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# Walk to Jerusalem: Facilitating Physical Activity in a Faith Community

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Walk to Jerusalem:  
Facilitating Physical Activity in a Faith Community

By

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Graduate Project

Submitted to the School of Health Promotion & Human Performance

Eastern Michigan University

in partial fulfillment of the requirements

for the degree of

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in

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## ABSTRACT

Obesity and physical inactivity are on the rise in our society today. Combined with poor eating habits, many Americans are overweight or obese. Churches have become important settings for providing health education programs, especially for African-American populations. There have been mixed results from faith-based physical activity studies, and few have been conducted with Caucasian populations. The present study used the Walk to Jerusalem program as a motivational tool within a Caucasian faith-based setting. The objectives were to increase physical activity, decrease blood pressure and weight, if needed, and improve attitude toward physical activity. The primary objective of the project was achieved as the results showed a significant increase in level of physical activity from pre to post-program. There were no significant differences in weight or blood pressure. Faith-based settings can be useful for providing health promotion and education programs, especially for those lacking access to health care, but more long-term studies are needed.

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## **CHAPTER I**

### **Introduction**

Obesity and physical inactivity are on the rise in our society today. Modern conveniences have enabled us to be more efficient and exert less physical activity on a daily basis. Combined with poor eating habits, more and more Americans are overweight or obese. Also on the rise are the diseases that are associated with unhealthy lifestyle choices. These diseases include heart disease, Type 2 diabetes, coronary heart disease, and stroke. Health professionals must help individuals make healthier lifestyle choices to increase physical activity and decrease weight. This in turn, will impact morbidity and mortality related to these diseases.

### **Spirituality and Health Connection**

Many people believe that physical health and spirituality are connected. Studies have been done to explore this connection. In a qualitative study of health perceptions, beliefs, attitudes, and intentions among African American women with faith-based support, Drayton-Brooks and White (2004) concluded that the social system and interaction in a faith community may influence healthy lifestyle behaviors. The church is a major source of social support for many people. Social support has also been identified as a facilitator of physical activity.

### **Social Support as a Facilitator of Physical Activity**

Identifying facilitators and barriers to physical activity are important considerations when planning and developing a physical activity program. A review of



two decades of research on correlates of physical activity in women found social support to be a positive determinant of physical activity (Eyler et al., 2002).

### **Faith-Based Physical Activity Studies**

Churches have become important settings for providing health education programs, especially for African-American populations. Heart disease, weight and nutrition, cancers, and smoking cessation are common programs in the faith-based literature (DeHaven, Hunter, Wilder, Walton, & Berry, 2004). These authors concluded that faith-based programs can be effective in improving health outcomes.

### **African-American Faith-Based Physical Activity Studies**

There have been mixed results from physical activity studies in the African-American population. Three studies utilizing randomized designs within African American churches found no significant results from a physical activity intervention (Wilcox, Laken, Bopp et al., 2007; Rohm & Stewart, 2006; Yanek, Becker, Moy, Gittelsohn, & Koffman, 2001). They all had issues with their randomization processes that affected the number of participants they had in their studies. One study did have positive results, but did not have a control group and had a small sample size. The results of the study showed statistically significant changes in moderate and vigorous intensity physical activity from pre to post-intervention assessments (Whitt-Glover, Hogan, Lang, & Heil, 2008).

### **Caucasian Faith-Based Physical Activity Studies**

Few faith-based studies have been published that include Caucasian participants. The Heart and Soul Physical Activity program (Peterson, Yates, Atwood, & Hertzog, 2005) did not find a statistically significant difference in the level of moderate-intensity

physical activity between their two groups after the intervention. The results did show a medium size effect in the hypothesized direction.

### **Background and Significance**

Overweight and obesity are common problems in our country. Over 30 percent of men and women are obese (National Center for Health Statistics, 2008). Obesity is a risk factor for multiple health problems including high blood pressure, Type 2 diabetes, coronary heart disease, stroke, and dyslipidemia (CDC, 2008). The rise in physical inactivity is also a concern. The National Center for Health Statistics (2008) reported that only 31 percent of adults engage in regular physical activity. Due to the severity of these problems and the impact on health, one of the Healthy People 2010 objectives is to reduce the prevalence of obesity to less than 15 percent (U.S. Department of Health and Human Services, 2000).

### **Statement of the Problem**

With the alarming rise in obesity and physical inactivity levels in our population, it is important that health educators evaluate the effectiveness of alternative sites for programs to improve levels of physical activity, and thereby influence obesity and physical inactivity levels. A faith-based setting is one alternative for such programs which builds upon the spirituality and health connection. It also provides the social support which has been shown to be a facilitator for physical activity.

### **Statement of the Purpose**

The purpose of this project is to evaluate the effectiveness of a faith-based physical activity program in improving weight, blood pressure, level of weekly physical

activity, and attitude toward physical activity in the participating members of a church congregation.

### **Project Objectives**

1. The participants will increase their level of physical activity following implementation of the “Walk to Jerusalem” program as measured by the International Physical Activity Questionnaire prior to and following completion of the program.
2. The participants who have a beginning elevated blood pressure will have an improvement in blood pressure and those participants who are overweight will have a decrease in weight following completion of the program.
3. The participants will have a positive change in attitude toward physical activity following implementation of the program as measured by the Attitude toward Physical Activity Questionnaire prior to and after the program.

### **Assumptions**

In conducting this project the following assumptions will be made:

1. The instruments used will accurately measure the participants’ physical activity level and attitude toward physical activity.
2. The equipment used will accurately measure the participants’ blood pressure and weight.

### **Study Limitations**

The study will be limited as follows:

1. The measurement of physical activity and attitude toward physical activity are self-report instruments which can be unreliable.

2. The participants are limited to those who are volunteering to participate in a physical activity program.

### **Study Delimitations**

The study delimitations are as follows:

1. A convenience sample consisting of members of the St. Timothy Presbyterian Church during the winter of 2009.
2. The use of the International Physical Activity Questionnaire (2003) to measure physical activity level.
3. The use of the Attitude toward Physical Activity Questionnaire to measure attitude toward physical activity.
4. Administration of the data collection instruments and measurements of blood pressure and weight prior to and following completion of the “Walk to Jerusalem” program.

### **Definition of terms**

1. Faith-based health program: A program focused on health that takes place in a church setting and has as its participants the members of that church congregation.

## **CHAPTER II**

### **Literature Review**

#### **Faith-Based Physical Activity Programs**

##### **Obesity and Physical Inactivity**

It is common knowledge that overweight and obesity is a problem in our country. The 2005-2006 National Health and Nutrition Examination Survey found that 33.3 percent of men and 35.3 percent of women were obese (National Center for Health Statistics, 2008). Obesity is a risk factor for many diseases and health problems including high blood pressure, Type 2 diabetes, coronary heart disease, stroke, and dyslipidemia (CDC, 2008). The rise in physical inactivity, which contributes to the obesity issue, is also a concern. The National Center for Health Statistics (2008) reports that only 31 percent of adults engage in regular physical activity. Due to the severity of these problems and the impact on health, one of the Healthy People 2010 objectives is to reduce the prevalence of obesity to less than 15 percent (U.S. Department of Health and Human Services, 2000).

##### **Spirituality and Health Connection**

Many believe that physical health and spirituality are connected. Maddox (2000) administered a questionnaire to 40 women to assess their beliefs on faith and health. The participants felt that they were given their body to care for as a gift from God. The findings from the questionnaire showed that spirituality was important to wellness and wholeness in that population. Mackenzie, Rajagopal, Meibohm, and Lavizzo-Mourey (2000) conducted a qualitative study with 41 older adults to explore their perceptions of the connection between religion and health. The researchers found that the participants

believed that religion and health are closely linked. In a qualitative study of health perceptions, beliefs, attitudes, and intentions among African American women with faith-based support, Drayton-Brooks and White (2004), concluded that the social system and interaction in a faith community may influence healthy lifestyle behaviors. Matthews et al., (1998) reviewed empirical literature that looked at the relationship between religious factors and health status. A majority of the studies reviewed showed that religious commitment is beneficial in all aspects of health, including prevention, dealing with actual illness, and recovering from illness. Ellison and Levin (1998) reviewed medical literature on religious factors and physical and mental health to identify mechanisms that explain the effects religion has on health. One area that was identified is the social support and social integration that occurs in a church community.

### **Social Support as a Facilitator of Physical Activity**

In order to develop physical activity programs that will be successful, it is important to consider the factors that facilitate or are positively associated with physical activity. In a qualitative study of 16 European American women, social support was identified as a major facilitator for physical activity (Nies, Vollman, & Cook, 1998). Wilcox, Bopp, Oberrecht, Kammerman, and McElmurray (2003) had similar findings. Social support was identified as a motivator for physical activity among a convenience sample of 102 African American and Caucasian women. As this study was a convenience sample and the participants were from a rural community, the findings cannot be generalized to a wider population. A review of two decades of research on correlates of physical activity in women found social support to be a positive determinant of physical activity (Eyler et al., 2002).

## **Faith-Based Physical Activity Studies**

Churches have been found to be important avenues in providing health education and care to different populations, but primarily African-American populations. In a literature review of the effectiveness of faith-based programs, DeHaven, Hunter, Wilder, Walton, and Berry (2004) found that most programs were targeted at heart disease, weight and nutrition, breast and prostate cancer, and smoking cessation. The majority of the programs were for African-American participants. It was concluded that faith-based programs can be effective in improving health outcomes. Sternberg, Munschauer, Carrow, and Sternberg (2007) reviewed faith-placed cardiovascular health programs to identify a framework of factors that led to program success. Along with development of a framework, it was concluded that faith-placed programs are important for minorities and women in reducing cardiovascular risk factors. In their review of church-base health promotion programs, Peterson, Atwood, and Yates (2002) identified key elements that were common to successful programs. These elements included collaboration between the church and health care organizations, availability of services through the church, facilities for use within the church, programs that impact the family, and therefore the community, social support, and positive health values and behavior change.

Some of the programs described in the literature have not been scientifically evaluated. White (2001) describes a successful program that as a collaboration between exercise physiologists and parish nurses. Lay leaders are trained to provide a sixteen week church-based exercise program that has had positive feedback from a follow-up questionnaire with participants. Participants reported feeling more in control of their health and feeling that their health had improved since attending the program. Kotecki

(2002) describes the development of a partnership between hospitals, a nursing school, and community outreach program to help African American churches meet Healthy People 2010 goals and objectives. Again, this program has only been evaluated by surveys of the participants. Reusch and Gilmore (1999) designed a “Hearts to God” program for cardiovascular health targeting Caucasian, middle-class women in a parish setting. The participants in the two week pilot study provided positive feedback about the program.

### **African American Faith-Based Physical Activity Studies**

Three studies utilizing randomized designs within African American churches found no significant results from a physical activity intervention (Wilcox, Laken, Bopp et al., 2007; Rohm & Stewart, 2006; Yanek, Becker, Moy, Gittelsohn, & Koffman, 2001). All described issues with the randomization process that occurred due to working with church officials who did not want to have the control group in their church. They made adjustments in their designs to accommodate these issues so participants would not be lost.

One large study of physical activity interventions in the African-American church is the Health-e-AME Faith-Based Physical Activity Initiative. Bopp et al., (2007) first conducted a qualitative study with eight focus groups to identify influential factors for physical activity participation, the connection between healthy behaviors and spirituality, and how the church can help to promote these healthy behaviors. From the focus groups, they identified four categories of interest- spirituality, barriers, enablers, and physical activity programs favored by the participants. This information was then used to develop the Health-e-AME study.



The Health-e-AME study was a three year community-based participatory research (CBPR) approach. Wilcox, Laken, Anderson et al., (2007) describe the program and the baseline findings. Unlike previous studies that include nutrition and physical activity interventions, this study looked exclusively at physical activity. Based on social ecology and the Stages of Change Model, they developed different programs for individuals at different stages within the model. Volunteers in over 300 churches were trained to implement the physical activity programs in their churches, and evaluation of the program implementations were completed by telephone surveys. The Health-e-AME program utilized a randomized design with a delayed intervention control group. Based on the telephone interviews completed at one and two years, there were no statistically significant changes in levels of moderate intensity physical activity in the participants (Wilcox, Laken, Bopp et al., 2007). The authors felt that in a CPBR program such as this, a time period of three years is not enough to produce significant results.

*Project Joy* (Yanek, Becker, Moy, Gittelsohn, & Koffman, 2001) utilized a one year randomized study with a self-help control group, a standard intervention group, and a spiritual intervention group to improve cardiovascular health with physical activity and nutrition strategies in African-American women. They found positive changes in the two intervention groups compared to the control group, but they were modest in magnitude. One issue that may have affected their findings was that the participants in the standard intervention group added a spiritual component on their own, making it similar to the spiritual intervention group.

Rohm and Stewart (2006) evaluated a six month church-based trial with one aerobic exercise group and one health and stretch combination group. The health/stretch

group was necessary because participants were not willing to have a non-intervention control group. Although there were no significant results between the two groups, both did decrease their level of physical inactivity.

One study did have positive results after the study. Whitt-Glover, Hogan, Lang, and Heil (2008) piloted a three month faith-based physical activity intervention with a convenience sample of sedentary African-Americans found statistically significant increases in number of pedometer steps after the intervention. The results of the study showed statistically significant changes in moderate and vigorous intensity physical activity from pre to post-intervention assessments. Although the study lacked a control group and the sample size was small (n=87), its conclusions suggest a need for further study in a larger, randomized controlled design.

The *Healthy Body/Healthy Spirit* program (Resnicow et al., 2005) had three randomized church-based groups that evaluated the impact of culturally tailored materials and telephone counseling on a physical activity intervention. The first group received standard nutrition and physical activity materials, the second received culturally tailored nutrition and physical activity materials, and the third group received the tailored materials along with telephone calls based on motivational interviewing. At the one year follow-up, the two groups receiving the culturally tailored educational materials increased significantly in their physical activity and fruit and vegetable intake when compared with the group that received standard materials.

### **Caucasian Faith-Based Physical Activity Studies**

Few studies have been published that utilize Caucasian participants. The *Heart and Soul Physical Activity* program (Peterson, Yates, Atwood, & Hertzog, 2005) was

implemented with an experimental repeated measures nested design in two rural counties with primarily Caucasian women. The researchers did not find a statistically significant difference in the level of moderate-intensity physical activity between the two groups after the intervention. The results did show a medium size effect in the hypothesized direction. The ability to identify significant differences may be due to the small number of study participants (n=42).

### **Summary**

Obesity and a lack of physical activity are serious issues in our society today due to the health problems that can arise. Increasing physical activity may seem like a simple solution; however, motivating people to engage in physical activity presents a challenge to health educators. One method to motivate individuals to exercise is to identify factors that facilitate physical activity. One of those factors is social support, which is a common component of religious communities. Many individuals also feel there is a connection or relationship between spirituality and health. Most of the faith-based physical activity studies have been conducted in African American churches. Some have had positive results while others have not. Few studies have been conducted in church communities that are primarily Caucasian. Studies are needed to evaluate the effectiveness of physical activity interventions in this setting with this population to contribute to the literature on faith-based physical activity programs. If more programs are found to be effective, the faith community can be utilized as an alternative setting for programs to impact individual weight and physical activity, and thereby influence obesity and physical inactivity levels in society.

## **CHAPTER III**

### **Methodology**

#### **The Walk to Jerusalem Program**

The Walk to Jerusalem program was developed to promote physical and spiritual health in a church setting. It is a 12 week program that takes place during the Lenten season. The goal is for the congregation, as a whole, to collect enough miles from Ash Monday to Easter to travel from the church to Jerusalem. Each participant records the number of miles they walk or the number of minutes engaged in physical activity each week. Every twenty minutes of physical activity earns one mile. Weekly devotionals are provided for the participants. The total number of weekly miles for all participants is combined and progress toward Jerusalem is recorded on a world map that is on display in the fellowship hall.

#### **Theoretical Framework**

The framework used during this project was the Theory of Reasoned Action (TRA) and the Theory of Planned Behavior (TPB). Constructs used from the TRA were behavioral intention, attitude, and subjective norm. The construct of perceived behavioral control is taken from the TPB (Montano & Kasprzyk, 2002). This framework explains the importance of an individual's intention in determining their behavior. If the individual believes in a positive outcome from the behavior, there will be a positive attitude about the behavior. Subjective norms refer to the belief of the individual as to whether others who are important to them would approve or disapprove of the behavior. Perceived behavioral control is similar to the concept of self-efficacy, which refers to the

individual's perception of facilitators and barriers that influence their control over the behavior (Montano & Kasprzyk, 2002).

If an individual believes there will be a positive outcome from their participation in physical activity, such as weight loss or improved health, they will be likely to have a positive attitude toward physical activity. If the significant others of the individual approve of their physical activity and the individual believes they are able to overcome any barriers that are present, the perception of their control will be increased. When the previous factors are combined with the intention to participate in physical activity, they will be more likely to actually engage in that behavior.

### **Institutional Review Board Approval**

This project was approved by the CHHS Human Subjects Review Committee at Eastern Michigan University on December 1, 2008.

### **Instrumentation**

The following two instruments were used to obtain data pre and post intervention.

#### **International Physical Activity Questionnaire.**

The International Physical Activity Questionnaire (Craig et al., 2003), a 27-item instrument was used to obtain pre- and post-program information. This questionnaire asks questions regarding frequency of moderate and vigorous physical activity during the past seven days in four categories: (1) job-related, (2) transportation, (3) housework, house maintenance, and caring for family, and (4) recreation, sport, and leisure-time physical activity. It also has a question regarding amount of time spent sitting during the past seven days.

### **Attitude toward Physical Activity Questionnaire.**

The Attitude toward Physical Activity Questionnaire, a 16-item instrument was used to obtain pre- and post-program information. The questionnaire asks participants to identify their level of agreement with statements regarding control, attitude, amount of social support, and intention toward physical activity. It also has statements regarding barriers to and benefits of physical activity.

## **Data Collection**

### **Participant Recruitment**

The participants of the project were members of the St. Timothy Presbyterian Church congregation. All members of the congregation wishing to participate in the Walk to Jerusalem program did so, but data was only collected from members aged eighteen years or older who consented to participate in the project.

Several recruitment methods were used, including an article describing the study and requesting volunteers in the November, December, and January church newsletter. Announcements were made during the December and early January services, and notices placed in the weekly bulletins. A table was placed in the fellowship hall following services in late December and early January to announce the project and answer any questions.

### **Orientation Meetings**

For the two weeks prior to the first data collection, two orientation meetings were held at the church. The investigator explained what the participants in the project would be asked to do and answered any questions. Those who agree to participate read and

signed two copies of the Informed Consent Form. The participant kept one copy of the consent form. Each participant was then asked to complete the International Physical Activity Questionnaire and the Attitude toward Physical Activity Questionnaire and return it to the investigator. Each questionnaire was labeled with a pre-assigned identification number to ensure the confidentiality of each participant.

After the completion of the questionnaires, a private measurement of the weight and blood pressure of each participant was obtained. The participants were then given the weekly logs to be completed with number of physical activity minutes. Again, these logs were labeled with the pre-assigned identification number.

#### **Data Collection Procedure**

Each participant was asked to complete a weekly log of minutes spent engaging in physical activity for each of the twelve weeks of the program. These logs were turned in at church each Sunday during the program.

#### **Data Analysis**

The data was analyzed with the Statistical Package for the Social Sciences. Frequencies for demographics, chi square tests of independence and paired samples *t*-tests to evaluate pre and post-test data of physical activity are analyzed and reported.

## CHAPTER IV

### Results

#### Description of the Participants

A total of 31 members of the congregation participated in the Walk to Jerusalem research project. The majority of the participants were women (61.3%), and 67.7% were between the ages of 50 and 69. Seventy-one percent had completed four or more years in college. When asked how often they currently engaged in physical activity, 16.1% reported they were physically active more than five times per week, 41.9% were active three to five times per week, 19.4% were active one to two times per week, and 22.6% were active once in a while.

The participants were also asked to identify factors that prevented them from being physically active as well as those factors that were motivating. Lack of time was the response that the majority of the participants (64.5%) identified as a barrier to physical activity (see Table 1). The top three motivating factors to exercise were the positive way it made them feel (74.2%); increased energy (67.7%); and weight control (67.7%) (see Table 2).

Table 1

#### *Barriers to Physical Activity*

Barrier	Percent
Lack of time	64.5%
Physical limitations	3.2%
Not enough energy	9.7%
Too overweight	3.2%



No one to exercise with	19.4%
Physical activity boring	19.4%
Unsure of what to do	6.5%

Table 2

*Motivators for Physical Activity*

Motivator	Percent
Having friends to exercise with	54.8%
Having more energy when exercising	67.7%
Helps control weight	67.7%
Feel better when exercising	74.2%
Helps control medical problems	45.2%
Physical activity is fun	38.7%

The participants were also asked to complete a questionnaire to identify their attitude toward physical activity. This was measured prior to the beginning of the program and again at the completion of the program (see Table 3). All participants (100%) agreed both prior to and after the program that regular physical activity is beneficial to health, improves well-being, and helps manage weight. The percentage of those who agreed that it is important to exercise even when busy increased from 96.7% to 100% after the program. The percentage of those who felt that they were too busy to exercise decreased from 19.4% to 16.2%. The percentage of those who agreed that family and friends think activity is important increase from 96.7% to 100%. The

percentage of those who felt that they couldn't exercise if their family and friends were unsupportive increased from 6.5% to 12.9%. The percentage of participants who agreed that they look forward to physical activity increased from 87.1% to 100%. Prior to and after the program, 100% of the participants agreed that they intended to be physically active after the program. However, the percentage of those who felt confident they could continue to be physically active after the program decreased from 96.7% to 93.5%. The percentage of those who felt that they can't be physically active on their own increased from 16.1% to 19.3%.

Table 3

*Attitude toward Physical Activity*

	Agree		Disagree	
	Pre	Post	Pre	Post
Look forward to physical activity	87.1%	100%	12.9%	0%
Physical activity improves well-being	100%	100%	0%	0%
Important to exercise even when busy	96.7%	100%	3.2%	0%
Regular activity is beneficial to health	100%	100%	0%	0%
Regular activity helps manage weight	100%	100%	0%	0%
Family/friends think activity is important	93.6%	96.8%	6.4%	3.2%
More likely to exercise with friends	67.8%	61.3%	32.2%	38.7%
I can't be physically active on my own	16.1%	19.3%	83.9%	80.7%
I am confident I can continue being physically active after program	96.7%	93.5%	3.2%	6.5%
I intend to be physically active after program	100%	100%	0%	0%
I have control over my ability to be active	93.5%	93.5%	6.5%	6.5%

If family/friends unsupportive, I can't be physically active	6.5%	12.9%	93.6%	87.1%
Too busy to be physically active	19.4%	16.2%	80.6%	83.8%
Physical activity has no effect on well-being	0%	0%	100%	100%
I do not intend to be active after program	0%	3.2%	100%	96.8%
I do not have control over ability to be active	9.7%	3.2%	90.3%	96.8%

Chi square tests of independence were calculated comparing the demographic variables of gender, age and level of education with the 16 items in the Attitude toward Physical Activity Questionnaire. Only two significant relationships were identified between the pre-program attitude items and demographics. A chi square test of independence was calculated comparing age and the statement that being physically active improves the sense of well-being. A significant interaction was found ( $\chi^2(2) = 8.119, p < .05$ ). Those in the 50 to 69 years age range were more likely to agree that being physically active improves their sense of well-being. A chi square test of independence was calculated comparing educational level attained and the statement that the participant is too busy to fit in physical activity. A significant interaction was found ( $\chi^2(6) = 16.92, p < .05$ ). Those who had attained four or more years of college were more likely to agree that they were too busy to fit physical activity into their lives.

Only one significant relationship was identified between the post-program attitude items and demographics. A chi square test of independence was calculated comparing gender and the statement that it is important to make time to exercise in a busy schedule. A significant interaction was found ( $\chi^2(1) = 4.92, p < .05$ ). Females were more likely to agree that it is important to make time for physical activity in a busy schedule.

The participants' weight, blood pressure and current level of physical activity were measured using the International Physical Activity Questionnaire (see Tables 4, 5, and 6).

Table 4

*Blood Pressure*

	Normal	Prehypertension	Hypertension
Pre-program	32.3%	41.9%	25.8%
Post-program	16.1%	64.5%	19.4%

Note: As defined by the American Heart Association, a normal blood pressure (BP) is a systolic BP less than 120 mm Hg and a diastolic BP less than 80 mm Hg. Prehypertension is a systolic BP between 120 and 139 mm Hg or a diastolic BP between 80 and 89 mm Hg. Hypertension is a systolic BP above 140 mm Hg or a diastolic BP greater than 90 mm Hg.

The percentage of participants with a normal blood pressure decreased from 32.3% prior to the program to 16.1% after the program, while those with prehypertension increased from 41.9% to 64.5%. However, the percentage of those with hypertension decreased from 25.8% to 19.4%. A paired-samples *t* test was calculated to compare the mean pre-program blood pressure to the mean post-program blood pressure. The mean of pre-program blood pressures was 2.07 (*sd* = 0.77). The mean of post-program blood pressures was 1.97 (*sd* = 0.60). No significant difference from pre-program to post-program was found ( $t(30) = 0.83, p > .05$ ).

Change in weight as well as amount of weight change was identified for each participant. Fifty-one percent of the participants gained weight, 45.2 % lost weight, and

3.2% had no change in weight. Twenty-nine percent gained greater than one and a half pounds and 32% lost more than one and a half pounds.

Table 5

*Amount of Weight Change Pre to Post-Program*

	Percentage
Gain of greater than 1.5 pounds	29%
Loss of 1.5 pounds to gain of 1.5 pounds	38.7%
Loss of greater than 1.5 pounds	32.3%

A paired samples *t* test was calculated to compare the mean pre-program weight to the post-program weight. The mean of pre-program weight was 182.91 (*sd* = 41.63), and the mean of post-program weight was 182.40 (*sd* = 40.47). No significant difference from pre-program to post-program was found ( $t(30) = 0.77, p > .05$ ).

Table 6

*Level of Physical Activity*

	Pre-program	Post-program
Low level of physical activity	38.7%	19.4%
Moderate level of physical activity	25.8%	38.7%
High level of physical activity	35.5%	32.3%

The percentage of those with a low level of physical activity decreased from 38.7% prior to the program to 19.4% after the program. The percentage of those with a moderate level of physical activity increased from 25.8% to 38.7%. Those with a high

level of physical activity decreased slightly from 35.5% to 32.3%. A paired samples  $t$  test was calculated to compare the mean pre-program level of physical activity to the post-program level of physical activity. The mean of pre-program level of physical activity was 1.97 ( $sd = 0.85$ ) and the mean of post-program level of physical activity was 2.81 ( $sd = 2.18$ ). A significant increase from pre-program to post-program was found ( $t(30) = -2.28, p < .03$ ).

## CHAPTER V

### Summary, Conclusion, and Recommendations

#### Summary of Findings

The majority of previous faith-based physical activity studies have been conducted with African American populations. Many times a faith-based setting is chosen for health programs directed at this population because of health disparities and lack of access to health care. The participants in the Walk to Jerusalem project were Caucasian and did not have difficulties obtaining health care.

Few significant results have been found in previous studies. Reasons for this include randomization issues, lack of a control group, and small sample size. This project also had a small sample size (n=31). One of the three objectives for the project was achieved. The first objective was to increase the level of physical activity of the participants as measured by the International Physical Activity Questionnaire (IPAQ) prior to and after implementation of the Walk to Jerusalem program. A significant difference was found in the IPAQ scores from pre to post program, indicating a significant difference in activity levels. In their three month study, Whitt-Glover et al. (2008) also utilized the IPAQ and found a significant difference in moderate and vigorous physical activity levels. They also showed a significant increase in pedometer steps, which their participants recorded on a weekly basis. The second objective of this project was to decrease blood pressure and weight in those participants with elevated blood pressure and weight prior to implementation of the program. No significant differences were found between pre and post program blood pressures or weights. Similarly, Whitt-Glover et al. (2008) did not find a significant difference in blood

pressure, and weights did not change. The small sample size may have influenced the lack of significant results. If the sample size had been larger, the ability to detect significant differences in blood pressure and weight would be increased. The third objective of the project was to have a positive change in attitude toward physical activity as measured by the Attitude toward Physical Activity questionnaire. The results of this questionnaire were mixed. Although the percentage of those who stated they looked forward to physical activity increased to 100% and 100% of the participants intended to be physically active after the program, there was a decrease in the percentage of those who were confident they could continue being physically active after the program. The percentage of those who felt they cannot be physically active if family and friends are unsupportive and the percentage of those who stated they can't be physically active on their own increased. This result is not surprising as Wilcox et al. (2003), Eyster et al. (2002), and Nies et al. (1998) found that social support is an important factor in physical activity levels in women. Elements of social support that have been identified include having someone to exercise with and to provide encouragement and positive reinforcement.

When these results from the attitude questionnaire are viewed within the constructs of the Theory of Reasoned Action, it can be seen that the participants did display a positive intention for physical activity, an attitude that a positive outcome will result from increased activity, and the subjective norm that family and friends also think physical activity is important. The construct of perceived behavioral control from the Theory of Planned Behavior is seen as the participants did feel that they had control over their ability to be physically active. The most commonly identified barrier to exercise



was lack of time, but the participants did agree that it was important to be physically active even when busy. Nies et al. (1998) also found time constraints to be a barrier to exercise. An important statement that could have been included in the attitude questionnaire was that the participant is confident they will be able to fit exercise into their busy schedule. This would speak to their perceived control over barriers to physical activity. A motivator for exercise for the participants was having friends to exercise with. This is consistent with the results that the percentage of those who felt they cannot be physically active if family and friends are unsupportive and the percentage of those who stated they cannot be physically active on their own increased.

Even though the results of the attitude questionnaire were mixed, the objective of increasing physical activity among the participants was achieved with the Walk to Jerusalem program. This may be explained by the fact that this program took place in a faith-based setting where social support and encouragement from other members of the congregation and having a specific goal to achieve helped provide extra motivation for the participants. Whitt-Glover et al. (2008) and Resnicow et al. (2005) are faith-based programs that also showed significant results. Their methods of intervention and measurement of physical activity did differ, but were statistically significant. Whitt-Glover utilized educational sessions and exercise sessions with a certified instructor to increase activity, and the IPAQ was used to measure physical activity. In the Resnicow study, an exercise video and exercise guide was utilized to improve activity levels and an adaptation of the Community Healthy Activities Model Program for Seniors was used for measurement.

## **Recommendations**

A different method of measuring physical activity is recommended for future research projects. Although there were only four questions and terms such as vigorous and moderate were defined, the IPAQ was difficult to interpret for several individuals. This may have caused errors and false results in the IPAQ score. A method of simply reporting number of minutes per day engaging in moderate physical activity could be more successful. Another possibility is the use of pedometers and recording number of steps, with a goal of increasing to 10,000 steps per day. Another measurement that might yield useful information is a quality of life measurement prior to and after implementation of a program. Even if physical activity levels are not significantly increased, an improvement in quality of life can positively influence health.

More studies within faith-based settings with this population are recommended. Multiple sites with different interventions but similar measurement tools would be helpful for comparison purposes. Given the current economic situation with rising unemployment levels, and loss of health benefits, many more individuals will need alternative sites of access to health education and health improvement programs.

## **Limitations**

Limitations of this project include a small sample size and the use of self-reporting instruments, which can be unreliable. This project was also limited due to the fact that the participants were volunteers. There was another group who also recorded activity in the Walk to Jerusalem program, but did not consent to participate in the project portion.

## **Conclusions**

The current economic situation in our society with increased unemployment, decreased financial resources, and loss of health care benefits in all socioeconomic levels make the faith-based setting a desirable alternative for health education and health promotion programs. Many individuals seek out places of faith for encouragement and social support, and therefore, may be reached by health care professionals. In the present project, physical activity levels were increased with the Walk to Jerusalem program. Although there were no significant changes in weight and blood pressure among the participants, this project can be viewed as a positive step towards a healthier lifestyle, especially if the program is continued on a long-term basis. More long-term studies are needed with Caucasian populations in the faith-based setting to provide scientific evidence for health education programs.

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# INTERNATIONAL PHYSICAL ACTIVITY QUESTIONNAIRE (August 2002)

## SHORT LAST 7 DAYS SELF-ADMINISTERED FORMAT

### FOR USE WITH YOUNG AND MIDDLE-AGED ADULTS (15-69 years)

The International Physical Activity Questionnaires (IPAQ) comprises a set of 4 questionnaires. Long (5 activity domains asked independently) and short (4 generic items) versions for use by either telephone or self-administered methods are available. The purpose of the questionnaires is to provide common instruments that can be used to obtain internationally comparable data on health-related physical activity.

#### ***Background on IPAQ***

The development of an international measure for physical activity commenced in Geneva in 1998 and was followed by extensive reliability and validity testing undertaken across 12 countries (14 sites) during 2000. The final results suggest that these measures have acceptable measurement properties for use in many settings and in different languages, and are suitable for national population-based prevalence studies of participation in physical activity.

#### ***Using IPAQ***

Use of the IPAQ instruments for monitoring and research purposes is encouraged. It is recommended that no changes be made to the order or wording of the questions as this will affect the psychometric properties of the instruments.

#### ***Translation from English and Cultural Adaptation***

Translation from English is supported to facilitate worldwide use of IPAQ. Information on the availability of IPAQ in different languages can be obtained at [www.ipaq.ki.se](http://www.ipaq.ki.se). If a new translation is undertaken we highly recommend using the prescribed back translation methods available on the IPAQ website. If possible please consider making your translated version of IPAQ available to others by contributing it to the IPAQ website. Further details on translation and cultural adaptation can be downloaded from the website.

#### ***Further Developments of IPAQ***

International collaboration on IPAQ is on-going and an ***International Physical Activity Prevalence Study*** is in progress. For further information see the IPAQ website.

#### ***More Information***

More detailed information on the IPAQ process and the research methods used in the development of IPAQ instruments is available at [www.ipaq.ki.se](http://www.ipaq.ki.se) and Booth, M.L. (2000). *Assessment of Physical Activity: An International Perspective*. Research Quarterly for Exercise and Sport, 71 (2): s114-20. Other scientific publications and presentations on the use of IPAQ are summarized on the website.



# INTERNATIONAL PHYSICAL ACTIVITY QUESTIONNAIRE

We are interested in finding out about the kinds of physical activities that people do as part of their everyday lives. The questions will ask you about the time you spent being physically active in the **last 7 days**. Please answer each question even if you do not consider yourself to be an active person. Please think about the activities you do at work, as part of your house and yard work, to get from place to place, and in your spare time for recreation, exercise or sport.

Think about all the **vigorous** activities that you did in the **last 7 days**. **Vigorous** physical activities refer to activities that take hard physical effort and make you breathe much harder than normal. Think *only* about those physical activities that you did for at least 10 minutes at a time.

1. During the **last 7 days**, on how many days did you do **vigorous** physical activities like heavy lifting, digging, aerobics, or fast bicycling?

\_\_\_\_\_ **days per week**

No vigorous physical activities → **Skip to question 3**

2. How much time did you usually spend doing **vigorous** physical activities on one of those days?

\_\_\_\_\_ **hours per day**

\_\_\_\_\_ **minutes per day**

Don't know/Not sure

Think about all the **moderate** activities that you did in the **last 7 days**. **Moderate** activities refer to activities that take moderate physical effort and make you breathe somewhat harder than normal. Think *only* about those physical activities that you did for at least 10 minutes at a time.

3. During the **last 7 days**, on how many days did you do **moderate** physical activities like carrying light loads, bicycling at a regular pace, or doubles tennis? Do not include walking.

\_\_\_\_\_ **days per week**

No moderate physical activities → **Skip to question 5**

4. How much time did you usually spend doing **moderate** physical activities on one of those days?

\_\_\_\_\_ **hours per day**

\_\_\_\_\_ **minutes per day**

Don't know/Not sure

Think about the time you spent **walking** in the **last 7 days**. This includes at work and at home, walking to travel from place to place, and any other walking that you might do solely for recreation, sport, exercise, or leisure.

5. During the **last 7 days**, on how many days did you **walk** for at least 10 minutes at a time?

\_\_\_\_\_ **days per week**

No walking → **Skip to question 7**

6. How much time did you usually spend **walking** on one of those days?

\_\_\_\_\_ **hours per day**

\_\_\_\_\_ **minutes per day**

Don't know/Not sure

The last question is about the time you spent **sitting** on weekdays during the **last 7 days**. Include time spent at work, at home, while doing course work and during leisure time. This may include time spent sitting at a desk, visiting friends, reading, or sitting or lying down to watch television.

7. During the **last 7 days**, how much time did you spend **sitting** on a **week day**?

\_\_\_\_\_ **hours per day**

\_\_\_\_\_ **minutes per day**

Don't know/Not sure

Appendix B

## Attitude toward Physical Activity Questionnaire

The following statements pertain to your feelings and thoughts related to physical activity. Read each item and circle the number that best describes your feelings about the statement.

1. I look forward to being physically active or exercising.  
1 Strongly agree 2 Agree 3 Disagree 4 Strongly disagree
2. Being physically active improves my sense of well-being  
1 Strongly agree 2 Agree 3 Disagree 4 Strongly disagree
3. It is important for me to make time to exercise in my busy schedule  
1 Strongly agree 2 Agree 3 Disagree 4 Strongly disagree
4. Regular physical activity or exercise is beneficial for my health  
1 Strongly agree 2 Agree 3 Disagree 4 Strongly disagree
5. Regular physical activity or exercise helps me manage my weight  
1 Strongly agree 2 Agree 3 Disagree 4 Strongly disagree
6. My family and/or friends think regular physical activity/exercise is important  
1 Strongly agree 2 Agree 3 Disagree 4 Strongly disagree
7. I am more likely to exercise if I have a buddy or friend with me  
1 Strongly agree 2 Agree 3 Disagree 4 Strongly disagree
8. I can't exercise or be physically active on my own  
1 Strongly agree 2 Agree 3 Disagree 4 Strongly disagree
9. I am confident that I can participate in regular physical activity/exercise after the end of this program  
1 Strongly agree 2 Agree 3 Disagree 4 Strongly disagree
10. I intend to be physically active/exercise on a regular basis after the end of this program.

1 Strongly agree 2 Agree 3 Disagree 4 Strongly disagree

11. I have control over my ability to be physically active/exercise  
1 Strongly agree 2 Agree 3 Disagree 4 Strongly disagree

12. If my family and/or friends are not supportive, I am unable to be physically active/exercise  
1 Strongly agree 2 Agree 3 Disagree 4 Strongly disagree

13. I am too busy to fit in physical activity/exercise  
1 Strongly agree 2 Agree 3 Disagree 4 Strongly disagree

14. Physical activity/exercise has no effect on my health or well-being  
1 Strongly agree 2 Agree 3 Disagree 4 Strongly disagree

15. I do not intend to be physically active/exercise after the end of this program  
1 Strongly agree 2 Agree 3 Disagree 4 Strongly disagree

16. I do not have control over my ability to be physically active/exercise  
1 Strongly agree 2 Agree 3 Disagree 4 Strongly disagree

