Spring 2015

Exercise Motivations of Older Adults

Laura J. Attaway
Central Washington University, attawayl@cwu.edu

EXERCISE MOTIVATIONS OF OLDER ADULTS

A Thesis

Presented to

The Graduate Faculty

Central Washington University

In Partial Fulfillment

of the Requirements for the Degree

Master of Science

Experimental Psychology

---

by

Laura June Attaway

March 2015

CENTRAL WASHINGTON UNIVERSITY

Graduate Studies

We hereby approve the thesis of

Laura June Attaway

Candidate for the degree of Master of Science

APPROVED FOR THE GRADUATE FACULTY

_____ _____
Dr. Jeff Penick, Committee Chair

_____ _____
Dr. Marte Fallshore

_____ _____
Dr. Mary Radeke

_____ _____
Dean of Graduate Studies

ABSTRACT

EXERCISE MOTIVATIONS OF

OLDER ADULTS

by

Laura June Attaway

March 2015

This study examined and compared activity levels and motives in 103 older (over 50 years of age) competitive athletes (CA) and non-competitive fitness exercisers (NCF). The findings indicate that the CA group was significantly higher in the motives of enjoyment, competition, and social recognition. Ranking of the strength of the motivation factors for each group indicated that enjoyment was the strongest motivating factor for both groups, health ranked high for both groups, and social recognition ranked lowest in both groups. Findings related to rankings were not tested for significance, so are more tentative.

Keywords: Aging, Exercise, Physical Activity, Motivation, Self-Determination Theory

ACKNOWLEDGEMENT

I would like to extend our thanks and appreciation to the participants of the Puget Sound Senior Games who participated in this present research with great enthusiasm and input. I would also like to thank the members of the Ellensburg and Wenatchee Senior Centers and the participants of the Central Washington University Senior Aqua-Fitness class for their willing and enthusiastic participation in this present research.

TABLE OF CONTENTS

LIST OF TABLES

CHAPTER I

INTRODUCTION

"The perseverant athlete can find victory over the physical setbacks of age by exercising the strength of their resolve." Sebastian (2012)

Demographic Trends

Increasing Numbers of Older Adults

The most rapidly growing age group in America today is those over 50 years old as there is a general trend towards more individuals living longer (U.S. Census Bureau, 2010). This trend, combined with the population increase of the birth cohort of the baby boomers generation, who were born in the post war era between 1946 and 1964, is fueling this rapid growth. Average life expectancy has increased over the past 25 years from 72 to 78.8 years old (Centers for Disease Control, 2009). It is estimated that by the year 2050, the number of individuals aged 65 and older will be 88.5 million, which is double the population numbers for this age group in 2010 (U.S. Census Bureau, 2011). An increase of this magnitude will impact the dynamics of society on many levels. The impact on the health care system could have dire consequences. It is more important than ever for older adults to maintain their health and fitness into later life. The purpose of this research is to examine older adults to determine what motivates some to engage in exercise and fitness pursuits, while others in their cohort seek out and maintain more sedentary lifestyles.

Strain on the Health Care System

Positive health does not come naturally, and must be worked at. Adults, and particularly older adults (those 65 years or older) are not especially good maintaining positive health (Clark et al., 2011). A simple glimpse at magazines at the grocery stores

provides a look into the fact that diabetes and obesity rates are on the rise across the nation, reaching almost epidemic levels (Centers for Disease Control and Prevention, 2011). These diseases are preventable. The current cost of diabetic care and obesity in the United States is $245 billion annually (Fehely, 2013). The risks of diabetes involve damage or loss of eyesight, amputations caused by poor circulation, and renal failure. Each of these factors adds to the demands on the health care system, which are then multiplied by the increased number of sedentary older adults who are at higher risk for diabetes. In addition to the risk of diabetes and obesity, the older population is at risk of cardiovascular disease, hypertension, and orthopedic problems such as osteoporosis and fractures from falls ("Falls Among Older Adults," 2014). The prevalence of surgery also increases with age. Having diabetes and obesity may adversely influence the ability to heal after surgery. Kliff (2013) states that the cost of a "primary joint replacement" is between $10,000 and $125,000. Medical advances are truly amazing; however, the expense of medical procedures combined with an increasing aging population in poor health can be devastating. The incidence of diabetes, obesity, cardiovascular disease, hypertension, and fractures are significantly decreased through exercise and studies have shown there are additional benefits to exercise for the aging population (Mair et al., 2014.)

Benefits of Exercise for Older Adults

Preventable Health Costs

While aging is not preventable, many of the health care costs associated with the aging process are. Physical exercise reduces the incidence of non-communicable diseases associated with aging and yet less than one third of older adults state they are meeting the

guidelines set forth by the Centers for Disease Control (Bethancourt, Rosenberg, Beatty, & Arterburn, 2014). Seals, Walker, Pierce, and Lesniewski, (2009) state that daily aerobic exercise reduces the incidence of cardiovascular disease by increasing vascular wall elasticity. Maintaining an active lifestyle supports older adults independence, mobility, and decreases health care costs.

Fall Reduction, Improved Cognitive Function, and Mobility

One important benefit of physical fitness in older adults is the reduction of risk of injuries from falling (Clemson et al., 2010). Falls can be a devastating part of growing old. A fall can lead to head injury, loss of function, independence, and even death. Mirelman et al. (2013) provided evidence that not only does exercise decrease the incidence of falls in older adults, but through the use of virtual reality scenes comprised of different terrains, participants also gained in the area of cognitive functions. In this innovative study, Mirelman et al. used the treadmill to strengthen the body while the participants watched a virtual reality program. Participants walked on the treadmill based on what was being seen on the screen in front of them. Cognitive function is required to successfully navigate bodily movements while watching a virtually screen. This dual challenge was successful in prevention of falls in individuals with a high risk of fall, i.e. history of falls, fragility, and over the age of 65 years old. Not only does exercise aid in the prevention of falls, exercise can also boost the cognitive functions of older adults.

To study improving cognition, reduction of susceptibility to diseases, and compressing morbidity Lau, Patki, Das-Panja, Le, and Ahmad (2011) performed an 18-week treadmill study to examine the effect of exercise on mice with Parkinson's disease. The findings suggest that exercise may increase neuroplasticity and neurogenesis in the

brain. Although the animal model is not always directly indicative of the human model, factors can be extrapolated from this experiment that point toward the benefits of exercise for humans. Increased neuro-plasticity and neurogenic properties provided by exercise could ward off some of the neurological changes seen in the aging brain. Brain functions change over time (Lockhart & DeCarli, 2014). An individual's brain will not function the same at 75 years old as it did at 25 years old. However, Muscari et al. (2010) showed that a 12-month endurance exercise course does reduce many the negative cognitive effects that can be seen in aging.

Exercise in Older Adults

Older Adult Athletes

The first National Senior Games were held in 1985 with 2,500 participants. The Senior Games are similar to the Olympic Games; however, there is an age requirement of 50 years old or older. The most recent national games were held in Cleveland, Ohio in 2013 and hosted 10,888 participants (Atassi, 2013). This is more than a five-fold increase in numbers since the inaugural games and the most participants since the games inception. Likewise, there has been an increase in the number of participants over 50 years old in marathons, triathlons, and many other sporting events. Jokl, Sethi and Cooper (2004) performed a linear analysis of New York City marathon participants over the age of 50 years old during the time period of 1983-1999. Their study revealed that not only did the number of participants over 50 years old increase, but those participants over 50 years old improved their overall finish time at a higher rate than the younger competitors. Exercise is becoming more acceptable and a more integral part of society for

older adults than ever before as seen by the increasing numbers of participants in sports (Jokl, Sethi & Cooper, 2004).

Extreme Competition

It is becoming more common to see older adults compete in some of the more extreme fitness competitions. For example, Lew Hollander and France Cokan are two 81-year-old men who compete regularly in Ironman Triathlons ("Amazing 81 year old still competing," 2012). An Ironman Triathlon consists of a 2.4-mile swim, 112-mile bike and 26.2-mile run (Willsey, n.d.). The evident drive of these two men is an example of the changing trends in aging. Thirty years ago, these men would be relaxing in retirement, playing golf, and with grandchildren, not pushing their body to physical and mental limits. A better understanding of the drives and motives related to fitness such as this are at the heart of the present research.

Acceptance of Exercise and Fitness in Older Adults

Views towards aging in society have changed very little over the past decade despite the increase in the aging population. Companies still devise subtle ways to "force retirement" on aging employees (Jacobs, 2013) even though "forced retirement" is illegal. Prior to 1985, scientists within the field of gerontology viewed aging as a series of losses, inevitable decline, and demise with little hope of vitality and robustness (Johnson, 1995). Despite the lack of change within society, some in the aging community display continued and increasing vitality and need for adventure. Marketing and advertising are encouraging travel and exploration by the over-50 crowd ("Travel Opportunities for Older Adults," 2011).

Despite changing norms and the growing numbers of older adults engaging in physical activity, exercise, and competition, an enormous number of sedentary older adults still exist. Older adults often view retirement as a time to take it easy, having "served their time." This sense of ease may contribute to a sedentary lifestyle and the negative aspects associated with it. As stated, a sedentary lifestyle in older adults can lead to the increased associated risks of diabetes, cardiovascular disease, obesity, and orthopedic injuries. The present study seeks to better understand the exercise motives of active older adults in order to improve the education of sedentary older adults.

CHAPTER II

LITERATURE REVIEW

Difficulties in Maintaining Healthy Lifestyles

Lack of exercise is just one way people have difficulty practicing good self-care. No matter the age, humans are poor at self-care and positive health maintenance practices (Mechanic & Cleary, 1980). From the frequency of flossing teeth to condom use to proper sleep habits and exercise, many humans struggle to maintain healthy behaviors/habits.

The prevalence of meals eaten at fast-food restaurants rather than home cooked nutritious lower calorie meals is an obvious display of poor health self-care. Food high in sugars and fats and low in fiber and nutrients, such as the typical foods from fast food restaurants, add to the rate of obesity in the United States. Kruger, Greenberg, Murphy, DiFazio, and Youra (2014) found individuals with fast-food restaurants within two miles of their homes had higher BMIs, lower fruit and vegetable consumption, and increased risk of cardiovascular disease than individuals who did not have a fast-food restaurant within two miles of their homes. Proximity to fast food restaurants appears to make healthy food choices difficult.

A lower sense of self-efficacy was also found to add to poor health choices. Buglar, White, and Robinson (2010) found that individuals who had a lower sense of self-efficacy were less likely to maintain the healthy habit of flossing teeth. If confidence was lacking, so was healthy behavior.

Despite media and education programs emphasizing the importance of condom use to prevent pregnancy and sexually transmitted diseases, complete and correct condom

use continues to fail to occur. Hensel, Stupiansky, Herbenick, Dodge, and Reece (2011) demonstrated among the 1,875 males participating in their study incomplete or incorrect condom use occurred 17% of the time.

Rates of exercise adherence in most individuals are similarly disappointing. The Center for Disease Control recommends that individuals over 65 years old should participate in 150 minutes of moderate-intensity activity each week and two or more days a week of muscle-strengthening activities ("How Much Physical Activity," 2014). Caspersen (1995) found two-thirds of individuals in his study had no regular physical activity. Forkan et al. (2006) surveyed 630 older adults after they completed a home-based exercise balance-training program. The program was supervised by a licensed physical therapist at either the University of Washington Medical Center or the Northwest Hospital Safety and Gait Enhancement program. A mere 37% of exercise program participants maintained the prescribed exercise regime beyond a four-week post discharge period. These facts, when viewed together, bring up many questions. Does this lack of adherence stem from lack of motivation, information, or incentives? Further research is required to acquire the answers to these questions.

Individual Factors Associated with Lack of Exercise in Older Adults

A number of specific factors and demographic variables have been examined and have been found to be associated with lack of exercise in older adults. These include cultural or cohort effects (Capps, 2012), gender (Conn, Tripp-Reimer, & Maas, 2003), socioeconomic status (Burkert, Rásky, Großschädl, Muckenhuber, & Freidl, 2013), lack of available or conducive space (Frost et al., 2010), and locus of control (Rotter, 1966).

Cultural and Cohort Effects

In general, within the culture in the United States, aging is viewed as an upward progression with a beginning, a rise, a peak and then a slow decline to an end, with no control throughout (Capps, 2012). From birth through the first 40 years, life is viewed as a continuing process of improvement. Depending on the person, heredity, lifestyle, and mindset, this continuing process of improvement begins to shift to a downhill slide around 40-50 years old. The downhill slide ends in failure and death. Many perspectives on aging focus on the downhill slide. Much of the language about aging is related to the opinion that aging entails fragility, ill health, dependence, and loss (Butler, 1980). Johnson (1995) stated that even within the field of gerontology, perspectives on aging are often based on biological decreases and losses. At a given age individuals retire and are "put out to pasture" with expectations to engage only in leisure activities due to this perception of fragility. Different age cohorts view exercise differently.

Louw, Van Biljon, and Mugandani (2012) demonstrated differences between age cohorts in the top five motives to exercise. Individuals less than 25 years old stated the order of importance in motivation to exercise as general health, fitness, strength, to feel good, and appearance. Individuals 25-34 years old stated, in order of importance: fitness, general health, strength, to feel good, and desire to improve energy. Individuals 35-44 years old stated general health, energy, weight control, strength, and to feel good. Participants over 44 stated general health, to feel good, fitness, enjoyment, and weight control. Whether due to a cohort effect or changes due to aging, it seems that motivations towards exercise shift with age.

Life course theory has evolved over time beginning the 1920s (Elder, 1998). This theory states individuals' lives must be studied based on the social, cultural, and structural changes and events within the course of their lives. These events shape and mold the individual. For example, the baby boomer cohort consists of children of post-Depression era parents. Life at the end of the Depression was one of scarcity and hard work. The baby boomer cohort who started life observing scarcity and hard work in their parents slowly developed a life of gradual ease and mechanization. Why use a push lawnmower when there is a newer model you can sit on? The end of the day was for taking it easy, not doing an hour of cardio. This mindset continued later into life and the "take it easy" mindset became retirement rather than engaging in exercise or competition. The "take it easy" mindset was revealed by Cousins (2001) wherein participants in a qualitative study stated retirement was a time of no commitments after a life time of working. If you were healthy, exercise was not necessary and exercise would not be appropriate if you were unhealthy. Lastly, these participants noted that being busy volunteering and helping with grandchildren is a substitute for physical activity.

Differing age cohorts engage in different forms of exercise. DiPietro (2001) states that running, team sports, and weight lifting are the primary forms of exercise in younger men, while participation in aerobics is most common in younger women. Older adults tend to engage in less intense activities such as walking, gardening, and bicycling. Less intense activities tend to be engaged in for more prolonged periods of time in older adults when compared to younger adults. Along with cohort differences, researchers have examined the role of gender on rates of exercise.

Gender

Gender is associated with rates of exercise in older adults. Conn, Tripp-Reimer, and Maas (2003) interviewed 225 women over 65 years old to determine their views on exercise. The findings suggested that older women view formal exercise as too strenuous to be added to their daily life. Culturally and historically it was frowned on for women to participate in sports. Sports competition often required wearing revealing clothes and older women were seen as too fragile. There was a very strong cultural mindset of propriety in regards to dress, exertion, and lady-like activities. Gender bias in physical activity had a very strong influence up until the late 20th century and the advent of Title IX. In 1972, Title IX became law requiring gender equality for males and females in educational programs that receive funding from the federal government.

Title IX applies to sports, but sports is only one of 10 key areas addressed by the law. These areas are: Access to Higher Education, Career Education, Education for Pregnant and Parenting Students, Employment, Learning Environment, Math and Science, Sexual Harassment, Standardized Testing and Technology (http://titleix.info/History/History-Overview.aspx). Gender and exercise rates were examined by Louw et al. (2012), and it was determined that although women rated feeling good, general health, and fitness maintenance as the top three motivations to exercise, men rated fitness maintenance, strength, and general health as motivators of exercise.

Lee (2005) surveyed 276 older adults between ages of 60-75 years old. Seventy percent of those surveyed reported that walking was their primary form of physical activity. Women demonstrated less engagement in physical activity outside the home and

more household chores than men. Lee (2005) found that the perceptions of women were that a lack of safety, poorer health, living alone, and a lower self-efficacy, were significant contributors to the difference between genders in levels of physical activity. It was also concluded that lower education and income were de-motivating to women in regards to physical activity.

Socioeconomic Status

It has been shown that socioeconomic status may influence the extent of adherence to or avoidance of exercise in older adults. Older adults on a fixed income will not be able to afford gym memberships, home-based exercise equipment such as treadmills, stationary bicycles, or fees for fitness-based classes. In a study performed in the United Kingdom, Dobson (2007) found that state pensions did not allow ample income to provide for healthy living. There were monies for basic needs (food, fuel, and housing), but no extra monies were available to pay for organized fitness, exercise programs, or equipment.

Burkert et al. (2013) examined 3,231 individuals who were divided into three weight classes: normal, overweight, and obese. A significant negative correlation between weight and socioeconomic status was reported. Individuals in lower socioeconomic status had more chronic disease and poorer health management. The lower the socioeconomic status, the more significant impact there was on health particularly in the obese group.

In patients recovering from cardiac surgery, Murray and Rogers (2012) found no correlation between socioeconomic status and the patients' adherence to cardiac rehabilitation. However, patient socioeconomic status does appear to influence the

accessibility of health care and its associated costs. Although socioeconomic status may influence exercise and health habits, the availability of safe and accessible space to exercise can also influence exercise and health habits.

Availability and Accessibility of Conducive Space

Weather and issues with city infrastructure such as lack of sidewalks and safe walking areas may also influence older adults' motivations and adherence to exercise behaviors. In larger metropolitan areas, mall walking has become prevalent (Stephenson, Culos-Reed, Doyle-Baker, Devonish, & Dickinson, 2007). However, mall walking often is simply a stroll and social time without a focus on exercise and cardiovascular improvement. Mall walking should not be discounted completely, because older adults are getting off the couch and moving. Such lower-intensity mall walking has been shown to reduce body mass index and waist to hip ratio (Stephenson et al., 2007) and alleviates depression and anxiety and stimulates cognitive attributes (Hogan, Mata, & Carstensen, 2013). Rural areas continue to be a challenge to providing safe and accessible areas for older adults to engage in exercise or physical activity. Frost et al. (2010) found the presence of built environments in rural areas significantly increased exercise rates of older adults. A built environment is one that has been structurally amended with paved sidewalks, paved cycling or jogging paths, sufficient lighting to provide safety during outdoor activities, and roadways with appropriately wide shoulders in order to provide safety for pedestrians.

Although these three factors gender socioeconomic status, and available space, are somewhat linked to locus of control, variation in locus of control is still possible, and

those who develop a more internal locus of control can overcome situational limitations (Rotter, 1966).

Locus of Control

The construct of *locus of control* was developed by Rotter (1966) and posits that there are both internal and external loci of control. Internal locus of control states that control comes from within the individual not from external sources. An individual possessing a strong internal locus of control is more likely to be motivated to set goals and tasks and implement strong and positive health behaviors. Internal control individuals are responsible for their own actions and less influenced by social constructs. Those individuals who believe something or someone outside him or her has control are less likely to be motivated to exercise and are said to have external locus of control (i.e., are controlled by luck, fate, chance, or powerful others). Why should they be exercising when some outside source already determines whatever will happen? Hopelessness and lack of power demotivate individuals with an external locus of control. Strong internal locus of control reveals a strong motivation to exercise and avoid negative consequences of aging and reap the positive benefits of exercise. Rotter (1966) states locus of control should be viewed as a continuum, as no person possesses an all-internal or external locus of control.

Overcoming the aforementioned barriers to exercise requires motivation. Goals need to be set and habits established based on an individual's motivation to exercise. Several types of motivational styles have been researched and are discussed below.

Comprehensive Theories and Models on Motivations for Activity and Exercise

Along with individual factors that have been associated with differences in exercise in older adults, a number of more comprehensive theories have been applied to examine motives for exercise in older adults. Motivational styles are nearly as varied as the number of individuals who utilize them. Often an individual will utilize a combination of several styles in order to accomplish their goals of exercise and physical activity (Biddle & Nigg 2000). Studies of exercise motivation have utilized the Health Belief Model (Sommers, Andres, & Price 1995), Positive View of Aging (Wurm, Tomasik, & Tesch-Romer 2010), Self-determination Theory (Deci & Ryan 2008), and Self-efficacy Theory (Bandura, 1997).

Health Belief Model Theory

The Health Belief Model (HBM) is a multi-faceted approach to motivation and behavior modification. The HBM states that an individual will participate and subscribe to behaviors perceived to have a positive outcome and avoid those that have a negative outcome. Further, it states an individual will be more motivated to adopt and engage in behaviors that are perceived to have a higher potential of success. The HBM has been used to promote condom use (Andreas & Theologia 2010), stress management (King, Singh, Bernard, Merianos, & Vidourek 2012) and drug and alcohol behavior in college students (Von Ah, Ebert, Ngamvitroj, Park, & Duck-Hee 2004). Koch (2002) utilized the HBM to study African-American women with Type 2 diabetes and how motivation and their beliefs regarding exercise would influence glycemic levels and health maintenance. Thirty-one women over the age of 50 years old participated in the study and results

demonstrated a belief in the positive outcome and the ability to influence their disease were motivating factors to exercise.

Sommers, Andres, and Price (1995) utilized the HBM to study mall walkers and their motivation and knowledge of exercise. One hundred thirty-four participants with a mean age of 66 years old were surveyed on the influences promoting or preventing them from exercising. Results demonstrated there were fewer barriers and an increase in motivation to mall walk if the participant had a belief in a positive outcome based on the advice of their physician. Participants believed in the benefits and had confidence in their ability to attain the benefits and thus were more motivated to control and manage their health. Confidence and control were thought to be associated with a more positive view of aging.

Positive View of Aging

A positive view of aging (PVA) signifies a belief an individual has control and thus the ability to influence the aging process. Rather than the downhill slide portrayed in modern media, an individual with a PVA can, and will, manage the physiological, mental, and emotional changes that occur with advancing years. The mindset then translates into motivations to influence rather than just experience the aging process (Wurm et al., 2010).

Wurm et al. (2010) examined the importance of a PVA and its relationship to motivational levels to engage in walking or sports activities. Participants were in one of two age brackets, middle age (40-64 years of age) and older aged (65-85 years of age). Results showed that although a PVA is important across both age groups, within the older group, having a PVA provided a greater level of motivation towards participation in

physical activity or exercise than in the middle age group. The reason for this difference maybe physical shifts due to aging that were not yet prevalent within the younger group. An individual with a PVA may not be influenced by cultural or familial attitudes towards physical and mental abilities after 65 years old. The decrease in influence may counteract some of the motivational barriers to exercise and physical activities (Schutzer & Graves 2004.)

A notable finding of the research by Wurm et al. (2010) indicates that participants with poor health and a PVA engaged in exercise as often as their counterparts who possessed good health. This demonstrates that a PVA supports the motivation to perform physical activity or exercise no matter the health status of the individual.

Older adults are more likely to exercise if their self-perception of aging is positive (Levy & Myers 2004.) This self-perception regards their view of their own aging rather than a generalized one. Levy and Myers (2004) conducted a longitudinal study over 20 years involving a cohort of 241 individuals who were 50 years of age at the beginning of the study. Findings indicated that those individuals whose self-perceptions of aging were positive were more likely to engage in preventive health behaviors. These preventive health behaviors included the regular use of seatbelts, annual medical checkups, proper diet, exercise routines, and reduction of or stopping the use of tobacco products.

Although a PVA has been shown to improve participation in preventative health behaviors (Wurm et al. 2010), there is still a strong age related stigma to the aging process prevalent in modern culture. This stigma views older adults in a largely negative light when compared to younger individuals. An individual who accepts the negative

cultural views of aging might then establish a downward spiral of self-fulfilling prophecies with regard to the aging process. For this reason it is important to develop education and informational programs that will negate this stigma and create a positive view of aging. It is important to include the theory of self-efficacy in order to create a positive view of aging.

Self-Efficacy

Self-efficacy is the degree to which an individual holds the belief they have the ability to succeed and have mastery in a particular facet of their life (Bandura, 1997). Bandura states there are four primary sources from which high self-efficacy can be garnered: (a) social modeling, (b) social persuasion, (c) mastery experiences, and (d) psychological responses. *Social modeling* is the observation of one's peers accomplishing a task similar to one that the individual is attempting. Seeing a peer accomplishing a task increases the probability that an individual will view his/herself capable and thus have a higher sense of self-efficacy. Receiving verbal encouragement and positive reactions from peers is *social persuasion*. Verbal encouragement is vital to overcoming self-doubts and limiting mindsets. Completing tasks or accomplishing goals provides a strong sense of self-efficacy and is referred to as *mastery experiences*. Using success as a building block strengthens self-efficacy. *Psychological responses* refer to an individual's perceptions and interpretations toward a situation, which may be creating stress, performance anxiety, or challenges to accomplishment of tasks. The individual's response to a challenge will reflect on and be reflected in their level of self-efficacy.

Within this level of self-efficacy lies the knowledge and belief the individual will succeed in the endeavor before them. This belief in control is one of many determinants

of how people think, feel, or behave. With regard to exercise, the older adult with high self-efficacy will set goals, overcome obstacles, and strive towards success because of their belief in their ability to master, accomplish, and continue.

Li, McAuley, Harmer, Duncan, and Chaumeton (2001) utilized the simplistic form of exercise known as Tai Chi to demonstrate increased self-efficacy through the use of mastery of experience, social modeling, and persuasion. Tai Chi is generally not an activity known to many older American adults. Yet, through this simple activity, self-efficacy was seen to increase over the 24-week program when compared to the control group who did not engage in Tai Chi. Engagement in unfamiliar forms of exercise and gaining mastery in such a form supports an increase in exercise motivation.

Warner, Ziegleman, Wurm, and Schwarzer (2011) utilized social modeling, support, and persuasion constructs of self-efficacy to show significant effects on the level of older adults' exercise self-efficacy. Their longitudinal study with 309 German participants over the age of 65 years were tested for self-efficacy levels pre-, mid-, and post-study at three-month intervals. Results showed that despite having low self-efficacy scores, individuals who received strong social support demonstrated high exercise adherence. The combination of high self-efficacy and strong social support demonstrated high levels of exercise adherence. It can be surmised that social support is an important factor in exercise motivation and adherence rates in older adults. Other important factors to include are those based on self-determination theory.

Self-Determination Theory

Formulated by Deci and Ryan (1980), self-determination theory (SDT) has been utilized to study motivations for such activities as weight loss (Williams, Grow,

Freedman, Ryan, & Deci, 1996) and exercise and physical activity behaviors (Ryan, Williams, Patrick, & Deci, 2009). SDT separates motivation into two different types, extrinsic and intrinsic. Extrinsically motivated needs are based on the probability of external rewards and acknowledgments and thus may be more tension producing than intrinsic motivation. Intrinsically motivation needs are based on internal, more personal rewards. Deci and Ryan (2008) place these two types of motivation on a continuum from extrinsic at one end (doing something like exercise simply as a means to an end) to the other end with intrinsic (being driven to exercise for the sake of it). Within this continuum of extrinsic to intrinsic motivation types, are the dimensions of introjected, identified, and integrated motivations. *Introjected motivations* are based on guilt, shame and worry. For example, an individual might believe they must exercise because a physician, clergy, or other person wielding authority says exercise must occur. Next on the continuum is *identified motivation*. In this form of motivation, the individual has moved past guilt and recognizes the exercise behavior is beneficial in the development and maintenance of health and well-being. *Integrated motivation* is the result of self-examination and a decision that leads to the belief and adoption of the benefits of exercise. The individual deems exercise and physical activity as right and suitable to engage in (Ryan et al., 2009). The degree to which the type of motivation meets the needs of autonomy, competence, and relatedness are of primary importance in the SDT.

The Missouri State Senior Games provided Reed and Cox (2007) with 981 participants for their study using SDT in order to determine the motives and regulatory style of senior athletes in competitive sport. Their hypothesis that intrinsic and identified motivation would be the strongest motivating forces was confirmed. Personal fitness,

enjoyment, competence, social interaction, and physical appearance were each factors of the intrinsic motivation. A gender difference was also noted. Social interaction was stronger in men than women and personal fitness was stronger in women than men.

Applying the SDT to age, gender, and competition level, Pero et al. (2009) surveyed 430 Italian swimmers and track and field athletes ranging from 45-80 years old. Their findings revealed an intrinsic source of motivation with regard to emotional health and mental clarity. Exercise provided not only physiological stimuli, exercise provided cognitive and emotional stimuli as well. The primary extrinsic motivation was focused on avoiding factors of physical decline associated with aging.

Self-esteem and sense of self-worth are often motivating factors for women (Wilson & Rogers 2002). Intrinsic and identified motivations provided the highest level of self-esteem while extrinsic motivations provided the lowest levels of self-esteem. The concept of psychological need for exercise is closely related to SDT.

Utilizing SDT, Markland and Ingledew (1997) developed the Exercise Motivation Inventory-2 (EMI-2) to measure 14 motives to exercise. The motives measured include 11 that are considered to be primarily intrinsic variables: stress management, revitalization, enjoyment, challenge, health pressures, ill-health avoidance, positive health, weight management, appearance, strength/endurance, and nimbleness. Additionally, there are three, which are considered to be extrinsic variables: social recognition, affiliation, and competition. These variables are referred to as “subscales” by the authors, because the authors aimed to group conceptually related subscales into higher-order models. However, the authors have not satisfactorily validated those theoretical subscales.

Psychological Need for Exercise

Expanding on the work of Deci and Ryan (2008) and the SDT, Wilson and Rogers (2008) studied the relationship between psychological needs and behavior regulation toward exercise. SDT posits three basic psychological needs: proving competence, maintaining autonomy, and relating to others. *Competency* is defined as one's ability to perform and master difficult tasks. Maintaining an internal locus of control without external coercion defines *autonomy* while *relatedness to others* represents engaging in satisfying interpersonal relationships with one's peers or cohort. Successful fulfillment of these three psychological needs then provides a positive influence on exercise and physical activity motivations. However, considerable differences of opinion exist within previous research (Wilson & Rogers 2008).

Definitions

The Merriam-Webster's collegiate dictionary (2003) defines *exercise* as "bodily exertion for the sake of developing and maintaining physical fitness." Similarly, Merriam-Webster's collegiate dictionary (2003) defines *physical activity* as bodily movement that is concerned with the state of being active, vigorous or energetic in action; bodily movement requiring expenditure of energy. Ceria-Ulep (2011) determined that most of their participants considered activities for daily living to be forms of exercise. The activities listed were household chores, taking care of grandchildren, yard work, and walking to the store. Caspersen, Powell, and Christenson (1985) defined *physical activity* as any movement produced by skeletal muscles that results in the expenditure of energy. *Exercise* is defined as structured, planned and repetitive

movement done with the intent to improve or maintain one or more components of physical fitness. For the purpose of this study the latter definition will be utilized.

Summary of Literature Review

Motivation is a multi-faceted construct with many variables. This is valuable due to the vast individuality within the human race. This multi-faceted factor provides a vast array of tools from which to draw in order to establish and accomplish exercise motivation and adherence. In an effort to narrow the parameters of motivation, this present research will utilize and focus on the SDT theory of motivation and the facets therein.

Four groups of older adults who all differ in their involvement in activity, exercise, and fitness competition were examined based on differences in their motivations to stay fit based on variables measured by the SDT. There are five primary hypotheses:

1. Competitive athletes (CA) will be higher in measures of competitive and positive health measures than non-competitive fitness (NCF) participants, daily active participants, and sedentary participants.

2. NCF participants will be higher in measures of social, stress management and enjoyment than CA, daily active participants, and sedentary participants.

3. Daily active participants will be higher in the ill-health avoidance, stress management, enjoyment than sedentary participants.

4. Sedentary participants will score lower in affiliation and weight management than CA participants, NCF participants and daily active participants.

5. The strongest motivating factor among competitive, daily fitness and daily active will be enjoyment and positive health variables.

CHAPTER III

METHODS

Participants/Procedure

Participants (N = 124) were recruited at the Puget Sound Senior Games held in Olympia, WA, the Central Washington University Senior Aqua-Fitness class and through convenience sampling. Of the 124 surveys distributed, 21 were eliminated due to incomplete, missing or bad data. Bad data are results that have two numbers circled on the same response line. The resulting data set of 103 completed surveys (61 females, 42 males; with a M age 69.2 (*SD* = 9.3) was used to test the hypotheses. Ethnicity was distributed as follows: 75% Caucasian, 12.5% American Indian or Alaska Native, and 12.5% Other.

Participants were distributed across four groups as follows: (a) CA (*n* = 35, 32.1%), (b) NCF (*n* = 68, 62.4%), (c) Daily active (*n* = 4, 3.7%), and (d) Sedentary (*n* = 2, 1.8%). These four groups were to serve as the independent variable. Based on small numbers (6) of participants in daily active and sedentary groups, those surveys were not included and analyses compared only the CA and the NCF groups.

Materials

Materials were distributed individually in a brown-clasped 8 x11 manila envelope by the primary investigator and research assistant. Each envelope contained the following: an informed consent form (Appendix A), demographic form (Appendix B), an activity level survey (Appendix C), EMI-2 (Appendix D), and a debriefing form (Appendix E).

Demographic Form

The demographic form (Appendix B) requested anonymous information from the participants with regard to their age, gender, race, employment/retirement status, and number of children living at home.

Activity Level Form

The activity level survey (Appendix C) asked the participant to supply their history of activity levels, and their current activity levels. History was defined as what sports activities did the participants engage in during high school and college years. The current levels included self-reporting for frequency, duration, rate, intensity, and type of exercise or physical activity they are currently engaged in. To be categorized in the "Competitive Athlete" group, participants needed to provide a positive response to the question, "Have you competed in a timed or scored event in the last two years?" To be categorized in the "Non-Competitive Daily Fitness Exerciser" group, participants needed to provide a negative response to the competition question and a positive response of more than once a week to the question of "Do you participate in a fitness/exercise class or perform cardiovascular, weight or flexibility on your own?" To be categorized in the categorized in the "Daily Active" group, participants were required to give a negative response to the previous two questions and provide a positive response to, "Do you engage in daily home or leisure activities?" If a participant provided a negative response to all three of the previous questions, they were placed in the Sedentary group.

Exercise Motivation Inventory-2

The EMI-2 (Markland & Ingledew, 1997; Appendix D) is a 51-item survey. In order to provide a more efficient assessment tool with a focus on fitness-related motives for exercise, the EMI-2 was researched and developed to improve the original EMI. There are 14 independent scales consisting of stress management, revitalization, enjoyment, challenge, social recognition, affiliation, competition, health pressures, ill-health avoidance, positive health, weight management, appearance, strength/endurance, and nimbleness. The present research focused on scores regarding positive health, ill-health avoidance, stress management, competition, social recognition, and enjoyment. Cronbach's alpha across these scales ranges from .68 to .95, and the EMI-2 has been reported to have good discriminant validity. The present research focused on scores regarding positive health, ill-health avoidance, competition, social recognition, stress management and enjoyment.

Instructions for the EMI-2 ask participants to complete sentences using a Likert scale ranging from 0 (not true for me at all) to 5 (very true for me). The sentences begin with, "Personally, I exercise or might exercise…" and then a statement is provided to complete the stem sentence, followed by the Likert scale.

CHAPTER IV

RESULTS

The purpose of this research was to determine differences in motivation to perform exercise and fitness activities across older adults grouped by varying degrees of daily activity levels. Because of the lack of success in recruiting adequate numbers of participants in the "daily active" and "sedentary" categories, differences in types of motivation were examined across the CA and NCF groups. This leaves as the primary research question an exploratory examination of how CA and NCF participants differ in their motives for activity based on the six EMI-2 exercise motives of (a) stress management, (b) enjoyment, (c) positive health, (d) ill-health avoidance, (e) competition, and (f) social recognition.

Table 1 shows some of the differences in the two groups based on demographic variables. The means for the motivation variables across the two groups are shown in Table 2. To provide further clarity to the information presented in Table 2, Table 3 lists the rankings of motives by group.

Independent samples *t* tests were computed to examine differences between the competition and fitness groups on the six motivation variables. To reduce concerns regarding the Type I error rate associated with the use of multiple *t* tests, only results that indicated significance at $p < .01$ were deemed statistically significant. Levene's test for equality of variances indicated significant differences in variance for the measures of enjoyment, social recognition, and positive health motivations, therefore adjustments in the *p* values were made through SPSS. Significant differences were found between the two groups on enjoyment ($t = 3.680$; $p = .000$), social recognition ($t = 4.305$; $p = 000$),

Table 1

Comparison of Groups Across Demographic Factors

Demographic Factor		Competitive Athlete (*n*=35)	Non-Competitive Fitness Exerciser (*n*=68)	Total
Gender	Male	17 (48.6%)	25 (36.8%)	42
	Female	18 (51.4%)	43 (63.2%)	61
Survey Site	Senior Games	28 (80.0%)	8 (11.8%)	36
	Family & Friends	1 (2.9%)	12 (17.6%)	13
	CWU Staff/Faculty	1 (2.9%)	2 (2.9%)	3
	Ellensburg Senior Center	0	4 (5.9%)	4
	CWU Aqua-Fitness	1 (2.9%)	20 (29.4%)	21
	CWU Medical Staff	2 (5.7%)	4 (5.9%)	6
	Wenatchee Senior Center	2 (5.7%)	18 (26.5%)	20
Percent Played High School/College Sports		25 (71.4%)	35 (52.2%)	60
Work Status				
	Employed	16 (45.7%)	15 (27.7%)	31
	Working Part-Time	7 (20.0%)	4 (6.1%)	11
	Retired	12 (43.3%)	47 (71.2%)	59
Mean Age		66.1 (*SD*=9.6)	70.8 (*SD*=8.8)	

Table 2

EMI2 Scores for Competitive and Fitness Groups

EMI Variable	Item Number	Competitive Athlete		Non-Competitive Fitness Exercise Group		Total	
		M	(*SD*)	M	(*SD*)	M	(*SD*)
Stress Management	6, 20, 34,46	13.5	5.7	10.7	5.6	11.7	5.8
Enjoyment	9, 23, 37, 48	17.1	3.9	13.7	5.2	14.6	5.2
Social Recognition	5, 19, 33, 45	9.9	6.0	4.7	4.8	6.4	5.7
Competition	12, 26, 40, 50	14.4	6.4	5.4	5.2	8.1	7.0
Positive Health	7, 21, 35	14.0	1.4	13.4	1.9	13.6	1.8
Ill-Health Avoidance	2, 16,30	3.1	2.0	12.9	2.2	12.9	2.1

Table 3

Rankings of Motives by Group

Rank	Competitive Athlete	Non-Competitive Fitness Exerciser
1	Enjoyment	Enjoyment
2	Competition	Positive Health
3	Positive Health	Ill-Health Avoidance
4	Stress Management	Stress Management
5	Ill-Health Avoidance	Social Recognition
6	Social Recognition	Competition

and competition (t = 7.603; p = .000) indicating that the competition group was higher in these motives. Differences between the groups were not significant at the .01 level in stress management (t = 2.357; p = .020), positive health (t = 1.621; p = .108), and ill-health avoidance (t = .607; p = .545).

CHAPTER V

DISCUSSION

Principal Findings

The primary purpose of this research was to determine differences in motivational factors across CA and NCF groups. Results demonstrate that the strongest motivating factor to exercise among individuals over 50 years old in both groups is that of enjoyment. This present research demonstrated that in order to be motivated to either compete or engage in non-competitive fitness activities, an individual over 50 years old must find the activity enjoyable.

However, each group seems to enjoy their physical activity for different reasons. Whereas the CA group appears to enjoy their activity based on the opportunity to compete, the NCF group appears to enjoy the health benefits (i.e., positive health and ill-health avoidance). It is evident that the NCF group is less motivated by competition, as they are lower on this motivational factor than the CA group and the motivational factor of competition is lower when compared to most of their other scores. Something other than competition is motivating the NCF group and it appears to be the health factors.

The NCF focus on the health-based factors of positive health benefits and ill-health avoidance is optimistic and surprising. The message is getting through to these older adults and they know exercise is beneficial to their well-being. While the media and physicians strongly recommend and extol the advantages of exercise and physical activity, the percentage of individuals over the age of 50 years old who exercise are still low (Dacey, Baltzell, & Zaichkowsky, 2008). It is important to better understand why some and act on this message and others do not.

Beneath the drive for competition, for the CA group, health also remains relevant, as positive health benefits ranked highly for them in this study. This group of participants has realized that utilizing their competitive drive also provides the positive health benefits many are seeking during the aging process.

Based on Table 1, the CA group contained more males, and was younger, more employed, and more active in sports in high school and college. It is possible that these disparities between groups could explain some of differences seen in the motivation patterns of the two groups. For instance, Niederle and Vesterlund (2008) found that males are more competitive than females, and take risks. DiPietro (2001) found that older adults tend to engage in less intense activities for prolonged period of times when compared to younger adults. Dohle and Wansink (2013) found the most significant predictor for males staying active over 50 years old were participation in high school varsity sports.

The CA group has a higher percentage of employed individuals, and their employment may in some way promote better access or availability to exercise and fitness opportunities. Dobson (2007) supports this finding, concluding that some individuals in his study were not able to pay for organized fitness and exercise programs. Similarly, socio-economic status provided an "indirect association" to exercise self-efficacy in later life according to Grove and Buckworth (1996). Trainers need to be aware of this and design programs that require little or no money for the participants. The findings of this study support these previous studies.

Social recognition is of less importance as motivation for both groups however, is even less important to the NCF group. There may be some relationship between extrinsic factors such as competition and social recognition leading the CA group to be higher in

both. Further research may be useful to examine such relationships. It appears likely that in older age, extrinsic factors such as social recognition will decline as individuals become more secure in their sense of identity.

The lack of significant differences between the groups on measures of stress management, positive health benefits, and ill-health avoidance does not indicate these motives are unimportant. This finding indicates that the CA and NCF groups are similar in the strength with which they are motivated by these factors. Although the health factors are not different between groups, it does appear that they are less important to the CA group than the motive of competition.

Based on the SDT theory of intrinsic and extrinsic motivation styles, enjoyment is viewed as both intrinsic and extrinsic (Deci & Ryan, 2008). Intrinsic motivation is one that satisfies an internal and personal motive of the individual (Deci & Ryan, 2008). In this present research, enjoyment is at the integrated level of intrinsic motivation. *Integrated motivation* is the belief that an activity is right and suitable for the individual thus should be engaged in. Any guilt, shame or external motivating force has been shifted. Regulation and motivation have been internalized and deemed integrated and part of the individuals' lifestyle. This form of motivation requires the individual to have performed self-examination and determined that exercise is enjoyable. Given the age of these groups and the apparent dedication to exercise and activity, it seems likely that they have reached an integrated stage of intrinsic motivation.

While enjoyment is personal and intrinsic style of motivation, it can also be viewed as an extrinsic motivation style. People observing the participant may notice a

motivated individual who is enjoying a particular activity more, thereby shifting motivation to extrinsic rather than intrinsic.

Based on SDT (Deci & Ryan, 2008) the CA group is operating from the extrinsic motivation facet of competition. Participants in the CA group may find enjoyment in the thrill of competition, the cheers of the crowd and hearing their name announced on the public address system.

Maltby and Day (2001) used the EMI-2 and the SDT to note that exercise participants often shifted from the extrinsic motivational style to an intrinsic one after experiencing the long-term effects of exercise. This can be seen across both groups, in that social recognition is scaled lower than the motivational factors with a more intrinsic base such as enjoyment, positive health, and ill-health avoidance.

Health factors were shown to be an important motivating factor for the NCF group. The HBM has been used to study to promote condom use (Andreas and Theologia, 2010), stress management (King, Singh, Bernard, Merianos, and Vidourek, 2012) and drug and alcohol behavior in college students (Von Ah, Ebert, Ngamvitroj, Park, and Duck-Hee, 2004). These are all factors relating to good health and success in the maintenance of good health. The NCF group seems to believe that exercise will promote good health as seen by the results and the focus on the motivating factors of positive health and ill-health avoidance. The NCF participants engage in various fitness exercise programs due to their abilities to produce a positive outcome and beneficial results thus avoiding some of the possible negative outcomes of aging.

Both groups appear to be utilizing exercise and the health benefits found therein to influence their aging process rather than be controlled by it. Combining the findings based on the HBM model, and those based on Levy and Myers (2004), it can be demonstrated that older adults are more likely to exercise if their self-perception of aging is positive. Both groups demonstrated a similar score in relationship to motivation based on the positive health benefits of exercise. The more positive an individual's attitude and outlook is towards the aging process, the more likely they will be to exercise or compete, and receive the positive benefits.

Wilson and Rogers (2002) found that self-esteem and self-worth are motivating factors for women. In the present study participants of the NCF group were primarily women. These participants use exercise to bolster positive health, which can translate into improved self-worth and self-esteem. Feeling good about oneself can be an integral factor in the continuation of an exercise program. Having negative feelings towards self, based on an exercise program, would be a certain way to fail and not proceed with an exercise program.

Implications

Exercise and fitness programs should be encouraged to emphasis the strongest motivational needs of enjoyment, positive health and ill-health avoidance. The findings surrounding enjoyment are important to keep in mind during the design of exercise programs and might lead to greater adherence among older adults. Trainers and exercise leaders can include cohort appropriate music, themes, and settings that could increase participation and adherence to exercise programs.

Competition was the strongest motivating factor for the CA group. It may become important for this group to broaden their motives and to learn to enjoy exercise without the benefit of competition due to likely health changes in the future. Trainers and facilities need to educate and support these athletes to these possibilities. The drive to compete and engage in activity is a strong one in some people. This was witnessed during the Puget Sound Senior Games, when one participant walked a mile despite the obvious physical appearance of recovering from a stroke. The transition away from the extrinsic factor of competition may be aided by teaching a focus on more intrinsic factors.

Competition motives appear to be very powerful for the CA group and health motives appear to be less enjoyable for the NCF group. Perhaps some of the motivation benefits of competitive elements could be brought into the exercise lives of those staying active for health benefits. For instance, the challenges of "cooperative games" allow participants to compete for better performance without the emotional threats of having an adversary. Similarly, the use of step-tracking apps today allows one to compete with oneself as a natural motivator.

Trainers and facilities working with non-competitive training may wish to get a personal history of individuals that includes past participation in sports and other competition. Using this information as a guide, trainers could form homogenous groups based on how receptive individual are to competition motives. Where one group may emphasize challenge and comparison to create more competition, the other group might emphasize non-competition goals such as stress management and health.

Limitations of the Study and Future Research

A weakness to this present study is the use of family, friends, and participants from a class in which the primary investigator was once an instructor. This limitation may have created a bias toward reporting results which would support the present research rather than the stating of how a participant actually felt.

The methodology of the present study would need to be improved for future research. Missing and incomplete data resulted in the exclusion of 21 data sets from this present research. An effort needs to be made to monitor each survey upon completion in order to scan for missing data and incomplete surveys. Rather than striving to get as many surveys completed, the focus must be the number of properly completed surveys.

Future research will need to focus on and bring to the forefront the health advantages and psychological benefits of exercise for older adults. Sampling that includes less active groups will allow for a wider comparison across groups.

Conclusion

It appears that participants of this present research exercise because they enjoy the competition or health benefits of exercise. This present research demonstrates the importance of the ability to enjoy what activities an individual is engaged in and it is reassuring that enjoyment is so strong in these active older adults. One of the most significant findings is the need for competition in the CA group. Implications for those designing and implementing exercise programs for older adults point to the importance of the elements of fun as well as programs tailored to personality and exercise history of the participants.

REFERENCES

Amazing 81-year-old Lew Hollander still competing (2012). The Bleacher Report. Retrieved from: http://bleacherreport.com/articles/1170057-amazing-81-year-old-ironman-lew-hollander-still-competing

Andreas, C., & Theologia, T. (2010). Factors that contribute to the systematic use of condom for the prevention of unwanted pregnancies and sexually transmitted diseases based on the Health Belief Model. *Cyprus Nursing Chronicles, 11*, 6-17.

Atassi, L. (2013). National senior games break attendance records. Cleveland.com. Retrieved from: http://www.cleveland.com/cityhall/index.ssf/2013/09/national_senior_games_in_cleve.html#incart_river

Bandura, A. (1997). Self-efficacy. *Harvard Mental Health Letter*, *13*, 4.

Baugher, R. R. (1978). Motivation to exercise, why people do it? *Journal of Physical Education*, *76*, 42; 45

Bethancourt, H. J., Rosenberg, D. E., Beatty, T., & Arterburn, D. E. (2014). Barriers to and facilitators of physical activity program use among older adults. *Clinical Medicine & Research, 12*(1/2), 10-20. doi:10.3121/cmr.2013.1171

Biddle, S. H., & Nigg, C. R. (2000). Theories of exercise behavior. *International Journal of Sport Psychology*, *31*, 2

Buglar, M. E., White, K. M., & Robinson, N. G. (2010). The role of self-efficacy in dental patients' brushing and flossing: Testing an extended Health Belief Model. *Patient Education & Counseling, 78*, 269-272. doi:10.1016/j.pec.2009.06.014

Burkert, N. T., Rásky, É., Großschädl, F., Muckenhuber, J., & Freidl, W. (2013). The influence of socioeconomic factors on health parameters in overweight and obese adults. *Plos ONE, 8,* 1-8. doi:10.1371/journal.pone.0065407

Butler, R. N. (1980). Ageism: A foreword. *Journal of Social Issues, 36,* 8-11. doi:10.1111/j.1540-4560.1980.tb02018.x

Capps, D. (2012). The aging process as forward movement and the case for detours and backward steps. *Journal of Religion and Health, 51,* 479-497. doi:10.1007/s10943-011-9534-0

Caspersen, C. J., & Merritt, R. K. (1995). Physical activity trends among 26 states, 1986-1990. / Pratique des activites physiques dans 26 etats, 1986-1990. *Medicine & Science in Sports & Exercise, 27,* 713-720

Caspersen, C. J., Powell, K. E., & Christenson, G. M. (1985). Physical activity, exercise, and physical fitness: Definitions and distinctions for health-related research. *Public Health Reports, 100,* 126-131

Centers for Disease Control and Prevention. Falls Among Older Adults, (2014). Retrieved from: http://www.cdc.gov/HomeandRecreationalSafety/Falls/adultfalls.html

Centers for Disease Control, National Vital Statistics Report, Vol. 62, 7, United States Life Tables, (2009). Retrieved from http://www.cdc.gov/nchs/data/nvsr/nvsr62/nvsr62_07.pdf

Ceria-Ulep, C. D., Tse, A. M., & Serafica, R. C. (2011). Defining exercise in contrast to physical activity. *Issues in Mental Health Nursing, 32,* 476-478. doi:10.3109/01612840.2010.525692

Clark, P. G., Blissmer, B. J., Greene, G. W., Lees, F. D., Riebe, D. A., & Stamm, K. E. (2011). Maintaining exercise and healthful eating in older adults: The SENIOR project II: Study design and methodology. *Contemporary Clinical Trials*, *32*, 129-139. doi:10.1016/j.cct.2010.10.002

Clemson, L., Singh, M. F., Bundy, A., Cumming, R. G., Weissel, E., Munro, J., & . . . Black, D. (2010). LIFE Pilot Study: A randomized trial of balance and strength training embedded in daily life activity to reduce falls in older adults. *Australian Occupational Therapy Journal*, *57*, 42-50. doi:10.1111/j.1440-1630.2009.00848.x

Conn, V. S., Tripp-Reimer, T., & Maas, M. L. (2003). Older women and exercise: Theory of planned behavior beliefs. *Public Health Nursing*, *20*, 153-163. doi:10.1046/j.1525-1446.2003.20209.x

Cousins, S. O. (2001). Thinking out loud: What older adults say about triggers for physical activity. *Journal of Aging & Physical Activity*, *9*, 347-363

Dacey, M., Baltzell, A., & Zaichkowsky, L. (2008). Older adults' intrinsic and extrinsic motivation toward physical activity. *American Journal of Health Behavior*, *32*(6), 570-582. doi:10.5993/AJHB.32.6.2

Deci, E. L., & Ryan, R. M. (1980). Self-determination theory: When mind mediates behavior. *Journal of Mind and Behavior*, *1*, 33-43

Deci, E. L., & Ryan, R. M. (2008). Self-determination theory: A macrotheory of human motivation, development, and health. *Canadian Psychology/Psychologie Canadienne*, *49*, 182-185. doi:10.1037/a0012801

DiPietro, L. (2001). Physical activity in aging: Changes in patterns and their relationship to health and function. *Journals of Gerontology Series A: Biological Sciences & Medical Sciences, 56A*, 13-22

Dobson, R. (2007). UK state pension inadequate for healthy living. *BMJ: British Medical Journal (International Edition), 335*(7612), 176-177

Dohle, S., & Wansink, B. (2013). Fit in 50 years: Participation in high school sports best predicts one's physical activity after age 70. *BMC Public Health*, *13*, 1-13 doi:10.1186/1471-2458-13-1100

Elder, G. r. (1998). The life course as developmental theory. *Child Development*, *69*, 1-12. doi:10.2307/1132065

Fehely, C., (2013), American Diabetes Association. American Diabetes Association releases new research estimating annual cost of diabetes at $245 billion. Retrieved from: www.diabetes.org/for-media/2013/annual-cost-of-diabetes-2013.html

Forkan, R., Pumper, B., Smyth, N., Wirkkala, H., Ciol, M. A., & Shumway-Cook, A. (2006). Exercise adherence following physical therapy intervention in older adults with impaired balance. *Physical Therapy*, *86*, 401-410

Frost, S. S., Goins, R., Hunter, R. H., Hooker, S. P., Bryant, L. L., Kruger, J., & Pluto, D. (2010). Effects of the built environment on physical activity of adults living in rural settings. *American Journal of Health Promotion*, *24*, 267-283

Grove, J. R., & Buckworth, J. (1996). Exercise self-efficacy in older adults. *Journal of Sport & Exercise Psychology*, *18*, 226

Hensel, D. J., Stupiansky, N. W., Herbenick, D., Dodge, B., & Reece, M. (2011). When condom use is not condom use: An event level analysis of condom use behaviors during vaginal intercourse. *Journal of Sexual Medicine, 8,* 28-34. doi:10.1111/j.1743-6109.2010.02031.x

Hogan, C.L, Mata, J., & Carstensen, L. L (2013). Exercise holds immediate benefits for affect and cognition in younger and older adults. *Psychology and Aging, 28,* 587-594. doi:10.1037/a0032634

Jacobs, D.L., (2013) Eleven sneaky ways companies get rid of older workers. Retrieved from: http://www.forbes.com/sites/deborahljacobs/2013/11/03/11-sneaky-ways-companies-get-rid-of-older-workers/.

Johnson, T. (1995). Aging well in contemporary society. *American Behavioral Scientist, 39,* 120-130. doi:10.1177/0002764295039002003

Jokl, P., Sethi, P. M., & Cooper, A. J. (2004). Master's performance in the New York City Marathon 1 983-1999. *British Journal of Sports Medicine, 38*(4), 408-412

King, K. A., Singh, M., Bernard, A., Merianos, A. L., & Vidourek, R. A. (2012). Employing the Health Belief Model to examine stress management among college students. *American Journal of Health Studies, 27*(4), 192-203

Kliff, S. (2013, February12) The Washington Post - How much does hip surgery cost? Retrieved from: www.washingtonpost.com/blogs/wonkblog/wp/2013/02/12/how-much-does-hip-surgery-cost-somewhere-between-10000-and-125000

Koch, J. (2002). The role of exercise in the African-American woman with Type 2 Diabetes Mellitus: Application of the Health Belief Model. *Journal of the American Academy of Nurse Practitioners, 14,* 126

Kruger, D. J., Greenberg, E., Murphy, J. B., DiFazio, L. A., & Youra, K. R. (2014). Local concentration of fast food outlets is associated with poor nutrition and obesity. *American Journal of Health Promotion, 28*, 340-343

Lau, Y., Patki, G., Das- Panja, K., Le, W., & Ahmad, S. (2011). Neuro-protective effects and mechanisms of exercise in a chronic mouse model of Parkinson's disease with moderate neuro-degeneration. *European Journal of Neuroscience, 33*, 1264-1274. doi:10.1111/j.1460-9568.2011.07626.x

Lee, Y. (2005). Gender differences in physical activity and walking among older adults. *Journal of Women & Aging, 17*, 55-70. doi:10.1300/J074v17n01_05

Levy, B. R., & Myers, L. M. (2004). Preventive health behaviors influenced by self-perceptions of aging. *Preventive Medicine: An International Journal Devoted to Practice and Theory, 39*, 625-629. doi:10.1016/j.ypmed.2004.02.029

Li, F. F., McAuley, E. E., Harmer, P. P., Duncan, T. E., & Chaumeton, N. R. (2001). Tai chi enhances self-efficacy and exercise behavior in older adults. *Journal of Aging & Physical Activity, 9*, 161-171

Lockhart, S. N., & DeCarli, C. (2014). Structural imaging measures of brain aging. *Neuropsychology Review, 24*(3), 271-289. doi:10.1007/s11065-014-9268-3

Louw, A. J., Van Biljon, A. A., & Mugandani, S. C. (2012). Exercise motivation and barriers among men and women of different age groups. *African Journal for Physical, Health Education, Recreation & Dance, 18*, 759-768

Mair, J. L., Boreham, C. A., Ditroilo, M., McKeown, D., M. Lowery, M., Caulfield, B., & Vito, G. (2014). Benefits of a worksite or home-based bench stepping intervention for sedentary middle-aged adults - a pilot study. *Clinical Physiology & Functional Imaging*, *34*, 10-17

Maltby, J., & Day, L. (2001). The relationship between exercise motives and psychological well-being. *The Journal of Psychology: Interdisciplinary and Applied*, *135*, 651-660. doi:10.1080/00223980109603726

Markland, D., & Ingledew, D.K. (1997). The measurement of exercise motives: Factorial validity and invariance across gender of a revised Exercise Motivations Inventory. *British Journal of Health Psychology, 2*, 361-376

Mechanic D. & Cleary P.D. (1980, November 9). Factors associated with the maintenance of positive health behavior. *Preventive Medicine*. 805–814

Merriam-Webster's collegiate dictionary (11th ed.). (2003). Springfield, MA: Merriam-Webster

Mirelman, A., Rochester, L., Reelick, M., Nieuwhof, F., Pelosin, E., Abbruzzese, G., & Hausdorff, J. M. (2013). V-TIME: A treadmill-training program augmented by virtual reality to decrease fall risk in older adults: Study design of a randomized controlled trial. *BioMedCentral Neurology, 13*.doi:10.1186/1471-2377-13-15

Murray, T., & Rodgers, W. (2012). The role of socioeconomic status and control beliefs on frequency of exercise during and after cardiac rehabilitation. *Applied Psychology: Health & Well-Being*, *4*, 49-66. doi:10.1111/j.1758-0854.2011.01061.x

Muscari, A., Giannoni, C., Pierpaoli, L., Berzigotti, A., Maietta, P., Foschi, E., & ... Zoli, M. (2010). Chronic endurance exercise training prevents aging-related cognitive decline in healthy older adults: A randomized controlled trial. *International Journal of Geriatric Psychiatry*, *25*, 1055-1064

Niederle, M., & Vesterlund, L. (2008). Gender differences in competition. *Negotiation Journal*, *24*(4), 447-463. doi:10.1111/j.1571-9979.2008.00197.x

Obesity, Halting the Epidemic by Making Health Easier at a Glance, (2011). Retrieved from:http://www.cdc.gov/chronicdisease/resources/publications/AAG/obesity.htm

Pero, R., Amici, S., Benvenuti, C., Minganti, C., Capranica, L., & Pesce, C. (2010). Motivation for sport participation in older Italian athletes: The role of age, gender and competition level. *Sport Sciences for Health*, *5*, 61-69.

Rate per 100 of Civilian, Non-institutionalized Population with Diabetes Diagnosis, by Age, United States, 2008-2011. Retrieved from: http://www.cdc.gov/diabetes/statistics/prev/national/figbyage.htm

Reed, C. E., & Cox, R. H. (2007). Motives and regulatory style underlying senior athletes' participation in sport. *Journal of Sport Behavior, 30*, 307-329

Rotter, J. B. (1966). Generalized expectancies for internal versus external control of reinforcement. *Psychological Monographs: General and Applied*, *80*, 1-28. doi:10.1037/h0092976

Ryan, R. M., Williams, G. C., Patrick, H., & Deci, E. L. (2009). Self-determination theory and physical activity: The dynamics of motivation in development and wellness. *Hellenic Journal of Psychology*, *6*(2), 107-124

Schutzer, K. A., & Graves, B. (2004). Barriers and motivations to exercise in older adults. *Preventive Medicine*, *39,* 1056-1061. doi:10.1016/j.ypmed.2004.04.003

Sebastian, A. (2012). You're gonna carry that weight, *Running Times*, *394*, 52-53.

Seals, D. R., Walker, A. E., Pierce, G. L., & Lesniewski, L. A. (2009). Habitual exercise and vascular ageing. *The Journal of Physiology*, *587,* 5541-5549. doi:10.1113/jphysiol.2009.178822

Sommers J, Andres F, Price J. (1995). Perceptions of exercise of mall walkers utilizing the health belief model. *Journal of Health Education* [serial online]. 26:158-166. Available from: SPORTDiscus with Full Text, Ipswich, MA. Accessed May 4, 2014

Souto Barreto, P. (2009). Exercise and health in frail elderly people: A review of randomized controlled trials. *European Reviews of Aging & Physical Activity*, *6,* 75-87

Stephenson, L. E., Culos-Reed, S., Doyle-Baker, P. K., Devonish, J. A., & Dickinson, J. A. (2007). Walking for wellness: Results from a mall walking program for the elderly. *Journal of Sport & Exercise Psychology*, *29*S204

The Free Dictionary. (no date) Exercise. Retrieved from: http://www.thefreedictionary.com/exercise

Title IX. (2015) Titleix Info. Retrieved from: http://titleix.info/History/History-Overview.aspx

Travel Opportunities for Older Adults. (2011) Retrieved from: http://www.acfccares.com/careville/sencenter/articles/ST_TravelOps.html

US Census Bureau - The Older Population, (2010). Retrieved from: http://www.census.gov/prod/cen2010/briefs/c2010br-09.pdf

US Census News Brief, (2011). Retrieved from: http://www.census.gov/newsroom/releases/archives/2010_census/cb11-cn192.html

Von Ah, D., Ebert, S., Ngamvitroj, A., Park, N., & Duck-Hee, K. (2004). Predictors of health behaviors in college students. *Journal of Advanced Nursing*, *48*, 463-474. doi:10.1111/j.1365-2648.2004.03229.x

Warner, L.M., Ziegleman, J.P., Wurm, S., Schwarzer, R. (2011) Synergistic effect of social support and Self-efficacy on physical exercise in older adults. *Journal of Aging & Physical Activity*, *19*, 249-261

Williams, G. C., Grow, V. M., Freedman, Z. R., Ryan, R. M., & Deci, E. L. (1996). Motivational predictors of weight loss and weight-loss maintenance. *Journal of Personality and Social Psychology, 70*, 115-126. doi:10.1037/0022-3514.70.1.115

Willsey, M. (n.d.) How long is an Iron Man Triathlon? Adventure-HowStuffWorks. Retrieved from: http://adventure.howstuffworks.com/outdoor-activities/triathlons/how-long-is-ironman-triathlon.htm

Wilson, P. M., & Rodgers, W. M. (2002). The relationship between exercise motives and physical self-esteem in female exercise participants: An application of self-determination theory. *Journal of Applied Biobehavioral Research, 7*, 30-43

Wurm, S., Tomasik, M. J., & Tesch-Römer, C. (2010). On the importance of a positive view on ageing for physical exercise among middle-aged and older adults: Cross-sectional and longitudinal findings. *Psychology & Health, 25,* 25-42. doi:10.1080/08870440802311314

APPENDIX A

WELCOME/INFORMED CONSENT LETTER

PLEASE READ FIRST

Dear Research Participant,

This research will look at the reasons and motives that older adults participate in athletic or fitness events.

This is a completely anonymous research project. At no time do we want your name on any of the enclosed forms.

If you are not willing to complete this survey and thereby consenting to participate, please simply return this packet to the researcher. Thank you for your time and have a wonderful day.

Laura J. Attaway

If you would like to receive a copy of the research findings or have any questions or concerns please contact one or both of the following:

Laura J. Attaway – attawayl@cwu.edu

Dr. Jeff Penick – PenickJ@cwu.edu, 509-963-3669

APPENDIX B

DEMOGRAPHIC INFORMATION FOR RESEARCH

All information recorded here is anonymous. At no time is your name required anywhere on this form or any subsequent forms. Please complete this form based on today's date.

Age: _____

Sex: ____ Female
____ Male

Ethnicity: Please select all that apply
___ American Indian or Alaska Native
___ Asian or Asian American
___ Black or African American
___ Hispanic or Latino
___ Native Hawaiian or Other Pacific Islander
___White
___Multiracial
___Other (please specify): _____

Number of Children living at home under age of 18 years old? _____

Current Employment Status:
___ Working Full Time
___ Working Part Time
___ Not working/retired

Did you participate in sports in high school or college?
___Yes
___ No
If yes, which sport(s)
_____

Did you participate in exercise/fitness programs or self-directed programs during your 20s thru 40s?
___Yes
___ No
(Examples of this would be community based baseball, soccer teams, bowling, jazzercise, tennis, yoga, running, cycling, swimming.)

APPENDIX C

ACTIVITY QUESTIONNAIRE

In the previous two years did you compete in a timed or scored event either individually or on a team?
___Yes
If Yes, how many times in the last 5 years _____?
___ No

How often do you participate in a fitness/exercise class or perform cardiovascular, weight or flexibility on your own for a minimum of 30 minutes per session?
___ Not at all
___ 1 times per week
___ 2 – 3 times per week
___ 4 – 5 times per week
___ 6 or more times per week

How often do you engage in daily home or leisure activities: (e.g., gardening, car repair, sculpting, painting, carpentry, or home repairs and remodeling)?
___ Not at all
___ 1 times per week
___ 2 – 3 times per week
___ 4 – 5 times per week
___ 6 or more times per week

During the past 7 days, how many times did you do any of the following types of exercise for at least 30 minutes?

____ times: light exercise/activity, such as
- walking at an average pace
- light housework
- light gardening (e.g. weeding, raking leaves)

____ times: moderate exercise/activity, such as
- fast walking, dancing, gentle swimming, golf
- heavy housework, heavy gardening (e.g., digging, hoeing)
- non-powered mower

____ times: vigorous exercise/activity, such as
- tennis, jogging, running
- swimming lengths
- aerobics, fast cycling
- football, soccer

APPENDIX D

The Exercise Motivations Inventory - 2 (EMI-2)

On the following pages are a number of statements concerning the reasons people often give when asked why they exercise. *Whether you currently exercise regularly or not,* please read each statement carefully and indicate, by circling the appropriate number, whether or not each statement *is true* for you personally, *or would be true* for you personally if you did exercise. If you do not consider a statement to be true for you at all, circle the '0'. If you think that a statement is very true for you indeed, circle the '5'. If you think that a statement is partly true for you, then circle the '1', '2', '3' or '4', according to how strongly you feel that it reflects why you exercise or might exercise.

Remember, we want to know why *you personally* choose to exercise or might choose to exercise, not whether you think the statements are good reasons for *anybody* to exercise.

		Not at all true for me					**Very true for me**
Personally, I exercise (or might exercise) …							
1	To stay slim	0	1	2	3	4	5
2	To avoid ill-health	0	1	2	3	4	5
3	Because it makes me feel good	0	1	2	3	4	5
4	To help me look younger	0	1	2	3	4	5
5	To show my worth to others	0	1	2	3	4	5
6	To give me space to think	0	1	2	3	4	5

	Personally, I exercise (or might exercise) …	Not at all true for me					Very true for me
7	To have a healthy body	0	1	2	3	4	5
8	To build up my strength	0	1	2	3	4	5
9	Because I enjoy the feeling of exerting myself	0	1	2	3	4	5
10	To spend time with friends	0	1	2	3	4	5
11	Because my doctor advised me to exercise	0	1	2	3	4	5
12	Because I like trying to win in physical activities	0	1	2	3	4	5
13	To stay/become more agile	0	1	2	3	4	5
14	To give me goals to work towards	0	1	2	3	4	5
15	To lose weight	0	1	2	3	4	5
16	To prevent health problems	0	1	2	3	4	5
17	Because I find exercise invigorating	0	1	2	3	4	5
18	To have a good body	0	1	2	3	4	5
19	To compare my abilities with other peoples'	0	1	2	3	4	5
20	Because it helps to reduce tension	0	1	2	3	4	5
21	Because I want to maintain good health	0	1	2	3	4	5
22	To increase my endurance	0	1	2	3	4	5

23	Because I find exercising satisfying in and of itself	0	1	2	3	4	5
		Not at all true for me					**Very true for me**

Personally, I exercise (or might exercise) …

24	To enjoy the social aspects of exercising	0	1	2	3	4	5
25	To help prevent an illness that runs in my family	0	1	2	3	4	5
26	Because I enjoy competing	0	1	2	3	4	5
27	To maintain flexibility	0	1	2	3	4	5
28	To give me personal challenges to face	0	1	2	3	4	5
29	To help control my weight	0	1	2	3	4	5
30	To avoid heart disease	0	1	2	3	4	5
31	To recharge my batteries	0	1	2	3	4	5
32	To improve my appearance	0	1	2	3	4	5
33	To gain recognition for my accomplishments	0	1	2	3	4	5
34	To help manage stress	0	1	2	3	4	5
35	To feel more healthy	0	1	2	3	4	5
36	To get stronger	0	1	2	3	4	5
37	For enjoyment of the experience of exercising	0	1	2	3	4	5
38	To have fun being active with other people	0	1	2	3	4	5

		Not at all true for me					Very true for me
Personally, I exercise (or might exercise) …							
39	To help recover from an illness/injury	0	1	2	3	4	5
40	Because I enjoy physical competition	0	1	2	3	4	5
41	To stay/become flexible	0	1	2	3	4	5
42	To develop personal skills	0	1	2	3	4	5
43	Because exercise helps me to burn calories	0	1	2	3	4	5
44	To look more attractive	0	1	2	3	4	5
45	To accomplish things that others are incapable of	0	1	2	3	4	5
46	To release tension	0	1	2	3	4	5
47	To develop my muscles	0	1	2	3	4	5
48	Because I feel at my best when exercising	0	1	2	3	4	5
49	To make new friends	0	1	2	3	4	5
50	Because I find physical activities fun, especially when competition is involved	0	1	2	3	4	5
51	To measure myself against personal standards	0	1	2	3	4	5

Thank you for completing this questionnaire

APPENDIX E

PLEASE KEEP THIS FORM

Survey Debriefing

Thank you for your participation in this study. We appreciate your time and willingness to participate. The purpose of this study was to explore exercise and fitness motivations. You were asked questions that assessed how you are motivated to exercise, and/or compete.

You were also given a demographic questionnaire that tells us a little bit about your background, you were asked questions about family and work, and your activity levels. We are interested in exploring what motivates you to move.

If you would like to receive a copy of the research findings or if you have any questions or concerns regarding this research study, please contact either

Researcher - Laura J. Attaway – attawayl@cwu.edu

Faculty Sponsor - Dr. Jeff Penick – PenickJ@cwu.edu, 509-963-3669