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The purpose of this study was to examine family structure, father involvement and physical activity participation among African American adolescent girls. The study sample was 40 African American girls ages 13-18 from a Public High School in Raleigh, North Carolina. Participants volunteered to complete demographic, father involvement and physical activity questionnaires.

The predictor variables were family structure (two-parent vs. single-parent and brothers vs. no brothers), and overall father involvement and physical activity father involvement. The dependent variable was physical activity participation. Analysis of variance (ANOVA) was employed to determine if significant group differences existed. The comparison of means revealed girls from two-parent families ($M=43.49$) had higher physical activity levels than their single parent peers ($M=36.91$); however, the one-way ANOVA results indicated these differences were not significant, $F(1,38)=.92$, $p=.34$). The comparison of means and ANOVA comparing brother groups and overall father involvement groups indicated no significant differences, $F(1,38)=.01$, $p=.93$; $F(1,38)=.21$, $p=.58$). The comparison ANOVA between high physical activity father involvement ($M=44.39$) and low physical activity father involvement ($M=30.49$) groups indicated significant differences in physical activity participation, $F(1,38)=3.92$, $p<.05$).

Multiple regression analysis was performed using father involvement predictors (overall, expressive, instrumental, mentoring/advising and physical activity father involvement) to determine which has the largest relationship to physical activity

participation among African American adolescent girls. Physical activity and expressive father involvement had the largest, significant relationships with correlation coefficients ($r=.37, p<.05$; $r=.34, p<.05$, respectively). Expressive father involvement was the best predictor but non-significant ($p=.10$). Other father involvement dimensions had weak relationships and were non-significant in the regression model.

Findings suggest active physical activity involvement (playing with or coaching girls) demonstrated by fathers and father-figures may lead to increased physical activity levels among African American adolescent girls.

FATHERS, FAMILY AND PHYSICAL ACTIVITY: A STUDY ON
AFRICAN AMERICAN GIRLS

by

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To my dad—thanks for being involved.

APPROVAL PAGE

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CHAPTER I

INTRODUCTION

Laila Ali, boxing professional, and Venus and Serena Williams, tennis champions, are prominent African American female athletes who attribute much of their success to their fathers. The importance that the father's role has on boys is commonplace (Morman & Floyd, 2006), but studies on father-daughter relationships are rare. In addition, girls are less likely to live with their fathers than boys (Dahl & Moretti, 2004), which may jeopardize their general well-being. The absence of a father appears to be detrimental to adolescent self-esteem, emotional intimacy, and relationship building (Balcom, 1998) as well as related to lower academic achievement, increased crime rates, and an increased risk of being poor (Call & Post, 1996). The negative impact of father absence raises concern for the increasing number of single-parent families.

The prevalence of single-parent households is alarming to many people and may be impacting African Americans negatively. Sixty-five percent of African American families are single parent households, and African Americans are the only ethnic group to have more single than two-parent families. The majority (90%) of these families are maintained by the mother (U. S. Census Bureau, 2007). These rates are very high, yet little attention is directed toward the impact they have on children, especially girls.

One area of impact is physical activity. The increased drop in physical activity among African American girls as compared to Caucasian girls may be in part due to

family make up. The higher rate of two-parent Caucasian families (U. S. Census Bureau, 2004-2005) may contribute to higher physical activity patterns as Caucasian girls tend to have higher rates of activity than African American girls (Hesketh, Crawford, & Salmon, 2006). This may be because father participation is more likely to occur due to residential status of these fathers. It should not be implied, however, that households headed solely by the mother translates into father neglect, as families with nonresidential fathers may have fathers who are highly involved versus those with residential fathers who may be emotionally and/or physically absent.

In addition, most studies use marital status to define family structure, which can inaccurately portray father involvement and other family members who may contribute to the development of children. However, the absence of the father is more prevalent in African American families (Dahl & Moretti, 2004) and may increase the likelihood of neglect. And, as the rate of single-parent families in the African American population significantly increases, the health status of African American girls appears to be decreasing (Center for Disease Control, National Center for Health Statistics, 2006).

Although father-daughter research on physical activity is limited, Davison and Birch (2001) found that fathers' physical activity practices is a better predictor of physical activity among girls than mothers' physical activity practices, potentially putting African American girls at a disadvantage as most are raised by single mothers without their fathers. In addition, girls raised by one parent tend to be less physically active than those who are raised by two parents (Hesketh et al., 2006), further supporting the disadvantage for African American girls and the lack of attention that is directed towards

the fathers of these girls. Interestingly, Bungum and Vincent (1997) found that nurturing behaviors received from fathers was a predictor of physical activity among African American girls but not among their Caucasian counterparts, suggesting that there are socio-cultural differences that may aid in increasing physical activity participation among African American girls. Research on father influence on physical activity behaviors among African American girls may be limited due to the nature in which family structure is categorized and father influence is assessed.

For example, fathers may not be the only male figure that impacts physical activity practices among African American girls. There is a small amount of literature suggesting brothers may play an important role in the physical activity participation among African American girls (Taylor et al., 1999). For instance, Taylor et al. (1999) found that girls with higher physical activity levels reported being active with their brothers. Unfortunately, siblings generally are not included when family structure is under investigation and no study to date has directly investigated the brother effect on physical activity among girls. The socio-cultural expectations that boys have to participate in sport and/or be physically active may be another area of family structure that needs more attention in physical activity promotion among girls, especially when a sister is involved.

Physical activity promotion among African American girls should be a primary focus as being inactive may lead to a lower quality of life. Physical inactivity or sedentary behaviors have been linked to chronic illness that may result in premature death (Blair & Brodney, 1999; American Heart Association, 2005). African American

girls are more at risk as they are less physically active, have more body fat and participate in more sedentary activities than their Caucasian peers (Kimm et al., 2002; Dowda et al., 2004). Potential health threats including stroke, diabetes, cancer, hypertension and heart disease resulting from sedentary lifestyles are more prevalent among African American females than among Caucasian females and females of other ethnic groups (Troost et al., 2002; Center for Disease Control, 2005). In addition, African American females are at greater risk for death from heart disease than any other group (American Heart Association, 2005). Studies confirm most of these illnesses are preventable and/or manageable through physical activity and diet (“Death rate for blacks,” 2004).

It is also important to note that physical activity declines with age. This is especially true in African American girls’ during high school. Kimm et al. (2002) investigated longitudinal changes in physical activity patterns among African American and Caucasian girls throughout adolescence (ages 8-18) and reported a 100% percent decline in physical activity for African American girls as compared to a 64% decline among Caucasian girls. Girls were asked to provide physical activity/leisure participation outside of physical education class seven out of ten years using the Habitual Activity Questionnaire (Kimm et al., 2002). Although both groups’ physical activity levels significantly decreased, by year eight of the study, the median physical activity level was zero for African American girls. This drop in physical activity was double in comparison to their Caucasian peers.

The increased drop in physical activity among African American girls and the complex family life of many African American families, illustrates two problematic areas

of concern for research on physical activity and African American girls. First, parental influence research on physical activity participation often includes large samples of Caucasian families (Brustad, 1996; Welk, Wood, & Morss, 2003) and tend to focus on elementary and middle school age youth (Adkins, Sherwood, Story, & Davis, 2004; Frenn et al., 2005; Welk et al., 2003). For instance, Brustad (1996) studied parental influence on physical activity attraction in children residing in urban areas and only two percent of the population were African American. Adolescent groups were absent from this study. Following the same trend, Welk et al. (2003) studied parental influence on physical activity and 68% of the participants were Caucasian with an average age under 10 years. This tells very little about African American families and physical activity promotion during later adolescence. Had these studies been more inclusive to African American families, they most likely would not have captured the diversity and varying family structures among African American families nor the role that fathers of African American girls play, even when they reside elsewhere.

The second area of concern is that the leading studies on interventions used to increase physical activity among adolescent girls, especially African American girls, tend to include mothers only (Ransdell, Dratt, Kennedy, O'Neill, & DeVoe, 2001; Ransdell, Detling, Taylor, Reel, & Shultz, 2004; Stolley & Fitzgibbon, 1997). This presumes that the same sex parent has the greatest influence and/or the availability of fathers is minimal. There is a large amount of evidence suggesting fathers play a significant role in other areas (e.g. social and cognitive) of child development (Bramlett & Blumberg, 2007;

Pleck, 2004), but limited evidence on the importance fathers may have on physical activity participation, especially among African American girls.

Physical activity has been shown to increase self-esteem (Erkut & Tracey, 2002; Daley & Leahy, 2003) and may be an avenue for these girls to alter self-defeating behaviors often exhibited. Therefore, physical activity programs targeting African American adolescent girls may need to take into account family structure, and find to what extent father involvement represents as an agent for significant change.

Statement of the Problem

The purpose of this study is to examine family structure, father involvement, and physical activity participation among African American adolescent girls ages 14-18. The following questions will guide this research.

Research Questions

1. Are there significant differences in physical activity participation among African American adolescent girls living in two-parent families versus those living in single-parent families?
2. Are there significant differences in physical activity participation among African American adolescent girls who have brothers and those who do not have brothers?
3. Are there significant differences in physical activity participation between girls who have fathers who demonstrate high levels of father involvement versus those who demonstrate low levels of father involvement?

4. Does overall, expressive, instrumental, mentoring, and physical activity father involvement, affect physical activity participation among African American adolescent girls? If so, to what extent?

Operational Definitions

For the purpose of this study, the definitions of terms are listed below.

Adolescents: Adolescents are defined as high school girls ages 13-18.

Brother: A male sibling, who is not the caretaker, that resides with the participant.

Family structure: The adult caretaker(s) residing with participant to include two-parent (married biological parents; stepparents) and single-parent families (mother, father, grandmother).

Father involvement: The perceived support provided by the father figure identified by the participants. Father involvement levels are assessed with the Finley and Schwartz's (2004) Father Involvement Scale (FIS). The FIS total and three subscale scores will be used in the study. The FIS has raw scores ranging from 20 to 100 with mean scores ranging from 1 to 5. High father involvement is established with a mean score of three or higher and low father involvement is established with a mean score below 3.

Subscales under the FIS include expressive father involvement, instrumental father involvement and mentoring/advising father involvement. Expressive father involvement are nurturing behaviors demonstrated by fathers. Nurturing behaviors include caregiving, companionship, sharing activities, emotional development, physical development, and leisure, fun and play. Instrumental father involvement are the traditional father role behaviors fathers demonstrate that include discipline, protecting,

providing income, monitoring schoolwork, moral development, developing responsibility, career development, and developing independence domains.

Mentoring/Advising father involvement are the direct teaching behaviors father demonstrate that include intellectual development, developing competence, mentoring/teaching and advising domains.

MET: Physical activity is assessed using Godin's Leisure-Time Exercise Questionnaire (GLTEQ). A MET is the metabolic equivalent of energy expenditure or multiples of the resting metabolic rate (McArdle, Katch, & Katch, 2007).

Significance of the Study

Few studies address the impact that family structure and father involvement have on physical activity participation among African American girls. The current study is significant as it provides an alternative strategy in determining the impact fathers and family structure have on African American adolescent girls' physical activity levels. The current physical inactivity crisis affecting African American adolescent girls illustrates the need for alternative investigations and strategies to gain an understanding and address fundamental factors influencing this phenomenon.

Compounding the problem, physical activity studies seldom investigate African American girls alone, and intervention strategies used to improve their health usually do not take into account other socio-cultural factors including cultural beliefs regarding body type, family structure, and father involvement, therefore having little effect. Many interventions have been ineffective because they concentrate solely on caloric intake, weight loss and physical activity (Resnicow, Taylor, Baskin & McCarty, 2005; Robinson

et al., 2003), which may not create behavior change among African American girls, as they tend to be more accepting of their bodies (Robinson et al., 2003; Young-Hyman, Herman, Scott, & Schlundt, 2000). The “one size fits all” approach is failing African American girls due to the lack of attention given to cultural beliefs and social conditions that may contribute to these girls’ sense of apathy toward physical activity. This study provides a springboard for further research on fathers and family structure and the impact on physical activity practices among African American adolescent girls.

CHAPTER II

LITERATURE REVIEW

The purpose of this literature review is to closely examine recent journal articles and relevant research on physical activity trends among African American girls, family structure, and father involvement. Attention will be given to the broad impact of family structure on adolescents, and then focus on physical activity specifically with emphasis on African American girls and their families. The same pattern will follow regarding fatherhood and father involvement with a brief discussion on measuring physical activity in youth, thus, the literature review is organized to focus on the following:

1. Brief overview of African American adolescent girls' physical activity trends and concerns.
2. Family structure and adolescent well-being.
3. Family structure and the impact on physical activity.
4. Father involvement defined and impact on adolescent well-being.
5. Father involvement and the impact on physical activity.
6. Measuring physical activity in youth.

Physical Activity among African American Girls

Physical activity is widely accepted as a mediating factor for improving and maintaining health. There are a host of benefits resulting from being physically active including reduced risk of diabetes, stroke, heart disease, some cancers (American Heart Association, 2005) as well as weight maintenance, relieving stress and improving mood

(Hansen, Stevens, & Coast, 2001; Janisse, Nedd, Escamilla, & Nies, 2004). African Americans are more susceptible to chronic ill health as a result of sedentary behaviors, especially females, which has created a social and economic burden on America.

African American girls are less physically active than girls in other ethnic groups (Bungum & Vincent, 1997; Dowda et al., 2004; Kimm et al., 2002; Trost et al., 2002) putting them at greater risk for obesity and obesity related illnesses (National Institute of Health, n. d.). For example, Dowda et al. (2004) examined physical activity behaviors among African American and Caucasian girls. They found that 51% of the Caucasian girls were active compared to 34% of African American girls. African American girls also had significantly higher body mass indices than their Caucasian peers. These problematic differences have consistently been identified in the literature (Bungum & Vincent, 1997; Ogden, Flegal, Carroll, & Johnson, 2000) but solutions remain minimal.

Acknowledging the physical inactivity problems facing African American girls, The President's Council on Physical Fitness and Sports brought awareness to the these issues. They summoned support for change by showcasing an article (Corbett & Calloway, 2006) dedicated to African American females and the health disparities affecting them. Numerous barriers for physical activity were presented but the "lack of social support by parents and family" (p. 7) was of particular interests. This appears to indicate that African American family structures may not be conducive to promoting physical activity.

Family Structure

The dramatic shift in family structure that has occurred over the past 30 years is evidence that times are changing in American society. The once traditional two-parent, married household has transitioned into a host of other family structures to include single-parenting, step-parenting, grand-parenting, and diverse cohabitating parenting families. These changes are especially true for African American families and may be negatively affecting the African American community. And, as social norms evolve, a substantial amount of literature has emerged to determine the impact on children.

The well-being of children has been of particular interest when investigating family structure and tends to compare two-parent and single-parent families (Fields, 2003; Manning & Lamb, 2003; McCreary & Dancy, 2004). Arguments made in favor of two-parent families over single parenting are insurmountable as sustained marriages among two-parent biological families appear to be most beneficial for adolescent well-being. For example, Carlson (2006) investigated family structure and behavioral outcomes and found adolescents living in married, two-parent biological families had lower behavioral problems (cheats, lies, argues often) versus those living in single-mother, step-father, and other family types. Also found were higher rates of adolescent delinquency (i.e., physically harming others, lying to parents, breaking curfew, stealing, skipping school, drunkenness) among divorced-single and non-marital birth families. Carlson's findings provide evidence that resident parents and marriage has a positive effect on the well-being of children.

This positive effect may be the result of couples being committed to the relationship, which may transcend into the commitment of raising children. This study does not take into account two-parent families who choose not to marry but are committed to the relationship and the well-being of children. This places other family forms in a deficit category, which may not be a good reflection of what is transpiring in African American families. As family structures change and become more diverse, methods used to capture these dynamics should be considered.

The importance of two-parent families is further supported by Manning and Lamb (2003), who compared adolescent problem behaviors and academic outcomes among various family structures focusing on single mother, married biological parent, married stepfather, and cohabitating stepfather households. They found married biological parents provide the most protection from school problems, suspension, and delinquency. In addition, cognitive scores, grade point averages, and college expectations were higher among married biological families than with other family structures. Families with married and cohabiting stepfathers were comparable to single mother families, which may indicate a biological effect among fathers and children. These findings could also be the result of the disruption in family structure and the impact on children, which could potentially contribute to differences found among family groups.

Children's health may also be affected by family structure, and children in two-parent families have an advantage. For example, Bramlett and Blumberg (2007) studied the impact family structure has on the health status of children by collecting data from the National Survey of Children's Health to compare the physical and mental health of

children living with two biological parents with other family structures. Results indicated children's health status is significantly lower in single mother families and grandparent families than those raised by both biological parents or solely by fathers. For instance, 87% of children living with two parents had excellent health compared to 77% of children living in single mother households. In addition, children in single-mother households were more likely to suffer from emotional and behavior problems (13.2%) than children living in two-parent households (5.7%). Children raised solely by fathers had comparable mental health and better physical health than those in two-parent families, in addition to having better physical and mental health than children reared by the mother alone. This finding further illustrates the benefits of having a father present, which may be due to the economic strength that men can bring. These findings remained significant even when demographic and socioeconomic status was controlled.

Financial benefits are also evident for two-parent families as compared to single-parent families, especially when headed by the mother. According to Fields (2003) only 15% of children living in two-parent households and 45% of children living in single father families have incomes less than \$30,000. This is compared to 65% of children living in single mother families. In addition, single mothers are more likely to depend on public assistance to meet basic needs, have inadequate health care, and have less time to engage with their children (Fields, 2003), which negatively impacts the well-being of African American families and society at large, as the limited resources often create government dependency.

The findings stated above pose additional challenges to African American families as they are more likely to be single-parent and have more complex family structures than other ethnic groups. For example, it is not uncommon for African American children to live with extended family members as well as non-family members who serve as the primary caregiver(s) (Center for Disease Control, 2005; King, Harris, & Heard, 2004; McCreary & Dancy, 2004; Roopnarine, 2004). This has been shown to be the least favorable family environment for adolescent well-being (Fields, 2003). McCreary and Dancy (2004) interviewed low-income single African American mothers and 70% of them acknowledge “fictive family” or non-related individuals who assist them with day to day needs. These non-related individuals are considered family as one woman states “. . . I like my kids to know everybody in they [their] family. Even if it’s not blood relatives . . .” (p. 695) and many feel more connected to these non-related members than with their own blood-related family.

Fifty-eight percent also indicated living with another family member in addition to their children. Interestingly, only 8% of participants considered their children’s father a family member, further illustrating the complexity of many African American families. It also underscores the disadvantage non-residential fathers have along with the challenge in identifying a father’s contributions to the general well-being and physical activity among African American adolescent girls. In addition, the mother is determining the father’s role rather than the children (Waller & Swisher, 2006), which has been a criticism among researchers in the field of father involvement (Finley & Schwartz, 2004; Lamb, 2004), as mothers can sometimes provide a distorted view of who and what fathers

are to children due to other underlying issues. Father involvement will be discussed further in the father involvement section.

Adding to the complexity of African American family life, most African American single mothers have never married whereas other single mother families in other ethnic groups are the result of divorce (CDC, 2005), which suggests a difference in familial expectations among some African American families. More attention should be directed toward the impact alternative structures and situations may have on children.

Family Structure and Physical Activity

Physical activity reduces the risk of being overweight but certain family structures put children at greater risk. For example, 18.9% of children living in single mother families are overweight, whereas 15.2% and 12.2% of children residing in two-parent step-families and two-parent biological families, respectively, are overweight (CDC, 2005); however, literature on family structure and physical activity participation among youth is minimal and inconsistent.

According to Sweeney, Glaser, and Tedeschi (2007), adolescents from single-parent families participate in sport and exercise more often than adolescents from two-parent families, which may be in part due to programming targeting single-parent families. Their findings, however, are consistent with Lindquist, Reynolds and Goran (1999) who found that adolescents in two-parent families were less active than their single-parent peers. Interestingly, within their study, these same students were less likely to participate in physical education classes suggesting that physical education curriculums may not be addressing the needs of all students. In addition, African

American girls were the least active group, which is consistent with other findings (Kimm et al., 2002).

Ornelas, Perreira, and Ayala (2007) used data from the National Longitudinal Study of Adolescent Health and found no difference in moderate to vigorous physical activity (MVPA) between one-parent, two-parent and step-parent families but did note that adolescents living in different family structures had lower MVPA than the structures more commonly noted. As stated earlier, African American youth are more likely to live in different family structures than other ethnic groups (CDC, 2005) putting them more at risk for sedentary behaviors.

Contrasting the previous findings, Hesketh et al. (2006) found that children residing in single-parent families are more likely to engage in low-intensity activities and less likely to participate in moderate to vigorous physical activity than children in two-parent families. In addition, girls living in single-parent families watched more television than their two-parent peers, often preventing them from being physically active. It should be noted that African American youth have consistently been shown to view more television than other ethnic groups (Felton, Dowda, Ward, Dishman, Trost, Saunders, & Pate, 2002; Gorely, Marshall, & Biddle, 2004) thus linking them to physical inactivity and obesity (Thompson et al., 2003).

Similar findings were reported by Tremblay and Willms (2003). They found a relationship between family structure and physical activity levels, as children from two-parent homes participated in more sport (organized and unorganized) than children from single-parent homes; however, this finding may be in part due to the lack of financial

resources among single-parent families to participate in extracurricular activities. Consequently, children living in single-parent homes were also more obese than their two-parent peers, which is consistent with the Center for Disease Control's findings. Again, this finding may be the result of having fewer resources to purchase quality foods. Given the limited review regarding family structure and physical activity, and the dramatic shift in family structure, father involvement becomes an area of concern.

Definition of Father Involvement

During the 1990s, a large amount of father involvement literature emerged as single parenting increased considerably. Numerous studies have been conducted but a clear, agreed upon definition has not been established. Early and current research tends to focus on the time spent with children rather than the quality of time (Ahmeduzzaman & Roopnarine, 1992; Carlson, 2006; Cooksey & Craig, 1998; Levant, Slattery, & Loiselle, 1987; Waller & Swisher, 2006), which is a poor indicator of father involvement, especially for fathers who do not reside with their children. Financial child support provided by the father has also been used to establish father involvement (Cooksey & Craig, 1998), again, putting fathers of low-socio-economic status at a disadvantage which limits and fails to capture other essential characteristics of father involvement.

Although father involvement has not been clearly defined, debates on the subject matter continue to occur in an effort to identify more meaningful measures of father involvement. There are, however, common attributes that consistently appear in the literature that begin to provide a glimpse of what father involvement is. Finley and Schwartz (2004), Harris (1998), and Menning (2006) characterize father involvement as

“how close” youth are to their fathers. However, Harris also includes affection received from the father, as well as supportive communication and interaction between father and child (p. 204). As part of the characterization and in agreement with Harris’ characteristics of father involvement, Finley and Schwartz (2004) add additional domains to include a father’s involvement in their child’s intellectual, emotional, and physical development. They also include level of companionship, and leisure activity involvement to name a few, however, most of the literature continues to use time or contact (Cooksey & Craig, 1998; King et al., 2004; Leite & McKenry, 2006; Lundberg, McLanahan, & Rose, 2007; Waller & Swisher, 2006) and/or financial contributions as measures of father involvement (Cooksey & Craig, 1998).

African American fathers are at a disadvantage because many do not live with their children (CDC, 2005; Percheski & Wildeman, 2008) and often suffer from economical disadvantages compared to fathers in other ethnic groups (Percheski & Wildeman, 2008; Waller & Swisher, 2006). However, there is evidence that father involvement is higher than expected in the African American community even though most father involvement measures do not capture these levels of involvement. For example, Lerman and Sorenson (2000) found that non-marital, mostly non-residential African American fathers have higher levels of father/father-figure involvement (contact and financial support) than assumed. Their findings indicated that almost 90% of these men remain involved in their children’s lives long term despite the large percentage of black fathers who do not live with their children (Center for Disease Control, 2006;

Clarke, Cooksey, & Verropoulou, 1998). These findings illustrate the contributions fathers can make even when living elsewhere.

Also negating the perception that father involvement is low among African American men, Fagan and Palkovitz (2007) found that non-residential African American men were more likely to provide caregiving to their children than their Caucasian counterparts suggesting that previous studies often operate out of a deficit model that again puts non-residential African American fathers at a disadvantage. Despite the obstacles of race and class that many African American men face, it is apparent that many do participate in and recognize the importance of being involved in their children's lives. However, when the framework does not focus on resilience, the negative outcomes that are often reported are inevitable, especially when the criteria excludes other factors of involvement.

As a result of the narrow constructs of father involvement and the disadvantages many African American fathers face, this study aimed to broaden the concept of father involvement and capture essential factors that may hold beneficial to these girls by using Finley and Schwartz's (2004) Father Involvement Scale (FIS) which takes into account five factors; (a) addresses residential and non-residential fathers; (b) captures child perception of father involvement; (c) assesses long-term retrospective accounts of father involvement; (d) addresses father involvement in varying domains; and (e) has the ability to determine if fathers are important in their children's lives.

These factors presented by Finley and Schwartz (2004) are essential to African American families given the complexity of the family structures present, and the large

percentage of African American girls who do not live with their fathers. In addition, these factors address the complexity of defining father involvement by including a wide range of father involvement behaviors. Recognizing the difficulty in defining father involvement, Finley and Schwartz's (2004) have included twenty domains on the FIS that encompass the many ways that fathers contribute or are involved in their children's lives. These domains include: (a) intellectual development, (b) emotional development, (c) social development, (d) ethical/moral development, (e) spiritual development, (f) physical development, (g) career development, (h) developing responsibility, (i) developing independence, (j) developing competence, (k) leisure, fun, play, (l) providing income, (m) sharing activities, (n) mentoring/teaching, (o) caregiving, (p) being protective, (q) advising, (r) discipline, (s) school/homework, and (t) companionship.

The FIS is unique in that it asks children to rate their father's level of involvement retrospectively in each respective domain. This retrospective scale has been used on older adolescents and young adults and allows the child to indicate how involved they believe their fathers to have been by asking the following question: "How involved was your father in the following aspects of your life and development"? Each domain is rated on scale of 1 - never involved; 2 - rarely involved; 3 - sometimes involved; 4 - often involved or 5 - always involved.

Using factor analysis for the FIS in previous research, Finley and Schwartz (2004) have identified three subscales for father involvement: (a) *expressive*, (b) *instrumental*, and (c) *mentoring/advising*. The *expressive* subscale includes the domains of caregiving, companionship, sharing activities, emotional development, physical development, and

leisure domains. The *instrumental* subscale includes the domains of discipline, protecting, providing income, monitoring schoolwork, moral development, developing responsibility, career development, and developing independence domains. The *mentoring/advising* subscale includes the domains of intellectual development, developing competence, mentoring/teaching and advising. The *mentoring/advising* subscales were patterned on both the *expressive* and *instrumental* subscales.

In reviewing the literature, there is a host of father involvement research that has been conducted on boys (Morman & Floyd, 2006). Unfortunately, there is a troubling gap in the literature pertaining to girls suggesting girls do not matter or are not affected when fathers are not involved. However, the limited research addressing girls is promising and suggests fathers are important for their growth and development. For example, adolescent girls raised with fathers are less likely to have sex and get pregnant than girls raised without fathers (Ellis, Bates, Dodge, Fergusson, Horwood, Pettit, & Woodward, 2003; Ellis, McFadyen-Ketchum, Dodge, Pettit, & Bates, 1999; Teachman, 2004), which may help to explain why African American girls have the highest teen pregnancy rate (CDC, 2005). In addition, girls are less likely to suffer from depression, and tend to have higher levels of self-esteem when their fathers are involved (Barras, 2000; Coley, 2003).

Given the fact that most African American girls will be raised without a resident father, and the gap in father involvement literature pertaining to girls, this study aims to identify father behaviors that may be instrumental in the growth and development of African American adolescent girls, specifically in promoting physical activity among them.

Father Involvement and Physical Activity

It should be noted that a mother's influence is important for their daughter's physical activity levels, but most of the research that includes fathers suggests fathers are more influential (Bungum & Vincent, 1997; Jaffee & Rex, 2000; Raudsepp & Viira, 2000; Taylor et al., 1999; Thompson et al., 2003). According to Jaffee and Rex (2000) support from both parents positively affects girls' physical activity participation, but their study found that father behaviors have greater influence than mothers. For example, 100% of girls with active fathers were physically active as compared to 86% of girls with active mothers. In addition, when fathers played with or coached their daughters, they were more likely to be physically active but when mothers were physically active or coached their daughters, there was no effect. Raudsepp and Viira (2000) also found that daughters' physical activity levels were significantly associated to fathers' physical activity but no effect with mothers. Earlier findings support Jafee and Rex (2000) as overall lifestyle and habits, including physical activity, are associated with the father's support and influence (North American Association for the Study of Obesity, 1993), which may be the untapped resource to physical activity promotion among African American girls.

Fathers of African American girls may have greater impact on their daughters' physical activity practices than fathers of Caucasian girls (Bungum & Vincent, 1997; Taylor et al., 1999) and could prove effective in creating behavior change among these girls. For example, Taylor et al. (1999) studied African American and Latina middle school girls regarding physical activity and found that African American girls ages 14-18

reported biological fathers positively influence their physical activity levels. Bungum and Vincent (1997) also found fathers are instrumental in physical activity promotion among African American girls. They found that nurturing received from biological fathers was a predictor of physical activity participation among African American girls. There was no father nurturing effect for Caucasian girls as it was not indicative of their physical activity practices. These findings illustrate the varying needs between girls from different cultures and identify a potential barrier for African Americans girls' physical activity potential—the absent father.

Another promising finding, Thompson et al. (2003) found that African American girls who were more physically active reported being active with their fathers or siblings suggesting African American girls may need additional social support to increase physical activity behaviors, especially from their fathers. Again, the literature is weak and no study to date has looked at father involvement and the impact on physical activity among African American girls specifically, yet these general trends are promising and identify a need for further inquiry.

Measuring Physical Activity in Youth

Measuring physical activity is often a challenging task, especially in youth. This challenge is even greater when using self-report measures. Despite these challenges, great strides have been made to ensure that measures used are reliable. Reliability of physical activity measures is important to accurately determine how active individuals are in order to develop appropriate physical activity interventions and prescriptions (Sirard & Pate,

2001). Although accuracy is important, strengths and weaknesses exist for all physical activity measures (Sirard & Pate, 2001).

Sirard and Pate (2001) conducted a review of physical activity measures specifically assessing physical activity among youth. Measures under review included both subjective and objective measures. Objective measures included heart rate monitors, pedometers and accelerometers while subjective measures included self-report and interviewer-administered questionnaires, proxy reports and diaries. The review addressed the strengths, limitations and reliability of each measure. The more commonly used measures will be discussed.

Pedometers

Pedometers are odometers for human beings. They are small, square or rectangular, electronic devices generally worn around the waist that count the number of steps an individual takes. Pedometers have been compared to other measuring protocols to determine their validity. For example, Eston, Rowlands, and Ingledew (1998) conducted a laboratory study on 30 children using electronic pedometers and other measures to determine the best predictors of oxygen uptake (VO_2). Each child wore three pedometers (Digiwalker DW-200) located on the hip, ankle and wrist, two accelerometers (WAM and Tritrac-R3D), and one heart rate monitor (BHL 6000). Children's VO_2 was measured on a treadmill at two speeds—walking and running. Children also participated in hopscotch, soccer and coloring to measure steps at predetermined times during each activity.

Each measure, except the wrist pedometer, had significant correlations ($p < .001$) with VO_2 and heart rate. However, the Tritec-R3D accelerometer was the overall best predictor of VO_2 . Pedometers worn on the hip were found most effective in comparison to the wrist and ankle. Eston et al. (1998) questioned the high correlation of the hip pedometer and conducted a second analysis only using treadmill data to remove a cluster of data points from the initial analysis. Correlations remained high with heart rate ($r = .78$) and with the heart rate monitor ($r = .69$) illustrating the accuracy and dependability pedometers can have.

Pedometers are an easy to use and inexpensive way to measure physical activity; however, they do not assess patterns of activity or intensity levels. Even with these limitations, Eston et al. (1998) acknowledges the potential in pedometers to accurately measure physical activity in larger studies.

Heart Rate Monitors

Although pedometers have been shown to effectively measure physical activity, heart rate monitors are one step above. Heart rate monitors generally consist of a watch-like monitor with an electrode strap or nodes that transmit heart beats to the watch-like monitor for storage. Heart rate monitors are used to measure the rate at which the heart beats per minute which can estimate physical activity or energy expenditure (Sirard & Pate, 2001). The benefits of heart rate monitors are that they can measure patterns of activity and intensity levels. Unfortunately, not all intensity levels are recognized using heart rate monitors.

Moderate to vigorous activity are easily assessed with heart rate monitors; however; they have difficulty measuring low intensity activities, making it problematic in assessing physical activity among sedentary and individuals who have low levels of activity. Further, other factors can increase or impede heart rate including stress, medications and substances like caffeine, therefore making it difficult to get an accurate analysis (Sirard & Pate, 2001). Although this measure has been shown to estimate physical activity, it is recommended to only be used as a classification measure for groups and not for estimating physical activity (Sirard & Pate, 2001). In other words, it should only be used to compare groups rather than used as a general measure of how active individuals are.

Accelerometers

The accelerometer is similar to a heart rate monitor except it measures bodily movement rather than heart rate. They are considered more hi-tech than heart rate monitors because they “use piezoelectric transducers and microprocessors that convert recorded accelerations to a quantifiable digital signal referred to as ‘counts’” (Sirard & Pate, 2001, p. 445) As with heart rate monitors, accelerometers measure intensity and the amount of physical activity done, but are unable to distinguish the type of activity. Unlike heart rate monitors, they are not as effective in converting counts to units of energy expenditure which increases error in physical activity reporting (Sirard & Pate, 2001).

Sallis, Buono, Roby, Carlson, and Nelson (1990) conducted a field study using both accelerometers (the Caltrac) and heart rate monitors (UNIQ Heart Watch) on children ages eight to 13. Thirty-five children wore both instruments for two days from

morning to evening but not overnight, including weekday and weekend hours. Measures were compared with each other along with a self-report physical activity measure (7-day Physical Activity Recall (PAR)). They found significant correlations between the two measures ($r=.54$ – day one $r=.42$ on day two) and significant correlations between the accelerometer and the PAR on both days ($r=.49$ – day one and $r=.39$ on day two). Significant correlations were only found on day two between the PAR and heart rate monitors ($r=.52$). Interestingly, girls had the highest correlations on the PAR and heart rate monitors suggesting girls may be better able to recall physical activity done days prior.

Self-Report Questionnaires

Sirard and Pate (2001) also reviewed physical activity surveys that had been measured against more reliable measures (e.g. test-retest, heart rate monitoring), to ensure validity. Sixteen self-report and seven interviewer-administered self-report instruments were under review including the 7-day Physical Activity Recall (PAR) (Wallace & McKenzie, 1985), and the Godin-Shepard Physical Activity Survey (PAS) (also known as Godin's Leisure-Time Exercise Questionnaire (GLTEQ) (Godin & Shepard, 1985), with the later being used in the current study. The 7-Day PAR is a self-report measure and the GLTEQ is an interviewer-administered self-report measure. The GLTEQ was correlated with high reliability with the PAR, and had a high correlation ($r = .81$) when compared with heart rate readings (Sallis et al., 1993). In addition, both measures were reliable and valid among 10 and 11 year olds, with both improving with age.

Sirard and Pate (2001) and Sallis et al. (1990) agree that there are benefits in using self-report among adolescents. Benefits include easy use, low cost, painless, quick to administer, and can be used for large groups. Limitations reported for both measures include activity remembrance done on days prior (primarily younger children), pressure among youth to over report when an interviewer is assisting, and/or failure to complete. Despite these limitations, self-report among adolescents has been favorable, and the physical activity measure (GLTEQ) used for the current study, has been shown reliable and valid for establishing leisure-time physical activity levels among the target population.

The GLTEQ has been shown reliable for measuring physical activity among adolescents and has been tested using test-retest correlation coefficients producing a significant correlation of $r = .81$ (Sallis et al., 1993). Sallis et al. (1993) administered the GLTEQ to children in 5th, 8th, and 11th grades and re-administered the GLTEQ to the same groups two weeks later with 16-hour heart rate comparisons. High reliabilities were found for all three groups and significant ($p < .001$). Their high reliability was consistent with an unpublished dissertation yielding a reliability coefficient of .84 (Sallis et al., 1993). In addition to the reliability findings of the GLTEQ, the design of the study only requires an estimate of participants' physical activity levels, therefore the GLTEQ is sufficient.

CHAPTER III

METHODOLOGY

The purpose of this study is to determine if father involvement and family structure, impact physical activity participation among African American adolescent girls ages 14-18. In this chapter, methods used to address research questions including participants, measures and procedures are described. Research questions examined are listed below.

1. Are there significant differences in physical activity participation among African American adolescent girls living in two-parent families versus those living in single-parent families?
2. Are there significant differences in physical activity participation among African American adolescent girls who have brothers and those who do not have brothers?
3. Are there significant differences in physical activity participation between girls who have fathers who demonstrate high levels of father involvement versus those who demonstrate low levels of father involvement?
4. Does overall, expressive, instrumental and mentoring father involvement, affect physical activity participation among African American adolescent girls? If so, to what extent?

Participants

The study sample was comprised of 40 African-American or Black adolescent girls ages 13-18 from an urban magnet high school in Urban, North Carolina. The magnet high school focuses on leadership and technology and is located in a predominately African American community in the city. Its magnet status attracts a student body of 1866 from around the county. Roughly 66% percent of the students are African American, 26.5% Caucasian, 3.4% Hispanic, 2.3% Asian, 1.9% Multi-Racial and .02% American Indian. Twenty girls were being raised in single-parent mother homes as compared to 15 in two-parent, three in stepfather families, one in a single-father household, and one with the grandmother.

Family structures were reported into two groups for better analyses: (a) those from a single-parent family, and (b) those from a two-parent family. Therefore, two-parent families included couples consisting of married and unmarried biological parents, married adoptive parents, and married step parents living in the same household. Single-parent families are referred to as having only one adult-caretaker (single mother, single father, grandmother) living in the household with the participant.

Instruments

Demographic Questionnaire

Participants completed a demographic survey (see Appendix A) developed specifically for the study that assessed age, grade, race/ethnicity, father/father-figure, and family structure (two-parent, single parent mother, single-parent father, grandparents, stepparent, other) including parents' marital status. The participant's age at the time of

divorce or separation, or the incarceration, deployment, and/or death of parent was assessed when applicable.

Finley and Schwartz Father Involvement Scale

As previously discussed, father involvement was measured using Finley and Schwartz's (2004) Father Involvement Scale (FIS) (see Appendix B). The benefit of using this scale is that it allows adolescent participants to determine father involvement according to their perspective rather than parental report.

The FIS consists of one question 'How involved was your father (father-figure) in the following aspects of your life and development?' as it pertains to twenty domains. These domains include: (a) intellectual development, (b) emotional development, (c) social development, (d) ethical/moral development, (e) spiritual development, (f) physical development, (g) career development, (h) developing, responsibility, (i) developing independence, (j) developing competence, (k) leisure, fun, play, (l) providing income, (m) sharing activities, (n) mentoring/teaching, (o) caregiving, (p) being protective, (q) advising, (r) discipline, (s) school/homework, and (t) companionship. A physical activities domain was added to specifically address this area of involvement as it relates to the dependent variable of physical activity participation, but was analyzed independent of the father involvement scale items. The response set for each domain was based on the following ratings: 1 (never involved), 2 (rarely involved), 3 (sometimes involved), 4 (often involved), and 5 (always involved). High father involvement is established with a mean score of three or higher and low father involvement is established with a mean score of one or two, as identified in the literature (Finley & Schwartz, 2004).

To achieve efficiency in modeling (given the sample size limitations of this study), the decision was to replicate dimension level results using findings from Finley and Schwartz (2004, 2006). Finley and Schwartz (2004, 2006) have identified three involvement dimensions (subscales) derived from the FIS. Dimensions were created using factor analysis. The first dimension is *expressive involvement*. This dimension includes the caregiving, companionship, sharing activities, emotional development, physical development, and leisure domains. The second dimension is *instrumental involvement*. This dimension includes the discipline, protecting, providing income, monitoring schoolwork, moral development, developing responsibility, career development, and developing independence domains. The third dimension is *mentoring involvement*. This dimension includes intellectual development, developing competence, mentoring/teaching, advising.

Finley and Schwartz (2004) tested the FIS for internal consistency in their study assessing father involvement among college freshmen by using Cronbach's alpha producing high scores for total father involvement (.97), expressive involvement (.93), instrumental involvement (.91) and mentoring involvement (.90). The current study also conducted an internal consistency reliability analysis using Cronbach's alpha yielding high scores as Finley and Schwartz (2004) for total involvement (.97), expressive involvement (.93), instrumental involvement (.93), and mentoring involvement (.91). Appendix C provides a summary of the reliability analyses (via Cronbach's Alpha) for the total scale and each sub scale (Expressive, Instrumental, and Mentoring) are provided.

Again, the alpha scores are reasonably large to suggest internal consistency for each dimension construct.

For the current study, three questions were added at the bottom of the FIS that specifically ask participants if their father had influenced their physical activity practices and to determine what types of behaviors fathers' exhibit. The three questions added are:

- 1) *Has your father influenced your physical activity practices? Y___ N___,*
- 2) *If yes, please explain how (please list as many ways as you can), and*
- 3) *In the last week, list how your father has been involved in your physical activities (please give specific examples).*

Godin's Leisure-Time Exercise Questionnaire

Physical activity levels were measured through self-report using Godin's Leisure-Time Exercise Questionnaire (GLTEQ) (Godin & Shephard, 1985) (see Appendix D). The GLTEQ has been shown reliable for measuring physical activity among adolescents and has been tested using test-retest correlation coefficients producing a significant correlation of $r = .81$ (Sallis et al., 1993). Sallis et al. (1993) administered the GLTEQ to children in 5th, 8th, and 11th grades and re-administered the GLTEQ to the same groups two weeks later with 16-hour heart rate comparisons. High reliabilities were found for all three groups and significant ($p < .001$.) Their high reliability was consistent with an unpublished dissertation yielding a reliability coefficient of .84 (Sallis et al., 1993).

The GLTEQ assesses physical activity habits over a seven day period and asks individuals to report the days per week they participate in strenuous, moderate, and mild physical activity in bouts of 15 minutes or longer. Examples of activities are presented

under each category. For the current study, a few activities were omitted (e.g. squash, fishing from a river bank) to eliminate activities participants were unfamiliar with or unlikely to participate in and added (e.g. kickboxing, yoga, Pilates) to include activities more familiar to participants.

Each intensity category is assigned a metabolic equivalent value (MET) and multiplied by the times per week participant participates in each category. This provides a quick glance of physical activity levels. For instance, strenuous activity is given a MET value of nine; moderate activity is given a MET value of five; and mild activity is given a MET value of three. Each of these values is multiplied by the number of days of reported participation in each category. Then the values are summed. The sum of these scores provides the girls total physical activity score during a typical seven day week. For determining a PAQ score for one person, an example is listed below.

Strenuous = 9 METS at 3 times/week

Moderate = 5 METS at 5 times/week

Mild = 3 METS at 7 times/week

Total leisure activity score = $(9 \times 3) + (5 \times 5) + (3 \times 7) = 27 + 25 + 21 = 73$

An additional question is asked to determine the frequency of physical activity during a typical week and to cross check with the total physical activity score reported. The frequency question with responses are as follows: “During a typical 7-Day period (a week), in your leisure time, how often do you engage in any regular activity long enough to work up a sweat (heart beats rapidly)?”: often, sometimes and never/rarely.

Procedures

Prior to this study, the University of North Carolina at Greensboro's Institutional Review Board granted approval to the protocol of this study. In addition, the Wake County Public School System approved recruitment in their high schools (see Appendix E). Students were recruited through information flyers posted throughout various Wake County public schools, however, Urban Magnet High School allowed the researcher to recruit and collect data on site. Students and/or parents of students interested in participating contacted the researcher in person, via phone and/or through email to obtain additional information regarding the study. After initial communication, girls and/or parents who wanted to participate were given assent/consent packets with study details (see Appendices F and G, respectively). After receiving packets, girls and/or their parents called or emailed the researcher and were given a date, location and time to return assents/consents and complete questionnaires. Questionnaires were number coded for participant anonymity and were administered by and remained with the researcher to ensure confidentiality. Questionnaires took 15-20 minutes for girls to complete. Participants were given a \$5 gift card to Subway and free passes to Seaboard fitness center for their participation.

The girls completed questionnaires at local public libraries in Wake County most convenient for them and were called the evening prior to remind and confirm appointment time, date, and location to complete questionnaires. There was also another group of girls who returned consents/assents in person, completed questionnaires during

their lunch period and/or scheduled an appointment for a later date to complete at one of the public libraries.

Analysis of Data

The first research question was: “*Are there significant differences in physical activity participation among African American adolescent girls living in two-parent families versus those living in single-parent families?*” To test for statistically significant group differences, a one-way analysis of variance (ANOVA) was employed to examine the effects of family structure on physical activity levels. The alpha level was set at .05.

The second research question was: “*Are there significant differences in physical activity participation among African American adolescent girls who have brothers and those who do not have brothers?*” To test for statistically significant group differences, a one-way analysis of variance (ANOVA) was employed to examine the effects of brothers on physical activity levels. The alpha level was set at .05.

To answer the third research question: “*Are there significant differences in physical activity participation between girls who have fathers who demonstrate high levels of father involvement versus those who demonstrate low levels of father involvement?*” To test for statistically significant group differences, a one-way analysis of variance (ANOVA) was employed to examine the effects of hi/low father involvement on physical activity levels. The alpha level was set at .05.

The fourth research question was: “*Does overall, expressive, instrumental, mentoring, and physical activity father involvement, affect physical activity participation among African American adolescent girls? If so, to what extent?*” Multiple regression

analysis was used to determine if overall, expressive, instrumental, mentoring, and physical activity father involvement predicted physical activity among African American adolescent girls and the extent of that prediction. Given the sample size limitations in this study, the decision was to produce dimension level results from Finley and Schwartz (2004). As such, three dimensions (*expressive, instrumental and mentoring*) were created by aggregating results across subscale items. The alpha level was set at .05.

This chapter explained methodology used in this study to determine if there is a relationship between family structure, father involvement and physical activity among African American adolescent girls. Chapter IV presents the results acquired using those methods.

CHAPTER IV

RESULTS

The purpose of this study was to examine family structure, father involvement, and physical activity participation among African American adolescent girls. This chapter presents descriptive analyses of demographic and variable data and the results of the analyses described in the methods section. In this chapter, findings are reported according to research questions. Research questions guiding this study were as follows:

1. Are there significant differences in physical activity participation among African American adolescent girls living in two-parent families versus those living in single-parent families?
2. Are there significant differences in physical activity participation among African American adolescent girls who have brothers and those who do not have brothers?
3. Are there significant differences in physical activity participation between girls who have fathers who demonstrate high levels of father involvement versus those who demonstrate low levels of father involvement?
4. Does overall, expressive, instrumental and mentoring father involvement, affect physical activity participation among African American adolescent girls? If so, to what extent?

Predictor and Dependent Variables

The predictor variables in this study include family structure, measured by the demographic questionnaire designed specifically for the study, and father involvement, measured by the Father Involvement Scale (FIS) developed by Finley and Schwartz (2004). Father involvement, three sub-categories of father involvement (*expressive, instrumental and mentoring/advising*) and physical activity father involvement are also predictor variables on the dependent variable of physical activity. Physical activity scores were measured using Godin's Leisure-Time Exercise Questionnaire (GLTEQ) (Godin & Shephard, 1985).

The Statistical Package for the Social Sciences 15.0 (2006) was used to conduct all data analyses. One-way ANOVAS were employed to compare group differences. Multiple regression was used to determine what categories of father involvement were the best predictors of physical activity. Alpha levels of .05 were set for all analyses.

Descriptive Statistics

A total of 40 African American adolescent girls ages 13-18 completed the surveys. Family structure and father-figure data were collected on the demographic survey. Consistent with the Center for Disease Control (2006) family structure statistics, there were more single mother families than two-parent families. Twenty girls were being raised in single mother homes as compared to 15 in two-parent, three in stepfather families, one in a single father household, and one with the grandmother. As result of the small sample size, all two-parent family forms (biological mother and father, and mother

and stepfather) were combined, irrespective of marriage, and single parent families were combined, irrespective of gender (see Table 1).

Table 1

Frequency Table for Family Structure

Single Parent	N	Two Parent	N
Mother	20	Mother and Biological Father	15
Father	1	Mother and Stepfather	3
Grandmother	1		
Total	22		18

Twenty-six girls identified their biological fathers as their father/father-figure. Four girls identified a step-father, four an uncle, and three a grandfather. One girl indicated brothers her church filled the role of father-figure, one chose a godfather, and one was unable to identify a father/father-figure. Table 2 provides a summary of father/father-figure responses.

Table 2

Frequency Table for Father/Father-Figure

Father Type	N
Biological Father	25
Step-father	4
Uncle	4
Grandfather	3
Brothers (in the church)	1
Godfather	1
Unknown	1

Physical activity scores reported on the GLETQ ranged from zero to 91 with a mean score of 44. However, a univariate outlier assessment was performed using descriptive statistics and three outlier data points were detected in the total physical activity results. One respondent indicated that she rarely exercises, reported a physical activity score of 83. The highest score reported for the “rarely” group was 40 – a 43 point difference. Another respondent who indicated she exercises “sometimes” reported a physical activity score of 88. The highest score reported from the “sometimes” group was 74, which is a 14 point difference. In addition, the highest score from the “highest” group was 91 followed by 83. The score of 91 is the final outlier. The problem with this score is it is the highest score and this respondent is from the low father involvement group. The range in scores from the low father involvement group is 8-74. This person’s score is 17 points higher. Linear trends were noted without outliers. These respondents’ physical activity scores were removed changing the range from zero to 83 with a mean score of 22.23. Predicted values were assigned to the outliers using Amelia II: A Program for Missing Data software (Honaker, King, & Blackwell, 2006). A review of all other variables indicated no large deviations. Table 3 provides a summary of mean physical activity scores and standard deviations with and without outliers.

Table 3

Mean Physical Activity Scores

	N	Min	Max	M	SD
Original Physical Activity Score	40	0	91	44.03	24.76
Physical Activity Score (Outliers Excluded)	37	0	83	40.51	22.23
Physical Activity Score (Mean Imputation)	40	0	83	39.87	21.56

Physical Activity Participation and Family Structure

A one-way ANOVA was computed to detect significant group differences between girls from single-parent and two-parent families on physical activity participation. The mean scores and standard deviations for family structure groups in physical activity scores are shown in Table 4.

Table 4

Physical Activity Mean Scores and Standard Deviations for Family Structure Groups

Physical Activity Score	N	Mean	Std. Deviation
Single-parent	22	36.91	18.63
Two-parent	18	43.49	24.74

Although girls residing in two-parent families had higher physical activity scores than those residing in single-parent families, significant differences were not evident. The F ratio derived from the analysis of variance among the means is quite small and was found to be non-significant $F(1,38)=.92$; $p=.34$. Appendix H provides a summary of the analysis on family structure differences in physical activity.

Physical Activity Participation and Having or Not Having Brothers

A one-way ANOVA was computed to detect significant group differences between girls with brothers and girls without brothers on physical activity participation. The mean scores and standard deviations for brother groups in physical activity scores are shown in Table 5.

Table 5***Physical Activity Mean Scores and Standard Deviations for Brother Groups***

Physical Activity Score	N	Mean	SD
Brother	28	39.68	22.48
No Brother	12	40.32	20.18

The F ratio derived from the analysis of variance was found to be non-significant, $F(1,38) = .01$, $p=.93$. Appendix H provides a summary of brother group differences in physical activity.

Physical Activity Participation and High and Low Levels of Father Involvement

A one-way ANOVA was also computed to detect significant group differences between girls with highly involved fathers compared to those with low levels of involvement. The mean scores and standard deviations for father level of involvement groups in physical activity scores are shown in Table 6.

Table 6***Physical Activity Mean Scores and Standard Deviations for Overall Father Involvement Groups***

Physical Activity Score	N	Mean	SD
Low Father Involvement Group	19	37.86	19.08
High Father Involvement Group	21	41.69	23.91

Although girls with highly involved fathers had higher physical activity scores than those with fathers demonstrating low levels of father involvement, significant differences are not evident. Among these groups, the F ratio is small and found non-

significant, $F(1,38)=.31$, $p=.58$. Appendix H provides a summary of overall father involvement group differences in physical activity.

A one-way ANOVA was also used to compute group differences between using the added physical activities father involvement response and physical activity scores. It is apparent that across physical activity involvement responses (never to always) added to the FIS, the physical activity scores tend increase with a modest dip in “often involved.” However, these differences were non-significant, $F(1,38)=.2.01$, $p=.11$). The mean scores and standard deviations for physical activity father involvement groups in physical activity scores are shown in Table 7.

Table 7

Physical Activity Mean Scores and Standard Deviations for Physical Activity Father Involvement Groups

Physical.Activities	N	Mean	SD
1.00 Never involved	8	25.29	16.73
2.00 Rarely involved	5	38.80	13.59
3.00 Sometimes involved	5	43.20	25.29
4.00 Often involved	7	34.22	23.19
5.00 Always involved	15	49.53	21.15
Total	40	39.87	21.56

After creating the low (never and rarely involved) and high (sometimes, often and always) groups, girls with high levels of father involvement have higher physical activity scores but these differences are non-significant ($F=(1,38) =3.92$, $p<.05$). Low involvement is determined by scores of one or two and high involvement is determined

by scores of three, four or five. The mean scores and standard deviations for physical activity father involvement groups in physical activity scores are shown in Table 8.

Appendix H provides a summary of physical activity father involvement group differences in physical activity.

Table 8

Physical Activity Mean Scores and Standard Deviations for Physical Activity Father Involvement Groups

	N	Mean	SD
Low PA Involvement Group	13	30.49	16.48
High PA Involvement Group	27	44.39	22.51

To gather additional physical activity father involvement information that could not be captured on questionnaires, three questions were added to the Father Involvement Scale (FIS). These questions specifically ask participants if and how their fathers had influenced their physical activity practices. The three questions added were:

- 1) *Has your father influenced your physical activity practices? Y___ N___,*
- 2) *If yes, please explain how (please list as many ways as you can), and*
- 3) *In the last week, list how your father has been involved in your physical activities (please give specific examples).*

Twenty girls answered yes and twenty answered no for question one. Girls' responses were coded into three major categories. Interestingly, girls who reported that their fathers had been involved in their physical activity participation listed specific behaviors in which their fathers had been involved. Behaviors reported are listed below:

“. . . he helped me practice and gave me tips on what to do better.”

“He tells me when I need to work harder. He supports me. He encourages me to practice a lot.”

“Takes me to the park to play basketball, basketball practices, walking”

“He played basketball with me and my brother outside”

“When I’m playing sports outside, he’ll come see me play”

“My stepfather was the one taking me to soccer games, basketball games and practices. He pushed me to be aggressive and encouraged me”

“My uncle played basketball”

“I exercise/workout with my father on a daily basis”

Raw responses were categorized by the most commonly given. Categories included active participation or engagement from the father (e.g., play with or coach daughters), support and encouragement, and logistical support (e.g., transportation to sporting games). As a result, a table of responses of girls who indicated their fathers had influenced their physical activity practices was created (see Table 9). For complete raw responses, see Appendix I.

Expressive, Instrumental, Mentoring, and Physical Activity Father Involvement

Table 10 presents descriptive statistics including range, means and standard deviations for father involvement variables and physical activity scores. A correlation matrix (see Table 11) is produced to review Pearson correlation coefficients across variables used in the regression model, including correlations with the physical activity score. The purpose of this correlation matrix was to determine if multicollinearity was present among the predictor variables. The coefficient values ranged from .20 to 0.37.

The magnitude of each coefficient was observed and subscales (*expressive, instrumental and mentoring*) and physical activity father involvement variables are positively correlated with the dependent variable.

Table 9

Categories and Frequencies of Responses to Open-Ended Questions

Father's Influence on Physical Activity Practices	N
Active Participation or Engagement	13
Support and Encouragement	9
Father's Influence on Physical Activity Practices in the Last Week	N
Active Participation or Engagement	6
Support and Encouragement	7
Logistical Support	4

Table 10

Descriptive Statistics for Expressive, Mentoring, Instrumental, Physical Activity Domain, and Physical Activity Score

	N	Min	Max	M	SD
Instrumental Dimension	40	1	5	3.9	1.1
Mentoring Dimension	40	1	5	3.8	1.2
Expressive Dimension	40	1	5	3.6	1.2
Physical Activity Domain	40	1	5	3.4	1.6
Physical Activity Score	40	0	83	39.9	21.6

Table 11***Multiple Regression Correlation Matrix***

Physical Activity Score	Instrumental	Mentoring	Expressive	Physical Activity Domain
Pearson Correlation	0.20	0.25	0.34	0.37
Sig. (2-tailed)	0.22	0.12	0.03*	0.02*
N	40	40	40	40

*p<.05

The largest relationship to physical activity is physical activity father involvement reported by participants. The correlation coefficient is significant at the 95% level ($r=.37$, $p=.02$). The next largest coefficients and significant relationship is seen with expressive father involvement ($r=.28$, $p=.02$). Thereafter, mentoring father involvement has the next largest coefficient but it is not significant ($r=.25$, $p=.12$). Finally, the smallest, non-significant relationship is seen with instrumental father involvement ($r=.20$, $p=.22$).

Multiple regression analysis is performed using predictors (expressive involvement, instrumental involvement, mentoring/advising involvement and physical activity involvement), to determine which were to have the largest initial relationship to the dependent variable. The total amount of variance (R squared) accounted for in the physical activity score using the current combination of predictors was 22%. The adjusted R square, which indicates the amount of variance expected to be accounted for in the population is 13%.

None of the four predictors had a significant regression coefficient; However, the expressive father involvement dimension was the best predictor and almost significant ($t=1.70$; $p=.10$). Expressive father involvement accounted for 6% of the variance in physical activity score where instrumental, physical activity and mentoring father involvement accounted for five percent, 3 percent and zero percent, respectively, of the dependent score variance. This suggests given the total variance accounted for is equal to 22%, 6% of the dependent variable score is accounted for by the combination of all variables in the model. Table 12 provides a summary of the regression model with unstandardized and standardized coefficients.

Table 12

Summary of Multiple Regression for Father Involvement Variables Predicting Physical Activity

Variable	B	SE B	β
Instrumental Dimension	-32.75	0.42	-0.65
Mentoring Dimension	-4.35	0.42	0.09
Expressive Dimension	40.17	0.48	0.81
Physical Activity Father Involvement	3.56	0.23	0.26

$R^2 = .22$; Adjusted $R^2 = .13$

Overall and Physical Activity Father Involvement

Table 13 presents descriptive statistics including range, means, and standard deviations for father involvement variables and physical activity scores.

Table 13

Descriptive Statistics for Father Involvement Variables and Physical Activity Scores

	N	Min	Max	M	SD
Overall Father Involvement	40	20	100	75.23	22.27
Physical Activity Father Involvement	40	1	5	3.4	1.6
Physical Activity Score	40	0	83	39.9	21.6

A correlation matrix (see Table 14) is produced to review Pearson correlation coefficients across variables used in the regression model, including correlations with the physical activity score.

Table 14

Correlation Matrix for Overall and Physical Activity Father Involvement

Physical Activity Score	Overall Father Involvement	Physical Activity Father Involvement
Pearson Correlation	0.27	0.37
Sig. (2-tailed)	0.08	0.02*
N	40	40

*p<.05

The purpose of this correlation matrix was to determine if multicollinearity was present among the predictor variables and to determine the best relationship to physical activity scores. The coefficient values were 0.28 for overall father involvement and 0.37 for physical activity father involvement. The magnitude of each coefficient was observed overall and physical activity father involvement variables are positively correlated with the dependent variable.

A second multiple regression analysis was performed using predictors overall father involvement and physical activity father involvement, to determine which was to have the largest initial relationship to the dependent variable. The total amount of variance (R squared) accounted for in the physical activity score using the current combination of predictors was 14%. The adjusted R square, which indicates the amount of variance expected to be accounted for in the population is 9%.

Both predictors had non-significant regression coefficients. Physical activity father involvement was the best predictor of physical activity and accounted for 6% of the variance in the physical activity score where overall father involvement accounted for zero percent. This suggests given the total variance accounted for is equal to 14%, 6% of the dependent variable score is accounted for by the combination of all variables in the model. Table 15 provides a summary of the regression model with unstandardized and standardized coefficients.

The results presented in this chapter suggest fathers may contribute to their daughters' physical activity practices when certain types of father involvement behaviors occur. Chapter V presents a more in-depth summary and discussion of the results.

Table 15*Summary of Multiple Regression for Variables Predicting Physical Activity (N=40)*

Variable	B	SE B	β
Overall Father Involvement	-0.05	.26	-0.05
Physical Activity Father Involvement	5.53	.26	0.41

 $R^2=.14$; Adjusted $R^2=.09$

CHAPTER V

DISCUSSION

This chapter provides a summary of the research problem and findings with discussion. Study limitations are also discussed. Recommendations for practitioners are given and implications for future research on physical activity participation among African American adolescent girls are provided.

The physical inactivity crisis among African American adolescent girls and the prevalence of African American girls being raised without fathers are the points of interests guiding this study. Research has shown that father involvement and family structure influence adolescent well-being outcomes; however, research on the impact on physical activity is minimal. The purpose of this study was to examine family structure, father involvement, and physical activity participation among African American adolescent girls ages 14-18. Forty African American girls participated in the study by completing questionnaires to assess family structure, father involvement and physical activity participation.

The current study employed both analysis of variance and multiple regression statistical techniques to answer research questions. Analysis of variance was used to determine if significant differences exist between and within family structure and father involvement groups on physical activity levels among participants. Multiple regression was used to determine which predictor variable(s) (overall, instrumental, expressive,

mentoring/advising and physical activity father involvement) best predicts physical activity (dependent variable) among participants. The following section presents the findings from the analysis.

Physical Activity Participation and Family Structure

Differences in physical activity participation between family structures have not been clearly established and are inconclusive. For example, this study's finding is consistent with Tremblay and Willms (2003) who found that children from two-parent homes participated in more organized and unorganized sport than children from single parent families. Hesketh et al. (2006) had similar findings. They found children residing in single-parent families were less likely to participate in moderate to vigorous physical activity and more likely to engage in low-intensity activity than their two-parent peers.

However, in contrast to the current study's finding, Sweeney et al. (2007) found adolescents from single-parent families participate in sport and exercise more often than adolescents from two-parent families. Lindquist et al. (1999) had similar results. They found that adolescents in two-parent families were less active than their single-parent peers; However, within their study, students residing in single-parent families were less likely to participate in physical education classes suggesting that physical activity emphasis may be placed on extra-curricular sport and exercise occurring out of school.

Interestingly, Ornelas, et al.'s (2003) findings conflict with previously mentioned studies. Their study found no differences in moderate to vigorous physical activity between one-parent, two-parent and step-parent families in their large study using data from the National Longitudinal Study of Adolescent Health.

Although the current study yielded non-significant differences between family structure groups, trends supporting a difference were shown. Girls' residing in two-parent families had higher physical activity scores by almost seven mean points higher than girls residing in single parent families. This suggest, had the study sample been larger, significant differences may have been noted.

The inconsistency in the findings illustrates the need for further investigation regarding family structure and physical activity, especially as family structures continue to evolve. Doing so may bring better understanding of if and how family structure impacts physical activity practices among children. And although the current study's findings were not significant, the difference in group mean scores is promising and indicates that there may be some benefit from having two-parents and physical activity levels among African American adolescent girls. An additional advocate in the home may be a key factor in physical activity promotion but more is needed to determine if a relationship exist.

Physical Activity Participation and Having or Not Having Brothers

Few studies investigating family structure and physical activity have addressed a sibling component. The attention tends to be directed towards the parents or caretakers of children instead of a family member that may be more able to relate, thus having more influence, especially during adolescence. Due to the lack of attention on a sibling effect, the current study chose to investigate the relationship between physical activity participation and having a brother or not. Differences between groups were non-significant and not even close.

This finding is inconsistent with Raudsepp and Viira (2000) who examined sibling influence on physical activity and found brothers' moderate physical activity participation is significantly related ($r=.17$, $p<.01$) to their sisters' moderate physical activity participation. That study was much larger ($N=375$) than the current one, and those participants in this study resided in Tartu, Estonia. Similar findings were found among Iceland adolescents. Vilhjalmsson and Thorlindsson (1998) examined factors related to physical activity among adolescents and found having an older brother was associated with higher physical activity levels. In addition, an older brother's physical activities were related to more physical activity involvement among siblings, regardless of gender. There was no association among older sisters suggesting that male socialization in sport participation and the admiration younger siblings may have on their older brothers, may influence them to be active.

Unfortunately, the role of siblings and physical activity has not been directly investigated in the United States and the current sample is too small to make inferences. Brothers should, however, be considered in family structure and physical activity research due to higher rates of physical activity among boys (CDC, 2006). Brothers may affect their sisters' physical activity levels favorably. This may be especially true for African American girls who may not have another male (e.g., father, stepfather.) residing with them to offer support in promoting physical activity. Further investigation is recommended.

Physical Activity Participation and High and Low Levels of Father Involvement

Brothers are not the only underrepresented male figure in physical activity studies conducted on African American girls. Fathers are also ignored. This may be due to the prevalence of single mother families among this population. However, fathers are able to make contributions to their children even when they do not reside with them.

Recognizing that fathers are often left out in physical activity studies among African American girls, the current study investigated father involvement and the impact on physical activity participation. Results indicated that girls with highly involved fathers had higher physical activity scores ($M=41.69$) than those with fathers demonstrating low levels of father involvement ($M=37.86$). However, significant differences were not detected. These results were based on overall father involvement as measured by the FIS (Finley & Schwartz, 2004). Again, the trend indicates that fathers may be influential in physical activity practices, but the small sample size prevents that conclusion. A follow-up study with more participants is recommended.

Interestingly, the added *physical activities* domain to the FIS produced more favorable results. Girls were asked to report how involved their fathers/father figures had been in their physical activities. Results showed physical activity scores increased as father involvement in this domain increased. Significant differences were detected between the low and high physical activity father involvement groups. Girls who had highly involved fathers in their physical activities had higher physical activity scores by almost 14 points compared to girls who had fathers who were not as involved. Although the sample size limits inferences, the significant trend noted is favorable warranting

further investigation, and suggests the correlation regression might have been significant had the study sample been larger.

Currently, there are not many (only one found to date) investigations on father involvement and physical activity. However, Raudsepp and Viira (2000), who examined parental influence on physical activity found a significant relationship between fathers' physical activity participation and their daughters' physical activity participation ($r=.22$, $p<.01$). Fathers who participated in moderate physical activity had daughters who participated in moderate physical activity. Again, this study was not conducted in the United States, making it difficult to generalize. In addition, it should be noted that the current study did not assess fathers' physical activity levels, only levels of physical activity involvement according to participant responses; However, responses given to the physical activity father involvement follow-up questions, suggest that fathers' physical activity practices did influence physical activity behaviors among the study sample.

To gather additional physical activity father involvement information that could not be captured on questionnaires, three questions were added to the Father Involvement Scale (FIS). These questions specifically ask participants if and how their father/father-figure had influenced their physical activity practices. Interestingly, girls who reported that their fathers had been involved in their physical activity participation listed specific behaviors in which their fathers/father-figures had been involved. Behaviors reported are listed below:

“. . . he helped me practice and gave me tips on what to do better.”

“He tells me when I need to work harder. He supports me. He encourages me to practice a lot.”

“Takes me to the park to play basketball, basketball practices, walking”

“He played basketball with me and my brother outside”

“When I’m playing sports outside, he’ll come see me play”

“My stepfather was the one taking me to soccer games, basketball games and practices. He pushed me to be aggressive and encouraged me”

“My uncle played basketball”

“I exercise/workout with my father on a daily basis”

Girls often used the words “supportive” or “encouraged” when describing ways in which their fathers/father-figures had influenced their physical activity practices. These responses illustrate the benefits that social support can provide in physical activity promotion, which may be the catalyst needed to promote behavior change. The lack of social support from family and parents has been identified as a barrier to physical activity among African American girls (Corbett & Calloway, 2006). More emphasis may need to be directed here. In addition, reports of fathers actually participating with them was high, and consistent with Raudasepp and Viira’s (2000) and Jaffee and Rex’s (2000) earlier findings where girls tended to be more active when their fathers participated in physical activities with them.

These responses also suggest fathers may play a pivotal role in physical activity promotion and participation among African American adolescent girls. Joe Kelly (2001), expert on father-daughter relationships and executive director of Dads and Daughters, stresses the importance of father-daughter relationships. Dads and Daughters is an organization that advocates for fathers of daughters by equipping them with resources that aid them in being better parents. Among several recommendations for fathers, Kelly

strongly encourages them to be physically active with their daughters and points out by doing so decreases pregnancy, reduces school dropout rates and the likelihood of being in an abusive relationship (National Center for Education Statistics, 2000). He further acknowledges that girls who are the most physically active, are active with their fathers.

Father behaviors appear beneficial to physical activity participation among the study sample but these behaviors may not be limited to biology or residence of these fathers. As designed, the Finley and Schwartz's (2004) FIS captured the benefits of non-related and/or non-residential father/father-figures as scores reported were irrespective of father type. This suggests that other men (step-fathers, grandfathers, mom's boyfriend, uncles, teachers, coaches, and preachers) can and do assist with the development of these girls regardless of biology and/or residence. This may be an essential factor for promoting physical activity among African American adolescent girls, since most will reside in single mother families without the presence of a biological father. This is pointed out because 14 of the 40 girls indicated father-figures other than their biological fathers, and nine of the 14 reported high levels of physical activity involvement from these men.

There is evidence that men other than the biological father can benefit children. Coley (1998) found children tended to be better behaved when non-paternal men (60% residential partners or ex-husbands of the mother; 32% male relatives; 8% other men in the community – coaches, friend's father) took on disciplinarian roles (Coley, 1998). This finding illustrates the value other men can have in other aspects in children's lives and may be an untapped resource that can be used for physical activity promotion.

The lack of social support by parents and family that has been identified as a barrier for African American girls to become physically active (Corbett & Calloway, 2006) illustrates the benefit of rallying support from others in the community to assist in the promotion of physical activity. The matriarchal prevalence in most African American families may need father-figures to aid in this effort. The “fictive family” or non-related individuals identified as assisting African American single mothers in childrearing (McCreary & Dancy, 2004) could be an asset to change the status quo among African American girls but more research is needed to determine potential impact.

Overall and Physical Activity Father Involvement & Expressive, Instrumental, Mentoring, and Physical Activity Father Involvement

To further investigate father involvement impact on physical activity, a regression model was used to determine if overall and physical activity father involvement were predictors of physical activity for study participants. Although physical activity father involvement was the best predictor, it was non-significant. Had the sample size been larger, the regression coefficient may have been significant.

In addition to investigating the impact overall and physical activity father involvement has on participants, the current study investigated what father involvement subscales (*expressive, instrumental, mentoring/advising*) and physical activity father involvement best predict physical activity participation. The best predictor of physical activity among study participants was expressive father involvement and was almost significant. The next best predictor was physical activity father involvement followed by mentoring and instrumental.

Although, the expressive domain was not significant in the regression model, the nurturing behaviors (caregiving, companionship, sharing activities, emotional development, physical development, and leisure) in this subscale warrants further investigation, as Bungum and Vincent (1997) identified nurturing received from the father was as a predictor of physical activity among African American adolescent girls but not their Caucasian peers. A larger sample may yield significant findings in the expressive subscale.

Investigating father involvement and physical activity on a larger scale has shown promise in younger children. Beets and Foley (2008) examined the effects of father-child involvement and physical activity with over 10,000 kindergartners. They found that father-child time and spending time participating in sports during family time were positively associated with young children's physical activity. Unfortunately, more father involvement and physical activity investigations are needed to determine if these findings can be replicated with older adolescents.

Conclusions

More support for physical activity may be needed to help African American girls develop a sense of physical activity empowerment. Doing so may encourage them to be physically active and thrive in environments like their homes, neighborhoods and physical education class. This support might need to come from the fathers or father figures in their lives.

Fathers appeared instrumental in promoting physical activity among study participants. The expressive father involvement dimension was the best predictor of

physical activity participation among study sample. This suggests that fathers may be able to positively impact physical activity practices among African American adolescent girls when they demonstrate nurturing behaviors.

Direct physical activity father involvement may also be essential in promoting physical activity among participants, especially when fathers are actively engaged. Girls who reported that their fathers influenced their physical activity practices specifically identified behaviors that their fathers demonstrated. Behaviors included playing or exercising with them, and coaching them. These same girls also indicated that their fathers supported and encouraged them to be physically active.

Certain types of father involvement may be more beneficial to physical activity promotion than others. Overall father involvement did not appear to have an impact on physical activity participation scores; however, physical activity father involvement did. Girls with high levels of physical activity father involvement had significantly higher physical activity scores than girls with low levels of father involvement.

In addition to the positive father involvement findings, favorable trends were noted with family structure. Girls from two-parent families had higher physical activity mean scores than girls from single-parent; however, findings were not significant. The current study did not find significant differences between brother groups.

Findings suggest physical activity father involvement may be related to physical activity among African American adolescent girls; however, more research directly investigating this relationship is needed. Given the small sample size of 40, it is difficult

to draw clear conclusions. Consequently, all findings reported provide only a springboard for further investigation.

Recommendations for Practitioners

It is difficult to prescribe the appropriate physical activity interventions without knowledge of the cause or causes of inactivity. Doing so has created a “deer in headlights” position for many physical activity interventionists, researchers and practitioners.

Given the diversity in the United States, it is naïve to assume that one family type is the model needed for all to thrive and be successful. There are numerous examples that can debunk this myth but is beyond the scope of this study. In addition, the father’s role needs to expand beyond residential status, and other male figures need to be recruited to promote physical activity among African American girls.

Some male figures that may be enlisted in this effort are physical education teachers. Most students go through public school education and it is highly probable that they will encounter a male physical education teacher during their academic careers. These men should be encouraged to demonstrate nurturing behaviors and actively participate when teaching African American female students. Accepting the role as a surrogate father might contribute to increasing these girls’ physical activity levels.

Caution should be used however, as physical education classrooms are often where girls are ignored due to the testosterone-laden curriculums often implemented. The support from a male physical educator does not equate to the status quo of the male-dominated physical education classes often occurring. Rather, this support should

include gaining an understanding of cultural and gender differences among students by offering diverse physical education curriculums. Female-centered physical education programming in which girls are encouraged and expected to participate, may create higher levels of physical activity participation among them.

Limitations of the Study

There were several limitations in the current study. To begin, the sample size was too small. Consequently, it was difficult to infer and draw clear conclusions, especially with the trend in mean score differences. The small sample size also created the necessity to combine family structure types, which may not be a reflection of what is “really” going on among the groups under investigation. It also does not allow generalization to the school’s larger African American female population or the broader African American adolescent female population.

The inclusion of younger adolescents (13-15) was another limitation, as the FIS had not been used on this age group before. Fortunately, the mean age was 16, and girls younger than 16, did not appear to have difficulty understanding and completing the scale.

Lastly, the current study failed to assess socio-economic and educational status of parents, which could have potentially provided more meaning of the results.

Recommendations for Future Research

Although there were several limitations to this study, positive trends were noted. The current study offers a springboard for further investigation addressing father involvement, family structure, and physical activity participation among African

American adolescent girls. Current literature addressing the impact fathers have on adolescents' general well-being is fruitful, however, there is very little with regards to physical activity. In addition, the relationship with physical activity and siblings, especially brothers, has not been well documented. As hopeful and creative as interventions are that use the mother/daughter model to increase physical activity among African American girls, additional research using alternative methods that include qualitative studies, family dynamics, children's perspectives on family, and the inclusion of fathers should be considered to determine if family structure and father involvement are areas where programming and interventions should be directed.

A specific alternative method to be used if duplicating this study is the use of Finley and Schwartz's father nurturant scale, which directly assess how nurturing fathers are. Since nurturing behaviors have been shown to be a predictor of physical activity for African American girls (Bungam & Vincent, 1997), this instrument may be able to confirm earlier findings and be used to create programming for targeted group.

In addition to using alternative methods, duplicating this study on a larger scale is recommended to establish more significant, conclusive results. To ensure a larger sample size for school-age children, recruiting and collecting data in non-academic institutions (e.g. churches, recreation centers) is suggested, which may yield higher participation rates. The researcher encountered challenges when trying to gain access into the local public school system due to the school systems concern for their students and past bad experiences with researchers. However, collaborative efforts between schools, health educators/researchers and families are recommended to further assist in the well-being of

all students. Schools should recognize that health and physical activity research on youth may contribute to their overall objectives of educating students. A collective approach may create a more favorable environment that affects students positively.

Finally, it is recommended that a younger age group be targeted. Younger participants may be ideal as they tend to be more physically active than adolescents and may be instrumental in combating the trend of decreased physical activity during adolescence, especially among African American girls. Investigations at this level may assist professionals in developing proactive interventions designed to change current activity patterns among African American adolescent girls.

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Please list any other adults that live with you that were not listed above.

5. Do you have any brothers? Y _____ N _____ If yes, how many? _____

6. Identify the father figure who has had the greatest impact in your life.
 _____ biological father _____ stepfather _____ adoptive father
 _____ grandfather _____ uncle
 _____ other, please list _____

7. Check here if you have never met your biological father _____ Explain.

8. Is your biological father deployed in the military? Y _____ N _____ If yes, how long?

9. Is your biological father in prison or jail? Y _____ N _____
 If yes, how long? _____

10. Does your biological father live in another city or state? Y _____ N _____
 If yes, what city or state? _____

11. Has a parent died? Y _____ N _____
 If so, who and when? _____

12. What is the marital status of your parents/caretakers?
 _____ Married _____ Divorced _____ Never Married – living
 together
 _____ Never Married – not living together _____ Separated
 _____ Other – Please list _____

13. If your parents are divorced or separated, how old were you when they
 divorced/separated? _____

14. How would you describe your household?

_____ Single-parent Mother

_____ Single-parent Father

_____ Two-parent biological/adoptive

_____ Two-parent stepfather

_____ Two-parent stepmother

_____ Single Grandmother

_____ Single Grandfather

_____ Married Grandparents

_____ Mom with live-in partner

_____ Dad with live-in
partner

If your household type is not listed above, please list your household type below.

Appendix B

Father Involvement Scale

Father Involvement Scale

Who do you consider the father figure in your life (for example, biological father, step father, uncle, brother, teacher, preacher, etc.)? _____

Use your father figure when completing the following items.

How *involved* was your father (father figure) in the following aspects of your life and development?

Please place the appropriate number on the line before each of the following items.

5. Always involved
4. Often involved
3. Sometimes involved
2. Rarely involved
1. Never involved

- _____ Intellectual development
- _____ Emotional development
- _____ Social development
- _____ Ethical/moral development
- _____ Spiritual development
- _____ Physical development
- _____ Career development
- _____ Developing responsibility
- _____ Developing independence
- _____ Developing competence
- _____ Leisure, fun, play
- _____ Providing income
- _____ Sharing activities/interests
- _____ Mentoring/teaching
- _____ Caregiving
- _____ Being protective
- _____ Advising
- _____ Discipline
- _____ School/homework
- _____ Companionship

_____ Physical Activities

How has your father influenced your physical activity practices? Y _____ N _____

If yes, please explain how (please list as many ways as you can).

In the last week, list how your father has been involved in your physical activities (please give specific examples).

Appendix C
Cronbach's Alpha

Cronbach's Alpha

	Cronbach's Alpha
Father Involvement Scale	0.97
Father Involvement Scale: Expressive Dimension	0.93
Father Involvement Scale: Instrumental Dimension	0.93
Father Involvement Scale: Mentoring Dimension	0.91

Appendix D

Godin Leisure-Time Exercise Questionnaire

Godin Leisure-Time Exercise Questionnaire

1. During a typical **7-Day period** (a week), how many times on the average do you do the following kinds of exercise for **more than 15 minutes** during your free time (write on each line the appropriate number)?

**Times
Per
Week**

a) STRENOUS EXERCISE

(HEART BEATS RAPIDLY)

(e.g., running, jogging, hockey, football, soccer, basketball, cross country skiing, judo, roller skating, aerobic dance, kickboxing, vigorous swimming, vigorous long distance bicycling,)

b) MODERATE EXERCISE

(NOT EXHAUSTING)

(e.g., fast walking, softball, tennis, easy bicycling, volleyball, badminton, easy swimming, weight training, popular and folk dancing)

c) MILD EXERCISE

(MINIMAL EFFORT)

(e.g., yoga, pilates, archery, bowling, horseshoes, golf, easy walking)

2. Considering a **7-Day period** (a week), during your leisure-time, how often do you engage in any regular activity **long enough to work up a sweat** (heart beats rapidly)?

OFTEN

SOMETIMES

NEVER/RARELY

1. ?

2. ?

3. ?

Appendix E

Wake County Public School Recruitment Approval



WAKE COUNTY
PUBLIC SCHOOL SYSTEM

EVALUATION AND RESEARCH

3600 WAKE FOREST ROAD
RALEIGH, NORTH CAROLINA 27609
PHONE: 919.850.1863
FAX: 919.850.1861

December 6th, 2007

Tara B. Blackshear
4908 Liles Road
Raleigh, NC 27606

RE: **Project No. 626** –

Dear Ms Blackshear:

Wake County board policy # 2420 (Distribution of Publications by Non-students) allows the distribution of fliers for research sponsored by State agencies; however the distribution has to be approved by the school principal. Therefore, you can post flyers and posters to recruit students in your study, as long as the principal allows it, and as long as interested students are directed to a contact person outside of the school itself for further information.

In this sense, because the activities related to the research project are taking place completely outside the school, we do not consider it to be a WCPSS external research project and therefore does not require our approval.

Sincerely,

Anne-Sylvie M Boykin

CC:

William Crockett, principal, Athens HS
Lee Teel, principal, Broughton HS
Alice Cochran, principal, Enloe HS
Anthony Baker, principal, East Wake HS of Health Sciences
Beulah Wright, principal, Southeast Raleigh HS
Cathy Moore, principal, Sanderson HS
Isaac Holton, principal, Garner HS
Kristin Cuilla, principal, East Wake HS of Integrated Technology
Martha McCaskill, principal, East Wake HS of Art Education and Global Studies
Sebastian Shipp, principal, East Wake HS of Engineering Systems

Appendix F

Minor Assent Form

Fathers, Family and Physical Activity

A Study for African American Girls

Minor Assent Form

My name is Tara Blackshear. I am trying to find out if the type of family structure and the level of the father's involvement impacts physical activity levels among African American adolescent girls. If you would like, you can be in my study.

If you decide you want to be in my study, you will be asked who you live with, what your parent's marital status is and who your father/father-figure is. In addition, you will be asked to rank how you believe your father/father-figure is. Lastly, you will be asked to assess your physical activity habits. All of these questions will be asked using three questionnaires which should take 15 to 20 minutes. Each girl participating will receive a \$5.00 coupon from Subway and free passes to Seaboard Fitness Center in downtown Raleigh.

Risks and benefits: There are minimal risks involved with this study. You may feel uncomfortable when reporting on parental divorce, military deployment, death or incarceration of a parent, and/or not knowing who your biological father is if applicable.

There is no direct benefit to you for participating in the study. This study aims to identify factors that may contribute to physical activity participation among African American girls to address the physical inactivity and obesity crisis affecting them. The data from this study will be used to aid families and physical activity practitioners with strategies that address the needs of African American adolescent girls by creating culturally relevant physical activity programming for them.

Confidentiality: Other people will not know if you are in my study. I will put things I learn about you together with things I learn about other teens so no one can tell what things came from you. There will be no way for me to know which person gave which answers because the questionnaires will be coded with numbers and your name won't be on them.

Voluntary nature of participation: Your parents or guardian have to say it's OK for you to be in the study. After they decide, you get to choose if you want to do it too. If you don't want to be in the study, no one will be upset with you. If you want to be in the study now and change your mind later, that's OK. You can stop at any time.

My telephone number is 919-815-7388. You can call me if you have questions about the study or if you decide you don't want to be in the study any more. In addition, if you have any questions or concerns about your rights as a research subject, you may contact Eric Allen at (336) 256-1482 in the Office of Research Compliance at The University of North Carolina at Greensboro.

I will give you a copy of this form in case you want to ask questions later.

Agreement

I have decided to be in the study even though I know that I don't have to do it. Tara Blackshear has answered all my questions.

Signature of Study Participant

Date

Signature of Researcher

Date

Appendix G

Parental Consent Form

Fathers, Family and Physical Activity

A Study for African American Girls

Parental Consent Form

Your child has been invited to be in a study about the impact family structure and father involvement has on physical activity participation among African American adolescent girls. I ask that you read this form and ask any questions you may have before agreeing to allow your child to participate in this study.

The study: The purpose of this study is to determine if family structure and father involvement impact physical activity participation among African American adolescent girls. If you agree to allow your daughter to participate, she will be asked to complete three questionnaires which should take 15 to 20 minutes. Questionnaires include a demographic questionnaire, a father involvement questionnaire and a physical activity questionnaire. Your child will be asked who she lives with, parental marital status, and who her father/father-figure is. In addition, she will rank how involved she believes her father/father-figure is in various aspects of her life. Lastly, your child will be asked to assess her physical activity habits.

Each girl participating will receive a \$5.00 coupon from Subway and free passes to Seaboard Fitness Center in downtown Raleigh.

Risks and benefits: There are minimal risks involved with this study. Participants may feel uncomfortable when reporting on parental divorce, military deployment, death or incarceration of a parent, and/or not knowing who their biological father is if applicable.

There is no direct benefit to your child or you for participating. This study aims to identify factors that may contribute to physical activity participation among African American girls to address the physical inactivity and obesity crisis affecting them. The data from this study will be used to aid families and physical activity practitioners with strategies that address the needs of African American adolescent girls by creating culturally relevant physical activity programming for them.

Confidentiality: Your child's records will be kept private and none of the questionnaires will have names or any identifiable information on them. Consent forms will be stored separately in a lock box and locked storage at the student researcher's residence for 3 years. The student researcher will be the only one with

the keys. Your child's privacy will be protected because your child will never be identified by name.

Voluntary nature of participation: Your decision on whether or not to allow your child to participate will not affect you or your child. If you decide to allow your child to participate, you are free to withdraw your child at any time without affecting your or her relationship with the Wake County Public School System. Furthermore, your child may refuse to participate or discontinue participation at any time.

The Researcher conducting this study is Tara B. Blackshear, graduate student at The University of North Carolina at Greensboro. She is under the direction of Tom Martinek, Ed.D., graduate advisor at The University of North Carolina at Greensboro. You may reach Tara at 919-815-7388 or tblack@uncg.edu. Please feel free to ask any questions you have now, or at any point in the future. In addition, if you have any questions or concerns about your child's rights as a research subject, you may contact Eric Allen at (336) 256-1482 in the Office of Research Compliance at The University of North Carolina at Greensboro.

Child's name _____

Parent's signature _____ Date _____

Appendix H

ANOVA Results

***ANOVA Results for Family Structure Group
Differences in Physical Activity***

Source	df	SS	MS	F	p
Between Groups	1	429	429.00	0.92	0.34
Within Groups	38	17698	466.00		

***ANOVA Results for Brother Group
Differences in Physical Activity***

Source	df	SS	MS	F	p
Between Groups	1	3.5	3.47	0.01	0.93
Within Groups	38	18124.1	476.95		

***ANOVA Results for Overall High/Low Father Involvement Group
Differences a***

Source	df	SS	MS	F	p
Between Groups	1	146.4	146.38	0.31	0.58
Within Groups	38	17981.2	473.19		

***ANOVA Results for High/Low Father Physical Activity Involvement
Group Differences b***

Source	df	SS	MS	F	p
Between Groups	1	1695.8	1695.75	3.92	0.05*
Within Groups	38	16431.8	432.42		

Appendix I

Raw Responses on Father's Influence on Physical Activity

Has your father influenced your physical activity practices? Y___ N___, If yes, please explain how (please list as many ways as you can).	In the last week, list how your father has been involved in your physical activities (please give specific examples).
	He played basketball with me and my brothers outside
Always talks to me about it	Talks to me about how I can improve my swimming at practice
Takes me to the park to play basketball, basketball practices, walking	Walking places, driving and picking 'me' up from basketball, watched basketball game situation
Playing tennis on Sunday afternoons; Going to the gym to play basketball	
	He has taken me to get food for my track meets
When I used to play sports, he helped me practice and gave me tips on what to do better. He has definitely been there to encourage me to stay strong in sports.	Well, I haven't been too active lately since I stopped playing sports so he hasn't been too involved since I haven't been
He tells me when I need to work harder. He supports me. He encourages me to practice a lot.	
He always encourage me to run, exercise, never be lazy. It's unattractive.	Did encourage me to be more physically active now that I'm pregnant.
He has encouraged me to do cheerleading and stick to it.	He has taken me to work and let me rest when I get home.
Yes, he is always influencing me to do well whether dancing or playing any sports	Not in the last week
Dancing and walking	We went walking
When I'm playing sports outside he'll come see me play.	When I was outside dribbling my basketball doing drills.
Helped me practice, participating in physical activities	Helped me practice for a game, playing basketball with me.
My stepfather was the one taking me to soccer games, basketball games and practices. He pushed me to be aggressive and encouraged me.	He has not been involved. I don't play any sports right now and my step father does not live with my mother and I. Our relationship is based mostly on an emotional, social level.
He played different activities with me.	
He was in the military before he passed away and we went jogging a lot.	Deceased.
He encourages me even when I don't believe in myself.	
Me and my father work out together everyday.	Walking 2 miles with me. Going to our neighborhood gym with me. Riding our bicycles together.
He encourages me to participate in numerous physical activities.	In dance he has watched my performance and has told me what to work on.
My uncle played basketball	Encouraged me to go exercise
I exercise/workout with my father on a daily basis.	My father supports me by coming to my dance performances and games where I cheered.
He got me interested in soccer and put me on my 1st team. He has coached me ever since I've been playing	Gives me advice on what I should do in a soccer game..transportation to the game.