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Strategies and Characteristics of Young African American Women Who Maintain Physical Activity

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To the Graduate Council:

I am submitting herewith a thesis written by Chloe Jones entitled "Strategies and Characteristics of Young African American Women Who Maintain Physical Activity." I have examined the final electronic copy of this thesis for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Science, with a major in Kinesiology.

Lyndsey M. Hornbuckle-Lampkin, Major Professor

We have read this thesis and recommend its acceptance:

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(Original signatures are on file with official student records.)

**Strategies and Characteristics of Young African American Women
Who Maintain Physical Activity**

A Thesis Presented for the

Master of Science

Degree

The University of Tennessee, Knoxville

Chloe Selyse Jones

August 2020

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Abstract

African American (AA) women have a disproportionately higher prevalence of obesity and physical inactivity compared to their gender and racial counterparts. Young AA women experience the largest increases in weight gain between 20-30 years of age, yet are underrepresented in current literature surrounding leisure-time physical activity (LTPA) promotion. Examining young AA women who successfully maintain LTPA participation may provide insight into their methods for doing so. The purpose of this study was to explore strategies used by active young AA women that support their LTPA maintenance, and identify various characteristics of these women.

A multimethod approach (qualitative and quantitative) was used with a primary focus on qualitative methods. AA women ages 20-34 years who had met national guidelines for either aerobic or muscle-strengthening LTPA for at least six months were recruited. Participants completed questionnaires/surveys, then engaged in a semi-structured interview inquiring about their LTPA history, preferences, motivators/enablers, barriers, and strategies to overcome barriers. Ten women completed the study. Eighty percent met national PA recommendations for both aerobic (2578.0 ± 1228.5 MET-minutes/week) and muscle-strengthening LTPA (4.0 ± 1.9 days/week). Participants had high self-efficacy for LTPA (1414.5 ± 64.4 of 1800) and high levels of commitment to LTPA (49.6 ± 2.9 out of 55). These women also showed success in utilizing processes to assist their LTPA maintenance including committing oneself (4.7 ± 0.4 of 5), substituting alternatives (4.7 ± 0.4 of 5), increasing knowledge (4.5 ± 0.4 of 5), and comprehending benefits (4.5 ± 0.7 of 5). Four themes emerged from the interviews: (1) *Factors Contributing to LTPA Participation*, (2) *Characteristics of Current LTPA*, (3) *Initiating LTPA Participation*, and (4) *Maintaining LTPA Participation*. Having an in-person and virtual fitness network (via social

media), and planned strategies to overcome barriers were among multiple strategies that assisted this sample with maintaining regular LTPA. Participants also identified muscle-strengthening activities as their preferred type of LTPA.

The strategies used to maintain regular LTPA participation in this sample of active young AA women may be helpful to support other young AA women trying to initiate and/or maintain long-term LTPA participation. These results may also help inform future LTPA interventions in young AA women in an effort to prevent health and physical activity disparities.

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Chapter 1: Introduction

The prevalence of obesity in the United States (U.S.) has continually increased over the past few decades and is currently at its highest point historically (1). The National Health and Nutrition Examination Survey (NHANES) data indicated between the years of 2013-2016, 38.8% of adults 20 years of age and above were obese, defined by a body mass index (BMI) of 30 kg/m² or higher. This increased from a reported obesity prevalence of 22.9% in 1988-1994. In addition, the 2013-2016 report showed that approximately 70.9% of adults were categorized as overweight or obese, indicated by a BMI 25 kg/m² or higher. Similar to obesity, this prevalence has also increased compared to data from 1988-1994 that showed overweight or obese adults only represented 56.0% of the population. According to Wang and colleagues, if these trends continue, the national obesity prevalence is projected to escalate to nearly 50% by the year 2030 (2).

Although overweight and obesity continue to increase in all Americans, the prevalence in African American (AA) women is disproportionately higher compared to women of other races/ethnicities and AA men (1). Data show that 56% of AA women are obese compared to 38% of non-Hispanic, white (NHW) and 48.9% of Hispanic women, respectively. A disparity between AA women and AA men also exists, in which 38% of AA men are obese. This is concerning for AA women given the well-established comorbidities (3) that have been linked to obesity.

Energy expenditure and intake are key determinants of body weight and can therefore be manipulated in order to cause changes in weight. To reduce weight, an individual must have a higher energy expenditure than intake, which is where physical activity (PA) can be impactful (4). Although the benefits of PA are well known with regard to weight loss, weight maintenance,

and many additional health benefits (5), Americans are not engaging in a sufficient amount of it. More specifically, data show that only 26.5% of AA females meet national guidelines for aerobic PA, 3.3% meet guidelines for muscle-strengthening PA, and 13.1% meet guidelines for both (6). This is also lower than percentages of NHW females meeting PA guidelines in all three of these categories at 30.6%, 3.9%, and 24.0%, respectively.

There has been an increasing number of research intervention studies targeting AA females that assess the effect of PA on obesity and its comorbidities, such as cardiovascular disease (CVD) and its risk factors (7, 8). However, many of these studies related to PA, weight loss, or weight maintenance were limited as they mostly targeted middle-aged or older AA adult women. Although this is understandable given the high prevalence rates of obesity and other cumulative health concerns related to obesity as individuals age, it is important not to overlook younger adults in the interest of prevention.

There has also been an increasing amount of research dedicated to understanding PA behaviors and the barriers to PA in AA women. Identified barriers include lack of time, knowledge, motivation, financial means, social support, physically active role models, and neighborhood safety, as well as concerns with physical appearance (9-13). Many of the women who participated in these studies were physically inactive or insufficiently active due to one or more of the constraints listed above. While it is imperative to examine why AA women are not obtaining sufficient amounts of PA despite its well-known benefits, it may also be important to seek information from AA women who are successfully and continuously maintaining PA. A PA maintainer is defined as a person who has remained physically active for at least six months or longer (14). Identifying the methods and strategies used by AA female PA maintainers to overcome common barriers could be useful and possibly transferable to inactive AA women. The

domain of leisure-time PA (LTPA) may be of particular interest because of its association with decreased risk of all-cause mortality including CVD- and cancer-related mortality (15). In addition, LTPA is performed in one's free time and at their own will rather than mandatory occupational PA, household chores (domestic PA), or transportation PA.

Although the research is somewhat sparse, there have been studies that focus on AA women who have been able to successfully maintain PA (11, 16-18), in which strategies those women used to remain active were identified. That said, all of the current studies have limitations including extremely wide age ranges, no focus on a specific PA domain, or specific inclusion criteria such as requiring the women to have a CVD risk factor. Also, the majority of the past research in this area did not distinguish between the types of PA in which the women were engaged (aerobic versus muscle-strengthening), which is an important factor as strategies could differ based upon type. There is a need to understand the strategies of young AA women who have successfully maintained PA participation in order to inform and develop successful PA interventions in this age group. This may help improve PA maintenance across the lifespan and help to reduce obesity, its related comorbidities, and ultimately, health disparities in this population.

Purpose

The purpose of the present study was to gain insight into the strategies used by AA women 20-34 years of age to maintain PA participation. Factors that influence their PA maintenance, such as motivators and enablers, were also explored. This study also aimed to identify behavioral, psychosocial, and physical characteristics of these young, physically active AA women. A multimethod approach was utilized in order to examine the participants experience with LTPA from various perspectives. Qualitative data were collected through one-on-one interviews designed to obtain a deep understanding of to the participants' strategies that

help them maintain a physically active lifestyle. Several quantitative tools were used to characterize the participants and serve as supplemental data to the interviews. Anthropometric measurements were taken and several questionnaires were administered to provide descriptors of the participants and quantify their PA behaviors, level of self-efficacy related to PA, and their commitment to PA. Data gathered from this study could potentially help provide strategies to overcome barriers to PA in inactive, young AA women and inform future PA intervention research in this population.

Research Questions

1. What strategies have been used by young AA women to maintain recommended amounts of LTPA for six months or more?
2. What factors have influenced young AA women's decisions to maintain recommended amounts of LTPA for six months or more?
3. What are some behavioral, psychosocial, and physical characteristics of young AA women who maintain LTPA?

Chapter 2: Review of Literature

Obesity

According to the World Health Organization (WHO), obesity is defined as “abnormal or excessive fat accumulation that presents a risk to health,” (19). The National Heart, Lung and Blood Institute (NHLBI) (20) describes overweight and obesity as occurring due to energy excess within the body. For instance, consuming a higher caloric intake than caloric expenditure will result in positive energy intake, which will be stored as fatty tissue. As a result, since the body has the ability to store large amounts of fat in excess, over time it can accumulate leading to overweight or obesity (21).

A widely used tool to assess overweight and obesity is BMI (weight in kilograms (kg) divided by height in meters (m) squared). The BMI classifications are as follows: 18.5-24.9 kg/m² = normal weight, 25-29.9 kg/m² = overweight, 30-34.9 kg/m² = Grade I obesity, 35-39.9 kg/m² = Grade II obesity, and ≥ 40 kg/m² = Grade III obesity (19, 20). Although this method for assessment is suitable for the general population, it does not distinguish between fat mass and lean mass. As such, it may provide misleading information for a person who has a high proportion of lean tissue mass (muscle, bone, etc.) compared to fat mass. Given this knowledge, other strategies are useful in order to gain a clearer understanding of body fat distribution. Waist circumference assesses regional fat distribution and specifically reflects abdominal adiposity. This can be linked to several obesity-related disease risk factors including type 2 diabetes, dyslipidemia, hypertension, CVD, and in some cases premature death (4, 22). A waist circumference of 88 centimeters (cm) or greater for women or 102 cm or greater for men are considered high risk factors and strong predictors for risk of CVD and metabolic diseases.

Therefore, the use of this anthropometric measurement can be very informative for interventions aimed to reduced obesity and obesity-related diseases.

There are several risk factors that can lead to overweight or obesity. These factors can be categorized into behavioral, social, and environmental risk factors (21). Behavioral risk factors may include lack of PA, increased sedentary behavior, unhealthy eating habits, and high amounts of stress (20). Social factors leading to increased rates of obesity can include socioeconomic status or unsafe neighborhoods. Easy access to unhealthy fast foods, lack of recreational spaces, parks or fitness facilities, and unsafe areas to walk in neighborhoods can all be included in environmental factors that may lead to increased chances of overweight or obesity. Some of these risk factors, such as lack of PA and unhealthy eating habits, can likely be transferred from childhood to adulthood (21) creating ongoing negative health trends throughout the lifespan.

Obesity in AA Women

From 2013-2016, NHANES estimated 38.8% of the U.S. adult population aged 20 years or above was obese (1), making it historically the highest prevalence of obesity in the U.S. Being that it is a risk factor for CVD, it is imperative to act upon this increasing epidemic in order to improve and/or eliminate many of the negative health risks that are associated with obesity. According to NHANES, women are at a greater risk for obesity than men with a prevalence of 40.7% and 36.8%, respectively (1). Of all women in the U.S., AA women have the highest obesity prevalence of any subgroup at nearly 56%, which is disproportionately higher than their NHW female counterparts (37.9%). This drastic difference between AA women and NHW women indicates an increased need to research why this large gap exists and how can it be decreased. AA women have had the highest rates of obesity over the past 30 years (1). Table 1 shows NHANES data documenting the increase in obesity in AA women from 1988-1994 to the

present. These alarming percentages make it essential to seek methods to address obesity in AA women in order to disrupt the current trends.

Table 1: Obesity trends in U.S. African American (AA) women ages 20 or older

| | 1988-1994 | 1999-2002 | 2003-2006 | 2007-2010 | 2013-2016 |
|-----------------|-----------|-----------|-----------|-----------|-----------|
| AA Women | 38.3% | 48.6% | 53.4% | 54.0% | 56.0% |

Adapted from data provided by the Centers for Disease Control and Prevention (1).

Further assessment of obesity by age produced varied results. When comparing women of all races/ethnicities by age group using NHANES data from 2013-2014, obesity was highest amongst women between the ages of 40-59 years with prevalence rates of 44.6% (23). The preceding and succeeding age groups (20-39 and ≥ 60 years of age) had similar percentages at 37% and 39.4%, respectively. Table 2 shows less variability across the age groups in AA women, as well as higher percentages overall (23). These extremely high and persistent rates of obesity in AA women suggest that intervention is needed as early as 20 years of age in this population in order to fight obesity.

Table 2: Percentages of obesity in Non-Hispanic black and Non-Hispanic white women by age

| | 20-39 y | 40-59 y | ≥ 60 y |
|---------------------------|---------|---------|-------------|
| All women | 37.0% | 44.6% | 39.4% |
| Non-Hispanic white | 33.2% | 43.5% | 38.2% |
| Non-Hispanic black | 56.7% | 57.5% | 57.5% |

Adapted data from Flegal et al. (2016) (23). Data source NHANES 2013-2014.

Obesity Across the Lifespan

Williamson et al. completed a longitudinal study assessing incidence of overweight and major weight gains in U.S. adults in a 10-year time span (24). The data used for this analysis were taken from the First National Health and Nutrition Examination Survey Epidemiologic Follow-up Study, in which they used data from NHANES I for the baseline data. The NHANES I data was initially taken between the years of 1971-1975 and included people from the ages of 1-74 years. Between the years of 1981-1984, follow up data were collected from individuals who were between the ages of 25-74 years at baseline. Within the vast data that were collected during this follow up period, BMI was reassessed in order to analyze the differences between the 10 years that had elapsed. The cohort subjected to analysis included 9,862 people (86% NHW, 62% women).

During this 10 years, women were reported to have greater increases in BMI than men, gaining an average of 0.3-0.4 kg/m² more than men within the ages of 25-54 years (24). Both men and women who were not overweight at baseline had the highest 10-year incidence rate of overweight in the age group of 35-44 years. Thereafter, the incidence rates of overweight decreased as age increased. Also, it is important to note that young women who were overweight at baseline experienced the highest incidence rate of major weight gain in the entire cohort, which was defined as a gain of ≥ 5 kg/m² within 10 years. This information suggests that immediate attention is needed for overweight, young women, for they have the highest risk for increased weight gain.

Results also indicated that across all age groups, women were twice more likely to have a risk for major weight gain than men. However, highest major weight gain incidence rates for both men and women occurred in the youngest age group, ages 25-34 years (24). As age

increased, the incidence of major weight gain decreased. Within this same age group, it was found that AA women gained on average 0.6 kg/m² more than white women and were 40% more likely to experience major weight gain. For women aged 35-44 years, AA women gained on average 0.4 kg/m² more than white women and were 30% more likely to have major weight gain.

Williamson et al. concluded that the highest major weight gains (≥ 5 kg/m²) in a 10-year time frame occurred between the ages of 25-34 years for both men and women, and that AA women experience higher weight gains on average compared to their gender/racial counterparts (24). This suggests that health and fitness professionals should intervene during early adulthood to combat obesity. Also, these data suggest that greater attention should be paid to women who experience larger weight gains than men. More specifically, AA women should receive increased attention due to this group experiencing the greatest amount of major weight gain during this 10-year time period.

Comorbidities

It is well-established that overweight and obesity are linked to many concerning health conditions that could lead to various chronic diseases, several being life-threatening. Some of these negative health conditions and diseases include but are not limited to coronary heart disease (CHD) or other atherosclerotic diseases, type 2 diabetes, stroke, musculoskeletal issues such as osteoarthritis, some forms of cancers, sleep apnea, and early mortality (3, 4). Higher BMI values are associated with increased risks of these chronic conditions (22). In addition, overweight and obesity could increase the chances of developing several CVD risk factors including hypertension, dyslipidemia, blood glucose intolerance, and increased hemoglobin A1C levels (4).

Of the many risk factors associated with obesity, CVD is significant because it continues to be the leading cause of death in the U.S. (25). Although the death rates from CVD have been

declining over the years, in the year of 2016, CVD claimed nearly 840,768 deaths, which is still a concerning amount. In addition, CVD contributed to an annual amount of \$351.2 billion in healthcare costs between the years of 2014-2015 in the U.S. CVD continues to be a large health and economic burden in the U.S.

There are several modifiable and non-modifiable risk factors that contribute to CVD. The non-modifiable risk factors include age and family history. However, risk factors that can be modified and controlled via behavior include smoking status, sedentary lifestyle, BMI, hypertension, dyslipidemia, high-density lipoproteins, and type 2 diabetes (4). Of those modifiable risk factors, the highest prevalence is found in hypertension, affecting 45.6% of the U.S. population (followed by obesity representing 39.6% of the U.S. population) (25). Hypertension is a large risk factor for both CVD and stroke (25). The criterion for hypertension has recently been redefined. Hypertension in the past was defined as having a systolic blood pressure (BP) of ≥ 140 mm/Hg and a diastolic BP of ≥ 90 mmHg. The current definition of hypertension according to the American Heart Association (AHA) is a BP measurement of $\geq 130/80$ mmHg, use of antihypertensive medication, or being told by a physician or health professional at least twice that one has high BP (25).

Based upon the current definition of hypertension, data collected by NHANES between the years of 2013-2016 indicated that approximately 46.0% of U.S. adults aged 20 years or older were hypertensive (25). NHANES data from 2015-2016 estimated that men had a higher prevalence of hypertension compared to women, with AA men having the highest prevalence overall (58.6%). The next highest prevalence was AA women at 56%. Approximately 59.2% of the adult population between the ages of 45-64 years were hypertensive, and 26.1% of adults in

the 20-44 years of age were hypertensive. These statistics depict that hypertension increases with age, however it can also occur early on in adulthood.

Obesity has also been shown to be strongly correlated with increased risk for CVD. Increased rates of obesity can be linked to increased risk of myocardial infarction as well as congestive heart failure (21). In recent years, interest has also grown regarding the association of inflammation as a risk factor for CVD. Since obesity is considered to be a state of chronic low-grade inflammation, this factor links obesity back to CVD (22). Inflammation is harmful because it increases the size of adipocytes which causes an increased production of vascular and intercellular cell adhesion molecules and increases vascular permeability.

A prospective study conducted by Zheng and colleagues assessed the correlation between weight gain and major health outcomes in subjects from early to middle-aged adults (26). Subjects from two major cohort studies were used for analysis: Nurses' Health Study and the Health Professionals Follow-Up Study. A total 92,837 women and 25,303 men were analyzed for this study. Questionnaires were issued biennially and included questions related to age, race, family history of disease, alcohol consumption, smoking status, PA level, and any newly developed health outcomes. Early to middle adulthood change in weight status was determined by their weight at age 55 minus their weight at early adulthood, which was 18 years for women and 21 years for men. Results of this study showed that increases in weight as small as 5 kg were associated with higher incidence rates of type 2 diabetes, CVD, cancer, and mortality (26). The strongest association of weight gain and chronic diseases/disorders occurred in type 2 diabetes, cholelithiasis, and hypertension. Women who experienced moderate weight gain (≥ 2.5 kg to < 10 kg) compared to those who maintained a stable weight throughout adulthood had higher incidence rates of type 2 diabetes, hypertension, CVD, obesity-related cancer, cholelithiasis, and

severe arthritis. Those who experienced more than moderate weight gain (> 10 kg to ≤ 20 kg) experienced increased incidence rates of the diseases/disorders listed above in addition to increased mortality rates in women who never smoked. Finally, people who experienced extreme weight gain (> 20 kg) from early to middle adulthood experienced the highest mortality incidence rates.

Based upon the analyzed data from Zheng's study, it is necessary to prevent moderate and extreme weight gain in order to decrease the chances of developing many chronic diseases (26). Furthermore, it is important to decrease mortality rates in these individuals. Intervening and introducing positive lifestyle habits during young adulthood could assist in decreasing or eliminating many of these major chronic diseases/disorders, or even mortality that is associated with excessive weight gain.

Physical Activity

The 2018 Physical Activity Guidelines defined PA as "bodily movement produced by the skeletal muscles that results in energy expenditure" (27). The 2018 PA Guidelines are the latest national guidelines that provide Americans information and guidance regarding the types, importance, and methods to obtain an adequate amount of PA. For adults, the 2018 PA Guidelines recommend increasing the amount of movement throughout the day because any amount of PA is better than none. In order to obtain significant health benefits, the PA Guidelines recommend adults to obtain 150-300 minutes of moderate-intensity aerobic PA per week or 75-150 minutes of vigorous-intensity aerobic PA per week. It is noted that adults will receive more substantial benefits if they are to engage in more than 300 minutes of moderate intensity aerobic PA per week. In addition, it is recommended that adults engage in muscle-

strengthening PA of at least moderate-intensity a minimum of two days per week. In order to meet the recommendations, all major muscle groups should be involved.

Domains and Types of PA

There are four domains within which individuals can accumulate PA throughout the day. These domains of PA are leisure-time, occupational, transportation, and household/domestic (5). LTPA is performed by choice and is considered activity obtained during the time one is not performing PA in one of the other three domains. This type of PA can include participating in sport activities, games requiring one to be active, walking, or simply any type of PA that is done in one's free time. Occupational PA refers to activity that is obtained in a work setting such as jobs that require manual labor or an extensive amount of movement. Transportation PA is activity that is accrued while moving from one place to another. This can include walking, running, or cycling to and from work, school, or any involvement in PA to change location. Lastly, household or domestic PA is considered activity done in one's home such as cleaning, cooking, or yardwork.

PA can be broken down into various categories, however aerobic and muscle-strengthening activities are the two largest categories that are assessed due to them having the most predominant physiological effect (5). Aerobic PA is defined as activities that are performed at an intensity and duration that enables an individual to maintain or improve cardiorespiratory fitness. In addition, aerobic PA will primarily use the oxidative metabolic energy pathways to sustain an activity. Muscle-strengthening PA is defined as activities that can maintain or improve muscular fitness such as strength, endurance, and power (5).

Both aerobic and muscle-strengthening PA are beneficial to one's overall health. Aerobic PA can decrease the risk of all-cause mortality, cardiometabolic risk factors, some cancers, and improve weight status. It can also improve both strength and endurance in major muscle groups

depending on the type of activity performed (5). Muscle-strengthening activities can also have several similar benefits to aerobic PA such as decreasing the risk of certain cardiometabolic risk factors and improving both muscular strength and endurance. In addition, when combined with balancing exercises, muscle-strengthening activities can improve one's balance and decrease the risk of falls later in life. Overall, both types of PA can be extremely influential on easing all activities of daily living and improving one's overall health.

The latest data from the 2018 National Health Interview Survey analyzed the participation in LTPA for both aerobic and muscle-strengthening PA and the percentage of adults who met the 2008 PA Guidelines for both categories. The 2008 PA Guidelines minutes per week requirement for participation in aerobic and muscle-strengthening PA are identical to the 2018 PA Guidelines. Overall, the percentage of Americans meeting the 2008 PA Guidelines for aerobic PA was 30%, 3.6% for muscle-strengthening, and 24.1% were meeting both aerobic and muscle-strengthening guidelines (6). When analyzed by gender, the percentage of females and males meeting aerobic guidelines were 29.6% and 30.5%, 3.5% and 3.7% for muscle-strengthening, and the percentage meeting both was 20.8% and 27.6%, respectively. Further analysis by race indicated that AA females were obtaining a lower amount of PA in all three categories compared to their NHW female counterparts (6). The percentages meeting aerobic guidelines were 26.5% and 30.6%, 3.3% and 3.9% for muscle-strengthening, and the percentage meeting both was 13.1% and 24.0% for AA females and white females respectively. With the well-established association between PA and obesity (5), it is logical to infer that AA females have higher rates of obesity due in part to the lower participation in PA. Therefore, increasing PA in AA women may help prevent and/or reduce obesity in this population. That said, first it is important to understand the contributing factors to low activity in AA women.

PA Interventions in AA Women

A systematic review conducted by Whitt-Glover et al., summarized PA interventions among AA adults from the years of 2009-2013 (8). In total, 16 interventions were included, however one was limited to AA men only. The review did not provide a mean age of participants for all studies, but it did report that majority of the studies focused on middle-aged AA women. Only three of the 16 studies included AA women 18 and older. Although younger AA women were included in these studies, the mean ages of each of these interventions were 60 years (28) and 43 years (29). The mean age was not reported in the third study, however 74% of the sample was aged 40-79 years (30). Ten studies in this review had inclusion criteria requiring AA women to be aged 30 years or older (31-40). Two of the studies failed to report inclusion criteria, however the mean ages of the samples were 52 years (41) and 44 years (42).

The findings from this review show there is a greater need for studies to include more structured exercise or exercise training regimens to increase behavior change (8). Allowing the participants to practice the new behaviors within the intervention could possibly increase self-efficacy leading to increased and long-term exercise behaviors. In addition, the review recommended that more studies should evaluate cardiorespiratory fitness given its ability to reduce the chances of mortality and morbidity (8). Lastly, the review suggested that future studies should assess built and social environments of AA women. Researchers should strategize methods to alter or help AA women navigate these environments in order to positively influence their level of PA. Also, the sample of participants included in this systematic review supports the current author's view that PA interventions in young AA women are currently scarce.

A more recent systematic review performed by Bland and Sharma assessed PA interventions in AA women between the years of 2009-2015 (7). In total, 14 studies were included in the review, in which two articles used the same intervention, and had a mean age of

48 years for women across the studies. It is also noteworthy that 6 of the articles in this review were also included in the previous review by Whitt-Glover et al. (8, 28, 31, 33, 36, 37, 42). Analyzing each of the studies individually, 10 of the 14 studies included women aged 35 years or older (28, 31, 33, 36, 37, 42-46). Three of the studies had an age range of 18 years or greater or 18-70 years (47-49). Only one of the studies focused on young AA adult females between the ages of 19-30 years, in which all of the participants were undergraduate or graduate college students (50). This systematic review concluded that some PA interventions in AA women were successful (7). However, there is still a need for further research targeting behavioral habits and built environments and incorporating behavioral theories into PA interventions. The review also showed that within this seven-year time span, much of the intervention focus was dedicated to middle-aged or older adult AA women.

Of the few studies to include a younger population of AA women, a study performed by Arad et al., recruited 28 AA women between the ages of 20-40 years (mean age = 29.5 years) (51). This study assessed the effect of a 14-week high-intensity interval training (HIIT) intervention on metabolic flexibility and insulin sensitivity. The results of the study indicated the intervention improved metabolic performance during exercise but had no significant effect on insulin sensitivity. Another study conducted by Hornbuckle et al., included 27 AA women between the ages of 20-40 years (mean age = 30.5 years) who participated in a 16-week steady state or HIIT treadmill protocol (52). The purpose of this study was to assess the effect of each of the protocols on body composition and several cardiometabolic risk factors. The results indicated the HIIT protocol elicited a significant decrease in waist circumference, however there were no other significant results related to other components of body composition or cardiometabolic risk factors. Lastly, a study performed by Young and Stewart recruited 196 AA women aged 25-70

years (mean age = 48.3 years) from local churches and were randomized into a weekly group aerobic exercise intervention or 1-week alternating low-intensity stretching classes and health lectures (53). The intervention period was six months. The study aimed to assess the differences in habitual PA between the groups from baseline to 6 months post-intervention by administering a 6-month follow-up PA questionnaire. The findings of the study suggested that the group aerobic exercise protocol did not increase habitual participation in PA significantly more than the stretching protocol. Although these three studies included younger AA women, they also included middle-aged AA women making it unclear if differences exist in the results between the two age groups.

Changes in PA Across the Lifespan

There are many life events that take place in women that have been known to have an impact on their PA levels. Based upon a woman's stage of life, data show that PA can either decrease or increase. A study performed by Brown et al. utilized data from the Australian Longitudinal Study on Women's Health and examined life events in women at different stages in life and how these events impacted their level of PA (54). A large cohort of 7,173 Australian women were recruited and segmented into 3 distinguished groups: young (ages 22-27 years), middle-aged (ages 51-56 years), and older (ages 73-78 years). Questionnaires were administered to the women of the study every three years, in which information was gathered regarding their PA level (calculated in MET-minutes/week), weight in kgs, and life events that the participants may have experienced during this time. Each list of life events was tailored for each of the three age groups.

Data from this study showed women in the young category reported a greater number of life events (eight) that were associated with increased odds of decreasing PA (54). Of the eight,

the most common events were getting married, birth of the first or second child, decreased income, and divorce/separation. In contrast, two events were associated with increased odds of increasing PA, which were distressing harassment at work and establishing a new relationship. Middle-aged women reported only 3 life events that were associated with increased odds of decreasing PA, and two of these events were being pushed/grabbed and the arrest of a family member. These women reported more events that increased their odds of increasing PA such as retirement, changing work conditions, personal achievements in life, death of a partner/spouse, and decreased income. In the older women, there were three life events that were associated with decreased PA, which were presence of a major injury or illness, major surgery, or being placed into an institution. The study did not find any significant correlations between life events and increased PA in this age group.

Results from this study indicate women of all ages experience life events that can affect their PA levels, but young women experienced more life events that lead to a decrease in PA. These findings suggest that women in early adulthood require a greater amount of assistance to overcome the many challenges they face during this time period. Future studies are needed in order to help identify and provide strategies that will help young women continue PA in order to counteract the notable decline.

Further analysis of this study performed by Bell and Lee assessed the effects of major life events during the transition into adulthood on PA in the youngest group of women (ages 18-23 years) (55). The aim of the study was to understand the life events that occurs during this transition period therefore it can inform strategies to encourage PA during this time. A total of 8,545 women responded to two surveys administered separately in 1996 and 2000. The surveys assessed four domains which were residential status (those who lived with parents versus

independent), employment status (full-time student versus, full-time employee versus unemployed), relationship status (single, cohabitating, married, or after), and motherhood status (mother or childless). Also, both surveys inquired about engagement in either vigorous-intensity or less-vigorous-intensity PA on a weekly basis.

Results of the study showed participants who resided independently during both timepoints were significantly more likely to have a decrease in PA than participants who remained living with parents (55). Findings related to relationship status showed that individuals who entered a cohabitating relationship between the two timepoints were more likely to decrease PA than individuals who remained single. In addition, those who transitioned from cohabitating to married also showed a significant decrease in PA or and were less likely to remain active. In the motherhood domain, women who transitioned from childless to motherhood illustrated significant decreases in PA and were less likely to remain active or increase participation in PA. There were no significant effects shown in the employment domain.

This study assessed 4 major life domains that may change during young women's emergence into adulthood (55). The findings suggest that transitioning into a cohabitating relationship, getting married, or becoming/remaining a mother are associated with significant decreases in PA during this time. The researchers suggest that there may be a greater need to focus on the emerging adulthood population in order to promote PA during these life transitions that significantly decrease PA.

Despite the disturbing rates of obesity among young AA women and previous research indicating a need for interventions in early adulthood (24, 26, 55), this age group appears to be somewhat overlooked in research. This is a critical time period being that research has shown this is the stage in which the highest amount of weight gain occurs (24) and many life events take

place that can cause a decrease in PA (54, 55). Therefore, a greater emphasis should be placed on research promoting PA in young AA women in order to prevent and decrease the rates of obesity in this population. Developing positive PA habits earlier in life can also help decrease the onset of many of the comorbidities associated with obesity that are extremely prevalent in AA women.

Barriers to PA in Women

In order to make an effort to increase PA in women, the barriers to PA must be studied and understood first. There have been many studies to assess the barriers to PA in women, however the barriers may differ amongst racial/ethnic groups. Therefore, it is important to analyze and compare the barriers to PA in different racial populations in order to develop culturally relevant interventions to overcome the known barriers.

In a study conducted by Osuji et al., barriers to PA in rural midwestern women (mean age = 48 years, 94.6% white) were assessed via telephone surveys (56). The reported barriers in order from most frequent to less frequent were too tired, lack of time, bad weather, lack of energy, lack of motivation, lack of an exercise partner, fear of an injury, traffic in the community, not liking to exercise, and engaging in exercise at work. In a national study conducted by Brownson et al., similar results were obtained (57). This study administered telephone surveys to both men and women with majority of the participants being white (82%) and being 18 or older (mean age unreported). Again, the primary barriers reported by women were lack of time, feeling too tired, obtaining enough PA at work, lack of motivation, lack of energy, and not liking to engage in PA (57). Additionally, Kowal and Fortier performed a study in middle-aged and older women (mean age = 51.8 years, 93% white) and results indicated that common barriers were similar to the above studies, however health problems were also named a barrier to PA in this population (58). Lastly, Rye et al. assessed barriers to PA in low-income

Appalachian women (mean age = 52.2 years, 93.9% white) (59). The findings reported the most common barriers were lack of support, lack of motivation, lack of money, lack of a facility, lack of time, and not needing anymore PA were the most common barriers in this population.

Barriers to PA in AA Women

There have also been studies conducted to assess the common barriers to PA and exercise in AA women. This research shows some distinctive characteristics that are specific to this particular demographic. Of these studies, the populations varied in age and level of PA. Even so, similar results have been documented amongst all of the studies within this population. Main themes that have emerged as common barriers to PA in AA women can be grouped by personal, social/cultural, and environmental barriers. Most of the barriers reported fell under the personal barriers, followed by social/cultural, and lastly, environmental barriers.

Personal Barriers to PA in AA Women

Fatigue was one of the most common reported barriers in AA women. Most AA women stated that they were too tired to exercise by the end of the day due to the amount of time they were on their feet at work (9, 10, 12). Some described simply lacking the energy to exercise after completing all of their other daily obligations pertaining to work and family (10). Other women stated that exercise itself makes them feel fatigued, therefore they don't participate in it (13). Another factor related to fatigue was lack of motivation. Many women self-described being lazy and not having the willpower to perform some type of PA or exercise when there are tired (9, 12).

Health was also a commonly cited reason why AA women did not engage in PA or exercise. Many reported conditions such as hypertension, arthritis, and general pain prevented them from exercising (10, 13). Some women even believed that exercise could do further harm

to them if they already were already diagnosed with hypertension (10). Other health-related problems included pain during exercise, previous injuries, or operations hindered their ability to engage in PA (9). Lastly, a less common health-related barrier to PA was related to having too many doctor appointments, in general (12).

Lack of time was another highly common theme that appeared amongst the research in this area. Similar to fatigue, many women described having too many obligations throughout the day as an underlying reason for a lack of time to dedicate to PA or exercise (9, 10, 12). Some common obligations mentioned were work, school, family, chores around the house, and church (9). Women stated that their day is already full there was not any time remaining in the day to exercise.

Family and childcare obligations were frequently mentioned as a barrier to PA or exercise in AA women. Hoebeke et al. reported, specifically in low-income women, that lack of childcare or interference of children when attempting to exercise is a major barrier (12). Caring for children or grandchildren was reported to take precedence of PA or exercise (10). Transporting children to sporting events or work, preparing meals, and homework assistance were the primary barriers described in a study by Bopp et al. (9). Also, some women believed that exercise would interfere with their time with their family, which was more important to them.

Some AA women stated that the facility cost and insecurities were reasons for not participating in PA or exercise. The women described their desire to want to join a group exercise class, however the price of joining classes were costly (9, 12). Some women complained about the size of the facilities stating they felt closed in and uncomfortable (9). Other women did not want to join group classes in facilities due to self-conscious thoughts about their own body.

They believed that they would be taunted due to being overweight, therefore they avoided group classes (12).

Another personal barrier to PA and exercise that is prevalent in AA women is the impact of PA or exercise on their hair. AA women stated that the texture of their hair compared to the textures of white women's hair requires a different level of maintenance. Subjects described having to plan their participation in PA around their hairstyle and how they are limited to certain types of hairstyles due to this (11). Women also stated that the hair maintenance required to regularly engage in PA imposes an added time and financial burden (60). One woman stated if she spent a lot of money on her hair in a hair salon, she would not work out afterwards. After performing PA or exercise, another woman described feeling the need to wash and style her hair, taking several hours, which increases the time commitment. Therefore, depending on the hairstyle of an AA woman, performing PA may not be an ideal condition.

Social/Cultural Barriers to PA in AA Women

A cultural barrier that appeared frequently in AA women in the literature was the lack of experience or knowledge related to PA or exercise (11, 12). Women described being exposed to physical education classes in public schools growing up, but little beyond that. AA women also described their mothers having many responsibilities as children; therefore, PA was not prioritized or encouraged leading to lack of exposure (11, 12). AA women also described their lack of knowledge whether it is safe to exercise if one has existing health conditions. Lack of education in this area prevents some AA women from being physically active (9).

Data also show that social support or encouragement have been a determining factor of PA engagement in AA women. Women who stated they did not have a partner or a friend to work out with discussed the difficulty of continuing to exercise alone (10, 12). A lack of role

models was also shown to discourage participation in AA. As children, AA women stated they never saw their mothers or grandmothers exercising, therefore they were not encouraged to become physically active (11). As adults, a lack of community role models was reported as a relevant factor due to women's lack of motivation to go to group exercise classes or gyms if they were the only AA woman present.

Multiple cultural norms in the AA community have also been shown to affect PA and exercise participation. Some women explained that they were taught that the woman of the household should not engage in PA because it was "selfish" and took time away from being a caregiver. For this reason, PA was "despised" by some older women of the family and some younger women were also told it was unladylike (11). Another norm that can prevent AA women from participating in PA is their body shape. Several studies have shown that AA women do not associate a larger body type with being obese. Instead, it is viewed as a more desirable body shape due to having a more curvaceous figure. As such, it may be less likely that AA women will be motivated to exercise solely for the purpose of weight loss.

Environmental Barriers to PA in AA Women

Safety and weather were two main environmental barriers to PA that emerged amongst multiple research studies. Safety related to neighborhoods of the AA women included badly behaved children preventing the women from being able to walk the sidewalks (12). Other descriptions of barriers were the presence of crime, unleashed dogs, and lack of lighting, all of which making women afraid to engage in PA in their neighborhoods (9, 13). Weather-related barriers to outdoor PA included changes in temperature, excessive heat, the presence of wind, precipitation, and humidity in the southern region of the U.S. (10, 12). These factors were stated as primary reasons for not being able to perform PA outside.

Although some similar PA barriers exist between white women and AA women, there are also some notable differences. Some of the common barriers reported in both populations included lack of energy, lack of motivation, lack of an exercise partner, and weather conditions. Although lack of time was reported in both populations, reasons for this barrier were not detailed in white women. Also, health and cost of facilities was reported in both populations, but not as frequently in white women.

A barrier to LTPA that was reported in white women only was engaging in PA at work. This barrier was not a finding in studies with AA women and may suggest that white women have increased opportunities to engage in occupational PA. AA women reported a higher number of barriers that were not mentioned in white women. These barriers were pain during exercise or from a previous injury, family and childcare obligations, feeling insecure in public workout facilities, hair maintenance, lack of exposure and knowledge about exercise, lack of role models, unwillingness to change body shape, and neighborhood safety. Based upon these comparisons, it is apparent that the many differences in barriers between white and AA women are cause for distinct PA interventions to be conducted in each group in order to cater to their dissimilar needs.

Characteristics of PA Maintainers

A PA maintainer is defined as a person who has remained physically active for at least six months or longer (14). Research has been conducted in order to gain a perspective of the characteristics of PA maintainers. Specifically, a study conducted by Janssen et al. utilized data from the longitudinal Study of Women's Health Across the Nation, which was collected over a 15-year timespan (61). The aim of the study was to assess psychosocial correlates of long-term PA maintainers, specifically self-efficacy, autonomy, and social support. The study hypothesized

that women who have sustained higher PA levels would have higher autonomous motivation, self-efficacy, and would be more likely to have friends who are also highly active.

A total of 475 women who were pre- or early menopausal were included in the data analysis in which most were middle-aged (mean age = 59 years) and majority NHW women (57%) (61). As a part of the inclusion criteria, each participant must have had two PA assessments over the past 15 years and a visit within the past four years. Also, each participant had to identify a female friend to also participate in the study. PA was assessed and the women were classified as low or highly active, and then they were further classified as consistently participating in PA, sporadically participating, or sedentary. Self-efficacy and motivation were assessed via surveys. Results showed that 43% of the women were highly active and the remaining 57% were low active. PA patterns showed that 44% of the women were sporadically active, 28% were consistently active, and 28% were sedentary. As predicted, women who had higher autonomous motivation and self-efficacy scores were more consistently active. In addition, women who had friends who were physically active were also more likely to be consistently active (61). Therefore, the findings of this study suggest that increased levels of self-efficacy, autonomous motivation, and social support may lead to participating in PA in a more consistent manner.

Dacey et al. completed a study exploring the differences in self-generated influences upon regular moderate-intensity and vigorous-intensity women exercisers (62). A total of 92 women (mean age = 47 years, 95% NHW) were recruited from a community fitness class as volunteered to complete a survey assessing their attitudes and motivation towards exercise. Women were categorized as being a moderate-intensity or a vigorous-intensity exerciser for a minimum of six months. The Processes of Change Questionnaire (PCQ) and Self-Efficacy

Questionnaire (SEQ) were also administered to ensure the participants were PA maintainers and to assess their level of self-efficacy. Of the 92 participants, 8 women were randomly selected (four from each intensity category) to participate in one-on-one interviews during which they were questioned about their PA patterns (62).

Findings from the study revealed that the characteristics of moderate-intensity PA maintainers and vigorous-intensity maintainers were more similar than different (62). On the PCQ, counterconditioning was the most important factor for engaging in PA.

Counterconditioning was defined as using PA in order to cope with fatigue, unpleasant emotions, or stress. Also, both groups reported a high degree of self-efficacy, although the vigorous-intensity group reported a significantly higher score than the moderate-intensity group. Women in both groups also stated that immediate gratification from exercise outweighs the health benefits, suggesting that making the experience more enjoyable is more effective than providing measurable health outcomes. Participants of both groups also expressed having a feeling of control and responsibility, which contributed to their sustained behavior (62).

Some of the differences that emerged between the two groups were reasons for maintaining PA (62). Women of the vigorous-intensity group placed a higher importance on countering negative feelings thru exercise, having higher confidence to complete and activity despite possible barriers, and social support appeared to be more relevant. Moderate-intensity maintainers attributed their continued behavior to viewing themselves as role models and having also experienced more PA in their childhood. In conclusion, results from both groups show that PA maintainers have a high degree of self-efficacy and that more importance is placed on enjoying an activity rather than the health benefits that are associated with the activity (62).

Strategies of PA Maintainers in AA Women

Although the barriers to PA in AA women have been adequately researched, the strategies to overcome these barriers have not been researched as sufficiently. There have been some reports that investigated facilitators to PA or exercise in AA women, however, much of this research contained a mix of women who were active, inactive, or insufficiently active. Viewing PA maintenance from the perspective of physically active AA women has been understudied. Although research in this area exists, it is limited, the age range is extremely broad, and the research did not distinguish between the types of PA.

Research performed by Kirchhoff and colleagues examined strategies for PA maintenance in AA women segmenting the participants into maintainers (10 women) and relapsers (9 women) after one-on-one interviews were conducted (18). All participants were between the ages of 27-77 years (maintainers mean age = 40.6 years, relapsers mean age = 40.8 years) and reported to be at risk for diabetes. Each of the women were either currently meeting the national guidelines for PA for a minimum of 6 months or had met the guidelines in the past. Results from this study indicated that the benefits and barriers related to exercise were similar in both groups, the maintainers and relapsers (18). The most significant benefit mentioned in both groups was improvement in appearance and weight loss. Common barriers that emerged were similar to barriers found in previous research: family or work obligations, poor weather, and gym membership cost. Common facilitators were only mentioned in the maintainers and included social support, establishing goals, and implementing a reward system.

The results from this study were informative, however, the study had several limitations. One of the main limitations was the broad age range that included young, middle-aged, and older adult women. In addition, the participants of this study were required to have at

least one risk factor for diabetes, meaning their reasons or motivation to continue exercise may be altered compared to someone who does not have a risk factor for diabetes. The authors failed to mention whether the women in this study engaged in aerobic exercises only or whether they included muscle-strengthening activities as well. Given the national guidelines for these two types of PA are different, this information is critical and could affect the strategies of the maintainers.

Further research was conducted by Harley et al., which investigated the effects of social and cultural contexts on challenges to participation in PA and strategies to overcome them in AA women (11). The AA women of this particular study were ages 25-45 years (median age = 33 years), must have obtained some post high school education, must have scored a minimum value on the commitment to PA scale, and were required to have been physically active for at least one year. Researchers conducted one-on-one in-depth interviews with 15 AA women prior to conducting focus groups, which only contained 9 of the women. Data from the interviews and focus groups showed three main social/cultural concepts that affected their participation in PA including lack of PA exposure, PA norms and beliefs, and hair type (11). For each of these challenges, the women also suggested strategies to overcome these barriers. Some of the suggested strategies to the challenges were to find role models beyond the local community, engage the younger generation into PA, educate other women about PA benefits beyond weight, and wear hair styles that are less likely to be affected by PA.

Some of the limitations of this study were the exclusion of AA women with no education beyond high school. Also, the age range was too wide to identify differences between young and middle-aged adult women. These two age groups may have had different experiences and strategies depending upon their stage in life. In addition, the authors failed to mention

whether they screened for PA within a certain domain or were all domains acceptable. This information is valuable because certain strategies may be more reasonable for certain domains of PA. Another noteworthy point is the participants of this study did not indicate the type of PA in which they participated (aerobic versus muscle-strengthening). Again, this detail could also affect their strategies to maintain PA.

Another study conducted by Harley et al. (16) explored PA maintenance in physically active, low-income AA women. The purpose of this study was to examine the experiences of AA women who were able to successfully maintain PA despite the barriers they faced related to limited income. Participants were selected from a previous study examining low-income AA's. In total, 14 women between the ages of 26-65 years (median age of 49 years) were included in the study, in which all women reported maintaining the national guidelines for PA for a minimum of one year based upon self-reported data. All participants completed the Commitment to Physical Activity Scale qualifying if they scored in the mid-range (≥ 33). Data related to socioeconomic status and BMI was also collected, however it was not used to determine eligibility.

Semi-structured interviews were conducted with each of the participants with primary topics including history of their PA, competing obligations, planning strategies, perceived benefits of PA, and racial/cultural influences (16). The participants reported PA engagement at the median rate of 152% of the national recommendations and the median duration of PA maintenance was 2.75 years. Women also reported receiving PA in multiple domains including LTPA, transportation PA, and occupational PA.

Analyzed data identified three major themes: motivation for maintaining active lifestyle, strategies for maintaining PA, and challenges to maintaining PA (16). Some of the

reported motivational reasons for maintaining PA included staying healthy, social support, and gratification. Subthemes that emerged from strategies for maintaining PA were allowing flexibility and freedom to change goals or schedules in order to fit their daily routines. There were several reported challenges to maintaining PA including financial constraints, physical strain, and history of sedentary relapse.

The findings presented in this study aligned with the results from the previous research studies mentioned. Challenges that were reported were similar to the barriers reported by other researchers in the literature (9, 12). The results indicated that social networks, realistic and flexible goals were instrumental to successfully maintain PA in this population. The findings also supported the need for more free or low-cost access to PA opportunities or facilities in order to decrease some of the challenges that exist with AA women attempting to engage and maintain PA. The primary limitation of this study was that the recruitment was restricted to low-income AA women, therefore the results may not be generalizable to other AA women of a different socioeconomic status. Other limitations of this study were similar to the previous study conducted by Harley et al., (11). The type of PA in which the participants engaged was not specified and the researcher did not mention whether women were included if they were meeting the muscle-strengthening PA guidelines. Lastly, the large age range did not allow the differences amongst the various age groups to be distinguished.

In a study performed by Price et al., older AA women described their experiences initiating and maintaining PA (63). Eligibility requirements for this study included being an AA women ≥ 60 years and obtaining a minimum of 150 minutes of moderate-intensity or 75 minutes of vigorous-intensity aerobic activity for at least one year. The mean age of the participants was 66.7 years, 86.7% had a college degree, and 80% reported an income greater than \$50,000. A

total of 16 one-on-one interviews were conducted, however one was eliminated from analysis because it became apparent that the participant had not been regularly active in the past six months (63).

Most women in this study reported walking, gardening, and group exercise classes as the main methods for engaging in PA (63). Common reasons for initiating PA included developing a new health condition such as type 2 diabetes, hypertension, and anxiety issues or reaching a concerning weight. Women commented on how difficult it was to initiate PA, however, they began to receive immediate benefits such as increased energy and feeling better overall which increased their motivation. Other benefits and motivators that were described included weight loss, improved health conditions, having “me time” to plan their day, and taking pride in being more physically fit than their peers and even some younger adults. Common strategies to maintaining PA were have a regular PA routine, creating a flexible plan, and being able to adapt their routine or create a back-up plan if barriers arise (63).

Findings from this study provide strategies in which older, AA women are able to initiate and maintain PA for the long term (63). Results suggest that women in this age group should initiate PA by engaging in regular walking or seeking group exercise classes. Most women reported feeling better and having increased energy, which can be a huge motivator in this age group. Some limitations of this study were the majority of the participants had a college degree and a higher income, which may have contributed to their ability to maintain PA. Additionally, the participants of this study had a mean age of 66.7 years, therefore the results and strategies may not be applicable to women of different age groups. Future research be conducted to analyze reasons for initiating and maintaining PA in other age groups in AA women.

Kinsey et al. recently conducted a study to identify AA women throughout the U.S. who were successfully maintaining PA and understand their behavioral practices. Positive outliers amongst AA women were identified and the factors that contributed to their long-term PA maintenance were examined (17). The secondary purpose was to compare the characteristics between the women who were categorized as “high” maintainers versus “low” maintainers. This study was a mixed-methods design and distributed an online questionnaire to women including multiple choice, select-all-that-apply, and open-ended questions. The age range for the 290 participants in the study was 19-71 years with a mean age of 40.7 ± 11.8 years (17). The participants had an average BMI of 27.8 ± 5.9 kg/m², 92.4% had at least some college education, and 69.8% had a family income of at least \$50,000. Nearly 70.0% of the women had been regularly active for at least 2 years and the average years active was 13.0 ± 10.0 years. Lastly, women reported engaging in an average of 249.7 ± 105.8 minutes of PA per week, which exceeds the national recommendation for aerobic PA.

Some of the common strategies reported to maintain PA were performing activities in the morning, scheduling PA throughout the entire week, depending on social support, setting weekly goals, using self-monitoring tools, and creating a back-up plan for missed sessions (17). When participants were grouped into high maintainers versus low maintainers, high maintainers were identified as women who engaged in ≥ 150 minutes of PA/week and low maintainers engaged in < 150 minutes of PA/week. The majority of the sample consisted of high maintainers (84.9%). There were many similarities between the two groups with only a few differences. The women who were identified as high maintainers had been regularly active for a longer period of time, engage in PA more frequently, had a higher score on the Commitment to PA scale, and were more likely to use mobile activity trackers.

Findings from this study indicated that engaging in less than 150 minutes per week may still be advantageous for women in this population (17). Although these women were not meeting the national recommendations for PA, they were still able to maintain PA for at least two years which should be acknowledged. Also, engaging in a variety of activities, having flexible schedules, and creating back up plans can be facilitators to successful activity maintenance. Some limitations of the study included applying the aerobic PA guidelines to all participants' activities including muscle-strengthening PA. Utilizing the appropriate PA guidelines for muscle-strengthening could have altered the level of participation in weekly PA for some individuals. Lastly, similar to the other maintenance studies previously mentioned, this study allowed a wide age range of women to participate making it difficult to separate the results based upon the age group.

Summary

Although the levels of both obesity and physical inactivity are troubling across all ages of AA women, there may be a need to focus on younger AA women in the interest of prevention. Research has shown that greatest weight gains take place in the 20s and 30s, with AA women having the most significant gains compared to their gender/racial counterparts (24). Additionally, young and emerging adults are faced with a higher amount of life events that leads to a decrease in PA compared to middle-aged and older adults. Finding methods to assist with PA maintenance during this transition is necessary in order to counteract the decrease in PA. Furthermore, current literature shows less research performed in this population compared to middle-aged and older adults, warranting more research and interventions in young AA women. Current research has already identified several barriers to PA in AA women, however there is a current need to develop successful interventions to overcome these barriers in order to promote long-term PA maintenance in young AA women. With increased participation in PA, the likelihood of obesity

and its related comorbidities declines. Therefore, perhaps guidance from young AA women who have a history of successfully overcoming barriers in order to meet and maintain the national PA guidelines for a minimum of six months will be more important in terms of potentially informing successful PA interventions.

Chapter 3: Methods

Study Design

This study primarily used qualitative research methods with the addition of quantitative methods to provide supplemental information. Although the current study incorporated multiple forms of data collection, it was not a true mixed methods study since the results were not integrated (64). The results of this study were used to supplement one another; therefore, this was a multimethod research approach used to obtain data from multiple angles (64). This was chosen because many of the studies in the current literature exploring AA woman who are PA maintainers have used either a quantitative or qualitative methods. There are advantages and disadvantages to both types of research, however the combination of the two enhanced the ability to gain perspective on the issue. The quantitative data that were collected for this study via questionnaires, surveys, and anthropometric measurements allowed the investigators to characterize the participants from a behavioral, psychosocial, and physical perspective (64). The qualitative data that were collected via semi-structured interviews provided the opportunity for a more detailed exploration of each participant's LTPA experiences with deeper context.

Participants

The principal investigator (PI) used purposeful sampling to recruit regularly active AA females, ages 20-34 years. Recruitment continued until the PI began to see redundancy in the data and no new information arose from additional participants indicating a point of saturation (65). Data related to social media usage have shown that nearly 88% of young adults between the ages of 18-29 years and 78% of adults between the ages of 30-49 years use social media platforms (66); therefore, social media served as a key method of recruitment. Digital flyers advertising the study (Appendix H) were posted/distributed on major social media platforms

including Facebook[®] and Instagram[®] within a 35-mile radius of the Atlanta, GA metropolitan area. This area was chosen to maximize recruitment potential in a diverse city. In addition, flyers were also posted in local fitness facilities. Personal contacts with group fitness instructors and personal trainers were utilized in an effort to identify class participants or clients who may have been eligible to participate in the study. Additional professional and community/personal networks were engaged in order to recruit participants via word of mouth.

Inclusion criteria required that all participants met either the aerobic or the muscle-strengthening recommendations of the 2018 PA Guidelines for Americans for the past six months or greater (27). Specifically, each participant must have obtained a weekly minimum of 150 minutes of moderate-intensity aerobic PA, 75 minutes of vigorous-intensity aerobic PA, or at least two days of moderate-intensity muscle-strengthening activities for all major muscle groups (legs, back, chest, arms, shoulders, and abdomen). In addition, all participants had to be employed 30-40 hours per week to reduce the variability in characteristics amongst the sample. Exclusion criteria included unemployed individuals, current full-time students, and past or present collegiate- or professional-level athletes. Unemployed individuals and full-time students were excluded as they may have more opportunities to engage in LTPA given greater autonomy in their daily schedule. Further, they may not experience the same barriers to LTPA as employed individuals. Former and present collegiate- and professional-level athletes were excluded from the study as they possess increased knowledge and training experiences that may affect their reasons for engaging in LTPA when compared to non-athletes (11, 16, 63). All potential participants underwent an initial screening via telephone to ensure all inclusion and exclusion criteria had been satisfied. This screening form (Appendix A) collected data about race, gender, age, employment status, and previous athletic history. An adapted version of the Physical

Activity Stages of Change questionnaire (Appendix B) was also administered during the telephone screening to include its original questions about aerobic activities plus added questions about the participants' engagement in muscle-strengthening activities. This questionnaire confirmed that all participants had been regularly active for six months or longer and were in the maintenance phase of the Transtheoretical Model (14).

Once the participant was deemed eligible, a meeting date and location with the PI was discussed and scheduled. At the beginning of the meeting, each participant received and signed an informed consent containing an overview of the study's purpose, procedures, risks, benefits, and compensation. Four of the meetings were conducted via telephone in order to accommodate social distancing mandates due to the COVID-19 pandemic. In these cases, the informed consent was read verbally to each participant, and the PI was given permission to sign off stating the participant consented to the study. Additionally, a verbal consent was captured and recorded at the onset of their semi-structured interviews. The meetings lasted approximately two hours and included the completion of questionnaires/surveys, body assessments (pre-COVID-19 only), and a one-on-one semi-structured interview. Once all data were collected, participants were compensated \$25 in cash as a token of appreciation for their time. All data collection procedures were reviewed and approved by the University of Tennessee, Knoxville Institutional Review Board.

Questionnaires/Surveys

Six of the meetings took place in a study room at various local libraries that were conveniently located per the participants' preference. Prospective study rooms were screened prior to use, and those with windows were blocked using a screen to protect the participants' privacy. Four of the participants participated in data collection remotely due to social distancing

requirements as a result of the COVID-19 pandemic. These participants were emailed the questionnaires/surveys prior to their scheduled meeting; however, they were completed during their scheduled meeting time via telephone with the PI.

Prior to completion of the questionnaires/surveys, a brief demographic survey (Appendix C) was administered to collect age, marital status, number of children/dependents, employment status, education, and gross income data. Following, The Processes of Change 40-item Questionnaire was given, which is an assessment of frequency of various LTPA behaviors. The questionnaire focuses on 10 processes of change defined in Table 3, which relate to the strategies and techniques used by the participant that assists them in navigating through the stages of change of the Transtheoretical Model (14) (Appendix D). For each of the items, participants were instructed to select a score on a 5-point Likert scale indicating how frequently a behavior occurs. Means and standard deviations were calculated for each process. Processes with higher mean scores indicated the participant utilized strategies of that process more frequently than processes with lower mean scores in order to maintain PA. This questionnaire was intended to help answer the primary research question: *What strategies have been used by young AA women to maintain recommended amounts of LTPA for six months or more?* In addition, this questionnaire aimed to help answer the second research question: *What factors have influenced young AA women’s decisions to maintain the recommended amounts of LTPA?* Responses from this questionnaire served as supplemental information to the data obtained via interviews.

Table 3: The Processes of Change

| Cognitive Strategies | Definition |
|-----------------------------|---|
| Increasing knowledge | Encourage your client to read and think about PA. |

Table 3 cont.

| | |
|-------------------------------------|---|
| Being aware of risks | Provide your client with the message that being inactive is very unhealthy. |
| Caring about consequences to others | Encourage your client to recognize to how their inactivity affects their family, friends, and co-workers. |
| Comprehending benefits | Help your client to understand the personal benefits of being physically active. |
| Increasing healthy opportunities | Help your client to increase their awareness of opportunities to be physically active. |
| Behavioral Strategies | |
| Substituting Alternatives | Encourage your client to participate in PA when they are tired, stressed, or unlikely to want to be physically active. |
| Enlisting social support | Encourage your client to find a family member, friend, or co-worker who is willing and able to provide support for being active. |
| Rewarding yourself | Encourage your client to praise themselves and reward themselves for being physically active. |
| Committing yourself | Encourage your client to make promises, plans, and commitments to be active. |
| Reminding yourself | Teach your client how to set up reminders to be active, such as keeping comfortable shoes in the car and at the office, ready to be used at any time. |

An adapted Self-Efficacy to Regulate Exercise scale was used to measure the participants' self-efficacy to engage in LTPA on a regular basis under various conditions (67) (Appendix F). The questionnaire asked the participants on a scale of 0-100, how confident they were that they could perform their exercise routine regularly in specific situations that made it

difficult to adhere to a routine. Scores from each question item were aggregated for each participant and were used to rate the level of LTPA self-efficacy to provide additional descriptors and characteristics of study participants. Higher scores indicated higher self-efficacy. In addition, an adapted 11-item Commitment to Physical Activity Scale was administered to gather information related to the participant's dedication to LTPA (Appendix E) by asking them how they feel about LTPA. For each item, participants were asked to select whether they "strongly agree", "agree", were "uncertain", "disagree", or "strongly disagree" with each statement related to PA. Sums were calculated from the 11 items using the scoring algorithm located in Appendix E, which ranges from 11-55. Previous studies have noted that a midpoint score of 33 or greater has been associated with PA maintenance in AA women (11, 16, 17, 63). The results provided further psychosocial characteristics of the participants.

An adapted version of the International Physical Activity Questionnaire (IPAQ) long form was utilized to obtain self-reported information related to the type and amount of PA performed by each participant and has been deemed both reliable and valid for research purposes (68) (Appendix G). The questionnaire was adapted for the purposes of this study, in which only section four (related to LTPA) was utilized and scored. In addition, since the IPAQ only includes aerobic PA, additional questions were added to inquire about the subject's participation in muscle-strengthening activities. Weekly LTPA volume was measured in MET-minutes for aerobic activities and days and minutes for muscle-strengthening activities and summed for each participant. The adapted IPAQ was used to confirm the participant was meeting the national 2018 PA guidelines for aerobic or muscle-strengthening activities in their leisure time. Table 4 provides a summary of each of the questionnaires/surveys used and how they contributed to the study.

Lastly, the women were provided a list of common barriers to LTPA (Appendix J) that have previously been identified in the literature by other AA women. The women were instructed to circle barriers they had encountered and were also given the option to write in personal barriers they faced that were not included on the list. The women were then instructed to identify the top five most problematic barriers by numbering them with one being the most problematic. This list was used during the interview to allow participants to elaborate on these barriers and the strategies they employ to overcome those barriers.

Table 4: Summary of questionnaires/surveys

| Questionnaire/Survey | Brief Description | Contribution to the Study |
|-----------------------------|--|--|
| Stages of Change | Categorizes a participant's PA stage of change according to the Transtheoretical model | Serves as screening tool to ensure participants have been maintaining PA for ≥ 6 months |
| Processes of Change | Gathers information related to strategies, influences, motivation, and enablers of participants to maintain PA | Addresses research questions 1 and 2 (stated above) |

Table 4 cont.

| | | |
|---|---|---|
| Self-Efficacy to Regulate Exercise Scale | Measures participant's self-efficacy to regulate exercise in situations that are hard to maintain a routine | Provides quantitative descriptors and characteristics of the participants and addresses research question 3 (stated above) |
| Commitment to Physical Activity Scale | Describes a participant's feelings towards PA and measures their commitment to PA | Provides quantitative descriptors and characteristics of the participants and addresses research question 3 (stated above) |
| IPAQ-Long | Quantifies volume and intensity of PA in 4 domains of PA and sedentary time | Confirms amount of LTPA performed and provides an average weekly volume of PA for each participant. Can be used as a descriptor and characteristic of the participants and addresses research question 3 (stated above) |

Anthropometric Measures

Anthropometric measurements were taken including body height, body weight, and waist and hip circumferences. A portable stadiometer and digital scale were used to measure height and weight to the nearest 0.1 cm and 0.5 kg, respectively. These measurements were used to

compute BMI. As these participants may have had a higher amount of lean muscle mass than the average population, BMI may not have been the best anthropometric measurement to indicate overweight or obesity for the women of this particular study. Therefore, waist and hip circumferences were also measured according to the American College of Sport Medicine's guidelines as a simple indicator of body fat distribution (4). Waist circumferences were measured at the narrowest part of the torso below the xiphoid process and above umbilicus while the abdomen was relaxed. Hip circumferences were measured at the widest circumference around the buttocks above the gluteal fold, with the subject's feet together (4). Each measurement was taken and measured to the nearest 0.1 cm twice with an inelastic measuring tape, and a third measurement was taken if the first two measurements differed by more than 0.5 cm. Each of these measurements provided information related to risk factors for CVD and provided physical descriptors of the participants. Anthropometric measurements were not collected in the four participants who entered the study after social distancing was mandated; however, height and weight were self-reported by these participants.

Semi-Structured Interviews

Semi-structured one-on-one interviews were conducted by the PI with all participants to gain insight into the participants' experiences with LTPA. As stated above, six of these interviews took place in-person, and the final four were converted to telephone meetings in response to social distancing requirements. The interview guide development process was adopted from Glesne (2016) to ensure all questions were open-ended and non-leading (69). Although a set of interview questions were developed (Appendix I), the semi-structured interview format allowed the PI flexibility to rephrase or add to the questions in addition to impromptu probing when needed (69). The primary topics that were covered during the

interview included history of participation in LTPA, motivators, enablers, and challenges to LTPA participation, strategies to overcome these challenges, and the preferred modes of participation in LTPA. Predetermined and spontaneous probes were used to obtain and clarify responses from the participants. Each interview lasted approximately 30 minutes and were simultaneously audio recorded and transcribed verbatim using Otter software (Otter.ai; Los Altos, CA). Otter is a cloud-based, password protected software that digitally transcribes audio files in real time. Once audio files were transcribed, recordings were exported to Microsoft Word, deleted from Otter, and stored in a password protected file on the University of Tennessee's secure server.

Data Analysis

The Processes of Change Questionnaire, Self-Efficacy to Regulate Exercise Scale, Commitment to PA Scale, and adapted IPAQ-long were scored according to guidelines listed above for each participant. Means and standard deviations of descriptives or frequencies were computed for all questionnaires/surveys, demographics, and anthropometric measurements using SPSS Statistics for Windows, version 26.0 (IBM; Armonk, NY).

The PI reviewed and revised all interview transcripts in Otter in order to ensure accuracy of the computer-generated transcriptions. Corrections were made as needed. Transcripts were then transferred to a Microsoft Excel document and systematically analyzed by the PI and an additional investigator. Both researchers reviewed the interviews independently in order to observe and interpret the context of each transcript. A first round of open coding was then performed in which codes were assigned to data that had similar concepts (70). After the first round of coding was completed, the investigators met to discuss their interpretations of the data and their rationale for their codes. This was an iterative process and took three meetings in order

to come to a consensus on a final code book. Once the code book was developed, a second round of coding was completed using the codebook to ensure all concepts were captured. Each of the codes were then organized into themes, categories, and subcategories with examples and explanations being provided for each.

Chapter 4: Results

Participants

In total, 17 women responded to the study recruitment efforts. Per the study's criteria, two women were excluded due to being past collegiate-level athletes, two women exceeded the age range, and one individual lived beyond the 35-mile radius of Atlanta's metropolitan area. Lastly, two women were screened and considered eligible, however they ultimately became non-responsive despite multiple contact attempts. Therefore, the final sample size included 10 women.

Quantitative Results

Anthropometrics and Socio-demographics

Table 5 provides anthropometric and socio-demographic descriptors of the participants. The mean age of the participants was 26.1 ± 1.7 years, the majority of the women were single (90%), without children (90%), and had a bachelor's degree or greater (80%). Fifty percent of the women earned \$50,000 per year or greater and were employed at least 30 hours per week (90%). Although each participant was screened prior to data collection, one participant later reported working less than 30 hours per week at her data collection meeting. As the participant reported working 25 hours per week, she was not excluded from the study. Both measured and self-reported height and weight were used to calculate the mean BMI of the sample at 26.3 ± 4.6 kg/m². Forty percent of the participants were categorized in the normal range, 30% as overweight, and 30% as obese. Of the six participants who were able to attend in-person meetings prior to the pandemic, mean waist circumference was within recommended range (< 88 cm) at 80.5 ± 5.0 cm and the mean hip circumference was 108.7 ± 5.8 cm.

Table 5: Anthropometric and socio-demographic characteristics of participants (N=10)

| VARIABLE | Mean \pm SD or Frequency (%) |
|--------------------------------------|--------------------------------|
| Age (years) | 26.1 \pm 1.7 |
| Height (m) | 1.7 \pm 4.8 |
| Weight (kg) | 73.9 \pm 12.8 |
| Body Mass Index (kg/m ²) | 26.3 \pm 4.6 |
| Body Mass Index Category | |
| <i>Normal</i> | 4 (40) |
| <i>Overweight</i> | 3 (30) |
| <i>Obese</i> | 3 (30) |
| Waist Circumference (cm)* | 80.5 \pm 5.0 |
| Hip Circumference (cm)* | 108.7 \pm 5.8 |
| Marital Status | |
| <i>Single</i> | 9 (90) |
| <i>Married</i> | 1 (10) |
| Number of Children | |
| 0 | 9 (90) |
| 1 | 1 (10) |
| Employment | |
| < 30 hours/week | 1 (10) |
| \geq 30 hours/week | 9 (90) |
| Education | |
| <i>High School Diploma</i> | 1 (10) |
| <i>Some College</i> | 1 (10) |
| <i>Bachelor's Degree</i> | 7 (70) |
| <i>Graduate/Professional Degree</i> | 1 (10) |
| Gross Annual Income | |
| <\$29,999 | 1 (10) |
| \$30,000-\$49,999 | 4 (40) |
| \$50,000-\$74,999 | 4 (40) |
| \$75,000-\$99,999 | 1 (10) |

Note: Mean height and weight measurements included both measured (N=6) and self-reported (N=4) data due to social distancing mandates encountered mid-study. Body mass index was calculated from these data.

*N=6.

Questionnaires and Surveys

All questionnaire and survey data are presented in Table 6. The Processes of Change Questionnaire was administered to gather information related to the cognitive and behavioral

strategies individuals utilized in order to complete LTPA on a regular basis. Data indicated that the most utilized strategies for this sample were Committing Oneself (4.7 ± 0.4), Substituting Alternatives (4.7 ± 0.4), Increasing Knowledge (4.5 ± 0.4), and Comprehending Benefits (4.5 ± 0.7) with the highest possible score of 5. These results showed that the women of the study were not only committed to LTPA, but they were also interested in gaining a deeper education about LTPA and its benefits. Creating plans and commitments and being able to improvise when these plans were disrupted also appeared to be a widely used behavioral strategy. Repeating these strategies on a frequent basis seems to be a contributing factor to LTPA maintenance for the women in this study.

The Self-Efficacy to Regulate Exercise questionnaire presented several situations that may make it difficult for an individual to complete LTPA on a regular basis. Table 6 shows the results where the mean score of the sample was 1414.5 ± 64.4 out of a maximum score of 1800. Therefore, the current sample scored approximately in the 79th percentile. Results from this questionnaire showed that even when presented with difficult circumstances, the participants still remain highly confident that they are able to engage in LTPA despite the challenges.

The Commitment of Physical Activity Scale measured participants' feelings towards LTPA on a 5-point Likert scale. The mean score for the sample was 49.6 ± 2.9 out of 55 possible. A score of 33 or greater has been utilized in other studies with AA women as a cut point for PA maintainers versus non-maintainers (11, 16, 17, 63). Therefore, the mean score of the women of this sample indicated they possessed more positive feelings towards LTPA resulting in increased commitment.

The IPAQ was administered to quantify the amount of LTPA each participant obtained on a weekly basis. This questionnaire was segmented into aerobic and muscle-strengthening

sections, and the majority of the sample were sufficiently active in both types of LTPA. As shown in Table 6, the average MET-minutes of aerobic LTPA were 2578.0 ± 1228.5 MET-minutes per week of LTPA. In order to meet the recommendations for sufficient weekly aerobic PA suggested by the 2018 PA Guidelines (25), an individual must obtain a minimum of 600 MET-minutes per week. The current sample's mean greatly surpassed the recommendations. As for muscle-strengthening LTPA, the average days of engagement were 4.0 ± 1.9 days with most individuals (90%) meeting the PA guidelines of completing these activities 2 or more days per week. Again, these results surpass the recommendations, which was expected for this targeted sample.

Table 6: Questionnaire and survey results (N=10)

| Questionnaire/Survey | Mean \pm SD or Frequency (%) |
|--|--|
| Processes of Change Questionnaire | |
| <i>Increasing Knowledge</i> | 4.5 ± 0.4 |
| <i>Being Aware of Risks</i> | 3.4 ± 0.9 |
| <i>Caring about Consequences to Others</i> | 4.0 ± 0.7 |
| <i>Comprehending Benefits</i> | 4.5 ± 0.7 |
| <i>Increasing Health Opportunities</i> | 3.8 ± 0.9 |
| <i>Substituting Alternatives</i> | 4.7 ± 0.4 |
| <i>Enlisting Social Support</i> | 3.9 ± 1.0 |
| <i>Rewarding Oneself</i> | 4.1 ± 0.7 |
| <i>Committing Oneself</i> | 4.7 ± 0.4 |
| <i>Reminding Oneself</i> | 3.5 ± 0.8 |
| Self-Efficacy to Regulate Exercise | 1414.5 ± 64.4 |
| Commitment to Physical Activity Scale | 49.6 ± 2.9 |
| IPAQ-Aerobic (MET-min/week of LTPA) | 2578.0 ± 1228.5 |
| <i><600 (MET-minutes/week)</i> | 1 (10) |
| <i>≥ 600 (MET-minutes/week)*</i> | 9 (90) |

Table 6 cont.

| | |
|--|-----------|
| IPAQ-Muscle Strengthening (days/week of LTPA) | 4.0 ± 1.9 |
| <2 (<i>days/week</i>) | 1 (10) |
| ≥2 (<i>days/week</i>) [#] | 9 (90) |

Note: LTPA = leisure-time physical activity. Processes of Change Questionnaire was scaled from 1 to 5 with 5 indicating the utilization of a process more frequently to maintain LTPA. Self-efficacy was scaled from 0 to 1800 with 1800 indicating a higher level of self-efficacy. Commitment to Physical Activity Scale was scaled from 11 to 55 with 55 indicating a higher commitment to LTPA.

*≥600 MET-minutes = meeting national aerobic PA guidelines

[#]≥2 days/week = meeting national muscle-strengthening guidelines

Qualitative Results

The following four overarching themes emerged from the results of the semi-structured interviews: *Factors Contributing to LTPA Participation*, *Characteristics of Current LTPA*, *Initiating LTPA Participation*, and *Maintaining LTPA Participation*. Each of the themes were divided into multiple categories with the theme *Maintaining LTPA Participation* being divided into categories then subcategories. Each of the themes, categories, and subcategories are presented in Table 7.

Table 5: Identified themes, categories, and subcategories of qualitative data (N=10)

Theme 1: Factors Contributing to LTPA

Participation

Active Childhood (23)

Active Father During Childhood (15)

Theme 2: Characteristics of Current LTPA

Mixed Workouts (45)

LTPA Preferences (40)

Theme 3: Initiating LTPA Participation

Motivators to Initiate LTPA (28)

Strategies to Initiate LTPA (11)

Table 7 cont.

Theme 4: Maintaining LTPA Participation

Motivators to Maintain LTPA

Rewards (76)

Being a Role Model (14)

Enablers of LTPA

Fitness Network (30)

Fitness Facility (10)

Ongoing Challenges to Maintain LTPA

Lack of Time (12)

Work Obligations (6)

Tiredness/Fatigue (7)

Hair Style (4)

Less Prevalent Challenges (26)

Ongoing Strategies to Overcome Challenges to LTPA

Plan Daily/weekly Goals (12)

Prepare for Missed Workouts (21)

Overcoming Lack of Time (7)

Overcoming Work Obligations (4)

Overcoming Tiredness/Fatigue (5)

Overcoming Hair Styles (9)

Less Prevalent Strategies (23)

LTPA= leisure-time physical activity. Frequency of references are shown in parentheses.

Theme 1: Factors Contributing to LTPA Participation

When questioned about childhood activities, the subjects revealed two major commonalities. Many of the subjects described having active childhoods along with having an active family led by their fathers. Whether or not it was apparent to the subjects, it was possible that their exposure to LTPA in their childhood may have affected their current participation in LTPA.

Active Childhood

A fair number of participants identified themselves as an active child having participated in outdoor play as well as athletics. The majority of the subjects participated in multiple sports from elementary through high school.

Participant #2: "Oh, it started back in, I would say like elementary school so growing up I did gymnastics, I did dance, I was mainly doing cheerleading, up until high school. Like my senior year I did All Star cheerleading, competitive cheerleading. So all growing up, I was like really, really like athletic and active."

Participant #6: "... I would say I was pretty physically active, like with, because of the neighbor... it was socially, because of the neighborhood kids. We'd all hang out all the time and we were always outdoors just, I mean racing. Riding our bikes, playing basketball, doing stuff like that."

Participant #1: "I played soccer when you know since I was, what? Five. Started playing soccer, soccer, all the way up until middle school. I played basketball. Then back in high school, I went back to soccer. So I've always been physically active. I think there was only a brief moment from senior year to college, until like probably my junior year of college was when I like wasn't really doing much at all. So...I would say I've always been pretty physically active."

Participant #4: "Growing up, I was, was really active. Like I played softball. I played softball, I want to say about 12 years. I played up and through high school. And then after high school that's when the physical activity kind of stopped. You know?"

Active Father During Childhood

When the subjects described their activity during childhood and the LTPA levels of those in their family, interestingly many of the women spoke of having active fathers, however they did not recall their mothers being physically active. In addition, some of the ladies outright attributed their childhood LTPA to their fathers' influence.

Participant #2: "Um, I guess you can say my dad, mostly. He would work out a lot, you know, lifting weights, running. My mom not really. Right. Yeah I would say my dad..."

Participant #7: "Um yeah I would say that my dad being so active definitely had an influence on me. I feel like he's the reason why I was in so many things as a

child. He kind of put me in like, like I said... I was in dance. I was in swim. I was in so many different activities, and it was really him who initiated, all of it, just to keep me out, and um.... active. So yeah I think my dad had a big influence on how I, you know started off being active.”

Participant #8: “My dad played basketball with some adult league...I just always watched my dad or whenever I watched my dad, you know, I would ask and be like ‘hey’. Or he tried to show me some things when I was really young about like basketball.

Participant #10: “My dad. So my dad actually played professional football once upon a time. So uhh...Football, baseball, and basketball... But um, so my dad, he definitely like um, it just unconsciously kind of planted there and grew.”

Theme 2: Characteristics of Current LTPA

Many of the participants described a variety of activities when it pertained to their type of LTPA engagement and their preferences. The majority of the women understood the importance of incorporating diverse types of LTPA into their routine such as various modalities of aerobic activity and muscle-strengthening activities in order to receive well-rounded benefits from each.

Mixed Workouts

Many participants reported completing a variety of workouts including resistance training, various mode of aerobics training (e.g., treadmills, ellipticals, and stair stepping machines), and attending group fitness classes. Several of the participants incorporated aerobic activity into their warm-up or they would complete it after their resistance training routine. Additionally, some of the women would complete an aerobic activity, such as jumping rope, in between their sets of resistance training to ensure they were completing both types of LTPA. Although some enjoyed group fitness classes to increase variation in their weekly routines, most women performed self-led workouts without a fitness instructor or trainer.

Participant #4: “So a typical exercise session for me would be start off with just a warm-up, which basically includes like an incline speed walk on the treadmill. And then after that, we will do weight training. Mostly I split my lower body and upper body days up... And then after about an hour and a half, I'll go to cardio,

and that basically includes like the Stairmaster for about 20 minutes and then after that I stretch and then I'm done.”

Participant #5: “...when I go to the gym, I do lifting sessions with physical weights or pulley machines. And then after that is a 15 to 20-minute cardio session... That includes like uh running sprints, or like Stairmasters, or cycling on the bike.”

Participant #2: “I also try to do some cardio, right, and some type of like weight-lifting or something. Like I do legs like all the time. Okay. But I mainly do kickboxing.”

Participant #10: “Some days I might just do the weight training where I'm literally in the weight area and I'm doing anything from major muscle groups... I do switch it up but um I'm a person who believes in everything, like a variety of fitness. I'm not just weight training just this. I do the Zumba. I love yoga classes. I'll do the swimming. Aerobics. Everything.”

LTPA Preferences

Participants reported that they participated in LTPA 3-5 days per week ranging from one to two hours per session. Most of the participants preferred to workout at a moderate- or high-intensity with a couple stating, “anything that's like low intensity for me is not going to make me sweat,” and “that's what I prefer is to give like high intensity training in any type of like aerobic, strength training exercise that I do.”

Although many of the participants engaged in a mixture of types of workouts, most of them had a preference of muscle-strengthening activities versus aerobic. Many of the women in this study preferred muscle-strengthening activities because of the physical challenge, the many variations of activities they could perform, and personal goals to increase muscle mass. That said, some of the women spoke of preferring to work on their lower body more so than their upper body in order to achieve their desired body shape.

Participant #1: “Um, I definitely like aerobic. Get your heart rate up, especially during HIIT [high-intensity interval training] training because then you'll just... You feel so much better afterwards... So, I mean your heart rates up your

endorphins are built, and you feel really good, and you sweat. Like that's what I like."

Participant #3: "I don't really like cardio but it's necessary if you're trying to lean down. I just prefer to lift weights... I think it's more of a challenge because I feel like you adapt to, your body adapts to the cardio, but the weights, they can always increase the sets, the time, the amount of weight."

Participant #4: "Um yes. I prefer to do weight training just because of the more, it has more beneficial, bene... benefits for your body as opposed to cardio... I prefer weight training but I know that cardio is also healthy for the heart too."

Participant #5: "Weight-lifting is fun. It's more interesting. Its variations you can try. More equipment. It's more of a variety as far as like your cardio sessions you can start doing one thing for a long period of time."

Participant #7: "My main focus, usually are my legs. I just feel like naturally, I am just stronger when it comes to my legs. So I do a lot of squatting with the weight assistant that they have and I also use the dumbbells to do lunges... So, yeah, if I'm if I'm doing weights, I'm probably doing a lot of leg."

Participant #8: "I prefer heavy because like I'm trying to like build more muscle mass. So I prefer heavy over aerobics, but I do like to still incorporate that just to stay flexible."

Theme 3: Initiating LTPA Participation

As mentioned previously, most of the women in study participated in some form of LTPA or sports during their childhood; however, some indicated their engagement in activity ceased in late childhood or high school. Some spoke about their lapse in LTPA participation occurring while enrolled in college. "I would say I became physically active...dang that was like, in 20...post undergrad. I would say I really started going to the gym maybe in 20...16." "I think there was only a brief moment from senior year to college, until like probably my junior year of college was when I like wasn't really doing much at all." After this inactive period, participants detailed their initial motivations to begin LTPA again and what strategies they utilized in order to take those steps. These participants have been maintaining LTPA for 1-7 years.

Motivators to Initiate PA

Physical health was a large contributor to why women were motivated to initiate their LTPA journey, whether they were advised by a physician or were self-motivated. Some women expressed the significance of wanting to live a longer and healthy life in addition to attempting to avoid developing negative health outcomes that they have witnessed in their own families.

Participant #6: "You know, I think, at my, when I turned 25 during my physical my doctor just, you know, was talking about how you know just staying in shape for all different types of health reasons... especially being someone who is not that tall, it's easy for your BMI to get kind of high."

Participant #9: "...they said my blood sugar was super duper high so they were like, 'Lose the weight.' So I just started doing research and like I don't want to be like people in my family, who are dealing with diabetes, and other different ailments that, you know..."

Another major contributor that drove these women to increase their LTPA levels was dissatisfaction with their physical appearance. The specific underlying reasons for this dissatisfaction were split as some women wanted to gain weight because they thought they were too thin, while other women attributed their motivations to being overweight and wanting to lose weight.

Participant #2: "Well, number one, the way I look. Because uh you go to college, and I didn't gain 15 pounds. I gained like 30 pounds. That was one reason."

Participant #4: "I remember like walking up a flight of steps and I was just so winded. And I was just like, I can't do this anymore. Like, you know, like something has to change. So that for me was really like the turning point in when I knew that I needed to make like a difference."

Participant #7: "I was really, really tiny. It really started off as something vain, I just did not like how small I was and I wanted to put on some weight."

Participant #8: "Yeah I gained weight because I was, I was a small, small, and like I gained weight like probably three times what I was...because I didn't like a small. Like I didn't like being skinny and everything like that. Like I wanted to be like have more fill out and everything..."

Strategies to Initiate LTPA

There were various strategies each woman employed to begin their participation in regular LTPA. Some women relied on friends, relatives, or trainers to become more comfortable with working out, while others depended on resources such as social media. While the methods varied slightly, many women worked on building their knowledge and confidence in their desired LTPA routine via direct observation in gyms and educating themselves by reading and viewing workout videos on social media platforms.

Participant #4: “I would just step out of my comfort zone, but say if like, like... because I really used to hate doing anything in the gym if it wasn't with my sister. So we had to literally, you know, like stop going to the gym together in order for me to get comfortable. And if I wasn't comfortable doing particular exercise, I would still ask her... But I just like, I would record myself and I wouldn't post it, but I'd be like, okay that squat looks good. Like, they need to see how good I'm squattin'. So then after that, that's when I put it on social media.”

Participant #8: “So when I first started, and I was by myself, so, you know, I would see people. I knew the basic workouts that you learn, basically, and then watching other people I would just take the time and ask them... And just to gain some more knowledge from them, and then I started doing my own research. So then doing that, it helped me gain more confidence in like my own workouts themselves.”

Participant #9: “...I had to just kind of learn. It wasn't something that was taught in my family, how to eat healthy how to exercise regularly... So really I consider myself self-taught, because I had to teach myself a lot of different things... I would see, like when I finally got access to Instagram[®] and when I finally started working out, I went on Instagram[®]. I'd read a lot of articles online.”

Participant #6: “Um it was actually with a friend. We started going to the gym together and that friend is now a personal trainer, so yeah.”

Theme 4: Maintaining LTPA Participation

Participants described numerous motivators and enablers that supported their ability to maintain their regular LTPA routine. Although they had developed a normal schedule for LTPA and were confident in their ability to remain active, they were still presented with challenges

along their LTPA journey. However, the participants spoke of the various strategies and tools they incorporated to prevent these challenges from disrupting their new LTPA lifestyle.

Motivators to Maintain LTPA

Each of the women in the study had both intrinsic and extrinsic motivators to assist with LTPA sustainability. These motivations consisted of both rewards that they received from being physically active along with their position as a role model to others. Both of these factors seemed to fuel the women and help keep them remain active on a consistent basis.

Motivators to Maintain LTPA: (Subcategory 1: Rewards)

There were many aspects and benefits of LTPA that consistently motivated the participants to remain active. One of the greatest motivators were the rewards that the participants received from being physically active. These rewards included mental and emotional health benefits as some women described their workout as “uplifting” or being an “escape”. Additionally, many women enjoyed working out after work, as their workout provided an avenue to relieve stress from their workday.

Participant #1: “Yeah, I definitely find myself uplifted when I get to the gym. Even just that one day you'll feel good and then you realize if you can just be consistent like the more you go, the more consistency your mind builds on that high...”

Participant #2: “It...It makes me happier. More pleasant... The main reason is stress relief and to channel like everything is going on, into, you know like, physically. I would say, the way I treat people, my mood, like everything. If I don't work out, I'm probably gonna have an attitude. So, I think it just helps me release everyday stress, um... work life, other things that I do outside of work.”

Participant #5: “The biggest factor for me was just how I felt after. Like the stress. More so a stress reliever and when you get to that point, it feel like it's just like you have to do it. Like you just can't stop...”

Another mental and emotional health benefit that appeared to be common amongst the women was the boost in their confidence that they felt from being active.

Participant #7: “Um, I’m more confident in my, in my body physically. So yeah, it definitely boosts my confidence, and how I perceive myself.”

Participant #4: “It gives me more confidence especially since like I went through a breakup recently. And so basically whenever I go through something that’s like emotionally and you know, just affects me a lot like I go to the gym, and it makes me feel better. And then after I work out, you know, I kinda pose the mirror like ‘Dang! I’m poppin’.’ So it just boosts my confidence. Like okay. I’m a prize too.”

Women also discussed the physical benefits that motivate them to continuously engage in LTPA such as the potential to increase their lifespan. Some women expressed a preference to work out in the mornings for an energy boost that carries them throughout their day. Additionally, women were motivated by the physical changes that their bodies undergo and the satisfaction achieved when they realize they are able to change their own body images naturally. Women were also drawn to regular activity for the feeling of accomplishment after completing a workout. Some of the participants described creating challenges and continuously being in a “competition” with themselves as mechanisms that led them to strive to meet new goals. Lastly, some of the participants discussed the desire of future motherhood and the importance of being physically active prior to pregnancy.

Participant #3: “I think it gives me more energy to get throughout the day. ‘Cause you know I’m an attorney so I work long hours. So I don’t think I’ll be able to stay longer or get up earlier if I didn’t work out like I did.”

Participant #8: “So once I started working out doing that...I finally was able to fill out and finally get my, my weight back and everything. And then I was like, well, I look good, so I might as well continue to keep working out or continue to build that build that strength and everything.”

Participant #10: “Um, the gift of life. The more physically active you are, the you know more to put a couple years on your life expectancy.”

Participant #6: “Plus you know I’m thinking about having kids one day. It’s better to be active now, than try to get active later. Make sure to incorporate it into my lifestyle.”

Participant #7: "...just trying to overcome challenges when I'm working out. Just so like accomplishing those small goals, definitely gives me a great feeling so uh...like a feeling of accomplishment for me."

Motivators to Maintain LTPA: (Subcategory 2: Being a Role Model)

Most of the women described their influence on others around them, and once they became comfortable and confident with their own routines, many unknowingly became a role model to others. Although many modestly denied the title "role model," the impact that they had on their surrounding social networks made it apparent that they were positive influencers to both their family and friends. In addition, some women stated the importance of being a role model for their current or future children.

Participant #5: "Yeah, I think it's had a major impact especially within like my life. People around me, my family, my mom, my friends are all like influenced to like go to the gym or get physically fit now."

Participant #8: "It's always good to see people do something like, 'Hey, I did that,' or whatever. And they be like, 'Yeah, I kinda took that workout from you when I seen you do it the other day.' And I'm like 'Really!'... So, I wouldn't say a role model. I would kind of say, you know, just a mild influence on people working out."

Participant #9: "I like to somewhat be an inspiration to people...without coming off as a snob. I feel like some people can come off really snobby when you talk to them about this stuff, but I'm really showing concern. You know I've been in a really bad place, you know, physically and I'm like hey if I can show you a way to help you, you know, monitor, and navigate through your, your current lifestyle."

Participant #10: "It all trickles down because you know once you have kids and things like that you will want them to... They'll have a better chance to see a mom, be physically active from a young age, they'll incorporate that more into teenage and adulthood."

Enablers of LTPA

There were many factors that assisted the participants in maintaining physically active lifestyles. These factors included maintaining a fitness network, as well as the atmosphere of the fitness facility itself.

Enablers of LTPA: (Subcategory 1: Fitness Network)

Most women spoke of having a fitness network surrounding them that helped them complete their workouts on a regular basis and to hold them accountable. For many subjects their fitness networks included a variety of people such as family members, friends, classmates, new individuals that they met during of their fitness journey, and even people on social media that they have never met. Whether it was their significant other, personal trainer, or an Instagram[©] fitness role model, having this community helped them remain active consistently. In some cases, the participants relied on their fitness network to introduce new workout ideas to add variety to their usual routines.

Participant #1: "... for me, I was doing my own thing for a minute and I got bored, tired. I'm at work actually working and I can't sit there and like put my workout... But I started following these girls they have you know great physiques. They provide guides and I got interested in that, and bought some of them, and follow those. Have been with them back and forth when I'm at the gym and I have no idea what I'm going to do or you know between Jam Fitness, so that definitely has inspired me a lot more as well."

Participant #3: "Well I think having a coach is like, very helpful too. I mean, they're expensive, but I feel like it's worth it because they can guide you into the right direction and you can learn from them. So that, that's who I take my guidance from. So like I check in with her every week."

Participant #5: "I have a lot of friends at the gym. I met a lot of people in the fitness industry. We actually like link up and do like workouts, which makes it fun because you learn new, you know, new activities, new work out, new ways to target muscle groups. It's a big like community where you just learn from each other and network."

Participant #7: "I will say that my boyfriend is definitely a positive influence to get me out and working out and um...So, I think that that is another enabler to help me to get out."

Enablers of LTPA: (Subcategory 2: Fitness Facility)

In addition to have a supportive fitness network, many aspects of the women's fitness facilities proved to help them maintain LTPA in their normal weekly routines. Factors such as

proximity, hours of operation, and the atmosphere of the facility itself were all aspects that the participants described as helpful.

Participant #2: “Yeah, like, to me like energy is everything. So kickboxing, I like the class because of the music. The instructors are very like personal. So they kind of know you...they know what your goal is. And it's really like they give this like, fitness family vibe.”

Participant #5: “I think the convenience of like me being located near a gym. Like I don't even live like a mile from the gym. Literally. So it's not like I have to fight traffic right, or it's like going out of my way. Like my apartment is right next to the gym. That is so convenient.”

Participant #8: “Just going to the gym. Like some days I... Like I said I'm not mentally there, but I'll make myself go to the gym. Like I'll be like okay, maybe if you just go to the gym you might change your mentality. And I'll get there just seeing people put in the work. I'm like okay. I gotta, I gotta work too.”

Participant #9: “...the gym that we go to around the corner. So five minutes from my house opposed to the 25 minutes it takes to get to LA Fitness. So it being close and it being \$25 just makes it a little bit easier. You really don't really have an excuse to not be committed because it's open at any, at any time.”

Ongoing Challenges to Maintain LTPA

Although the participants were all LTPA maintainers, they each faced various challenges when it came to being active on a regular basis. Based upon the predetermined list of common LTPA barriers in AA women that was presented to the participants (Appendix J), the most frequent challenges that were reported were lack of time, work obligations, tiredness/fatigue, and hair styles. In addition, the current participants identified some LTPA challenges that have not been previously identified in the literature. Overall, some challenges were more persistent than others and created a larger disruption to these women's weekly routines.

Ongoing Challenges to Maintain LTPA: (Subcategory 1: Lack of Time)

Lack of time was the most frequently reported challenge to weekly participation in LTPA. It was apparent that there were many other challenges that overlapped and contributed to

their lack of time such as school obligations, work obligations, household duties, and other daily responsibilities.

Participant #1: "I think that's where my biggest thing is especially like when I'm at work late. I'll be there probably an extra hour. So you come home and you're just like, I gotta clean my room. Whatever it is that you have to get done you're like have so much time, you only have so little time before you have to go to bed. So, sometimes I do struggle with that and just thinking like, okay, I'm not gonna go to the gym tonight."

Participant #2: "So for me, I'm tired. You know I have a million other things to do when I get home. So it's very easy for me to fall into the, you know, I really don't have time right. It's almost 10 o'clock, and I haven't done anything that I need to do, like I don't have time to work out. So, that's like a big factor."

Participant #6: "You're talking about you got to factor in commute times and things like that to get to and from work, which could take me anywhere between 30 minutes to 50 minutes sometimes depending on if there's an accident...then to try to think about, you know, wanting to cook a somewhat healthy meal or find time to do that as well is hard... And for me, you know I've been a graduate student the last three years, and I had class at night... And then not getting home until nine o'clock at night, made it really hard for me to work out...So, time is a big factor."

Participant #7: "... my schedule, because my schedule is always changing, that can prevent me from having the time to go to the gym as much as I want to. So, that, that, that would be my biggest thing is just having so many moving parts in my life currently, that I'm, I'm not on a constant schedule as I used to be."

Ongoing Challenges to Maintain LTPA: (Subcategory 2: Work Obligations)

All but one of the participants of the study worked 30 hours or more per week therefore, work obligations were the next most problematic challenge when it came to remaining physically active. These women described their work duties and workdays spilling over into their time committed going to the gym, and some even mentioned having to respond to work responsibilities while at the gym. In addition, the amount of hours dedicated towards their jobs interfered with their weekly routines.

Participant #1: "...I do have a job where I'm on call all the time... I even deal with it where it's so frustrating, I literally am probably 30 minutes down my

workout and I'm just like forget this I'm going home like... You know, so I'll have to stop and then sometimes it requires me to just be more present and sitting down on a computer. So something I have to, like, just be at home and stay there and make sure everything gets situated."

Participant #2: "The kind of job that I have is very people-based, and so, there's always something that needs to be done. And so, if I don't cut it off at a certain time, I'll just stay there and keep doing stuff and doing stuff and then the whole day is gone and I don't make it to the gym."

Participant #4: "Yeah, basically, sometimes we have a lot longer days than others. The most we can have is a 14-hour duty day. So after 14 hours, like we'll get to the hotel. Most of the time it will be like, almost midnight, and you know, like I'm literally tired. Like I'm so drained just because flying, it's a lot on your body."

Participant #7: "Yeah, I would say that work obligations, it contributes to my lack of time. Like I said if I had deadlines that I have to meet or particular, for a particular week, I'll have to sacrifice, you know, going to the gym in order to get that done."

Ongoing Challenges to Maintain LTPA: (Subcategory 3: Tiredness/Fatigue)

Similar to lack of time, many other daily obligations contributed to the participants' energy levels. Many of the women spoke of feeling drained at the end of their day and simply not having the energy to complete their workout. At times, previous overwhelming days also affected their plan to workout the next morning, which created a disruption to their normal schedules. Additionally, a participant spoke about being tired/fatigued from a previous exhausting workout session and not regaining her full amount of energy prior to her next session.

Participant #1: "I'm just going to go after work then after work comes... it's been a burnt out day and I'm just like, I'm going to chill tonight."

Participant #4: "'Cause I like challenge myself to do stuff in the gym. And I know like the recovery time with strength training and HIIT [high-intensity interval training] is a lot longer than just, you know, a regular workout at the gym... Yeah, that definitely plays a lot, a lot as far as a barrier in me like continuing to be like on a regular schedule at the gym. 'Cause I know my body needs more time to recover than I'm giving it."

Participant #9: “Once that energy is zapped, and I'm tired and I worked a full day, and been in meetings and... I've done like five loads of laundry throughout my day, and tend to my son. I'm just, I'm done... And then I have this crazy night. Then I can't get up in the morning.”

Ongoing Challenges to Maintain LTPA: (Subcategory 4: Hair Styles)

Another challenge that surfaced amongst the women in the study was lack of durable hair styles when they were being physically active. This barrier was more apparent for some women than others. Specifically, participants discussed their struggle with finding hair styles that would not be ruined by sweat, difficulty with natural hair styles, and challenges with or newly washed and styled hair styles. All of these issues limited the participants' ability to be active.

Participant #1: “... So just like this past week I had... was at my boyfriend's, blow dried my hair, got ready for work, went to work and I was like dang! I want to go to the gym, but I also want to leave this fresh blow out like... So for me, that's my biggest issue and especially if I were to get my hair straightened. Oh goodness, probably won't catch me the gym for good three days after that.”

Participant #2: “Um, and it's really hard when you're natural like for my hair type, to go to the gym, sweat it out, and you have to go home and like start over with your hair routine... You sweat and your hair gets all, you know, you can't manage it. So hairstyles is a big effect on my workout.”

Participant #7: “So as being an African American woman, you know, we change our hairstyles very often. Certain hairstyles that you just can't sweat it out...because you spent so much money on it.”

Ongoing Challenges to Maintain LTPA: (Subcategory 5: Less Prevalent Challenges)

There were additional challenges to LTPA that the women identified from the predetermined list of LTPA barriers commonly cited by AA women in previous research studies; however, they were not reported as frequently. Some of these challenges were facility cost, transportation, weather, pain/injuries, family/childcare obligations, self-consciousness regarding looks, and school obligations.

Participant #2: “Um for me like when it's raining, or it's just too cold, like I don't really want to be out. So I found myself like having a hard time with, you know,

“a large southeastern city” it's raining all the time. It's cold, and when it gets hot it gets hot. And I just want to be inside.”

Participant #4: “So I had a knee injury um in August of last year, which was 2019, and it was a work-related injury. Like it'll swell up and it'll be hard to like lock in place. So that's one of the other barriers. Like I won't go as hard as I should in the gym or as hard as I could because of that injury.”

Participant #9: “Um well the baby is under two. So that's a whole lot of energy and time and just making sure he doesn't do anything crazy...So that, then he has eczema, so I'm always attending to his skin to make sure that he's okay and comfortable...There's only so much I can get done with, just with him.”

Participant #10: “Sometimes I may not have enough money for option A [transportation costs] to get to the gym. Then option B [facility costs] exists, I don't have enough money to actually spend on the gym, so money plays a big... money plays a big role into that.”

The women were also given the opportunity to convey other challenges they faced personally, which allowed the emersion of some new challenges in the current study that have not been reported in the literature. These challenges included type of active wear, lack of desired equipment, seasons/time of year, and lack of lesbian, gay, bisexual, and transgender (LGBT) acceptance. One participant explained that the type of active wear (i.e., fitness pants and shoes) that she wears to the gym, dictates her capability to complete a diverse range of LTPA. In addition, the cost and quality of active wear presented as a barrier for her. A couple of the participants spoke about lack of a sufficient amount of equipment or updated equipment in their gyms, which prevented them from being able to carry out their desired workout. Winter months seemed to have an effect on LTPA participation for a couple of the participants who stated they were less motivated and active during that period of the year. Lastly, one participant expressed sentiments of not feeling accepted at her local gyms due to her LGBT status.

Participant #5: “So I work out in flat Converses for stability wise for my type of workouts. But when I go upstairs and do like a cardio session, I can't do that because I brought Converses. So yeah um... Also just, again the fit of the clothing. I don't feel like they more so make clothing that are catered to women who are

like bottom heavy... Um, the price of it is a barrier as well. I mean, it can get expensive.”

Participant #5: “Um if equipment is broken or if too many people are on equipment... Obviously I can't make them move. I can't really do my workout how I want to.”

Participant #10: “It's hard. You know even sometimes for me it's hard for you to go in places where you see, especially you know in the gym this is how women feel too... Like isn't, it's not really no place... basically what I'm saying is you go to these places and nobody looks like you. That you know, it's a little bit disappointing and depressing, but also because you know in some of these places, they wouldn't really cater to people like you.”

Ongoing Strategies to Overcome Challenges to LTPA

Despite diverse challenges all of the current participants have managed to be physically active on a regular basis for six months or greater. Therefore, they have been able to develop coping methods and strategies to consistently maintain their level of LTPA and overcome the constant barriers. Some of the primary strategies utilized by the women to maintain LTPA included planning daily/weekly goals and preparing for missed workouts. In addition, they established various methods for overcoming the many barriers that they encountered on a regular basis.

Ongoing Strategies Overcome Challenges to LTPA: (Subcategory 1: Plan Daily/Weekly Goals)

Creating a plan of daily and/or weekly goals included setting a targeted amount of days to be active, as well as identifying the types of activities the participants wanted to complete throughout the week. This strategy promoted a consistent schedule in which most of the participants completed the same activities on the same days every week. The participants frequently spoke of the amount of discipline required to commit to their plans on a weekly basis. Sometimes this required them to arrange their entire day around their planned workout, and some women described simply forcing themselves to go whether they were motivated or not. Setting

body weight goals or setting weight lifting goals were also strategies that several of the women mentioned.

Participant #7: "Usually I am always going to the gym around the same time on the same day. I have like... when my, when my schedule is consistent, I try to go on Mondays and Wednesdays, and Saturdays...and sometimes Friday. So, yeah, usually week to week I'm going at the same time on the same day."

Participant #2: "I do everything, like if I can't really make it to the gym I'll move my schedule around or I just won't go to certain things. So for me, my schedule is like very particular has to make sure I go to the gym, make sure I get all my meals in."

Participant #1: "...just make sure you plan it out correctly during the week. Sometimes I actually have to do that. Okay, I'm going to go to the gym. Tonight, I'm going to the gym and clean my room. Tomorrow I'm going to the gym then wash my clothes. You know like, just kind of have to plan out your days..."

Participant #8: "So I kind of try to just be like, just go there and you might feel better. Just might workout. Just get over the hump and you'll be fine... I would say yeah. Just forcing myself to go."

Ongoing Strategies to Overcome Challenges to LTPA: (Subcategory 2: Prepare for Missed Workouts)

As a PA maintainer, many of the women seemed well-prepared for the possibility of missing a workout session. Most of the women seemed to have an array of strategies in order to counteract the days in which they were unable to be physically active. Some of the reported strategies for missed workout sessions included combining their missed LTPA session with the next day's session (i.e., "doubling up"), rescheduling their routine to an alternative day, controlling their diet on the days they missed, or simply accepting that it was okay to miss a day.

Participant #3: "Umm...well, I just have to reschedule it to a different day. Or you can always get up the next morning and do like some fasted cardio, and then go to work, and then come back you can work out. To me that counts is like two workouts."

Participant #6: "So I'll trade out days. Like if I'm not working out today, I'm going to make sure I work out on Sunday, which I may not have originally planned to work out on, you know. Like I'll trade out the days."

Participant #8: "I usually try to just go harder the next day. So it might be a different muscle group, so I might even turn it into a full body day or I just try to go harder either the next time that I do that muscle group. Or I just try to go hard the next day in general."

Participant #9: "Um I just watch what I eat. I won't eat as many carbs that day."

Participant #5: "...you realize like one day is not going to make a difference. So you kind of have to just talk to yourself like, you know, it'll be alright. Just go back tomorrow and get it done."

It is noteworthy that although many of the women were able to accept a missed workout session for the week, this was a strategy that they had to develop over time. Initially, many of the women stated they felt upset or disappointed with themselves if they missed a day in their weekly routine.

Participant #5: I used to feel really guilty about that honestly. Just like missing workouts. I used to feel real like...guilt trippin'."

Ongoing Strategies to Overcome Challenges to LTPA: (Subcategory 3: Overcoming Lack of Time)

Lack of time was the most common LTPA challenge cited by the women of this study. A lack of time often resulted in using their toolbox of strategies for preparing for a missed workout. However, if the participants managed to not completely miss their scheduled routine, they were equipped with additional strategies to overcome this apparently prevalent barrier. These strategies included completing an alternative workout from their original plan or shortening the duration of their LTPA session. Participants were able to shorten their sessions by limiting themselves to the amount of activities they perform or completing compound movements (two movements in one).

Participant #4: "Um, basically, you, I can tweak my routine so that it's still effective, but less time consuming... what I'll basically do is um...I'll time myself, so I'll do weights, but it'll be kind of weighted cardio. So it's like a combination of the two. It's just light weights, more reps, and it gets your heart rate up just like

cardio. So it's just, you know, just tweak your routine just a little bit so that your body still gets what it needs, but it's just less time."

Participant #1: "Some days I even just set aside 30 minutes to get in. Like, one day I literally went in and I did, I did medicine ball squats. Squat throw it up in the air. I did kettlebell swings and then I did one other exercise and I did that four times. That took me 30 minutes, and I knocked that out and finish that and that was my workout for the day."

Participant #5: "I have to pretty much put two types of movements into one workout if that makes sense. Like a squat into an overhead press, just to save time."

Participant #9: "Um, when it comes to the time and not having any, um...I'll actually, and it's kind of funny, I'll use my son as a weight and do like a little fun stuff with him to kind of include him on it. If I don't have any time to go to the gym or it's hard for me to get deep into at home workout. I'll include him on little things to kind of just make it a game in a way just to keep them entertained."

Ongoing Strategies to Overcome Challenges to LTPA: (Subcategory 4: Overcoming Work Obligations)

In order to be a LTPA maintainer despite work obligations, many women expressed prioritizing their happiness over their work. Choosing a job that would not interfere with their weekly LTPA routine was a strategy employed by one of the participants in order to prevent her work life from overtaking her time dedicated to LTPA. Additionally, setting boundaries or rearranging their PA schedule around their work schedule were also strategies stated by these women.

Participant #1: "Luckily it's not often. It is sometimes. But I'm also not a huge fan of my job, so I kind of make what makes me happy, more of a priority. That's kind of what it is for that one. While trying to do the bare minimum we make them happy."

Participant #3: "When I'm deciding where I'm going to work at. Is it going to interfere with me going to the gym before or after? So that's something that I look into."

Participant #3: "[I] have to cut off and like once my alarm on my phone goes off, it just has to wait 'til tomorrow. But I know different people do different things. Most people um...they don't do that but that's what I do. So if it's after a certain

time I just have to go because if not I won't... I'll stay and I won't make it to the gym..."

Participant #9: "I'll try to shoot for the weekend when there's a little more free time. Not such a demand for me to be online for work."

Ongoing Strategies to Overcome Challenges to LTPA: (Subcategory 5: Overcoming Tiredness/Fatigue)

When discussing strategies to overcome tiredness/fatigue, there was one common strategy that the women utilized: caffeine. Some women preferred to drink coffee prior to their workout, some drank a pre-workout drink, and others mentioned taking supplements to provide an energy boost. Additionally, one participant stated a nap prior to her workout would suffice and allowed her to complete a home-based PA session afterwards.

Participant #1: "Umm coffee. Coffee does help. Pre-workout helps. Those literally are the two that I kinda like go to. Because I feel like if I get up earlier and just drink some water have a little coffee I think I might be able to succeed in my little 5am workout."

Participant #4: "Um you can take B12, which, you know, basically it's an energy supplement. So you can do pre-workout, which is just caffeine for the most part. Or you can do BCAA [branched chain amino acids], which is basically amino acids. All of which will just give your body a little bit of boost of what it needs to go to the gym."

Participant #9: "I just, you know, drink my coffee and just head right over to the gym and do that early morning workout."

Participant #9: "If I'm too tired, I'll take a nap and then I'll get up, and probably just do some cardio on my elliptical downstairs here at home."

Ongoing Strategies to Overcome Challenges to TLPA: (Subcategory 6: Overcoming Hair Styles)

As mentioned earlier, having a natural hair style or wearing a hair style that is easily ruined by sweat presented as a barrier for some women to be physically active. However, the participants were able to provide several strategies that they used frequently to ensure they were still able to obtain their weekly LTPA goals. These strategies included wearing protective hair

styles such as braids, working out at a lighter intensity to reduce the amount of sweat, or sacrificing their normal exercise routine by waiting several days for their hair style to become older.

Participant #1: “Protective styles help whenever I do get my hair done... like... I'll get braids. Like I can literally shower and wash my face brush my teeth. I don't have to worry about my hair. Take the thing out the wrap and keep it moving. Um, French braiding my own hair like when it's not in protective styles. I'll French braid my own hair. It does make it easier.”

Participant #2: “I wouldn't say it would, it doesn't keep me [from working out], but I won't go as hard and my workout.”

Participant #7: “...when it comes to my hair, I just wait 'til it gets a little older. I just try not to work out when it's fresh. If I absolutely have to work out when it's fresh, try to find a way to prevent my hair as much as I can so it's not like completely ruined by the end of my workout. So that can consist of me on, on YouTube and just finding different creative ways, like put my hair up to make sure that, you know, it's still good and I didn't just waste my money.”

Ongoing Strategies to Overcome Challenges to LTPA: (Subcategory 7: Less Prevalent Strategies)

Study participants provided strategies to overcome their less prevalent challenges as well. These challenges (identified above) included family/childcare obligations, weather, pain, facility cost, lack of transportation, insufficient activewear, lack of desired equipment, and feeling unaccepted due to LGBT status.

Participant #9: “Um, some mornings my husband and I, we'll kind of switch off and sometimes we're just like you leave the baby here. You go work out, and then you'll be good by the time you get home and you know you can start your day. You know sometimes we'll switch off...”

Participant #4: “Um what I normally do if, if I'm in a lot of pain, I'll take, you know, pain relievers, right before my workout, or either um... I'll just kind of scale back on the weight... I'll go okay, well, I'm not gonna squat this week, but I can do other exercises, you know, for my quads.”

Participant #10: “...because I'm personal trainer I have access to the gym... It froze up the facility costs. Two, if I already had to travel there then I'm traveling

there already. Three if we talkin' about money, I'm going somewhere I'm getting paid. Not only am I getting paid there to work there I can also work out."

Participant #10: "...you work on your transportation. What, you know, whether it was can I walk there? Can I take the bus there? Can you figure out how to Uber, train, whatever that might have been. That was how I did it..."

Participant #5: "I just kind of buy... I guess it's like fitness equipment. I'll give you an example like, say like if the pull up machine is taken, they have like the weighted pull up bands. So you could just grab like an overhead rack or overhead bar, put it on there. So it's ways around it. Just buy like little stuff like the jump rope if like the um...the Stairmasters are all taken."

Participant #10: "But sometimes as a member, when you eventually start to go there every day, you work out there every day, then people start to talk to you. It makes you feel a little bit more comfortable, you know. We humans. We love hum...human interaction, so when you sometimes in a sense of breaking down those walls. It made me feel a little bit more welcomed."

Chapter 5: Discussion

The current study aimed to explore strategies used by young AA women who have been successful in maintaining regular LTPA, and assess their behavioral, psychosocial, and physical characteristics. In addition, the factors that influenced their decisions and strategies to remain active were explored using a multimethod approach. By relying on both qualitative and quantitative data, we were able to obtain more than one perspective of these women's experiences with LTPA. Even though there have been previous studies in AA women who are PA maintainers (11, 16-18, 63), this is the first study to focus specifically on young AA women, the domain of LTPA, distinguish between aerobic and muscle-strengthening PA, and to utilize a multimethod approach for data collection.

Results from this study revealed novel findings that have not been reported in previous literature. First, the young AA women in this sample reported their reliance on social media to provide them with new workout ideas as well as a virtual fitness network. Participants in this sample also expressed their preference for muscle-strengthening activities versus aerobic activities. In addition to these new discoveries, four overarching themes also emerged, which provided valuable insight into these women's experiences with LTPA. These main themes were *Factors Contributing to LTPA Participation, Characteristics of Current LTPA, Initiating LTPA Participation, and Maintaining LTPA Participation.*

Key Findings

The participants of this study differed from the middle-aged and older AA women who maintained an active lifestyle in previous studies in that they reported relying on social media, such as Instagram[®] and Twitter[®], for a fitness network and new workout ideas. Although the use of fitness networks for social support has been reported previously (16, 18, 61, 62), the social

media aspect is a new finding that surfaced in the current study. As stated prior, the majority of the people in this age group used social media platforms on a regular basis (66), therefore it was not shocking that the women of this study relied on social media in both their initial and maintenance phases of LTPA. The usage of social media as a motivator, enabler, and strategy to initiate and remain physically active has not been reported in the previous studies assessing AA women LTPA maintainers. However, the current literature shows that social media platforms have been used as a delivery method for LTPA interventions frequently. In a study by Cavallo et al., undergraduate females reported an increase in LTPA after a Facebook[®]-delivered intervention. Although there were no significant differences in LTPA increases between the control and experimental group, there was an overall time effect that showed an increase in PA. As such, this study supported the idea that social media may be useful in efforts to increase LTPA in young adults (71). That said, it is notable that the women of the current study relied on social media more for workout ideas and social support rather than LTPA monitoring. Also, the findings of the current study related to social media usage may be exclusive to the younger population of AA women, and perhaps it should be operationalized more frequently in future studies aiming to promote LTPA adherence. Not only can these platforms provide a variety of LTPA activities and serve as guides, but they can also provide sense of community which has been shown to increase the chances of LTPA maintenance.

Although the data collected from the adapted IPAQ showed that 90% of the current participants were sufficiently meeting the guidelines for both aerobic and muscle-strengthening activities, during their interviews, the majority of the women expressed their preference for performing muscle-strengthening activities versus aerobic activities. The author speculated this may be preferable due to the desire of the women in the current study to have a more curvaceous

body shape. It has been shown in the literature that AA women prefer this type of body shape opposed to a thinner figure (72). Several of the participants mentioned a preference of performing lower body, muscle-strengthening workouts as well as expressing pleasure in developing new curves on their lower body. This preference in type of LTPA contrasted with previous literature, as many middle-aged and older AA women have reported walking as their preferred mode of LTPA (16, 17, 73). However, results from a recent study conducted by Kinsey et al. also showed there was no significant difference between the frequency of weight lifting versus running or walking in AA women of a wide age range (17). Although that study did not explore the preference of type of activity of AA women, it possibly suggested that muscle-strengthening activities are becoming more common in AA women. To our knowledge, these findings related to modality preference have not been reported in other AA women age groups who are LTPA maintainers. Therefore, this finding is novel and should be taken into consideration for this population when constructing a LTPA intervention for young AA women

Additional Findings

The first theme, *Factors Contributing to LTPA*, revealed that most of the participants engaged in LTPA during their childhood. The majority of the women indicated that they engaged in a variety of sport activities starting in elementary and some up until high school. It has been shown that children who are active or highly active during childhood are more likely to be active during their adulthood (74, 75). LTPA behaviors as a child, such as the affinity for being active, can carry over into their adulthood. Therefore, it was not surprising that all the women reported high levels of LTPA or sports engagement as a child.

The results of this study also revealed that during childhood, LTPA was mainly driven by their fathers. This was not an uncommon theme seen in the literature, as previous studies

indicated that although mothers are present during childhood activities, they served more as the organizer of activities and encourager (76, 77). Fathers were reported to serve more as a facilitator or co-participant of LTPA and a role model for children. This seemed to be reflected in the present study as well, as several women attributed their participation in LTPA and sports during childhood to their fathers. Perhaps this could be a strategic plan for incorporating LTPA in the lives of young AA girls.

The second theme, *Characteristics of Current LTPA*, showed that none of the participants relied solely on one type of LTPA. The women preferred to meet their weekly LTPA goals through a variety of workouts ranging from self-designed aerobic and muscle-strengthening activities to guided group fitness classes and personal training sessions. Additionally, self-reported IPAQ data, which quantified the frequency and volume of LTPA, supported the statements made by the women in their interviews that they dedicated one to two hours per session to LTPA at least three to five days per week. These results were consistent with data from similar studies, which indicated that active AA women participated in multiple activities with walking, running, dancing, and weight-lifting being the most frequently reported (16, 17). Previous research studies have shown that engaging in a variety of activities not only promotes increased PA volume but increase adherence as well (76). Also, the frequency of LTPA reported by the women in the current study was similar to frequencies reported by Kinsey et al., in which AA women who maintained PA reported engaging in PA 4.5 ± 1.2 days per week for 55.4 ± 16.8 minutes per session (17).

There was a divide in the current sample of women who preferred to exercise in the morning versus in the evening. This preference may vary from person-to-person; however, it is important to acknowledge that the time of day for a LTPA session may affect long-term

adherence to LTPA depending on the subject's motivation and typical daily schedule. Additionally, the participants described preferring to work out at a moderate- or high-intensity in order to "produce more sweat," which seemed to be a motivator and led to a feeling of accomplishment. Increased sweat production as a motivator to continue LTPA participation was also identified in a study conducted by Morton et al., in a group of indoor cyclists consisting of majority young, AA women PA maintainers (78). It is important to point out this is the preference of a maintainer and this may not have been their preference in the initial stages of LTPA. However, future PA interventions should take this into consideration by incorporating progressive increases in intensity over time, as it may contribute to LTPA adherence.

The third theme that emerged was the *Initiating LTPA Participation*, which highlighted motivators to begin LTPA and strategies that the women used to begin their fitness journey. Factors such as overall health, body image, and mental stress relief were the main contributing factors to initiate LTPA. Although this has been previously presented in the literature (16, 63, 73), there were some slight differences for this sample of young AA women. In a study conducted by Price et al. older AA women expressed initiating LTPA due to the onset of a chronic disease such as hypertension or diabetes (63), however this sample chose to focus on LTPA as a preventative measure. Although this difference was not surprising given the age group, it was encouraging to note as a motivator for LTPA participation. In regards to body image, weight loss has been a commonly reported motivator to begin LTPA for AA women (16, 18, 63), however, this sample appeared to focus on weight loss in addition to other factors such as future motherhood and general longevity. Also, multiple participants had a goal of increasing their weight due to dissatisfaction with their smaller body size, which was contradictory to the goal of weight loss that was commonly reported in the literature. However, this did align with

results from a study conducted by Awad et al., in which AA women reported the desire to have a more curvaceous body figure compared to NHW women. NHW women have been shown to desire a thinner figure versus a curvier shape that AA women consider “ideal” (72).

Although body image was a key motivator for both initiating and maintaining LTPA, it was not the sole driver. Building confidence by becoming more knowledgeable about LTPA was a common strategy to support the adoption of LTPA and eventually allowed participants to transform into a PA maintainer. Several of the participants described relying on a fitness network to assist them with their LTPA journey in the beginning, however they worked to become more independent through self-education and direct and indirect observation (via social media). One participant stated her enrollment in an anatomy class sparked her interest to research specific muscles of the body and workouts that would increase the muscle mass of those muscles/muscle groups. Another participant stated she would read online articles to further educate herself about LTPA. This strategical plan seemed to be a very critical aspect for the women, for it allowed them to become more comfortable with their LTPA routine. Previous studies have shown that increased self-efficacy is associated with increased levels of LTPA (79). According to the results of the current study, building confidence in one’s abilities to complete a LTPA routine may have promoted an increase in self-efficacy and has shown to be a contributing factor in becoming a PA maintainer. Therefore, this should be a focus of future PA interventions within this population in order to increase adherence.

The fourth theme, *Maintaining LTPA Participation*, showed it was apparent that the immediate, short-, and long-term benefits of LTPA were all drivers to keep the participants active on a regular basis. The gratification that the women received from being physically active was the largest motivator for the participants of this study. The benefits ranged from stress and

mental relief to physical benefits, as well as the feeling of accomplishment when surpassing goals, which are all benefits and motivators that have been presented in previous studies. (16, 18, 62, 63). The participants recognized the rewards of LTPA such as stress relief, increase in confidence, increase of energy, health benefits, preparing the body for future motherhood, and an overall feeling of accomplishment. It is important to educate AAs about the benefits of LTPA beyond weight loss, and the rewards listed above are great examples of those benefits that young AA women specifically enjoy. Presenting and promoting rewards and benefits of LTPA beyond weight loss may attract more women in this population if they are aware of both the mental and physical gratification, they may receive from being consistently active. These may serve as motivators for them to adopt and sustain LTPA.

In addition, having a fitness network from multiple sources seemed to have a great influence on enabling the participants to remain active. Sources included family, friends, significant others, newly developed friendships from gyms, and even an online fitness community. This community helped with holding the participants accountable for remaining active and additionally it created a source of innovation. Similar to the social media network mentioned above, many of the women described relying on their “other” fitness network for new ideas and workouts to increase variability in their routines, which seemed to help keep them motivated. This idea of social support with LTPA has been frequently reported in past studies with women who were PA maintainers (16, 18, 61, 62). In fact, Kirchoff and colleagues reported that AA women who were PA maintainers in their study actively solicited help in gym settings to establish relationships. Having in-person social support provided accountability and helped the women remain frequently active (18). Therefore, the current evidence supported that it may be useful to help women who are aiming to become active on a regular basis establish a fitness

network. Having a dependable fitness community can be key when attempting to increase LTPA maintenance in this population.

Although the women of this study were PA maintainers, they still faced many challenges. The most frequently reported challenges in this study that have also been reported in the literature were lack of time (9, 10, 12), work obligations (18), tiredness/fatigue (9, 10, 12), and hair style (11, 60). However, some newly reported challenges that emerged were insufficient active wear, lack of LGBT acceptance, and insufficient equipment. Although these challenges were not as prevalent amongst this sample, it was still important to recognize they are present within this population as other young AA women may be presented with these barriers as well.

Some of the strategies that were mentioned in this study have been revealed in similar studies as well including creating plans and goals (17, 18, 63), preparing for possibly missing workouts (17, 63), and using protective and durable hairstyles to avoid ruining a hairstyle (11). However, there were also new strategies that surfaced specifically for overcoming lack of time, work obligations, and tiredness and fatigue. Many of the women in the study described being physically active was a lifestyle for them rather than a trend, therefore they continuously make it a priority within a given week. It was evident that these participants felt that obtaining some form of activity was better than none, and this was apparent as participants formed strategical plans when they were short on time and their ability to incorporate LTPA into their day was threatened. Being that lack of time was an extremely common barrier for not participating in LTPA, performing LTPA compound movements allowed participants to complete a total body workout in a shorter period of time. In addition, setting alarms as an alert for an individual that it was the end of a workday helped these participants stay on a consistent schedule and prioritize LTPA maintenance. The results from the Processes of Change Questionnaire supported that

being a PA maintainer is high on the participants' priority list and they are committed to obtaining their LTPA on a weekly basis. The high scores calculated from the Self-Efficacy to Regulate Exercise questionnaire and Commitment to Physical Activity Scale also supported the qualitative data that showed being physically active is a priority and lifestyle of these women, because even when they were faced with difficult circumstances, they remained committed to being active. Data from these questionnaires supported the findings from the interviews in which women stated they were willing to rearrange their schedules or perform short duration workouts to ensure they met their weekly LTPA goals. Being equipped with these strategies seemed to help the women remain active for a long-term period.

Limitations

This study identified several strategies and characteristics of young AA women LTPA maintainers, however, there were study limitations that should be recognized. Qualitative research inherently presents the possibility of bias from the investigators during analysis. This was minimized by note taking throughout the interviews to ensure the PI's thoughts did not interfere with the data collected from the participants. In addition, cross analyses of each of the investigators results and multiple consensus meetings occurred to ensure the results were accurately reported and reflected the experiences of the participants. Given this study had a small sample size, the quantitative results were limited in their descriptive utility; therefore, future research studies should conduct related quantitative research in a larger sample size. Further, this targeted sample is not representative of all young AA women. Although, the qualitative results from the interviews may not be generalizable to all young AA women, some of the strategies may be useful to other employed younger AA women.

The original study methods for collecting body measurements were disrupted, which dictated the need to request self-reported height and weight data from the latter half of the

participants. This necessity may have compromised the accuracy of these data. The adapted IPAQ data were also self-reported and may have overestimated or underestimated the LTPA levels of the participants. The employment inclusion criteria for the study may have also been a limitation since having a steady income likely removes a critical barrier (finances) and allows access to fitness facilities and personal trainers. That said, the current study targeted employed women in a purposeful effort to reduce variability within the sample. Even so, it may be beneficial to repeat this study in a population without employment constrictions to examine if the results differ in a wider variety of young AA women (e.g., stay-at-home mothers, lower income individuals). Although these limitations existed, this study was the first to focus on and provide information related to the LTPA experiences and strategies of young AA women PA maintainers and can provide insight for future LTPA intervention in this population.

Conclusion and Future Directions

This study added valuable information to the current limited literature surrounding young AA women who maintain regular participation in LTPA. Although previous studies have explored the strategies utilized by AA women who are PA maintainers, the majority of those studies had extremely large age ranges making it difficult to distinguish which results were representative of young AA women. The strategies employed to continue regular LTPA in AA women may differ depending on age, therefore this study was warranted in order to bring focus to this particular population.

The importance of incorporating social media into the women's LTPA routines emerged in this study, which should be considered when designing a study or intervention meant to increase LTPA in this population. Social media can provide a fitness network for young women to provide a supportive and active community to motivate and enable them throughout their journey. This network should consist of both maintainers and novice exercisers in order to

provide role models as well as peers for women of various fitness levels. Building this network prior the end of a LTPA intervention may increase the chances of sustainability in AA women. Additionally, this network can serve as a resource to educate and increase knowledge about LTPA in conjunction with the study's investigators to build the confidence levels of the research participants. The interviews also revealed that the women of this study preferred muscle-strengthening activities versus aerobics, and enjoyed moderate-to-high intensity workouts. This should be another consideration when designing exercise programs in this population. Lastly, preparing future participants with plans to overcome missed LTPA sessions can be valuable and necessary to prevent a lapse in LTPA participation. Providing young women with various methods to counteract missed sessions, can promote consistency and commitment to their LTPA routine over a longer period.

This study contributed to the literature by providing preliminary groundwork for the development of future LTPA interventions in young AA women. The strategies that these women shared to overcome unique barriers and be consistently active may be transferrable to inactive, young AA women. Ultimately, this work will contribute to the promotion of LTPA sustainability to prevent obesity, obesity-related comorbidities, and health disparities in the young AA women.

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Appendices

APPENDIX A

INITIAL TELEPHONE SCREENING: GENERAL SCREENING FORM

Hello, my name is Chloe Jones and I am a graduate student at the University of Tennessee, Knoxville conducting a research study to gather information about the ways young African American women maintain their participation in physical activity. If you are interested in participating in my study, it will require a total of approximately two hours of your time to meet with me one-on-one. During this meeting, I will collect a few physical measurements from you including your height, weight, waist circumference, and blood pressure. In addition, I will ask you to complete several written surveys related to your participation in physical activity. Lastly, I will conduct an interview to gather more details about your normal physical activity routine and how you have been able to maintain this routine for the past six months or more. If you choose to participate, you will receive \$20 cash as a token of appreciation for your time and contributions to the study. If you are interested, may I ask you a few questions to see if you are eligible to complete my study?

NO:

Thank you for your time. If you change your mind, please feel free to contact me at cjone237@vols.utk.edu. Have a great day! (END CALL)

YES:

Great! Now I'll be asking you a little about yourself.

- | | | | |
|---|-----|----|--|
| 1. Do you identify yourself as an African American female? | YES | NO | |
| <hr/> | | | |
| 2. What is your current age? | | | |
| <hr/> | | | |
| 3. Do you currently have a full-time job? | YES | NO | |
| <hr/> | | | |
| 4. Are you currently a full-time student? | YES | NO | |
| <hr/> | | | |
| 5. Are you currently or were you previously a collegiate or professional athlete? | | | |
| | YES | NO | |
| <hr/> | | | |

*If eligible, continue to *Physical Activity Stages of Change Questionnaire*.

*If ineligible, thank participant for their time and request permission to retain information collected during the screening.

APPENDIX B
INITIAL TELEPHONE SCREENING:
ADAPTED PHYSICAL ACTIVITY STAGES OF CHANGE QUESTIONNAIRE

Adapted Physical Activity Stages of Change Questionnaire

For each of the following questions, please answer YES or NO. Please be sure to listen to the question carefully.

Aerobic physical activity or exercise includes activities such as walking briskly, jogging, bicycling, swimming, or any other activity in which the exertion is at least as intense as these activities.

| | | |
|--|-----------|------------|
| For aerobic activity to be regular, it must add up to a total of 30 minutes or more per day and be done at least 5 days per week. For example, you could take one 30-minute walk or take three 10-minute walks for a daily total of 30 minutes. In addition, vigorous activity must add up to 25 minutes or more per day and must be done at least 3 days per week. | | |
| | NO | YES |
| 1. I currently engage in purposeful, regular aerobic physical activity in my leisure time. | 0 | 1 |
| 2. I have been regularly active (aerobic) in my leisure time for the past 6 months. | 0 | 1 |

Muscle-strengthening activities include lifting weights, using resistance bands, and body weight exercises.

| | | |
|--|-----------|------------|
| For muscle-strengthening activity to be regular, it must be performed at a moderate-intensity and take place 2 or more days per week. | | |
| | NO | YES |
| 1. I currently engage in purposeful, regular muscular-strengthening physical activity in my leisure time. | 0 | 1 |
| 2. I have been regularly active in my leisure time for the past 6 months. | 0 | 1 |

*If participants answer yes to **BOTH** questions 1 & 2 for either aerobic or muscle-strengthening, they are deemed eligible for the study.

APPENDIX C
DEMOGRAPHICS SURVEY

Demographics Survey

Participant's ID: _____

1. How old are you? _____

2. What is your marital status?

- Single
- Married
- Widowed
- Divorced
- Separated (Legally)
- Engaged
- Cohabiting

3. How many children/dependents do you have living in your home?

- 0
- 1
- 2
- 3
- 4
- 5 or more

4. Are you employed?

- No
- Yes, < 30 hours/week
- Yes, > 30 hours/week

5. What is your highest level of education completed?

- Less than high school degree
- High school degree
- Some college
- Bachelor's degree
- Graduate degree

6. What is your yearly gross income (before taxes)?

- Under \$29,999
- \$30-\$49,999
- \$50-\$74,999
- \$75-\$99,999
- \$100-\$149,000

\$150-\$199,999

\$200,000 or more

APPENDIX D
PHYSICAL ACTIVITY PROCESSES OF CHANGE QUESTIONNAIRE

Processes of Change Questionnaire

Processes of Change

Physical activity or exercise includes activities such as walking briskly, jogging, bicycling, swimming, and any other activity in which the exertion is at least as intense as these activities.

The following experiences can affect the exercise habits of some people. Think of any similar behaviors you may currently have or have had during the **past month**. Then rate how frequently the behavior occurs. Please circle the number that best describes your answer for each experience.

| | How frequently does this occur? | | | | |
|--|---------------------------------|--------|--------------|-------|------------|
| | Never | Seldom | Occasionally | Often | Repeatedly |
| 1. Instead of remaining inactive, I engage in some physical activity. | 1 | 2 | 3 | 4 | 5 |
| 2. I tell myself I am able to physically active if I want to. | 1 | 2 | 3 | 4 | 5 |
| 3. I put things around my home to remind me to be physically active. | 1 | 2 | 3 | 4 | 5 |
| 4. I tell myself that if I try hard enough, I can be physically active. | 1 | 2 | 3 | 4 | 5 |
| 5. I recall information people have personally given me on the benefits of physical activity. | 1 | 2 | 3 | 4 | 5 |
| 6. I make commitments to be physically active. | 1 | 2 | 3 | 4 | 5 |
| 7. I reward myself when I am physically active. | 1 | 2 | 3 | 4 | 5 |
| 8. I think about information from articles and advertisements on how to make physical activity a regular part of my life. | 1 | 2 | 3 | 4 | 5 |
| 9. I keep things around my place of work that remind me to be physically active. | 1 | 2 | 3 | 4 | 5 |
| 10. I find society changing in ways that make it easier to be physically active. | 1 | 2 | 3 | 4 | 5 |
| 11. Warnings about the health hazards of inactivity affect me emotionally. | 1 | 2 | 3 | 4 | 5 |
| 12. Dramatic portrayals of the evils of inactivity affect me emotionally. | 1 | 2 | 3 | 4 | 5 |
| 13. I react emotionally to warnings about an inactive lifestyle. | 1 | 2 | 3 | 4 | 5 |
| 14. I worry that inactivity can be harmful to my body. | 1 | 2 | 3 | 4 | 5 |
| 15. I am considering the idea that regular physical activity would make me a healthier, happier person to be around. | 1 | 2 | 3 | 4 | 5 |
| 16. I have someone I can depend on when I am having problems with physical activity. | 1 | 2 | 3 | 4 | 5 |
| 17. I read articles about physical activity in an attempt to learn more about it. | 1 | 2 | 3 | 4 | 5 |
| 18. I try to set realistic physical activity goals for myself rather than set myself up for failure by expecting too much. | 1 | 2 | 3 | 4 | 5 |

Participant's ID:

| | How frequently does this occur? | | | | |
|---|---------------------------------|--------|--------------|-------|------------|
| | Never | Seldom | Occasionally | Often | Repeatedly |
| 19. I have a healthy friend who encourages me to be active when I don't feel up to it. | 1 | 2 | 3 | 4 | 5 |
| 20. When I am physically active, I tell myself that I am being good to myself by taking care of my body. | 1 | 2 | 3 | 4 | 5 |
| 21. The time I spend being physically active is my special time to relax and recover from the day's worries, not a task to get out of the way. | 1 | 2 | 3 | 4 | 5 |
| 22. I am aware of more and more people encouraging me to be physically active these days. | 1 | 2 | 3 | 4 | 5 |
| 23. I do something nice for myself for making efforts to be more physically active. | 1 | 2 | 3 | 4 | 5 |
| 24. I have someone who points out my rationalizations for not being physically active. | 1 | 2 | 3 | 4 | 5 |
| 25. I have someone who provides feedback about my physical activity. | 1 | 2 | 3 | 4 | 5 |
| 26. I remove things that contribute to my inactivity. | 1 | 2 | 3 | 4 | 5 |
| 27. I am the only one responsible for my health, and only I can decide whether or not I will be physically active. | 1 | 2 | 3 | 4 | 5 |
| 28. I look for information related to physical activity. | 1 | 2 | 3 | 4 | 5 |
| 29. I avoid spending long periods of time in environments that promote inactivity. | 1 | 2 | 3 | 4 | 5 |
| 30. I feel that I would be a better role model for others if I were regularly physically active. | 1 | 2 | 3 | 4 | 5 |
| 31. I think about the type of person I would be if I were physically active. | 1 | 2 | 3 | 4 | 5 |
| 32. I notice that more businesses are encouraging their employees to be physically active by offering fitness courses and time off to work out. | 1 | 2 | 3 | 4 | 5 |
| 33. I wonder how my inactivity affects those people who are close to me. | 1 | 2 | 3 | 4 | 5 |
| 34. I realize that I might be able to influence others to be healthier if I would be more physically active. | 1 | 2 | 3 | 4 | 5 |
| 35. I get frustrated with myself when I am not physically active. | 1 | 2 | 3 | 4 | 5 |
| 36. I am aware that many health clubs now provide babysitting services to their members. | 1 | 2 | 3 | 4 | 5 |
| 37. Some of my close friends might be more physically active if I were. | 1 | 2 | 3 | 4 | 5 |
| 38. I consider the fact that I would feel more confident in myself if I were regularly physically active. | 1 | 2 | 3 | 4 | 5 |
| 39. When I feel tired, I make myself be physically active anyway because I know I will feel better afterward. | 1 | 2 | 3 | 4 | 5 |
| 40. When I'm feeling tense, I find physical activity a great way to relieve my worries. | 1 | 2 | 3 | 4 | 5 |

Scoring Process: For each process, average the individual items by adding each group together and dividing by 4. Do not score an individual process if fewer than three items were answered.

| Process | Items |
|-------------------------------------|-------------|
| Increasing Knowledge | 5,8,17,28 |
| Being aware of risks | 11,12,13,14 |
| Caring about consequences to others | 30,33,34,37 |
| Comprehending benefits | 15,31,35,38 |
| Increasing healthy opportunities | 10,22,32,36 |
| Substituting alternatives | 1,21,39,40 |
| Enlisting social support | 16,19,24,25 |
| Rewarding oneself | 7,18,20,23 |
| Committing oneself | 2,4,6,27 |
| Reminding oneself | 3,9,26,29 |

APPENDIX E
ADAPTED COMMITMENT TO PHYSICAL ACTIVITY SCALE

Adapted Commitment to Physical Activity Scale

The following statements may or may not describe your feelings about physical activity. Physical activity includes a wide range of activities, examples of these activities are walking, tennis, badminton, yoga, racquetball, football, basketball, cycling, dance, running, swimming, weight training, fitness calisthenics, etc. Please CIRCLE the appropriate letter or letters to indicate how well the statement describes your feelings most of the time. There are no right or wrong answers. Do not spend too much time on any one item, but give the answer which seems to describe how you generally feel about physical activity.

SD = Strongly Disagree, D = Disagree, U = Uncertain, A = Agree, SA = Strongly Agree

| | | | | | | |
|-----|---|----|---|---|---|----|
| 1. | I look forward to physical activity | SD | D | U | A | SA |
| 2. | Physical activity is a chore | SD | D | U | A | SA |
| 3. | I do not enjoy physical activity | SD | D | U | A | SA |
| 4. | Physical activity is very important to me | SD | D | U | A | SA |
| 5. | Life is more fulfilling as a result of physical activity | SD | D | U | A | SA |
| 6. | Physical activity is pleasant | SD | D | U | A | SA |
| 7. | I dislike the thought of doing regular physical activity | SD | D | U | A | SA |
| 8. | I would arrange or change my schedule to participate in physical activity | SD | D | U | A | SA |
| 9. | I have to force myself to participate in physical activity | SD | D | U | A | SA |
| 10. | To miss a day of physical activity is a relief | SD | D | U | A | SA |
| 11. | Physical activity is a high point in my day | SD | D | U | A | SA |

Scoring Algorithm

Questions 1, 4, 5, 6, 8, 11:

| | | | | |
|----|---|---|---|----|
| SD | D | U | A | SA |
| 1 | 2 | 3 | 4 | 5 |

Questions 2, 3, 7, 9, 10:

| | | | | |
|----|---|---|---|----|
| SD | D | U | A | SA |
| 5 | 4 | 3 | 2 | 1 |

APPENDIX F
BANDURA SELF-EFFICACY TO REGULATE EXERCISE SCALE

Self-Efficacy to Regulate Exercise

A number of situations are described below that can make it hard to stick to an exercise routine. Please rate in each of the blanks in the column how certain you are that you can get yourself to perform your exercise routine regularly (most days of the week).

Rate your degree of confidence by recording a number from 0 to 100 using the scale given below:

0 10 20 30 40 50 60 70 80 90 100

Cannot
do at all

Moderately
can do

Highly certain
can do

**Confidence
(0-100)**

| | |
|--|-------|
| When I am feeling tired | _____ |
| When I am feeling under pressure from work | _____ |
| During bad weather | _____ |
| After recovering from an injury that caused me to stop exercising | _____ |
| During or after experiencing personal problems | _____ |
| When I am feeling depressed | _____ |
| When I am feeling anxious | _____ |
| After recovering from an illness that caused me to stop exercising | _____ |
| When I feel physical discomfort when I exercise | _____ |
| After a vacation | _____ |
| When I have too much work to do at home | _____ |
| When visitors are present | _____ |
| When there are other interesting things to do | _____ |
| If I don't reach my exercise goals | _____ |
| Without support from my family or friends | _____ |
| During a vacation | _____ |
| When I have other time commitments | _____ |
| After experiencing family problems | _____ |

APPENDIX G
ADAPTED INTERNATIONAL PHYSICAL ACTIVITY QUESTIONNAIRE

INTERNATIONAL PHYSICAL ACTIVITY QUESTIONNAIRE (October 2002)

LONG 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 encouraged to facilitate worldwide use of IPAQ. Information on the availability of IPAQ in different languages can be obtained at 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 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.

LONG LAST 7 DAYS SELF-ADMINISTERED version of the IPAQ. Revised October 2002.

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** and **moderate** 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. **Moderate** activities refer to activities that take moderate physical effort and make you breathe somewhat harder than normal.

PART 4: RECREATION, SPORT, AND LEISURE-TIME PHYSICAL ACTIVITY

This section is about all the physical activities that you did in the **last 7 days** solely for recreation, sport, exercise or leisure.

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

_____ **days per week**

No walking in leisure time

Skip to question 3

2. How much time did you usually spend on one of those days **walking** in your leisure time?

_____ **hours per day**

_____ **minutes per day**

3. During the **last 7 days**, on how many days did you do **vigorous** physical activities like aerobics, running, fast bicycling, or fast swimming **in your leisure time**?

_____ **days per week**

No vigorous activity in leisure time

Skip to question 5

4. How much time did you usually spend on one of those days doing **vigorous** physical activities in your leisure time?

_____ **hours per day**

_____ **minutes per day**

5. Again, think about only those physical activities that you did for at least 10 minutes at a time. During the **last 7 days**, on how many days did you do **moderate** physical activities like bicycling at a regular pace, swimming at a regular pace, and doubles tennis **in your leisure time**?

_____ **days per week**

No moderate activity in leisure time

This is the end.

6. How much time did you usually spend on one of those days doing **moderate** physical activities in your leisure time?

_____ **hours per day**

_____ **minutes per day**

Additional LTPA Questions

This section is about activity that you did in the **last 7 days** solely for recreation, sport, exercise or leisure. Please do not include any activities that you have already mentioned.

1. During the last 7 days, on how many days did you perform muscular-strengthening activities involving all major muscle groups at a moderate-intensity or greater?

_____ **days per week**

No muscular-strengthening activities in leisure time

2. How much time did you usually spend on those days performing muscular-strengthening activities?

_____ **hours per day**

_____ **minutes per day**

APPENDIX H
RECRUITMENT FLYER



ARE YOU REGULARLY PHYSICALLY ACTIVE?

AFRICAN AMERICAN WOMEN NEEDED TO PARTICIPATE IN A RESEARCH STUDY EXAMINING STRATEGIES FOR MAINTAINING PHYSICAL ACTIVITY

Study Details

Participants will be asked to schedule ONE meeting (approximately 2 hours) with the researcher. The meeting will include various body measurements, multiple physical activity surveys, and a one-on-one interview.



PARTICIPANT REQUIREMENTS:

AFRICAN-AMERICAN FEMALE

AGE 20-34 YEARS

PARTICIPATED IN REGULAR PHYSICAL ACTIVITY FOR THE PAST 6 MONTHS OR MORE

**ALL SUBJECTS WILL RECEIVE \$25 CASH FOR PARTICIPATION*

CONTACT:

Chloe Jones

cjone237@vols.utk.edu

Call or Text
(865) 309-5033

APPENDIX I
INTERVIEW GUIDE

Interview Guide

Thank you for taking the time to meet with me today. As discussed over the phone, I am interested in learning about the strategies to maintain physical activity in young African American women. During this interview, I will be asking you questions about your normal physical activity routine, and how and why you choose to participate in physical activity on a regular basis. Please take your time in answering all of the questions and feel free to skip any questions that you are not comfortable answering. Please try to think of this interview a conversation and be as open and detailed as possible with your responses.

Before we begin, I would like to define leisure time physical activity. Leisure time physical activity is activity that is done by choice and in one's free time. Therefore, this excludes physical activity that is done for work, transportation, or during normal household duties.

- **I want to get a sense of the physical activity that you do. I want you to walk me through a couple of your exercise sessions including where you go and who you interact with.**

Potential probes

- Can you describe the type of workout that you perform?
- Do you prefer a certain type of leisure-time physical activity? If so, why?
- Do you have a preferred intensity? If so, why?
- Can you describe any social aspects that may contribute to your participation in leisure-time physical activity?

- **How does being physically active affect the way you feel?**

Potential probes

- Physically?
- Mentally?
- How has it changed the way you feel about yourself?
- What kind of impact has physical activity had on your life?

- **Looking back, when would you say you became physically active?**

Potential probes

- Were you active growing up?
- Was anyone in your family active?
- How did your past influence your experience with physical activity?

- **What factors have influenced your decision to begin physical activity or remain physically active?**

Potential probes

- What motivates you to be physically active?
 - What enables you to be physically active (a person, place or thing that allows you to complete an activity)?
-
- **You circled a list of common barriers/challenges that you face when it comes to leisure-time physical activity. The top 5 barriers were ... (cite the barriers that were circled). Can you tell me how each of these cause a challenge to your participation in leisure-time physical activity?**
 - **What strategies do you use to overcome these barriers/challenges?**
 - **Think of a time when you could not make a workout session. How did you deal with that situation?**

Potential Probes

- Do you reschedule and if so, how?
-
- **Is there anything else that you would like to add about your participation in regular participation in leisure-time physical activity?**

Those are all the questions that I have for you. Again, thank you for telling me about your experiences with leisure-time physical activity.

APPENDIX J
LIST OF BARRIERS TO PHYSICAL ACTIVITY

List of Barriers

Below is a list of common barriers associated with physical activity. Please **circle** all barriers that apply to you. Please **add** any barriers to physical activity that you may have that are not listed. After you circle your barriers, please **number** them in order of most problematic (biggest barrier, #1) to least problematic (smallest barrier).

- | | |
|---|---|
| <input type="checkbox"/> Physical health | <input type="checkbox"/> Family/childcare obligations |
| <input type="checkbox"/> Pain | <input type="checkbox"/> Lack of physically active role model |
| <input type="checkbox"/> Lack of energy/tiredness/fatigue | <input type="checkbox"/> Role as a woman |
| <input type="checkbox"/> Lack of encouragement | <input type="checkbox"/> Body norms/preference |
| <input type="checkbox"/> Weather/heat | <input type="checkbox"/> Hairstyle |
| <input type="checkbox"/> Lack of motivation | <input type="checkbox"/> Lack of social support |
| <input type="checkbox"/> Lack of time | <input type="checkbox"/> Work obligations |
| <input type="checkbox"/> Self-consciousness about looks | <input type="checkbox"/> Lack of experience/knowledge |
| <input type="checkbox"/> Money/facility cost | <input type="checkbox"/> Lack of active partner |
| <input type="checkbox"/> Transportation | <input type="checkbox"/> Lack of sidewalks |
| <input type="checkbox"/> Personal safety | <input type="checkbox"/> Lack of local facilities |
| <hr/> | <hr/> |
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| <hr/> | <hr/> |

APPENDIX K
CHECK-LIST/ANTHROPOMETRICS

CHECK-LIST

VISIT DATE: _____

- ___ Informed Consent
- ___ IPAQ
- ___ Processes of Change Questionnaire
- ___ Commitment to PA Scale
- ___ Self-Efficacy Scale
- ___ Blood Pressure
- ___ Height & Weight
- ___ Waist & Hip Circumferences
- ___ Semi-Structured Interview
- ___ Sign off for Incentive

BLOOD PRESSURE (mmHg)

Arm circumference _____ cm

| | | |
|---------|-----------|-----------|
| Trial 1 | SBP _____ | DBP _____ |
| Trial 2 | SBP _____ | DBP _____ |
| Trial 3 | SBP _____ | DBP _____ |
| Trial 4 | SBP _____ | DBP _____ |

HEIGHT _____ (in.) _____ (cm)

WEIGHT _____ (lbs.) _____ (kg)

WAIST CIRCUMFERENCE (cm)

Trial 1 _____ Trial 2 _____ Trial 3 _____

HIP CIRCUMFERENCE (cm)

Trial 1 _____ Trial 2 _____ Trial 3 _____

APPENDIX L
INFORMED CONSENT

CONSENT FOR RESEARCH PARTICIPATION

Research Study Title: Characteristics and Strategies of Young African American Women Who Maintain Physical Activity

Lead Investigator:

Chloe Jones- Dept. of Kinesiology, Recreation, & Sport Studies

Faculty Advisor:

Lyndsey Hornbuckle, PhD, RD- Dept. of Kinesiology, Recreation, & Sport Studies

INTRODUCTION

You are being asked to participate in this research study because you identified yourself as a young African American woman who participates in regular physical activity.

PURPOSE

The purpose of this study is to gather information through body measurements, questionnaires, and one-on-one interviews to identify characteristics of young (20-34 years of age), African American women who maintain physical activity. Also, the purpose is to gain insight into the strategies these women use to maintain physical activity participation.

PARTICIPATION

If you choose to participate in the following study, you will be asked to attend ONE meeting at a local public library (in the Atlanta-Fulton County or Cobb County public library system) with the lead investigator that will be approximately 2 hours in duration. During the meeting, 1 hour will be used for the completion of surveys/questionnaires and several body measurements, and 1 hour for a one-on-one interview. Specifically:

- You will be asked to complete a brief demographic survey about yourself and several questionnaires related to your experience with physical activity and the amount of physical activity in which you engage.
- You will be asked to allow the lead investigator to measure your blood pressure, height, weight, waist circumference, and hip circumference.
- During the interview, you will be asked to respond to questions about your experiences, barriers, and strategies related to your regular physical activity habits.
- We will audio record and transcribe (type out) your responses during the interview so we can better remember and analyze your responses after the interview. After the meeting, I will remove any names or identifying information from the transcription.

VOLUNTARY PARTICIPATION

Participation in this study is completely voluntary. You may choose not to be in this study. Even if you decide to be a part of the study now, you may choose to withdraw at any point in time by telling a study investigator via e-mail, telephone, or in person. The investigators' contact information is located at the end of this consent form. You may choose to refuse any of the body measurements requested by the investigator. If you feel uncomfortable answering any of the

questions in the interview, you may ask to skip that question or terminate the interview. If you choose not to participate in or to withdraw from the study, your decision will not affect your relationship with the investigator or the University of Tennessee, Knoxville.

RISKS

This research is considered to be no more than minimal risk. This means there is no more expected risk to you than what you might experience in a typical day. Taking part in this study involves providing health information that you may consider confidential or private (age, education, income, body measurements, etc.). Also, participation in research studies involve some potential risk to your confidentiality, and it is possible that someone outside of the study staff could find out that you participated in this study or see your study information. However, the study investigators and staff have specific procedures in place to minimize this risk and protect your personal information.

BENEFITS

You will not likely receive direct benefits from participating in this study. The data collected will be used for research purposes and your participation will help provide further information related to strategies used by physically active, young African American women. Results could help the investigators and other researchers when they plan future studies with the goal of improving health in the African American community.

CONFIDENTIALITY

Your feedback collected during the meeting will be used for research purposes only and will only be accessed by approved study staff. We will protect the confidentiality of your information by de-identifying your information and using a numerical code rather than your name for all the information collected before we begin to analyze the data. All paper copies of information related to this study will be kept at the University of Tennessee, Knoxville in a locked file cabinet or electronically on a secure server at the University of Tennessee, Knoxville.

If information from this study is published or presented at scientific meetings, your name and other personal information will not be used. We will make every effort to prevent anyone who is not on the research team from knowing that you gave us information and what information came from you. Although it is unlikely, there are times when others may need to see the information we collect about you. These include:

- People at the University of Tennessee, Knoxville who oversee research to make sure it is conducted properly.
- Government agencies (such as the Office for Human Research Protections in the U.S. Department of Health and Human Services), and others responsible for watching over the safety, effectiveness, and conduct of the research.
- If a law or court requires us to share the information, we would have to follow that law or final court ruling.

FUTURE RESEARCH

We will keep your information and feedback for future research and may also share this information with other researchers in future studies without obtaining additional informed consent from you. Your name and any other information that can directly identify you will be removed before any such use.

COMPENSATION

You will be awarded \$25 cash for participating in the study. This will be distributed in person after all measurements have been completed and your interview has concluded.

COSTS

All study costs and procedures related to the study will be covered by the study. You will be responsible for covering costs for transportation to and from the meeting location.

CONTACT INFORMATION

If you have any questions about the study, please contact Chloe Jones at cjone237@vols.utk.edu or (865) 309-5033, or Dr. Lyndsey Hornbuckle at lhornbuc@utk.edu or (865) 974-1288. If you have any questions about your rights as a research participant, please contact the Institutional Review Board (IRB) of the University of Tennessee, Knoxville, at utkirb@utk.edu or (865) 974-7697. You may also contact the IRB with any problems, complaints, or concerns you have about the research study.

CONSENT

I have read this form and the research has been explained to me. I have been given the chance to ask questions and my questions have been answered. If I have more questions, I have been told who to contact. By signing this document, I am agreeing to be in this study. I will receive a copy of this document after I sign it.

Participant’s Name (printed) _____

Participants Signature _____ Date _____

I have explained the study to the participant and answered all of her questions. I believe that she understands the information described in this consent form and freely consents to be in the study.

Study Staff Name (printed) _____

Study Staff Signature _____

Date _____

APPENDIX M
REVISED INFORMED CONSENT (COVID-19)

CONSENT FOR RESEARCH PARTICIPATION

Research Study Title: Characteristics and Strategies of Young African American Women Who Maintain Physical Activity

Lead Investigator:

Chloe Jones- Dept. of Kinesiology, Recreation, & Sport Studies

Faculty Advisor:

Lyndsey Hornbuckle, PhD, RD- Dept. of Kinesiology, Recreation, & Sport Studies

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The purpose of this study is to gather information through body measurements, questionnaires, and one-on-one interviews to identify characteristics of young (20-34 years of age), African American women who maintain physical activity. Also, the purpose is to gain insight into the strategies these women use to maintain physical activity participation.

PARTICIPATION

If you choose to participate in the following study, you will be asked to complete a telephone interview with the lead investigator that will be approximately 2 hours in duration. During the meeting, 1 hour will be used for the completion of surveys/questionnaires and 1 hour for a one-on-one interview. Specifically:

- You will be asked to complete a brief demographic survey about yourself and several questionnaires related to your experience with physical activity and the amount of physical activity in which you engage.
- During the interview, you will be asked to respond to questions about your experiences, barriers, and strategies related to your regular physical activity habits.
- We will audio record and transcribe (type out) your responses during the interview so we can better remember and analyze your responses after the interview. After the meeting, I will remove any names or identifying information from the transcription.

****IF AND WHEN GIVEN CLEARANCE BY THE CDC AND IRB, THE FOLLOWING WILL BE ASKED OF YOU:**

- You will be asked to allow the lead investigator to measure your blood pressure, height, weight, waist circumference, and hip circumference.

VOLUNTARY PARTICIPATION

Participation in this study is completely voluntary. You may choose not to be in this study. Even if you decide to be a part of the study now, you may choose to withdraw at any point in time by

telling a study investigator via e-mail, telephone, or in person. The investigators' contact information is located at the end of this consent form. You may choose to refuse any of the body measurements requested by the investigator. If you feel uncomfortable answering any of the questions in the interview, you may ask to skip that question or terminate the interview. If you choose not to participate in or to withdraw from the study, your decision will not affect your relationship with the investigator or the University of Tennessee, Knoxville.

RISKS

This research is considered to be no more than minimal risk. This means there is no more expected risk to you than what you might experience in a typical day. Taking part in this study involves providing health information that you may consider confidential or private (age, education, income, body measurements, etc.). Also, participation in research studies involve some potential risk to your confidentiality, and it is possible that someone outside of the study staff could find out that you participated in this study or see your study information. However, the study investigators and staff have specific procedures in place to minimize this risk and protect your personal information.

BENEFITS

You will not likely receive direct benefits from participating in this study. The data collected will be used for research purposes and your participation will help provide further information related to strategies used by physically active, young African American women. Results could help the investigators and other researchers when they plan future studies with the goal of improving health in the African American community.

CONFIDENTIALITY

Your feedback collected during the meeting will be used for research purposes only and will only be accessed by approved study staff. We will protect the confidentiality of your information by de-identifying your information and using a numerical code rather than your name for all the information collected before we begin to analyze the data. All paper copies of information related to this study will be kept at the University of Tennessee, Knoxville in a locked file cabinet or electronically on a secure server at the University of Tennessee, Knoxville.

If information from this study is published or presented at scientific meetings, your name and other personal information will not be used. We will make every effort to prevent anyone who is not on the research team from knowing that you gave us information and what information came from you. Although it is unlikely, there are times when others may need to see the information we collect about you. These include:

- People at the University of Tennessee, Knoxville who oversee research to make sure it is conducted properly.
- Government agencies (such as the Office for Human Research Protections in the U.S. Department of Health and Human Services), and others responsible for watching over the safety, effectiveness, and conduct of the research.

- If a law or court requires us to share the information, we would have to follow that law or final court ruling.

FUTURE RESEARCH

We will keep your information and feedback for future research and may also share this information with other researchers in future studies without obtaining additional informed consent from you. Your name and any other information that can directly identify you will be removed before any such use.

COMPENSATION

You will be awarded \$25 cash for participating in the study. This will be distributed by non-contact delivery after telephone interview has been completed.

COSTS

All study costs and procedures related to the study will be covered by the study.

CONTACT INFORMATION

If you have any questions about the study, please contact Chloe Jones at cjone237@vols.utk.edu or (865) 309-5033, or Dr. Lyndsey Hornbuckle at lhornbuc@utk.edu or (865) 974-1288. If you have any questions about your rights as a research participant, please contact the Institutional Review Board (IRB) of the University of Tennessee, Knoxville, at utkirb@utk.edu or (865) 974-7697. You may also contact the IRB with any problems, complaints, or concerns you have about the research study.

CONSENT

I have read this form and the research has been explained to me. I have been given the chance to ask questions and my questions have been answered. If I have more questions, I have been told who to contact. By signing this document, I am agreeing to be in this study. I will receive a copy of this document after I sign it.

Participant's Name (printed) _____

Participant has been informed about the study by PI and agrees to participate
Date _____

I have explained the study to the participant and answered all of her questions. I believe that she understands the information described in this consent form and freely consents to be in the study.

Study Staff Name (printed) _____

Study Staff Signature _____

Date _____

Vita

Chloe Jones was born November 12, 1992 in Riverdale, GA. She was raised in Stockbridge, GA by her mother, Betty Jones, along with her older siblings, Kelsey and Eric Jones. Chloe attended Dutchtown High School and Kennesaw State University in Kennesaw, GA. There, she received her Bachelor of Science Degree in Exercise Science with a minor in Spanish in December of 2015. In 2018, she began attending the University of Tennessee Knoxville, where she acquired her Master of Science in Kinesiology with a concentration in Exercise Physiology. Following, she plans to attend Auburn University where she plans to earn her Doctor of Philosophy in Kinesiology with a concentration in Physical Activity and Health. Upon graduation, Chloe intends to pursue a career in academia and continue research focused on increasing physical activity adherence in African American women.