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Determinants of Physical Activity in Arab American Children

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DETERMINANTS OF PHYSICAL ACTIVITY IN ARAB AMERICAN CHILDREN

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Abstract

Physical activity is an integral part of preventing and managing childhood and adolescent obesity. Lack of regular physical activity has negative impact on physical and psychosocial health. Arab Americans (AAs), one of the most rapidly growing minorities in United States, tend to have a high prevalence of obesity and low participation in physical activity.

The purpose of this study was to describe determinants of physical activity, including self-efficacy, social support, physical environment, and selected demographics among AA children in Southern California. A descriptive correlational study using a cross sectional design was conducted. Self-administered questionnaires were completed by children (N=206) recruited from mosques, churches, and family social gathering events located in Southern California. Descriptive and inferential statistics were used to analyze the data. Multiple linear regression was performed to examine the variance of physical activity in AA children.

The majority of participants were girls (53%). The sample mean age was 12.1 (SD = 1.49) years. The mean of the final Physical Activity Questionnaire for Children (PAQ-C) summary score was 2.39 (SD = 0.648). The study participants exhibited a moderate level of physical activity. In the regression model the data explained 51.6% of the variance ($F [11,194] = 18.782$; $P < 0.000$). Participants with higher self-efficacy overcome barriers ($\beta = .071$; $p = .020$) and higher self-efficacy positive alternatives ($\beta = .063$; $p = .025$) are expected to have higher level of physical activity. Participants with

greater social support from parents ($\beta = .145$; $p = .017$) and friends ($\beta = .321$; $p = .000$) are expected to have higher level of physical activity. The level of physical activity decreased as participant age increased ($\beta = -.076$; $p = .001$). Finally, physical environment was not a predictor of physical activity.

AA children, and older AA children in particular, may need close monitoring of their physical activity. Future interventions to improve physical activity should be designed that include considerations of promoting self-efficacy and social support.

Dedication

For the first time in writing my dissertation, I will let my heart talk to those who stood next to me throughout my academic journey, those without whose love, support, and encouragement I would not have accomplished this doctorate degree. First of all, I am extremely grateful to my husband, Dr. Yousef Zakarni, who played many roles in my life—husband, dad, mom, and best friend—to facilitate my long academic journey. Thank you for your valuable advice, endless love, patience, wisdom, and support. Thank you for not complaining when I spent long hours studying while you took care of our kids and house. Thank you for giving me the guidance and strength to reach the stars and pursue our dreams.

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CHAPTER 1

INTRODUCTION

Childhood obesity is increasing at an alarming rate throughout the world. Globally, approximately 155 million children are overweight and approximately 30 to 45 million are classified as obese (Chinn & Rona, 2001; World Health Organization [WHO], 2005). In the US, data from the 2007-2008 National Health and Nutrition Examination Survey (NHANES) demonstrated 16.9% of children and adolescents aged 2 to 19 years are obese (Flegal, Carroll, Ogden, & Curtin, 2010; Ogden, Carroll, Curtin, Lamb, & Flegal, 2010). According to the National Center for Health Statistics (Centers for Disease Control and Prevention [CDC], 2010), more than one third of children and adolescents are overweight or obese; the percentage of children aged 6 to 10 years who were obese increased from 7% in 1980 to nearly 20% in 2008, and the percentage of adolescents aged 12 to 19 years who were obese increased from 5% to 18% over the same period.

Childhood obesity is known to have a significant immediate and long-term impact on physical and psychosocial health (Freedman, Mei, Srinivasan, Berenson, & Dietz, 2007). In a recent population-based sample of 5 to 17 year olds in the US, 70% of obese youth had at least one risk factor for cardiovascular disease such as high cholesterol or

high blood pressure (Freedman, Zuguo, Srinivasan, Berenson, & Dietz, 2007). Obese adolescents are more likely to have prediabetes, predisposing them to a higher risk of developing diabetes (Li, Ford, Zhao, & Mokdad, 2009; CDC, 2011). Obese children are at higher risk for bone and joint problems, sleep apnea, and social and psychosocial problems such as stigmatization and poor self-esteem (Daniels et al., 2005; Dietz, 2004). In the long-term health, obese children are also more likely to be obese adults (Freedman et al., 2005; Freedman et al., 2009; Freedman, Khan, Dietz, Srinivasan, & Berenson, 2001; Guo & Chumlea, 1999). Therefore, obese children are at higher risk for adult health problems such as cardiovascular disease, type 2 diabetes, stroke, several types of cancer, and osteoarthritis (CDC, 2011; Daniels et al., 2005; Dietz, 2004; Freedman et al., 2007; Kushi et al., 2006; Li et al., 2009). As a result, the medical care costs of obesity in the US—estimated at $147 billion in 2008 (Finkelstein, Trogdon, Cohen, & Dietz, 2009) — are expected to increase..

Physical activity is an integral part of preventing and managing childhood and adolescent obesity. The CDC (2013) emphasizes the importance of maintaining regular physical activity in children and adolescents to improve strength and endurance, build healthy bones and muscles, control weight, reduce anxiety and stress, increase self-esteem, and enhance blood pressure and cholesterol levels. Establishing regular physical activity patterns in children and adolescents is key to building a foundation of physical activity in the future (Beunen et al., 1997; Kemper, de Vente, van Mechelen, & Twisk, 2001; Malina, 1996; McMurray, Harrell, Bangdiwala, & Hu, 2003; Telama, Yang, Laakso, & Viikari, 1997).

Statement of the Problem and Rationale

According to the 2008 NHANES III national survey (Flegal et al., 2010; Ogden et al., 2010), the prevalence of obesity varies according to race/ethnicity; non-Hispanic Black girls had a higher prevalence of obesity (24%) than Mexican American girls (19%) or non-Hispanic White girls (14%), while Mexican American boys had a higher prevalence of obesity (25%) than non-Hispanic Black boys (18%) or non-Hispanic White boys (15%).

For the purposes of governmental statistics, "White" is a racial category comprising those persons descended from the original peoples of Europe, the Middle East, or North Africa (Office of Management and Budget, 2011). By this definition, Arab Americans (AAs) are considered "White"; little attention in terms of race and health status has been given to AAs as a subcategory of the White race (Berlie, Herman, Brown, Hammad, & Jaber, 2008).

As AAs are among the most rapidly growing minorities in the US, studying their health status is important. AAs have needs that are unique from the general US population. AAs have their own language, culture, historical identity, traditional norms, family structure, gender roles, health beliefs, and religious affiliation distinguishing them from other ethnicities. The large majority of AAs are followers of Islam, which affects their perceptions of health and illnesses and plays a major role in regulating their spheres of life (Berlie et al., 2008).

Research indicates AA adults have a high prevalence of obesity, several associated conditions, such as cardiovascular diseases, hyperlipidemia, type 2 diabetes, hypertension, and arthritis, and very low levels of physical activity (Corteville, 2010;

Qahoush, 2006; Shara et al., 2010; Zakarni, 2013; Berlie et al., 2008; Hammad & Kysia, 1996; Hammad, Kysia, Maleh, Ghafoor, & Rabah-Hammad, 1997; Jaber et al., 2003; Kulwicki, 1990). However, more attention should be given to AA children in the literature. In a cross sectional study conducted among 158 fifth grade AA students in Michigan, Abou-Mediene and Shamo (2005) reported 31% of boys and 24.5% of girls were overweight, and 17.6% of boys and 15.5% of girls were obese. Several previous studies identified the influence of physical activity self-efficacy, social support related to physical activity, and physical environment effect in physical activity among children with different ethnicities (Bungum, Pate, Dowda, &Vincent, 2007; Kitzman-Ulrich, Wilson, Van Horn, & Lawman, 2010; Kohl & Hobbs, 1998; Martin & McCaughtry, 2007; Sallis, Prochaska, & Taylor, 2000; Trost et al., 2002). However, to date the relationship of these variables has not been studied in AA children in Southern California.

Study Purpose

The overall purpose of this descriptive correlational study was to describe determinants of physical activity in AA children residing in Southern California. This study was guided by the Health Promotion Model (Pender, 1996).

Specific Aims

The specific aims of this study were to:

1. Describe the demographic factors (age, gender, BMI, grade, types of school [public vs private]), self-efficacy, social support, physical environment, and levels and types of physical activity of AA children;

2. Examine the relationships between demographic factors (age, gender, BMI, grade, types of school [public vs private]), self-efficacy, social support, physical environment, and physical activity of AA children; and
3. Determine if there is a statistically significant model fitted to the data to explain the variance in physical activity among AA children.

The additional exploratory aim of this study was to describe the performance reliability of the instruments utilized in the current study of AA children.

Significance of the Problem

Childhood obesity is a public health problem. Obese children and adolescents are at greater risk for adult obesity (Whitaker, Wright, Pepe, Seidel, & Dietz, 1997) and are more likely to develop significant short- and long-term health problems such as hyperlipidemia, hypertension, type 2 diabetes, osteoarthritis, and cancer (CDC, 2011; Daniels et al., 2005; Dietz, 2004; Freedman et al., 2007; Kushi et al., 2006; Li et al., 2009). In addition, childhood and adolescent obesity may have negative social effects such as rejection, stigmatization, victimization, and decreased friendliness (Mahoney, Lord, & Carry, 2005). Additionally, obese children and adolescents are more likely to have poor academic performance (Plucker, Spradlin, & Cline, 2005) and receive low scores across all areas of development, including physical, emotional, psychosocial, and school functioning (Schwimmer, Burwinkle, & Varni, 2003).

Lack of physical activity has linked to developing childhood and adolescence obesity (Goran, 1997; Weinsier, Hunter, Heini, Goran, & Sell, 1998). Identifying the factors or determinants influencing physical activity among children and adolescents is critical in order to design effective intervention strategies for this age group (Baranowski,

Anderson, & Carmack, 1998). The psychosocial and environmental factors that have been investigated in relation to this group's physical activity include self efficacy, beliefs and social norms, physical environment, and parents' physical activity patterns (Kohl & Hobbs, 1998; Sallis et al., 2000). AA adults tend to have a sedentary lifestyle, as reported in cross sectional studies conducted in Michigan and California (Berlie et al., 2008; Jaber et al., 2003b; Qahoush, 2006; Zakarni, 2013); the physical activity behaviors of AA parents may well negatively influence the physical activity behaviors of their children. However, there are no published studies examining either physical activity patterns or their determinants in AA children in Southern California. This study will attempt to identify the significant determinants of physical activity among AA children and adolescents. These determinants can be targeted for developing intervention programs specifically appropriate for the needs of AA children.

Summary

This chapter presented the importance of identifying the determinants of physical activity among AA children and adolescents in order to develop future intervention strategies specifically appropriate for this group. In the following chapter, the researcher reviews the published literature relevant to this study, including variables of childhood obesity, physical activity, self-efficacy, social support, physical environment, and AAs in the overall US child population.

CHAPTER 2

LITERATURE REVIEW

Conceptual Framework

This study was guided by Pender's (1996) Health Promotion Model (HPM), which is well known in the fields of nursing and public health. The HPM is a multidimensional model directed toward individual, family, community, environment, and societal health. HPM is distinguished from other models by including several explanatory concepts for understanding an individual's health behaviors and does not focus on threat as a primary motivation for behavior (Shin, Yun, Pender, & Jang, 2005). This model approaches health promotion from a positive perspective and the health messages are intended to motivate individuals to adopt health promoting behaviors in order to improve their quality of life. HPM can be applied in settings such as schools, workplace, homes, or healthcare facilities. It can also be applied in understanding different behaviors such as exercise, nutrition, stress management, and social support.

HPM was developed in 1982 by Nola Pender and revised in 1996 (Pender, Murdaugh, & Parsons, 2006). The revised model added additional concepts and explained its relationships with individuals' behaviors. This revision led to improving

the model's explanatory effect and increased its applications in structuring health-promoting nursing interventions. HPM has been used since 1996 as a framework for guiding research exploring health behaviors with numerous chronic health conditions such as diabetes (Ho, Berggren, & Dahiborg-Luckhage, 2010), osteoporosis and osteoarthritis (Shine et al., 2006). In addition, many studies have supported the usefulness of HPM in explaining physical activity as a health-promoting behavior among children, adolescents, and adults (Shin et al., 2005; Robbins, Grete beck, Kazanis, & Pender, 2006).

HPM is derived from two previous theories including the Expectancy Value Theory (Feather, 1982) and the Social Cognitive theory (Bandura, 1986). The Expectancy Value Theory emphasizes that individuals will engage in actions or behaviors when they believe these actions are achievable and will result in a valued outcome. The Social Cognitive Theory focuses on individuals' thoughts, behaviors, and environmental interactions, indicating that in order to promote individuals' behaviors, investigators must understand their thoughts and environment. The core of social cognitive theory is self-efficacy, or the confidence a person has in his or her ability to successfully perform an action (Bandura, 1986). Pender believes high confidence levels will lead to greater likelihood for performing behaviors (Pender et al., 2006).

Conceptual Components of Health Promotion Model

Pender's HPM (1996) can explain the determinants of health promoting behaviors through the model's three major conceptual components: individuals' characteristics and experiences, behavioral-specific cognitions and affect, and behavioral outcome. *Individual characteristics and experiences* include prior related behaviors and personal

factors such as sociocultural and biological factors that can explain and predict individuals' behavioral tendencies. Nevertheless, personal factors are attribute factors and in general they cannot be modified (Pender, 2006).

Behavioral-specific cognitions and affect are considered the major motivational mechanisms for individuals' health promotion behaviors. Behavioral-specific cognition and affect includes several concepts, such as perceived benefits of action, perceived barriers to action, perceived self-efficacy, interpersonal influences from family, peers, providers, situational influences, commitment to a plan of action, and response to immediate demand and preferences. *Behavioral outcome,* or the health promotion behavior, is the desired behavioral outcome of health decision making and preparation for action. The HPM was structured to demonstrate the interaction of these three conceptual components and their direct and indirect influences on understanding health promoting behaviors (Guthrie, Loveland-Cherry, Frey, & Dielman, 1994).

Health Promotion Model's Domains

The theoretical framework that will primarily guide this study is derived from the HPM (Pender, 1996). This model describes the multidimensional nature of individuals as they interact within their environment to promote health. This model was used among different culturally diverse groups, such as Korean, Taiwan, Thai, Japanese, and Mexican populations (Guedes, Moreira, Cavacante, de Araujo, & Ximenes, 2009). To date, this model has not been used among Arab American (AA) children, but it constitutes an appropriate organizing framework for the proposed study.

Personal factors domain. Personal factors are general characteristics of a person that influences health behaviors, such as biological, psychological, or sociocultural

factors. These factors are predictive of a given behavior and shaped by the nature of the target behavior being examined. For the purpose of this study, the personal factor domain will be represented with characteristics such as BMI, gender, age, grade, and type of school (public vs private).

Perceived self-efficacy. This domain emphasizes the judgment of an individual's capability to organize and execute a health-promoting behavior. Perceived self-efficacy influences perceived barriers to action, so higher efficacy results in lowered perceptions of barriers to the performance of the behavior (Pender, 1996). For the purpose of this study, the perceived self-efficacy domain will be represented with support seeking self-efficacy, overcoming barriers self-efficacy, and positive alternatives self-efficacy.

Interpersonal influences. This domain emphasizes the cognition concerning behaviors, beliefs, or attitudes of others. Interpersonal influences might include norms (such as expectations of significant others), social support (such as instrumental and emotional encouragement), or modeling (such as vicarious learning through observing others engaged in a particular behavior) (Pender, 1996). Primary sources of interpersonal influences are families, peers, and healthcare providers. For the purpose of this study, the interpersonal influences domain will be represented with the social support received from parents and friends.

Situational influences. This domain emphasizes individuals' perceptions and cognitions of any given situation or context that can facilitate or impede behaviors (Pender, 1996). Situational influences might include several environmental factors such as involvement in community-based physical activity organizations, accessibility to recreational facilities, or neighborhood safety. Pender et al. (2002) proposed that the

environment may positively or negatively affect an individual's health behaviors and can increase or decrease performance of health-promoting behaviors. Therefore, for the purpose of this study, the situational influences domain will be represented by the physical environmental factors of convenience, public recreation facilities, safety, and private sport providers.

Health promotion behavior. This domain emphasizes the endpoint or action outcome directed toward attaining positive health outcomes such as optimal well-being, personal fulfillment, and productive living (Pender, 1996). For the purpose of this study, the physical activity will be represented in the health promotion behavior domain.

In summary, the HPM emphasizes that each individual has unique personal characteristics and experiences affecting subsequent actions. The set of variables for behavioral specific knowledge and affect have important motivational significance and these variables can be modified through nursing actions. Finally, health-promoting behavior is the desired behavioral outcome and is the end point in the HPM. Health-promoting behaviors should result in improved health, enhanced functional ability, and better quality of life at all stages of development (Pender, 2006). Based on Pender's HPM (1996), the proposed conceptual model for the current study is presented in Figure 1.

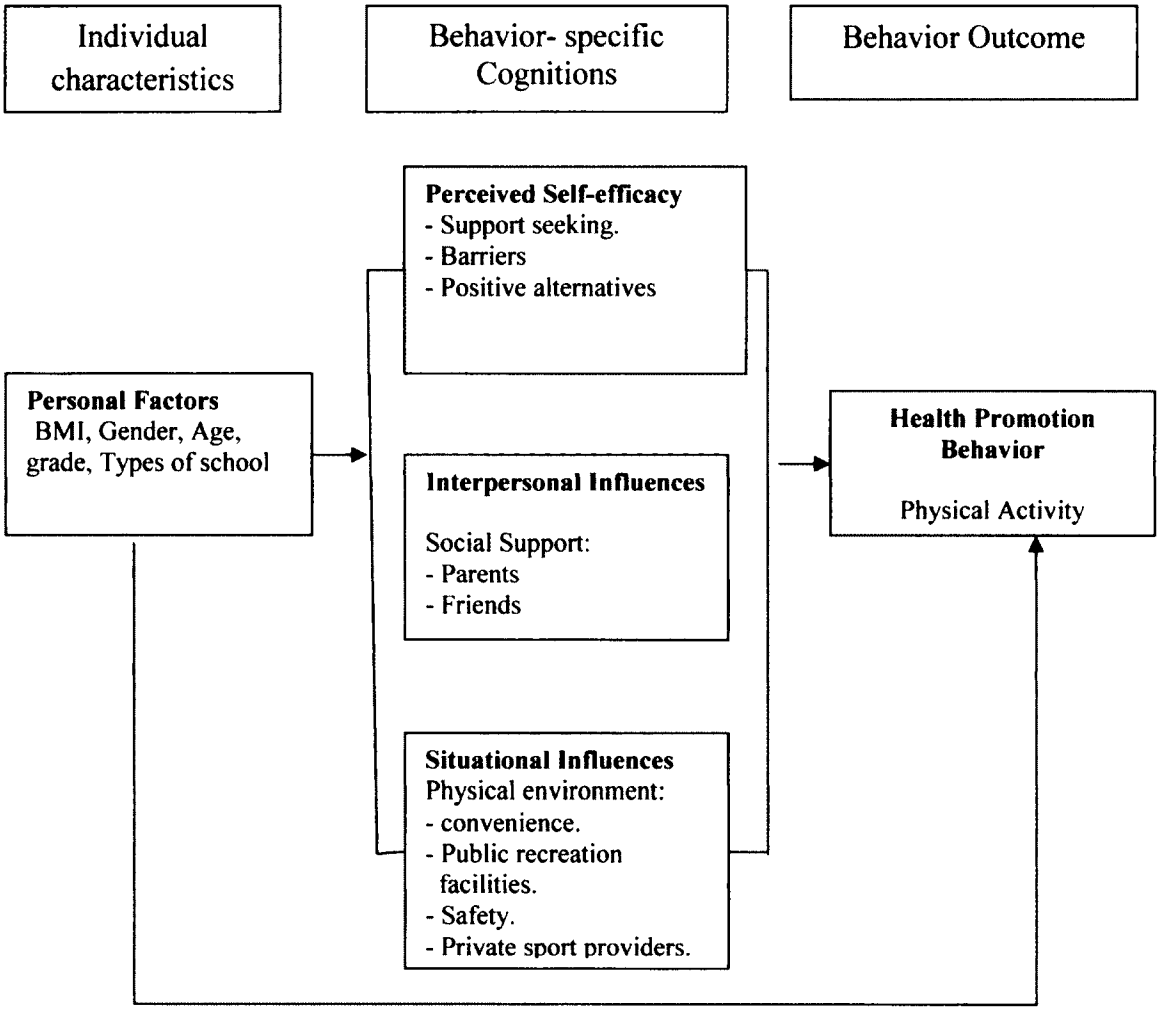

Figure 1. Proposed Conceptual Model Derived from Pender's Health Promotion Model (1996).

Obesity

The prevalence of obesity in the US has increased substantially since the 1960s (Flegal, Carroll, Kuczmarski, & Johnson, 1998). From 1976-1980 to 2007-2008, obesity prevalence increased from 15% to 34% among adults and from 5% to 17% among children and adolescents (Flegal et al., 2010; Ogden et al., 2010). Overweight children are more likely to become overweight adults (McNaughton, Ball, Mishra, & Crawford,

2008; Williams & Strobino, 2008). Approximately 50% of obese adolescents with a BMI at or above the 95th percentile become obese adults, leading to increased health problems such as a higher prevalence of cardiovascular disease and diabetes (Dietz, 1998).

Overweight and obese children and adolescents are known to have significant physical and psychological health consequences such as cardiovascular disease, hypertension, high cholesterol levels, type 2 diabetes mellitus, and other risk factors related to conditions associated with increased weight such as asthma, hepatic stenosis, and sleep apnea (Cali & Caprio, 2008; Williams & Strobino, 2008). In addition, being overweight or obese places a long-term higher risk for chronic conditions such as stroke, colon, breast and kidney cancers, musculoskeletal disorders, and gall bladder disease (Daniels, Jacobson, McCrindle, Eckel, & Sanner, 2009).

Inadequate dietary habits and physical inactivity are the major preventable risk factors for obesity (Rodriguez & Moreno, 2006). Several studies examining nutritional status and physical activity among children and adolescents conclude that nutritional interventions and interventions to enhance physical activity are strongly needed (Lytle, Jacobs, Perry, & Klepp, 2002). Ivesa, Peláezb, Gallegod, Terradese, and Aguilàf (2012) conducted a study to examine the efficiency of educational interventions on lifestyle habits to reduce BMI in adolescents. The sample consisted of 174 adolescents between 10 and 14 years old who were either overweight or obese. The participants were assigned randomly into two groups (intervention and control group), each of which included 87 participants. Health education interventions about dietary habits and physical exercise were provided at the first visit and at the follow up visits at one, three, six, nine, and 12 months. The findings included decreased BMI and improved dietary habits such as

increased consumption of fruit, decreased consumption of sweets, and decreased eating out of boredom. On the other hand, there was no improvement in physical activity. The strength of the study was the involvement of parents in health education classes; its limitation was the use of online tools.

The CDC (2002) conducted a national study of children ages 9 to 13 years. The results indicated that approximately 62% of children do not participate in any organized physical activity during non-school hours, and approximately 23% of children do not engage in any free time physical activity. Moreover, children tend to become less physically active and more obese as they move into adolescence (CDC, 2002). Harper (2006) reported that physical inactivity such as watching television and playing video games has been related to higher BMI in children and adolescents. Also, sedentary behaviors such as listening to music or talking on the telephone for extended periods were associated with increased obesity by decreasing energy expenditure according to Nowicka and Flodmark (2007). As a result of the epidemic of childhood obesity, several guidelines and programs have been implemented to promote healthy eating habits and regular physical activity in the general US population. For the purpose of this study, determinants of physical activity in AA children will be examined. Perhaps future studies will be conducted to examine the eating habits among AA children.

Physical Activity

The terms *physical activity* and *exercise* are widely used to describe individuals' movements. These terms have been used interchangeably in the literature, but in fact exercise is a subgroup of physical activity (Caspersen, Powell, & Christenson, 1985). Physical activity has been defined as any body movement that works the muscles and

uses more energy than would be used when resting (Ford et al., 2010). Body movement increases energy expenditure, leading to a higher metabolic rate than at resting (Maibach, 2007; Nowicka & Flodmark, 2007). Physical activity is categorized according to its purposes, such as occupational, leisure time, or commuting activities (Maibach, 2007). Conversely, exercise has been defined as planned and structured bodily movement performed to improve or maintain one or more components of physical fitness (Caspersen et al., 1985). Children can participate in physical activity by active transportation, outdoor play, personal fitness activities, and sports (Council on Sports Medicine and Fitness and Council on School Health, 2006).

Physical Activity Benefits

Physical activity plays an important role in obesity prevention (Kay & Fiatarone Singh, 2006). Obesity occurs as a result of an imbalance between energy consumption and energy expenditure. Children can influence their energy expenditure through physical activity. Decreased participation in physical activity has been shown to be independently associated with higher BMI during childhood and adolescence (Kimm et al., 2005).

Physical activity has several physical, psychological, and social benefits for all age groups (Dishman et al., 2005). Regular physical activity in children and adolescents helps to build and maintain healthy bones and muscles (US Department of Health and Human Services [DHHS], 2008) and reduces the risk of developing chronic conditions such as cardiovascular disease, hypertension, colon cancer, and diabetes (Boutron-Ruault, Senesse, Meance, Belghiti, & Faivre, 2001; Council on Sports Medicine and Fitness and Council on School Health, 2006; Dishman et al., 2005). Furthermore, the many

psychological benefits of maintaining regular physical activity include increased self-esteem and self-confidence and reduced feelings of depression and anxiety (Hill, King, & Armstrong, 2007; USDHHS, 2008). In addition, participation in physical activity might enhance students' academic performance and improve behaviors and factors that influence academic achievement such as concentration and attentiveness in the classroom (CDC, 2010).

It is suggested that physical habits in adulthood originate from childhood (Makinen et al., 2010). Previous studies have consistently demonstrated that the higher the childhood BMI, the greater risk of becoming an overweight adult. Herman, Craig, Gauvin, and Katzmarzyk (2009) conducted a longitudinal study in Canada to track BMI and physical activity over 22 years from youth to adulthood. The study sample was 374 participants between 7 and 18 years old in 1981 who were reevaluated in 2002 to 2004. The results of the study demonstrated that around 38% and 42% of children and adolescents in the highest and lowest BMI quintiles remained in these quintiles as adults, approximately 83% of overweight children and adolescents remained overweight as adults, and almost all healthy weight adults had been healthy weight youth. Also, the study reported that 16% of children and 18% of adolescents who participated in high and low physical activity remained the same as adults. Furthermore, overweight and obesity in childhood predicted a large range of adverse health effects in later adulthood. As a result, several school-based and community-based programs have been developed to increase awareness among teachers, parents, and children about the health benefits of an active lifestyle.

Understanding the antecedents of minority children's physical activity engagement is important. Minority children are less likely to engage in non-school physical activity and physical activity in physical education classes (Gordon-Larsen, McMurray, & Popkin, 1999; Kann et al., 1996; Lindquist, Reynolds, & Goran, 1999), and are less fit relative to Caucasian children (Lindquist et al., 1999). Many studies have been conducted to examine the determinants of physical activity among African American, Hispanic American, and Native American children (Martin et al., 2005; Martin, Oliver, & McCaughtry, 2007; Bagley, Angel, Dilworth-Anderson, Liu, & Schinke, 1995). To date, there has been no study conducted to examine the determinants of physical activity in AA children in Southern California.

Obesity and Physical Activity in Arab Americans

The prevalence of obesity and physical inactivity is high in the AA adult population. A cross sectional study was conducted in Southern California to assess the general health status of 353 AA general population adults demonstrating the following prevalence of chronic conditions: hypertension 21%, hyperlipidemia 24.9%, diabetes 9.3%, overweight 40.3%, and obesity 27.5% (Qahoush, 2006). Another cross sectional study conducted among 321 AA adults in Washington found the prevalence of health conditions as: hypertension 16.3%, high cholesterol 37.6%, overweight 39.9%, and obesity 22.3% (Shara et al., 2010). Hammad et al. (1997) conducted a cross sectional study of 261 AAs in Michigan and reported the following health conditions: hypertension 23%, diabetes 31.9%, and high cholesterol 48%. A survey of 2,025 individuals conducted among AA adults in Michigan demonstrated 59.4% of participants were overweight and 17.1% were obese (Corteville, 2010). A health assessment survey

conducted by the Arab American Chaldean Council (ACC) in Michigan among AA adults found they were more likely to have three or more chronic conditions (Corteville, 2010). In another survey conducted by the Arab Community Center for Economic and Social Service (ACCESS) and ACC (2009) in Michigan found that diabetic patients were more likely to have hypertension, high cholesterol, and heart disease (Corteville, 2010). In a more recent cross sectional study conducted among 185 AA patients with type 2 diabetes in Southern California, 84.9% of participants were obese or overweight, and 48.1% were obese (Zakarni, 2013). These studies reflect the high prevalence of obesity and its associated diseases in AA adults.

The prevalence of low physical activity has also been reported in several studies among AA adults. Hammad et al. (2002) surveyed a total of 1,200 participants to assess the health and physical activity of AA adults residing in Detroit, Michigan and found 34% of participants were obese, 80% did not regularly exercise, and 75% had sedentary lifestyles. Among AA patients with diabetes residing in Michigan, only 15% reported engagement in strenuous exercise (Berlie et al., 2008). In another cross sectional study of health risks among AA adults in Michigan, 47% of men (n=97) and 19% of women (n=200) were physically active, which was defined as regularly participating in activities that made participants breathe hard and sweat, walking regularly for 15 minutes at a time, or engaging in other less vigorous physical activity for 150 minutes a week (Jaber, Brown, Hammad, Zhu, & Herman, 2003).

In Southern California, 46.5% of AA patients with type 2 diabetes did not exercise at all when they were asked to report their physical activities in general for at least 30 minutes during the last 7 days, and only 15.7% exercised every day (Zakarni,

2013). In the same study, when the participants were asked to report their participation in a strict training exercise session during the last 7 days, 55.7% of the participants did not exercise at all, and only 12.4% exercised every day. Qahoush (2006) conducted a study of physical activity patterns among AA general population adults in Southern California. The sample consisted of 173 men and 180 women with a mean age of 38.5. The participants completed the International Physical Activity Questionnaire. The findings of the study indicated that 46.2% of participants were sedentary and 53.8% were active.

Abou-Mediene and Shamo (2005) conducted a cross sectional research study among 158 fifth grade AA students in Michigan demonstrating that 31% of boys and 24.5% of girls were overweight, and 17.6% of boys and 15.5% of girls were obese. Martin, McCaughtry, and Shen (2008) conducted a cross sectional study among 345 AA students aged 10 to 14 years residing in Michigan and demonstrated that AA children participated in strenuous physical activity an average of 4.4 times a week for at least 15 minutes during their free time, 4.4 times a week for mild physical activity, and 4.1 times a week for moderate physical activity, for a total of at least 3 hours and 15 minutes of physical activity during free time in a week, and only slightly over 2 hours of moderate to vigorous physical activity. This study identified that the physical activity of AA children residing in Michigan was less than the national recommendations of physical activity (Strong et al., 2005; USDHHS, 2000).

Kahan (2009) conducted a cross sectional study among 214 AA students aged 18 to 29 years to examine the quantity and type of physical activity. The researcher used pedometers and daily activity logs to measure physical activity. The results demonstrated that 6.1% of the participants were obese and 27.1% were overweight. In addition, 69.2%

of the students had no weekly engagement in sport and 52.8% did not have walk or run activities. Furthermore, students' mean number of daily steps was 9,256 steps, which is fewer than the number of recommended steps per day. Finally, males were more likely to participate in sport activities than females. Similarly, Hatahet et al. (2002) reported the prevalence of overweight in young AA adults residing in Michigan was 37.9%. These studies demonstrate the high prevalence of obesity and overweight and low physical activity in the AA population at different age groups, indicating the critical need to examine factors that might impact physical activity in AA children.

Factors Influencing Physical Health in Children and Adolescents

Personal Factors

Several personal characteristics (e.g., age, gender, and BMI) have been found to influence individual physical activity patterns.

Age. Research indicates that with increasing age, physical activity declines more rapidly (Kahn et al., 2008; Nader, Bradley, Houts, McRitchie, & O'Brien, 2008). Troiano et al. (2008) found the percentage of children performing physical activity decreases from 100% in elementary school to 30% in high school (between ages 12 and 15) and that when children reach 12 to 15 years old, they engage in only about one-third to one-half of the moderate to vigorous activities they had participated in at a younger age of 6 to 11 years. McDermott et al. (2009) found that when students were asked about their participation in physical activity during the last seven days, sixth grade students reported significantly higher vigorous physical activity than seventh grade students. And in a descriptive correlational study conducted among elementary and high school students to examine the interrelationships of physical activity, watching television time, and

vegetable and fruit consumption, elementary school students consumed more fruits and vegetables and were more active than high school students (Driskell, Dyment, Mauriello, Castle, & Sherman, 2008).

Gender. Gender differences have been considered an important factor affecting physical activity, as girls have consistently demonstrated lower levels of activity than boys (Troiano et al., 2008; Whitt-Glover et al., 2009). Wu and Pender (2005) conducted a study based on a theoretical framework model. The researchers examined the causal relationships between individual characteristics, interpersonal influences, and cognitions in predicting levels of physical activity among Taiwanese adolescents, indicating that boys were more active than girls in both eighth and ninth grades. Similarly, according to Kahan's (2003) review of Islam and physical activity, girls engaged in less physical activity than boys. The researcher relates this difference in physical activity to many reasons including parental concern over girls having contact with boys, immodest clothing, unacceptable facilities, and commitments to family such as staying at home and watching siblings. Muslim girls living in Western Europe tended to spend their leisure time in sedentary activities such as reading, watching television, art and craft, and needle work, while boys were more active (Kahan, 2003). Ajrouch (2000) conducted a cross sectional study among AA children and demonstrated that young AA girls were not allowed to camp overnight with their Girl Scout friends, which might explain how cultural norms may limit girls' participation in physical activity. AA girls may feel unable to engage in moderate to vigorous activities as a result of AA parents' tendency to control their behaviors (such as ensuring modest dress) compared to boys (Martin,

McCaughtry, & Shen, 2008). Therefore, gender might influence physical activity in AA children and adolescents.

BMI. Previous studies indicated that overweight and obese youth engaged in lower levels of physical activity than healthy weight youth (Byrd-Williams, Kelly, Davis, Spruijt-Metz, & Goran, 2007; Kitzman-Ulrich, Wilson, Van Horn, & Lawman, 2010). BMI may influence the relationship of psychosocial determinants on physical activity. Taylor et al. (2002) conducted a study on seventh to twelfth grade students and found that psychosocial determinants including family and peer support were positively associated with activities in healthy weight youth, but not in overweight youth. Overweight and obese children and adolescents may feel unconfident in participating in sports because they are unable to perform like healthy weight children (Hills et al., 2007). Obese children might be teased during physical activity by their friends or teachers regarding their bodies, skills and capabilities, pushing them into more physical inactivity, additional weight gain, low self-confidence, and depression (Rukavina & Li, 2008). This study will attempt to identify the prevalence of obesity among the AA children and its relationship to their physical activity.

Self-Efficacy

Self-efficacy was considered one of the strongest psychosocial predictors of physical activity among children and adolescents (Bungum et al., 2007; Trost et al., 2002). Self-efficacy was defined as a person's belief regarding his or her confidence or ability to perform a specific action such as engaging in regular physical activity (Bandura, 2004). Individuals with strong self efficacy are able to overcome common barriers to be physically active and are more likely to engage in regular physical activity

compared with individuals with weaker self efficacy (Bandura, 1997; McNeill, Wyrwich, Brownson, Clark, & Kreuter, 2006). On the other hand, when adolescents lack self-efficacy they do not manage situations effectively, even when they have the necessary skills and knowledge to do so (Bandura, 1986). Perceiving greater barriers to physical activity is negatively associated with children's actual physical activity (Allison, Dwyer, & Makin, 1999; Sallis, Prochaska, & Taylor, 2000). Children's perceived ability to overcome barriers is positively associated with higher levels of moderate and vigorous intensity physical activity (Trost et al., 1997). In addition, self-efficacy has been found to play a significant role in health-related habits such as smoking, eating disorders, pain management, cardiac rehabilitation, and adherence to medical regimens (O'Leary, 1985).

Self-efficacy has been examined in predicting physical activity among adults but less frequently examined in children and adolescents (Saunders et al., 1997). Trost et al. (1997) conducted a prospective study of primarily African American fifth-grade students to identify predictors of vigorous physical activity and moderate to vigorous physical activity. Selected social-cognitive determinants of physical activity were assessed via questionnaire in the fifth grade. Participation in vigorous physical activity and moderate to vigorous physical activity was assessed via previous day physical activity recall one year later in the sixth grade. The results of the study indicated that participation in community sports, self-efficacy in overcoming barriers, and beliefs regarding physical activity outcomes were found to be significant predictors in both vigorous physical activity and moderate to vigorous physical activity.

Kitzman-Ulrich et al. (2010) conducted a cross sectional study among 669 sixth grade students to examine the influence of BMI on self-efficacy, social support, and

physical activity. Self reported questionnaires were used to measure self-efficacy and social support, while seven-day accelerometers were used to measure physical activity. Self-efficacy was found to be an important determinant of physical activity for both boys and girls regardless of BMI. Hausenblas, Symons Downs, Fleming, and Connaughton (2002) found that urban middle school children in Florida who had been exercising regularly for over six months had stronger self-efficacy compared with children who were not exercising and had no intention to begin exercising.

Reynolds et al. (1990) conducted a longitudinal study of 743 tenth graders to examine psychosocial predictors of physical activity. The students engaged in an interventional program (SAHP). Self-administered questionnaires were used to collect data at baseline and at 4 and 16 months post baseline. The results demonstrated that after 16 months physical activity was significantly associated with self-efficacy and intention among female students but was only significantly related to intention in male students.

Beets, Pitetti, and Forlaw (2007) conducted a study to examine the role of social support and self-efficacy among rural high school students. The results of the study indicated strong support for the relationship between barrier self-efficacy, peer social support, and physical activity among adolescents. The researchers emphasized that peer influence directly affects physical activity levels and does so indirectly through enhanced self-efficacy. Participants were primarily female and White non-Hispanic, limiting the generalization of the findings.

The application of self-efficacy to research on physical activity emphasizes that a strong belief in a person's ability to be physically active increases participation in physical activity. In adults, there has been a relatively consistent relationship between

self-efficacy and increased physical activity (McAuley & Mihalko, 1998), but results for children and adolescents have been inconsistent (Sallis, 2000). Kelishadi et al. (2010) conducted a mixed methods study of 600 Iranian students between 8 and 18 years old to explore barriers to physical activity. The quantitative results were that physical activity levels were significantly higher in boys than girls and there was an inverse association between self-efficacy and physical activity levels. The strengths of the study were its novelty focus on non-Western populations of children and adolescents, mixed methodology design, diversity in sampling involved urban and rural areas, and data collection from children, parents, and school staff. The limitation of the study was its utilization of a self-report questionnaire, allowing the possibility of measurement error from subtle social desirability influences.

Sallis (2000) emphasized the inconsistency of self-efficacy in predicting physical activity among children and adolescents might be due to differences between types of self-efficacy scales in measuring different components of self-efficacy. The three most common types or components of self efficacy examined in the literature were self efficacy for overcoming barriers to physical activity, seeking help for physical activity, and for being active despite competing activities such as watching television (Pate et al., 1997; Zakarian, Hovell, Hofstetter, Sallis, & Keating; 1994). Therefore, this study will examine three types or components of self-efficacy including support seeking, barriers, and positive alternatives self-efficacy.

Self-Efficacy among AAs

Qahoush (2006) conducted a cross sectional study of 353 Southern California AAs with a mean age of 38.5 years. The purpose of the study was to examine factors

influencing physical activity among AA adults. Self-efficacy was the only significant predictor of physical activity in males and females. The limitations of the study included lack of an objective measure for physical activity and that the sample reflected only those with high incomes.

Martin, McCaughtry and Shen (2008) conducted a cross sectional study in Michigan among 345 AA children aged 10 to14 years to evaluate the ability of the Theory of Planned Behavior (TPB) and Social Cognitive Theory (SCT) to predict moderate to vigorous physical activity (MVPA). The researchers found that SCT constructs were better predictors of MVPA than TPB constructs. The variables examined in the study included intention, attitude, perceived behavioral control, subjective norms, barrier self-efficacy, and parental support. Self-efficacy was the most important predictor of physical activity in SCT constructs, supporting the role of self-efficacy in promoting MVPA in AA children. In addition, the researchers found no gender differences for participation in physical activity. The limitation of the study was the inability to capture more than 9% of the variance in MVPA, indicating the need to examine additional determinants of MVPA. The physical activity examined in this study reflects only free time physical activity, so physical activity in physical education and formal sport programs were not explored. Additionally, the study sample may not have been representative of all AA children. The strength of the study was that it was the first to examine physical activity and social cognitive variables among AA children in the Midwest US.

Social Support

Social support has been recognized as an important determinant of physical

activity (Duncan et al., 2005; Kitzman-Ulrich et al., 2010; Martin & McCaughtry, 2008). Sources of social support for physical activity for children and adolescents include parents, siblings, and friends (Beets et al., 2007). Children spend around 18 years of their lives in close proximity to their parents, so parental support has been considered an important source of social support. Martin and McCaughtry (2008) completed a study on physical activity in 99 Hispanic American children between 10 and 14 years old and employed the Social Cognitive Theory as a guide to assess the determinants of physical activity, including perceptions of the social environment. The study findings indicated the highest source of social support was parents, followed by siblings and friends. Parents' encouragement and participation in physical activities with their children were considered direct support behaviors positively affecting children's physical activity levels and intentions to be active (Welk, Wood, & Morss, 2003). Trost et al. (2003) conducted a cross sectional study among 380 7^{th} and 12^{th} grade students and their parents. The study demonstrated that parental support including parental encouragement and participation in activities with their children directly positively influenced children's physical activity.

Children spend more time with their peers than their families as they grow up, so peers become an integral source of physical activity behaviors for adolescents (Bungum & Vincent, 1997). Duncan et al. (2005) conducted a cross sectional study to identify the sources and types of social support for 372 youth with mean age of 12.05 years. The findings of the study demonstrated that social support positively influenced physical activity in children and the highest source of social support was friends. The strengths of the study were its use of structural equation modeling in analyzing the data and using

more than one method to measure physical activity. One limitation was that only White participants were recruited, limiting study generalizability.

Sallis et al. (2002) conducted a cross sectional study among 781 students between grades 1 and 12 and their parents. Self-administered questionnaires were used to measure physical activity, social support, and psychological factors. The study demonstrated that friends' support was a significant positive predictor of vigorous physical activity among boys and girls of a wide range of age groups. In another cross sectional study conducted among middle school students in California, peer support was the strongest predictor of physical activity among study participants (Prochaska, Rodger, & James, 2002).

Springer, Kelder, and Hoelcher (2006) conducted a cross sectional study among 718 girls between 10 and 14 years old in Texas. The purpose of the study was to examine the associations of social support types (including social participation and social encouragement) and social support sources (including family and friends with physical activity levels). The researchers found that friends' physical activity participation and family and friends' encouragement were positively correlated with participants' moderate to vigorous physical activity. In the same study, friends' encouragement was the only factor that positively correlated with vigorous physical activity. It was not clear if the family support was from parents, siblings, or both. The recruitment of only female participants for this study limited the generalizability of the findings. The strength of the study was the administration of the Self-Administered Physical Activity Checklist over three separate days, including one weekend day, providing more stable estimate of daily minutes of activity.

There are several types of social support for physical activity such as

informational or emotional support, and instrumental support (Beets, Vogel, Forlaw, Pitetti, & Cardinal, 2006; Sallis et al., 1992; Taylor et al., 1994). Instrumental support comprises behaviors such as offering equipment, assisting with fees, and transportation. Hoefer, McKenzie, Sallis, Marshall, and Conway (2001) found that children had more physical activity when parents provided them with verbal support and transportation to and from physical activity locations. Similarly, Sallis et al. (1999) conducted a longitudinal study among 370 girls and 362 boys in different public schools to examine social and psychological correlates of physical activity changes over 20 months. The study found that transportation was the only type of social support related to change in activity for both boys and girls. The strength of the study included participation of both children and parents and use of objective physical activity measurement.

Beets et al. (2006) conducted a cross sectional study among 363 students between fifth to eighth grades using self-administered questionnaires for social support and physical activity. The purpose of the study was to examine the providers of physical activity (including mother, father, and peers) and types of social support (including encouragement, watching, praise, joint participation, and transportation). The study demonstrated that peers, transportation, and praise positively influenced physical activity levels. In addition, boys reported greater social support than girls. The strengths of this study were its use of structural equation modeling in analyzing the data and its examination of different sources and types of social support.

Several studies indicated a relationship between social support and BMI among children and adolescents. Zabinski, Stein, Hayden-Wade, and Wilfley (2003) conducted a cross sectional study to examine overweight children's perceived barriers to physical

activity compared with non-overweight children. The participants were children between 10 and 14 years old recruited from a summer fitness camp in Southern California, a university-based weight loss clinic in San Diego, and elementary and middle schools in California or New York. Questionnaires were used to investigate barriers and supportive factors for physical activity. The study found that overweight children, particularly girls, reported significantly higher social barriers to physical activity and lower levels of adult support compared with non overweight children. Social barriers included absence of anyone to engage in physical activity with, absence of someone at the same level to engage in physical activity with, having friends who did not like physical activity, and being teased by friends during participation in sports (Zabinski, Stein, Hayden-Wade, & Wilfley, 2003). Similarly, Kidzman-Ulrich et al. (2010) conducted a cross sectional study among 669 sixth grade students to examine the influence of BMI on self efficacy, social support, and physical activity. The findings indicated that family support was positively associated with healthy body weight for boys, but not in overweight boys. Furthermore, the level of physical activity in healthy weight children was higher than overweight children, and the level of physical activity was less in girls than in boys.

In summary, several studies have examined the importance of social support in promoting physical activity among children and adolescents. However, few studies have examined the sources and types of social support. Limited studies have examined the role of cultural influences on social support for physical activity. To date, no studies have examined the role of social support in physical activity for AA children and adolescents in Southern California.

Physical Environment

Neighborhood environmental factors have become top priority for public health research in the last 10 years, leading to increasing numbers of studies on environmental attributes and their association with physical activity. Neighborhood environmental factors include recreational infrastructure (e.g., availability of parks, playgrounds, youth camps and clubs), transport infrastructure (e.g., traffic speed or density and presence of sidewalks), and local conditions (e.g., safety, crime, and weather) (Davison & Lawson, 2006).

Several studies found significant positive association between the proximity of parks and playgrounds to the home and children's physical activity. Sallis et al. (1993) found that parents' reported number of play areas within walking distance of the home were positively associated with increased levels of physical activity among preschool children. Timperio, Crawford, Telford, and Salmon (2004) conducted a cross sectional study in Australia on 291 students between 5 and 6 years old and 919 students between 10 and 12 years old. The study demonstrated that children and their parents who reported a lack of parks or sports grounds near their homes had fewer walking and cycling trips. In another cross sectional study conducted among adolescents, the number of facilities for sport and exercise in the area was associated with higher adolescent self-reported vigorous activity (Zakarian, Hovell, Hofstetter, Sallis, & Keating, 1994). A prospective study conducted among African American fifth grade children demonstrated that participation in community sports for both boys and girls was considered an important predictor of vigorous and moderate physical activity (Stewart et al., 1997).

Robbin, Talley, Wu, and Wilbur (2010) conducted a qualitative study among sixth

grade boys to explore perceived benefits, barriers, self-efficacy, enjoyment or activity preferences, and environmental influences related to physical activity. Healthy body weight was the most important benefit and the environmental barriers included lacking equipment, lacking good places for physical activity, and lacking safe environment to play. The limitation of the study was the inability to generalize the results to other age groups.

The availability of places to engage in physical activity was considered an important environmental characteristic influencing physical activity levels. Babey, Hastert, Yu, and Brown (2008) conducted a cross sectional study to examine whether the relationship between physical activity and access to parks differs depending on adolescents' sociodemographic neighborhood characteristics and housing. The researchers obtained data from 4,010 adolescents using the California Interview Survey. The participants were from Latino, African American, Asian, and White American ethnic backgrounds. The study demonstrated that access to a safe park was positively associated with regular physical activity. Park access was not associated with regular physical activity for those groups living in apartment buildings, unsafe neighborhoods, and lower income families. The association between park access and physical activity differed by ethnicity. The limitation of the study included examining the access to parks and open spaces only; however, other recreational facilities may also be important for adolescents' physical activity. The strengths of the study were the large sample size and involvement of multiple ethnicities; however, AAs were not included in the study sample.

Kelishadi et al. (2010) conducted a cross sectional study to explore the barriers to physical activity in a representative sample of Iranian children and adolescents between 8

to 18 years old. In the qualitative part of the study 34 students, 20 parents, and 11 school staff identified lack of safe and easy access for physical activity, unsupportive family, and study priority as the main barriers to physical activity.

Several studies found a significant association between the weather conditions and physical activity. Brodersen, Steptoe, Williamson, and Wardle (2005) found that preschool children and 11- to 12-year old boys were less active during hotter months of the year. Furthermore, Brodersen et al. (2005) found that higher rainfall was associated with lower self-reported physical activity among girls, but not boys.

Several studies conducted among AA adults in Michigan to examine the environmental characteristics with physical activity demonstrated that hot summers and cold winters were generally unfavorable for outdoor physical activity, suggesting a sedentary lifestyle among AA adults (Aswad & Hammad, 2001; Hammad, Kysia, Rabah, Hassoun, & Connelly, 1999; Jaber et al., 2003; Kulwicki, 1990). To date, no studies have examined environmental characteristics in relation to physical activity among AA adults, children, or adolescents on the West Coast.

Conceptual Definitions

Personal Factors

For the purpose of this study, personal factors were defined as general characteristics of a person (biological, psychological, or sociocultural factors such as BMI, gender, age, grade, and type of school [public vs private]) that influence health behaviors.

Perceived Self-Efficacy

Perceived self-efficacy has been defined as the confidence a person has in his or her ability to successfully perform an action or behavior (Bandura, 1997; Hayden, 2009; Pender, Murdaugh, & Parsons, 2006).

Interpersonal Influences

Interpersonal influences are an individual's perceptions of the behaviors, beliefs, or attitudes of relevant others in regard to engaging in a specific health behavior such as social support, norms, and modeling (Pender, 1996).

Social Support for Physical Activity

Social support for physical activity is any direct assistance or encouragement provided by others (e.g., parents and friends; Pender, 1996).

Situational Influences (Physical Environment)

Situational influences are an individual's perceptions of the compatibility of life context or the environment with engaging in a specific health behavior such as convenience, public recreation facilities, safety, and private sport providers (Pender et al., 2006).

Health Promoting Behavior

Health promoting behavior is any behavior or action that individuals carry out with intention of improving their health (Peterson & Bredow, 2004).

Physical Activity

Physical activity was defined as any body movement that works the muscles and uses more energy than would be used in resting (Ford et al., 2010).

Overweight

Overweight was defined as having excess body weight for a particular height from fat, muscle, bone, water, or a combination of these factors (National Institutes of Health, National Heart, Lung, and Blood Institute, 2010).

Obesity

Obesity was defined as having excess body fat (Krebs et al., 2007).

Summary

As demonstrated in the review above, there is a gap in the current knowledge regarding determinants of physical activity among AA children. In particular, nothing has been documented about the relationship between demographic factors, self-efficacy, social support, environmental factors, and physical activity in this population. This study addresses the paucity of knowledge available for this culturally and ethnically diverse population and provides culturally sensitive scientific data that impacts physical activity among this population.

Physical activity and exercise have been reported in general terms for the AA population. When studying AA health, researchers should consider socio-religious barriers to some types of exercise and activity due to cultural norms for gender separation and modesty (Qahoush, 2006). The idea of physical activity is foreign in the Arab culture and a low level of physical activity may not be perceived as a health concern by AA adults (Qahoush, 2006); however, physical inactivity is a key factor contributing to the dramatic rise in prevalence of childhood obesity (Harper, 2006). Many strategies have been developed to promote physical activity among children and adolescents (Nowicka & Flodmark, 2007). However, these strategies should be culturally appropriate

in order to be effective. This study examined determinants of physical activity in AA children leading to future culturally sensitive interventions to improve AAs' physical activity.

CHAPTER 3

METHODS

The overall purpose of this descriptive correlational study was to describe determinants of physical activity in Arab American (AA) children residing in Southern California. The specific aims of this study were to:

1. Describe the demographic factors (age, gender, BMI, grade, types of school [public vs private]), self-efficacy, social support, physical environment, and levels and types of physical activity of AA children;
2. Examine the relationships between demographic factors (age, gender, BMI, grade, types of school [public vs private]), self-efficacy, social support, physical environment, and physical activity of AA children; and
3. Determine if there is a statistically significant model fitted to the data to explain the variance in physical activity among AA children.

The additional exploratory aim of this study was to describe the performance reliability of the instruments utilized in the current study of AA children.

Research Design

A descriptive correlational study using a cross sectional design was conducted to collect data from the subjects using standardized questionnaires in Arab community gathering places such as mosques and churches.

Setting

This study was conducted in the Southern California AA communities of Orange County, Riverside County, San Diego County, Los Angeles County, and San Bernardino County. Different mosques and churches conducting gatherings for the Arab community providing educational classes for AA youth, particularly on the weekends, were used to recruit study participants.

Research Sample

A convenience sampling method was used to recruit potential participants. Participants who met the inclusion criteria were of self identified Arab ancestry, 10 to 14 years old, able to communicate verbally or in writing in English, and were willing to sign informed consent or had a parent willing to sign informed consent to participate in this study. Any who did not meet these criteria were excluded from this study.

Sample Size

The sample size for this study was calculated based on the number of variables proposed in the study aims above. Tabachnick and Fidell (2007) suggest using the formula of $N \geq 50+8K$ for testing multiple correlations, and $N \geq 104+K$ for testing individual predictors. They suggest calculating N both ways and using the larger value. So, with 14 variables in this proposed study, the first formula (50+ [8*14]) = 161, the second formula (104+14) = 118. Therefore, the sample size for this proposed study

should be at least 161 persons.

To confirm the accuracy of the sample size, this researcher used Power Analysis and Sample Size (PASS) Software version 12.0 for a multiple regression power analysis (Cohen, 1988). A sample size of 162 achieves 80% power to detect an R-Squared of 0.11 attributed to 14 independent variables using an F-Test with a significance level (alpha) of 0.05. Therefore, according to these calculations, the maximum sample size required is 162 participants. This researcher obtained 20% above the maximum sample size to accomodate for incomplete questionnaires or missing data, for a sample size of 195. A total of 206 participants were recruited in the current study.

Data Collection

Instruments

Several instruments were used to collect study data. The researcher developed a demographic factors survey (Appendix A) to collect data on participant age, gender, grade, height, weight, and school type (private versus public). Participants' height and weight were measured with a portable stadiometer to the nearest 0.5 cm and digital scale to the nearest 0.1 kg, respectively, and BMI was calculated for each participant using the CDC's BMI calculator (2000). Physical activity was measured by the Physical Activity Questionnaire for Older Children (PAQ-C; Kowalski, Crocker, & Donen, 2004; Appendix B). Self-efficacy was measured by the Self Efficacy Scale (Saunders et al., 1997; Appendix C). Social support was measured by the Social Support Scale (Reimers et al., 2012; Appendix D). Finally, the environment was measured by the Physical Environment Scale (Reimers et al., 2012; Appendix E). Table 3-1 outlines the study variables with the instruments' psychometrics characteristics.

Table 1

Study Variables and Instruments' Psychometrics Characteristics

Variable	Instrument	Description	Reliability	Validity
Physical Activity	Physical Activity Questionnaire for Older Children (PAQ-C). (Kowalski, Crocker, & Donen, 2004)	10 items Likert scale	Test-retest reliability (0.75, 0.82) and ICC (0.79, 0.89) for boys and girls, respectively (Crocker, Bailey, Faulkner,Kowalski, & McGrath, 1997)	Convergent construct, and divergent validity (Kowalski, Crocker, & Faulkner, 1997)
Self Efficacy	Self Efficacy Scale (Saunders et al., 1997)	17 items, 3 subscales (support seeking, barriers, positive alternative) Dichotomous.	Internal consistency reliabilities, α (0.71, 0.71, 0.54) respectively. Test retest for scales(0.76, 0.82, 0.61) respectively	Construct and predictive validity
Social Support	Social Support Scale (Reimers et al., 2012)	8 items, 2 subscales (parental support, friends support) Rating scale.	Internal consistency (α=0.78, 0.70) Test retest reliability (0.83, 0,67)	Construct and Predictive Validity
Environment	Physical Environment Scale (Reimers et al., 2012)	8 items 4 subscales (public recreation facility, convenience, safety, private sport) Rating scales	Test retest intraclass correlation (ICC range 0.5 to 0.75)	Construct Validity
BMI	CDC BMI-for-age growth charts CDC (2000).	- *underweight* (less than the 5th percentile). - *healthy weight* (5th percentile to less than 85th percentile). - *overweight* (85th to less than 95th percentile) - *obese* (equal to or greater than the 95th percentile).	CDC (2000); (Barlow & the Expert Committee, 2007).	CDC (2000); (Barlow & the Expert Committee, 2007).

Physical Activity

The physical activity construct was measured by the Physical Activity Questionnaire for Older Children (PAQ-C; Kowalski et al., 2004; Appendix B). The PAQ-C is a self-administered questionnaire developed for children between 8 to 14 years old and in 4th to 8th grade to assess general levels of moderate to vigorous physical activity in the last seven days. This questionnaire was designed to measure types and frequency of physical activity before, during, and after school, and during spare time. Physical activity was defined as any activity, including sports and games, that caused children to breathe hard or sweat, or that made their legs feel tired.

The PAQ-C consists of 10 items measured on five-point Likert scale. The first item assesses spare time activities during the last seven days (1 = no activity to 5 = seven times or more). Items 2 through 8 assess the frequency with which participants engage in various activities during physical education class, lunch, recess, after school, evening, and weekends (1= lowest activity response, 5= highest activity response). Item 9 assesses the frequency of physical activity in all the days of the last week (ranging from 1 = none to 5 = very often). Item 10 assesses any reasons students were unable to engage in their usual physical activity during the last week. The final PAQ-C score can be calculated as the mean of items 1 to 9; a score of 1 indicates low physical activity, and a score of 5 indicates high physical activity. The PAQ-C manual will be used to code and score the instrument (Kowalski et al., 2004).

The PAQ-C's psychometric properties have been established in several studies (Kowalski et al., 2004). Kowalski, Crocker, and Faulkner (1997) conducted a study to support the validity of the PAQ-C using two samples of children. The first sample

consisted of 89 boys and girls aged 8 to 13 years. The convergent validity was obtained by moderate relationships with the activity rating (r = 0.63), a week summation of 24 hours of moderate to vigorous activity recalls (r = 0.53), and teachers' ratings of physical activity (r = 0.45). Divergent validity was obtained by no relationship between the PAQ-C and the behavioral conduct scale. Construct validity was also obtained through moderate correlation with perceptions of athletic competence (r = 0.48). The second sample consisted of 97 boys and girls in fourth to eighth grades. The convergent and construct validity was examined by using different instruments to measure physical activity. The PAQ-C was moderately related to the activity rating (r = 0.57), Leisure Time Exercise Questionnaire (r = 0.41), Seven Days Recall Interview (r = 0.46), and Caltrac Motion Sensor (r = 0.39). The results of this study support the validity of PAQ-C.

The test-retest reliability and internal consistency of the PAQ-C was examined among students aged 9 to 14; the results were 0.75 and 0.82 for boys and girls, respectively. The internal consistency measured by Cronbach's alpha for the total sample in the first week and second week were 0.79 and 0.89, respectively (Crocker et al., 1997).

Self-Efficacy

The self-efficacy construct was measured using the Physical Activity Self-efficacy Scale (PASES; Saunders et al., 1997; Appendix C). Developed based on Social Cognitive Theory (Bandura, 1986), the PASES instrument was piloted in four studies conducted with fifth grade students, resulting in a final version that includes age-appropriate words, a more visually clear format (e.g., wider margins and larger print), a simplified rating scale from five points to a dichotomous scale, and a reduced scale size

after deleting items children did not understand.

PASES is considered the result of one of the first efforts to measure self-efficacy for physical activity in children (Saunders et al., 1997). PASES is a dichotomous scale (yes or no) and consists of three subscales: support seeking subscale (seven items), barriers subscale (four items), and positive alternatives subscale (six items). The support seeking subscale measures children's belief they can ask or find others such as parents or friends to share physical activity. The barriers subscale measures children's belief they can overcome common barriers to be physically active. The positive alternatives subscale measures children's belief they can substitute physical activity for sedentary behaviors such as viewing television.

The validity and reliability of PASES were examined using a sample of 422 fifth grade students. Validation techniques applied for psychometric development of the scale included factor analysis, reliability, and correlating the scale scores with intention to be physically active and after school physical activity. Factor analysis demonstrated construct validity, and factor loading was reported of greater than .35. Internal consistency reliabilities for the support seeking, barriers, and positives alternatives subscales were 0.71, 0.71, and 0.54, respectively. Test-retest reliability for the support seeking, barriers, and positives alternatives subscales were 0.76, 0.82, and 0.61, respectively (Saunders et al., 1997).

The PASES questionnaire has been used with children of African American, Caucasian, and Hispanic ethnicities (Bartholomew, Loukas, Jowers, & Allua, 2006). It has also been used among boys and girls ranging from fifth to eighth grades in several studies (Dishman et al,. 2005; Trost, Pate, Ward, Saunders, & Riner, 1999; Kitzman-

Ulrich, Wilson, Van Horn, & Lawman, 2010; Pate et al., 1997). The PASES has not yet been used in Arab American youth. Findings from this study will support its use in this population.

Social Support

The social support construct was measured using the Social Support Scale (SSS; Reimers et al., 2012; Appendix D). The SSS is a four-point Likert scale gauging respondents' level of agreement (1=never, 2=rarely, 3=often, 4=always). This instrument consists of two subscales: parental support subscale (5 items) and friends support subscale (3 items). Higher scores indicate greater social support.

Construct validity for the SSS was established by cross validation technique using two independent samples of boys and girls between 9 to 17 years old. Predictive validity was established using Pearson's correlation demonstrating statistically significant positive correlations between parent and friend support and three different physical activity indices. Internal consistency reliability was measured by Cronbach's alphas for the parental support subscale and friend support subscale of 0.78 and 0.70, respectively. Test-retest reliability was measured by Intra Class Coefficients (ICC) demonstrating parental support subscale and friend support subscale of 0.83 and 0.67, respectively (Reimers et al., 2012).

Physical Environment

The physical environment construct was measured by the Physical Environment Scale (Reimers et al., 2012; Appendix E). The Physical Environment Scale is a four-point Likert scale gauging respondents' level of agreement (1=never, 2=rarely, 3=often, 4=always). This instrument consists of four subscales: convenience subscale (2 items),

public recreation facilities subscale (2 items), safety subscale (2 items), and private sport providers (2 items). Higher scores indicate a more activity-friendly environment.

Reimers et al. (2012) examined the preliminary reliability and validity of the Physical Environment Scale among boys and girls between 9 and 17 years old. The one week test-retest reliability calculated by ICC was moderate for the accessibility of public recreational facilities subscale, convenience subscale, and safety subscale of 0.74, 0.71, and 0.59, respectively. Construct validity was established by cross validation technique using two independent samples of boys and girls between 9 to 17 years old (Reimers et al., 2012).

Overweight and Obesity

BMI is a measure used to determine childhood overweight and obesity using a child's weight and height. A child's weight status is determined using an age- and sex-specific percentile for BMI rather than the BMI categories used for adults because children's body composition varies by age and gender (CDC, 2002).

The overweight and obesity constructs were measured by obtaining an accurate height and weight with a portable stadiometer to the nearest 0.5 cm and digital scale to the nearest 0.1 kg, respectively. Participants' BMIs were calculated using the CDC's BMI calculator (2002). Next, the CDC's BMI-for-age growth charts for girls and boys were used to translate the BMIs into percentiles by sex and age (CDC, 2002). Finally, these percentiles were used to find the weight status category percentile range for age using established ranges for that have been determined for ages 2 to 19 years for underweight (less than the 5th percentile), healthy weight (5th percentile to less than 85th percentile), overweight (85th to less than 95th percentile), and obese (equal to or greater

than the 95th percentile; Barlow & the Expert Committee, 2007). According to the weight status category percentile range for ages between 2 to 19 years, *overweight* is defined as a BMI at or above the 85th percentile and lower than the 95th percentile for children of the same age and sex, and *obesity* is defined as a BMI at or above the 95th percentile for children of the same age and sex.

Recruitment Plan

Potential participants were recruited at mosques, churches, and family social gathering events in Arab communities. This study's primary investigator (PI) contacted the administrators of these sites and obtained verbal permission to recruit potential participants. The research assistant (RA) and the PI posted English and Arabic fliers advertising the study in visibly prominent places in Arab community gathering places. Site administrators and family social event coordinators assisted with recruitment. Using a script written by the PI and approved by the Institutional Research Board (IRB), site administrators announced the study to parents, introduced the PI and RA to parents, and provided study fliers to interested participants. Site administrators and family social events coordinators were provided with eligibility criteria and notified interested eligible participants how to contact the PI or RA for further questions and instructions on volunteering to participate. At sites and events, the PI and RA wore University of San Diego (USD) T-shirts with identification badges so that interested persons could easily recognize them.

Interested parents and their potential participant children were invited to a private room where the PI or RA explained the study's aims. Parents or guardians who expressed interest in volunteering their children to participate were asked to sign the USD IRB

consent to participate in the research study and children were asked to sign the assent form to participate in the research study.

Data Collection Procedure

A self-administered paper and pencil questionnaire was made available in English language. After obtaining the questionnaire from participants, the PI or RA measured paticipants' height and weight with a portable stadiometer to the nearest 0.5 cm and digital scale to the nearest 0.1 kg. The height and weight measurements were recorded on the demographic form by the PI or RA (Appendix A).

The RA assisting the PI in this study was a bilingual, bicultural Arabic-English nurse. The PI and RA were available three to four days per week. The PI trained the RA during a one-hour workshop that included an orientation and introduction to the study, an explanation of how the questionnaire should be presented to subjects, and a demonstration of all activities related to recruitment and data collection. The PI monitored as the RA demonstrated all recruitment and data collection procedures until the PI was confident the RA was consistently following the study protocol. The PI and RA provided participants with instructions about filling out the questionnaires and answered any questions. Immediately after data collection, the PI or RA reviewed the completed questionnaires for missing data. If any responses were missing, the PI or RA respectfully asked for clarification on why the participant chose not to answer the item. The PI or RA measured participants' weight and height and these values were recorded on the study demographic form (Appendix A). Each participant was given a $10 gift card for participation.

Data Management

At the end of each event the PI collected the questionnaires from participants and the RA. All data were manually entered by the PI onto a spreadsheet using the Statistical Package for the Social Sciences (SPSS) Version 20.0 (2011) software. The questionnaires and all other study forms will be stored in a locked file cabinet in the PI's office for five years.

Statistical Analysis

The first specific aim of the study was to describe the demographic factors, self-efficacy, social support, physical environment, and levels and types of physical activity of AA children. In order to achieve this aim, descriptive statistics were performed on the data. Measures of central tendency for continuous level data (mean, mode, median), variability (range, standard deviation), and frequencies (number and percent) were calculated for categorical level data.

The second specific aim of the study was to examine the relationships between demographic factors, self -efficacy, social support, physical environment, and physical activity in AA children. In order to achieve this aim, two Independent T-tests, ANOVA, Pearson's correlation coefficient, Pearson Chi-Square, and Fisher's exact test were performed to examine the relationships between the independent variables (IVs) and physical activity. The two independent samples T-test was utilized to examine the relationships between independent variables having two categorical groups (gender and school types [public vs private]) with physical activity. A one-way ANOVA was utilized to examine relationships between IVs having three or more categorical groups (BMI and grades with physical activity). A Post-hoc test was utilized using Bonferonni adjustment

for multiple comparisons. Pearson's correlation coefficients were calculated to examine the relationship between continuous IVs (age, self-efficacy, social support, and physical environment) and participants' mean physical activity. Pearson Chi-Square was used to assess the association between qualitative variables. Fisher's exact test was used in the analysis when the assumptions of Pearson Chi Square were not met. Chronbach's alpha values were calculated to determine the items with each other so that scores of scales would be created based on inter-item consistency.

The third specific aim of the study was to determine if there is a statistically significant model fitted to the data to explain the variance in physical activity in AA children. In order to achieve this aim, multiple linear regression was used to determine the significant variables associated with PAQ values after adjusting for all other variables in the model. Alpha was set at 0.05 significance level for all statistical tests.

Multiple linear regression analysis is used to predict the value of a single dependent variable (DV) from a weighted, linear combination of IVs (Tabachnick and Fidell, 2007). The multiple correlation (R) is the linear combination of IVs that maximally correlate with the DV. The R explains the variation in a DV as a result of a combination of IVs. In multiple regression, the coefficient of determination (R^2) determines the proportion of DV variance as a result of the combination of IVs. In multiple regression, the F test determines whether the relationship between the set of IVs and the DV is large enough to be meaningful. A regression equation was developed in order to predict physical activity for individuals in this population.

Finally, one exploratory aim of this study was to describe the performanice reliability of the instruments utilized in this study of AA children. Reliability was

assessed by internal consistency, evaluated by calculation of Cronbach's alpha coefficient on each measurement instrument subscales and total score and a Cronbach's alpha 0.70 or higher indicates acceptable internal consistency (Cronbach, 1951).

Human Subjects Considerations

USD IRB approval was obtained before starting the data collection. The PI or RA notified participants that their acceptance or refusal to participate was voluntary. The PI or RA explained the aims, minimal risks, and benefits, and participants were fully informed of their right to withdraw from the study at any time or to decline to answer any question. The parents and participants were allowed sufficient time to read the study consent form and ask questions before signing the consent and assent. The parents and participants were provided with a copy of the consent and assent forms. To protect participants' confidentiality questionnaires were coded with numbers and without personal identifying information. Results were aggregated to protect participant anonymity. Data were stored in a locked file cabinet in the PI's office.

Summary

This descriptive correlational study was designed to describe and examine determinants of physical activity among AA children. A convenience sampling method was used to recruit potential participants. This study sample included participants from Arab communities in several Southern California counties. The PI used several instruments to measure the study variables and various statistical tests were performed to analyze the data.

CHAPTER 4

RESULTS

Specific Aim # 1

The first aim of this study was to describe the demographic factors (age, gender, BMI, grade, types of school [public vs private]), self-efficacy, social support, physical environment, and levels and types of physical activity of Arab American (AA) children. The descriptive statistics for the demographic factors are shown in Tables 2 and 3, and the statistics for the independent variables are shown in Tables 4-9. The descriptive statistics are presented for the overall sample (N=206) and by gender.

Table 2

Participants' Demographics Characteristics for Total Sample (N=206)

Variable	Category	N	%
Gender	Boy	96	46.6
	Girl	110	53.4
Grade	4th Grade	28	13.6
	5th Grade	35	17.0
	6th Grade	32	15.5
	7th Grade	39	18.9
	8th Grade	28	13.6
	9th Grade	44	21.4
Types of School	Private	51	24.8
	Public	155	75.2
Body Mass Index (BMI)	Underweight (<5th percentile)	2	1.0
	Healthy Weight (5th-<85th percentile)	111	53.9
	Overweight (85th-<95th percentile)	53	25.7
	Obese (>95th Percentile)	40	19.4
Age (Mean ± SD)	12.13 ± 1.49	-	-

Table 3

Participants' Demographics Characteristics by Gender

Variable	Category	Boys N (%)	Girls N (%)	P-Value
Grade	4th Grade	18 (18.8)	10 (9.1)	.141[a]
	5th Grade	17 (17.7)	18 (16.4)	
	6th Grade	17 (17.7)	15 (13.6)	
	7th Grade	19 (19.8)	20 (18.2)	
	8th Grade	10 (10.4)	18 (16.4)	
	9th Grade	15 (15.6)	29 (26.4)	
Type of School	Private	25 (26.0)	26 (23.6)	.690[a]
	Public	71 (74.0)	84 (76.4)	

Body Mass Index (BMI)	Underweight (<5th percentile)	1 (1.0)	1 (0.9)	.694[b]
	Healthy Weight (5th-<85th percentile)	49 (51.0)	62 (56.4)	
	Overweight (85th-<95th percentile)	24 (25.0)	29 (26.4)	
	Obese (>95th Percentile)	22 (22.9)	18 (16.4)	
Age (Mean ± SD)	-	11.89 ± 1.47	12.35 ± 1.48	.027*[c]

Note. * Significant at an alpha of 0.05; a. Chi- square Test; b. Fisher's Exact; c. Independent samples T-test

Demographic Factors

The sample size was N=206. Forty-seven percent (n = 96) of participants were boys and 53% (n=110) were girls. The participants' ages ranged from 10 to 14 years with a mean of 12.13 years (SD=1.49). The participants' grade levels differed; the majority were in 9th grade (n=44; 21.4%), followed by 7th grade (n=39; 18.9%), 5th grade (n=35; 17.9%), and 6th grade (n=32; 15.5%); there were equal numbers of 4th and 8th grade participants (n=28; 13.6%). Majority of girls (n=29; 26.4%) were in the 9th grade, while the majority of boys (n=19; 19.8%) were in 7th grade (see Table 3).

Seventy-five percent (n=155) of participants were in public school, and 24.8% (n=51) were in private school. The participants' BMIs differed; the majority were healthy weight (BMI 5th - <85th percentile; n=111; 53.9%), followed by overweight (BMI 85th- < 95th percentile; n=53; 25.7%), obese (BMI > 95th percentile; n=40; 19.4%), and underweight (BMI < 5th percentile; n=2; 1%). Twenty-three percent (n=22) of boys were obese, while 16.4% of girls (n=18) were obese. Twenty-five percent (n=24) of boys were overweight, while 26.4% of girls (n=29) were overweight (see Table 3).

Self-Efficacy of Physical Activity

The Physical Activity Self-Efficacy Scale (PASES) included three subscales: support seeking, barriers, and positive alternatives (Saunders et al., 1997). Participants responded to items on the self-efficacy subscales using a dichotomous scale ("yes" or "no"). Subscale scores were calculated by adding the number of "yes" responses in each subscale. Mean score of the three subscales were calculated; the possible subscale score ranged from 0 to 7 for support seeking, from 0 to 4 for barriers, and from 0 to 6 for positive alternatives.

The study participants (N = 206) exhibited high levels of support seeking from others (seeking support subscale; mean = 5.77 ± 1.38, possible score range = 0 to 7). The highest frequency item reported as "yes" from participants was "I think I can ask my parent or other adult to do physically active things with me" (n=79; 38.3%). Overall, boys and girls reported similar support seeking from others with means of 5.72 ± 1.53 and 5.82± 1.23, respectively (actual score ranges = 0 to7 for boys and 1 to 7 for girls).

Participants (N = 206) exhibited a moderate belief that they could overcome common barriers to being physically active (barriers subscale; mean = 2.00 ± 1.33, possible score range = 0 to 4). The highest frequency items reported as "yes" from participants were "I think I can be physically active, even if I have a lot of homework (n=124, 60.2%), followed by "I think I can be physically active no matter how tired I may feel" (n=114, 55.3%). Boys exhibited higher levels of self-efficacy than girls with means of 2.28± 1.37 and 1.74 ± 1.25, respectively (actual score range = 0 to 4).

Participants (N = 206) exhibited a moderate belief that they could substitute physical activity for sedentary behaviors (positive alternatives subscale; mean = 4.50 ±

1.55, possible score range 0 to 6). The highest frequency items reported as "yes" from participants were "I think I can be physically active after school even if my friends want me to do something else" (n= 48; 40.8%), followed by "I think I can be physically active even though I'd rather be doing something else" (n= 58; 28.2%). Boys exhibited higher levels of self-efficacy than girls with means of 4.57 ± 1.55 and 4.42 ± 1.55, respectively (actual score range = 0 to 6). Table 4 presents self-efficacy scores for boys, girls, and total sample. Table 5 presents the frequencies of self-efficacy items for total participant physical activity (N=206).

Table 4

Participants' Self-Efficacy Subscale Scores for Boys, Girls, and Total Sample

Self Efficacy	Possible Score Range	Mean ± SD	Minimum	Maximum
Support Seeking				
Boys	0 to 7	5.72 ± 1.53	0	7
Girls	0 to 7	5.82 ± 1.23	1	7
Total Sample	0 to 7	5.77 ± 1.38	0	7
Barriers				
Boys	0 to 4	2.28 ± 1.37	0	4
Girls	0 to 4	1.74 ± 1.25	0	4
Total Sample	0 to 4	2.00 ± 1.33	0	4
Positive Alternatives				
Boys	0 to 6	4.57 ± 1.55	0	6
Girls	0 to 6	4.42 ± 1.55	0	6
Total Sample	0 to 6	4.50 ± 1.55	0	6

Table 5

Frequencies of Self-Efficacy Items for Total Participants' Physical Activity (N=206)

Self-Efficacy Items	No N (%)	Yes N (%)
I think I can be physically active most days after school.	43 (20.9)	163 (79.1)
I think I can ask my parent or other adult to do physically active things with me.	79 (38.3)	127 (61.7)
I think I can be physically active even when I'd rather be doing something else.	58 (28.2)	148 (71.8)
I think I can be physically active after school even if I could watch TV or play video games instead.	52 (25.2)	154 (74.8)
I think I can be physically active after school even if my friends want me to do something else.	84 (40.8)	122 (59.2)
I think I can ask my parent or other adult to sign me up for a sport, dance, or other physical activity program.	21 (10.2)	185 (89.8)
I think I can be physically active even if it is very hot or cold outside.	66 (32.0)	140 (68.0)
I think I can ask my best friend to be physically active with me.	18 (8.7)	188 (91.3)
I think I can ask my parent or other adult to get me the equipment I need to be physically active.	40 (19.4)	166 (80.6)
I think I can be physically active no matter how tired I may feel.	114 (55.3)	92 (44.7)
I think I can ask my parent or other adult to take me to a physical activity or sport practice	22 (10.7)	184 (89.3)
I think I can be physically active, even if I have a lot of homework.	124 (60.2)	82 (39.8)
I think I can be physically active even if I have to stay at home.	37 (18.0)	169 (82.0)
I think I can be physically active even if my friends don't want me to.	53 (25.7)	153 (74.3)
I think I have the skills I need to be physically active.	30 (14.6)	176 (85.4)
I think I can be physically active no matter how busy my day is.	110 (53.4)	96 (46.6)
I think I can be physically active at least three times a week for the next 2 weeks.	27 (13.1)	179 (86.9)

Social Support of Physical Activity

The Social Support Scale included two subscales: friend support and parent support. The response scale for each ranged from 1 to 4, with 1 indicating strong disagreement and 4 indicating strong agreement with perceived social support. Study participants (N = 206) exhibited a moderate level of friend support (mean = 2.83 ± 0.754, possible score range = 1 to 4). Seventy-six percent (n = 156) of participants reported they always or often played sports with friends, and more than half (60.2%, n = 124) reported they always or often asked their friends if they wanted to play or engage in sports. Boys exhibited a higher level of social support from friends than girls, with means of 3.03 ± 0.724 and 2.65 ± 0.739, respectively (actual score range 1 to 4).

Participants (N = 206) exhibited a moderate level of parental social support (mean = 2.83 ± 0.672, possible score range = 1 to 4). Seventy-five percent (n = 155) of participants reported that parents always or often supported them in their sports activities. Roughly two-thirds of the participants (n= 139; 67.5%) reported it was "pretty important" or "very important" to their parents that they play sports. Boys exhibited a higher level of parental social support than girls, with means of 2.90 ± 0.689 and 2.77 ± 0.654, respectively. Table 6 presents participants' social support and Table 7 presents frequencies of social support items for the total sample.

Table 6

Participants' Social Support Subscales Scores for Boys, Girls, and Total Sample

Social Support	Possible Score Range	Mean ± SD	Minimum	Maximum
Friends				
Boys	1 to 4	3.03 ± 0.724	1	4
Girls	1 to 4	2.65 ± 0.739	1	4
Total Sample	1 to 4	2.83 ± 0.754	1	4
Parents				
Boys	1 to 4	2.90 ± 0.689	1	4
Girls	1 to 4	2.77 ± 0.654	1.2	4
Total Sample	1 to 4	2.83 ± 0.672	1	4

Table 7

Frequencies of Social Support Items for Total Participants' Physical Activity (N=206)

Social Support Items		N (%)
How often do you do sport with your friends?	Never	8 (3.9)
	Rarely	42 (20.4)
	Often	99 (48.1)
	Always	57 (27.7)
How often do you ask your friends if they want to play outside or do sport with you (e.g. playing soccer, riding a bicycle, inline skating)?	Never	22 (10.7)
	Rarely	60 (29.1)
	Often	78 (37.9)
	Always	46 (22.3)
How often do your friends ask you if you want to play or do sport with them (e.g. playing soccer, riding a bicycle, inline skating)?	Never	19 (9.2)
	Rarely	55 (26.7)
	Often	84 (40.8)
	Always	48 (23.3)
Do your parents support you in your sports activity (e.g. by buying sporting goods for you)?	Never	15 (7.3)
	Rarely	36 (17.5)
	Often	70 (34.0)
	Always	85 (41.3)
How often is your sport a topic of conversation in your family?	Never	21 (10.2)
	Rarely	75 (36.4)
	Often	75 (36.4)
	Always	35 (17.0)
How important is it for your parents that you do sport?	Not important at all	11 (5.3)

	A little Important	76 (36.9)
	Pretty important	63 (30.6)
	Very important	
How much of an interest do your parents have in your sport?	None at all	19 (9.2)
	A little bit	55 (26.7)
	Pretty strong	73 (35.4)
	Very strong	59 (28.6)
How often do your parents watch you doing sport?	Never	21 (10.2)
	Rarely	64 (31.1)
	Often	77 (37.4)
	Always	44 (21.4)

Physical Environment

The Physical Environment Scale included four subscales: convenience, public recreational facilities, safety, and private sport providers. The response scale for each ranged from 1 to 4, with 1 indicating strong disagreement and 4 indicating strong agreement with friendly physical environment. Study participants (N = 206) exhibited a moderately strong agreement on the convenience physical environment subscale (mean = 3.07 ± 0.733, possible score range = 1 to 4). Participants strongly agreed that bus and tram stops, shops, and businesses centers in the areas where they lived could be reached on foot. Eighty-one percent (n = 168) reported shops and businesses in the areas where they lived could be reached on foot "rather well" or "very well." Girls reported higher level of agreement on the convenience physical environment than boys, with means of 3.17 ± 0.701 and 2.96 ± 0.757, respectively.

Participants (N = 206) exhibited a moderately strong agreement on the public recreation facilities subscale (mean = 2.86 ± 0.799, possible score range 1 to 4). Participants moderately agreed on accessibility of public recreation facilities such as a soccer field or playground. Sixty-five percent (n = 139) reported "several" or "many" playgrounds were in the areas where they lived. Boys exhibited a higher level of

agreement on the public recreation facilities than girls, with means of 2.91 ± 0.802 and 2.89 ± 0.797, respectively.

Study participants (N = 206) exhibited a highly strong agreement on the safety physical environment subscale (mean = 3.28 ± 0.579, possible score range = 1 to 4). Participants strongly agreed that the areas they lived in were safe in term of problems with crime. Ninety percent (n = 186) rated the public leisure facilities where they lived as "pretty safe" or "very safe." Boys and girls reported almost similar mean scores on the safety physical environment subscale (3.29 ± 0.587 and 3.26 ± 0.573, respectively).

Study participants (N = 206) exhibited a moderately strong agreement on the private sport providers subscale (mean = 2.51 ± 0.893, possible score range = 1 to 4). Participants moderately agreed on the presence of commercial sport providers and sports clubs. Fifty-four percent (n = 112) reported several or many commercial sport providers were available in the areas where they lived. Boys reported a higher level of the agreement on private sport provider subscale than girls with means of 2.54 ± 0.880 and 2.49 ± 0.907, respectively. Tables 8 and 9 display physical environment for participants.

Table 8

Participants' Physical Environment Subscale Scores for Boys, Girls, and Total Sample

Physical Environment	Possible Score Range	Mean ± SD	Minimum	Maximum
Convenience				
Boys	1 to 4	2.96 ± 0.756	1	4
Girls	1 to 4	3.17 ± 0.701	1	4
Total Sample	1 to 4	3.07 ± 0.733	1	4
Public Recreation Facilities				
Boys	1 to 4	2.91 ± 0.802	1	4
Girls	1 to 4	2.89 ± 0.797	1	4
Total Sample	1 to 4	2.86 ± 0.799	1	4
Safety				
Boys	1 to 4	3.29 ± 0.587	1	4
Girls	1 to 4	3.26 ± 0.573	1.5	4
Total Sample	1 to 4	3.28 ± 0.579	1	4
Private Sport Providers				
Boys	1 to 4	2.54 ± 0.880	1	4
Girls	1 to 4	2.49 ± 0.907	1	4
Total Sample	1 to 4	2.51 ± 0.893	1	4

Table 9

Frequencies of Physical Environment Items for Total Participants' Physical Activity (N=206)

Physical Environment Items		N (%)
In the area I live in, there are sports facilities that are always accessible (e.g. soccer fields).	None	15 (7.3)
	Few	63 (30.6)
	Several	67 (32.5)
	Many	61 (29.6)
In the area I live in, there are sports clubs.	None	40 (19.4)
	Few	78 (37.9)
	Several	45 (21.8)
	Many	43 (20.9)
In the area I live in, there are commercial sport providers (e.g. fitness clubs).	None	35 (17.0)
	Few	59 (28.6)
	Several	70 (34.0)
	Many	42 (20.4)
In the area I live in there are playgrounds.	None	16 (7.8)
	Few	56 (27.2)
	Several	72 (35.0)
	Many	62 (30.1)
How safe are the public leisure time facilities in the area you live in (in terms of problems with crime)?	Very unsafe	5 (2.4)
	Pretty unsafe	15 (7.3)
	Pretty safe	117 (56.8)
	Very safe	69 (33.5)
For walking and riding a bicycle, the area I live in is	Not very nice at all	6 (2.9)
	Not that nice	15 (7.3)
	Pretty nice	88 (42.7)
	Very nice	97 (47.1)
In the area I live in, shops and businesses can be reached on foot	Very badly	12 (5.8)
	Rather badly	26 (12.6)
	Rather well	95 (46.1)
	Very well	73 (35.4)
From where I live, the bus and tram stops can be reached on foot	Very badly	18 (8.7)
	Rather badly	30 (14.6)
	Rather well	86 (41.7)
	Very well	72 (35.0)

Physical Activity

Physical activity in spare time. The frequency of physical activity during participants' spare time in the last week was categorized using five preset categories (no activity, 1-2 times, 3-4 times, 5-6 times, and 7 times or more). Table 10 presents the types and frequencies of physical activity categories reported for the prior week. The activity performed most often (seven or more times) by study participants (n= 70; 34.0%) was jogging or running, followed by basketball (n= 53; 25.7%), soccer (n = 39; 18.9), and bicycling (n = 25; 12.1%). Less than half of the participants reported a single activity occurring seven or more times in during the prior week. Activities reported with moderate level of frequency (3 to 4 times a week) included bicycling (n = 38; 18.4), running (n = 36; 17.55%), basketball (n= 34; 16.5%), tag (n = 32; 15.5%), soccer (n = 39; 18.9%), and swimming (n = 24; 11.7%). The activities that were least reported were ice hockey (n= 194; 94.2%), rowing (n = 194; 94.2%), cross-county skiing and street hockey (n= 183; 88.8%), floor hockey (n= 179; 86.9), badminton (182; 88.3%), in-line skating (n= 169; 82.0%), and ice skating (n = 168; 81.6%).

Table 10

Types and Frequencies of the Participants' Physical Activity in Their Spare Time in the Prior Week (N=206)

Physical Activity in Spare Time Items		N (%)
Skipping	No	104 (50.5)
	1-2 times	60 (29.1)
	3-4 times	14 (6.8)
	5-6 times	6 (2.9)
	7 times or more	22 (10.7)
Rowing/canoeing	No	194 (94.2)
	1-2 times	8 (3.9)
	3-4 times	3 (1.5)
	5-6 times	0 (0.0)
	7 times or more	1 (0.5)
In-line skating	No	169 (82.0)
	1-2 times	19 (9.2)
	3-4 times	11 (5.3)
	5-6 times	2 (1.0)
	7 times or more	5 (2.4)
Tag	No	84 (40.8)
	1-2 times	53 (25.7)
	3-4 times	32 (15.5)
	5-6 times	19 (9.2)
	7 times or more	18 (8.7)
Bicycling	No	70 (34.0)
	1-2 times	49 (23.8)
	3-4 times	38 (18.4)
	5-6 times	24 (11.7)
	7 times or more	25 (12.1)
Jogging or running	No	22 (10.7)
	1-2 times	34 (16.5)
	3-4 times	36 (17.5)
	5-6 times	44 (21.4)
	7 times or more	70 (34.0)
Aerobics	No	136 (66.0)
	1-2 times	31 (15.0)
	3-4 times	16 (7.8)
	5-6 times	10 (4.9)
	7 times or more	13 (6.3)
Swimming	No	97 (47.1)
	1-2 times	53 (25.7)
	3-4 times	24 (11.7)
	5-6 times	14 (6.8)
	7 times or more	18 (8.7)

Baseball, softball	No	121 (58.7)
	1-2 times	41 (19.9)
	3-4 times	21 (10.2)
	5-6 times	11 (5.3)
	7 times or more	12 (5.8)
Dance	No	116 (56.3)
	1-2 times	40 (19.4)
	3-4 times	14 (6.8)
	5-6 times	14 (6.8)
	7 times or more	22 (10.7)
Football	No	122 (59.2)
	1-2 times	39 (18.9)
	3-4 times	17 (8.3)
	5-6 times	12 (5.8)
	7 times or more	16 (7.8)
Badminton	No	182 (88.3)
	1-2 times	5 (2.4)
	3-4 times	7 (3.4)
	5-6 times	4 (1.9)
	7 times or more	8 (3.9)
Skateboarding	No	126 (61.2)
	1-2 times	38 (18.4)
	3-4 times	15 (7.3)
	5-6 times	10 (4.9)
	7 times or more	17 (8.3)
Soccer	No	75 (36.4)
	1-2 times	45 (21.8)
	3-4 times	27 (13.1)
	5-6 times	20 (9.7)
	7 times or more	39 (18.9)
Street hockey	No	183 (88.8)
	1-2 times	8 (3.9)
	3-4 times	6 (2.9)
	5-6 times	1 (0.5)
	7 times or more	8 (3.9)
Volleyball	No	131 (63.6)
	1-2 times	43 (20.9)
	3-4 times	16 (7.8)
	5-6 times	6 (2.9)
	7 times or more	10 (4.9)
Floor hockey	No	179 (86.9)
	1-2 times	8 (3.9)
	3-4 times	8 (3.9)
	5-6 times	3 (1.5)
	7 times or more	8 (3.9)
Basketball	No	58 (28.2)

	1-2 times	47 (22.8)
	3-4 times	34 (16.5)
	5-6 times	14 (6.8)
	7 times or more	53 (25.7)
Ice Skating	No	168 (81.6)
	1-2 times	15 (7.3)
	3-4 times	8 (3.9)
	5-6 times	6 (2.9)
	7 times or more	9 (4.4)
Cross-county skiing	No	183 (88.8)
	1-2 times	12 (5.8)
	3-4 times	2 (1.0)
	5-6 times	3 (1.5)
	7 times or more	6 (2.9)
Ice hockey /ringette	No	194 (94.2)
	1-2 times	3 (1.5)
	3-4 times	2 (1.0)
	5-6 times	3 (1.5)
	7 times or more	4 (1.9)

Physical activity in the last seven days. Table 11 presents the frequency of physical activities over the course of the prior seven days, categorized in physical education class, lunch, recess, after school, evening and weekends. Responses were given on a five-point scale with 1 indicating the lowest activity level and 5 indicating the highest activity level. The highest frequency rating was provided for activity during physical education classes, where 74.7% (n=154) of participants reported they "always" or "quite often" engaged in physical activity during physical education classes. At recess, almost half of participants (49%, n = 101) reported they sat, stood, or walked around, while 41.3% (n = 85) reported running and playing quite a bit or most of the time. Similarly, a lack of physical activity was reported during lunchtime, where 57.3% (n = 118) of participants reported they sat, stood, or walked around, and 31.1% (n = 64) reported running and playing quite a bit or most of the time. Nearly 71% (n = 146) of participants engaged in physical activities at least two or three times right after school,

69.4% (n = 143) in the evening and 68.5% (n = 141) during the weekends.

On the item asking "Which one of the following describes you best for the last 7 days?" 20 participants (9.7%) reported all or most of their free time was spent doing things that involved little physical effort, 34.5% (n = 71) reported physical activities 1 to 2 times, 20.4% (n = 42) reported 3 to 4 times, 15.5% (n = 32) reported 5 to 6 times, and 19.9% (n = 41) reported 7 or more times.

Table 11

Participants' Physical Activity in the Prior Week (N=206)

Physical Activity in the Prior 7 Days Items		N (%)
In the last 7 days, during your physical education (PE) classes, how often were you very active (playing hard, running, jumping, throwing)?	I don't do PE	10 (4.9)
	Hardly ever	5 (2.4)
	Sometimes	37 (18.0)
	Quite often	61 (29.6)
	Always	93 (45.1)
In the last 7 days, what did you do most of the time *at recess*?	Sat down (talking, reading, doing school work)	38 (18.4)
	Stood around or walked around	63 (30.6)
	Ran or played a little bit	20 (9.7)
	Ran around and played quite a bit	28 (13.6)
	Ran and played hard most of the time	57 (27.7)
In the last 7 days, what did you normally do *at lunch* (besides eating lunch)?	Sat down (talking, reading, doing school work)	58 (28.2)
	Stood around or walked around	60 (29.1)
	Ran or played a little bit	24 (11.7)
	Ran around and played quite a bit	22 (10.7)
	Ran and played hard most of the time	42 (20.4)
In the last 7 days, on how many days *right after school*, did you do sports, dance, or play games in which you were very active?	None	35 (17.0)
	1 time last week	25 (12.1)
	2 or 3 times last week	50 (24.3)
	4 times last week	27 (13.1)
	5 times last week	69 (33.5)
In the last 7 days, on how many *evenings* did you do sports, dance, or	None	29 (14.1)
	1 time last week	34 (16.5)

play games in which you were very active?	2 or 3 times last week	63 (30.6)
	4 or 5 times last week	34 (16.5)
	6 or 7 times last week	46 (22.3)
On the last weekend, how many times did you do sports, dance, or play games in which you were very active?	None	26 (12.6)
	1 time	39 (18.9)
	2-3 times	62 (30.1)
	4-5 times	36 (17.5)
	6 or more times	43 (20.9)
Which *one* of the following describes you best for the last 7 days? Read *all five* statements before deciding on the *one* answer that describes you.	All or most of my free time was spent doing things that involve little physical efforts	20 (9.7)
	I sometimes (1-2 times last week) did physical things in my free time (e.g. played sports, went running, swimming, bike riding, did aerobics)	71 (34.5)
	I often (3-4 times last week) did physical things in my free time	42 (20.4)
	I quite often (5-6 times last week) did physical thing in my free time	32 (15.5)
	I very often (7 or more times last week) did physical things in my free time	41 (19.9)

Table 12 presents participants' physical activity for each day of the prior week. The percentage of participants (N = 206) reporting physical activity "often" or "very often" on Monday was 43.7%, with 48% on Tuesday, 50% on Wednesday, 53.4% on Thursday, 58.3% on Friday, 43.7% on Saturday, and 39.3% on Sunday. Participants reported less physical activity during the weekends than weekdays; Friday had the greatest physical activity levels of any of the days of the week.

Table 12

Level of Physical Activity for each Day of the Prior Week (N = 206)

Physical Activity for Each Day of the Prior Week	None N (%)	Little bit N (%)	Medium N (%)	Often N (%)	Very often N (%)
Monday	19 (9.2)	45 (21.8)	52 (25.2)	40 (19.4)	50 (24.3)
Tuesday	20 (9.7)	38 (18.4)	49 (23.8)	46 (22.3)	53 (25.7)
Wednesday	21 (10.2)	43 (20.9)	39 (18.9)	45 (21.8)	58 (28.2)
Thursday	26 (12.6)	32 (15.5)	38 (18.4)	56 (27.2)	54 (26.2)
Friday	23 (11.2)	26 (12.6)	37 (18.0)	44 (21.4)	76 (36.9)
Saturday	40 (19.4)	39 (18.9)	37 (18.0)	33 (16.0)	57 (27.7)
Sunday	47 (22.8)	45 (21.8)	33 (16.0)	33 (16.0)	48 (23.3)

Final physical activity summary score. The PAQ-C subscales and final scores were calculated as recommended by the PAQ-C manual (Kowalski et al., 2004). First, item one on the instrument is actually a subscale and requires a procedure for calculating a score for each participant. Each of 21 activities (or more, if the participants added activities to the list) in item one were summed and then a subscale score was created for each participant by taking the summed item score and dividing it by 21 (or more, if the participants added activities to the list). Second, the reported value that is checked off for each item in items 2 to 8 (the lowest activity response being a 1, and the highest activity response being a 5) was used in the final PAQ-C calculation. Third, item nine on the instrument is also a subscale, and in order to calculate a score for each participant the scores for each day in item nine were summed. The possible range for the summed scores was 7 to 35. A mean was then calculated for each participant for the week. Possible range of means scores was 1 to 5. Finally, a physical activity composite score was calculated by summing the mean scores of item one and item nine and the reported values for items 2 to 8. The final PAQ-C mean activity summary score was calculated,

where a score of 1 indicates low physical activity and a score of 5 indicates high physical activity (Kowalski et al., 2004).

Table 13 presents participants' final PAQ-C activity summary scores. For the total sample (N = 206), the mean of final PAQ-C activity summary scores was 2.39 (SD = 0.648). Participants exhibited a moderate level of physical activity. Boys (n = 96) reported physical activity more than girls (n = 110) with mean and SD of 2.57 0 ± .662 and 2.25 ± 0.604, respectively.

Table 13

Participants' final PAQ-C Activity Summary Score for Boys, Girls, and Total Sample

Physical Activity	Possible Score Range	Mean ± SD	Minimum	Maximum
Boys	1 to 5	2.57 ± 0.662	1	5
Girls	1 to 5	2.25 ± 0.604	1.03	4.11
Total Sample	1 to 5	2.39 ± 0.648	1	5

Specific Aim # 2

The second aim of this study was to examine the relationships between demographic factors (age, gender, BMI, grade, types of school [public vs private]), self-efficacy, social support, physical environment, and physical activity of AA children. The relationships were presented into three groups: total sample, boys, and girls. The bivariate analysis of demographic factors for total participants' physical activity is shown in Table 14. The bivariate analysis of demographic factors for boys is shown in Table 15 and for girls in table 16.

Table 14

Means Differences and Correlation Coefficient(age) of Demographic Factors and Total Participants' Physical Activity Scores (N=206)

Variable	Category	N	Mean ± SD	Test	P-Value
Gender	Boy	96	2.56 ± 0.662	t = 3.43	.001[a*]
	Girl	110	2.25 ± 0.604		
Type of School	Private	51	2.53 ± 0.767	t =1.68	.094 [a]
	Public	155	2.35 ± 0.600		
Grade	4th Grade	28	2.65 ± 0.620	F= 3.77	.003[b*]
	5th Grade	35	2.62 ± 0.714		
	6th Grade	32	2.46 ± 0.567		
	7th Grade	39	2.34 ± 0.619		
	8th Grade	28	2.09 ± 0.596		
	9th Grade	44	2.25 ± 0.624		
Body Mass Index (BMI)	Underweight (< 5th percentile)	2	1.24 ± 0.222	F= 3.12	.027 [b*]
	Healthy Weight (5th-<85th percentile)	111	2.46 ± 0.659		
	Overweight (85th-95th Percentile)	53	2.28 ± 0.592		
	Obese (> 95th Percentile)	40	2.44 ± 0.642		
Age	(r) -.243	206	12.13 ± 1.49		.000c*

Note. * Significant at an alpha of 0.05; a. Independent T-test; b. ANOVA; c. Pearson's Correlation.

Table 15

Means Differences and Correlation Coefficient (age) of Demographic Factors and Boys' Physical Activity scores (n=96)

Variable	Category	N	Mean ± SD	Test	P-Value
Type of School	Private	25	2.66 ± 0.848	t = .973	.333 [a]
	Public	71	2.51 ± 0.585		
Grade	4th Grade	18	2.67 ± 0.565	F =.866	.507[b]
	5th Grade	17	2.67 ± 0.856		
	6th Grade	17	2.68 ± 0.612		
	7th Grade	19	2.49 ± 0.613		
	8th Grade	10	2.37 ± 0.747		
	9th Grade	15	2.33 ± 0.583		
Body Mass Index (BMI)	Underweight(< 5th percentile)	1	1.40 ± 0.000	F =1.20	.313[b]
	Healthy Weight (5th-<85th percentile)	49	2.57 ± 0.656		
	Overweight (85th-95th Percentile)	24	2.50 ± 0.580		
	Obese (> 95th Percentile)	22	2.63 ± 0.743		
Age	(r) -.178	96	-		.083c

Note. * Significant at an alpha of 0.05; a. Independent T-test; b. ANOVA; c. Pearson's Correlation.

Table 16

Means Differences and Correlation Coefficient (Age) of Demographic Factors and Girls' Physical Activity Scores (n=110)

Variable	Category	N	Mean ± SD	Test	P-Value
Type of School	Private	26	2.39 ± 0.670	t = 1.33	.186 [a]
	Public	84	2.21 ± 0.579		
Grade	4th Grade	10	2.61 ± 0.740	F= 3.11	.012[b*]
	5th Grade	18	2.57 ± 0.570		
	6th Grade	15	2.20 ± 0.387		
	7th Grade	20	2.18 ± 0.601		
	8th Grade	18	1.93 ± 0.439		
	9th Grade	29	2.20 ± 0.651		
Body Mass Index (BMI)	Underweight(< 5th percentile)	1	1.08 ± 0.000	F= 2.76	.046[b*]
	Healthy Weight (5th-<85th percentile)	62	2.36 ± 0.652		
	Overweight (85th-95th Percentile)	29	2.09 ± 0.547		
	Obese (> 95th Percentile)	18	2.19 ± 0.383		
Age	(r) -.252	110	-		.008c*

Note. * Significant at an alpha of 0.05; a. Independent T-test; b. ANOVA; c. Pearson's Correlation.

Demographic Variables for Total Sample (N = 206)

The relationships between demographic factors and the level of participants' physical activity were examined. The demographic factors examined were age, gender, type of school, grade, and BMI. All demographic factors had statistically significant relationships with physical activity (N = 206) except types of school (t = 1.68; p = 0.94). Participant age had a statistically significant negative relationship with level of physical activity (r = -.243; p = .000); level of physical activity decreased as participants' ages increased. Gender had a statistically significant relationship with level of physical activity (t = 3.43; p =.001); boys had a statistically significant higher level of physical activity than girls (mean = 2.56 vs. 2.25; p = .001).

School grade had a statistically significant relationship with level of physical activity (F = 3.77; p = .003); Bonferonni's post-hoc test was conducted among the six schools' grades to find which pairs of means were significantly different from one another. Results demonstrated that physical activity in 8th grade was statistically different from 4th and 5th grades; participants in 4th grade had statistically significant higher levels of physical activity than participants in 8th grade (mean = 2.65 vs. 2.08; p =.014). Participants in 5th grade had statistically significant higher levels of physical activity than those in 8th grade (mean = 2.61 vs. 2.08; p = .015). There was no statistically significant difference in the level of physical activity for boys in 9th, 7th, and 6th grade.

BMI had a statistically significant relationship with level of physical activity (F = 3.12; p = 0.027), according to post-hoc testing (Bonferonni) performed among the four BMI categories. Results demonstrated that participants with healthy weight (5th - < 85th percentile) had statistically significant higher levels of physical activity than those who

were underweight (<5th percentile; mean = 2.45 vs. 1.24; p = .027). There were no statistically significant differences in overweight and obese categories with level of physical activity.

Demographic Factors by Gender

Among the boy participants (n = 96), there were no demographic factors that had a statistically significant correlation with level of physical activity. Boys' age (M = 11.89; SD = 1.47) had no statistically significant correlation with level of physical activity (M = 2.57; SD = 0.662; r = -.178; p = 0.083); at the same time, results showed that boys' level of physical activity decreased as their age increased.

Among the girls (n = 110), there were statistically significant relationships between level of physical activity and all demographic factors except for the type of school (t = 1.33; p = .186). Similar to the results of total sample, age (M = 12.35; SD = 1.48) had a statistically significant negative relationship with girls' level of physical activity (M = 2.25; SD = 0.604; r = -.252; p = .008); girls' level of physical activity decreased as their age increased. Grade level had a statistically significant relationship with level of physical activity (F = 3.11; p = .012); post-hoc testing (Bonferonni) was performed among the six school grades. Results demonstrated a statistically significant difference between 8th grade girls and 5th grade girls; girls in 5th grade had statistically significant higher levels of physical activity than those in 8th grade (mean = 2.57 vs. 1.93; p =.018). There was no statistically significant difference in level of physical activity between girls in 9th grade, 7th grade, 6th grade, and 4th grade.

BMI had a statistically significant relationship with level of physical activity (F = 2.67; p= .046); post-hoc testing (Bonferonni) could not be run among the four BMI categories because the underweight category had fewer than two cases.

Self-Efficacy of Physical Activity

The three Physical Activity Self-Efficacy subscales (support seeking, barriers, and positive alternatives) were examined in relation to participants' physical activity (N = 206). Self-efficacy support seeking (M = 5.77; SD = 1.38) had a statistically significant positive relationship with physical activity (M = 2.39; SD = 0.648; r =.317; p = .000). Participants with higher support seeking from others such as parents or friends had higher level of physical activity. Self-efficacy barriers (M = 2.00; SD = 1.33) had a statistically significant positive relationship with physical activity (M = 2.39; SD = 0.648; r = .442, p = .000). Participants with higher belief of overcoming barriers to physical activity had higher levels of physical activity. Self-efficacy positive alternatives (M = 4.50; SD = 1.55) had a statistically significant positive relationship with physical activity (M = 2.39; SD = 0.648; r = .438, p .000). Participants' with higher belief of substituting physical activity for sedentary behaviors such as viewing television had higher levels of physical activity.

Boys and girls had results similar to those of the total sample. Among boys (n = 96), self-efficacy support seeking (M =5.72; SD = 1.53), barriers (M = 2.28; SD = 1.37), and positive alternatives (M = 4.57; SD = 1.55) had statistically significant positive relationships with physical activity (M = 2.57; SD = 0.662; r =.432, p = .000, r = .520, p = .000, r = .514, p = .000, respectively). Among girls (n = 110), self-efficacy support seeking (M =5.82; SD = 1.23), barriers (M = 1.74; SD = 1.25), and positive alternatives

(M = 4.42; SD = 1.55) had statistically significant positive relationships with physical activity (M = 2.25; SD = 0.604; r = .221, p = .021, r = .302, p = .001, r = .368, p = .000, respectively).

Social Support of Physical Activity

The social supports subscales (friend and parent) were examined in relation to participants' physical activity. Social support from friends (M = 2.83; SD = 0.754) had a statistically significant positive relationship with the level of physical activity (M = 2.39; SD = 0.648; r = .601, p = .000). Participants with greater social support from friends had higher levels of physical activity. Social support from parents (M = 2.83; SD = 0.672) had a statistically significant positive relationship with the level of physical activity (M =2.39; SD = 0.648; r = .436, p = .000). Participants with greater social support from parents had higher levels of physical activity.

Boys and girls had results similar to those of the total sample. Among boys (n = 96), social support from friends (M = 3.03; SD = 0.724) and parents (M = 2.90; SD = 0.689) had statistically significant positive relationships with physical activity (M =2.57; SD = 0.662; r = .608, p = .000, r = .462, p = .000, respectively). Among girls (n = 110), social support from friends (M =2.65; SD = 0.739) and parents (M =2.77; SD = 0.654) had statistically significant positive relationships with participants' physical activit(M =2.25; SD = 0.604; r = .548, p = .000, r = .393, p = .000, respectively).

Physical Environment

The four physical environment subscales (convenience, public recreational facilities, safety, and private sport providers) were examined in relation to participants' physical activity. Only one of the four had a statistically significant relationship with

participants' physical activity. Physical environment public recreation (M =2.86; SD = 0.799) had a statistically significant positive relationship with physical activity (M =2.39; SD = 0.648; r = .222, p = .000). Participants with greater accessibility to public recreation facilities had higher levels of physical activity. Table 17 presents the correlation of independent variables for participants' physical activity.

Table 17

Correlation Coefficients of Independent Variables for Total Participants' Physical Activity (N=206)

Variable	r	P-Value
Self Efficacy		
Seeking Support	.317	.000*
Barriers	.442	.000*
Positive Alternative	.438	.000*
Social Support		
Friend	.601	.000*
Parent	.436	.000*
Physical Environment		
Convenience	.112	.108
Public Recreation Facilities	.222	.001*
Safety	.079	.257
Private Sport Providers	.061	.381

Note. *Significant at an alpha of 0.05

The relationship between physical environment and level of physical activity was examined among boys and girls. Among boys (n = 96), Pearson's correlation identified results similar to those of the total sample, where only public recreation facilities (M = 2.91; SD = 0.802) had a statistically significant positive relationship with physical activity (M =2.57; SD = 0.662; r = .278, p .006). Among girls (n = 110), the four

physical environment subscales were not statistically significant with physical activity ($p > .05$). Tables 18 and 19 present the correlation of independent variables for boys' and girls' physical activity.

Table 18

Correlation Coefficients of Independent Variables for Boys' Physical Activity (n=96)

Variable	r	P-Value
Self Efficacy		
Seeking Support	.432	.000*
Barriers	.520	.000*
Positive Alternative	.514	.000*
Social Support		
Friend	.608	.000*
Parent	.462	.000*
Physical Environment		
Convenience	.189	.066
Public Recreation Facilities	.278	.006*
Safety	.126	.220
Private Sport Providers	-.030	.775

Note. *Significant at an alpha of 0.05

Table 19

Correlation Coefficients of Independent Variables for Girls' Physical Activity (n=110)

Variable	r	P-Value
Self Efficacy		
Seeking Support	.221	.020*
Barriers	.302	.001*
Positive Alternative	.368	.000*
Social Support		
Friend	.548	.000*
Parent	.393	.000*
Physical Environment		
Convenience	.113	.239
Public Recreation Facilities	.156	.104
Safety	.026	.784
Private Sport Providers	.136	.156

Note. *Significant at an alpha of 0.05

Specific Aim #3

The third aim of this study was to determine if there is a statistically significant model fitted to the data to explain the variance in physical activity among AA children. The contribution of demographic factors, self-efficacy, social support, and physical environment was explored. There were statistically significant relationships between physical activity and participants' gender, age, grade, BMI, self-efficacy behaviors (seeking support, barriers, positive alternatives), social support sources (friends, parents), and physical environment (public recreation facilities).

A multiple linear regression was conducted to assess the effect of these statistically significant factors (gender, age, grade, BMI, self-efficacy seeking support,

self-efficacy barriers, self-efficacy positive alternatives, social support friend, social support parent, and physical environment public recreation facilities) in predicting physical activity in AA children. To detect multicollinearity of all predictor variables in the physical activity model, the tolerance and VIF statistical tests were performed. Generally, a tolerance value of less than 0.1, or a value of VIF greater than 10 indicates multicollinearity concerns (Tabachnick & Fidel, 2007). Multicollinearity was found between grade level and age (tolerance = .082, VIF =12.213; tolerance = .080, VIF = 12.510). Therefore, grade level was dropped from the final regression model. Table 20 gives the multicollinearity statistics for the physical activity model.

Table 20

Multicollinearity Statistics for the Physical Activity Model

Variable	Tolerance	VIF
Gender	.856	1.169
Age	.082	12.213
Grade	.080	12.510
Self Efficacy Seeking Support	.631	1.585
Self Efficacy Barriers	.645	1.550
Self Efficacy Positive Alternative	.566	1.767
Social Support Friend	.664	1.507
Social Support Parent	.634	1.578
Physical Environment Public Recreation Facilities	.772	1.295
BMI Underweight	.902	1.108
BMI Normal Weight	.544	1.839
BMI Overweight	.554	1.805

The final regression model for physical activity is presented in Table 21. The data fit the final model for physical activity ($F [11,194] = 18.782$; $P < 0.000$) with an R-squared value of 0.516, explaining 51.6% of the variance in physical activity. After

adjusting for other variables in the model, only five variables significantly predicted physical activity: age, self-efficacy barriers, self-efficacy positive alternative, social support friend, and social support parent. The level of physical activity decreased as participant age increased (β = -.076; p = .001); For every unit increase in age, physical activity decreased by .076. Participants with higher self-efficacy regarding overcoming barriers had higher levels of physical activity (β = .071; p = .020); for every unit increase in overcoming barriers, physical activity increased by .071. Participants with higher self-efficacy regarding positive alternatives had higher levels of physical activity (β = .063; p = .025); for every unit increase in positive alternatives, physical activity increased by .063. Participants with greater social support from friends and parents had higher levels of physical activity (β = .321; p = .000 and β = .145; p = .017, respectively). For each unit increase in social support from friends, physical activity increased by .321, and for each unit increase in social support from parents, physical activity increased by .145. Despite the bivariate significant relationships between gender, self-efficacy seeking support, and BMI, these factors were not statistically significant predictors in the multivariate regression model.

Table 21

Multiple Linear Regression Results for Total Participants' Physical Activity (N=206)

Variable	Slope (β)	P-Value	95.0% CI for B	
			Lower Bound	Upper Bound
Gender	-.077	0.272	-.213	.060
Age	-.076	0.001*	-.122	-.031
Self Efficacy Seeking Support	-.010	0.728	-.481	.337
Self Efficacy Barriers	.071	0.020*	.045	.523
Self Efficacy Positive Alternative	.063	0.025*	.049	.707
Social Support Friend	.321	0.000*	.217	.425
Social Support Parent	.145	0.017*	.026	.265
Physical Environment Public Recreation Facilities	.063	0.169	-.027	.153
BMI Underweight	-.487	0.162	-1.170	.197
BMI Normal Weight	.092	0.296	-.081	.265
BMI Overweight	-.118	0.236	-.314	.078

Note. Dependent variable: PAQ-C; Total $R^2 = .516$, P = 0.000; * Significant at an alpha of 0.05, Grade is dropped from the regression model due to multicollinearity.

Additional Exploratory Aim

The additional exploratory aim of this study was to describe the performance reliability of the instruments utilized in the current study of AA children. Cronbach's alpha coefficient was calculated for each instrument and corresponding subscales, demonstrating acceptable internal consistency for all instruments utilized in this study. George and Mallery (2007) indicated the determination of internal consistency as follows: $\alpha > .9$ = excellent, $\alpha > .8$ = good, $\alpha > .7$ = acceptable, $\alpha > .6$ = questionable, $\alpha > .5$ = poor, and $\alpha < .5$ = unacceptable. This general guideline should be used with caution, because the value of alpha depends on the number of items in the scale. For example, with increased number of items, Cronbach's alpha increases (Waltz, Strickland, & Lenz,

2010). Cronbach's alpha values for the instruments utilized in this study ranged from 0.500 to 0.920 and the number of items for each scale and subscale ranged between 2 and 35 items. Table 22 presents the Cronbach's alpha coefficient values for the instruments utilized in this study.

Table 22

Reliability of the Self Efficacy, Social Support, Physical Environment, and PAQ-C Questionnaires

Questionnaires	Number of Items	Cronbach's Alpha Coefficient
Self Efficacy	17	.788
Seeking Support	7	.579
Barriers	4	.614
Positive Alternative	6	.654
Social Support	8	.820
Friend	3	.818
Parent	5	.786
Physical Environment	8	.750
Convenience	2	.556
Public Recreation Facilities	2	.634
Safety	2	.500
Private Sport Providers	2	.712
PAQ-C	35	.920

Compared to the Cronbach's alphas of previous studies, the Cronbach's alphas in this study for the self-efficacy seeking support, self-efficacy barriers, and positive alternatives were 0.58, 0.61, and 0.65 as compared to 0.71, 0.71, and 0.54. The Cronbach's alpha of the self-efficacy seeking support and self-efficacy barriers in this

study were lower than previous studies, while the Cronbach's alpha of the self-efficacy positive alternative in this study was higher than found by others (Saunders et al., 1997).

The Cronbach's alpha in this study of the social support friend and parent were 0.81 and 0.78 as compared to 0.70 and 0.78. The Cronbach's alpha of the social support friend in this study was higher than what was previously found, while the Cronbach's alpha of the social support parent in this study was the same as previously (Reimers et al., 2012).

The Cronbach's alpha in this study of the physical environment subscales including convenience, public reaction facilities, safety, and private sport providers were 0.56, 0.63, 0.50, and 0.71, respectively, as compared to 0.64,0.61,0.42, and 0.48 (Reimers et al., 2012). The Cronbach's alphas of all the physical environment subscales in this study were higher than found by others (Reimers et al., 2012).

The Cronbach's alpha in this study of the physical activity questionnaire was 0.920, compared to 0.89 (Kowalski, Crocker, & Donen, 2004). The Cronbach's alpha in this study of the physical activity questionnaire was higher than found by others (Kowalski, Crocker, & Donen, 2004).

Summary

This chapter presented results from the analysis of data collected in a sample of 10 to 14-year old AA children. There were statistically significant relationships between participants' physical activity and gender, age, grade, BMI, self-efficacy seeking support, self-efficacy barriers, self-efficacy positive alternatives, social support friend, social support parent, and physical environment public recreation facilities.

After adjusting for all other variables in the regression model, only five variables

significantly predicted physical activity: age, self-efficacy barriers, self-efficacy positive alternatives, social support friend, and social support parent. The level of physical activity decreased with participants' age. Participants with higher self-efficacy (overcome barriers, positive alternative) had higher levels of physical activity than other participants. Participants with greater social support from friends and parents had higher levels of physical activity than those with less social support. School grade was dropped from the final regression model due to multicollinearity between school grade and age.

CHAPTER 5

DISCUSSION, RECOMMENDATIONS, AND LIMITATIONS

This study examined gender, age, grade, BMI, self-efficacy seeking support, self-efficacy barriers, self-efficacy positives alternatives, social support, and physical environment as possible predictors of physical activity in Arab American (AA) children. Significant predictors of physical activity were age, grade level, self-efficacy (barriers, positives alternatives), and social support (from friends and parents). This chapter addresses the study findings, implications and recommendations, and strengths and limitations of the study.

Physical Activity

In this study, the mean PAQ-C score was 2.39 (SD = 0.648), indicating a moderate level of physical activity for participants. Jogging/running was the most often activity and was reported as occurring seven or more times during the week. Other frequently reported activities were basketball, soccer, and bicycling. Participants tended to report activities requiring less equipment or special training.

The findings of this study are consistent with those of Kowalski et al. (1997), who reported on two independent samples of children aged 8 to 13 years old; in the first

sample, participants' mean PAQ-C score was 3.23 (SD = 0.78), and in the second sample the mean was 3.35 (SD = 0.68), indicating participants had a moderate level of physical activity. Similarly, Ar-Yuwat, Clark, Hunter, and James (2013) conducted a descriptive study of 87 ten-year old students in Thailand and found a mean PAQ-C score of 3.29 (SD = 0.56). The most common physical activities for these students were bicycling, skipping, outdoor play, and walking.

In addition, Martin, McCaughtry, and Shen (2008) conducted a cross sectional study of 345 AA students aged 10 to 14 years who resided in Michigan. The researchers found that AA children got at least 3 hours and 15 minutes of physical activity during free time in a week. This study identified that the physical activity level of AA children residing in Michigan was lower than the level recommended nationally (Strong et al., 2005; US Department of Health and Human Services [USDHHS], 2000).

The current study found that participants engaged in more physical activities during physical education classes. This finding is congruent with previous studies (Ar-Yuwat et al., 2013; Sanamthong, 2005). Therefore, the role of school in improving AA children's physical activity level is an important future research area.

In addition, participants in the current study reported more physical activity on weekdays than weekends, whichis inconsistent with findings of previous studies. Ar-Yuwat et al. (2013) reported 10-year old students engaged in more physical activity during weekends compared to weekdays. Similarly, Wannasuntad (2007) found that fourth grade students in Thailand were more active on weekends than weekdays. It might be that AA children are more involved in family commitments or sedentary activities

during weekends. Future studies may need to examine factors affecting physical activity for AA children during weekends.

Demographics and Physical Activity

Age

In this study age was a significant predictor of participants' physical activity. This finding is consistent with previous studies that found physical activity decreases as children's age increases, specifically for children between 10 and 14 years old (CDC, 2008; Kahn et al., 2008; Nader, Bradley, Houts, McRitchie, & O'Brien, 2008; Troiano et al., 2008).

Cultural norms in the AA community may limit older children's participation in physical activity. AA parents tend to engage their older children in family commitments (Kahan, 2003). This might explain one of the factors affecting the decline in physical activity for older AA children. The findings of one study demonstrated decreased physical activity and increased sedentary behavior (from 78.0% to 81.1%) over a two-year period. Another study conducted among US children found that the average number of hours children engaged in sedentary behaviors daily was 6 hours for children between ages 6 and 11, 7.5 hours for children aged 12 to 15 years, and over 8 hours for children between ages 16 and 19 (Matthews et al., 2008).

It is possible that older AA children engage in more sedentary behaviors than younger children. The current study did not examine sedentary behaviors of the study participants. Future studies might examine sedentary behaviors of older AA children and factors contributing to these behaviors.

School Grade

In the current study participants in 4th grade demonstrated higher levels of physical activity than participants in 8th grade. Similarly, McDermott et al. (2009) found that when students were asked about their physical activity during the prior seven days, 6th grade participants exhibited higher vigorous physical activity than 7th grade participants. Therefore, it is recommended that future intervention studies for AA children develop programs targeting older children to increase their participation in physical activity.

Another factor that could explain the decline of physical activity in older AA children is increased engagement in sedentary activities such as watching television and movies, playing video games, and using computers. Basterfield et al. (2011) conducted a longitudinal study of 405 seven-year-old children to track physical activity and sedentary behavior over a two-year period. The results demonstrated declining levels of physical activity and increasing sedentary behavior before adolescence. Future studies might therefore need to assess sedentary behaviors among AA children.

Gender

In the current study gender was not a predictor of physical activity in AA children; however, boys had statistically significant higher level of physical activity than girls. This finding is consistent with numerous previous studies where girls have consistently demonstrated lower levels of activity than boys (Brockman, Jagoa, & Foxa, 2010; Kitzman-Ulrich et al., 2010; Robbins, Sikorskii, Hamel, Wu, & Wilbur, 2009; Rodriguez, 2009; Troiano et al., 2008; Whitt-Glover et al., 2009; Wu & Pender, 2005).

Similarly, Kahan (2003) found that Muslim girls engaged in less physical activity than Muslim boys.

In AA culture, boys and girls are treated differently and are allowed different degrees of freedom and responsibility (Mourad & Carolan, 2010). Boys are permitted much more freedom than girls. One researcher found AA girls were not allowed to camp overnight with their girl scouts (Ajrouch, 2000). AA parents tend to control their daughters' behaviors through strategies such as ensuring modest dress (Martin et al., 2008). Additionally, parental concern with girls is having contact with boys, unacceptable facilities, and girls' commitments to family such as staying at home and watching siblings (Kahan, 2003). These cultural factors might explain why AA girls engage less in physical activity than boys. Future research might investigate acculturation and physical activity in AA children. Also, healthcare providers should give greater attention to assessing physical activity patterns in AA girls and provide proper education to parents regarding the importance of equally promoting physical activity for both genders.

Barriers to Participating in Physical Activity

Obesity

In the current study 25.7% of the participants were overweight and 19.4% were obese; however, there were no statistically significant differences between overweight and obese participants with levels of physical activity. These findings are inconsistent with previous studies that found overweight and obese children and adolescents are less active than their healthy weight peers (Hills, King, & Armstrong, 2007; Kitzman et al., 2010; Taylor et al., 2002).

Page et al. (2005) reported that decreased energy expenditure has major responsibility for rapid increase of obesity in adults, but the association of obesity with physical activity in children is more controversial. It is unclear which dimensions of physical activity (e.g., frequency, intensity, and duration) are related to obesity; one reason for this uncertainty is discrepancy in the accuracy of physical activity measured techniques used (Page et al., 2005).

In the current study, the PAQ-C is a self-administered questionnaire used to measure general levels of physical activity, possibly, this instrument does not capture the specific various dimensions of physical activity (frequency, duration, and intensity). Also, objective measures of physical activity such as accelerometers or pedometers would provide a more accurate measurement of physical activity. Therefore, future research may consider using dual measurements to examine physical activity in AA children such as self-administered questionnaires and objective measures.

Facilitators to Participating in Physical Activity

Self-Efficacy Barriers

In the current study, self-efficacy in overcoming barriers to participation in physical activity was a significant predictor of physical activity. A higher self-efficacy in overcoming barriers to participation in physical activity was connected to increased physical activity, which is consistent with several previous studies (Beets et al., 2007; Bungum, Pate, Dowda, &Vincent, 2007; Kitzman-Ulrich et al., 2010; Trost et al., 1997; Trost et al., 2002), including one study of AA children in Michigan that found self-efficacy overcoming barriers was the most important predictor for physical activity (Martin et al., 2008).

Children with high self-efficacy in overcoming barriers to particiation in physical activity are able to be active even when conditions or situations may not be favorable for activity involvement (Beets et al., 2007). The highest frequency items measuring barriers to participation in physical activity were "I think I can be physically active, even if I have a lot of homework (n=124, 60.2%), followed by "I think I can be physically active no matter how tired I may feel" (n=114, 55.3%). This suggests the need to identify the most salient dimensions of self-efficacy for producing change in individual behaviors such as increased physical activity (Baranowski et al., 1998).

In order to promote physical activity in AA children, the current study findings emphasize the need for parents, teachers, and healthcare providers to strengthen the self-efficacy of AA children and to help them overcome traditional barriers of physical activity, including time constraints, homework obligations, bad weather conditions, and feelings of fatigue.

Self-Efficacy Positive Alternatives

In the current study, self-efficacy positive alternatives for sedentary activities was significant predictor for physical activity. A higher self-efficacy in this area was a facilitator to increased physical activity, whichis consistent with several previous studies (Beets et al., 2007; Bungum et al., 2007; Kitzman-Ulrich et al., 2010; Trost et al., 1997; Trost et al., 2002). Children with high level of self-efficacy positive alternatives are able to substitute physical activity for sedentary behaviors such as viewing television (Pate et al., 1997; Zakarian et al., 1994).

In the current study, the highest frequency items measuring positive alternatives were "I think I can be physically active after school even if my friends want me to do

something else" (n= 48; 40.8%), followed by "I think I can be physically active even though I'd rather be doing something else" (n= 58; 28.2%). This suggests the need to identify the most salient dimensions of self-efficacy for producing change in individual behaviors such as increased physical activity (Baranowski et al., 1998). These findings demonstrate the importance of emphasizing the self-efficacy concept in promoting physical activity in AA children by parents and healthcare providers.

Social Support

Social support from friends and parents were significant predictors of physical activity in the current study, which is consistent with previous studies that found social support influences the level of physical activity among children and adolescents (Dowda, Dishman, Pfeiffer, & Pate, 2007; Duncan, Duncan, & Strycker, 2005; Kitzman-Ulrich et al., 2010; Martin et al., 2008; Welk, Wood, & Morss, 2003).

The family unit is the cornerstone of a healthy community in the Arab culture. All family members are respected and each individual's life experiences and hierarchic position within the family unit are considered (Basit, 2007). AA children live with their parents until they are married, and are expected to live with their parents for life if they never marry (Haboush, 2007). Duty to the family extends into adulthood; frequent close contact with family is expected even after marriage, and elder parents are expected to live with one of their children. As a result, retirements and elderly care homes are almost unheard of in Middle East countries (Aboul-Enein, & Ahoul-Enein, 2010).

The current study findings identified the positive influence of social support from parents and friends in promoting AA children's physical activity. Healthcare providers need to educate AA parents of the importance of supporting and promoting their

children's physical activity. In addition, future study might consider different providers of social support such as fathers, mothers, siblings, or peers, and different types of social support such as encouragement and transportation. Beets et al. (2006) examined the influence of different providers and types of social support in promoting physical activity among fourth graders and demonstrated peers transportation and praise positively affected students' physical activity levels. The current study examined parents and friends as providers of social support but was not intended to study different types of social support. Future studies might examine the association of different providers and types of social support with physical activity levels in AA children.

Health Promotion Model (HPM)

This study was guided by the HPM (Pender, 1996), which consists of personal factors domain, perceived self-efficacy domain, interpersonal influences domain, and situational influences domain. Returning to the HPM may be useful in succinctly organizing the study findings overall. In this study, five variables were measured in the personal factor domain (age, gender, BMI, grade, types of school [public vs. private]). Only age and grade were found to be significant predictors for physical activity. Gender was not a significant predictor of physical activity in the final multiple regression model; however, there was a statistically significant association between gender and level of physical activity. BMI and types of school were not predictors for physical activity in the study.

The perceived self-efficacy domain was represented by self-efficacy support seeking, self-efficacy barriers, and self-efficacy positive alternatives. The three self-efficacy variables had statistically significant positive relationships with physical activity.

Two out of the three self-efficacy variables (overcome barriers and positive alternatives) were significant predictors of physical activity in the final multiple regression model. The interpersonal influences domain was represented by social support from parents and friends, which were found to be significant predictors for physical activity in the final multiple regression model. Finally, the situational influences domain was represented by convenience, public recreation facilities, safety, and private sport providers. None of these physical environment factors were found to be significant predictors in the final regression model. However, public recreation facilities had a statistically significant relationship with physical activity. This could be due to interrelation effect of other variables in the model, and that study participants were recruited only from Southern California.

In summary, these study findings support the importance of Pender's HPM in explaining and guiding future interventions to promote physical activity in AA children.

Implications and Recommendations

Clinical Practice

The findings of the current study show that self-efficacy and social support are predictors of physical activity in AA boys and girls. These findings have practical implications for pediatric nurses, community health nurses, nurse practitioners, and other healthcare providers to recognize the importance of enhancing self-efficacy and social support from parents and friends to improve physical activity in AA children.

Community health nurses and healthcare providers can utilize the current study findings by acknowledging and supporting the role of parents and friends in promoting physical activity in AA children and the importance of maintaining healthy weight for

this population. This could be accomplished through providing educational classes for parents to increase support through verbal encouragement, participating in activities with their children, providing transportation, and buying necessary equipment to facilitate increased physical activity. In addition, healthcare providers might need to assess different dimensions of social support available for AA children to promote their physical activity.

Nurses need to advocate for school policy for sufficient physical activity within the school curriculum and assist in the development of physical activities during recess and lunch periods. Also, school nurses and physical educators might need to strengthen AA children's self-efficacy to promote their physical activity during weekdays as well as weekends. This study demonstrated that boys had higher levels of physical activity than girls; therefore, healthcare providers and policy makers need to develop culturally sensitive programs, strategies, and interventions to promote physical activity in AA children by providing programs separately to boys and girls, as this would respect the personal modesty that is highly valued in Arab culture.

Study participants exhibited a negative relationship between age and physical activity; as age increased, particpants' physical activity decreased. This finding increases the responsibility of school nurses, healthcare providers, and policy makers to provide programs not only targeting primary schools but also secondary schools to improve physical activity in older AA children.

Future Research

This study's findings suggest the need to develop culturally-sensitive interventional programs for AA children. The study utilized a self-administered

questionnaire to measure moderate to vigorous physical activity in AA children. Future study might consider including dual measurements of physical activity including objective measures such as pedometers or accelerometers and subjective measures such as self-reported questionnaires. Using dual measurements of physical activity would provide more specific and accurate data to guide the development of future interventional studies (Tudor-Locke & Lutes, 2009; Welk, Corbin, & Dale, 2000).

Future research might consider utilizing a longitudinal design to examine the long-term pattern of physical activity in AA children. Using a longitudinal design might identify mediating factors such as self-efficacy and social support that promote or decrease physical activity over time. In addition, the regression model in the current study explained 51.6% of the variance; remaining unexplained variance may be related to unmeasured variables. Future research should examine other factors influencing physical activity in AA children, such as religion and beliefs about obesity and physical activity.

Finally, this study explored the reliability of all the instruments utilized to support their use in future studies of AA children. Future studies are recommended to test further psychometrics of these instruments in this population.

Strengths of the Study

This study represents the first published attempt to establish a knowledge base about the determinants of physical activity in AA children in Southern California. Sample size was calculated based on the power analysis, so that the results of data analysis were strong enough to test the aims of this study. The study tested the instruments for internal consistency reliability. Cronbach's alpha of the four instruments exhibited good or excellent reliability, indicating they were appropriate for use in the

study. The study sample included both boys and girls, enhancing the generalizability of the study findings. The ability of the current study final regression model to capture 51.6% of the variance in physical activity suggested appropriate determinants of physical activity had been examined in this study.

Limitations of the Study

This study is a cross sectional design, which by nature gives a one-time "snapshot" of a healthcare phenomenon and does not provide any information about causal relationships. Future studies that utilize a longitudinal design would be useful in examining the long-term effect of determinants of physical activity in AA children.

The current study recruited participants from Southern California areas, which could limit the generalizability of the study findings. Future multi-site studies of AA children living in various regions of the US are needed. The current study utilized self-reported instruments that may have influenced participants to provide more desirable responses. Utilizing objectives measures such as pedometers or accelerometers would provide more valid physical activity data. In addition, the self-efficacy questionnaire utilized in the current study was a dichotomous scale (requiring "yes" or "no" responses). This restriction in variability of responses may make it more difficult to detect the relationships between variables. Future studies may administer questionnaires with three- or five-point response scale. Finally, the current study did not include interviews with participants; it may have helped triangulate quantitative findings with qualitative data.

Summary

This chapter discussed the findings, implications, strengths, and limitations of the current study of multiple factors affecting physical activity in AA children. Some implications in clinical practice and future research were presented. Finally, the study's limitations in design and sampling were described with strategies suggested for overcoming these limitations in future studies.

Conclusion

The purpose of this research was to describe determinants of physical activity in AA children. Regular physical activity has several physical, psychological, and several benefits for all age groups, including children and adolescents. This initial study of AA children suggests a need to explore more fully the significance and the impact of determinants of physical activity in AA children.

The results of the study revealed significant behavior-specific cognition components of HPM framework. Five variables significantly predicted physical activity: age, self-efficacy (barriers, positive alternatives) and social support (parent, friend). The level of physical activity decreased as participant age increased. This result could be due to older AA children engaging in more sedentary behaviors than younger children, which emphasizes the importance of future study to examine sedentary behaviors among AA children.

Participants with higher self-efficacy in the overcome barriers and positive alternatives subscales had higher levels of physical activity than other participants. These study findings illustrate the need to promote self-efficacy in improving physical activity in AA children. Participants with greater social support from parents and friends also had

higher levels of physical activity, which emphasizes the role of healthcare providers in encouraging parents and friends to provide social support to AA children in order to improve their physical activity. Male participants had statistically significant higher levels of physical activity than female participants. This result could be due to cultural norms in the AA population. Future research might consider examining AA beliefs towards obesity and physical activity. Finally, this study explored the reliability of different instruments used to measure the study variables, demonstrating evidence for their possible utilization in future studies in AA children.

This study provides a starting point for expanding the knowledge base regarding physical activity in this culturally and ethnically diverse population. In particular, the data suggest that the relationship between determinants of physical activity in AA children is a promising field of research and its exploration may ultimately promote the health of this rapidly growing segment of the American population.

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Appendix A

Demographic Form

Code#: .....

Please answer the following questions that best describe you:

1. How old are you: .....years
2. What is your gender: Male ☐ Female ☐
3. What is your current school grade: .....
4. What is the type of your school: Private ☐ Public ☐

Please leave the height and weight blank.

Height ..... Cm.

Weight (without shoes) ..... Kg.

Appendix B

Physical Activity Questionnaire for Older Children (PAQ-C)

Code#: .....

We are trying to find out about your level of physical activity from ***the last 7 days*** (in the last week). This includes sports or dance that make you sweat or make your legs feel tired, or games that make you breathe hard, like tag, skipping, running, climbing, and others.

Remember:

1. There are no right and wrong answers — this is not a test.
2. Please answer all the questions as honestly and accurately as you can — this is very important.

---

1. Physical activity in your spare time: Have you done any of the following activities in the past 7 days (last week)? If yes, how many times? (Mark only one circle per row.)

	NO	1-2	3-4	5-6	7 time Or more
Skipping.....	O	O	O	O	O
Rowing/canoeing.....	O	O	O	O	O
In-line skating.....	O	O	O	O	O
Tag.....	O	O	O	O	O
Bicycling.....	O	O	O	O	O
Jogging or running.....	O	O	O	O	O
Aerobics.....	O	O	O	O	O
Swimming.....	O	O	O	O	O
Baseball, softball.....	O	O	O	O	O
Dance.....	O	O	O	O	O
Football.....	O	O	O	O	O
Badminton.....	O	O	O	O	O
Skateboarding.....	O	O	O	O	O
Soccer.....	O	O	O	O	O
Street hockey.....	O	O	O	O	O
Volleyball.....	O	O	O	O	O
Floor hockey.....	O	O	O	O	O
Basketball.....	O	O	O	O	O
Ice Skating.....	O	O	O	O	O
Cross-county skiing.....	O	O	O	O	O
Ice hockey /ringette.....	O	O	O	O	O
Others: _____	O	O	O	O	O
_____	O	O	O	O	O

2. In the last 7 days, during your physical education (PE) classes, how often were you very active (playing hard, running, jumping, throwing)? (Check one only.)

I don't do PE..... O

Hardly ever..... O

Sometimes..... O

Quite often..... O

Always..... O

3. In the last 7 days, what did you do most of the time *at recess*? (Check one only.)

Sat down (talking, reading, doing schoolwork)..... O

Stood around or walked around..... O

Ran or played a little bit..... O

Ran around and played quite a bit..... O

Ran and played hard most of the time..... O

4. In the last 7 days, what did you normally do *at lunch* (besides eating lunch)? (Check one only.)

Sat down (talking, reading, doing schoolwork)..... O

Stood around or walked around..... O

Ran or played a little bit..... O

Ran around and played quite a bit..... O

Ran and played hard most of the time..... O

5. In the last 7 days, on how many days *right after school*, did you do sports, dance, or play games in which you were very active? (Check one only.)

None.....	O
1 time last week.....	O
2 or 3 times last week.....	O
4 times last week.....	O
5 times last week.....	O

6. In the last 7 days, on how many *evenings* did you do sports, dance, or play games in which you were very active? (Check one only.)

None.....	O
1 time last week.....	O
2 or 3 times last week.....	O
4 or 5 times last week.....	O
6 or 7 times last week.....	O

7. *On the last weekend*, how many times did you do sports, dance, or play games in which you were very active? (Check one only.)

None.....	O
1 time.....	O
2 - 3 times.....	O
4 - 5 times.....	O
6 or more times.....	O

8. Which *one* of the following describes you best for the last 7 days? Read *all five* statements before deciding on the *one* answer that describes you.

A. All or most of my free time was spent doing things that involve little physical efforts..... **O**

B. I sometimes (1-2 times last week) did physical things in my free time (e.g. played sports, went running, swimming, bike riding, did aerobics)..... **O**

C. I often (3-4 times last week) did physical things in my free time..... ..... **O**

D. I quite often (5-6 times last week) did physical thing in my free time..... **O**

E. I very often (7 or more times last week) did physical things in my free time..... **O**

9. Mark how often you did physical activity (like playing sports, games, doing dance, or any other physical activity) for each day last week.

	None	Little bit	Medium	Often	Very often
Monday.....	O	O	O	O	O
Tuesday.....	O	O	O	O	O
Wednesday.....	O	O	O	O	O
Thursday.....	O	O	O	O	O
Friday.....	O	O	O	O	O
Saturday.....	O	O	O	O	O
Sunday.....	O	O	O	O	O

10. Were you sick last week, or did anything prevent you from doing your normal physical activities? (Check one.)

Yes..... O

NO..... O

If Yes, what prevented you? _____

Appendix C

Self-Efficacy Scale

Code #: .....

SECTION E: Please put a check by "Yes" or "No" for each of the following sentences. "Yes" means that you agree with the sentence. "No" means that you do not agree with the sentence. Remember that physical activity can be any play, game, sport, or exercise that gets you moving and breathing harder. There are no wrong answers.

1. I think I can be physically active most days after school. _____ Yes _____ No
2. I think I can ask my parent or other adult to do physically active things with me. _____ Yes _____ No
3. I think I can be physically active even when I'd rather be doing something else. _____ Yes _____ No
4. I think I can be physically active after school even if I could watch TV or play video games instead. _____ Yes _____ No
5. I think I can be physically active after school even if my friends want me to do something else. _____ Yes _____ No
6. I think I can ask my parent or other adult to sign me up for a sport, dance, or other physical activity program. _____ Yes _____ No
7. I think I can be physically active even if it is very hot or cold outside. _____ Yes _____ No
8. I think I can ask my best friend to be physically active with me. _____ Yes _____ No
9. I think I can ask my parent or other adult to get me the equipment I need to be physically active. _____ Yes _____ No

10. I think I can be physically active no matter how tired I may feel. _____ Yes _____ No

11. I think I can ask my parent or other adult to take me to a physical activity or sport practice _____ Yes _____ No

12. I think I can be physically active, even if I have a lot of homework. _____ Yes _____ No

13. I think I can be physically active even if I have to stay at home. _____ Yes _____ No

14. I think I can be physically active even if my friends don't want me to. _____ Yes _____ No

15. I think I have the skills I need to be physically active. _____ Yes _____ No

16. I think I can be physically active no matter how busy my day is. _____ Yes _____ No

17. I think I can be physically active at least three times a week for the next 2 weeks. _____ Yes _____ No

Appendix D

Social Support Scale

Code #: .....

1. How often do you do sport with your friends?

never	rarely	often	always
☐	☐	☐	☐

2. How often do you ask your friends if they want to play outside or do sport with you (e.g. playing soccer, riding a bicycle, inline skating)?

never	rarely	often	always
☐	☐	☐	☐

3. How often do your friends ask you if you want to play or do sport with them (e.g. playing soccer, riding a bicycle, inline skating)?

never	rarely	often	always
☐	☐	☐	☐

4. Do your parents support you in your sports activity (e.g. by buying sporting goods for you)?

never	rarely	often	always
☐	☐	☐	☐

5. How often is your sport a topic of conversation in your family?

never	rarely	often	always
☐	☐	☐	☐

6. How important is it for your parents that you do sport?

not important at all	a little important	pretty important	very important
☐	☐	☐	☐

7. How much of an interest do your parents have in your sport?

none at all	a little bit	pretty strong	very strong
☐	☐	☐	☐

8. How often do your parents watch you doing sport?

never	rarely	often	always
☐	☐	☐	☐

Appendix E

Environment Scale

Code #: .....

1. In the area I live in, there are sports facilities that are always accessible (e.g. soccer fields).

none	few	several	many
☐	☐	☐	☐

2. In the area I live in, there are sports clubs.

none	few	several	many
☐	☐	☐	☐

3. In the area I live in, there are commercial sport providers (e.g. fitness clubs).

none	few	several	many
☐	☐	☐	☐

4. In the area I live in there are playgrounds.

none	few	several	many
☐	☐	☐	☐

5. How safe are the public leisure time facilities in the area you live in (in terms of problems with crime)?

very unsafe	pretty unsafe	pretty safe	very safe
☐	☐	☐	☐

6. For walking and riding a bicycle, the area I live in is

not very nice at all	not that nice	pretty nice	very nice
☐	☐	☐	☐

7. In the area I live in, shops and businesses can be reached on foot

very badly	rather badly	rather well	very well
☐	☐	☐	☐

8. From where I live, the bus and tram stops can be reached on foot

very badly	rather badly	rather well	very well
☐	☐	☐	☐