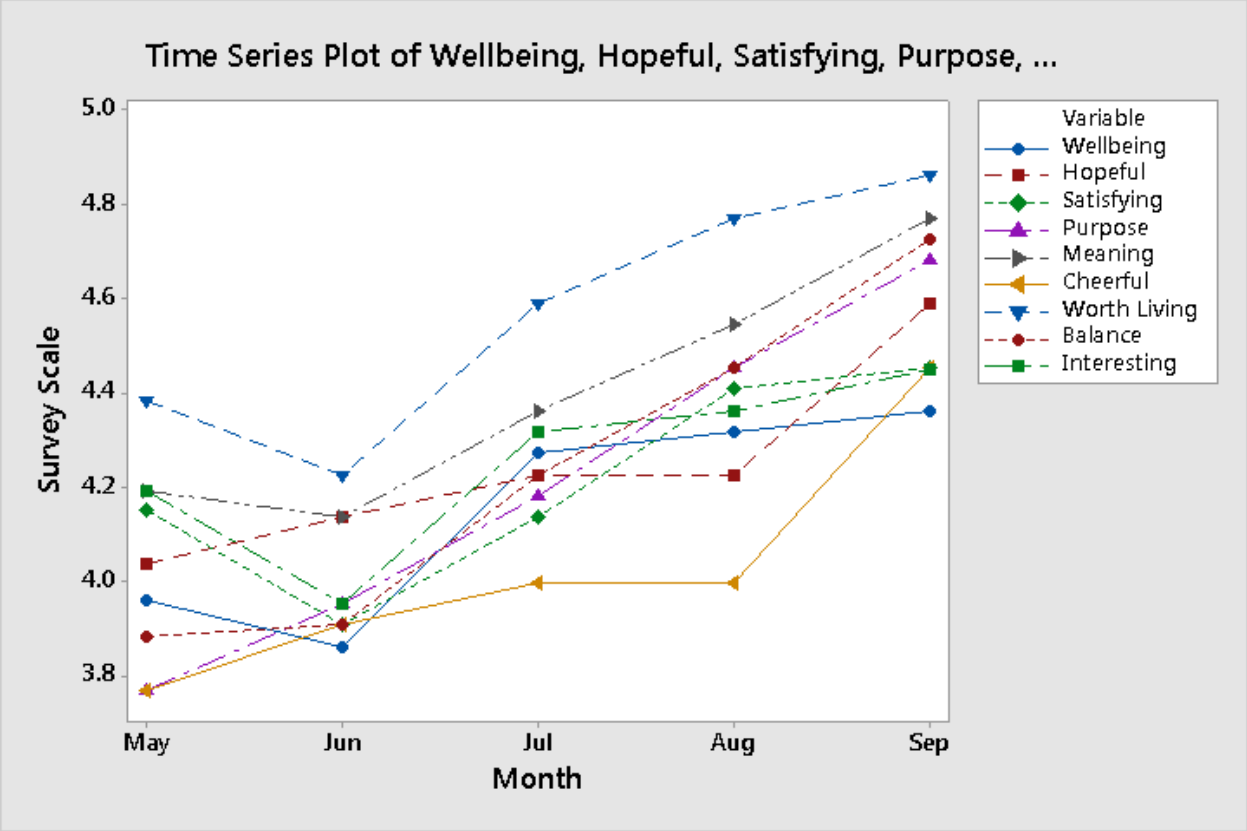
Appendix Z

Monthly Time Series Plot of Positive Affect/Well-Being Survey Variables




*Note:* Months are May through September 2017

# Appendix AA

Outcome Evaluation Table

| Outcome | Outcome Instrument Data | Analysis Goal | Analytic Technique |
|---|---|---|---|
| 2. Seventy-five percent (75%) of the facility staff attended the education session by 5/2017. | Attendance sheet for education session. | Describe and summarize the number of attendees listed on the attendance sheet. | Descriptive statistics: count and percentages |
| 3. Fifty percent (50%) of ALF residents attended the education session by 5/2017. | Attendance sheet for education session. | Describe and summarize the number of attendees listed on the attendance sheet. | Descriptive statistics: count and percentages |
| 4. Ninety percent (90%) of volunteer residents completed the two baseline NIH Survey tools by 5/2017. | * Neuro-QOL Short Form Cognitive Function survey—8 items.<br>* Neuro-QOL Short Form Positive affect and well-being survey—9 items (HealthMeasures, 2016). Forms have established reliability and validity over the past decade. | *Count and percentages of the number of residents completing the two baseline surveys prior to beginning the project. | Descriptive statistics: count and percentages |
| 5. Enrolled 20 ALF residents over the age of 60, who document having cognitive impairments and decreased HRQoL factors on the NIH surveys by 5/2017. | * Neuro-QOL Short Form Cognitive Function survey—8 items.<br>* Neuro-QOL Short Form Positive affect and well-being survey—9 items (HealthMeasures, 2016). | Describe and summarize the residents' responses on their current positive affect/ well-being and cognitive factors prior to beginning the project. | Descriptive statistics: count and percentages |

| | | | |
|---|---|---|---|
| 6. Eighty percent (80%) of volunteer residents were educated on NIH PROMIS survey tools (Positive Affect/Well-being and Cognitive Short Form) 5/2017 project start. | Attendance sheet for education session | Describe and summarize the number of attendees listed on the attendance sheet. | Descriptive statistics: count and percentages |
| 7. Seventy-five (75%) of residents are educated on how to complete the weekly walking log before program start 5/2017. | Attendance sheet for education session. | Describe and summarize the number of attendees listed on the attendance sheet. | Descriptive statistics: count and percentages |
| 8. Ninety percent (90%) of volunteer staff were educated on how to complete the weekly exercise log before program start 5/2017. | Attendance sheet for education session. | Describe and summarize the number of attendees listed on the attendance sheet. | Descriptive statistics: count and percentages |
| 9. Ninety percent (90%) of residents completed all 8 survey tools through program by 10/2017. | *Neuro-QOL Short Form Cognitive Function survey—8 items.<br>* Neuro-QOL Short Form Positive affect and well-being survey—9 items (HealthMeasures, 2016) | Describe and summarize the residents' responses on their positive affect and well-being and cognitive surveys throughout the project. | Descriptive statistics: count and percentages |
| 10. Fifty percent (50%) of the residents reported a 10% increase in HRQoL on the NIH survey by 10/2017. | *National Institutes of Health endorsed HealthMeasures Neuro-QOL Short Form Positive affect and well-being survey—9 items (HealthMeasures, 2016). | Describe and summarize the residents' responses on their positive affect and well-being surveys throughout the project | Descriptive statistics: N, M, & SD<br>Inferential statistics: Pearson's correlation coefficient over time |
| 11. Fifty percent (50%) percent of the residents reported a 10% increase in cognitive functioning on the NIH | National Institutes of Health endorsed HealthMeasures Neuro-QOL Short Form Cognitive | Describe and summarize the residents' responses on their | Descriptive statistics: N, M, & SD |

| | | | |
|---|---|---|---|
| cognitive survey by end of project 10/2017. | Function survey—8 items (HealthMeasures, 2016). | cognitive function surveys throughout the project. | Inferential statistics: Paired T-test; baseline and project end. |
| 12. Seventy-five percent (75%) of residents completed 80% of the walking sessions (50 out of 63 sessions) throughout the project implementation period (5/2017 to 10/2017). | Weekly walking log. The resident will fill in the number of minutes walked on any given day of the week. | Describe and summarize the responses on the residents' weekly exercise log at the end of the project. | Descriptive statistics: count and percentages |
| 13. Scholarly Project abstract submitted to professional conference by 6//2018. | Submit abstract for presentation consideration at Florida Nurse Association (FNA) conference. | To be accepted to present a poster presentation on Scholarly Project. | Acceptance to present poster presentation at FNA conference in 7/2018 |

*Note*. Table format adapted from Boise State University NURS 618, 2016. Reference-HealthMeasures. (2016). *About us*. Retrieved from http://www.healthmeasures.net/resource-center/about-us