

**EFFECTS OF SCRIPTURE-BASED PASTORAL COUNSELING ON EXERCISE
PARTICIPATION AND ADHERENCE AMONG MALE AND FEMALE AFRICAN
AMERICAN ADULTS**

by

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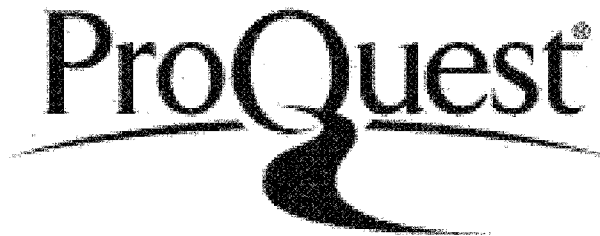


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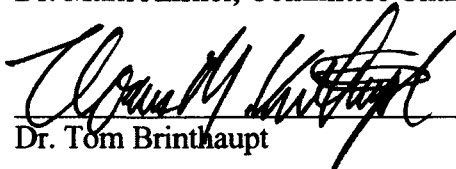
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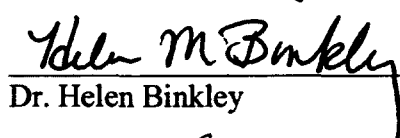
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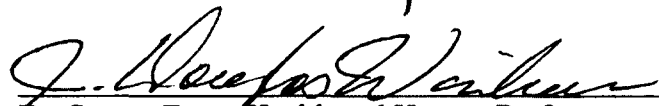
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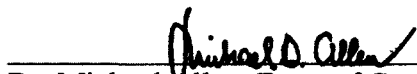
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The purpose of this study is to examine the influence of religious leaders' communication of Scripture on the exercise behavior, fitness, and exercise adherence of AA church attendees. The sample included 15 women, 2 males, all from two different predominately African American Southern-based churches. A ten-week exercise intervention was provided for members of both churches. Pre and post fitness scores were recorded and 2(group) x 2(pre and posttest) multivariate analysis of variance (MANOVA) were performed. Results indicate that Pastoral input had a negative impact on some fitness scores among church participants.

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CHAPTER I

INTRODUCTION

Church-based health related interventions are becoming a popular access point to inspire African Americans (AA) to live their lives in alignment with their deepest values, such as work, family, and faith (Meade, Calvo, Rivera, & Baer, 2003). When compared to Caucasians, AA's are more likely to suffer from diabetes, cardiovascular disease, hypertension and stroke (American Heart Association, 2004). In addition, AA's have reported the lowest exercise rates among older adults (Clark, 1996). Several studies have indicated that regular participation in physical activity can drastically reduce the chances of suffering from these severe health disparities, particularly in the AA community. According to Cowart, Biro, Wasserman, Stein, Reider, & Brown (2010), for example, "AA's have the highest rates of excess weight in the nation and are thus at greater risk for many serious diseases" (p. 4). Therefore, it is imperative to determine common exercise barriers for engaging in regular physical activity among the AA population in order to increase the rate of exercise participation and exercise adherence.

One source of inspiration for engaging in healthy habits in the AA community is the church. Many church-based studies have successfully motivated church members with potentially life-threatening health disparities by using various health interventions to promote prostate cancer screening and to reduce the rate of diabetes and cardiovascular disease (Boltri, Davis-Smith, Shellenberger, Okosun, & Cornelius, 2008; Holt, Wynn, Southward, Litaker,

Shellenberger, Okosun, & Cornelius, 2008; Holt, Wynn, Southward, Litaker, James, & Schulz, 2009, Lapane, Lasater, Allan, & Carleton, 1997). Boltri et. al. initiated a diabetes prevention study in a church-based setting. They reported statistically significant improvements in weight, body mass index (BMI), and systolic and diastolic blood pressure (BP) among participants at the end of a 16-session intervention. In contrast, Underwood and Powell (2006) conducted a study to examine the influence of religion and spirituality on cancer screening behaviors in the AA community. They determined that neither religious practice nor spirituality influenced participants' cancer screening behaviors, however, participants who included religious or spiritual practices were more likely to communicate with health care providers about personal health and dietary behaviors than individuals who did not. Culturally-tailored and population-specific initiatives such as increasing cancer screening behavior have been a catalyst for reducing cancer morbidity and mortality rates among participating AA faith communities (Underwood & Powell). The success of these interventions suggests that faith-based wellness initiatives can significantly impact a variety of health behaviors. Although successful cancer screening interventions have been documented, experts agree that teaching and incorporating physical activity and exercise will significantly improve the health status of AA's who participate in intervention programs (Quinn & Guion, 2010).

In addition to promoting cancer screenings and educating participants about particular diseases, religious institutions can also incorporate exercise interventions to assist in curbing the onset of diabetes, cardiovascular disease, and

hypertension. However, because the church congregation is such a diverse population in terms of age groups and exercise efficacy, it is important to consider the mode of exercise when designing an exercise intervention for people of faith. Guidelines for obese adults indicate that non-weight bearing exercises, walking, and resistance training are appropriate modes of exercise (*The American College of Sports Medicine*, 1997).

Integrating physical activity with religiosity can be an important factor when attempting to motivate the AA community. AA's reported that religious values were a fundamental motivator for physical activity (Keller, Gonzales, & Fleureit, 2005). In addition, the positive effect of social networks supported by the church and the role of prayer and beliefs improve psychological well-being (Fiala, Bjorck, & Gorsuch, 2002). Thus, the influence of religious beliefs and practice coupled with an exercise intervention may have significant implications for changing behaviors to aid in preventing the onset of serious diseases such as diabetes, cardiovascular disease, hypertension, and stroke.

In summary, AA's have reported lower exercise rates and are at greater risk for serious disease than Caucasians. The fellowship and/or religious practices that are supported by the Church environment have had statistically significant improvements among participants in several other church-based interventions. An exercise intervention in the AA community that incorporates religious values may be an integral part of improving health including reducing diabetes, cardiovascular disease, hypertension and stroke. There is limited research which focuses on the effect of church-based interventions for increasing physical activity

and/or exercise by incorporating religious values among AA's who regularly attend church.

Purpose Statement

The purpose of this study is to examine the influence of religious leaders' communication of Scripture on the exercise behavior, fitness, and exercise adherence of AA church attendees.

Hypotheses

1. A treatment main effect is hypothesized such that will show significantly higher levels of all measures for the SG as compared to the CG after program participation.
2. A time main effect is hypothesized such that both groups will have significant positive improvements from pre- to post-intervention on all measures.
3. Finally, a significant interaction is hypothesized such that the SG will show greater pre- to post-intervention changes on all measures than the CG.

Operational Definitions

For the purposes of this study, terms that may be unfamiliar have been defined:

1. *Religiosity*: religious attendance, practice, and activity (Musgrave, Allen & Allen, 2002).
2. *Spirituality*: the acknowledgment and relationship with a Supreme Being (Musgrave et al., 2002).

3. Exercise: planned, structured, repetitive movement intended to improve or maintain physical fitness (Fahey, Insell, & Roth, 2011).
4. Physical activity: body movement carried out by skeletal muscles that requires energy (Fahey et al.).
5. Senior pastor: ordained leader of a Christian congregation.
6. Exercise adherence: having steady allegiance in planned repetitive movement.
7. Physical fitness: A set of physical attributes that allows the body to respond or adapt to the demands and stress of physical effort (Fahey et al.).
8. Risk factor: A condition that increases one's chances of injury.
9. Cardiovascular training: planned exercise to increase the ability of the body to perform prolonged, dynamic exercises which use large muscle groups, at moderate to high levels of intensity.
10. Resistance training: the progressive use of resistance to increase one's ability to exert or resist force (Baechle & Earle, 2008).
11. Vacation Bible School: a specialized form of religious education, usually taking place during the summer months at respective churches.

Basic Assumptions

The following assumptions will be incorporated in the study:

1. that all participants will accurately and honestly report exercise adherence throughout the 10-week intervention.

2. that all participants will accurately and honestly report regular service church attendance.
3. that the Senior Pastor will provide adequate scripture which supports and influences physical activity and/or exercise.
4. that attendance of the regularly scheduled church services do not influence physical activity and/or exercise.
5. that participants will answer survey questions honestly.
6. that exercises will be carried out properly based on fitness instruction.

Delimitations

1. Participants were at least age 18 years to be included in sample.
2. The sample only included regular church attendees of two different specific churches located in the southeastern United States (U.S.).
3. Participants with health risk factors and who may be at risk in performing vigorous physical activity were excluded from study.
4. Participants only received fitness coaching every other week.

Significance of the Study

Members of the AA community are more susceptible to cardiovascular disease, diabetes, and stroke due to a higher frequency of risk factors such as obesity, hypertension and poor dietary habits (Frank & Grubbs, 2008). Physical activity and exercise have been proven to curb the onset of the aforementioned diseases; however, many AA's struggle to overcome exercise barriers that limit their participation in either activity. Generally, AA's associate themselves with religiosity and spirituality, making the church a popular access point to encourage

physical activity and exercise. An exercise program may be an excellent way for church attendees to appreciate the fellowship of church members, as well as motivate each other to engage in regular exercise routines. Research indicates that churches provide social support and have the resources to promote healthy lifestyles. However, research is lacking on the effects of scripture on a church attendee's exercise habits. This study aims to incorporate scripture to enforce the notion that God intends for people of faith to include regular exercise as part of their overall healthy lifestyle.

CHAPTER II

REVIEW OF LITERATURE

Many initiatives such as workplace health interventions and “Healthy People 2010” have failed to improve the overall health status of Americans. Healthy People 2010 provided health objectives in alignment with the Surgeon General’s report, in an attempt to encourage communities and organizations to develop programs to improve years of healthy life by increasing regular physical activity (Ham & Ainsworth, 2010). However, results of recent research indicate that, in general, health status in the U.S. continues to be on a steady decline. In conjunction with the declining health of the U.S. is a decreased quality of life as Americans age, especially among AA’s. AA health statistics are more alarming than any other ethnic population. It is critical to create an intervention that is tailored for this community.

The present review of literature will include the following areas: (1) physical activity (PA) statistics, (2) health disparities among AA’s, (3) PA and exercise guidelines, (4) common exercise barriers among AA’s, (5) perceived exercise barriers, (6) religious/ spiritual influence on health and wellness, (7) theoretical frameworks on behavior change, (8) church health behavior change interventions, (9) faith-based wellness interventions, and (10) measuring religious beliefs.

Physical Activity Statistics

Numerous studies have reported various physical and psychological benefits of regular cardiovascular and resistance training. Cardiovascular

exercises consist of dynamic movement, using large muscle groups at moderate intensity for a prolonged period of time (Fahey et al., 2011). Health benefits associated with long-term cardiovascular training include a stronger heart, increased resting stroke volume, decreased body fat, reduced risk of colon cancer and diabetes (Fahey et al., 2011). Therefore, cardiovascular fitness is a key component of health-related fitness. Resistance training exercises cause muscles to contract against an external resistance. Consistent resistance training promotes muscular strength, which can aid in daily activities and enhance overall well-being.

According to the American Heart Association (AHA, 2003), 24% of the American adult population do not engage in any physical activity or exercise. Regular exercise has been shown to decrease health risks such as cardiovascular disease, osteoporosis, and diabetes, as well as decrease hypertension and depression (Fox, 2003). Although many adults suffer from one or more of these illnesses, only 54% of American adults engage in physical activity as a means to combat these potentially life threatening diseases (AHA, 2003). In one study, Fitzgerald, Neale, Prasad, and Hess (1994) concluded that low self-efficacy was an important factor for low exercise adherence rates among AA women. Therefore, improving self efficacy related to exercise participation could potentially increase physical activity in general, and exercise, in particular, among AA women.

Historically, males, in general, and AA males in particular, have higher mortality rates and are more susceptible to sedentary-lifestyle related conditions

than females and Caucasians respectively (Goodyear-Smith & Birks, 2003).

Although women usually live longer, healthier lives than men, there continues to be a paucity of women who engage in regular resistance exercise (Ebben & Jensen, 1998). The results of related studies suggest possible reasons adults do not engage in regular physical activity, and the motivational factors that will promote exercise habits, especially in the AA community.

“Physical activity self efficacy (a person's confidence in his or her ability to be physically active on a regular basis)” and environmental factors have been identified as reason that could influence an adults exercise habits (Traust et al., 2002, p.1998). Many adults are not confident they can perform exercises using correct form, selecting the proper exercises to achieve their specific goals, or select exercises that will not agitate any pre-existing physical conditions. Several previous efficacy studies which included self-help motivational materials, and educational seminars showed significant impacts of each program (Campbell, et al., 1999).

Benefits of resistance training for both men and women include an increase in muscular strength, lean body mass, and a decrease in percent body fat (Chilibeck, Calder, Sale, & Webber, 1998). In addition, resistance training helps prevent age-related mineral bone loss and sarcopenia (Hurley & Roth, 2000). Resistance training also promotes psychological benefits such as improvements in self esteem, body image, and improved psychological health (Melnick & Mookerjee, 1991; Tsutsumi, Don, Zaichkowsky, Takeneaka, Oka, & Ohno, 1998). Thus, considering the negative consequences of a sedentary lifestyle,

further study is needed to examine the effectiveness of interventions that increase physical activity, particularly in the AA community. One factor that may influence intervention success is cultural differences.

Health Disparities Among African Americans

The National Institutes of Health (2002) defined health disparities as “differences in the incidence, prevalence, morbidity, mortality, and burden of diseases and other adverse health conditions that exist among specific population groups in the United States (p.7).” According to the CDC (2003), AA’s are of greater risk for serious diseases than many other races. While 65% of U.S. adults are overweight, 70% of AA adults are overweight, making the AA population significant contributors to the U.S. obesity epidemic. In terms of gender, 63% of AA men are overweight while 77% of AA women are considered overweight or obese according to body mass index (BMI) scales (CDC, 2002). AA’s have a higher rate of occurrence due to the higher frequency of risk factors, such as obesity, hypertension, and poor dietary habits. Finally, AA’s have a higher rate of occurrence of cardiovascular disease, diabetes, and stroke compared to Caucasians (National Center for Chronic Disease Prevention and Health Promotion, 2004; AHA, 2004).

Heart disease is the leading cause of death for men and women in the U.S. (Kung, Hoyert, & Murphy, 2008). Coronary heart disease accounts for 68% of all heart disease related deaths (Lloyd-Jones et al., 2009). Coronary heart disease (CHD) is a result of atherosclerosis, that is, the hardening of the arteries, which

leads to symptoms such as chest pain or heart attack (i.e., myocardial infarction) due to the lack of blood flow and oxygen to the heart.

Another disease that is ubiquitous in the AA community is diabetes. More than 7% of the American adult population is affected by diabetes, with 12.5% of AA adults having type 2 diabetes mellitus, which is a primary cause of morbidity and mortality (American Diabetes Association, 2007). Diabetes occurs when the body is either deficient in insulin production, or does not use insulin effectively. Without proper production or effective use of insulin, the body cannot convert food into energy. In conjunction with diabetes, poor diet, sedentary lifestyle and consequent obesity are risk factors for CHD, diabetes, and hypertension (CDC, 2009).

For AA women, “heart disease and stroke remain the first and third leading causes of death respectively” (Lutfiyya et al., 2008, p. 806). In their study of racial trends and disparities, Christian, Rosamond, White, and Mosca reported that 68% of Caucasian women were aware that stroke was one of the leading causes of death for women, whereas only 31% of AA females were aware of this statistic. In addition, Caucasian women are more likely to correctly identify early symptoms of stroke than are non-Caucasian women. For stroke symptoms, there is a small window to successfully intervene before the risk for long-term damage to the heart or brain occurs (DeSalvo et al., 2005). Perhaps more AA women succumb to stroke due to the lack of symptom awareness, as well as failing to seek treatment after experiencing symptoms of stroke.

Physical Activity and Exercise Guidelines

Physical activity (PA) is defined as “a movement carried out by the skeletal muscles that requires energy”, whereas exercise “refers to a planned, structured, repetitive movement intended specifically to improve or maintain physical fitness” (Fahey et al., p. 28). *Physical Activity Guidelines for Americans* were issued by the U.S. Department of Health and Human Services in 2008. PA guidelines include at least 150 minutes, per week, of moderate intensity aerobic physical activity to achieve substantial health benefits. For more extensive health benefits, aerobic PA should be increased to 300 minutes of moderate intensity activity per week. Americans should also engage in moderate muscle strengthening activities for all muscle groups at least 2 days per week.

Although many Americans may find meeting the prescribed doses for PA challenging, the report issued by the U.S. Department of Health and Human services also recognizes that some PA is better than none, therefore, certain strategies should be used to increase PA until guidelines can be achieved.

Common Exercise Barriers Among African Americans

Lack of physical activity (PA) has been identified as a significant problem in the United States (Centers for Disease Control, 2008). Although the benefits of regular exercise have been well documented, it is estimated that approximately 60% of the AA population does not meet the recommended physical activity guidelines to experience these benefits (CDC, 2009). In one study, Izquierdo-Porrera, Powell, Reiner, and Fotaine (2002) determined sedentary lifestyles are more prevalent among minority populations. When compared to other ethnic

groups, AA rank among the lowest rates of participation in regular physical activity. According to the Center for Disease Control (2009), only 40% of African Americans that reside in the United States engage in enough physical activity to reduce the risk of chronic diseases, and improve physical and mental health. In addition, the CDC (2009) reported that AA are less likely to meet physical activity guidelines when compared to Caucasian adults.

One possible reason for low rates of physical activity among AA, especially females, is that AA women report more barriers in their lives that prevent them from staying committed to an exercise program, such as adult care giving or raising a grandchild (Dunn, 2008). A low activity lifestyle continues to be prevalent among AA as well as the number of grandparents that are primary caregivers for their grandchildren (Duquin et al, 2004).

A study conducted by Bopp et al. (2007) revealed that environmental barriers also are contributing factors to inactive lifestyles among AA's. If neighborhoods were safe and had more recreational facilities and equipment, AA men would be more likely to exercise. In the same study, results from AA women were similar, adding that pleasant weather and a safe place to walk or be active could motivate them to include regular activity in their lives.

In addition to environmental barriers, cultural beliefs among the AA population also have a negative influence on exercise adherence. For example, Flynn and Fitzgibbon (1998) found that overweight AA women were more likely than Caucasian women to have an inaccurate perception of their body weight. That is, AA women were more tolerant to having higher percent body fat than

Caucasian women. Their results also revealed that socially, AA women feel that fit exercisers are “showing off” rather than maintaining fitness, which also affects exercise adherence rates among AA females. AA females are more intimidated in a traditional gym venue because they are not as fit as the patrons that participate in physical activity and/or exercise regularly. Environmental barriers, cultural beliefs, and intimidation are the most common exercise barriers reported by AA men and women.

Perceived reasons an individual does not engage in exercise or other forms of physical activity are called performance barriers (Dunn, Anderson, & Jakicic, 1998). Performance barriers are a persistent thought, emotion, or action that creates obstacles to movement or action, leading to insidious behaviors that over time compromise fitness levels and overall quality of life (Dunn et al. 1998). Because the AA population has reported some of the lowest rates of physical activity and exercise compared to other ethnic groups, it is important to identify common exercise barriers among AA so that exercise interventions can be more effective.

Many individuals are deterred from exercise due to at least one of two types of performance barriers, actual or perceived. An example of an actual performance barrier is an injury, such as sprained ankle, that inhibits a person’s ability to exercise or participate in physical activity. However, perceived performance barriers reflect the person’s thoughts or emotions that inhibit participation in activity or exercise. Examples of a perceived performance barrier include lack of time and social or physical discomfort due to the exercise

environment, or specific exercises performed. Both types of performance barriers are usually controllable and changeable, particularly perceived barriers (Anshel, 2008). Understanding the root cause of an individual's exercise barriers that are perceived to prevent exercise adherence and other forms of physical activity is a primary goal of researchers and practitioners. In order to overcome performance barriers, it is important to identify and understand their root cause.

Perceived Exercise Barriers

Lack of time is the most common exercise barrier reported from both AA men and women (Bopp et al. 2007). In Bopp et al.'s study (2007), AA women reported that obligations to family, such as caring for a grandchild or another family member, consume the time they could be devoting to regular exercise.

Lack of motivation to exercise is another common exercise barrier among AA men and women. Bopp et al. (2007) found that AA men who work multiple jobs view their time away from work as time for rest rather than as time to engage in physical activity or exercise. Physical ailments or illnesses contribute to the lack of motivation to exercise among AA males. Many AA males and females reported not knowing to what extent exercise would be safe or beneficial for them when considering existing health conditions.

Another contributing factor to lack of motivation to exercise or engage in physical activity is the lack of age-appropriate activities that are available in AA communities. When AA men and women were asked to describe what types of programs they desire in a church intervention, men reported wanting access to walking programs, sports activities, and aerobics classes geared specifically for

older adults. Although the women included in this study concurred with the activities mentioned by the men, the women also suggested weights and/or resistance training, and weight loss contests to be included in church physical activity programs (Bopp et al, 2007).

Religious/ Spiritual Influence on Health and Wellness

Although spirituality is often associated with being religious, there is a difference between the terms. Spirituality is a belief in a higher power operating the universe that is greater than one's self, including the development of personal and absolute values (Musgrave et al., 2002). Religiosity includes church attendance, religious practices, religious activities, and the fellowship of other religious beings (Musgrave et al., 2002).

Religious leaders have earned credibility from institution members who regularly attend religious services. They are able to interpret scripture in a way that can influence members' emotions, actions and beliefs, such as, considering the harms and risks of risky or unhealthy behaviors (Bowen, 2006).

Researchers have shown that many persons of faith suffer from similar physical ailments such as obesity and sedentary lifestyles as people who do not routinely engage in religious activity (Marks, 2005; Young & Koopsen, 2005). That is, people who regularly attend religious services are also plagued with the same antecedents of life threatening diseases as the general population. Therefore, promoting positive physical health behaviors in association with religious involvement in an AA church has the potential to improve the quality of life of many church attendees. Curlin (2007) reported that regular church attendees are

more likely to engage in new health behaviors and continue to practice ones that were already established.

Theoretical Frameworks for Health Behavior Change

Faith-based exercise intervention can be conceptually based on the Disconnected Values Model (DVM), first introduced by Anshel and Kang (2007). The DVM provides a framework which acknowledges that “a person’s negative habits (e.g., lack of exercise, poor nutrition) and his or her values and beliefs (e.g., faith, health) are often mis-aligned, or disconnected” (Anshel, 2008, p. 32). This model allows religious leaders to influence healthy behaviors among church members through interpretation of scripture; which suggests that individuals with faith and spirituality should maintain practices that promote good health (Anshel, 2008). The DVM is based on a premise that regular attendees of church can be influenced by the credibility of their religious leader. In turn, religious leaders should promote the marriage of spiritual values and regular physical activity or exercise. Religious leaders’ goals are to promote behaviors that are consistent with the norms of scripture and faith values. The DVM addresses one’s values, particularly faith, family and health and the evidence that one’s lifestyle or behaviors are inconsistent with their values.

This model allows religious leaders to use scripture to influence behavior change among attendees of respective institutions. In most cases, the church community view religious leaders as a credible source, which may make them more likely to adhere to behavior changes presented in the church setting and confirmed within biblical text. In addition, Anshel (2008, p. 37) contends that “

the primary motivators of normal human behavior are: (a) to identify a deeply held set of values, (b) to live a life consistent with those values, and (c) to consistently hold ourselves accountable to them.”

Another theoretical framework that lends a hand to exercise interventions in a church setting is “New Institutionalism” theory (Powell & Dimaggio, 1991). In order to understand congregational sponsorship of health-related programs, theoretical insights from New Institutionalism help to build strategies that allow congregational leaders to network with other congregations to circulate information about intervention strategies (Powell & Dimaggio, 1991; Trinitapoli, Ellison & Boardman, 2009). New Institutionalism theory allows congregations to recognize the impact of external environments and foster organizational relationships in order to build successful intervention practices based on other churches’ past experiences. According to Catanzaro et al., (2007), the leading motivation for churches to embrace a health intervention is hearing about the success of such a program from clergy of other congregations. In addition, the New Institutionalism theory allows religious groups to share sites and collaborate with other congregations to discuss community needs and plan programs to meet them (Wuthnow, 2004).

Church Health Behavior Change Interventions

Factors that must be considered when planning an intervention within a church community include the members’ intrapersonal characteristics, interpersonal/social networks, and organizational policies within the participating church (Campbell et al., 2007). Consideration of the aforementioned factors

provides a framework to intervene with multiple levels of influence on behavior change. The Socio-Ecological model may be the most relevant to church-based health promotion because it reflects the complex nature of a church community, and it addresses many factors that can influence the success of a behavioral intervention in a church setting. Churches inherently provide congregants with motivation and support through fellow members, as well as improve psychological well-being for church attendees that regularly engage in prayer and religious practices. Cambell et al. (2007, p.216) provide several level of change that are related to church-based health promotion programs:

1. Intrapersonal-“Individual characteristics that influence health behavior such as knowledge, attitudes, beliefs, affect and past experiences.”
2. Interpersonal/social interactions- “Interpersonal and group influences including formal and informal social networks and social support from family, friends, and church members to support healthy behaviors.”
3. Organizational policies and resources- “Policies and organizational structures which may help promote/maintain recommended behaviors within the church.”
4. Community and geographic resources- “Neighborhood, community, or governmental resources, institutions, policies, or other activities that improve the supportiveness and availability of healthy options for church members.”

The Socio-Ecological Model allows for a combination of intervention strategies including the aforementioned inherent church-based characteristics into a multi-component intervention, rather than the most common individual level intervention methods.

Faith-Based Wellness Interventions

In an attempt to improve the success of health promotion intervention programs, religious institutions and their respective leaders are being used as platforms and advocates respectively to promote healthy, active lifestyles (Campbell et al., 2007). Many health promotion based interventions initiated in the church setting have rendered results that show improved health status of regular church attendees. For example, Clark (1999) reported that participants in exercise intervention programs were more likely to adhere to the intervention prescription when the demographics of all the participants were similar, and the exercise leader also had similar characteristics as the participants. People with similar demographics are frequently attracted to a particular church, might increase the likelihood of conducting a successful health promotion intervention. The American Religious Identification Survey (2001) reported that 85% of American adults identify themselves with a religion. Not surprisingly, churches and other religious organizations offer attractive settings to conduct health promotions programs. In particular, the church provides positive social networks and social support which, according to past studies, have been shown to be key ingredients for promoting exercise adherence among regular church attendees (Campbell et al., 2007; Clark, 1999). In addition, many religions prohibit consumption of unhealthy foods and substances such as pork, alcohol and tobacco which increases the health benefits of faithful followers. Churches are equipped with the necessary resources to conduct a health promotion program, such as kitchens, meeting rooms, activity groups, health committees, and substance abuse

counseling (Campbell et al., 2007). Finally, churches provide easy access to track participants as many church members attend the same church regularly for many years.

The majority of health promotion research studies in churches with predominantly AA members are based on increasing health status by improving nutrition and reducing both cardiovascular disease and obesity. However, few studies have focused primarily on increasing physical activity among its members. In one study, for instance, Underwood and Powell (2006) examined the influence of religion and spirituality on cancer screening practices of AA's within a faith community. Participants ($N=471$) for this study were recruited from 6 AA churches, with a mean age of 42 years. Using the CDC and Prevention Behavioral Risk Factor Surveillance Survey (CDC, 2004), the researchers determined that although most of the participants in this study reported having health insurance and a primary health care provider, the majority would benefit from education and programming aimed specifically on cancer screening. Chi square analysis determined that religion and spirituality did not have a significant effect on cancer screening practices of the study participants.

In a more recent study, Cowart et al. (2010) combined nutrition education and exercise intervention in a church-based setting to reduce obesity over 12 consecutive Saturdays, for 3 hours each day. Meetings started with participants sharing success stories and challenges detailing the previous week regarding healthy eating and exercise. Discussion was followed by a 1.5 hour fitness program which included educational reinforcement and group exercise. A pre-

intervention survey determined that over half the participants fell into the “obese” category according to their BMI. The results revealed a pattern of beneficial changes in nutrition and exercise habits such as reduced fried food cooking methods and consumption and increased consumption of fresh foods and whole grains. Conversely, a higher percentage of post intervention respondents reported no exercise in the past month as compared to respondents reporting healthier eating habits. Although all respondents judged this intervention program as being very helpful at making them aware of nutritional decisions and exercise participation, perhaps the inclusion of scripture supporting the need to lead an active lifestyle will be a contributing motivational factor in any upcoming church-based exercise interventions.

Measuring Religious Health Beliefs

In recent years, religion has been a key variable in promoting positive health outcomes and reducing compromising health behaviors (Steinman & Zimmerman, 2004). However, measuring a person’s religiosity continues to be a challenge for researchers. A person’s religiosity has previously been measured by frequency of church attendance or self-reported rating of religiosity (Donahue & Benson, 1995 Wallace & Foreman, 1988).

In recent years, several instruments have developed to measure how religion or spirituality affects one’s health status (Paragament et al., 1988; Turner-Musa & Wilson, 2006; Wallston et al., 1999). Paragament et al. (1988), for example, developed the Religious Problem Solving Scale (RPSS). This scale was designed to measure the degree to which religion influences an individual’s

interpretation of problems and how they solve them. Three subscales comprise the RPSS: Collaborative Problem Solving, Deferring Problem Solving, and Self-Directing. The Collaborative Problem Solving subscale measures an individual's likelihood to solve a problem as a result of an active personal exchange with God. Deferring Problem Solving measures an individual's likelihood to place the responsibility for solving the problem on God, and waits for a solution to the problem from God. The Self-Directing subscale measures an individual's likelihood to solve a problem with no influence from God. Each of the subscales are used by creating questions pertaining to religious problem solving styles.

In one study, Holland et al. (1998) developed the Systems of Belief Inventory (SBI). The inventory questions were driven by four domains the authors identified as spiritual and religious beliefs/practices: "(1) the degree to which persons felt they derived meaning from an existential perspective (2) the use of certain religious practices and rituals, such as prayer and meditation, (3) the relationship to a superior being or perceived higher power, such as God, (4) the level of social support derived from a community of individuals sharing similar beliefs" (p. 462).

Among the more popular tools used to measure a person's religiosity is the God Locus of Health Control Scale (GLHC). Using religious beliefs as a platform to encourage religious persons to recognize their perceptions about internal or external health control stemmed from earlier locus of control scales such as the Multidimensional Health Locus of Control (MHLC), Internal Health Locus of Control (IHLC), and the Chance Health Locus of Control (CHLC). However, an

external source of health control that is neglected in the aforementioned Locus of Control Scales is that of religion, or “supreme beings” such as God. Welton et al. (1996) wrote six new items to include in the MHLC in attempt to measure God health-control beliefs. Although the additional items to the MHLC were a useful step assessing religiously based health-control beliefs, a tool to assess people’s beliefs that God is in control of their current health status was necessary. Wallston et al. (1999) developed a tool specifically designed to assess religiously based health control beliefs, the God Locus of Health Control scale (GLHC), which is a modified version of the MHLC. The GLHC scale encompasses Shapiro’s theory of a multidimensional health control approach (Shapiro et al., 1996). The GLHC scale allows researchers to assess the person’s belief that God is in control of his or her current state of health and well being.

Walston et al. (1999) tested the validity of the GLHC using two independent samples of persons with rheumatoid arthritis (RA). RA is a systemic autoimmune disease that causes painful inflammation of the joints. GLHC was administered to participants twelve years after being diagnosed with RA on average. To determine perceptions of control, all participants completed the 18-item Form C of the MHLC, which has adequate psychometric properties (Wallston, Stein, & Smith, 1994). All participants also completed the six-item GLHC to compare reliability and validity data of both scales. Results for the GLHC were significantly correlated with two of the MHLC subscales for the RA participants. These results indicate the accuracy of assessing GLHC beliefs when seeking to change the behavior of individuals with chronic illness.

In summary, various health benefits are associated with long term cardiovascular and resistance training. Although 70% of AA adults are overweight, many AA men and women do not engage in regular physical activity or exercise. With consideration to exercise barriers reported by AA's, and including spiritual and religious beliefs, it is plausible that AA's can be motivated and influenced to participate in regular exercise. This study aims to examine how a pastors' scripture-based counseling on exercise influences a congregation's exercise participation.

CHAPTER III

METHODS

Participants

The participants for this study were AA men ($n=2$) and women ($n=15$) who regularly attended two separate southern-based Baptist churches whose members were primarily AA congregants. All participants were at least aged 18 years ($M=57.2$, $SD 4.2$), and obtained their doctors approval to engage in vigorous physical activity and resistance training as required to participate in this study. Before data were collected, Institutional Review Board (IRB) approval was granted from Middle Tennessee State University (see Appendix A).

A progressive exercise prescription was provided for both SG ($n=9$) and CG ($n=8$) participants. The pastor of the SG church provided bi-weekly scripture to support healthy and active living. Although both SG and CG each started the program with 10 participants lack of transportation and unforeseen illness contributed to attrition in both groups.

Instrumentation

Anthropometric Data. Body weight was measured to the nearest pound using a Tanita digital scale model number BF-522. Height was measured to the nearest inch with a Seca Road Rod stadiometer model S-214. Waist and hip circumference were measured using a Gulick Tape Measure model number 5489. This testing equipment was selected due to its accuracy and portability and was transported to each church campus to maintain consistency in data collection.

God Locus of Health Control (GLHC). The extent to which participants believed God controlled their health status was assessed using the GLHC (Wallston et al., 1999). Initial studies of the psychometric properties of the GLHC provided evidence of the scales reliability and validity. The GLHC was internally consistent ($r = .94$, $p < .001$) with the original Multidimensional Health Locus of Control scale (Wallston, Wallston & Devellis, 1978). Refer to Appendix B.

Attitudes Towards Exercise Inventory (ATEI). The ATEI was adapted in this study based on a previous inventory called from Attitudes Towards Exercise and Physical Activity Inventory (McPherson & Yushasz', 1968). Adapting the scale consisted of changing key words of the original scale to key words more consistent with this study. The inventory was scored using a 5-point Likert Scale format: 1 (*strongly disagree*) to 5 (*strongly agree*). Test-retest methods determined the reliability for the original inventory, +0.916, validity was determined by a *t* test, revealing a ratio of 6.697 ($p < .01$). Refer to Appendix C.

Intervention

The study included a fitness coach who was trained and certified by the National Strength and Conditioning Association. In addition the fitness coach earned a Masters degree in Sport Management, and was pursuing a Ph. D in Health and Human Performance during the exercise intervention. The fitness coach served as the fitness coordinator in several other published exercise intervention studies. The role of the fitness coach was to provide progressive resistance and cardiovascular workouts and to adapt suitable exercise for participants with specific needs (e.g., bad knees or lower back problems) during

the 10-week intervention. Finally, the fitness coach also served as the PI for this exercise intervention.

In separate meetings, the pastors for each of two participating churches were solicited to receive an exercise intervention which included 10 weeks of progressive exercise prescription and measures of pre- and post-test fitness. Both pastors agreed to solicit volunteers from among select members of their respective congregations to participate in the program. In addition to the exercise prescription, one of the pastors provided messages of scripture to his congregants for one hour, every other week over 10-weeks (total of five one-hour sessions). Throughout the study, SG and CG were provided with identical bi-weekly progressive cardio and resistance workouts, for a total of 10-weeks of exercise prescription (see Appendix D).

Procedures

Participants were divided into two groups according to the particular church they attended. These were intact groups; members of one church formed the scripture group (SG) while members of the other church formed the control group (CG). The SG ($n= 1$ male, 8 females) consisted of participants who attended seminars offered by their pastor. SG participants were all members of the same church, and volunteers from an intact Bible study group that routinely met once per week in addition to regular Sunday services. Participants from the CG volunteered from the general congregation of their respective church and did not receive scriptural information from their pastor and were not part of an intact Bible study group.

Participants were informed that fitness assessments would be administered on the first and 11th week of the program. Both groups were given identical 10-week progressive exercise prescriptions. Both groups experienced a total of 5 exercise demonstration sessions, every other week, over the 10-week intervention. In addition, however, the SG but not the CG interacted with the pastor as part of their weekly Bible study group.

Scripture Group

Approximately five weeks before the Vacation Bible School (VBS)/exercise intervention was scheduled to begin, an intact Bible study group representing congregants from one church was solicited by the pastor to participate in a 10-week, church-based exercise intervention. The PI introduced himself as a Certified Strength and Conditioning Specialist and current doctoral candidate, then provided a brief overview of the 10-week exercise intervention. Interested members of the Bible study group were each provided with a consent form and standardized physician exercise approval (see appendices E and F) form prior to the planned exercise intervention start date. Participants completed consent forms and returned them immediately to the PI. Participants were advised that standardized physician forms would be collected on first day of the intervention program prior to beginning fitness assessments.

Experiment Group Exercise Program

VBS sessions consisted of one-hour meetings over three consecutive evenings. On the first night, physician exercise approval forms were collected from each participant, immediately followed by fitness assessments. After all

fitness assessments were completed, the PI provided hard copies of the first 2-weeks of the exercise program. All exercises were demonstrated by the PI and alternative exercises were also suggested to accommodate the physical needs of specific participants (e.g., previous injury, discomfort). For the next two consecutive evenings the PI provided participants with weeks 3 and 4, and 5 and 6 of the exercise prescription. The prescription consisted of large muscle group exercises as well as cardiovascular exercises. Each bi-weekly exercise prescription stemmed from the previous one. Change of direction exercises were added and more challenging cardiovascular exercises were prescribed as the program progressed. Each of the bi-weekly workouts were progressively longer in terms of sets and repetitions, as well as inclusion of more challenging exercises. In addition, cardiovascular exercise requirements increased in terms of time and difficulty. Each day all exercises were demonstrated, and alternative exercises were suggested to accommodate the physical needs of each participant. After the third consecutive exercise session, the next two workouts with coaching, weeks 7 and 8, were scheduled two weeks later. As before, all exercises were demonstrated, and alternative exercises offered to accommodate the needs of each participant. Prior to concluding the session, participants scheduled their next two sessions, weeks 9 and 10, two weeks later. In addition, participants were advised that fitness testing would take place during the next meeting, after a period of two weeks. The intervention concluded at the end of each participant's exercise post-test.

Pastoral Sessions

The pastor provided Scriptural references at all exercise program meetings prior to the conclusion of each session. Scriptural passages and encouragement that the senior pastor used over the 10 week intervention are provided in Appendix G. The Pastor used the keyword “prescription” encouraging participants to adhere to the Bible’s “health prescriptions” as well as the exercise prescription provided by the PI. Also, the Pastor informed participants that the “Lord’s work” could be far more effective if done in an able body. Participants were advised to train daily in the word of God, and use muscles in our spiritual arsenal to meet the biblical guidelines of offering a “usable tool” (i.e. your body) to serve the Lord. Thus, the pastor’s overall message was to be consistent with the dietary values suggested by the scriptural passages and to be religious about following the 10-week exercise program in pursuit of a stronger body with which to serve the Lord.

Control Group Intervention

Approximately five weeks prior to the planned start date for the church-based exercise intervention, the PI attended regular Sunday services at the church. For four consecutive Sundays, the pastor introduced the lead investigator to the congregation, while promoting and encouraging attendees to participate in the study. The investigator introduced himself as a Certified Strength and Conditioning Specialist and doctoral candidate, then provided a brief overview of the 10-week exercise intervention. Members interested in receiving more information about the program, or who wished to sign up for the program, were

invited to meet with the PI immediately following the service. At that time, interested members met with the PI to obtain a consent and standardized physician approval for exercise forms, and to ask any questions pertaining to the program. During these sessions, the PI collected signed consent forms and advised participants of the start date for the program. All participants were informed they must have a standardized physician approval form signed prior to fitness pre-testing. Contact information for the PI was given to all church members who attended the session in case participants had any questions or concerns pertaining to the intervention or needed to contact the PI. Participants were advised that the program would consist of pre-fitness testing on week 1, five bi-weekly exercise training sessions throughout the 10-week exercise program, and post-fitness testing on the 11th week of the program.

Exercise Treatment

Training sessions during the 10-week exercise intervention were conducted in groups for both conditions. For the SG, exercise sessions were conducted on 3 consecutive nights, and two sessions scheduled two weeks apart respectively. For the CG, One session was held and supervised by the PI bi-weekly. Each session was scheduled two weeks apart for a total of 5 sessions. At each session, the PI provided resistance bands and weighted balls to accommodate the exercise prescription. At each of the supervised training sessions, the PI distributed the next 2-week exercise program, demonstrated any new exercises, and answered any questions participants had. The PI modeled each exercise and advised participants to practice them and record keywords that would help them

remember specific movements. During exercise sessions, participants informed the PI if they experienced difficulties with specific movements or exercises. If so, alternative exercises or movement accommodations were suggested for each individual.

Resistance exercise prescription started with basic movements using large muscle groups such as squats (quadriceps), chest press (pectoralis major), hamstring curls/ stretches, and rows (lattisimus dorsi). During this phase, the prescribed rest period was 30 seconds to 1.5 minutes between each set. As the prescription progressed, exercises were incorporated combining upper and lower body movements such as squat and shoulder press. In addition, rest periods between exercises were shortened with every biweekly exercise prescription. Finally, resistance training ended using dynamic movements such as walking lunges or lateral lunges.

Cardiovascular endurance prescription started out with 5 – 10 min of consecutive walking, gardening, bike riding. By week five, 15 – 30 min of consecutive movement was prescribed. As the exercise intervention progressed, more vigorous cardiovascular exercises were prescribed such as 30 second sit and stand or 2 minute step test. In the early stages of the exercise intervention, cardiovascular exercises only took place at the beginning or end of the workout. As the workout progressed, cardiovascular exercises were incorporated throughout the entire workout, including immediately following a resistance training exercise.

Pre and Post Fitness Testing

All fitness testing took place at each of the respective church campuses. Participants met at the church campus to complete pre and post intervention fitness tests. Prior to beginning pre and post fitness assessments, each participant completed two inventories, the GLHC and the ATEL. Fitness assessments began immediately upon completion of questionnaires. Fitness assessments were conducted in a large multi-function room, assessing one participant at a time while remaining participants waited to complete their pre- and post-test measures.

Participants were pre- and post-tested for the following measurements: girth, upper and lower body muscular endurance, and a sub-maximal cardiovascular endurance test.

Girth Measurements. For baseline and post-testing purposes, the following measures were obtained: chest, right arm around biceps and triceps, waist (measuring the circumference of the lower body at the least posterior protuberance), hips (measuring circumference of lower body at the greatest posterior protuberance), and circumference of the leg.

Upper Body Muscular Strength Test. This test consisted of the number of repetitions to curl a dumb-bell through a full range of motion (i.e., biceps curl) within 30 seconds. Women were tested using a 5 lb. weight; men were tested using a 8 lb. weight (Rikli & Jones, 2001).

Lower Body Muscular Strength Test. Using the timed *Sit and Stand Test* (Rikli & Jones, 2001) to assess lower body muscular strength, participants sat in a straight-back chair while they folded their arms. Next, participants were asked to

sit and stand in the chair, as many times as possible within 30 seconds. A stop watch was used to count down 30 seconds and each sit and stand repetition was counted by the PI. The final number of repetitions at 30 seconds was recorded.

Cardiovascular Testing. This test consisted of walking in place for 2 minutes consecutively. For each participant, a piece of blue tape was placed on a wall indicating how high their knee needed to go for the step to count. Each time the right knee reached the tape, a repetition was counted until 2 minutes expired (Rikli & Jones, 2001).

Research Design

This study was a 2 (treatment/no treatment group) X 2 (pretest/posttest) quasi-experimental design. In particular, this was a non-equivalent control group design, since the groups were intact and participants could not be randomly assigned to treatment conditions.

CHAPTER IV

RESULTS

Descriptive Statistics

Table 1 presents descriptive statistics for the major measures, broken down by group and pre/posttest. An initial set of *t*-tests were run on each dependant variable to determine how similar the SG and CG were prior to their treatments. This analysis revealed that, compared to the CG group, the SG group had higher initial hip circumference ($t(15) = 2.166, p = .047$), performed less well on the step test ($t(15) = -3.024, p = .009$), and performed less well on the sit and stand test ($t(15) = -2.219, p = .042$).

Test of Hypotheses

To determine if there were statistical differences between pre- and post-tests, a 2(group) x 2(pre and posttest) multivariate analysis of variance (MANOVA) was run using Statistical Package for the Social Sciences (SPSS) version 17.0. The dependent variables in the MANOVA were weight, waist circumference, hip circumference, hip circumference, step test, sit & stand, and biceps curls. Repeated measures MANOVA was used to address the overall effect of the intervention (see Table 1). MANOVA indicated significant differences between the two time periods, Wilks' Lambda = .174, $F(6, 10) = 7.89, p = .002, \eta^2 = .83$. MANOVA indicated no significant interaction between time and group, Wilks' Lambda = .812, $F(6, 10) = 0.385, p = .873, \eta^2 = .19$. MANOVA results indicated significant differences between the two treatment groups periods, Wilks' Lambda = .32, $F(6, 10) = 3.57, p = .037, \eta^2 = .68$.

Participant Weight

Table 2 shows the results of the univariate ANOVA for participant weight. The ANOVA results showed no significant difference between the two time periods for participant weight, $F(1, 15) = 0.02, p = .905, \eta^2 = .00$. ANOVA showed no significant difference between the two treatment groups for participant weight, $F(1, 15) = 1.03, p = .327, \eta^2 = .06$. Finally, ANOVA results showed no significant interaction between time and group for participant weight, $F(1, 15) = 0.31, p = .586, \eta^2 = .02$.

Participant Waist Circumference

Table 3 shows the results of the univariate ANOVA for participant waist circumference. ANOVA results showed a significant difference between the two time periods for participant waist circumference, $F(1, 15) = 7.56, p = .015, \eta^2 = .34$. This indicates that the mean pretest waist circumference for all participants was significantly greater than the mean waist circumference at posttest. ANOVA results showed no significant difference between the two treatment groups for participant waist circumference, $F(1, 15) = 1.97, p = .181, \eta^2 = .12$. Finally, ANOVA results showed no significant interaction between time and group for participant waist circumference, $F(1, 15) = 0.25, p = .624, \eta^2 = .02$.

Participant Hip Circumference

Table 4 shows the results of the univariate ANOVA analysis for participant hip circumference. ANOVA results showed a significant difference between the two time periods for participant waist circumference, $F(1, 15) =$

6.05, $p = .027$, $\eta^2 = .29$. This indicates that the mean pretest hip circumference for all participants was significantly greater than the mean hip circumference at posttest. ANOVA results showed no significant difference between the two treatment groups for participant waist circumference, $F(1, 15) = 4.23$, $p = .058$, $\eta^2 = .22$. Finally, ANOVA results showed no significant interaction between time and group for participant waist circumference, $F(1, 15) = 0.23$, $p = .640$, $\eta^2 = .02$.

Step Test

ANOVA results showed a significant difference between the two time periods for step test, $F(1, 15) = 43.79$, $p < .001$, $\eta^2 = .75$. This indicates that the mean pretest for participant step test scores was significantly less than the mean step test scores at posttest. ANOVA results showed a significant difference between the two treatment groups for step test, $F(1, 15) = 15.20$, $p = .001$, $\eta^2 = .50$. In support of the hypothesis the mean step test score for the SG was significantly higher than the mean step test score for the control group across both trials. Table 5 shows the results of the univariate ANOVA for the step test. Finally, ANOVA results showed no significant interaction between time and group for step test, $F(1, 15) = 0.25$, $p = .623$, $\eta^2 = .02$.

Sit and Stand

Table 6 shows the results of the univariate ANOVA for the *Sit and Stand Test*. ANOVA results showed a significant difference between the two time periods for sit and stand, $F(1, 15) = 17.20$, $p = .001$, $\eta^2 = .53$. This indicates that the mean pretest for participant sit and stand scores was significantly less than the mean sit and stand scores at posttest. ANOVA results showed no significant

difference between the two treatment groups for sit and stand, $F(1, 15) = 3.76, p = .072, \eta^2 = .20$. Finally, ANOVA results showed no significant interaction between time and group for sit & stand, $F(1, 15) = 0.09, p = .764, \eta^2 = .01$.

Biceps Curl

Table 7 shows the results of the univariate ANOVA for biceps curl. ANOVA results showed a significant difference between the two time periods for biceps curl, $F(1, 15) = 22.30, p < .001, \eta^2 = .60$. ANOVA results showed a significant difference between the two time periods for biceps curl, $F(1, 15) = 22.30, p < .001, \eta^2 = .60$. This indicates that the mean pretest for participant biceps curl scores was significantly less than the mean biceps curl scores at posttest. ANOVA results showed significant difference between the two treatment groups for biceps curl, $F(1, 16) = 5.48, p = .033, \eta^2 = .27$. In support of the hypothesis, the mean biceps curl score for the SG was significantly higher than the mean biceps curl score for the control group. Finally, there was no significant interaction between time and group for biceps curl, $F(1, 15) = 0.43, p = .521, \eta^2 = .03$.

God Locus of Control

The GLHC measure was assessed using a 2 (treatment group) X 2 (pretest/posttest) repeated-measures ANOVA. These results (see table 8) showed no significant difference between the two time periods for GLHC scores, $F(1, 16) = 0.76, p = .398, \eta^2 = .05$. ANOVA results showed no significant difference between the two time periods for GLHC scores, $F(1, 16) = 0.76, p = .398, \eta^2 = .05$. ANOVA results showed no significant difference between the two treatment

groups for GLC scores, $F(1, 16) = 0.99, p = .334, \eta^2 = .06$. Figure 1 shows the results of the ANOVA analysis for GLHC scores. Finally, there was no significant interaction between time and group for GLHC scores, $F(1, 16) = 0.87, p = .364, \eta^2 = .05$.

Attitudes on Exercise Inventory

ANOVA results (see table 9) showed a significant difference between the two time periods for ATEI scores, $F(1, 16) = 5.92, p = .027, \eta^2 = .27$. As predicted, the mean pretest for attitudes on exercise scores was significantly less than the mean at posttest, meaning that participants' attitudes towards exercise became significantly more positive over the 10-week intervention. ANOVA results showed no significant difference between the two treatment groups for ATEI scores, $F(1, 16) = 0.68, p = .421, \eta^2 = .04$. Finally, ANOVA results showed a significant interaction between time and group for ATEI scores, $F(1, 16) = 4.48, p = .050, \eta^2 = .22$. Figure 2 shows the interaction results for attitudes on exercise scores. As the figure shows, the SG started the study with less positive attitudes than the CG. However, after participating in the study, the SG showed large changes in their exercise attitudes, whereas the CG did not.

Table 1

Descriptive Statistics for Dependent Variables

Variable	Pretest		Posttest	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Scripture Group (n=9)				
Age	46.6	18.9	NA	
Weight	212	31.9	212.7	30.3
Waist Circumference	41.5	4	40.1	3.4
Hip Circumference	48	3.5	46.8	3.2
Step Test	90	10.9	112.2	15.4
Sit and Stand	15.4	0.88	19.1	4.2
Biceps Curl	16.1	3.2	19.8	2
Control Group (n=8)				
Age	57.2	4.2	NA	
Weight	197	33.5	196.5	31.6
Waist Circumference	38.5	4	37.5	4.5
Hip Circumference	44.3	3.3	43.6	3.9
Step Test	110	16.1	135	11.8
Sit and Stand	17.3	2.4	21.6	3.5
Biceps Curl	18.1	2.1	23.1	4

Note. MANOVA Interaction: Wilks' Lambda = .812, $F(6, 10) = 0.385$, $p = .873$, $\eta^2 = .19$.

MANOVA Time Effect: Wilks' Lambda = .174, $F(6, 10) = 7.89$, $p = .002$, $\eta^2 = .83$.

MANOVA Group Effect: Wilks' Lambda = .32, $F(6, 10) = 3.57$, $p = .037$, $\eta^2 = .68$

Table 2

Univariate Analysis of Variance for Participant Weight

Characteristic	<i>M</i>	<i>SD</i>	<i>n</i>	<i>df</i>	<i>F</i>	<i>p</i>
					Between subjects	
Time				1	0.02	.905
Pre	204.94	32.60	17			
Post	205.12	31.11	17			
Group				1	1.03	.327
Scripture	196.75	32.46	9			
Control	212.39	31.13	8			
Time*Group				1	0.31	.586
Within-group error				15	(11.19)	

Note: Values enclosed in parentheses represent mean square errors.

Table 3

Univariate Analysis of Variance for Participant Waist Circumference

Characteristic	<i>M</i>	<i>SD</i>	<i>n</i>	<i>Df</i>	<i>F</i>	<i>P</i>
					Between subjects	
Time				1	7.56	.015
Pre	40.12	4.65	17			
Post	38.88	4.07	17			
Group				1	1.97	.181
Scripture	38.00	4.71	9			
Control	40.83	3.61	8			
Time*Group				1	0.25	.624
Within-group error				15	(11.19)	

Note: Values enclosed in parentheses represent mean square errors.

Table 4

Univariate Analysis of Variance for Participant Hip Circumference

Characteristic	<i>M</i>	<i>SD</i>	<i>n</i>	<i>Df</i>	<i>F</i>	<i>p</i>
					Between subjects	
Time				1	6.05	.027
Pre	46.29	3.82	17			
Post	45.35	3.88	17			
Group				1	4.23	.058
Experiment	44.00	3.57	9			
Control	47.44	3.33	8			
Time*Group				1	0.23	.640
Within-group error				15	(11.19)	

Note: Values enclosed in parentheses represent mean square errors.

Table 5

Univariate Analysis of Variance for Step Test

Characteristic	<i>M</i>	<i>SD</i>	<i>n</i>	<i>Df</i>	<i>F</i>	<i>p</i>
Between subjects						
Time				1	43.79	< .001
Pre	99.41	16.72	17			
Post	123.35	18.11	17			
Group				1	15.20	.001
Scripture	122.93	12.45	9			
Control	101.11	10.64	8			
Time*Group				1	0.25	.623
Within-group error				15	(11.19)	

Note: Values enclosed in parentheses represent mean square errors.

Table 6

Univariate Analysis of Variance for Sit and Stand

Characteristic	<i>M</i>	<i>SD</i>	<i>n</i>	<i>Df</i>	<i>F</i>	<i>p</i>
					Between subjects	
Time				1	17.20	.001
Pre	16.35	1.99	17			
Post	20.29	4.04	17			
Group				1	3.76	.072
Scripture	19.50	2.39	9			
Control	17.27	2.33	8			
Time*Group				1	0.09	.764
Within-group error				15	(11.19)	

Note: Values enclosed in parentheses represent mean square errors.

Table 7

Univariate Analysis of Variance for Biceps Curl

Characteristic	<i>M</i>	<i>SD</i>	<i>n</i>	<i>Df</i>	<i>F</i>	<i>p</i>
					Between subjects	
Time				1	22.30	< .001
Pre	17.05	2.92	17			
Post	21.41	3.48	17			
Group				1	5.48	.033
Scripture	20.62	2.86	9			
Control	18.00	1.67	8			
Time*Group				1	0.43	.521
Within-group error				15	(11.19)	

Note: Values enclosed in parentheses represent mean square errors.

Table 8

Univariate Analysis of Variance for God Locus of Control

Characteristic	<i>M</i>	<i>SD</i>	<i>n</i>	<i>Df</i>	<i>F</i>	<i>p</i>
					Between subjects	
Time				1	0.76	.398
Pre	16.33	5.77	18			
Post	14.83	8.82	18			
Group				1	0.99	.334
Scripture	14.06	6.45	9			
Control	17.12	7.60	8			
Time*Group				1	0.87	.364
Within-group error				16	(26.81)	

Note: Values enclosed in parentheses represent mean square errors.

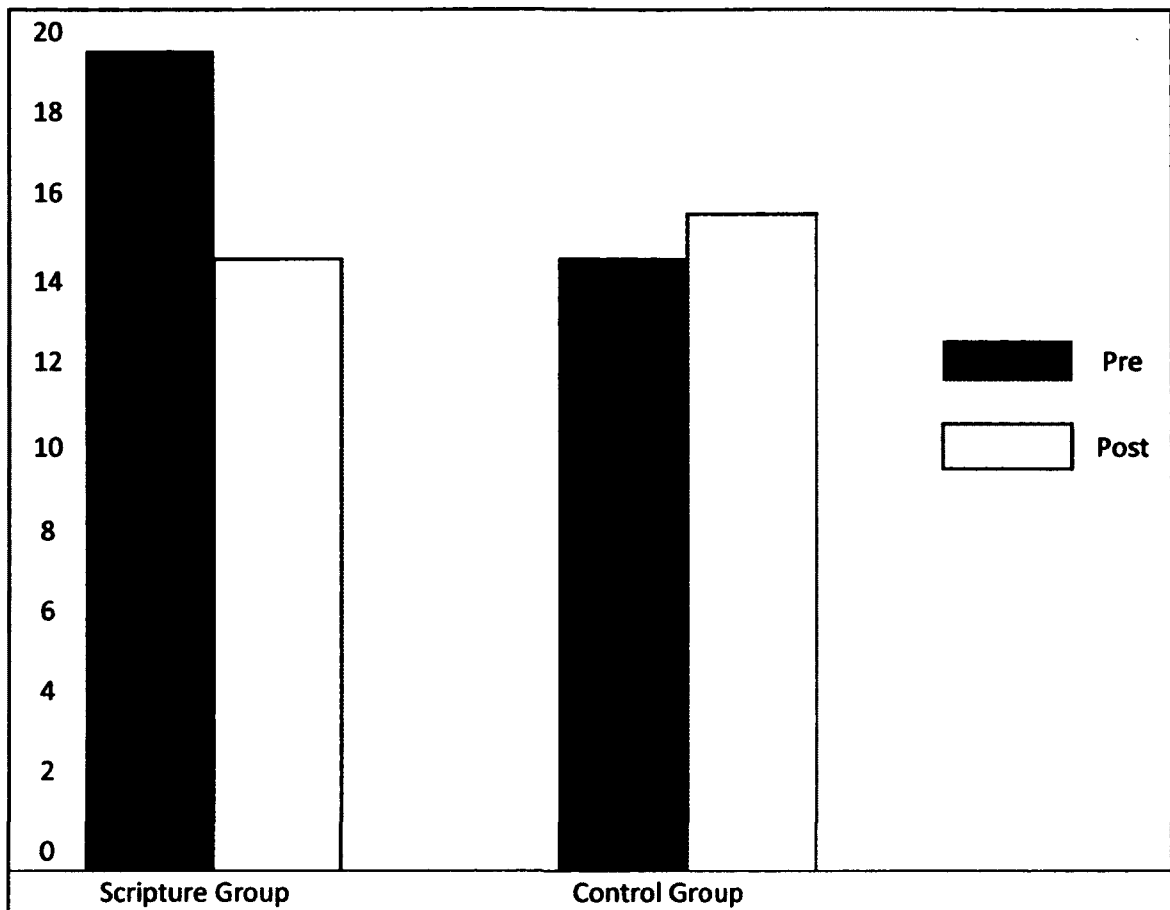


Figure 1. *God Locus of Control Scores*

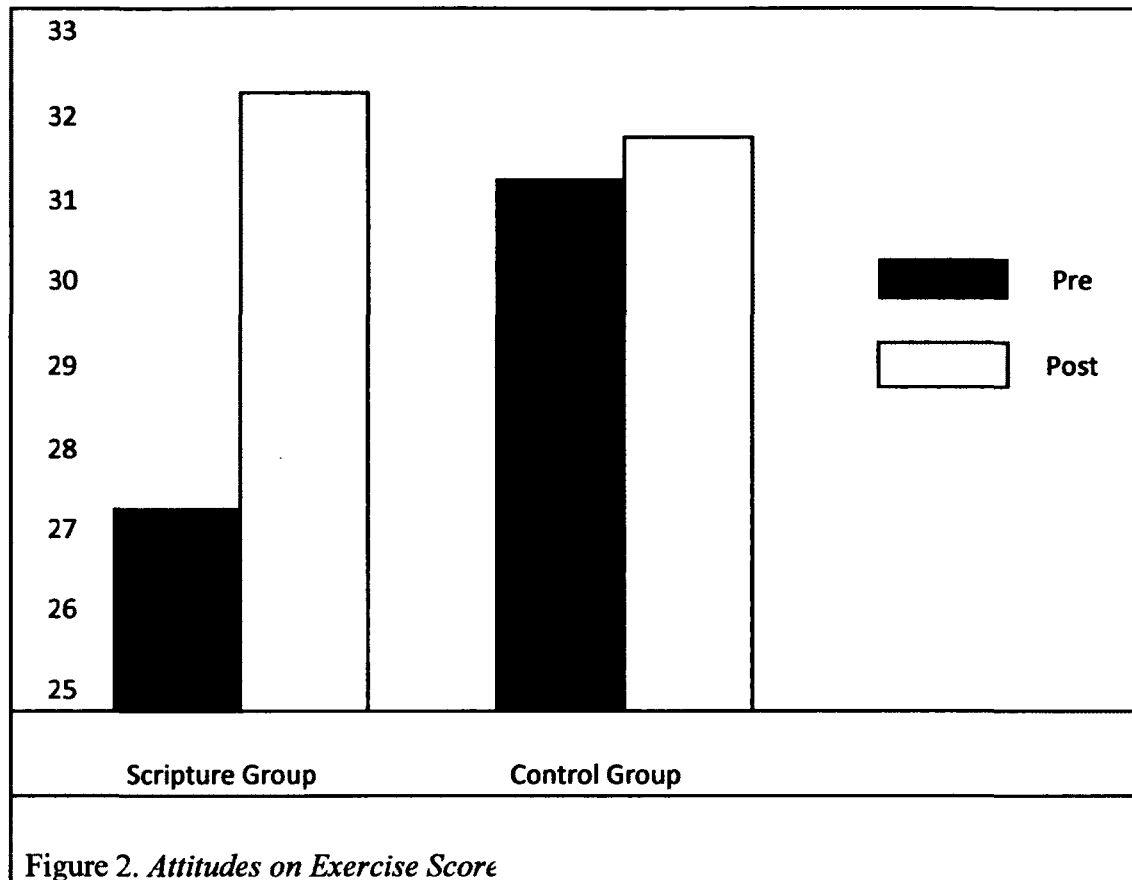
Note: Higher score indicates stronger belief that God is solely in control of their health.

Table 9

Univariate Analysis of Variance for Attitudes on Exercise

Characteristic	<i>M</i>	<i>SD</i>	<i>n</i>	<i>Df</i>	<i>F</i>	<i>p</i>
					Between subjects	
Time				1	5.92	.027
Pre	29.50	3.63	18			
Post	32.06	4.24	18			
Group				1	0.68	.421
Scripture	31.39	3.47	9			
Control	30.17	4.12	8			
Time*Group				1	4.48	.050
Within-group error				16	(9.92)	

Note: Values enclosed in parentheses represent mean square errors.



CHAPTER V

DISCUSSION

The purpose of this study was to examine the influence of a religious leader's communication of scripture on improved fitness, GLHC, and overall attitude toward exercise of AA male and female adults who regularly attend church. It was hypothesized that the SG would show greater improvements on the measures compared to the control group. Also, it was hypothesized that both groups would show positive significant change in pre- to post test scores on all measures. Finally, it was hypothesized that the SG would show a greater improvement on all measures from pre- to post-intervention than the CG. Results partially supported the treatment (SG/CG) main effect hypothesis. Results strongly supported the time (pretest/posttest) hypothesis. Finally, there was partial support for the interaction hypothesis.

Hypothesis 1: Treatment Effect

Contrary to the hypothesis, the SG did not have better fitness levels than the CG. However, the data indicate that the SG began the 10-week intervention with slightly better fitness levels than the CG. To be specific, the SG started the intervention with smaller waist and hip circumference, performed better on *Step Test*, *Sit and Stand*, and *Biceps Curl*, pre- intervention. In addition, the SG showed significant post-intervention scores on *Step Test* and *Biceps Curl*. This suggests that the SG's superior fitness levels allowed for less change during a 10-week intervention.

The results showed similar scores of upper and lower body muscular endurance for both groups. Similar fitness scores could be attributed to the exercise program being formally provided to both groups through their respective churches and with a fitness coach. For example, the program consisted of each participant meeting bi-weekly with an exercise coach who provided structured workouts throughout the 10-week program. Similar results in fitness were found in another church-based intervention in which participants were inspired to participate in physical activity partially due to a physical activity leader's influence (Bopp et al., 2007). One factor that may help explain the similar fitness scores for both groups is that participants could have been trying to meet perceived expectations, also known as the Hawthorne effect.

Hypothesis 2: Time Effect

Significant improvements for both the SG and CG groups in cardiovascular and muscular endurance support the Specific Adaptation to Imposed Demand (SAID) principle. The SAID principle states that the body will adapt to the type of demands placed on it (Baechle & Earl, 2008). In addition, "progressive overload refers to the practice of continually increasing the stress as it has more endurance" (Fleck & Kraemer, 2004, p.7). Ostensibly then, the successful association between the progressive exercise prescription and social support will result in a healthier lifestyle when incorporated in churches and other religious institutions. Results of the current study indicate that adults can benefit from exercise programs without the inclusion of scripture, religion, or spiritual practices.

Specific components of an exercise program can produce better fitness results when the correct progressions in repetitions and weight used, periodization and proper sequence of exercises are employed. Other studies have examined the effects of physical activity programs for older adults. For example, results for a best-practice multi-component physical activity program for adults (mean age 66) had significant improvements in upper and lower body strength, and exercise participation as compared to participants who did not engage in the program (Hughs, Seymour, Campbell, Whitelam & Bazzarre, 2009).

Hypothesis 3: Interaction

Of particular importance in the present study, however, was whether the regular-messages of the church pastor inspired church members to improve their exercise participation, ATEI and change in GLHC scores more than the changes shown by the control group. Although both groups improved similarly in all fitness categories, improvement on ATEI by the SG showed a greater increase from pre-intervention to post-intervention than the CG. This finding supports the interaction hypothesis. This indicates the messages delivered by the pastor may have created a more positive attitude about exercise for SG participants.

Underwood and Powell (2006) conducted a study to examine the influence of religion on cancer screening practices of AA's within a church-based setting. Results for the study revealed spirituality had a significantly favorable influence on participant's health and dietary behaviors. Therefore, reinforcing desired behavior with scriptural passages has been shown to positively influence outcomes when the program is generated by the individual's religious institution.

Self efficacy theory may also partially explain the results of the present study, at least in reference to the ATEI scores. Results of this study indicated that SG (pastoral) participants had a more positive change in attitude toward exercise as compared to the CG participants. For this study, self efficacy refers to a participant's perceived capabilities for learning and performing various exercises. According to Bandura (1997), social support and achievable goals contribute to raising an individual's self efficacy. Self efficacy improves motivation, achievement and self regulation. ATEI scores for the SG could be more improved directly due to social support, which was reinforced by the bi-weekly meetings in which participants knew the pastor would be present. Results of the present study revealed positive outcomes when there was pastoral participation and scriptural support.

Finally, post-test GLHC scores revealed SG participants to believe that their decisions and lifestyles also play a role in their overall health and well-being. CG participants reported higher post intervention GLHC scores than pre intervention scores, higher scores indicate a higher belief that God is solely in control of one's health. Starting as early as the 6th week of the intervention, during scheduled exercise sessions, many SG participants expressed a sense of pride for continued participation in the intervention. Consistent scriptural exposure pertaining to physical activity and practicing healthy habits may have kept SG participants more conscious of their religious values throughout the exercise program, inspiring them to adhere to the exercise program to keep their lifestyles consistent with their religious values. These results indicate that the SG had more

of a religious attachment to the exercise program due to the pastoral input. In addition, although all CG participants participated in all exercise session meetings throughout the 10-week intervention and all exercise sessions took place at their church, without a scriptural message included in the session participants did not consider they were exercising because Bible scripture promotes PA and practicing healthy habits. It is plausible that CG participants could have viewed their participation in the exercise program as a bridge or opportunity to achieve personal physical goals. Overall, the SG experienced positive short term effects from the intervention, allowing the recognition that they too could have an impact on their health status, as indicated by comparing their pre and post GLHC scores.

In conclusion, the surface structure of church is appropriate for applying behavior change interventions for the congregation. According to Rescignow et al. (2002, p. 565) “surface structure involves matching intervention materials and messages to observable social and behavioral characteristics of a target population.” Therefore, improved fitness scores were shown by both SG and CG participants. However, it is also evident that the inclusion of scripture can have a positive effect participants’ on attitudes on exercise and beliefs that they play a role in keeping their body healthy.

Recommendations for Further Studies

Further research on this topic should include a larger sample to allow a stronger test of the hypotheses. In addition, a measure of exercise adherence (in terms of number of workouts completed) should be recorded. Also, conducting a study that is longer than 10-weeks may allow more time for change in fitness

levels, as many of the findings for the present study came close to being significant. The current study consisted of only AA's. Future investigations might include religious institutions that are predominately other races and ethnic groups which allow the findings to be generalized. Scientific data could influence churches to couple behavior change intervention with specific pastoral input to promote changes in attitudes.

One of the limitations of the current study was the requirement for participants to obtain a doctor's approval to engage in vigorous exercise prior to becoming an official program participant. During preliminary recruiting for both SG and CG participants, there were over 60 members of each congregation collectively willing to participate in the program. However, only 10 participants from each congregation actually completed all requirements to become an official program participant. This is consistent with the literature that many AA's avoid doctors and hospitals because lack of insurance coverage and/or primary care physician (Ioannou, Chapko, & Dominitz, 2003). Another limitation of the present study was no record of exercise adherence besides the scheduled bi weekly exercise meetings. Although the present study did record exercise adherence data for bi weekly exercise meeting attendance, future investigations should include more specific exercise adherence measures which record all workouts completed during the intervention.

Finally, does a pastor's input and participation have long term effects on participants exercise adherence as opposed to improved fitness scores? A follow-up study should be conducted to examine exercise habits of past participants of

this intervention. A correlation between long term exercise adherence and pastoral input could help to build a consistent structure to apply exercise interventions in a church-based setting.

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APPENDIXES

- A. IRB Approval Letter**
- B. God Locus of Health Control**
- C. Attitudes Towards Exercise Inventory**
- D. 10-week Exercise Prescription**
- E. Consent Form**
- F. Standardized Physician Approval Form**
- G. Scriptural Passages**

APPENDIX A
IRB Approval Letter

October 28, 2010

Chris Dickson
Department of Health and Human Performance
jreineke@mtsu.edu

Re: Protocol Title: "An Exercise Intervention in a Church-Based Setting"

Protocol Number: 11-048

Dear Investigator(s),

I found your study to be exempt from Institutional Review Board (IRB) continued review. The exemption is pursuant to 45 CFR 46.101(b) (2). This is because your study involves the use of surveys and questionnaires. Additionally, the data obtained will be recorded in such a manner that subjects cannot be identified, directly or through identifiers linked to the subjects and any disclosure of the subjects' responses outside the research could not reasonably place the them at risk of criminal or civil liability or be damaging to their financial standing, employability, or reputation.

You will need to submit an end-of-project report to the Office of Compliance upon completion of your research. Complete research means that you have finished collecting data and you are ready to submit your thesis and/or publish your findings. Should you not finish your research within the three (3) year period, you must submit a Progress Report and request a continuation prior to the expiration date. Please allow time for review and requested revisions. Your study expires on **October 28, 2013**.

Any change to the protocol must be submitted to the IRB before implementing this change. According to MTSU Policy, a researcher is defined as anyone who works with data or has contact with participants. Anyone meeting this definition needs to be listed on the protocol and needs to provide a certificate of training to the Office of Compliance. **If you add researchers to an approved project, please forward an updated list of researchers and their certificates of training to the Office of Compliance before they begin to work on the project.** Once your research is completed, please send us a copy of your final report to the Office of Compliance.

Also, all research materials must be retained by the PI or **faculty advisor (if the PI is a student)** for at least three (3) years after study completion. Should you have any questions or need additional information, please do not hesitate to contact me.

Sincerely,
Emily Born
Compliance Officer
615-494-8918

APPENDIX B

God Locus of Health Control

The God Locus of Health Control (GLHC)

Scale DIRECTIONS (for investigators)

The GLHC is designed to assess the belief that God is either the locus of control of one's health status, in general, or the locus of control of one's specific disease status. It can stand alone or be imbedded in Forms A/B or C of the MHLC scales. If, as with Forms A/B, you wish to use it to assess general health beliefs, choose the word "health" in the items below. If, as with Form C, you wish to assess condition-specific beliefs, substitute for the material in parentheses the name of the actual condition you are studying. For instance, in our work with persons with arthritis, the last item (see below) reads: "God is in control of my arthritis." If you choose to embed it within the MHLC, one easy way to do so is to have three MHLC items followed by one of the GLHC items.

The response scale for the GLHC should be the same as for the MHLC scales, which, in our work, is a 6-point Likert scale: "strongly disagree;" "moderately disagree;" "disagree;" "agree;" "moderately agree;" and "strongly agree." [If you use a different response scale, that may be OK; just be consistent.] As with the MHLC subscales, all the items are keyed in the same direction; a high score represents belief in God as a locus of control.

GLHC ITEMS

1. If my (health; condition) worsens, it is up to God to determine whether I will feel better again.
2. Most things that affect my (health; condition) happen because of God.
3. God is directly responsible for my (health; condition) getting better or worse.
4. Whatever happens to my (health; condition) is God's will.
5. Whether or not my (health; condition) improves is up to God.
6. God is in control of my (health; condition).

APPENDIX C

Attitudes Towards Exercise Inventory

ATTITUDES INVENTORY

The following questions are designed to identify how you personally feel about your current exercise habits.

Please think about your current exercise habits, even if you do not currently exercise at all.

Read each question below carefully and decide to what degree you agree or disagree with each statement.

Put an "X" in the column that corresponds with the answer of your choice.

If you have any problems please ask Chris Dickson.

	Strongly Disagree	Disagree	Unsure	Agree	Strongly Agree
1. It's a waste of my time thinking about exercise because I prefer my current inactive lifestyle.					
2. I enjoy exercising, but sometimes I over-do it.					
3. There is nothing wrong if I choose not to exercise regularly.					
4. Sometimes I think I should begin an exercise program.					
5. Anyone can talk about doing something about their exercise habits, but I am actually doing something about it.					
6. I exercise as much as anyone else.					
7. Due to lack of time or physical discomfort, exercising is a problem.					
8. I plan to change my exercise habits immediately, either by starting or maintaining a program.					
9. I plan my exercise sessions in advance.					
10. There is nothing I really need to change about my exercise habits.					
11. I do not like to exercise and there is nothing I can do about that.					
12. I am currently working on increasing my exercise habit.					

Appendix D

10-week Exercise Prescription

Exercise Prescription Week

Week 1 - 2

Goal: 2 resistance days, 1 cardio per week

Day 1	Day 2	Day 3
Med. Ball circuit 1x3		Med. Ball circuit 1x3
(hip, knee, ankle progression)	15-30 min. walk	(hip, knee, ankle progression)
chest press/ push-up 1x15		chest press/ push-up 1x15
Band Pulls/heavy pants 1x15		Band Pulls/heavy pants 1x15
Body Squats 1x15		Body Squats 1x15
hamstring toe touch 1x15 (R & L)		hamstring toe touch 1x15 (R & L)
10 min. cardio		10 min. cardio
Stretch		Stretch

Exercise Prescription

Week 3 - 4

Goal: 2 resistance days, 1 cardio per week

Day 1	Day 2	Day 3
1 min step warm-up		1 min step warm-up
	15-30 min. walk	
Med. Ball circuit 1x5 (hip,knee,ankle progression)		Med. Ball circuit 1x5 (hip,knee,ankle progression)
chest press/ push-up 2x15		Band Pulls/ Heavy Pants 2x15
Triceps kickback/ extension 2x15		Biceps Curls 2x15
Squat + Press 2x15		RDL + Press 2x15
1 min step cool-down		1 min step cool-down
Stretch		Stretch

<u>Exercise Prescription</u>	Day 1 & 3	Day 2 & 4
WEEKS 5-6	1 min step warm-up	CARDIO DAYS
GOAL: 2 resistance, 2 cardio		
	Lateral Lunge + Press 2x15 R & L	20-40 min. walk/ jog
	Hamstring Curls/ Hip-ups 2x15	Stretch
	chest press/ push-up 2x15	
	Band Pulls/ Heavy Pants 2x15	
	Triceps kickback/ extension 2x15	
	Biceps Curls 2x 15	
	1 min step cool-down	
	Stretch	

<u>Exercise Prescription</u>	WEEKS 7-8	Goal: 2 resistance, 2 Cardio
Day 1	Days 2 & 4	Day 3
Elbow to knee touches 2x10 R & L	20-40 min. continuous activity	Elbow to knee touches 2x10 R & L
Lateral Lunge + Press 2x10 R & L		Twists w/ ball 2x10 R & L
	Stretch	
Hamstring Curls/ Hip-ups 2x15		Reverse Lunge 2x10 R & L
1 min step		
		Squat + overhead lift on toes 2x10
chest press/ push-up 2x15		(balance)
Band Pulls/ Heavy Pants 2x15		2 min step
Triceps kickback/ extension 2x15		RDL + Press 2x15
Biceps Curls 2x 15		30 sit and stand x 2
Stretch		Stretch

<i>Exercise Prescription</i>	WEEKS 9-10	Goal: 3 resistance, 2 Cardio
Day 1 & 3 Resistance	Days 2 & 4	Day 5 Resistance
1 min step	20-40 min. continuous activity	Elbow to knee touches 2x10 R & L
30 sec sit & Stand	Stretch	
		Twists w/ ball 5 R & L + Hip, knee, Ankle x 3
30 sec. biceps curls x 2		
		3 way lunge 3x3 R & L
2 min step		
30 sec. sit & stand		Push-ups/ Chest Press 2x10
30 sec. triceps ext. x 2		
		Supermans on the floor 2x5 R & L
lateral shoulder raise 2 x 15		
Elbow to Knee touches 1x12 R & L		
Stretch		Stretch

Appendix E
Consent Form

Name of participant: _____

Age: _____

The following information is provided to inform you about the research project and your participation in it. Please read this form carefully and feel free to ask any questions you may have about this study and the information given below. You will be given an opportunity to ask questions, and your questions will be answered. Also, you will be given a copy of this consent form.

Your participation in this research study is voluntary. You are also free to withdraw from this study at any time. In the event new information becomes available that may affect the risks or benefits associated with this research study or your willingness to participate in it, you will be notified so that you can make an informed decision whether or not to continue your participation in this study.

For additional information about giving consent or your rights as a participant in this study, please feel free to contact Emily Born at the Office of Compliance at (615) 494-8918.

1. **Purpose of the study is to examine the combined role of fitness coaching and scripture in promoting a regular exercise and developing a healthy lifestyle.**
2. **Description of procedures to be followed and approximate duration of the study:**
 Participants will first take the "God Locus of Control" and "Attitudes" questionnaires to determine baseline statistics. All participants will attend 5 bi-weekly bible study sessions (lead by the senior pastor) in addition to weekly church services. Participants will engage in a progressive exercise prescription program, (using resistance bands and weighted balls) 3 to 5 times a week depending on current fitness levels, as well as progressive fitness levels. Each exercise prescription will be demonstrated by the lead investigator bi-weekly, at this time alternative exercises can be provided for participants that have complications with the general exercise prescription. The total duration of the program will be 10 weeks. At the completion of the program, participants will re-take the "God Locus of Control" and "Attitudes" questionnaires to determine post intervention statistics.
3. **Expected costs: Free**
4. **Description of the discomforts, inconveniences, and/or risks that can be reasonably expected as a result of participation in this study:** Becoming physically fit requires exertion, and some individuals might find exercise a bit strenuous if you have not been exercising in recent years. Your exercise program will not be too strenuous, but will consist of exercises that are intended to improve both cardiovascular and strength fitness. To avoid unnecessary risks, your physician or other health care provider must approve of your participation in this program.
5. **Unforeseeable risks:**
 Because this treatment is investigational, meaning non-FDA approved, there may be unknown or unforeseeable risks associated with participation.]
6. **Compensation in case of study-related injury:**

MTSU will not provide compensation in the case of study related injury.

7. Anticipated benefits from this study:

a) The potential benefits to science and humankind that may result from this study are examining the ways in which scripture promotes healthy habits and taking care of our temple; we are stewards of our body.

b) The potential benefits to you from this study are improved fitness and all related advantages (e.g., weight reduction, more energy).

8. Alternative treatments available:

NONE

9. Compensation for participation:

No financial compensation, however, they will receive professional exercise coaching to improve their fitness. The fitness coach will also provide information on proper eating habits.

10. Circumstances under which the Principal Investigator may withdraw you from study participation:

If you exhibit an inability to exercise, if you are injured, or if you refuse to attend exercise sessions.

11. What happens if you choose to withdraw from study participation:

There is no penalty or any other disadvantage to withdrawal from the study at any time. MTSU research consists of individuals who volunteer to participate.

12. Contact Information. If you should have any questions about this research study or possibly injury, please feel free to contact **Chris Dickson** at **615-809-9035** or my Faculty Advisor, **Dr. Mark Anshel** at **615-898-2812**.

13. Confidentiality. All efforts, within reason, will be made to keep the personal information in your research record private but total privacy cannot be promised. Your information may be shared with MTSU or the government, such as the Middle Tennessee State University Institutional Review Board, Federal Government Office for Human Research Protection, or if you or someone else is in danger or if we are required to do so by law.

14. STATEMENT BY PERSON AGREEING TO PARTICIPATE IN THIS STUDY

I have read this informed consent document and the material contained in it has been explained to me verbally. I understand each part of the document, all my questions have been answered, and I freely and voluntarily choose to participate in this study.

I have read this informed consent document for this study and understand my rights as a research participant. Further, I understand that information I provide is only intended for research purposes and is not intended to establish a patient/psychologist relationship between me and the researchers/university or to be used for diagnostic purposes. A list of referral counseling services was provided to me. Should I become distressed at any time while participating in this study and feel the need that I need psychiatric/medical or other emotional assistance, I will contact one of the referral counseling services.

Date

Signature of patient/volunteer

Consent obtained by:

Date

Signature

Printed Name and Title

APPENDIX F

Standardized Physician Approval Form

MEDICAL CLEARANCE FORM

Your patient is interested in taking a test battery designed to assess the underlying physical parameters associated with functional mobility (strength and endurance). All test items will be administered by trained personnel, and procedures for any medical emergency are in place. Participants will be instructed to do the best they can within their comfort zone, and never to push themselves to the point of overexertion, or beyond what they think is safe for them. Technicians have been instructed to discontinue testing if at any time participants show signs of dizziness, pain, nausea, or undue fatigue.

The test items are:

1. Sit and Stand Test (number of stands from a chair in 30 seconds)
2. Arm curl test (number of curls in 30 seconds ; 5 lb. weight for women, 8 lb. weight for men)
3. 2 minute step-test (number of in-place steps counted over 2 minutes)

If you know of any medical or other reasons why participation in the fitness testing by your patient would be unwise, please indicate so on this form. By completing the following form, you are not assuming any responsibility for the administration of the test battery. If you have any questions about the fitness testing, please call Chris Dickson at 615-809-9035.

_____ I know of no reason why my patient should not participate.

_____ I believe my patient can participate, but I urge caution

because : _____

_____ My patient should not engage in the following test

items : _____

_____ I recommend that my patient NOT participate in testing.

Physician signature _____

Date _____

Print name of physician _____

Phone _____

Appendix G
Scriptural References

Scriptural References

- Exodus** 15 :26 He said "If you listen carefully to the voice of the Lord your God and do what is right in his eyes, if you pay attention to his commands and keep all his decrees, I will not bring on you any of the diseases I brought on the Egyptians, for I am the Lord that heals you.
- Deuteronomy** 14 :6 You may eat any animal that has a split hoof divided in two and chews the cud.
- 14 :8 The pig is also unclean ; although it has a split hoof , it does not chew the cud, you are not to eat their meat or touch their carcasses.
- 14 :9 Of all creatures living in the water, you may eat anything that has fins and scales.
- 14 :10 But anything that does not have fins and scales you may not eat ; for you it is unclean.
- Psalm** 32 :11 Rejoice in the Lord and be glad you righteous ; sing, all you who are upright in heart.
- 67 : 2 That your ways may be known on earth, your salvation among all nations.
- Proverbs** 12 :18 Reckless words pierce like a sword, but the tongue of the wise bring healing.
- 13 :17 A wicked messenger falls into trouble, but a trustworthy envoy brings healing.
- 17 :22 A cheerful heart is good medicine, but a downcast spirit dries up the bones
- Isaiah** 58 :8 Then your light will break forth like the dawn, and your healing will quickly appear, then your righteousness will go before you and the glory of the Lord will be your rear guard.
- Jeremiah** 8 :22 Is there no balm in Gilead ? Is there no physician there ? Why then is there no healing for the wound of my people ?

30 :18 I have surely heard Ephraim's moaning : you disciplined me like an unruly calf, and I have been disciplined, restore me and I will return, because you are the lord my god.

Lamentations 2 :13 What can I say for you ? With what I can compare you, O daughter of Jerusalem ? To what can I liken you, that I may comfort you, O virgin daughter of Zion ? Your wound is as deep as the sea, who can heal you?