

Preliminary Effects of the Athletes for Life Community Study
on Child Habitual Physical Activity

by

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ABSTRACT

Background: Although childhood engagement in physical activity has received growing attention, most children still do not meet the recommended daily 60 minutes of moderate to vigorous physical activity [MVPA]. Children of ethnic minorities are less likely to meet the guidelines. Interventions have been implemented in various settings to increase child physical activity levels, yet these efforts have not yielded consistent results. The purpose of this study was to assess the preliminary effects of a community-based intervention on light physical activity and MVPA among 6-11 year old children.

Methods: The present study was part of a larger study called Athletes for Life [AFL], a family-based, nutrition-education and physical activity intervention. The present study focused on physical activity data from the first completed cohort of participants (n=29). This study was a randomized control trial in which participating children were randomized into a control (n=14) or intervention (n=15) group. Participants wore accelerometers at two time points. Intervention strategies were incorporated to increase child habitual physical activity. Analyses of covariance were performed to test for post 12-week differences between both groups on the average minutes of light physical activity and MVPA minutes per day.

Results: The accelerometer data demonstrated no significant difference in light physical activity or MVPA mean minutes per day between the groups. Few children reported engaging in activities sufficient for meeting the physical activity guidelines outside the AFL program. Of the 119 total distributed child physical activity tracker sheets (7 per family), 55 were returned. Of the 55 returned physical activity tracker

sheets, parents reported engaging in physical activity with their children only 7 times outside of the program over seven weeks.

Conclusion: The combined intervention strategies implemented throughout the 12-week study did not appear to be effective at increasing habitual mean minutes per day spent engaging in light and MVPA among children beyond the directed program.

Methodological limitations and low adherence to intervention strategies may partially explain these findings. Further research is needed to test successful strategies within community programs to increase habitual light physical activity and MVPA among 6-11 year old children.

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LIST OF ABBREVIATIONS

AFL	Athletes for Life
AFLY5	Active for Life Year 5
ANCOVA	Analysis of Covariance
ASU	Arizona State University
BtBYCB	Be the Best You Can Be
CDC	Centers for Disease Control and Prevention
CPET	Children, Parents and Pets Exercising Together
CPM	Cut Points Per Minute
HBSC	Health Behavior in School-aged Children
HDL	High Density Lipoprotein
MET	Metabolic Equivalent
MVPA	Moderate to Vigorous Physical Activity
NHANES	National Health and Nutrition Examination Survey
SE	Standard Error
SMCC	South Mountain Community Center
SOFIT	System for Observing Fitness Instruction Time
SOS	Significant Other Supporter
SPARK	Sports, Play and Active Recreation for Kids
SPSS	Statistical Package for the Social Sciences
WAVES	West Midlands Active Lifestyle and Healthy Eating in School
WHO	World Health Organization
YRBSS	Youth Risk Behavior Surveillance System

CHAPTER 1

INTRODUCTION

Health Benefits of Physical Activity

Physical activity, especially moderate to vigorous physical activity [MVPA], is associated with various health benefits among children. For example, compared to children who do not meet recommendations for physical activity, children who meet recommendations for physical activity have increased bone mineral density during adolescence and lower risk of osteoporosis in adulthood (Janz et al., 2001). Physical activity also helps to improve metabolic profile, muscular and bone health (Ekelund et al., 2008; Hind and Burrows, 2007), mental health, and academic performance (Strong, Malina, Binkie, et al., 2005). Children who engage in higher levels of physical activity also have lower levels of depression and fewer internalizing/externalizing problems (Bartko & Eccles, 2003). Externalizing problems include social behaviors that are negative including delinquency and aggressiveness; internalizing problems include social withdrawal and anxiety/depression (Eisenberg et al., 2001). Higher psychological resilience is also reported in children who are involved in more athletic team sports at school or in the community compared to other activities including service, hobby clubs, and scouts (Bartko & Eccles, 2003). Thus, it is clear that physical activity has numerous psychological and physical health benefits for children (Janssen & LeBlanc, 2010; Hind & Burrows, 2007).

Prevalence of Physical Activity

The 2008 Physical Activity Guidelines for Americans, issued by the U.S. Department of Health and Human Services, recommends that children perform 60 minutes or more of MVPA daily (US Department of Health and Human Services, 2008). Physical activity intensities are

commonly expressed in METs. One MET is equivalent to the amount of oxygen consumed while sitting quietly at rest (WHO, 2015). MVPA refers to activities that require three metabolic equivalents [METs] or more, such as running (World Health Organization, 2015). Most American children do not meet these physical activity recommendations. For example, Troiano et al. (2008) used data from the 2003-2004 National Health and Nutrition Examination Survey [NHANES] to show that only 42% of 6-11 year old children met the recommended 60 minutes of MVPA per day.

The 2003-2004 NHANES was the first study to provide objective measures of physical activity for the United States population. Physical activity was objectively measured through accelerometers in 309 male and 288 female 6-11 year old children. The mean minutes per day spent participating in 10 minute bouts of MVPA among boys and girls were 45.1 and 26.2, respectively (Troiano et al., 2008). This study demonstrated that the physical activity guidelines were not being achieved by most children.

More recently, the 2011 Youth Risk Behavior Surveillance System [YRBSS] results found that the prevalence of engaging in physical activity for at least 60 minutes per day on five or more days of the week was higher among the white male (62.1%), black male (57.1%), and Hispanic male (57.1%) than the white female (42.6%), Hispanic female (33%), and black female (31.9%) students in grades 9-12, respectively (Eaton et al., 2012). Both YRBSS and NHANES data supported that males were more physically active than females, along with minority individuals (African-American and Hispanic) being less active than Caucasians (Crespo et al., 2000 & Eaton et al., 2012).

Not only are children of ethnic minorities less physically active, they are also disproportionately affected by negative health outcomes (Price et al., 2013). The percentage of

children with a chronic disease in the United States almost quadrupled between 1960 and 2005 (from 1.8%-7%), with children of ethnic minorities having a greater likelihood of chronic disease (Almanac of Chronic Disease, 2008). Common major chronic diseases among children in the United States include asthma, diabetes, obesity, hypertension, dental disease, attention-deficit/hyperactivity disorder, mental illness, cancer, sickle-cell anemia, and cystic fibrosis (Price et al., 2013). Physical activity has been shown to be effective in the prevention of several chronic diseases yet many children are not meeting the recommended physical activity guidelines, especially those of ethnic minorities (Eaton et al, 2012). Understanding the factors associated with physical activity participation is important in order to develop strategies to increase physical activity levels in children.

Determinants of Physical Activity

Research demonstrates that environmental, sociocultural, and psychological factors can influence children's physical activity. Environmental determinants of physical activity include access to play spaces, facilities, availability of equipment, and access to greenspace (Lachowycz and Jones, 2011; Kaczynski and Henderson, 2007), the incidence of opportunities to be physically active (Sallis, Prochaska, & Taylor, 2000), and transportation to activities or programs (Centers for Disease Control and Prevention, 2003). Sociocultural influences that support physical activity are peers and siblings (Davidson & Jago, 2009), parental level of physical activity (Edwardson & Gorely, 2005), parental support (Sallis, Prochaska, Taylor, 2000), participation in school sports (Van der Horst, Paw, Twisk, & Van Mechelen, 2007; Gordon-Larsen, McMurray, & Popkin, 2000), and parental income (Gustafson & Rhodes, 2006).

Psychological determinants of physical activity include confidence in one's ability to engage in exercise (self efficacy) (Dishman, Motl, Saunders, et al., 2005), enjoyment of physical

activity (Dishman, Motl, Saunders, et al., 2005), and perception of physical or sport competence (Sallis, Prochaska, Taylor, 2000). Data also suggest that encouragement by parents to be active, enjoyment of physical education classes, self-efficacy, perceived behavioral control, and participation in sports are positively associated with physical activity participation among ethnic minority children (Barr-Anderson et al, 2007; McGuire et al., 2002; Ward et al., 2006).

Behavioral Approaches to Increase Children's Physical Activity

Several interventions have been developed and implemented with a focus on increasing children's physical activity participation. An intervention is a combination of strategies designed to result in behavior changes or to improve health status. Interventions may include policy changes, educational programs, improvements in the environment, or health promotion campaigns. School, community, and family-based approaches are the most studied intervention types. The school setting is the most common intervention location for promoting physical activity to children because of the ability to reach a vast majority of children (Institute of Medicine, 2012; WHO, 2008). Common locations where community interventions are implemented include: within neighborhoods (e.g., parks), churches, work sites, and city community centers. Family-based interventions refer to programs that target both children and their parents. Emotional support and role modeling behaviors are important components of family-based interventions with children (Pearson et al., 2009).

Behavioral modification is a common approach to increase children's physical activity. Behavioral modification is an approach to increasing the likelihood of the desired behavior through the use of reinforcement strategies and manipulations in social and environmental factors that influence the desired behavior. Behavior modification techniques assume that providing new positive learning experiences, such as providing exposures to new exercises or

activities, can increase the likelihood that physical activity behaviors will occur (Kazdin, 2013). The outcomes of behavioral modification focus on measuring the target behavior (e.g., physical activity behaviors in children). In programs targeting physical activity, pedometers and accelerometers are the most commonly used tools to assess behavioral change before and after interventions. Behavioral strategies that have been found to be successful include setting specific goals for behavior change that specify what an individual will do (e.g., steps per day), along with when, where, how, and for how long the person will engage in the behavior (Wadden & Foster, 2000). Self-monitoring is another important component of behavior modification that has been successful (Wadden, Butryn, & Wilson, 2007). Mediated delivery of interventions using positive reinforcement has also been shown to work when altering a behavior (Marcus et al., 2000).

There is a lack of research regarding behavior modification techniques to increase light physical activity and MVPA among children of ethnic minorities in a community setting. More creative and culturally tailored approaches may be necessary to help minority children engage in greater physical activity for improved physical and mental health. A randomized controlled trial, Athletes for Life [AFL], sought to evaluate the effectiveness of a multicomponent intervention, with the main objective of improving physical fitness among mostly Hispanic 6-11 year old children in Phoenix, Arizona.

Purpose

The purpose of this study was to assess the preliminary effects of a community-based intervention (AFL) on 6-11 year old children's objectively measured light physical activity and MVPA. Behavioral modification techniques were incorporated into the intervention along with parental involvement to promote habitual physical activity on a daily basis. The present study is

a sub-analysis of the physical activity data from the first study cohort who completed the 12-week program.

Research Questions and Hypotheses

The present study sought to test the following research questions.

1. Does the AFL, after school family-based program (12-weeks) increase MVPA (7-day habitual MVPA minutes per day) among children?

Hypothesis 1.1: Children who complete the 12-week AFL program, will exhibit greater mean minutes per day of MVPA compared to children in the control group.

2. Does the AFL, after school family-based program (12-weeks) increase light intensity physical activity (7-day habitual light intensity physical activity minutes per day) among children?

Hypothesis 2.1: Children who complete the 12-week AFL program, will exhibit greater mean minutes per day of light intensity physical activity compared to children in the control group.

CHAPTER 2

REVIEW OF LITERATURE

Health Benefits of Light Intensity Physical Activity and MVPA

Regular physical activity is associated with many health benefits in children. Data retrieved over two years from the Healthy Hearts Prospective Cohort Study of Physical Activity and Cardiometabolic Health in Youth were analyzed to determine the associations between light, moderate, and vigorous physical activity intensities and cardiometabolic risk factors in 9-15 year old youth (n=315). Favorable associations were seen between physical activity [PA] of vigorous intensity PA and systolic blood pressure, waist circumference, body mass index z-score, and maximal oxygen uptake (Carson et al., 2014). However, light PA was not associated with health indicators in this study (Carson et al., 2014). Another study among 9-17 year old youth found that cardiometabolic risk declined in a dose-dependent manner with increasing vigorous PA, however it did not with light or moderate PA. It was also found that elevated systolic blood pressure and overweight status declined with increasing vigorous PA time (Hay et al., 2012). These findings support that MVPA is consistently associated with several health indicators among children, with varying strength of association.

The health benefits of light intensity PA among children have been extensively documented. For example, light intensity PA (including MVPA) was found to have favorable associations on systolic and diastolic blood pressure, high density lipoprotein [HDL] cholesterol, insulin, and insulin sensitivity among 12-19 year old adolescents (Carson et al., 2013). In this study, light intensity PA was categorized as follows: low light intensity (100-799 counts per minutes) and high light intensity (800 counts per minute; <4 METs). Results showed that each additional hour per day of low light intensity activity was associated with 0.59 mmHg lower

diastolic blood pressure. Each additional hour per day of light intensity PA was associated with 1.67 mmHg lower diastolic blood pressure and 0.04 mmol/L higher HDL cholesterol. Lastly, each additional hour per day of MVPA was associated with 3.54 mmHg lower systolic blood pressure, 5.49% lower waist circumference, 25.87% lower insulin, and 16.18% higher insulin sensitivity. This study demonstrated that MVPA had the most favorable associations with cardiometabolic markers. However, light PA also exhibited favorable associations with diastolic blood pressure and cholesterol, although not as strongly as MVPA (Carson et al., 2013). Thus, there is evidence to support that participating in all intensities of PA (light, moderate, and vigorous) are important for health among children.

Children who are not sufficiently active, may develop lifelong conditions that impact their well-being. Hypertension and atherosclerosis are especially important diseases in children as there is evidence of both conditions being established early in life (Chen & Wang, 2008; Berenson et al., 1992). Children with hypertension and atherosclerosis have a greater risk of suffering from the complications of these conditions through adulthood. High levels of LDL cholesterol beginning as early as the age of six have been associated with atherosclerosis (Berenson et al., 1992). This result supports the finding that endothelial function can be impaired very early in life. Providing opportunities of PA in children through interventions may aid in maintaining healthy endothelial function in active children into adulthood.

In addition to physiological factors, psychological factors can also be affected by PA. There is strong evidence to support that PA is important for children's psychological well-being (Penedo & Dahn, 2005). Children with lower activity levels have a higher prevalence of psychological and emotional distress including frequent temper tantrums, aggressive behavior, anxiety, and depression (Penedo & Dahn, 2005). A meta-analysis of 44 studies found that PA

had a positive association with cognitive functioning in 4-18 year old children (Sibley & Etnier, 2003). Cognitive function tasks include memory, mathematical ability, verbal ability, reasoning, creativity, academic achievement, mental age, intelligence quotient, reaction time, and perception (recognition and interpretation of sensory stimuli) (Carron, Hausenblas, & Estabrooks, 2003). Another study tested the association between PA and self-reported psychological problems among 5,003 11-16 year olds (Cao et al., 2011). Participants completed the Depression Self-Rating Scale for Children and the School Life Satisfaction Rating Questionnaire to obtain information regarding current mental health information. This study found an inverse association between vigorous PA levels and depressive anxiety symptoms and school life dissatisfaction. In other words, children who reported participating in higher levels of vigorous PA reported lower depressive anxiety symptoms and higher school life satisfaction as compared to children with lower levels of vigorous PA.

PA participation is essential for children based upon the many health benefits it provides, such as physical and mental wellbeing. Studies have shown favorable associations between PA and blood pressure as well as other cardiometabolic risk factors (Carson et al., 2013). PA has also demonstrated positive associations with cognitive functioning and inverse associations with depression (Sibley & Etnier, 2003; Cao et al., 2011). Focusing efforts on increasing children's PA levels (both light and MVPA) may be the most effective method of providing health benefits and preventing disease in adulthood.

Prevalence of PA

Despite the many health benefits obtained through regular PA, nationally representative studies demonstrate that many children do not meet the recommended guidelines of 60 minutes of PA per day (Troiano et al., 2008; CDC, 2011). For example, a longitudinal study conducted

by the Youth Media Campaign found that about 23 percent of 9-13 year old children did not engage in free-time PA and about 62 percent had not participated in any organized after school physical activities (CDC, 2003). Other data show that 23 percent of 9-13 year old children engaged in no free-time PA and only 39 percent participated in organized sports (Duke, Huhman, & Heitzler, 2003). Thus, it is clear that children who are not meeting the recommended PA guidelines will likely continue these behavioral patterns through adulthood.

Studies consistently show that energy expenditure and PA decline, while sedentary behavior increases with age in children (Belcher et al., 2008; Strong, Malina, Blimkie, 2005; Nader et al., 2008). For example, the 2003-2004 NHANES data showed that 42% of 6-11 year old children met the PA guidelines while only 8% of 12-15 year old children met the PA guidelines (Troiano et al., 2008). This study demonstrated that PA guidelines were not being achieved by most children, especially during adolescence and adulthood. These findings are of importance because data show an age-related drop in PA participation which contributes to the development of cardiometabolic disease in adulthood. Therefore it is critical that greater efforts be initiated in helping young children meet the recommended PA guidelines and sustain those behaviors into adulthood.

Similar to the PA patterns of children, a majority of adults do not meet recommended PA guidelines. The 2008 PA Guidelines for Americans recommend that adults perform at least 150 minutes of MVPA a week or 75 minutes of vigorous PA a week (US Department of Health and Human Services, 2008). PA levels of 453 men between 23-25 years of age were compared with their physical fitness scores as 10-11 year old or 15-18 year old children based on The Youth Fitness Test in a prospective study to investigate childhood determinants of adult PA patterns (Dennison, Straus, & Mellits, 2001). It was found that adults who are currently physically active

had significantly better childhood physical fitness than inactive adults (Chung et al., 2012). Data from the Cardiovascular Risk in Young Finns Study found similar results. Data from the study was analyzed to see how well adult PA levels could be predicted based on PA measured during childhood. It was found that a high level of PA among school-aged children was related to adult PA, especially at ages 9-18 (Telama et al., 2005). These studies demonstrate that child PA is an important predictor of adult PA. Thus, it is important to improve child PA levels in early childhood in order to increase the likelihood that these behaviors will be maintained through adulthood.

There are also significant gender differences in PA levels among youth, whereby boys tend to be more active than girls (Troiano et al., 2008; Trost et al., 2002). The 2011 Youth Risk Behavior Surveillance System [YRBSS] results demonstrated that the prevalence of engaging in PA for at least 60 minutes per day on five or more days of the week was higher among male (59.9%) than female (38.5%) 9-12th grade students (Eaton et al., 2012). Gender PA differences seem to be consistent across all ages, showing that females are less active than males throughout the lifespan. Lower PA participation among girls might be explained by factors such as: lack of opportunities for sports participation and lack of physical activities that are of interest to girls (Gordon-Larsen et al., 2004). This suggests that intervention programs designed to increase PA levels among children need to be gender neutral and/or gender-tailored in order to be appealing to both boys and girls.

PA levels also vary between ethnic groups. Belcher and colleagues (2010) analyzed NHANES 2003-2004 and 2005-2006 data to describe PA levels of 6-11 year old youth in the United States by ethnicity. Mexican American 6-11 year old children were found to engage in the least amount of MVPA (67.7 mean minutes per day) as compared with the non-Hispanic

White (74.1 mean minutes per day) and non-Hispanic Black children (79.7 mean minutes per day) of the same age (Belcher et al., 2010). Sirard and colleagues (2008) conducted a cross-sectional study using baseline data from a school-based randomized control trial to increase PA in ninth grade girls. This study identified associations between sports team participation and PA levels among non-Hispanic White and African American eighth grade girls (n=837). Girls were categorized into the following three groups: no sports participation, participating in one sport, or participating in multiple sports. A three-day recall instrument was used to measure PA. It was found that African American girls were less physically active than their non-Hispanic White counterparts regardless of sport participation level (Sirard et al., 2008). African American girls who did not participate in any sports, one sport, and multiple sports averaged 52, 67, and 73 mean minutes of MVPA per day, respectively, whereas non-Hispanic White girls engaged in 72, 80, and 89 mean minutes of MVPA per day in the non-sport, one sport, and multiple sport groups respectively (Sirard et al., 2008). Across all three groups, African American girls spent less time in MVPA than non-Hispanic White girls. Since ethnic minority children do not engage in enough PA and are disproportionately affected by negative health outcomes (Price et al., 2013); there is an urgent need to increase PA participation in children, especially those of ethnic minorities.

Determinants of PA

Several environmental, sociocultural, and psychological determinants of PA have been identified. Environmental determinants of PA refer to access to green space, play spaces, and available equipment and favorable weather (Kaczynski & Henderson, 2007). The influence of weather on PA behaviors was demonstrated in 27 out of 37 systematically reviewed studies; four of those studies specifically acknowledged “bad weather” as a perceived barrier to participation in PA (Tucker & Gilliland, 2007). Seasonal weather factors included: temperature differences,

the amount of precipitation, and sunlight exposure-all of which have been reported as barriers to children's participation in PA (Berkey et al., 2003). In fact, children engage in more PA in spring and summer, during after school hours, and on weekends as compared to during the winter, during school hours, and on weekdays (Shephard & Aoyagi, 2009; Fisher et al., 2005). Thus, it is important to consider these environmental factors when designing PA programs for children.

The socioeconomic status of a neighborhood can influence the level of PA among children living in that area. Neighborhoods with higher crime levels tend to demonstrate lower PA levels among children due to safety concerns (Gordon-Larsen, McMurray, & Popkin, 2000). Other environmental factors associated with children's PA levels include availability of after school programs and neighborhood design (Glanz, Rimer, Viswanath, 2008). Types of after school programs that are offered include: sport-specific programs offered by individual schools, community programs offered through state agencies (KidZone), and community programs offered through organizations (P1Kids). Aspects of neighborhood design that are associated with children's PA levels are the amount of street lighting provided, the condition and availability of nearby parks or green space, and street conditions (sidewalks available, high traffic). Neighborhood walkability, safety signage, and perceived crime rates are other examples of neighborhood-level factors that influence a child's PA (Glanz, Rimer, Vanswanath, 2008). Based upon the literature, safety precautions and outside temperatures should be taken into account when designing a PA program to decrease potential environmental barriers to children's PA. Consideration of outdoor temperatures during the planned implementation periods of an intervention might be especially important in states with extreme hot summer temperatures (such as Arizona).

Sociocultural determinants of PA refer to social and cultural factors that influence children's PA participation. Numerous studies have found that parental social support is a critical factor related to PA participation in children (Adkins et al., 2004; Prochaska, Rodgers, & Sallis, 2002). Parents can provide social support in various ways, including instrumental, modeling, and motivational support (Hashim, 2012). Instrumental support refers to direct support such as providing transportation, financial support, and providing sports equipment. Motivational support refers to praise and encouragement of children to participate in PA. An opportunity for parents to praise their children might be through parent monitoring of child PA, typically seen in interventions where parents log the time children spend doing PA. The Fit Kids/Fit Families study used PA logging which showed that 59% of the children in the intervention group increased their PA levels. Another finding was that 89% of children adhered to completing the logs, which suggests this is a viable intervention strategy (Jossee et al., 2008). Parental social support plays a significant role in a child's PA levels.

Several studies have found that children's PA levels are related to the level of parental support they receive. In a randomized control trial (Active by Choice Today school intervention), higher levels of child-reported parental modeling of PA were correlated with an increase in MVPA (Wilson et al., 2011). The mechanism by which child PA is related to parent PA is through the effects of parent role modeling. Children are more likely to engage in PA if their parents also engaged in PA (Pearson et al., 2009). Thus, intervention studies should integrate parent role modeling as a strategy to increase children's PA behaviors. In family-centered cultures, it is important to specifically integrate the family into various aspects of an intervention.

Psychological factors have been found to influence PA levels among children. Self-efficacy, enjoyment of PA, and perception of sport competence are the most commonly studied

psychological determinants of PA participation in children. Self-efficacy refers to one's belief in his/her capacity to perform PA. Children with higher self-efficacy are more physically active compared to children with lower self-efficacy (Dishman, Motl, Saunders, et al., 2005). Dishman and colleagues (2005) also found evidence to support that greater enjoyment of PA typically reflects higher levels of PA, meaning that children are more active if they enjoy the physical activities they are participating in. A child's perception of their competence in sports reflects their self-efficacy. Children with a greater perception of sport competence engage in more PA than children with a poor perception of their sport competence (Sallis, Prochaska, & Taylor, 2000). Literature suggests that children's PA levels have been influenced by psychological factors including self-efficacy and level of sport competence.

In summary, environmental, sociocultural, and psychological determinants of PA in children need to be understood when designing programs to increase PA. Planning interventions that consider outdoor temperatures, possible safety concerns, and ideal times (e.g., after school) to conduct a program might address common environmental barriers. Helping children to increase their PA levels is best accomplished by removing barriers restricting the activity of children and their families.

Behavioral Approaches to Increase Child PA

Theoretical Framework

Interventions designed to improve health-related behavior utilize various theoretical frameworks. The social ecological model is one framework that demonstrates how factors at each level influence individual behaviors. The most proximal level of the model is the individual level, enclosed by interpersonal, organizational, community, and policy levels (CDC, 2013). Public health professionals have begun to target these five levels in order to maximize

intervention effectiveness. PA interventions may address individual level factors by increasing the individual's knowledge and influence on his/her attitude toward PA. The interpersonal level targets social and cultural norms, and sources of interpersonal support (family, friends, health care providers, and community health workers). Lastly, the community level of the social ecological framework can be implemented into a PA intervention by leveraging resources and participation of community organizations (gymnasiums, schools, recreation centers).

Another approach to influencing positive behavioral change in an individual is through behavior modification and operant learning. Behavioral modification is based on experiments led by Burrhus F. Skinner (Glanz et al., 2008). Skinner believed that looking at the causes of an action and the consequences of that action was the ideal way to gain understanding of human behavior. This approach is referred to as operant conditioning (Kazdin, 2013). Positive reinforcement is one of the most commonly used behavioral modification techniques. Positive reinforcement with successful behavior is one of 40 behavior change techniques outlined to help individuals change PA and healthy eating behaviors. Positive reinforcement can include verbal praise as well as provision of incentives such as sporting equipment (Michie et al., 2011). One meta-analysis found average daily PA (measured with pedometers) was higher among participants rewarded with cash incentives as compared to those in the control group who were not rewarded for increasing PA level (Giles et al., 2014). Teaching parents of children participating in interventions about the importance of positive reinforcement and how to provide positive reinforcement is an effective intervention strategy.

Behavior change and level of intervention engagement may increase through behavior strategies. The West Midlands Active Lifestyle and Healthy Eating in School [WAVES] and the Daughters and Mothers Exercising Together programs provide examples of interventions in

which behavioral strategies were used effectively (positive learning experiences, goal setting, role modeling, and rewards). WAVES was a randomized control trial that applied behavior modification techniques in 24 schools with the aim of increasing PA in 6-7 year old children (Griffin et al., 2014). Teachers included 30 minutes of MVPA in the school day by facilitating additional PA from a manual and/or a DVD. This is an example of social manipulation; the children were required to engage in more PA during the day because of changes in their school environment. The WAVES study provided positive new learning experiences (another behavioral modification technique) through interactive workshops, goal setting, and challenges. The Daughters and Mothers Exercising Together program found that mothers and daughters increased the amount of days of PA participation over time. High adherence rates to program participation were also seen. Researchers concluded that high adherence was a result of the direct involvement that occurred between mother-daughter pairs (Ransdell et al., 2003). In summary, behavioral modification techniques often incorporated into behavioral interventions such as the WAVES study and in the Daughters and Mothers Exercising Together program include social manipulation, providing positive learning experiences, and goal setting. These strategies could be used in future child PA programs.

There is a gap in the literature related to what behavioral modification techniques work the best to encourage children to engage in more PA. Most intervention studies broadly explain the components of an intervention, but very few actually report findings for specific components such as goal setting and providing positive learning experiences. There is a need for studies to share more detailed findings related to specific components implemented in PA interventions to better understand which components are best adhered to by participants. Understanding effective components of an intervention might allow for future interventions with similar target

populations to be more successful at increasing PA in children. There is also a need for researchers to incorporate novel pieces into interventions because there is a lack of consistent and positive findings of effective intervention components with increasing PA in children.

Behavioral modification approaches that have worked in previous studies on children include the following: encouragement, material rewards, parent role modeling, direct parent participation, positive learning experiences, and goal setting. All of the mentioned approaches should be considered when trying to increase PA levels in children. Another gap in the literature includes the use of goal setting for children. There is no clear evidence if goal setting in children is more effective when the same PA goals are set for all children versus setting individualized PA goals based upon each child and his/her starting level of PA participation.

Intervention Settings

Intervention programs have been developed and implemented in various settings to increase child PA levels. The school setting is the most commonly used location for promoting PA to children because of the ability to reach a vast majority of children (Institute of Medicine, 2012; WHO, 2008). Child PA school-based interventions tend to occur during physical education or before/after school and are typically led by licensed physical education teachers or trained research assistants. Community-based PA programs usually involve exercise/sports sessions that are commonly led by trained research assistants or employees of the community organization. Family-based interventions involve at least one parent or parental figure through various ways, some include: participation in the intervention, completing homework assignments with children, etc. The different intervention settings each influence children in a unique way and can increase PA levels.

School-Based Interventions

School-based interventions are the most common setting for a PA intervention, in part because all children attend school. Having programs in the school setting provides benefit to children from all risk groups, particularly those with limited or no access to safe play areas (McKenzie, Nader, Strikmiller, et al., 1996). Qualified adults such as physical education teachers also supervise and facilitate PA at schools. Facilities and equipment that might not be available in a child's home (e.g., outdoor playground, basketball court, soccer field, etc.) are also available in the school setting. Systematic reviews have shown positive associations between school-based interventions and increased PA among children (Evans et al., 2012; DeMattia et al., 2007; Dobbins et al., 2013; Metcalf et al., 2012; Delgado-Noguera et al., 2011; Van Suluijs, McMinn, & Griffin, 2007; Salmon et al., 2007; Jago & Baranowski, 2004).

A notable school-based intervention was the SPARK program (Sports, Play, and Active Recreation for Kids). SPARK was a two-year physical education program designed to increase PA in fourth and fifth grade children during physical education classes as well as outside of school (Sallis, McKenzie, Alcaraz, et al., 1997). SPARK consisted of two parts; health-fitness activities and skill-fitness activities. The curriculum for the health-related activities included aerobic games, walking/jogging, aerobic dancing, and jumping rope, and sports. To stimulate parent-child interaction and support for PA, the children had homework assignments and monthly newsletters. A one-day recall was used to assess how much PA was done outside of school along with one weekday and one weekend per semester of wearing an accelerometer. SPARK increased the minutes of MVPA among the children that participated during physical education classes at school but not outside of school. The findings of no increased PA outside of school are consistent with previous studies (Sallis, Simons-Morton). School-based interventions

often increase PA levels during the intervention but do not necessarily lead to a sustained increase of PA over-time.

Another important school-based program was the Gold Medal Schools Program which was a one-year school-based program conducted in 2006 (Jordan, Erickson, & Cox, 2008). The program focused on improving eating habits, increasing PA and decreasing sedentary activity. Two schools implemented the Gold Medal Schools program (intervention) and two schools did not (control). The program was evaluated using anthropometric measurements along with dietary and PA surveys. No significant differences were seen in PA between the control and intervention schools. The authors noted that the intervention children already biked or walked to school at a higher rate than the children that attended the control schools, which may have influenced the findings. The evidence from SPARK and Gold Medal Schools, shows that school-based interventions can have mixed results.

Community-Based Interventions

Few studies have been conducted in city recreation centers or other community-based organizations such as YMCA and Boys and Girls clubs. City recreation centers are publicly-funded facilities that offer various recreational opportunities for community members. Some activities include sports clubs, educational classes, and group fitness classes for adults and children. An alliance of seven elementary schools and Boys and Girls Clubs in Kansas were selected to participate in The PA and Healthy Eating in the After-School Environment study (Coleman et al., 2008). After-school sessions were observed to assess knowledge and accomplishment for each session type (e.g., active recreation, non-active recreation, academic, and enrichment), session context, leader behavior, PA, and snack quality. It was found that children spent 51 percent of the active recreation session time doing MVPA during organized

sessions; whereas 69 percent of the children engaged in MVPA during free play after school (Coleman et al., 2008). It was concluded that the quality of after school programs can be improved by offering more free play activities and training after school staff to promote and model MVPA in and out of the after school setting (Coleman, et al., 2008).

Fit Kids/Fit Families was a twelve week program that focus on weekly lessons for children and families with the following objectives: help children maintain or decrease body mass index, increase PA, decrease sedentary activity, improve self-esteem, and increase overall knowledge about healthy lifestyle behaviors (Jossee, Stearns, Anderson, et al., 2008). The program was originally free of charge but a one-hundred and twenty dollar participation fee was set in place to enhance commitment to the program (covered the twelve week program). However, full scholarships were available for families that were unable to afford the participation fee. Individuals in the Fit Kids/Fit Families program met one time per week for two hours each day. The curriculum included exercise, nutrition, and behavior lessons. During the weekly meeting, an exercise specialist, behaviorist, and dietician worked with the children and families on strategies to promote lifestyle changes. Each session consisted of at least a half hour of MVPA exercises for children. Parents were encouraged to participate in the program activities with their children. PA was analyzed from weekly logbooks in which participants reported the amount of time spent in PA and sedentary behavior. It was found that 59 percent of children increased their PA, 32 percent reduced their sedentary activity, and two-thirds demonstrated improved self-esteem on the Rosenberg Self-Esteem Scale (Jossee, Stearns, Anderson, et al., 2008).

A unique intervention was implemented in the United Kingdom in 2012 to study how pets might impact the PA levels of children and families. This exploratory community

intervention randomly assigned 28 families to a control group or a dog-based PA (intervention) group. The study, Children, Parents, and Pets Exercising Together [CPET], was a 10 week intervention that focused on increasing intensity, frequency, and duration of walking/playing with a family dog (Morrison, Reilly, Penpraze, et al., 2013). The primary focus of the study was to target child, parent, and their dog to increase PA by creating routes to walk the dog and encouraging numerous ways of being physically active with the dog outdoors and indoors. Accelerometers were used to measure change before and after CPET. There were no significant differences seen in the amount of time children or parents spent doing light PA or MVPA between baseline and post intervention (week 11), nor were there significant changes seen among intervention children in light PA or MVPA. Even though no differences were seen in PA, this study concluded that using pets as an agent of lifestyle change in PA interventions in children and their parents is acceptable and feasible (Morrison, Reilly, Penpraze, et al., 2013). This study serves as an example of an exploratory and creative randomized control trial.

Although most community-based studies are conducted in schools, the Growing Right Into Wellness program was designed to be implemented in the community recreation setting (Po'e et al., 2013). The study was a multi-level, family-centered randomized control trial meant to prevent obesity in 5 year old children. Measurement of PA was conducted for seven days at baseline and post intervention. The program was designed to assess childhood body mass index trajectory after three years, therefore results have yet to be published. However, the study design for the program is elaborate and can serve as an exemplary study design for a multi-level and family-based community center based intervention. Targeting increased PA in children at community recreation centers that would continue to promote PA past the conclusion of an intervention provided the long term opportunity for community engagement in familiar facilities.

Therefore, conducting an intervention at a community center may lead to a greater likelihood of sustainable positive behavior in PA.

Family Based Interventions

Family based interventions have been shown to increase child PA levels. Interventions with multiple components versus single-component interventions show stronger potential to increase PA levels among children (Van Sluijs et al., 2007; Salmon et al., 2007; Timperio et al., 2004). Family-based interventions which involve at least one parent have been shown to prevent excessive weight gain in children (Beech, Klesges, Kumanyika, 2003). Parents play a key role in their children's health by modeling health behaviors, controlling a child's access to food, and controlling opportunities to engage in PA (Golan and Crow, 2004). Social support is the perception that one is cared for and is supported by other individuals. Families can provide a large amount of social support to children and are the main social network for children. The family can offer the following types of social support: informational, emotional, and instrumental (Glanz, Rimer, Viswanath, 2008). Informational support is providing advice, suggestions, and information. Emotional support is demonstrated through expressions of care, trust, love, and empathy. Lastly, instrumental support is giving tangible aid and services like helping children practice their sport skills or participating in a sports game with the child.

Different family members can impact the PA levels of children in varying levels. A family intervention based on approaches promoted by America on the Move Initiative aimed to alter PA and diet among participating families (Holm et al., 2012). Families were randomly assigned to the self-monitoring control group or the America on the Move initiative. A total of 83 families were enrolled. In the study, children's parents were instructed to increase their PA level by walking an additional 2,000 steps per day above their baseline level for the entirety of

the intervention. PA was assessed through pedometers and self-report. It was shown that for every additional 1,000 steps a father took on a weekend day, his child also took about 82 more steps per day. For every additional 1,000 steps a mother took on a weekend day, her child also took about 196 more steps per day (Holm, Wyatt, Murphy, et al., 2011). A limitation of the study was that more than half of the families did not have a father participate in the intervention. Mothers may have had a greater impact on the activity levels of the children because more mothers participated in the study than fathers.

In another family-based study, 8-12 year old children who lived in disadvantaged areas, engaged in regular PA, and avoided high levels of television screen time (referred to as resilient children because they displayed resilience to unhealthy behaviors) were selected for the Resilience for Eating and PA Despite Inequality (READI) study. READI explored the factors that assisted the resilient children in engaging in high levels of PA and low screen time. Data were gathered from face-to-face interviews with 38 children. Children were asked how parents motivated and encouraged greater amounts of time spent doing PA. It was found that the main factors influencing children to be active were parental encouragement, the physical environment at home and within the neighborhood, along with the involvement and presence of friends (Veitch, Arundell, Hume, Ball, 2013). The study results support that both physical (environmental) and social support (modeling active behaviors and encouragement) are important for children's PA behaviors.

The Active for Life Year 5 (AFLY5) program was also a family-based study made up of sixty primary schools in England. MVPA was assessed using accelerometers for the 1, 052 children involved in the study. The intervention group consisted of teacher training, provision of lesson and child-parent interactive homework plans (ten homework assignments), and written

materials for school newsletters and parent involvement. The control group received standard teaching. The homework assignments were based on the goals for behavior change, activities enjoyed by the kids, and activities which required parent involvement or supervision to increase parent engagement (Kipping, Howe, Jago, et al., 2014). Most parents responded in a positive manner by helping the children complete the homework assignments related to AFLY5 which required kids and parents to be physically active together. An average of 84 percent of the homework assigned was actually completed in AFLY5. However no significant differences were seen in MVPA at the conclusion of the study. This may suggest that homework assignments may not be a successful component in this intervention. Perhaps a more operative approach would be to task children participating in a program to do more PA afterschool and during weekend days.

In order to engage parents in an intervention, it is important to determine which methods of parental involvement are most effective. In 2009, O'Connor, Jago, and Baranowski conducted a systematic review of parental engagement in 24 health behavior change interventions (not only school-based interventions) in 2-12 year old children. Parental involvement was categorized into three categories. One category of parental involvement was the provision of information that did not require a parental response such as newsletters, tip sheets, and emails. The second category included invitations to parents and children to participate in activities sponsored by the study, for example, attending family fun nights or health fairs with nutrition topics. The third parental involvement category referred to studies in which communications directed at children and/or parents were designed to involve parents in intervention activities. The researchers identified five methods of involving parents: (i) face-to-face education or training; (ii) family participation in exercise programs; (iii) telephone communication; (iv) organized activities; (v) sending educational materials home. The study found no obvious pattern of parental involvement

methods that influenced PA behavior change (O'Connor, Jago, & Baranowski, 2009). Thus, research is necessary to determine the most effective parental involvement strategies to change children's PA behaviors.

Summary of Literature Review

In conclusion, behavioral modification strategies that have been used in previous studies can be implemented in interventions to increase habitual PA levels among children. As mentioned earlier, parental influence has an impact on a child's behavior through instrumental support, motivational support, and parent role modeling (Hashim, 2012). Therefore involving a mother or father in any child intervention is ideal and likely to increase potential success. Community-based interventions that include family participation provide an excellent opportunity for creative approaches to increase habitual PA levels and to continue the healthy behavior past the conclusion of an intervention.

Previous child intervention studies have identified several factors-environmental, sociocultural, and psychological determinants of PA. These include outdoor temperature, access to green space, safety, social support, parent monitoring, and self-efficacy, among others. The literature is lacking details about intervention components that lead to significant increases in time children spend doing PA. This gap in the literature makes it difficult to identify specific strategies that are successful. Studies need to identify which components of an intervention seem to work. Future studies need to examine if setting daily group goals of PA participation by children is more or less effective than setting individual PA participation goals. Additional studies should determine if using material rewards throughout a program to reinforce positive behavior is tied to successful results. On the other hand, studies might decide to track components throughout a program but not reward children until the end of a program based on

the accumulation of various tasks assigned. The present study will address some of the issues found in the literature regarding describing intervention components in detail and incorporating behavioral modification techniques to increase children's PA after school and outside of AFL.

CHAPTER 3

METHODOLOGY

Study Setting and Design

The primary aim of this randomized control trial was to determine the preliminary impact of a community-based intervention (AFL) on habitual light PA and MVPA in 6-11 year old children. The families (one parent and one child) were randomized to either a wait-list control or immediate intervention group. Although the AFL program and enrollment were designed to recruit both adults (parents) and children as the program was family-based, this specific research only looked at the child PA data. Control participants were asked to maintain their current lifestyle and did not receive any intervention activities. All families participated in baseline and post-intervention evaluations. The study was conducted at a local community recreation center located in South Phoenix, Arizona. A partnership was established between Arizona State University [ASU] and the City of Phoenix Parks and Recreation Department's South Mountain Community Center [SMCC] to develop and conduct the AFL study. This study received approval from the Arizona State University Institutional Review Board (Appendix A).

Recruitment and Enrollment

Families were recruited for the study through various recruitment strategies. Flyers were distributed to all elementary schools in the Roosevelt School District. The Roosevelt School District serves the South Phoenix community. The community center staff also promoted the intervention to individuals that already utilized SMCC. Families were also contacted via phone from a list of parents who were part of a previous phase of the study or had expressed interest before the current recruitment phase and agreed to be contacted. Interested participants completed an AFL interest information sheet and provided their contact information (e.g., phone number,

email address, etc.). The project coordinator then contacted interested families and followed a recruitment script to determine eligibility over the phone (Appendix B).

The consenting process included describing to the parent and child the nature of the study, the risks and benefits, and the evaluation procedures, and providing them with the opportunity to have questions about the study answered. Participants were reassured that they could refuse to participate at any time. Both the child and the parent provided written informed assent and consent (Appendix C), respectively, before participating in the study.

Inclusion Criteria were as follows: 1) children had to be between the ages of six to eleven years of age and 2) have a parent (age >18 years of age) willing to participate in the study. The eligible participant's siblings were also invited to participate in the intervention sessions (if they were 6-11 years old), but only one child per family was selected as an index child and completed evaluations.

Exclusion criteria were as follows: 1) Medical conditions requiring specialized dietary regimes (e.g., phenylketonuria, severe food allergies, kidney disease); 2) Limitations against participation in PA 3) currently participating in other diet or PA modification programs; 4) not available on the day and time of the sessions. (See Figure 1).

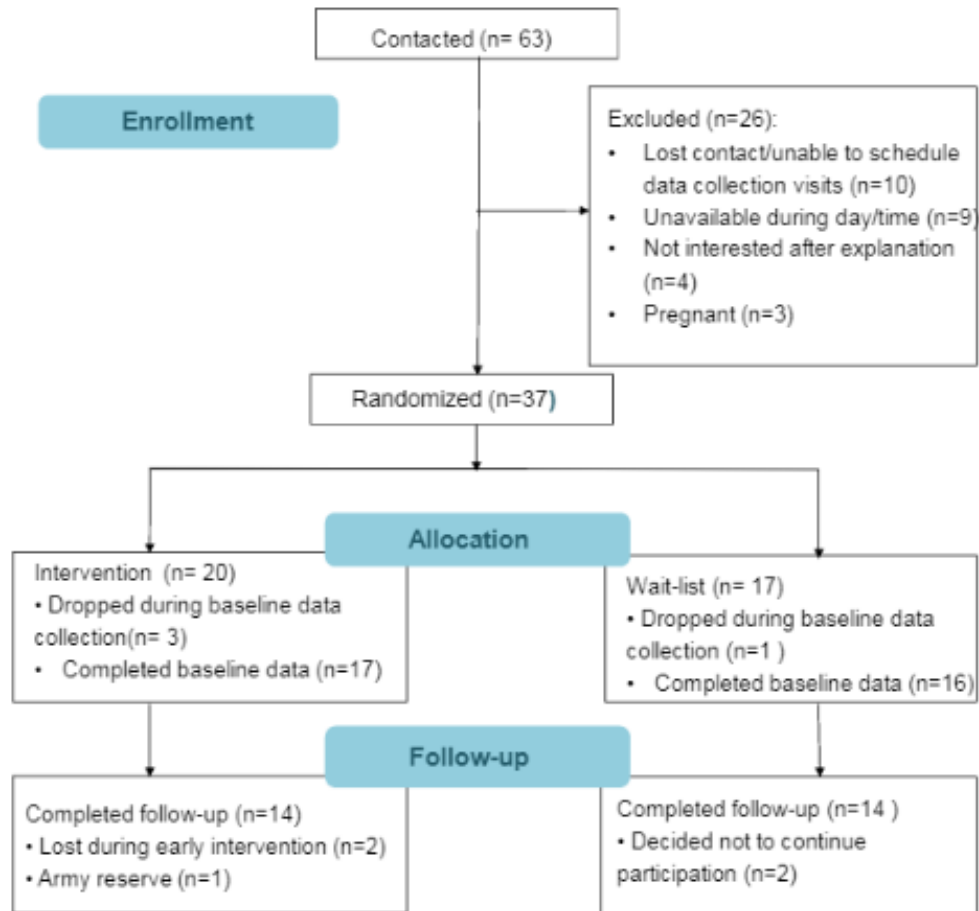


Figure 1. Athletes for Life CONSORT Figure

Figure 1 displays the flow of the AFL study. Individuals were contacted and screened through a phone interview. Eligible individuals were then randomized into intervention or waitlist control groups. Some participants did not complete the follow-up evaluation for various reasons. Fifty-eight percent of contacted individuals were enrolled into the program. Seventy-five percent of enrolled individuals completed the follow-up evaluation.

Athletes for Life Program

Athletes for Life was a 12-week program with PA and nutrition components. AFL provided sessions for children and parents twice a week. Each session was 90 minutes long and was conducted at SMCC from 5:30-7:00pm. The child program was delivered in English by trained ASU undergraduate and graduate research assistants while the adult program was delivered in two separate English-only and Spanish-only classes by additional ASU undergraduate and graduate research assistants. The goals of the AFL child program were to improve cardiovascular fitness and athletic ability and to improve children's dietary behaviors. The intervention sessions were designed to expose children to a variety of entertaining and challenging physical activities. Short (8-10 minute) interactive nutrition education sessions were also provided to the children. Secondary aims of AFL were to increase children's habitual PA outside of the intervention sessions, to reduce sugar-sweetened beverage consumption, and to increase fruit and vegetable intake. Again, the present study focuses on the child PA data.

The child sessions were structured to have a 10-15 minute warm-up, 60 minutes of various dynamic exercises, sports-related drills, and activities that varied in length and intensity, an 8-10 minute nutritional lesson, and a 10-15 minute cool-down. The structure and content of the session was developed by the graduate research assistants at ASU and the study investigators. Each week of the intervention focused on developing different sports skills so that children might increase PA participation through sports outside of the program (Appendix D).

The adult sessions were structured to include a 45-minute nutrition education class and 45 minutes of PA/exercises. Half of each adult session was dedicated to PA during which the parents were led through individual and group physical activities such as Zumba, weight lifting, plyometrics, and activity sessions with their children. The other half of the adult sessions were

composed of nutrition activities through presentations, food demonstrations, and group discussions on various nutrition topics that ranged from ideal meal portions to nutritional labels on food items. Some sessions involved cooking demonstrations which allowed the parents to prepare food during the intervention session to reduce their reluctance to prepare the recipe at home.

Study Measures

Demographic information was collected through an interviewer administered survey. The survey included questions regarding age, gender, and ethnicity of participating children (Appendix E). The data were collected for both groups. The intervention strategies used to increase child light and MVPA PA addressed determinants of PA because the intervention strategies promoted PA in other settings. The following determinants were investigated by the AFL study design: promoting PA through parent role modeling, recruitment of participants proximal to the recreation center, and logistical support (parents driving their children to the program). Although the determinants were not measured in this study, they were interwoven into the AFL program.

Child PA for both the control and intervention groups was measured using accelerometers at week 0 (baseline) and after week 12 (post) of the AFL intervention. Accelerometers assessed free living PA levels by measuring tri-axial activity (Welk, 2002). The ActiGraph accelerometer has the largest body of evidence to support its validity and is the most commonly used accelerometer in PA research (De Vries, Hopman-Rock, Van Mechelen, 2005). ActiGraph GT3X+ (ActiGraph Inc., Pensacola, FL). The device is small, measuring 4.6 cm x 3.3 cm x 1.5 cm and provides data on activity intensity (METs), energy expenditure (kcal), and activity counts. The accelerometer data is sampled by a 12-bit analog to digital converter at rates ranging from 30 Hz to 100 Hz and stored in a raw, unfiltered/accumulated format in the units of

gravity. Filtering of the data and epoch selection are done once data are gathered, allowing datasets to be processed at various epoch selections and using different cut-off points once data is collected. The GT3X+ device records the following: vertical axis activity acceleration data, horizontal axis activity acceleration data, perpendicular axis activity acceleration data, and ambient light. The GT3X+ also has an inclinometer, which determines body position at any given time (standing, lying, sitting) and identifies non-wearing time of the device. Data are downloaded through a USB cable then raw data are gathered at a user-selected sample rate and are post-processed using the proprietary ActiLife software using different filtering techniques or accumulation sizes depending on research needs.

The ActiGraph GT3X+ device was worn using a belt around the waist to ensure the most accurate measurements of habitual PA. Participants were instructed to wear the device for seven consecutive days following the baseline visit and then again for seven consecutive days after the last AFL session. A self-reported daily wear-time log was provided for parents to fill out when their children wore the accelerometer and when it was taken off (Appendix F). Participants were asked to take off the accelerometer during water based activities (bathing, swimming) and during sleep.

ActiLife v6.11.5 was used to process all accelerometer data. Of the 29 participants in the intervention and control groups, 13 returned accelerometers with valid data at baseline and post intervention. Accelerometer data was considered valid if accelerometer captured data for at least eight hours on one weekend day and two weekdays. Of the 13 participants that returned accelerometers in both time periods, 5 participants returned valid wear-time logs with less than eight hours of reported wear time on at least one weekend day and two weekdays and/or did not return an accelerometer wear time log. Valid wear-time logs that were returned without meeting

the wear-time criteria were processed through the 2007 Troiano automatic process, as were accelerometers that were returned without a wear-time log (n=5). An additional filter was used when performing the automatic process to filter out sleep time. Accelerometer data collected after midnight (12:00 am) and before 5:00 am was filtered and therefore not included as valid data. This was done in order to standardize all accelerometer data given that some children may have worn the accelerometer during sleep time. The automatic process was run with the following custom and recommended parameters: non wearing time period=20 minutes; spike tolerance=2 minutes; activity threshold= 100 counts per minutes; minimum wear time per day= 480 minutes. Accelerometers that were returned with a valid wear-time log were processed using the 2008 Evenson Children process (n=8). Combining wear-time logs with the 2008 Evenson Children process to analyze accelerometer data in children is optimal (Keadel et al., 2014). Two methods of analysis were used to process the accelerometer data since some participants did not return completed wear-time logs.

PA intensity levels were defined using counts per minute [CPM] from raw data collected by the accelerometer at 30 Hz in epoch files. The Evenson Children 2008 process defined PA level cut points as the following: sedentary 0-100 CPM, light 101-2295 CPM, moderate 2296-4011 CPM, and vigorous 4012+ CPM (Evenson, et al., 2008). The Troiano 2007 automatic process defined PA level cut points as the following: sedentary 0-99 CPM, light 100-2019 CPM, moderate 2020-5998 CPM, and vigorous 5999+ CPM (Troiano et al., 2008).

Description of AFL PA Intervention Components

The main focus of this study was to determine the preliminary effects of a community-based intervention on 6-11 year old children's habitual PA, specifically light PA and MVPA outside of the program. One of the main components used to increase PA in the children outside

of the program was to involve the parents through the use of child PA tracker sheets (Appendix H; described below) in order to monitor and motivate children's daily PA participation, similar to the logging of time spent in PA in the Fit Kids/Fit Families study (Jossee et al., 2008).

Another intervention tool that was incorporated to encourage habitual PA was a child PA scavenger hunt sheet (Appendix I; described below). The scavenger hunt sheet was created based on the operant learning theory through reinforcing PA outside of AFL and through rewarding participants for their efforts. The scavenger hunt was designed for this study. In addition, a list was created to include local parks near South Mountain Community Center to provide accessible locations for PA (Appendix J; described below). The list of parks was not based on a theory, but if individuals were unaware of their environment (knowledge of local parks) then the resource was thought to potentially increase PA levels by providing new or more nearby park locations where participants could be physically active outside of the program. Moreover, three PA sessions were dedicated to having parents and children engage in PA together during AFL to serve as a positive family experience for participating families. The hope was that the positive experience of doing PA as a family unit during AFL sessions would positively influence PA participation as a family during weekends and leisure time. Based on the social ecological model, verbal encouragement was also incorporated into each intervention session to create a supportive environment for child participants and to increase bouts of PA completed outside of the program and after school, however this was not addressed at every level of the model. Verbal encouragement was addressed mainly through individual and interpersonal levels (parent and child participating in AFL program) and loosely at the community level (SMCC). Incentives were another component of the intervention. Incentives have been found to be effective health behavior change interventions (Giles et al., 2014). Progressive points throughout the 12 weeks

were logged on a large chart and displayed with stickers. Each participating family received a sticker for attending AFL sessions and for returning homework assignments. Larger incentives were then rewarded to the families that accumulated the most points throughout the 12-week program. Furthermore, a youth Olympic event was conducted by the research team after the conclusion of the twelfth week of the intervention with the goal of motivating families and children to engage in family-based recreational activities. (Appendix G)

Child PA Tracker Sheets

The Athletes for Life child PA tracker sheets (Appendix H) were to be completed by the parent for the intervention group to record all MVPA performed by the children after school on Wednesdays, Saturdays, and Sundays (i.e., on days other than the intervention days). The tracker sheets were available in parents' language of preference, English or Spanish. Mondays and Thursdays were excluded from the PA trackers since the Athletes for Life intervention was implemented during those days. Each PA tracker was created with the goal of capturing the following three items: the location of the activity, what PA was done, and duration of the activity. Included on the tracker sheet was also a checkbox that was to be checked if the parent was physically active with the child during that week. It was predicted that there would be an increase in the amount of PA parents participated in with their children between the start and end of the program. Parents were verbally encouraged to engage in PA with their children outside of the program before and after each session as families arrived and left the intervention program.

Each PA tracker had brief instructions on how to complete the tracker at the top of the sheet and also included a sentence stating that it is recommended that children complete 60 minutes of MVPA daily. It was expected to see an increase in reported time that children spent doing MVPA; this was intended to be used as a process tool and not as an outcome. Light,

moderate, and vigorous PA intensities were defined on the back of each tracker sheet as a reference for the families. Examples of activities that might fall under the mentioned intensities were also included. PA of light intensity was defined as PA that was fairly easy (i.e. washing dishes, casual walking, cleaning room, playing catch). Moderate PA was defined as PA that required medium effort (i.e. mopping, vacuuming, walking briskly, jumping on a trampoline). Vigorous intensity was defined as PA that was hard/very hard (i.e. playing basketball, soccer, football, riding a bicycle really fast, running). The seven weeks of PA trackers were printed and distributed to all families at once so that the parents of the children could store all of the trackers in their program binders. Distribution of the tracker sheets occurred during week four of the intervention purposefully so that rapport was created among the child and adult groups separately. Parents were trained in how to properly fill out the child PA tracker sheets. The trackers had pre-printed days of the week along with dates for each week of the intervention. Each week, participants were expected to turn in the tracker from the previous week when checking in at the beginning of each session. Spanish and English trackers were created to ensure language barriers did not impact the completion of the sheets. Most parents chose to have Spanish trackers (Appendix H).

Child PA Scavenger Hunt Sheet

At week six, PA scavenger hunt sheets (Appendix I) were distributed to each of the twelve children in the intervention group that attended the session. The remaining three children in the intervention group did not receive the child PA scavenger hunt sheet because the sheets were only distributed to those who were present during the session in which they were distributed. The PA scavenger hunt sheet was created to serve as an activity idea guide for children. This was distributed halfway through the program to serve as an additional motivator to

engage in more PA. Twelve physical activities were suggested on the sheet; only one of which involved money for participation (bowling). The activities suggested were meant to be simple and achievable. Some of the activities included taking the stairs instead of the escalator or elevator, racing a friend or relative, helping an adult vacuum, and playing at a park with family or friends. Children received verbal recognition during the child PA session and recognition from the team (clapping) for returning the activity scavenger hunt sheet regardless of the amount of reported activity completed. A sticker was also given toward a point system explained later (Appendix I).

List of Local Parks

A list of local parks located in the City of Phoenix was created and distributed to parent participants in the intervention (Appendix J). The list was given along with the child PA tracker sheets so that all of the material would be readily available in the program binder immediately. A search was conducted on the City of Phoenix Parks and Recreation website to identify each of the parks located in the South Phoenix area. The alphabetical listing of city parks was reviewed. If a park was within fifteen miles from SMCC, it was added to the list of local parks. The list included the park name, distance from SMCC, address, amenities, and hours of operation based on the information provided on the website. This list was created to provide families with a resource guide of nearby parks so families could find accessible locations for PA. A packet with the list of parks was distributed to the adults on the second week of AFL so that families could begin exploring parks they may not have been aware of. (Appendix J).

Parent/Child PA Sessions

Three out of twenty-four program sessions were dedicated to having the parents and children do PA together as a family unit. The purpose of having children and parents participate

together was to demonstrate how much fun it could be to do PA together as a family. The three sessions utilized very minimal equipment in order to show that almost nothing is needed to engage in more PA as a family.

The first parent and child PA session was a fun relay event in which each family competed against the other families. The second session that combined the adult and child groups consisted of a soccer game. The adult and child leaders also joined a team to add some friendly competition and to encourage their respective teams throughout the game. The third combined session involved a family competition of different exercises at various cone stations. Each family counted the total number of completed circuits. The children pushed and supported their parent/s especially as the adults began to get tired.

Verbal Encouragement

Verbal encouragement was used during each session to motivate children to increase the number of bouts and length of time they were physically active when not participating in the Athletes for Life sessions. Verbal encouragement was done both individually and to the group as a whole from the start of the program at week one. Sincere, constructive, and encouraging praise was given to the children. The child PA research team created a safe and welcoming environment during the Athletes for Life program so that every child felt welcome. In fact, a team cheer was created to give the children a sense of unity. After the cool-down at each session, the child team leader would select a child who demonstrated the most effort during the session to proudly lead the team through the cheer. Every Thursday during the stretching portion of the curriculum, the child PA leader would ask the children to raise their hand if they believed they had done enough PA since the previous week of the program. The child PA leader would then select a couple of the children who had hands up in the air to share what physical activities they

had done. Once a child finished sharing with the group, the rest of the children then clapped as a form of group support and recognition of positive behavior. A maximum of three children were chosen to share what physical activities they had done since the previous Thursday each week.

Individual encouragement was given throughout the child PA sessions when children were putting forth their maximum effort in an activity, drill, or during a sporting game. During the cool-down portion of each Thursday session the children were challenged to ask their parent/s to either do PA with them or to ask for permission to go outside to engage in PA as much as possible.

Incentives

Incentives were used in order to motivate and challenge the parents and children to engage in more habitual PA. Throughout the intervention, families received points for child's attendance, arriving on time, turning in the child PA tracker, winning a family challenge for a session, and for turning in the PA scavenger hunt sheets.

Stickers were used towards a point system that accumulated throughout the twelve weeks of the intervention. A large chart was used to display each of the participants' progress in points each week. This chart was placed at the sign-in/out table at the recreation center so that children could see their progress throughout the program. The top three families with the most stickers/points at the end of the intervention received Amazon gift cards of \$25, \$75, and \$125, with the larger gift cards awarded to families with the most points.

Youth Olympic Event

After completing the twelfth week of the intervention, the research team hosted a youth and family Olympic event with the goal of motivating participants to improve their fitness and sports skills throughout the program. Parents were invited to coordinate and help run the youth

Olympic event which was held on a Saturday at SMCC. The events were planned to showcase each child's improvements in skills and performance. The Amazon gift cards were awarded at this event. . Children were informed about the youth Olympic event at the beginning of the program and were reminded of the event frequently in order to increase the children's desire to improve in their performance. Certificates of completion and ribbons were given to children based on their performance in each of the events. The youth Olympic event was held as an opportunity for children to receive social praise and reinforcement for their achievements and to give children a positive experience with PA.

Statistical Analyses

Of the 37 total Athletes for Life participants, data analysis was restricted to a subset of 29 children who returned an accelerometer at baseline or post intervention. Another subset of the data analysis was restricted to a subset of 13 children who returned accelerometers at both baseline and post intervention time periods. Children's data were also excluded if the ActiLife software reported less than 8 hours of wear time on two weekdays and one weekend day. Therefore, the final sample used in the present analysis totaled to 13 children who returned accelerometers with valid data at baseline and post intervention. Statistical analyses were performed in March 2015 using Statistical Package for the Social Sciences version 22 for Windows.

Descriptive statistics were conducted for analysis of gender, age, and ethnicity. Mean, standard deviation, and frequencies were calculated for the variables of interest. Statistical significance was defined as $p < 0.05$. Independent sample t-tests were conducted to test for baseline differences in key demographic (age, gender, condition) and PA variables in order to determine if randomization achieved balance in the variables between the groups (intervention

vs. control). An analysis of covariance (ANCOVA) was used to control for the covariates of age and gender that might influence the relationship between the independent and dependent variables. ANCOVA also controlled for baseline PA and tested for differences between the intervention and control groups on mean minutes per day of light PA and MVPA.

The intervention data for the child PA tracker sheets and child PA scavenger hunt sheet were analyzed based on the information reported on each sheet that was returned. Summations including minimum and maximum ranges were tabulated for each family regarding the number of child PA tracker sheets that were returned. The number of times a parent reported engaging in PA with their child was also tabulated. Summations were calculated for the reported time and bouts of PA and separate summations were performed after removing minutes of reported activities that were observed to fall under light intensity activities. The following activities were excluded from reported MVPA: walking in the mall; shopping at Wal-Mart; walking around at home; cleaning room; playing with toys at home; walking home from school; chores that were not specified. MVPA time was also excluded if bouts of reported activity were less than ten minutes and if physical education at school was included on tracker sheets since the tracker aimed at gathering activity levels outside of the AFL program and after school. Summations were made on the total PA scavenger hunt activities that were checked off as completed by the participating children.

CHAPTER 4

RESULTS

Sample Demographics

Table 1. <i>Demographic Characteristics of the Study Participants (n=29)</i>		
	n=29	%
Child's Gender		
Male	14	48.3
Female	15	51.7
Child's Age		
6-8	12	41.4
9-11	17	58.6
Child's Ethnicity		
Hispanic/Latino	26	89.7
Other	3	10.3

Table 1 shows the demographic characteristics of the study participants. The sample was mostly Hispanic and with about equal distribution between genders.

Table 2. <i>Baseline Unadjusted Group Differences on Age and PA (n=13)</i>			
	Intervention (mean±SE)	Control (mean±SE)	p-value
Age (months)	111.81±5.15	110.08±6.52	0.83
Light PA Minutes Per Day	200.67±16.03	256.51±17.04	0.036
Moderate PA Minutes Per Day	19.69±2.51	25.78±3.32	0.159
Vigorous PA Minutes Per Day	7.36±1.30	10.26±2.54	0.270
MVPA Minutes Per Day	13.52±1.72	18.02±2.85	0.164

Baseline Group Differences

Table 2 presents the mean number of minutes participants spent at various PA levels prior to the AFL intervention for both the intervention and control groups. The control group performed significantly more mean minutes per day of light intensity PA compared to the intervention group at baseline ($p < 0.05$). No other variables were statistically different between the groups at baseline.

Variables (per day)	Intervention (mean±SE)	Control (mean±SE)	p-value
Light PA Minutes	270.62±19.53	259.63±25.45	0.753
Moderate PA Minutes	31.25±3.36	28.77±4.34	0.674
Vigorous PA Minutes	13.71±4.24	12.33±5.40	0.847
MVPA Minutes	22.58±3.43	20.40±4.41	0.714
*Not adjusted for any covariates			

Intervention Effects on PA

Table 3 displays unadjusted post-intervention between-group difference in light and MVPA mean minutes per day. Results show no significant unadjusted differences in the amount of time spent doing light, moderate, vigorous, and MVPA.

Variables (per day)	Intervention (mean±SE)	Control (mean±SE)	p-value
Light PA Minutes	267.53±21.23	264.57±27.90	0.939
Moderate PA Minutes	28.80±1.96	32.70±2.59	0.300
Vigorous PA Minutes	13.07±4.03	13.34±5.15	0.969
MVPA Minutes	19.40±1.86	24.78±2.46	0.107
ANCOVA compared post-only values adjusting for baseline values for each variable, and for gender and age.			

Table 4 presents the adjusted post-intervention group differences controlling for gender, age, and baseline PA. Results show no significant adjusted differences in light PA, moderate PA, vigorous PA, or MVPA ($p>0.05$).

Intervention Fidelity and Adherence Results

Out of the 15 children in the intervention group, seven weeks of child PA tracker sheets were distributed to children's parents at week two of the Athletes for Life program. Of the 119 total distributed tracker sheets, 55 were returned. Different families returned different amounts of tracker sheets. All of the returned tracker sheets consisted of at least one reported PA. Trackers 2 and 3 were the most returned trackers, with a total of 10 trackers being returned for both trackers

numbers 2 and 3. Tracker 7 was the least returned tracker, with four being returned. Only in 7 out of the 55 tracker sheets returned did parents indicate participating in MVPA with their child. No noticeable trend was observed in the number of PA bouts that children engaged in over time. Bouts of reported PA were fairly low, with nobody reporting more than three different bouts of MVPA in one day. A decrease in reported PA participation among children, and adult participants, was observed throughout the 12-week program.

A PA scavenger hunt sheet served as an additional component of the intervention. Eight out of 13 children turned in the PA scavenger hunt sheet. Children were instructed to return the scavenger hunt sheet at any point throughout the AFL intervention. The sum of all activities reported as completed by the children in the intervention group was 48. The average number of activities performed was six (out of twelve). The two most common activities the children reported completing from the sheet were helping an adult mop, sweep, and/or vacuum and stretching in the morning before school and/or at night before bed. Both activities were reported to have been done by six different children in the program. Bowling was the only activity on the sheet that was not completed according to the scavenger hunt sheets. It was demonstrated that some families may have adhered to the intervention more than others. Bouts of reported PA were fairly low, with nobody reporting more than three different bouts of PA in one day.

CHAPTER 5

DISCUSSION

Summary of Study Findings

The purpose of this study was to examine the preliminary effects of a community-based intervention (AFL) to promote child habitual PA, specifically light and MVPA over a 12 week period. Most children do not engage in the recommended 60 minutes of PA per day (WHO, 2004). In fact, children of ethnic minorities are even less physically active and are also disproportionately affected by adverse health outcomes (Price et al., 2013). This study demonstrated that more research is needed to establish the best methods to encourage children to engage in habitual PA. No significant difference was identified in mean minutes per day spent doing light or MVPA between children in the intervention and control groups. Even though no significant difference was shown, children in the intervention group had a slightly higher (2.96) mean in minutes per day spent in light PA as compared to the control group after adjusting for group differences of gender and age. In addition the AFL program gave participants access to the South Mountain Community Center in order to expose participants to a community environment that supports PA. Participants were also given an annual pass to access SMCC so that participants were able to use the recreation center facilities and enroll in the programs offered at the center even after the program ended. The present non-significant findings are generally consistent with previous studies (Jordan, Erickson, & Cox, 2008; Morrison, et al., 2013).

Intervention Fidelity and Adherence Findings

Out of seventeen families that chose to complete at least one child PA tracker sheet, only 46% of the distributed trackers were returned. Of the 55 completed trackers, 11% demonstrated that the child engaged in the recommended 60 minutes of MVPA per day. The self-reported

measures of MVPA documented on the child PA tracker sheets demonstrated that only a few participants engaged in at least 60 minutes of MVPA per day on average. The mean minutes per day that children in the intervention group reported doing of MPVA based on the tracker sheets was 43 minutes. The reported mean minutes per day of MVPA from the tracker sheets was more than twice the amount of MVPA mean minutes per day gathered from the accelerometer data. However it is important to note that the child PA tracker sheets were collected while the intervention was ongoing, but the post accelerometer data was collected after the intervention ended.

Overall, there was low adherence to the intervention components based on the child PA tracker sheets. It is difficult to compare these findings to adherence rates in other intervention studies since studies that incorporate PA participation through logs do not include details regarding the data collected. Very few studies report tracking of intervention fidelity data, however The MOVE study serves as an example of a study that did so (Elder, Crespo, Corder, et al., 2013). In future studies, perhaps an individual on the research team could focus on measuring adherence rates of the various intervention components of a community-based PA intervention.

PA Findings

Based on previous child PA interventions (e.g. SPARK (Sallis et al., 1997), the Gold Medal Schools Program (Jordan, Erickson, & Cox, 2008), and AFLY5 (O'Connor, Jago, & Baranowski, 2009)), the present study was not effective at increasing children's MVPA. This study hypothesized that children participating in the 12-week intervention would show higher average minutes per day spent doing MVPA than children in the control group, but this was not demonstrated. SPARK was a two-year physical education program that was incorporated in the school setting using curriculum designed to increase PA during physical education classes and

outside of school that included homework assignments and rewards which were also components of the AFL program. Monthly newsletters and homework assignments were incorporated and meant to stimulate parent-child interaction as well as support PA in SPARK. Homework assignments were also part of both programs, although the distribution of the assignments varied. Participants in the AFL program had a weekly PA tracker sheet whereas participants of the SPARK program had a monthly homework assignment as well as a newsletter. The one day self-report PA recall in SPARK had been validated, while the three day recall of PA collected from the child PA tracker sheets incorporated into AFL had not been validated.

Rewarding children was an additional component of both studies used to motivate child participants. SPARK gave extrinsic rewards (pencils, sports water bottles) that were phased out as students learned how to use self-reward. AFL did not phase out extrinsic rewards.

Similar conclusions were found in both the SPARK and AFL programs, MVPA did not significantly increase after the program as compared with the control group. Habitual light PA and MVPA did not significantly increase among the Athletes for Life participants. However, the SPARK physical education program did increase PA during physical education classes. Specialist-led students participated in twice as much MVPA (40.2 minutes) during physical education each week than students in the control group (17.8 minutes). Both studies demonstrated results that prove the AFL and SPARK program components were not effective at increasing habitual PA levels outside of the program.

Behavioral Strategies

The inclusion of a parent in child behavior interventions is very common among research (Ransdell et al., 2003, Morrison et al., 2013, Griffin et al., 2014). The association between parental involvement and the results of this study on increasing PA among participating children

could not be determined since no measurement tools were used to assess levels of parental involvement throughout the study. Although social support was not measured in the study, this concept was repeatedly used throughout the twelve week program. The ASU research assistants demonstrated instructional and emotional support by sharing knowledge about PA effects and through establishing a coach-athlete relationship with each child. Logistical support was provided from participating parents by providing their children with the resources to participate in the youth Olympic event and by providing transportation to and from the event. Participating parents displayed emotional support by assisting the research team in running the youth Olympic event that was held once the program ended. Similar to AFL, parental involvement in the READI study resulted in children expressing support through parent participation (Veitch, Arundell, Hume, Ball, 2013); this was especially observed during the combined adult and child PA sessions. The effectiveness of social support in AFL was not measured, but involving parents of participating children in community interventions has been shown to strengthen social support (Van Sluijs et al., 2007 and Salmon et al., 2007).

Social support has been associated with children's PA in various research studies (Allender, Cowburn, Foster, 2006; McMinn et al., 2012). For example, in a six-year longitudinal study over 700 children that were 10 years of age at baseline found that encouragement from parents and positive attitude towards children's PA levels at 10 years of age was related to higher PA levels at 16 years of age (Verloigne, M., Van Lippevelde, W., Maes, L., et al., 2013). Additional support was found in a cross-sectional study on children of nine to ten years of age and found social support from family members to be positively correlated with PA in children after school and during weekends (McMinn, et al., 2012).

Homework assignments were part of this study as in the AFLY5 study. A total of seven child PA tracker sheets were to be completed along with one PA scavenger hunt sheet. Eight homework assignments were implemented through Athletes for Life [AFL] whereas ten were implemented in the Active for Life Year 5 study [AFLY5]. In AFLY5, 84 percent of the homework assignments were turned in but there was no significant change in the amount of MVPA among the children (Kipping, Howe, Jago, et al., 2014). On the other hand, 66 percent of homework assignments in AFL were completed, but with no increase in child PA levels as measured by accelerometry. The homework assignments were not effective intervention components in motivating children to engage in more habitual PA.

In summation, only certain components of the AFL study were analyzed for effectiveness in increasing habitual light and MVPA among 6-11 year old child participants. The list of local parks and incentive intervention strategies were not assessed in any manner. The child PA tracker sheets seemed to be ineffective as parents did not report that their child participated in more PA bouts of at least 10 minutes over time, nor was there a noticeable increase in reported mean MVPA minutes per day throughout the program. In addition, an increase in reported parent-child PA participation outside of AFL was not demonstrated in the child PA tracker sheets. The child PA scavenger hunt sheet also seemed to be unsuccessful; 61% of children who were given a scavenger hunt sheet turned it in. Furthermore, the hope was that returned scavenger hunt sheets would display that most activities were performed by children but on average only half (6) were actually done. The intervention may not have worked because too many intervention components were being targeted broadly without having measurement methods to test the effectiveness of each.

Strengths

A strength of this study was the ability to objectively measure PA levels at the various intensities (light, moderate, vigorous, MVPA) with GT3X+ ActiGraph accelerometers. The ActiGraph GT3X+ is a reliable device capable of classifying activity count, step count, energy expenditure, and activity intensity (METs) (McMinn, Acharya, Rowe, et al., 2013). Utilizing accelerometers allowed for the various PA levels to be measured at baseline (week 0) and post (week 12) to analyze if there were increased levels of MVPA for both the control and intervention groups.

Another strength in this study was the exclusion of data from subjects that only returned one accelerometer, regardless when the accelerometer was returned, baseline or post measure. Excluding those subjects led to more clear data which allowed for baseline and post accelerometer data analyses. Accounting for the confounding variables of age and gender between the valid data was an additional strength in the study.

Actively including at least one parent per child into the AFL intervention also served as a strength for this program. Parents in this study were able to increase their own knowledge and skills related to PA with hopes of increasing PA levels in children based on parental role modeling. The parents also demonstrated social and logistical support for participating children. Past studies have demonstrated that parental support is a critical factor associated with PA in youth (Prochaska, Rodgers, & Sallis, 2002; Adkins et al., 2004; Sallis, Prochaska, & Taylor, 2000).

Lastly, the randomized controlled study design was a strength of this study. Be Active Be Well was a community program, similar to Athletes for Life (Sanigorski, 2008). Both studies consisted of a baseline and post evaluation; however the Be Active Be Well program was quasi

experimental and therefore lacked randomization. The study aimed to increase PA and healthy eating in 4-12 year old children similarly to AFL, the Be Active Be Well and Athletes for Life study designs varied. Randomized trials are considered the strongest study designs to assess intervention effects (Kjaegard et al., 2001).

Limitations

There were several limitations to this study. The child PA tracker sheets showed several limitations. First, parents of participating children who were part of the intervention group were instructed to complete the PA tracker sheets rather than children. Parents were not likely with or observing their child at all times after school, so some parents might have failed to fully and accurately report all MVPA children performed each week. Secondly, the design of the tracker sheets did not include space for physical activities completed during Tuesdays or Fridays to be logged on the tracker. Activities performed during those days could have been excluded by the parent when completing the sheets as those days of the week were not included. Thirdly, the tracker sheets (used to measure PA bouts, duration, and parent-child participation) relied on self-reported data which could have been susceptible to recall bias and inaccurate reporting, as mentioned in previous studies using self-report data (Trolle-Lagerros & Lagiou, P, 2007; Sallis & Saelens, 2000).

In addition, variability in adherence to the numerous intervention components could have weakened the effects of the intervention. Specifically, participants who had higher compliance to the intervention components including the PA tracker sheets, the scavenger hunt sheet, and list of resource parks, might have demonstrated a more positive trend in increasing habitual light PA and MVPA compared to children who did not comply as fully. Of 119 distributed PA tracker sheets, 55 were returned. A total of 17 families received a total of seven child PA tracker sheets

and a PA scavenger hunt sheet. Eight out of 13 children returned the scavenger hunt sheet. In summary, varying levels of compliance were observed with the intervention components of the PA trackers and scavenger hunt sheets which might have had a negative impact on the results of this study. A more accurate assessment of the effectiveness of the PA tracker and scavenger hunt sheets would have resulted if more trackers and scavenger hunt sheets had been completed and returned.

Another limitation of the study was the sample size. The small sample size limited the ability to detect small to medium effects in the outcome variables (low statistical power). Only data from 13 children were included in the analyses because some children only returned an accelerometer at baseline or post intervention and multiple data were not used due to not meeting the minimum of three days (one weekend day and two weekdays) wear time of an accelerometer for at least eight hours each day.

Verbal encouragement was not tracked in a formal way, which was a shortcoming in the intervention evaluation. The only portion of verbal encouragement that was consistent from weeks 1-12 of AFL was the team cheer which was led by a child the team leader selected based upon maximum effort displayed for each respective session. No method of tracking individual and group verbal encouragement was used in this study.

Some external factors increased the limitations of this study. For example, weather conditions resulted in mosquitoes disrupting AFL sessions. Flow of the curriculum being taught was interrupted numerous times because of the mosquitoes. To address this issue, bug repellent was purchased through program funding and made available to participants to reduce the biting incidence of mosquitoes. These conditions may have also created barriers for families to engage in physical activities outside the program. Lighting during the evening hours was also an external

factor that served as a challenge beginning in the month of November. The AFL sessions were held from 5:30-7:00 pm and most sessions were led in the outdoor park area of SMCC. The park lighting was very poor, so portable lights were used for each AFL session to address the lighting problem. It is possible that the shorter daylight during these months may serve as a barrier for families to engage in outdoor activities.

Incentives were only given at the conclusion of the program rather than each time a PA tracker sheet and/or scavenger hunt sheet was returned. A large chart was created and displayed at the attendance check-in table to track points each family accumulated through the entirety of the AFL program. Points were tracked by placing stickers on the large chart under corresponding families. Rather than rewarding children in the intervention group every time a PA tracker or the scavenger hunt was returned, the child received a sticker and placed it onto the large log. The incentives based on the point system using stickers were not distributed until the youth Olympic event which occurred at the conclusion of the 12 weeks. It is possible that this reinforcement strategy may have been insufficient or infrequent enough to increase child PA outside the program.

Recruiting participants who already attended SMCC through the community center staff could have weakened the study effects. Some families that were enrolled in this study could have already been in the process of engaging in additional PA. Since some participants may have already been active in PA through the community center, it is difficult to know if an increase in their PA levels was due to the intervention or was self-directed.

It is possible that too many intervention components were included in this study. The intervention components were: child PA tracker sheets, child PA scavenger hunt sheet, list of local parks, parent/child PA sessions, verbal encouragement, incentives, and a youth Olympic

event. Although certain intervention components like verbal encouragement, incentives, and the youth Olympic event were already previously embedded into the AFL program, it was extremely difficult to focus on all of the intervention strategies at all times. Also, tracking of each intervention component was not well done.

The time points during which accelerometer data were collected (weeks 0 and 12 for baseline and post measures) might not have captured the habitual PA levels that were meant to be gathered. The purpose of the study was to increase light PA and MVPA outside of the program, yet accelerometer data were not collected during the study (only before and after the program) which would have shown if there was an increase in mean minutes per day of light PA and MVPA during the study. These data would have allowed for a comparison of PA level amounts before the AFL study, during the intervention, and at the end of AFL. The accelerometer data that was gathered only indicated activity levels before and after the program. It would have been ideal to observe PA levels at some point during the 12 week study (preferably a midpoint at 6 weeks) in addition to baseline and post data. Doing so would have identified changes that may have occurred throughout the program while the intervention components were being implemented.

Lastly, we did not analyze how attendance may relate to program effects on child PA. Attendance was recorded for each AFL session, but it was not analyzed as part of this study. Identifying children who adhered to the AFL sessions more than others could have enabled the potential to demonstrate correlations between session adherence and intervention components. However, given the small sample size, it is not likely that there would be sufficient statistical power to conduct these analyses.

Implications and Future Research

Additional research is needed to better develop and test successful behavioral interventions to promote greater PA participation among minority children. Comparison of PA levels among parents of participating children could be conducted in future studies to gain a better understanding of how potential parental adherence may be reflected in children's PA levels. Studies in the literature have shown that PA prevalence in children is influenced by parental level of PA. In other words, testing the influence of parental PA on children's PA levels could support or oppose what previous studies have found.

Future studies using incentives might attempt giving rewards to participants each time a take-home component of the intervention is returned (for example: PA recall, scavenger hunt sheet) rather than only having one large incentive at the conclusion of the study. Perhaps purchasing a bundle of various extrinsic rewards to use as incentives and having the rewards available throughout the intervention for instant recognition should be considered (e.g., water bottles, sunglasses).

Another suggestion for future research consisting of self-report PA is to have the participant whose information is being reported complete the self-report PA document. For example, if child PA behavior is to be captured, children should be instructed to complete self-report documents based on their behavior. In this study, parents were instructed to complete their child's PA tracker sheet even though the information being reported was based upon child PA information.

Studies implemented in the future may also consider incorporating an exit interview to ask participants specific questions about the program. Exit interview questions can seek to gain an understanding of what the participants thought regarding various intervention components.

The information gathered from an interview might be useful to gain insight about the effectiveness of the intervention components at increasing habitual PA, rather than only the effects from accelerometer data. Feedback given at the interview could help researchers alter intervention components to make them more effective.

Lastly, objective PA measures should be planned and timed wisely in order to best capture data that truly assesses information based on the purpose of a study. Future studies aiming to measure the effects of an intervention on habitual PA outside of a program should consider including a mid-point objective PA data collection period or measuring PA throughout the program (e.g., via wrist worn accelerometers). Having mid-point or continuous data collection throughout the intervention would provide a more accurate understanding of the effectiveness of various intervention components while the study is occurring, rather than only capturing PA data before and after the study is conducted. Only capturing baseline and post PA levels may not capture real habitual PA levels outside of the program, which was the main purpose of this study.

Conclusion

This study examined the preliminary effects of a community-based intervention (AFL) on increasing habitual light PA and MVPA among 6-11 year old children. The study results indicated that the approaches implemented throughout the study to encourage children participants to do more PA were not effective. Important behavior modification techniques of providing incentives and positive reinforcement based on the operant theory were incorporated throughout the twelve week program along with child-parent involvement in physical activities and take home materials. This study adds to the research conducted in a community setting with families. Although health risks associated with physical inactivity have a long history in

research, the effects of community-based behavior studies on children implemented in community recreation centers warrants further investigation. This is especially the case for children of ethnic minorities as they have greater health disparities and have year after year shown to be engaging in even less PA than average children.

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APPENDIX A
AFL INSTITUTIONAL REVIEW BOARD
APPROVAL LETTER

APPROVAL FULL BOARD

Noe Crespo
SNHP - Exercise and Wellness
602/827-2279
Noe.Crespo@asu.edu

Dear Noe Crespo:

On 8/1/2014 the ASU IRB reviewed the following protocol:

Type of Review:	Initial Study
Title:	Athletes for Life Phase 3: A family nutrition and physical activity intervention to improve fitness and prevent cardiovascular disease among elementary aged children and their parents.
Investigator:	Noe Crespo
IRB ID:	STUDY00001286
Funding:	Name: American Heart Association, National Center; Funding Source ID: 14SDG20490382.
Documents Reviewed:	<ul style="list-style-type: none"> • Appendix 12_Child Assent Form_English_072414_AC.pdf, Category: Consent Form; • Appendix 11_Parental Consent Form_English_073114_CLEANED.pdf, Category: Consent Form; • AHA_Bioscience application_FINAL_73114_AC.docx, Category: IRB Protocol; • Appendix 15- Child survey english+spanish.pdf, Category: Measures (Survey questions/Interview questions /interview guides/focus group questions); • Appendix 10-PAR-Q.pdf, Category: Measures (Survey questions/Interview questions /interview guides/focus group questions); • Appendix 14- Parent survey english+spanish.pdf, Category: Measures (Survey questions/Interview questions /interview guides/focus group questions); • Appendix 16-

	<p>FINAL_AFL_MODIFIEDHomeFoodInventory1_22_14.pdf, Category: Measures (Survey questions/Interview questions /interview guides/focus group questions);</p> <ul style="list-style-type: none"> • Appendix 13- Anthropometric Measurements Protocol (ALBERTO FLOREZ's conflicted copy 2014-07-06).pdf, Category: Other (to reflect anything not captured above); • Appendix 5- Adult Physical Activity Curriculum outline.pdf, Category: Other (to reflect anything not captured above); • Appendix 6- Adult nutrition program outline.pdf, Category: Other (to reflect anything not captured above); • Appendix 1-Valentina_MPHC_Letter of Support_.pdf, Category: Other (to reflect anything not captured above); • Appendix 2-Frank_SMCC_Letter of Support_.pdf, Category: Other (to reflect anything not captured above); • Appendix 3-Child Nutrition Curriculum Outline_.docx, Category: Other (to reflect anything not captured above); • Appendix 4-Child Physical activity Curriculum Outline_.pdf, Category: Other (to reflect anything not captured above); • Appendix 7-AFL2_RECRUITMENT FLYER_.pdf, Category: Recruitment Materials; • Appendix 8-AFL2_INTEREST PARENT CONTACT INFO SHEET_.pdf, Category: Recruitment Materials; • Appendix 7-AFL2_RECRUITMENT FLYER_.pdf, Category: Recruitment materials/advertisements /verbal scripts/phone scripts; • Appendix 9- Athletes for life Recruitment Script_070313.pdf, Category: Recruitment materials/advertisements /verbal scripts/phone scripts; • Appendix 8-AFL2_INTEREST PARENT CONTACT INFO SHEET_.pdf, Category: Recruitment materials/advertisements /verbal scripts/phone scripts; • Crespo_AHA_RMT30521120_award_letter.pdf, Category: Sponsor Attachment; • AHA Grant_Research Strategy_1-13-13.pdf, Category: Sponsor Attachment; • Appendix 18- Home Visit Protocol.pdf, Category: Technical materials/diagrams; • Appendix 17-backtranslation-form.pdf, Category: Translations;
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The IRB approved the protocol from 7/23/2014 to 7/22/2015 inclusive. Before 7/22/2015, you are to submit a completed "FORM: Continuing Review (HRP-212)" and required attachments to request continuing approval or closure.

If continuing review approval is not granted before the expiration date of 7/22/2015 approval of this protocol expires on that date. When consent is appropriate, you must use final, watermarked versions available under the "Documents" tab in ERA-IRB.

In conducting this protocol you are required to follow the requirements listed in the INVESTIGATOR MANUAL (HRP-103).

Sincerely,

IRB Administrator

cc: Monica Gutierrez
Rachel Ganger
Erika Hernandez
Gabriel Shaibi
Michael Todd
Kendra Swanson
Peggy Gomez
Leopoldo Hartmann Manrique
Alayna Terrell
Sonia Vega-Lopez
Noe Crespo
Mia Teran
Sarah MULLANE
Rachel Cassinat
Argemiro A Florez Pregonero
Monica Gutierrez
Adrian Chavez
Jennifer Huberty
Matthew Hulse
Jeremy Webb
Carla Dellaserra

APPENDIX B
AFL RECRUITMENT SCRIPT

AFL Recruitment Script

Description: This script will be used by Dr. Crespo's research staff when parents call for more information about the Athletes For Life Program.

Script: Answer call or make call

"Hello, my name is _____ I am a student research assistant with the Athletes for Life program. I am calling regarding your interest in the program."

"How did you find out about this program?"

(Enter this into the recruitment database)

"Ok, great! I am going to take some time to explain the study to you in more detail and ask you some questions to find out if you qualify, do you have about 15 minutes for that right now?"

If yes, proceed.

If no, reschedule another time to contact.

Time _____ Day _____

Parent/guardian is interested in program

"Athletes for Life is a free 12-week program aimed at improving physical fitness and dietary habits among families with children who are 6-11 years old. This program will be held twice a week on Mondays and Thursdays from 5:30 pm-7:00 pm at the South Mountain Community Center located at 212 East Alta Vista Rd, just south of Southern between Central and 7th streets. This program will be offered in both English and Spanish for adults.

Two phases of the program will be offered. The first will begin on September 15th and will end on December 4th. The second phase will begin in early April and will continue through early July. You will be randomly assigned to participate in one of these two phases.

We are very interested in creating a program that improves the fitness and health of the people who participate. To evaluate this we would ask you to complete dietary, health and fitness assessments before and after the program. These assessments will be completed over the course of three sessions before September 15th and after December 4th and you will be compensated with gifts such as gift cards, small kitchen appliances, and small exercise equipment. Although all of your family will be invited to participate in this program, only one parent and one child will complete the data collection procedures. "

Are you still interested in the study?

If no

- May I ask why?

_____ (Record in participant database)

- Thank you so much for your time and interest.
- Have a good night/day.

If yes proceed to child screening check- list.

- Since this program is part of a research study, there are certain criteria necessary for you and your child/children to be able to participate.
- To determine if you are eligible for the next phase I will need to ask you some short questions.

Continue

1. Do you have a child who is 6-11 years of age who is willing to participate in this program?

₁ Yes

₀ No

If “no”, then family is ineligible.

If “yes”, then proceed.

2. Do you have more than one child who is between these ages and who wants to participate?

₁ Yes

₀ No

If “no”, then proceed.

If “yes”, then ask:

3. Of your children who are in the eligible age group and would like to participate, which one of them has a birthday closest to January 1st?

_____ (Child's name)

Unless you have objections this child will be the child that we will collect information on, is this ok with you?

If “yes”, then proceed.

If “no”, then ask:

4. Which child is the child that you would prefer us to collect information on?

_____ (Child's name)

Why?

_____ (child participant's name).

PAR-Q

5. Has your child's doctor ever said that they have a heart condition and that they should only do physical activity recommended by a doctor?

- ₁ Yes
- ₀ No

6. Has your child ever complained about pain in their chest during physical activity?

- ₁ Yes
- ₀ No

7. Has your child ever complained about pain in their chest while not doing physical activity?

- ₁ Yes
- ₀ No

8. Does your child ever lose balance because of dizziness or does he/she ever lose consciousness?

- ₁ Yes
- ₀ No

9. Does your child have a bone or joint problem that could be made worse by a change in his/her physical activity?

- ₁ Yes
- ₀ No

10. Is your child's doctor currently prescribing drugs for their blood pressure, a previous heart attack, stroke or other serious heart condition?

- ₁ Yes
- ₀ No

11. Has your child been diagnosed with type 2 diabetes?

- ₁ Yes
- ₀ No

12. Do you know of any other reason why your child should not do physical activity?

- ₁ Yes
- ₀ No

If any answers to PAR-Q are "yes", then child will have to obtain medical clearance (see below). [Continue to adult screening before describing medical clearance.]

If all answers to PAR-Q are "no" then continue to adult screening.

Adult screening

13. Are you 18 years of age or older?

- ₁ Yes

No

If “yes”, then proceed

If “no”, then offer program to other parent. If no other parent is available then family is ineligible.

14. (Ask only if female is on telephone) Are you pregnant?

Yes

No

If “yes”, then offer program to other parent. If no other parent is available then family is ineligible.

If “no” proceed to PAR-Q

PAR-Q

15. Has your doctor ever said that that you have a heart condition and that you should only do physical activity recommended by a doctor?

Yes

No

16. Have you ever had pain in your chest during physical activity?

Yes

No

17. Have you ever had pain in your chest while not doing physical activity?

Yes

No

18. Do you ever lose balance because of dizziness or do you ever lose consciousness?

Yes

No

19. Do you have a bone or joint problem that could be made worse by a change in your physical activity?

Yes

No

20. Is your doctor currently prescribing drugs for your blood pressure, a previous heart attack, stroke or other serious heart condition?

Yes

No

21. Have you ever been diagnosed with type 2 diabetes?

₁ Yes

₀ No

22. Do you know of any other reason why you should not do physical activity?

₁ Yes

₀ No

If any answers to PAR-Q are “yes”, then family will have to obtain medical clearance (see below).

If all answers to exclusion criteria are “no” then continue to scheduling home visit.

Ineligible:

- It appears that your family is ineligible to participate in the program at this time.
- If you would like we will keep your contact information for future studies (Yes or No?)
- Thank you for your time! Have a good day/night.

If parent still wants to know more about not being eligible

- I can have my supervisor call you if you would like, as she can more thoroughly explain the study criteria and eligibility.

Medical clearance-Child

- It looks like your child will need to obtain medical clearance to participate in physical activity and be a part of this study. If you are still interested in the study, you will need to visit a doctor and ask for a note that clears you to participate in physical activity.

Medical clearance-Adult

- It looks like you will need to obtain medical clearance to participate in physical activity and be a part of this study. If you are still interested in the study, you will need to visit a doctor and ask for a note that clears you to participate in physical activity.

ELIGIBLE:

- Great news, you and your child/children are eligible for the Athletes for Life Program!!
- The next step would be to schedule an appointment to give you much more specific details about your participation in the study and have you and your child sign a form indicating that you understand the details of the study and you still want to participate.
- If you agree to be in the study we will also conduct a survey regarding some information about you and your family and your eating and physical activity habits.
- This visit is expected to take approximately one hour and fifteen minutes and we would like to have this visit in your home to make it convenient for you. If, for any reason, a home visit is not possible, we can schedule another location.
- Copies will be made for all of the consent forms that you sign at this appointment for your own personal record as well as records for the program.
- **Do you have your schedule available so we can set that appointment up now?**

If “yes”, then schedule appointment

If “no”

- Is there a better day/time I can reach you to schedule an appointment?
 - Day: _____ Time: _____
- What is the best number to reach you?
 - # ___ __ - ___ __ - ___ __
- Thank you so much for your time and interest.
- Have a good night/day.

Scheduling appointment

1. **The appointment will be held at the participant’s home unless there is a significant limitation to doing so.**
2. **The participating parent and child should both be there for the appointment.**
3. **Look at the “Home Visit Calendar” on dropbox and find a time and day that we have RA’s available and the participant is available.**

Date: _____

Time: _____

Add this appointment into the “Home Visit Calendar” by inserting the participants’ screening ID # into the time slot selected.

4. Collect participants’ information

a. What is your full name...?

First Name _____ Middle Name _____

Last Name _____

b. What is your child’s full name?

First Name _____ Middle Name _____

Last Name _____

c. What is the best telephone number to reach you?

(_____) _____ - _____

d. What is your home address

Street _____

City _____

Zip code _____

5. End call. Say:

“We look forward to seeing you and (*name of child*) on (*date / time*), we will call you a day before to remind you. If you have questions before then, you can call us at _____ . Thank you for your time! Have a good day/night.

6. Send an e-mail to the RA’s who are available for the home visit at the time scheduled to notify them of the schedule.

7. Congratulate yourself for a job well done!!

APPENDIX C
AFL CHILD INFORMED ASSENT
AND PARENT CONSENT FORMS

**Arizona State University
Athletes for Life 3
Child Informed Assent Form**

My parents (mom or dad) have given permission (said it's okay) for me to take part in the Athletes for Life program.

This program consists of fun group activities, games, and exercises to help me improve my fitness, sports skills, and wellbeing. The program will last 12 weeks, with two sessions per week. Each session will last about an hour and a half. At the end of the program I will be invited to participate in a youth Olympic event with all my group members.

As a part of this program I will be asked to do tests to measure my health and fitness. Someone from the project will measure my height, weight, body fat and muscle and width around my waist with a tape measure. I will be asked to run a mile and to have my blood drawn to measure my health and fitness. I will also be asked to wear an activity monitor. I will also be given the option to do an exercise test to measure my fitness level and wear another activity monitor if I choose to. All of these things will happen three different times: before the program, at the end of the program, and 12 weeks after the program is over. The mile run, height, weight, and waist circumference will happen halfway through the program as well as the times listed before. I will have the opportunity to win prizes such as balls and other sports equipment during the program.

I am taking part because I want to. I understand that there might be some pain when I have my blood drawn. I know that I can say 'yes' now and stop later if I want to and it will be okay if I want to stop. I know I can ask questions about the project at any time. If I choose not to do something, it will not affect my grades in school or medical care in any way.

If I decide to be in the study no one will tell anyone else how I did as part of the study.

Child's Name (Please Print)

Child's Signature

Date

**Arizona State University
Athletes for Life 3
Adult Consent Form**

INTRODUCTION:

The purpose of this form is to provide you with important information that may affect your decision regarding you and your child's participation and to record the consent of those who give permission for their child to participate in this study.

RESEARCHERS:

Drs. Noe Crespo, Sonia Vega-López, and Gabriel Shaibi are professors in the School of Nutrition and Health Promotion at Arizona State University, in collaboration with the City of Phoenix Parks and Recreation Department's South Mountain Community Center.

DESCRIPTION OF THE RESEARCH STUDY:

We are inviting parent-child pairs to participate in a research study to test the effectiveness of a child fitness and nutrition program. If you and your child decide to participate, you will be randomly assigned to be in one of two groups, either the "treatment" group or the "control" group.

The treatment group will begin the 12-week fitness and nutrition program after the baseline visits, at the same time as the data collection phase. The Control group will wait to begin the 12-week fitness and nutrition program until approximately 24 weeks after all data collection procedures have been completed.

Data from all participants (both treatment group and control group) will be collected in four phases: Baseline/week 0 (broken into 3 visits), and at 6, 12, and 24 weeks.

Baseline (Week 0) Procedures:

Visit 1 (approximately 1 hour total)

- (Parents only) Fill out a questionnaire about you and your child's diet and physical activity habits
- (Optional) Home food inventory – With your permission, a research assistant will conduct a brief home food inventory of the food items that are available in your kitchen

Visit 2 (approximately 1 hour total)

Location: ASU Nutrition & Health Promotion Laboratory (downtown Phoenix)

- You and your child will be asked to fast (no food or drink) for at least 8 hours before the visit, you will be offered a light snack during the visit
- (Females only) Pregnancy test
- Measure blood pressure, height, weight, and waist circumference
- Blood draw (Approximately 2 tablespoons from adults and 1 tablespoon from children)
- Full body DEXA scan to measure total and abdominal body fat.
- Fitness assessment - stepping up and down from a 12 inch step while we measure your heart rate

Visit 3 (approximately 45 minutes)

Location: *South Mountain Community Center*

- Activity warm-up
- Fitness assessment – same as the fitness assessment from the last visit
- Run/walk 1 mile while being timed
- Activity trackers (Accelerometers) - You will be given an accelerometer that we will ask you and your child to wear for one week to measure physical activity
- We will also ask you to fill out a 3-day food record for the week leading up to the intervention

Week 6 Procedures (takes place during session)

Location: *South Mountain Community Center*

- Repeat height, weight, and waist circumference measurements
- Run/walk 1 mile while being timed

Week 12 Procedures

Visit 1 (approximately 1 hour and 30 minutes)

Location: *South Mountain Community Center*

- Activity warm-up
- Fitness assessment – same as the fitness assessment from the baseline
- Run/walk 1 mile while being timed
- We will also ask you to fill out a 3-day food record for the week following the last intervention session
- Activity trackers (Accelerometers) - You will be given an accelerometer that we will ask you and your child to wear for one week to measure physical activity
- **TREATMENT GROUP ONLY** – Parent Interview

Visit 2 (approximately 30 minutes total)

Location: *ASU Nutrition & Health Promotion Laboratory (downtown Phoenix)*

- You and your child will be asked to fast (no food or drink) for at least 8 hours before the visit, you will be offered a light snack during the visit
- (Females only) Pregnancy test
- Measure blood pressure, height, weight, and waist circumference
- Blood draw (Approximately 2 tablespoons from adults and 1 tablespoon from children)
- Full body DEXA scan to measure total and abdominal body fat.

Visit 3 (approximately 1 hour total)

- (Optional) Home food inventory – With your permission, a research assistant will conduct a brief home food inventory of the food items that are available in your kitchen

Week 24 Procedures (approximately 45 minutes)

Location: *South Mountain Community Center*

- Repeat blood pressure, height, weight, and waist circumference measurements
- Fitness assessment – same as the fitness assessment from baseline and 12 weeks visit
- Run/walk 1 mile while being timed.
- Activity trackers (Accelerometers) - You will be given an accelerometer that we will ask you and your child to wear for one week in order to measure physical activity

Fitness and Nutrition Intervention Program:

(Treatment Group: Begin after baseline; Control Group: begin after week 24)

Child Participation. Each session will consist of an 80 minute physical activity and a 10 minute interactive nutrition lesson. The sessions include group activities, games, and exercises designed to improve your child's fitness, sports skills, and wellbeing. These games and activities will provide information about the importance of eating nutritious foods for optimal fitness. Your child may be given information from some of the sessions to share with the family.

Parent Participation. The parent portion consists of 45 minutes of interactive nutrition lessons with cooking demonstrations and taste tests. The other 45 minutes will be spent doing physical activities to help improve your health related fitness level.

If assigned to the treatment group, you and your child's participation will take approximately 28 weeks. If assigned to the control group participation will take approximately 40 weeks. At the end of the program your family will be invited to participate in a youth Olympic event to showcase you and your child's athletic skills developed over the course of the intervention.

We expect to have about 50 families enrolled in each phase, and expect four phases to be conducted over four years.

INCLUSIONARY and EXCLUSIONARY CRITERIA:

In order for you and your child to participate in this study, your child must be 6 to 11 years old, you both must be free of any mental or physical condition that limits your ability to move or restricts participation in sports, must not be taking medications that may influence hunger or body weight, and are not currently pregnant.

RISKS:

There is risk of being injured during the exercise sessions. The research team will reduce these risks by utilizing recommended exercise training procedures including having warm-up and cool-down activities, using appropriate facilities and equipment for the exercise sessions, increasing exercise intensity slowly throughout the program, and request that everyone wear appropriate clothing and shoes.

It is possible that participants may feel uncomfortable answering survey or interview questions, during body measurements or during fitness assessments. You are able to stop during any procedures you are not comfortable with and can skip any survey or interview questions you do not wish to answer. Privacy screens will be used during body measurements to protect your privacy.

There is a risk of slight discomfort, bruising, swelling, dizziness, or you may faint as a result of the blood draw. Only trained research personnel will draw you and your child's

blood and you both will be offered a snack after the blood draw. If at any time you or your child feel unable to complete the blood draw, you may ask to skip this measure.

There is a slight risk of discomfort when wearing the blood pressure cuff as it inflates.

There is a small risk associated with radiation exposure during the body composition measure (DEXA). However, the amount of radiation you and your child will be exposed to is approximately 1/10th of the amount that you would be exposed to during an x-ray and less than you would experience on a flight across the Atlantic Ocean. All female participants who are menstruating will receive a pregnancy test before completing the DEXA to avoid any possible risks of radiation exposure to the fetus.

BENEFITS:

The possible benefits of your family's participation in the research include improving fitness and improving dietary habits. In addition, you and your child will have the opportunity to earn prizes as a result of participation.

NEW INFORMATION:

You will be contacted if new information is discovered that would reasonably change your decision about you and your child's participation in this study.

CONFIDENTIALITY:

The results of the research study may be published but you and your child's name or identity will not be revealed. In order to maintain confidentiality, participants will be assigned a random study ID that will be used on all study records in place of participants' names. Study records with information about you will be kept locked in filing cabinets or on computers protected with passwords. Only those who work with this study will be allowed access to your information.

WITHDRAWAL PRIVILEGE:

There will be no penalty if you choose not to participate in this study. It will not affect you or your child's medical treatment, or future participation in the South Mountain Community Center's activities. Likewise, you and your child are free to drop from the study at any time for any reason and there will be no penalty.

COSTS AND PAYMENTS:

There is no cost to participants to join this study.

As compensation for your time and participation in this program, you or your child will receive:

- Lab visit: You will receive an incentive worth approximately \$20 for participating in the laboratory visit (baseline and 12 weeks).
- Accelerometer: Your child will receive a toy worth approximately \$5 for each time that they wear the accelerometer (baseline, 12, and 24 weeks).
- Following last baseline visit: One-year City of Phoenix Park and Recreation Department Recreation Pass/membership card for you and your child. If you already have one, we will give you a voucher to renew your membership when yours expires.

- Home inventory: You will receive an incentive worth approximately \$10 for each home visit you participate in (baseline and week 12).
- Twelve week follow up: You will receive an incentive worth approximately \$10 for participating in the 24 week follow-up

COMPENSATION FOR ILLNESS AND INJURY:

Agreeing to you and your child’s participation does not waive any of your legal rights. However, no funds have been set aside to compensate you in the event of injury. In the event that you or your child suffers harm as a result of participation in this research project, you may contact Dr. Noe Crespo at (602) 827-2279 or you may contact the Chair of the Human Subjects Institutional Review Board through the Research Compliance Office at (480) 965-6788.

If, during the interviews, there is evidence that you or your child has extreme depression, other signs of mental illness, or even suicide; project staff would work with you to see that you or your child gets help. This might require that we inform other professionals if necessary to protect your safety.

Project staff will also report to appropriate professionals if there is evidence that any member of your family is in danger of being harmed by any other family member or of causing harm to themselves, another family member, or others. This includes evidence of possible suicide and abuse of minor children.

VOLUNTARY CONSENT

By signing this form, you are saying 1) that you have read this form or have had it read to you, and 2) that you are satisfied and you understand this form, the research study, and its risks and benefits. The researchers will be happy to answer any questions you have about the research. If you have any questions, please feel free to contact Dr. Noe Crespo at (602) 827-2279.

If at any time you feel pressured to participate, or if you have any questions about your rights or this form, please call the Chair of the Human Subjects Institutional Review Board through the ASU Office of Research Integrity and Assurance at (480) 965-6788.

Note: By signing below, you are telling the researchers YES, that you agree to participate and give permission for your child to participate in this study. Please keep one copy of this form for your records.

Your child’s name (please print)

Parent: Your name (please print)

Parent Signature

Date

Your initials here indicate whether you consent to completing the home visit.

I DO consent to completing the home visit.

I DO NOT consent to completing the home visit.

Subjects Initial's

INVESTIGATOR'S STATEMENT:

I certify that this form includes all information concerning the study relevant to the protection of the rights of the participants, including the nature and purpose of this research, benefits and risks, costs, and any experimental procedures.

I have described the rights and protections afforded to human research participants and have done nothing to pressure, coerce, or falsely entice the parent to allow this child to participate. I am available to answer the parent's questions and have encouraged him/her to ask additional questions at any time during the course of the study.

Investigator's Signature

Date

APPENDIX D
CHILD PHYSICAL ACTIVITY CURRICULUM

Week 1 Session 1

1. Introductions (5 minutes)
 - a. Volunteers-name; active word that starts with the same first letter in your name
Then have all of the children do that active word for ~30 seconds
(For example: My name is Jenny, jumping Jenny. Then everyone jumps for ~30 seconds)
 - b. Children-have children say their names
2. Team Rules (5-7 minutes)
 - a. Jeremy: Will go through an overview of Athletes for Life program. Remind kids about being respectful and having a positive attitude.
 - b. Talk about how we are there to help everyone be more active while having fun.
3. Warm-Up (10 minutes)
 - a. Volunteers and kids get into a large circle so everyone can see each other.
 - b. Joint Series: arm circles of different sizes; crossing both; elbow circles; neck rotations; hip circles; hands down to toes; upright-left hand over the head to right side; upright-right hand over the head to left; knee rotations; ankle rotations; on right heel-toes up-lean body down towards foot
(do each warm-up series for ~15-20 seconds)
 - c. Have children run once around the pavement track
4. Freeze Tag (15 minutes)
 - a. Explain the game; set boundary lines outside
 - b. Kids and volunteers play
5. Stations (5 minutes per station=25 minutes)

Divide children as evenly as possible into 5 stations. Have them run past each station once at each rotation before starting new station.

 - a. Nutrition
 - b. Cone Drills
 - i. Running through
 - ii. Jumping over
 - iii. Running through with one leg leading
 - iv. Lateral running
 - c. Ladder Drills
 - i. One leg stepping; switch. Double step at each. Bouncing. In-in-out-out. High knees. Lateral running. Lateral stepping. Skipping one square.
 - d. Lower Body
 - i. Jumping jacks
 - ii. Air jacks
 - iii. Ski jumps
 - iv. Skipping jumps
 - e. Upper Body

- i. Shoulder taps in push-up position
 - ii. Hold a proper push-up position
6. Dodgeball (15-18 minutes)
 - a. Explain the game while volunteers set up; set boundary lines outside
 - b. Kids and volunteers play
 - c. Volunteers vs.children?
7. Cool-Down (10 minutes)
 - a. Lower body series on the floor: toe touch stretch; one leg over opposite knee turn body backwards; lift the top knee off the floor; grab bottom of foot and extend leg in front of body; extend internally towards opposite shoulder; switch hands and extend towards same-side shoulder; windmills; butterflies; split stretch; hurdler stretch; quad stretch lying backwards
(Do each cool-down stretch for ~15-20 seconds)
 - b. Have children run once around the paved track.
 - c. Caleb: teach everyone the group chant and end with that.

Week 1 Session 2

1. Introductions (5 minutes)
 - a. Roll call of children
 - b. Facilitator Introductions again (just names)

2. Warm-Up (10 minutes)
 - a. Volunteers and kids get into a large circle so everyone can see each other.
 - b. Joint Series: arm circles of different sizes; crossing both; elbow circles; neck rotations; hip circles; hands down to toes; upright-left hand over the head to right side; upright-right hand over the head to left; knee rotations; ankle rotations; on right heel-toes up-lean body down towards foot
(do each warm-up series for ~15-20 seconds)
 - c. Have children run once around the pavement track

3. Stations (5 minutes per station=25 minutes)

Divide children as evenly as possible into 5 stations. Have them run past each station once at each rotation before starting new station.

 - a. Nutrition
 - b. Body Weight Exercises (upper body)
 - i. Push-ups
 - ii. Planks
 - iii. Dips
 - iv. Shoulder Taps
 - c. Ladder Drills
 - i. One leg stepping; switch.
 - ii. Double step at each
 - iii. Bouncing in-in-out-out
 - iv. High knees
 - v. Lateral stepping
 - vi. Lateral running
 - d. Lower Body
 - i. Jumping jacks
 - ii. Ski jumps
 - iii. Skipping jumps
 - iv. Body weight squats
 - e. Core Work
 - i. Crunches
 - ii. Cherry pickers
 - iii. Hip hoppers

4. Dodgeball (15-18 minutes)
 - a. Explain the game while volunteers set up; set boundary lines outside
 - b. Kids and volunteers play
 - c. Volunteers vs.children?

5. Cool-Down (10 minutes)

- a. Lower body series on the floor: toe touch stretch; one leg over opposite knee turn body backwards; lift the top knee off the floor; grab bottom of foot and extend leg in front of body; extend internally towards opposite shoulder; switch hands and extend towards same-side shoulder; windmills; butterflies; split stretch; hurdler stretch; quad stretch lying backwards
(Do each cool-down stretch for ~15-20 seconds)
- b. Have children run once around the paved track.
- c. Caleb: teach everyone the group chant and end with that.

Week 2 Session 3
(Soccer)

1. Warm-Up (10 minutes)
 - a. Volunteers and kids get into a large circle so everyone can see each other.
 - b. Joint Series: arm circles of different sizes; crossing both; elbow circles; neck rotations; hip circles; hands down to toes; upright-left hand over the head to right side; upright-right hand over the head to left; knee rotations; ankle rotations; on right heel-toes up-lean body down towards foot
(do each warm-up series for ~15-20 seconds)
 - c. Have children run once around the pavement track

2. Color Tag (15 minutes)
 - a. Make a long field with boundaries; two sides are “base.” The person who is “it” stands in the middle and calls out a color, and anyone wearing that color has to run to the other side. Anyone tagged is now in the middle tagging other people. They keep calling out colors until everyone is on the other side. Then they turn around and do the same thing until one person is left.
 - b. Brittany F. can explain and lead this game

3. Stations (7-10 minutes per station=35-50 minutes)

Divide children as evenly as possible into 5 stations.

 - a. Nutrition
 - b. Passing
 - i. Discuss and demonstrate the proper technique for passing a soccer ball. Explain that they should use the inside or outside of their foot and not the tip of their toes to kick the ball. Go over the follow through with their kick, using a sweeping motion. Have children in this group split into partners to practice passing to each other starting at a close distance. When they feel comfortable they can start moving farther and farther away from each other.
 - c. Monkey in the Middle
 - i. Have children form a circle with one person in the middle who is the “monkey”. Children in the outside circle will pass the soccer ball to each other while the “monkey” tries to intercept the ball. If the monkey gets the ball whoever made the pass will become the new monkey and the old monkey will join everyone else in the circle.
 - ii. Have 2 different groups going at once so that kids can move more.
 - d. Long Kicks
 - i. Have children get into pairs. Have them practice kicking a soccer ball as far as they can to their partner while having control of where the ball goes. The partner can chase the ball if it goes past them. Coach should be checking that the children are using proper kicking technique at this station.

- e. Zig-Zag Dribble Relay
 - i. Split the children into two groups and have them dribble down through the set up cones and back. Once the first member of the group finishes, they will pass the ball to the next child in line and they will dribble through the cones.

- 4. Shark Game (15 minutes)
 - a. Cones are set up in a square, (size depending on number of children playing) every child except for one, “the shark,” starts with a soccer ball inside the cones. Children must dribble the ball around while staying inside the cones and trying to avoid the shark. If the shark kicks their ball out or the child dribbles outside of the cones, they will also become a shark. The last child left with a soccer ball is the winner.
 - b. Can have 2 rounds going-one for the kids that are eliminated and another for those that are actually still in.

- 5. Cool-Down (10 minutes)
 - a. Lower body series on the floor: toe touch stretch; one leg over opposite knee turn body backwards; lift the top knee of the floor; grab bottom of foot and extend leg in front of body; extend internally towards opposite shoulder; switch hands and extend towards same-side shoulder; windmills; butterflies; split stretch; hurdler stretch; quad stretch lying backwards
(Do each cool-down stretch for ~15-20 seconds)
 - b. Have children run once around the paved track.
 - c. End with group chant
(Everyone claps into a tight huddle and puts fists into the center. Coach says “Athletes for Life on 3-1,2,3...” Everyone replies “Athletes for Life!”)

Week 2 Session 4
(Soccer)

1. Warm-Up (10 minutes)
 - a. Volunteers and kids get into a large circle so everyone can see each other.
 - b. Joint Series: arm circles of different sizes; crossing both; elbow circles; neck rotations; hip circles; hands down to toes; upright-left hand over the head to right side; upright-right hand over the head to left; knee rotations; ankle rotations; on right heel-toes up-lean body down towards foot. Explain each stretch along with which muscles are being stretched.
(do each warm-up series for ~15-20 seconds)
 - c. Have children run once around the pavement track

2. Capture the Flag (15 minutes)
 - a. Split the field in half, place three hula-hoops on each side spread apart with a shirt or something easy to grab inside. Make sure the two teams are easy to tell apart. When the game has started the two teams will try to run to the other side and get the other team's flags without being tagged. If tagged they have to go to "jail." The only way they can get out of jail is if your teammate tags them or a group of teammates. The teammates who were tagged out of jail have to put their hands up and run/walk back to their side. Only one person can guard each flag. When an opposing team member crosses the line and makes it into the hula-hoop, they are safe in it for 30 seconds. Winner team gets all three flags to the other side.
 - b. Brittany F. can explain and lead this game

3. Stations (7-10 minutes per station=35-50 minutes)

Divide children as evenly as possible into 5 stations.

 - a. Nutrition
 - b. Header and Knees
 - i. Children should partner up, standing about five feet away from each other, toss the ball and try to head it or hit it with their knee to get the ball back to their partner. Younger children can use bigger gator balls to reduce risk of injury.
 - c. Toe Touch drill
 - i. Each child will have their own soccer ball and practice toe touches with the ball. Coach should demonstrate first. All of the children will stay in a stationary position bringing the ball back and forth in front of them (stationary right to left). Next they will go forward doing theht to left and then backward doing right to left. Have them go through a straight line.
 - d. Agility Ladders
 - i. Children will move through the agility ladders doing one skill each time through. High knees, quick feet, bunny hop, grape vine, side hops.
 - e. Zig-Zag Dribble Relay

- i. Split the children into two groups and have them dribble down through the set up cones and back. Once the first member of the group finishes, they will pass the ball to the next child in line and they will dribble through the cones.
4. 3 Ball Soccer Game (15 minutes)
 - a. Coaches will set up a desired perimeter and two goals. Children will be split into 2 teams. They will start like a regular soccer game, have a kick off, but as the game continues after the first goal is made, another soccer ball will be added to the game. After a certain random time, another soccer ball is thrown onto the field so that the soccer game consists of three soccer balls going at once. Allow the goalies to switch when they get scored on.
5. Cool-Down (10 minutes)
 - a. Lower body series on the floor: toe touch stretch; one leg over opposite knee turn body backwards; lift the top knee off the floor; grab bottom of foot and extend leg in front of body; extend internally towards opposite shoulder; switch hands and extend towards same-side shoulder; windmills; butterflies; split stretch; hurdler stretch; quad stretch lying backwards
(Do each cool-down stretch for ~15-20 seconds)
 - b. Have children run once around the paved track.
 - c. End with group chant
(Everyone claps into a tight huddle and puts fists into the center. Coach says “Athletes for Life on 3-1,2,3...” Everyone replies “Athletes for Life!”)

Week 3 Session 5
(Football)

1. Warm-Up (10 minutes)
 - a. Volunteers and kids get into a large circle so everyone can see each other.
 - b. Joint Series: arm circles of different sizes; crossing both; elbow circles; neck rotations; hip circles; hands down to toes; upright-left hand over the head to right side; upright-right hand over the head to left; knee rotations; ankle rotations; on right heel-toes up-lean body down towards foot
(do each warm-up series for ~15-20 seconds)
 - c. Have children run once around at least half the pavement track or on the grass.

2. Red Light Green Light (15 minutes)
 - a. Have all kids line up in one line. Choose a child to be “it”. When “it” says green light, all the kids run as fast as they can. When “it” says red light, everyone stops. Whoever doesn’t stop is out. “It” keeps saying red light or green light until all the kids are out or hves gone from one end of the field back to where they started from. Remind kids not to run too fast otherwise when "it" says red light, they won't be able to stop. The first person to touch the person who is “it” is the next “it”.

3. Stations (7-10 minutes per station=35-50 minutes)

Divide children as evenly as possible into 5 stations.

 - a. Nutrition
 - b. Passing
 - i. Discuss and demonstrate the proper technique for passing a football. Explain that they should use the hand grip with their hands. Go over the follow through with their pass and spirals. Have children in this group split into partners to practice passing to each other starting at a close distance. When they feel comfortable they can start moving farther and farther away from each other.
 - c. Mirror The Player
 - i. Have children partner up with someone of similar age/size. Tap one person in each pair to be the first “player.” The player is free to run anywhere within the boundaries. Have partners facing each other. Facing each other, have the first player leading various football footwork such as high knees, quick feet, running, faking, etc. The second player is to copy or mirror exactly what the first player is doing.
 - d. Long Kicks
 - i. Have children get into pairs. Have them practice kicking a football as far as they can to their partner while having control of where the ball goes. The partner can chase the ball if it goes past them. Coach should be checking that the children are using proper kicking technique at this station. Use as much space as needed.

- e. Accuracy Throw
 - i. Lean a large hula hoop against part of a tree. Have the children in this station line up in one line. The child that is up in line gets to throw the football, with the goal of trying to make it through the hoop. Have kids move further away from the hula hoop to make it more challenging.
- 4. Catch the Football (15 minutes)
 - a. One child starts with the football. Have that child be as far away from the rest of the group as they want. That child then throws the football at the distance of their choice. Whoever catches the football out of the group then gets to be the thrower. Keep going-can have coaches throwing the football too, in between the kids, or the entire time depending on behavior of children.
- 5. Cool-Down (10 minutes)
 - a. Lower body series on the floor: toe touch stretch; one leg over opposite knee turn body backwards; lift the top knee off the floor; grab bottom of foot and extend leg in front of body; extend internally towards opposite shoulder; switch hands and extend towards same-side shoulder; windmills; butterflies; split stretch; hurdler stretch; quad stretch lying backwards
(Do each cool-down stretch for ~15-20 seconds)
 - b. Have children run at least half way around the paved track or on the field.
 - c. End with group chant
(Everyone claps into a tight huddle and puts fists into the center. Coach says "Athletes for Life on 3-1,2,3..." Everyone replies "Athletes for Life!")

Week 3 Session 6
(Football)

1. Warm-Up (10 minutes)
 - a. Volunteers and kids get into a large circle so everyone can see each other.
 - b. Joint Series: arm circles of different sizes; crossing both; elbow circles; neck rotations; hip circles; hands down to toes; upright-left hand over the head to right side; upright-right hand over the head to left; knee rotations; ankle rotations; on right heel-toes up-lean body down towards foot
(do each warm-up series for ~15-20 seconds)
 - c. Have children run once around at least half the pavement track or on the grass.

2. Red Light Green Light (15 minutes)
 - a. Have all kids line up in one line. Choose a child to be “it”. When “it” says green light, all the kids run as fast as they can. When “it” says red light, everyone stops. Whoever doesn’t stop is out. “It” keeps saying red light or green light until all the kids are out or have gone from one end of the field back to where they started from. Remind kids not to run too fast otherwise when "it" says red light, they won't be able to stop. The first person to touch the person who is “it” is the next “it”.

3. Stations (7-10 minutes per station=35-50 minutes)

Divide children as evenly as possible into 5 stations.

 - a. Nutrition
 - b. Monkey in the Middle
 - i. Have children form a circle with one person in the middle who is the “monkey”. Children in the outside circle will pass the football to each other while the “monkey” tries to intercept the ball. If the monkey gets the ball, whoever made the pass will become the new monkey, and the old monkey will join everyone else in the circle.
 - ii. Have 2 different groups going at once so that kids can move more. Possibly 3 depending on how many kids show up.
 - c. Zig-Zag Holding Football Relay
 - i. Split the children into two groups based upon size. Each group should only have one football. Have each group get in their own straight line away from each other and far enough apart so that an adult could run between each person.
 - ii. In each group, give one child the football. This child will hold the ball under armpit and zig-zag through the lines with the football. As soon as the child with the football gets to the last person, they have to throw it to the next person who will run through the zig-zag.
 - iii. Can have each group go at their own pace or have them race each other.
 - d. Accuracy Throw with Distractions

- i. Lean a large hula hoop against part of a tree. Pick one child to be the thrower. The goal is for the thrower to throw the football through the hula hoop. Everyone else in the group is trying to intercept the throw so that the thrower misses the shot.
 - e. Back pedal, sideways, grape vine, sprinting
 - i. Have kids lined up behind cones in one line. Coach will explain each of the footwork drills and demonstrate. Kids are to do whichever drill the coach calls out at any time. Change the speed to make it more challenging. Can make races out of them too if there's enough time.
- 4. Flag Football (15 minutes)
 - a. Set a goal line with cones on each side of the football area. Children will be divided into two teams, both with different flags on. Rock-paper-scissors to see who gets the ball first. Do not keep track of downs, rather time. After a certain amount of time let the other team have the ball for the same amount of time. Keep track of score to make it competitive but play a practice round beforehand.
- 5. Cool-Down (10 minutes)
 - a. Lower body series on the floor: toe touch stretch; one leg over opposite knee turn body backwards; lift the top knee off the floor; grab bottom of foot and extend leg in front of body; extend internally towards opposite shoulder; switch hands and extend towards same-side shoulder; windmills; butterflies; split stretch; hurdler stretch; quad stretch lying backwards
(Do each cool-down stretch for ~15-20 seconds)
 - b. Have children run at least half way around the paved track or through the grass leading one of the coaches.
 - c. End with group chant
(Everyone clapt into a tight huddle and puts fists into the center. Coach says "Athletes for Life on 3-1,2,3..." Everyone replies "Athletes for Life!")

Week 4 Session 7
(Taekwondo)

1. Warm-Up (10 minutes)
 - a. Volunteers and kids get into a large circle so everyone can see each other.
 - b. Joint Series: arm circles of different sizes; crossing both; elbow circles; neck rotations; hip circles; hands down to toes; upright-left hand over the head to right side; upright-right hand over the head to left; knee rotations; ankle rotations; on right heel-toes up-lean body down towards foot
(do each warm-up series for ~15-20 seconds)
 - c. Have children run once around at least half the pavement track or on the grass.

2. Conditioning (15 minutes)
 - a. Sprint Intervals
 - b. Jogging laterally from one cone to another; karaoke drill
 - c. Bunny hops; knees to chest jumping

3. Taekwondo (10 minutes per station=50 minutes)

Divide children as evenly as possible into 5 stations. Give introduction of Taekwondo and explain discipline aspect.

 - a. Nutrition
 - b. Basics
 - i. Fighting stance
 - ii. Knee pick-up
 - iii. Middle stance
 - iv. Guard position
 - c. Technique-Punching
 - i. Show proper striking surface
 - ii. Walk through proper execution of technique
 - iii. Punch together by count with yells
 - iv. Punch at targets
 - d. Technique-front kick
 - i. Demonstrate front kick
 - ii. Walk through different positions throughout kick with children following at the same time
 - iii. Kick together by count with yells
 - iv. Kick on paddles
 - e. Technique-high block and low block
 - i. Demonstrate both blocks
 - ii. Walk through different positions throughout blocks with children following at the same time
 - iii. Block together by count with yells
 - iv. Block hand targets

- v. Split group up and have coaches lead a line. When child is up in line, they have to do the appropriate block based on location/height of the target.
4. Cool-Down (10 minutes)
- a. Lower body series on the floor: toe touch stretch; one leg over opposite knee turn body backwards; lift the top knee off the floor; grab bottom of foot and extend leg in front of body; extend internally towards opposite shoulder; switch hands and extend towards same-side shoulder; windmills; butterflies; split stretch; hurdler stretch; quad stretch lying backwards
(Do each cool-down stretch for ~15-20 seconds)
 - b. Have children run at least half way around the paved track or through the grass leading one of the coaches leading.
 - c. End with group chant
(Everyone clapt into a tight huddle and puts fists into the center. Coach says “Athletes for Life on 3-1,2,3...” Everyone replies “Athletes for Life!”)

Week 4 Session 8
(Taekwondo)

5. Warm-Up (10 minutes)
 - a. Volunteers and kids get into a large circle so everyone can see each other.
 - b. Joint Series: arm circles of different sizes; crossing both; elbow circles; neck rotations; hip circles; hands down to toes; upright-left hand over the head to right side; upright-right hand over the head to left; knee rotations; ankle rotations; on right heel-toes up-lean body down towards foot
(do each warm-up series for ~15-20 seconds)
 - c. Have children run once around at least half the pavement track or on the grass.

6. Conditioning (15 minutes)
 - a. Wall Sits; squats; lunges; bunny hops
 - b. Dips on park playground; push-ups; planks; shoulder taps
 - c. Sit ups; cherry pickers; leg suspensions; tree huggers
 - d. Laterals; sprints; grapevine

7. Taekwondo (10 minutes per station=50 minutes)

Divide children as evenly as possible into 5 stations. Give introduction of Taekwondo and explain discipline aspect.

 - a. Nutrition
 - b. Basics Review (application on targets)
 - i. Fighting stance
 - ii. Knee pick-up
 - iii. Middle stance
 - iv. Guard position
 - c. Punching on Targets
 - i. Walk through proper execution of technique as review
 - ii. Proper technique at various heights
 - iii. Apply different heights on targets
 - d. Technique-round house kick
 - i. Demonstrate round house kick
 - ii. Walk through different positions throughout kick with children following at the same time
 - iii. Kick together by count with yells
 - iv. Kick on paddles

 - e. Technique-middle block and review of high/low blocks
 - i. Demonstrate middle block
 - ii. Walk through different positions throughout blocks with children following at the same time
 - iii. Block together by count with yells
 - iv. Block hand targets

- v. Split group up and have coaches lead a line. When child is up in line, they have to do the appropriate block based on location/height of the target.
8. Cool-Down (10 minutes)
- a. Lower body series on the floor: toe touch stretch; one leg over opposite knee turn body backwards; lift the top knee off the floor; grab bottom of foot and extend leg in front of body; extend internally towards opposite shoulder; switch hands and extend towards same-side shoulder; windmills; butterflies; split stretch; hurdler stretch; quad stretch lying backwards
(Do each cool-down stretch for ~15-20 seconds)
 - b. Have children run at least half way around the paved track or through the grass leading one of the coaches.
 - c. End with group chant
(Everyone claps into a tight huddle and puts fists into the center. Coach says “Athletes for Life on 3-1,2,3...” Everyone replies “Athletes for Life!”)

Week 5 Session 9
(Child and Parent PA)

1. Warm-Up (10 minutes)
 - a. Volunteers, parents and kids get into a large circle so everyone can see each other.
 - b. Joint Series: arm circles of different sizes; crossing both; elbow circles; neck rotations; hip circles; hands down to toes; upright-left hand over the head to right side; upright-right hand over the head to left; knee rotations; ankle rotations; on right heel-toes up-lean body down towards foot
(do each warm-up series for ~15-20 seconds)
 - c. Have children and parents run once around at least half the pavement track or on the grass.

2. Competitive Relays (15 minutes)
 - a. Set boundaries with cones; each family is a team
 - b. Various relay events
 - i. Bear crawls
 - ii. Wheel barrows
 - iii. Side skips with jumps
 - iv. Sprints
 - v. Caterpillar walks

3. Soccer Game
 - a. Divide families into two separate teams. Have them play a competitive soccer game. Coaches join in to add extra competitiveness.

4. Cool-Down (10 minutes)
 - a. Lower body series on the floor: toe touch stretch; one leg over opposite knee turn body backwards; lift the top knee off the floor; grab bottom of foot and extend leg in front of body; extend internally towards opposite shoulder; switch hands and extend towards same-side shoulder; windmills; butterflies; split stretch; hurdler stretch; quad stretch lying backwards
(Do each cool-down stretch for ~15-20 seconds)
 - b. Have children and parents run at least half way around the paved track or through the grass leading one of the coaches.
 - c. End with group chant

Week 5 Session 10
(1 Mile Run and Obstacle Course)

5. Warm-Up (10 minutes)
 - a. Volunteers and kids get into a large circle so everyone can see each other.
 - b. Joint Series: arm circles of different sizes; crossing both; elbow circles; neck rotations; hip circles; hands down to toes; upright-left hand over the head to right side; upright-right hand over the head to left; knee rotations; ankle rotations; on right heel-toes up-lean body down towards foot
(do each warm-up series for ~15-20 seconds)
 - c. Have children run once around at least half the pavement track or on the grass.

6. Color Tag (15 minutes)
 - a. Set boundaries with cones; the two sides are “base.” The person who is “it” stands in the middle and yells out a color. Anyone wearing that color has to run to the other side. Anyone tagged is now in the middle tagging other people. They keep calling out colors until everyone is on the other side. Then they turn around and do the same thing until one person is left.

7. One Mile Run (20 minutes)
 - a. Explain that we will be recording their time on the 1 mile run.
 - b. Split children into even groups based on coaches present. Give each a sheet with child’s name and run time on it.
 - c. Have children run around the paved sidewalk twice. Coaches will record end time.

8. Obstacle Course (20 minutes)
 - a. Set up an obstacle course with the available equipment near the lit areas in the park. Use coaches either as obstacles or as observers.
 - i. Examples: Hurdles; cones; leap frog over people; rolling; laterals around the trees; sprinting; jumping; throwing a football into hula hoop; hula hoop challenge; squats; etc.

9. Cool-Down (10 minutes)
 - a. Lower body series on the floor: toe touch stretch; one leg over opposite knee turn body backwards; lift the top knee off the floor; grab bottom of foot and extend leg in front of body; extend internally towards opposite shoulder; switch hands and extend towards same-side shoulder; windmills; butterflies; split stretch; hurdler stretch; quad stretch lying backwards
(Do each cool-down stretch for ~15-20 seconds)
 - b. Have children run at least half way around the paved track or through the grass leading one of the coaches.
 - c. End with group chant

Week 6 Session 11
(Volleyball Techniques)

1. Warm-Up (10 minutes)
 - a. Volunteers and kids get into a large circle so everyone can see each other.
 - b. Joint Series: arm circles of different sizes; crossing both; elbow circles; neck rotations; hip circles; hands down to toes; upright-left hand over the head to right side; upright-right hand over the head to left; knee rotations; ankle rotations; on right heel-toes up-lean body down towards foot
(do each warm-up series for ~15-20 seconds)
 - c. Have children run once around at least half the pavement track or on the grass.

2. Life Boat (15 minutes)
 - a. Everyone stands in a big group. The coach calls out a number and the kids have to get into a group of that number. Usually after a number is called one or two kids are out. It goes until one kid is left.

3. Stations (10-15 minutes per station)
 - a. Passing To Self
 - i. Explain and demonstrate how to do volleyball forearm passes. Have kids do forearm passes to themselves for practice. Make sure they can all control the ball before letting them go on to next station.
 - ii. Explain and demonstrate how to do volleyball fingertip passes. Have kids do fingertip passes to themselves for practice.
 - b. Passing to Partners
 - i. Line kids up into two rows, each of them partnered with someone of similar size. Have them do forearm passes to their partner. Coaches can tell pairs to increase distance between each other if they are passing well enough and need more of a challenge.
 - ii. Have them practice fingertip passes with their partners.
 - c. Underhand Serving Practice
 - i. Line children up by height and have them partner up with someone of similar size. Explain and demonstrate how to do an underhand serve: (for right-handed people). Hold ball in left hand, feet shoulder width apart, knees slightly bent. Still holding the ball in left hand, step left foot forward and swing right arm forward to hit the ball. When serving, the hand can be either open palm or a fist.
 - d. Lower Body Exercises
 - i. Squats; jumping squats for those that need more of a challenge (30 nonstop)
 - ii. Wall sits (for as long as they can hold the squat position for; can make it a competition)
 - iii. Lunges (30 alternating sides)
(Have them rotate through each series of lower body exercises until it's time to switch)

- e. Nutrition
-
- 4. Cool-Down (10 minutes)
 - a. Lower body series on the floor: toe touch stretch; one leg over opposite knee turn body backwards; lift the top knee off the floor; grab bottom of foot and extend leg in front of body; extend internally towards opposite shoulder; switch hands and extend towards same-side shoulder; windmills; butterflies; split stretch; hurdler stretch; quad stretch lying backwards
(Do each cool-down stretch for ~15-20 seconds)
 - b. Have children run at least half way around the paved track or through the grass led by one of the coaches.
 - c. End with group chant
(Everyone claps into a tight huddle and puts fists into the center. Coach says “Athletes for Life on 3-1,2,3...” Everyone replies “Athletes for Life!”)

Week 6 Session 12
(Volleyball)

1. Warm-Up (10 minutes)
 - a. Volunteers and kids get into a large circle so everyone can see each other.
 - b. Joint Series: arm circles of different sizes; crossing both; elbow circles; neck rotations; hip circles; hands down to toes; upright-left hand over the head to right side; upright-right hand over the head to left; knee rotations; ankle rotations; on right heel-toes up-lean body down towards foot
(do each warm-up series for ~15-20 seconds)
 - c. Have children run once around at least half the pavement track or on the grass.

2. Flag Tag (15 minutes)
 - a. Everyone stands in a big group. Set boundaries. Children will try to pull each other's flags off. Last person standing with a flag wins. Those that are eliminated will be doing another physical activity with another coach.

3. Stations (10-15 minutes per station)
 - a. Shuffling and catching overhead passing
 - i. Children will be in two lines facing each other with their partners. They will be shown the proper stance (squat) and then will shuffle with their hands in the air to the side cones.
 - ii. Then children will toss volleyball to their partners across and they have to catch like they would a set and then toss it back.
 - b. Passing against the wall
 - i. Have the kids in ready position. Toss the ball underhand to the wall and catch it still in the ready position. Once they get comfortable with throwing the ball against the wall underhand and catching it without moving from their ready position, they can try to pass off the wall with their forearms.
 - c. Lower body agility drills
 - i. Have the children lined up along a line on the ground. They will practice jumping over the line lightly and in different directions.
 - a. Two feet together side to side; forward and backward; zig zag; jumping forward turning around and then jumping back to starting position.
 - b. Hurdles/agility ladders
 - d. Volleyball Game
 - e. Nutrition

4. Cool-Down (10 minutes)

- a. Lower body series on the floor: toe touch stretch; one leg over opposite knee turn body backwards; lift the top knee off the floor; grab bottom of foot and extend leg in front of body; extend internally towards opposite shoulder; switch hands and extend towards same-side shoulder; windmills; butterflies; split stretch; hurdler stretch; quad stretch lying backwards
(Do each cool-down stretch for ~15-20 seconds)
- b. Have children run at least half way around the paved track or through the grass led by one of the coaches.
- c. End with group chant
(Everyone claps into a tight huddle and puts fists into the center. Coach says “Athletes for Life on 3-1,2,3...” Everyone replies “Athletes for Life!”)

Week 7 Session 13
(Volleyball Game and Mile Run)

1. Warm-Up (10 minutes)
 - a. Volunteers and kids get into a large circle so everyone can see each other.
 - b. Joint Series: arm circles of different sizes; crossing both; elbow circles; neck rotations; hip circles; hands down to toes; upright-left hand over the head to right side; upright-right hand over the head to left; knee rotations; ankle rotations; on right heel-toes up-lean body down towards foot
(do each warm-up series for ~15-20 seconds)

2. One Mile Run (20 minutes)
 - a. Half of the children will do the mile run, the other half will do it on Thursday this week. Explain that the goal is for them to run the mile as fast as they can. Show them what their previous mile time was.

 - b. While the running group runs, have the other children playing freeze tag. Start off by selecting one child to be “it.” The rest of the kids should start running away to avoid the person who is “it.” The person who is “it” can tag and freeze the other children. The children who are not frozen can attempt to unfreeze the frozen players by gently touching them. Continue the game until everyone becomes frozen. The last person to be tagged can be “it” for the next round.

3. Indoors (10-15 minutes per station)
 - a. Nutrition
 - b. Volleyball Review
 - i. Let the children review what they have learned with a volleyball. Walk around and correct any mistakes that coaches see. They can do this with a partner or on their own.

 - c. Volleyball Game Indoors
 - i. Divide the children into two teams and have them play volleyball indoors with the net. Have coaches play too so that it is a continuous game.

 - d. Volleyball Steal the Bacon
 - i. Split the children into two even teams and give each child a number from 1-10 (each team must have corresponding numbers). Have the children line up on their baseline. Place a volleyball in the middle of the court, underneath the volleyball net. The child who gets the ball has to run back to their side and touch the wall with their hand. If the child on the opposing team gets the volleyball out of the other child’s hand

or touches the child, the opposing team gets a point. Have a coach keep track of points.

4. Cool-Down (10 minutes)

- a. Lower body series on the floor: toe touch stretch; one leg over opposite knee turn body backwards; lift the top knee off the floor; grab bottom of foot and extend leg in front of body; extend internally towards opposite shoulder; switch hands and extend towards same-side shoulder; windmills; butterflies; split stretch; hurdler stretch; quad stretch lying backwards
(Do each cool-down stretch for ~15-20 seconds)
- b. Have children run at least halfway around the paved track or through the grass led by one of the coaches.
- c. End with group chant
(Everyone claps into a tight huddle and puts fists into the center. Coach says “Athletes for Life on 3-1,2,3...” Everyone replies “Athletes for Life!”)

Week 7 Session 14
(Sporting Games)

1. Warm-Up (10 minutes)
 - a. Volunteers and kids get into a large circle so everyone can see each other.
 - b. Joint Series: arm circles of different sizes; crossing both; elbow circles; neck rotations; hip circles; hands down to toes; upright-left hand over the head to right side; upright-right hand over the head to left; knee rotations; ankle rotations; on right heel-toes up-lean body down towards foot
(do each warm-up series for ~15-20 seconds)

2. Sports Games (10-15 minutes per station)
 - a. Nutrition
 - b. Volleyball Game
 - ii. Overview of serving techniques
 - iii. Play a game
 - c. Football Game
 - i. Review setting
 - ii. Overview of serving techniques
 - iii. Play a game
 - i. Review of proper technique to kick soccer ball
 - ii. Review passing position of foot
 - iii. Play a game

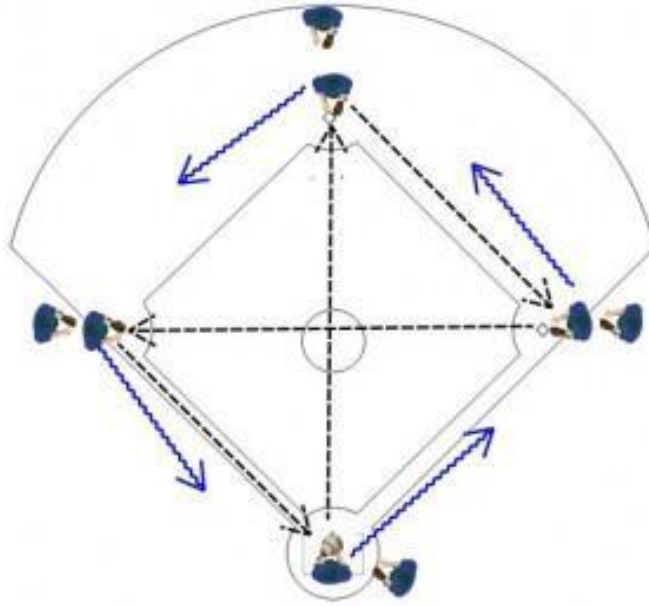
3. Cool-Down (10 minutes)
 - a. Lower body series on the floor: toe touch stretch; one leg over opposite knee turn body backwards; lift the top knee off the floor; grab bottom of foot and extend leg in front of body; extend internally towards opposite shoulder; switch hands and extend towards same-side shoulder; windmills; butterflies; split stretch; hurdler stretch; quad stretch lying backwards
(Do each cool-down stretch for ~15-20 seconds)
 - b. Have children run at least half way around the paved track or through the grass leading one of the coaches.
 - c. End with group chant
(Everyone claps i to a tight huddle and puts fists i to the center. Coach says “Athletes for Life on 3-1,2,3...” Everyone replies “Athletes for Life!”)

Week 8 Session 15
(Baseball)

1. Warm-Up (10 minutes)
 - a. Volunteers and kids get into a large circle so everyone can see each other.
 - b. Joint Series: arm circles of different sizes; crossing both; elbow circles; neck rotations; hip circles; hands down to toes; upright-left hand over the head to right side; upright-right hand over the head to left; knee rotations; ankle rotations; on right heel-toes up-lean body down towards foot
(do each warm-up series for ~15-20 seconds)

2. Link Tag or some sort of running game (15 minutes)
 - a. Have everybody get a partner and link arms. Each pair should spread out. One pair will unlink, one person will be “it” and the other will be running away. The person running away will run to another link and hook on, the person on the other end has to unlink and start running from the person who is “it.”

3. Stations (10-15 minutes per station)
 - a. Throwing Practice-Hula Hoop
 - i. Have one coach hold a hula hoop in the air. Start at a fairly close distance from the children. Children will try to throw a tennis ball through the hula hoop. Coach can adjust distance and height of hula hoop throughout. Check throwing technique and teach each group that comes through before letting them practice their throwing.
 - b. Throwing Practice-with group
 - i. Have 8 children at this station
 - ii. Set up four cones in a diamond shape out on the field as shown in image below. Each cone represents a base. This drill begins with a player at each base and at home plate. The ball begins at home plate. The player at home fires the ball to second base and then runs to first base. The player at second fires the ball to first and then runs to third base. The player at first throws the ball to third and then runs to second base. The player at third throws home and then runs to home.



- c. Batting Practice
 - i. Set up a cone and have children make one line behind the cone. Have one coach standing at a distance, facing the children. Coach should have a bag full of tennis balls, he/she will throw a tennis ball towards the child and the child will hit the ball with the bat. Give each child 5 tries to hit the ball. Have each child pick up the ball they hit and bring it back to the coach.
 - d. Nutrition
4. Diamond Race (groups of 5 or more) (15 minutes)
 - a. Create a small diamond-shaped field for each group of 5. Place cones (representing bases), ~15 feet apart. There will be a runner, a catcher, and one person at each of the 3 bases. The tennis ball starts at the catcher's hand.
 - i. The object is for the runner to run the bases quickly enough to beat the ball home, while fielder's throw it around the bases once.
 - ii. The runner says "go" and begins running the bases in order.
 - iii. On "go" the catcher throws the tennis ball to 1st, who then throws it to 2nd, who then throws it to 3rd, who throws it back to the catcher. The ball needs to travel around the bases before the runner runs the bases.
 - iv. Rotate after each round so that everyone is at a different position.
 5. Cool-Down (10 minutes)
 - a. Lower body series on the floor: toe touch stretch; one leg over opposite knee turn body backwards; lift the top knee off the floor; grab bottom of foot and extend leg in front of body; extend internally towards opposite shoulder; switch hands and

extend towards same-side shoulder; windmills; butterflies; split stretch; hurdler stretch; quad stretch lying backwards
(Do each cool-down stretch for ~15-20 seconds)

- b. Have children run at least half way around the paved track or through the grass led by one of the coaches.
- c. End with group chant
(Everyone claps into a tight huddle and puts fists into the center. Coach says “Athletes for Life on 3-1,2,3...” Everyone replies “Athletes for Life!”)

Week 8 Session 16
(Basketball Intro)

1. Warm-Up (10 minutes)-On the outdoor basketball court
 - a. Volunteers and kids get into a large circle so everyone can see each other.
 - b. Joint Series: arm circles of different sizes; crossing both; elbow circles; neck rotations; hip circles; hands down to toes; upright-left hand over the head to right side; upright-right hand over the head to left; knee rotations; ankle rotations; on right heel-toes up-lean body down towards foot
(do each warm-up series for ~15-20 seconds)
 - c. Have children run once around at least half the pavement track or on the grass.

2. Stations (10-15 minutes per station)
 - a. Dribbling
 - i. Dribble Practice- Have everyone practice dribbling with their own basketball. Review the basics of hand positioning and ball control. Walk around and check every child's dribbling, assist anyone that might need extra help.
 - ii. Dribble Relay- Once everyone seems comfortable dribbling, split everyone into 3 even groups and have them make one line. Each line should only have one basketball. The first relay will have the children dribbling to the half court and then back to the baseline using their right hand. They will hand the ball off to the next person in line, who will then repeat the process. The line that completes this task the fastest wins. The second relay will be done the same way except the players will dribble with their left hand.

 - b. Passing
 - i. Have children make two parallel lines facing each other. (Preferably across from someone of similar size/height). Start off with just a normal bounce pass. Then move on to a chest pass, go over the importance of strength control with this pass so that nobody gets hurt. Have one of the lines move back a little more for longer distance passing practice.
 - ii. Have each pair find an area around the court that isn't too close to any other pair. The child with the ball will dribble anywhere around the court and the other person will run behind him/her to catch a pass from the other person. Then the other person will dribble the ball anywhere around the court and pass the ball to their partner.
 - iii. Watch for any travelling

 - c. Zig Zag Dribbling
 - i. Set up 2 zigzag courses with cones. A child will dribble the basketball through the zig zag course, changing directions at each cone. The child who is dribbling down the course must call out the number the facilitator

is holding up with their fingers. This ensures the child is not looking down at the floor.

- ii. Using the 2 zigzag courses, have children do a competitive round of the dribbling. Tell the children that they can/should cheer on their group members.

d. Lower Body Exercises (rotations of 1 minute)

- i. Squats; jumping squats for those that need more of a challenge (30 nonstop)
- ii. Agility ladder drills
- iii. Lunges (30 alternating sides)
- iv. Side lunges

(Have them rotate through each series of lower body exercises until it's time to switch)

- e. Nutrition

3. Cone Pick Ups-on grass (15 minutes)

- a. Split the children into 5 groups of 4 or so. Line up 8 cones in a straight line in front of each group. One group member will run and pick up one cone at a time. The next person will run and pick up another cone that is on the field after the person running before him/her gives them a high five. Once all of the cones are picked up, they have to be placed back on the field one by one. This is a race, cheer the kids on and encourage them to run as fast as they can.

4. Cool-Down (10 minutes)

- a. Lower body series on the floor: toe touch stretch; one leg over opposite knee turn body backwards; lift the top knee off the floor; grab bottom of foot and extend leg in front of body; extend internally towards opposite shoulder; switch hands and extend towards same-side shoulder; windmills; butterflies; split stretch; hurdler stretch; quad stretch lying backwards
(Do each cool-down stretch for ~15-20 seconds)
- b. Have children run at least half way around the paved track or through the grass led by one of the coaches.
- c. End with group chant
(Everyone clapt into a tight huddle and puts fists into the center. Coach says "Athletes for Life on 3-1,2,3..." Everyone replies "Athletes for Life!")

Week 9 Session 17
(Basketball-Indoors)

1. Warm-Up (10 minutes)
 - a. Volunteers and kids get into a large circle so everyone can see each other.
 - b. Joint Series: arm circles of different sizes; crossing both; elbow circles; neck rotations; hip circles; hands down to toes; upright-left hand over the head to right side; upright-right hand over the head to left; knee rotations; ankle rotations; on right heel-toes up-lean body down towards foot
(do each warm-up series for ~15-20 seconds)

2. Dribble Practice (10 minutes)
 - a. Have each child get a basketball and make a big circle. Let them dribble on their own staying in their general area for a little bit. Then have them dribble up and down the court as fast as they can while dribbling the basketball properly. Do it a couple of times and then have everyone try dribbling down the court with their other hand controlling the basketball. If possible have everyone dribble down the court in one big line to make it more competitive.

3. Stations (10-15 minutes per station)
 - a. Shooting Technique
 - i. Have children lined up in a large circle. One coach should explain the proper shooting technique while demonstrating hand/body positioning. Have each child practice the proper technique by shooting the ball above their heads. This is to get the children comfortable with the right technique before moving onto actual shooting. All coaches should walk around and help kids with this.

 - b. Shooting Practice
 - i. Depending on the number of hoops available for use-split the group into similar ages/sizes. If possible one coach should be at each hoop. Have children practice shooting the basketball into the hoop. Focus on proper technique with every child.
 - ii. If group is doing well with technique and basic practice, the coach can lead them through the game around the world.

 - c. Knock Out
 - i. Split the children into two groups based on sizes/ages. Each group will have two basketballs. Have the children make one line behind the free throw line. Player #1 and Player #2 each have a ball and Player #1 shoots, after which Player #2 can immediately shoot. If Player #1 makes the shot, he/she passes to Player #3 and goes to the end of the line, while Player #3 then shoots.

If Player #1 had missed the shot, he/she must immediately follow the shot,

get the rebound and try to score (from anywhere on the court) before Player #2 scores. If Player #2 scores before Player #1, Player #1 is "knocked-out" of the game. If Player #3 scores before Player #2, then #2 is eliminated. The last player left is the winner. Players may not touch the other player's ball.

ii. Have the kids that are "knocked-out" doing another basketball related activity while the game continues.

d. Nutrition

4. Basketball Handling Game (15 minutes)

a. Have all children line up behind the baseline. Place one less ball than the number of players on the midcourt line. At the cue, all kids will attempt to get a ball. The one player who does not get a ball is "it". "It" has 30 seconds to get a ball away from any of the other children with a ball. "It" can get the ball away by either touching a ball, stealing the ball, forcing the dribbler to lose control of his/her dribble, or forcing a dribbler out of bounds. When the 30 seconds are up, the player without a ball is eliminated. The next game begins with one less child and one less ball. Work your way down to two players and one ball. Eliminated players should practice dribbling off to the side until a new round is started.

5. Cool-Down (10 minutes)

a. Lower body series on the floor: toe touch stretch; one leg over opposite knee turn body backwards; lift the top knee off the floor; grab bottom of foot and extend leg in front of body; extend internally towards opposite shoulder; switch hands and extend towards same-side shoulder; windmills; butterflies; split stretch; hurdler stretch; quad stretch lying backwards

(Do each cool-down stretch for ~15-20 seconds)

b. Have children run around the basketball court 2 times.

c. End with group chant

(Everyone claps into a tight huddle and puts fists into the center. Coach says "Athletes for Life on 3-1,2,3..." Everyone replies "Athletes for Life!")

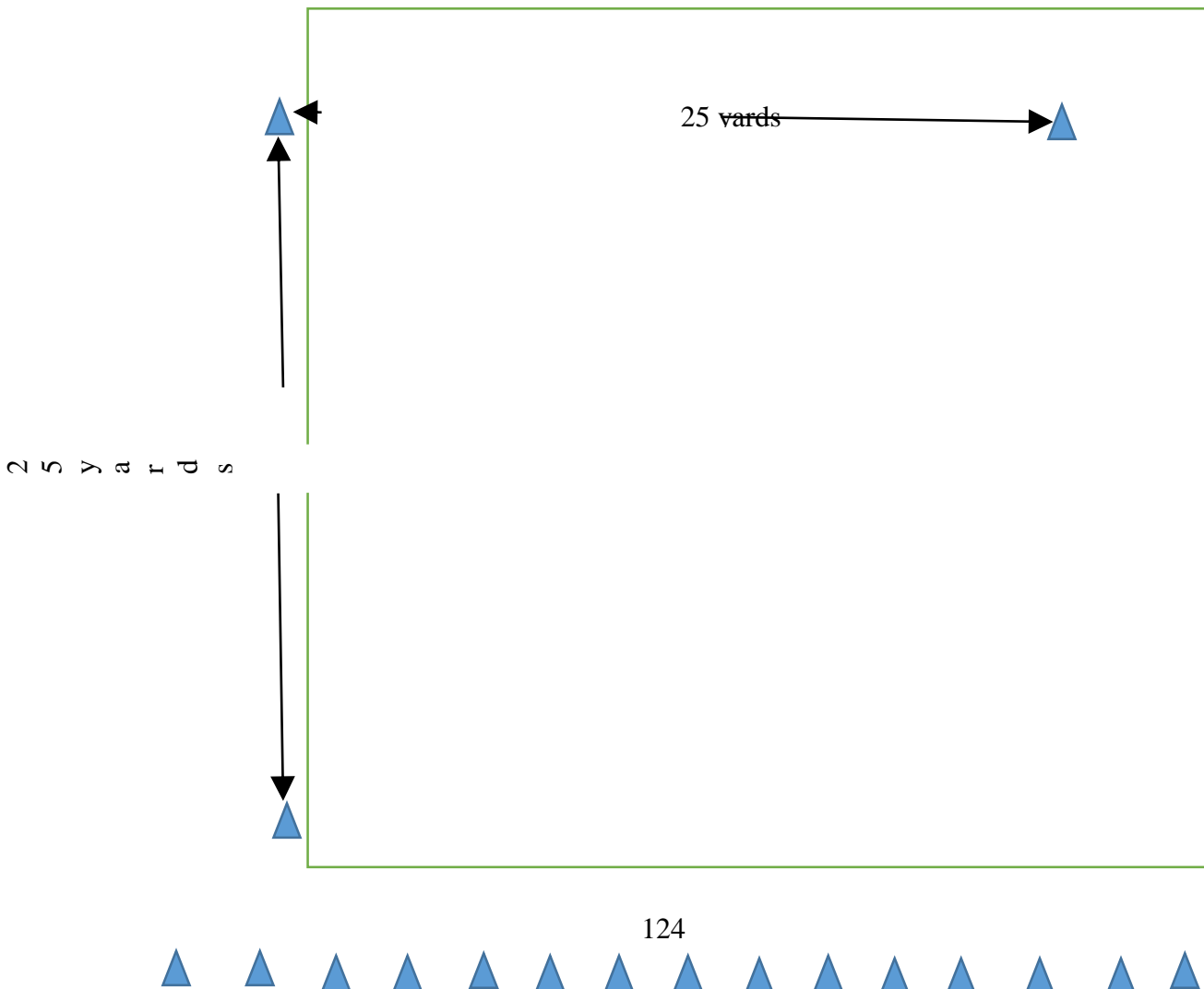
Week 9 Session 18
(Combined Adult and Child PA)

Warm-up (15 min):

- 0.5 mile walk/jog together as group (walk the first 0.25 mile and jog the final 0.25 mile)
- Dynamic exercises
 - Butt kickers
 - Walking knee hugs
 - Straight-leg kicks
 - Walking lunges with core rotation
 - Lateral shuffles
 - Carioca

Main Workout (45 min):

Field set-up: one row of 15 cones is set-up with each cone roughly 5 yards apart; a 25 yard x 25 yard square is set up about 10 yards in front of the row of 15 cones.



**Each cone on the bottom of the diagram represents a station, one family is assigned to each cone*

Competition Rules:

- 30 minute competition
- Adults are paired with their child to form their team and are assigned to a cone (this cone will be their designated station where they will perform all of their exercises)
- The participants all perform the following exercises:
 - First 15 minutes: 10 push-ups, 10 body-weight squats, 10 supine leg raises
 - Second 15 minutes: 10 jumping jacks, 10 resistance band rows (band wrapped around light pole or tree), 10 Russian twists
- After both the adult and the child complete each of the three exercises, they each run together for one lap around the 25 yard x 25 yard square
- After completing each lap, the team will mark a single tally on their team's respective paper (markers and paper will be provided at each cone for the tallies to be marked)
- After 30 minutes is up, the team with the most tallies (laps completed) is the winner
- The winner will receive a small prize (to be determined)

Cool-down (15 min):

- 0.5 mile walk/jog together as group (jog the first 0.25 mile and walk the final 0.25 mile)
- Static stretches
 - Chest and shoulder stretch (hands clasped behind back)
 - Overhead tricep stretch
 - Posterior shoulder stretch (arm crossed over front of chest)
 - Kneeling hip flexor stretch
 - Seated butterfly stretch
 - Seated hamstring/low back stretch

Week 10 Session 19
(Track)

1. Warm-Up (10 minutes)
 - a. Volunteers and kids get into a large circle so everyone can see each other.
 - b. Jog/run around the field once.
 - c. Joint Series: arm circles of different sizes; crossing both; elbow circles; neck rotations; hip circles; hands down to toes; upright-left hand over the head to right side; upright-right hand over the head to left; knee rotations; ankle rotations; on right heel-toes up-lean body down towards foot
(do each warm-up series for ~15-20 seconds)

2. Link Tag (10 minutes)

Everyone gets a partner and links arms. Each pair should spread out. One pair will unlink, one person will be “it” and the other will be running away. The person running away will run to another link and hook on, the person on the other end has to unlink and start running from the person who is “it.”

3. Stations (10-15 minutes per station)
 - a. Long Jump Knock Out
 - i. Set up a cone so that every child starts in the same position. The children will line up to take turns executing a standing long jump. The first child in the group to jump will stand to the side of the spot they have landed and will stay there until someone else has a longer jump. Then that child will stand next to the spot where they landed. Continue with the game until the last person in the group goes. The child with the longest jump in the group is the winner.
 - ii. Have children practice the long jump itself before doing the competition. Technique: both feet are parallel to the line and then leap forward. No steps backward or preparatory hops are allowed. To harness power of the legs, squat deeply onto heels while bringing arms back. While swinging arms back, weight shifts to heels, then rock forward and straighten legs while arms swing forward. Throw arms out in front, but stop hands just past shoulder height.

 - b. Small Hurdles

Set up all of the small orange hurdles in two rows about 3 feet apart. Have the children run through different hurdle drills, staying in one line.

 1. Jogging over the hurdles
 2. Hopping over the hurdles
 3. Laterals over the hurdles
 4. Jogging through the hurdles
 5. Side steps laterally
 6. High knees over the hurdles

7. Jump squats over the hurdles
 - c. Sprinting
 - i. Set up multiple start/end points for sprints of different lengths on the field. Pair children up with someone of similar sizes/ages, this will be their competitor. Teach children the proper sprinting beginning position: body low near the ground, hands on either side of lead foot, back heel off the ground.
 - ii. Have coach countdown 3-2-1-GO and have pairs race each other at the different sprinting lengths. Switch children into different groups for variation if there is enough time.
 - d. Nutrition
4. Dodgeball (15 minutes)
Or any active game the children would like to play.
 5. Cool-Down (10 minutes)
 - a. Have children run around the sidewalk once.
 - b. Lower body series on the floor: toe touch stretch; one leg over opposite knee turn body backwards; lift the top knee off the floor; grab bottom of foot and extend leg in front of body; extend internally towards opposite shoulder; switch hands and extend towards same-side shoulder; windmills; butterflies; split stretch; hurdler stretch; quad stretch lying backwards
(Do each cool-down stretch for ~15-20 seconds)
 - c. End with group chant
(Everyone claps in to a tight huddle and puts fists into the center. Coach says “Athletes for Life on 3-1,2,3...” Everyone replies “Athletes for Life!”)

APPENDIX E
AFL DEMOGRAPHIC SURVEY QUESTIONS

Athletes for Life Demographic Survey Questions

The remaining questions are about “your child.” Please remember to think about your child who will be enrolled in this program with you when answering these questions.

1. Are you the...?

- Biological parent
- Legal guardian/caregiver

2. Is your child...?

- Female
- Male

3. What is your child's date of birth? (MM/DD/YYYY)

____/____/20__

4. In what country was your child born?

- United States
- Mexico
- Another country, specify: _____
- Don't know
- Refuse

5. Which of the following categories would you use to describe your child? (Choose all that apply)

- White
- Black or African-American
- Asian or Asian-American
- Native Hawaiian or Other Pacific Islander
- American Indian or Alaskan Native
- Other, specify: _____
- Don't know
- Refuse

6. Which of the following categories would you use to describe your child? (Choose all that apply)

- Hispanic or Latino
- Other
- Don't know
- Refuse

APPENDIX F
ACCELEROMETER WEAR TIME LOGS

Athletes for life – Formato para el tiempo de no uso del Monitor

Fecha	Día	On		Off		On		Off		On		Off	
		On	Off	On	Off	On	Off	On	Off	On	Off		
Buscando el premio													

Fecha	Día	On		Off		On		Off		On		Off	
		On	Off	On	Off	On	Off	On	Off	On	Off		
Buscando el premio													

Si no puede usar el monitor durante dos semanas consecutivas, utilice la copia del extra de este mismo formato.

Padre

UNICAMENTE PARA USO DE LA OFICINA
 Participant ID 31400
 Serial Number 24
 Valid days _____

APPENDIX G
AFL TIMELINE OF MATERIAL
DISTRIBUTION/COLLECTION

Timeline

Week 1

September 22nd

- First day of Athletes for Life program at South Mountain Community Center.

September 25th

- Meet child participants and review overall purpose of increasing activity levels.

Week 2

October 2nd

- Meet parent participant; introductions and overview of role in the project.
- Explain the physical activity tracking sheet and expectations to parents participating in the program.
- Distribute all seven weekly child physical activity trackers to parents and store in program binder.
- Hand out packet with local park information.

Week 3

October 9th

- Out of town.

Week 4

October 16th

- Child physical activity trackers for week three were not collected.

Week 5

October 23rd

- Collect the week four child physical activity trackers.
- Reward for turned in tracker of a sticker before program begins that evening.

Week 6

October 30th

- Collect the week five child physical activity trackers.
- Reward for turned in tracker of a sticker before program begins that evening.
- Distribute the activity idea scavenger hunt sheet.

Week 7

November 6th

- Collect the week six child physical activity trackers.
- Reward for turned in tracker of a sticker before program begins that evening.

Week 8

November 13th

- Collect the week seven child physical activity trackers.
- Reward for turned in tracker of a sticker before program begins that evening.

Week 9

November 20th

- Collect the week eight child physical activity trackers.
- Reward for turned in tracker of a sticker before program begins that evening.

Week 10

November 27th

- No Athletes for Life program due to Thanksgiving holiday.

Week 11

December 4th

- Collect the week nine child physical activity trackers.
- Reward for turned in tracker of a sticker before program begins that evening.

Week 12

December 11th

- Collect the week ten child physical activity trackers.
- Reward for turned in tracker of a sticker before program begins that evening.
- Last day of Athletes for Life program.

Saturday December 13th

- Athletes for Life Olympic Event at South Mountain Community Center.

APPENDIX H
PHYSICAL ACTIVITY TRACKER SHEETS



CHILD AFTERSCHOOL PHYSICAL ACTIVITY TRACKER



This is your child's afterschool physical activity tracker for the week! Please record all moderate-vigorous physical activities based on the descriptions in the handout. Also include the duration of the activities. Remember that to be the most healthy, your child should get at least 60 minutes of physical activity per day.

Parent Name: _____

Child Name: _____

Wednesday (10-8-14)

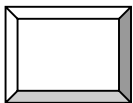
PHYSICAL ACTIVITY	DURATION (minutes)	LOCATION

Saturday (10-4-14)

PHYSICAL ACTIVITY	DURATION (minutes)	LOCATION

Sunday (10-5-14)

PHYSICAL ACTIVITY	DURATION (minutes)	LOCATION



Please check the checkbox if you were physically active with your child this week. ** Submit this activity tracker next Thursday to receive points!*

Physical Activity Intensities & Examples

Light (Easy)- Physical activity that is pretty easy to do. Your child should be able to sing while doing light-intensity physical activity.

Moderate (Medium)- Physical activity that requires medium effort to do. Your child should be able to talk but not sing while doing moderate-intensity physical activity.

Vigorous (Hard)- Physical activity that is hard/very hard to do. Your child should not be able to say more than a few words without pausing for a breath.

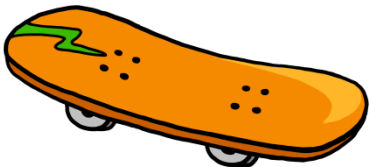
Light (Easy)

- Doing chores: washing dishes, dusting, folding laundry
- Casual walking
- Cleaning room
- Playing catch
- Stretching
- Shopping
- Fishing



Moderate (Medium)

- Doing chores: mopping, sweeping, vacuuming
- Walking briskly; walking uphill
- Jumping on a trampoline
- Leisure swimming
- Skateboarding
- Riding Bicycle
- Hiking
- Yoga



Vigorous (Hard)

- Playing sports like basketball, soccer, baseball; football; tennis
- Physical education at school
- Jumping rope; jumping jacks
- Riding bicycle very fast
- Fast dancing
- Martial arts
- Gymnastics




APPENDIX I

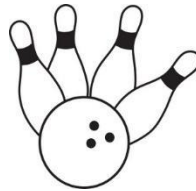
PHYSICAL ACTIVITY SCAVENGER HUNT SHEET



Physical Activity Scavenger Hunt

Do one of the activities below each week and receive a prize at the end of the Athletes for Life program! Please mark the activities you do with an "X" or a check mark. Try to do as many of these as you can 

- Go hiking
- Go bowling
- Play at a park with family and/or friends
- Ride a bicycle around your neighborhood
- Jog/walk outside with someone in your family
- Exercise during commercials while you watch television
- Take the stairs instead of the escalator or elevator
- Race a friend or relative
- Stretch in the morning before school and/or at night before bed
- Jog at a school track and/or do bleachers
the track
- Dance
- Help an adult mop, sweep, and/or vacuum





Búsqueda de Tesoro de Actividad Física

Haz una de las siguientes actividades cada semana para recibir un premio al final del programa Atletas de la Vida! Por favor, marca las actividades que hagas con una "X" o una marca de verificación. Trate de hacer la mayoría de las actividades 🖨

- Ve "hiking"
- Juega el boliche
- Juega en un parque con la familia y/o amigos
- Monta en bicicleta por el vecindario
- Corre/camina afuera con alguien de la familia
- Haz ejercicio durante los comerciales mientras ves la televisión
- Usa las escaleras en vez del ascensor o la escalera mecánica
- Juega a la carrera con un amigo o familiar
- Haz estiramientos en la mañana antes de la escuela y/o por la noche antes de acostarte
- Corre en una pista de la escuela
- Baila
- Ayudale a un adulto barrer, trapear, y/o aspirar



APPENDIX J

LIST OF LOCAL PARKS IN PHOENIX



City of Phoenix Parks

(within 15 miles from South Mountain Community Center: 212 E. Alta Vista)

Aya Mini Park (2.9 miles)

1925 E. Carver Drive

20th Street & Broadway Road

Lighted basketball, playground, ramada. Open from 5:30 a.m.-10 p.m.

Barrios Unidos Park (4.4 miles)

1501 E. Mohave

16th Street & Buckeye Road

Amphitheater, lighted basketball, grills, picnic area, playground, recreation building, restrooms, soccer, lighted softball, spray pad, lighted sand volleyball. Open from 5:30 a.m. - 10 p.m.

Cancer Survivors Park (5.9 miles)

1428 N. First St.

1st Street South of McDowell

Open from 6 a.m. - 10:30 p.m.

Central Park (3.7 miles)

140 E. Tonto St.

First Street and Tonto Street

Playground, recreation/teen center, restrooms, lighted basketball court, open turf, lighted multipurpose fields, lighted softball field, volleyball court. Open from 5:30 a.m.-10 p.m.

Cesar Chavez Park (4.6 miles)

7858 S. 35th Ave.

35th Avenue and Baseline Road

Lighted basketball, boat ramp, fishing lake, picnic area, playground, racquetball, ramadas, restrooms, lighted softball, tennis, lighted baseball field, lighted multipurpose field, soccer fields, Chavez Skate Park open dawn to dusk. Open from 5:30 a.m. - 11 p.m.

Cielito Park (11.8 miles)

35th Avenue & Campbell Avenue

Circle K Park (2.2 miles)

1346 E. South Mountain Rd.

12th Street and South Mountain Avenue

Ballfield, multipurpose field, soccer field, volleyball, lighted tennis court, lighted basketball, lighted handball/racquetball court, exercise course, playground, ramadas/picnic area, and restrooms. Open from 5:30 a.m.-10 p.m.

Civic Space Park (4.9 miles)

424 N. Central Ave.

A large public art feature, shade structures, extensive grassy areas, benches, renovated historic A.E. England building offering storefront retail and food options, space for meetings, presentations, small banquets, art events, classes, offices and restrooms. Water play feature/splash pad area open approx. May 1-October 1. Open from 5:30 a.m. - 11 p.m.

Coffelt-Lamoreaux Park (4.8 miles)

1510 S. 19th Drive

19th Ave & Pima

Recreation Center, lighted basketball court, picnic area, lighted softball field, playground, and restroom. Open from 5:30 a.m.-10 p.m.

*Winter Hours begin August 18: Monday through Friday 4-8 p.m.; Saturday 10 a.m.-4 p.m. Closed Sunday.

Coleman, Vernell Youth Center (4.2 miles)

830 W. Tonto

Amenities in the teen center include a computer center, game room, performance/meeting room, and small kitchen. Open from 5:30 a.m.-10 p.m.

*Winter Hours begin August 18: Monday through Friday 4-8 p.m.; 10 a.m.-4 p.m. Saturday. Closed Sunday

Colter Park (12.9 mils)

902 W. Colter St.

7th Avenue and Colter Street

8-acre Park includes soccer field, benches, ramada, and playground with shade structure. Open from 5:30 a.m.-10 p.m.

Coronado Park (6.3 miles)

1717 N. 12th St.

12th Street and Coronado - just north of McDowell

2 lighted tennis courts, shaded playground, 2 grills, restrooms, swimming pool, 2 lighted basketball courts, lighted softball field, baseball field, picnic area, benches, drinking fountain, parking, and security lighting. Open from 5:30 a.m.- 10 p.m.

Country Club Oval (12.9 miles)

826 E. Windsor Ave.

9th Street and Windsor Ave.

Open space, play area, grills, tables. Open from 5:30 a.m.-10 p.m.

Desert Storm Park (11 miles)

1700 E. Colter St.

North of Camelback Road

Amphitheater, drinking fountain, ramada, picnic area, grill. Open from: 5:30 a.m. - 10 p.m.

Dreamy Draw Recreation Area

2421 E. Northern Ave.

Northern Avenue & 51 Freeway

Fire pits, [hiking/riding trails](#), ramada and picnic area, restrooms, lighted volleyball, dance slab.

The ramada is available only on a first-come, first-served basis, dancing slab. Parking area open from 5 a.m.-7 p.m. (trails remain open until 11 a.m.)

Eastlake Park (6.6 miles)

1540 E. Jefferson St.

16th Street & Jefferson St.

Amphitheater, lighted baseball, lighted basketball courts, gymnasium, picnic area, 5 grills, pool, recreation building, restrooms, soccer, two lighted tennis courts, lighted volleyball, playground, lighted baseball field, recreation building, amphitheater, multi-purpose field, fitness center, dance studio, drinking fountains, restrooms.

The park is open from 5:30 a.m. - 10:30 p.m.

Edison Park (6.5 miles)

901 North 19th St.

19th Street, north of Van Buren

Lighted basketball, playground, ramada, picnic area, lighted softball field, multipurpose field, volleyball, spray pad. Splash pad area open approx. May 1-October 1.

Open from 5:30 a.m. - 10 p.m.

El Prado Park (2.2 miles)

6428 S. 19th Ave.

19th Avenue and Southern Avenue

Lighted basketball, picnic area, playground, pool, restrooms, lighted volleyball, lighted softball.

Open from 5:30 a.m. - 11 p.m.

El Reposo Park (at Mountain Park Community Center)

7th Street and Alta Vista Rd

Adult center, lighted basketball, playground, pool, ramada/picnic area, restrooms, lighted tennis, lighted volleyball, grill, recreation building. Open from 5:30 a.m. - 11 p.m.

Encanto Park (7.3 miles)

2605 North 15th Ave.

15th Avenue and Encanto Boulevard

Lighted basketball, boating, exercise course, golf course, lighted handball/racquetball, picnic area, playground, pool, lighted softball, recreation building, restrooms, lighted volleyball, lighted tennis courts, grills, fishing, lagoon. The Park also is home to Enchanted Island Amusement Park, with a host of rides for children ages 2 to 10 years old.

Park Hours: from 5:30 a.m.-11 p.m. Sports Complex Regular Hours:7 a.m.-10 p.m. 7 days/week

Eototo Mini Park (3.5 miles)

2223 E. Pueblo St.

23rd Street and Pueblo Avenue

Playground. Open from 5:30 a.m. - 10 p.m.

Esteban Park (4.3 miles)

3345 E. Roeser Rd

32nd Street and Broadway Rd

Lighted baseball, lighted basketball, playground, ramada and picnic area, restrooms, soccer, lighted softball, lighted tennis courts, lighted sand volleyball, grill, rugby field. Open from 5:30 a.m.-11 p.m.

Falcon Park (9.5 miles)

3420 W. Roosevelt St.

35th Avenue and Roosevelt Street

Lighted basketball, playground, pool, ramada and picnic area, restrooms, lighted softball, lighted volleyball. Open from 5:30 a.m.-11 p.m.

Francisco Highland Park (4 miles)

2702 E. South Mountain Ave.

28th Street and South Mountain Avenue-At the base of South Mountain

Lighted basketball court, playground with shade structure, spray pad, restroom building, picnic ramada with grill, multipurpose field. Enjoy special mountain views overlooking downtown Phx. Open from 5:30 a.m.-10 p.m.

Granada Park (12.2 miles)

6505 N. 20th St.

20th Street and Lincoln Dr.

Art sculpture, lagoon, picnic area, restrooms, lighted tennis, playground, grill, multipurpose field. Open from 5:30 a.m.-10 p.m.

Grant Park (4 miles)

701 S. Third Ave.

3rd Avenue and Grant

Basketball, gymnasium, picnic area, lighted play field, playground, pool, recreation building, grill, multipurpose field.

Open from 5:30 a.m.-10 p.m.

**Winter hours: Monday - Friday 4-8 p.m. Closed Saturday & Sunday.*

Green Valley Park (4.2 miles)

2243 S. 14th St.

14th Street and Watkins Road

Lighted basketball, playground, ramada and picnic area, recreation building, restrooms, lighted soccer, lighted softball, lighted volleyball, grill. Open from 5:30 a.m.-10 p.m.

Harmon Park (3.7 miles)

1425 S. 5th Ave.

5th Avenue and Buckeye Road

Lighted baseball, lighted basketball, gymnasium, picnic area, playground, pool, racquet ball, recreation building, shuffleboard, lighted soccer, lighted softball, lighted tennis, lighted volleyball, grill, ramada, restrooms, playground with shade structure, spray pad.

Open from 5:30 a.m.-11 p.m.

**Winter hours: Monday - Friday 4-8 p.m. Saturday: 8 a.m. - 12:30 p.m. Closed Sunday.*

Hayden Park (1.5 miles)

322 W. Tamarisk Ave.

7th Avenue and Broadway

Lighted basketball, playground, ramadas and picnic area, recreation building, restrooms, soccer, lighted softball, lighted sand volleyball, grill. Open from 5:30 a.m.-10 p.m.

G.R.Herberger Park (14.2 miles)

58th Street and Indian School Road

Play field, tennis, lighted sand volleyball, waterfall feature. Open from 5:30 a.m.-10 p.m.

Hermoso Park (11.7 miles)

2030 E. Southern Ave.

20th Street and Southern Avenue

Lighted basketball, playground, pool, ramadas and picnic area, recreation building, restrooms, lighted soccer, lighted softball, lighted tennis, lighted volleyball, lighted skate plaza, grill.

Open from 5:30 a.m.-11 p.m.

Hilaria Rodriguez Park (7.1 miles)

2801 E. Adams

Phoenix, Arizona 85034

This new park features a shaded playground, LED security lighting, picnic tables, Ramada, grill, benches, large shade trees, two turf areas and sidewalks. The 2006 Bond Program provides funding for the acquisition of the land and development of this project.

Ho-E Min Park (1.9 miles)

128 W. Ilini St.

Third Avenue and Illini Street

Lighted basketball, playground. Open from 5:30 a.m.-10 p.m.

Katchina Park (13 miles)

4304 E. Campbell Avenue

42nd Street and Campbell Avenue

Playground, open play area, ramada and picnic area. Open from 5:30 a.m.-10 p.m.

Kana Mini Park (5.6 miles)

1702 E. Adams St.

Adams and 17th streets

Located in the Sidney P. Osborn housing project.

Benches.

Open from 5:30 a.m.-10 p.m.

Kid Street Park (11 miles)

4535 N. 23rd Avenue

23rd Avenue just south of Camelback Road

Lighted sand volleyball, lighted basketball, recreation building, playground, ramada, multipurpose field, picnic area, racquetball. Open from 6:30 a.m.-8 p.m.

Kierland Park (11.9 miles)

66th Street and Kathleen

Playground, ramada, grill, picnic, playground with shade structure. Open 5:30 a.m.-10 p.m.

Kuban Park (7.5 miles)

3275 W. Sherman Street

Parking lot, playground, lighted basketball court, lighted sand volleyball court, ramada, picnic tables and grill, open turf and plaza area. Open from 5:30 a.m. - 11:00 p.m.

La Pradera Park (15 miles)

6830 N. 39th Avenue

39th and Glendale Avenue

Lighted basketball, community center, picnic area, playground, restrooms, lighted soccer, lighted softball, lighted tennis, lighted volleyball. Open from 5:30 a.m.-11 p.m.

Ladmo Park (11.3 miles)

3101 N. 41st Drive

41st Avenue and Earl Drive

Lighted basketball, picnic area, playground. Open from 5:30 a.m.-11 p.m.

Laveen Park Village (4.4 miles)

3146 W. Vineyard

32nd Avenue and Vineyard

Lighted basketball, grill, ramada, restrooms, spray pad, lighted sand volleyball.

Open from 5:30 a.m.-10 p.m.

Lenang Mini Park

2601 E. Southgate Ave.

24th Street and Broadway Road

Lighted basketball. Open from 5:30 a.m.-10 p.m.

Lewis Park (4.5 miles)

1238 S. 13th Place

13th Street and Buckeye Road

Lighted basketball, open play area, ramada and picnic area, playground.

Open from 5:30 a.m.-10 p.m.

Lindo Park

2230 W. Roeser Road

19th Avenue and Roeser Road

Lighted basketball, playground, ramada and picnic area, restrooms, lighted softball, lighted volleyball.

Open from 5:30 a.m.-10 p.m.

Little Canyon Park (12.5 miles)

3201 W. Missouri Avenue

32nd and Missouri Avenues

Lighted basketball, picnic area, playground, restrooms, soccer, lighted sand volleyball, grill, ramada. Open from 5:30 a.m.-10 p.m.

Longview Park (9.8 miles)

4040 N. 14th Street

14th Street and Indian School Road.

Open from 5:30 a.m.-10 p.m.

Los Olivos Park

2802 E. Devonshire Avenue

28th Street and Devonshire Avenue. Open from 6 a.m.-10 p.m.

M.O. Best Mini Park (5.5 miles)

2nd and Roosevelt Streets

Open from 5:30 a.m. -10 p.m.

Ma-Ha Tuak Park (2.9 miles)

9832 S. 7th Ave.

Seventh Avenue and Dobbins Road

Lighted basketball, ramada and picnic area, playground, lighted volleyball.

Open from 5:30 a.m.-10 p.m.

Madison Park (10 miles)

1440 E. Glenrosa Ave.

16th Street and Glenrosa Avenue

Lighted baseball, lighted basketball, playground, pool, ramada and picnic area, restrooms, lighted softball, lighted tennis, lighted volleyball, grill.

Open from 5:30 a.m.-11 p.m.

Manzanita Park (3.7 miles)

5500 S. 31st Ave.

Located at 31st and Roeser Road.

38.9 acre, Amenities include two lighted full size soccer fields, one lighted sand volleyball court, one lighted basketball court, playground areas for 2-5 and 5-12 year olds, benches, picnic area with ramadas and grills, drinking fountains, restrooms, security lighting, and parking. ,City Council District 7. Open from 5:30 a.m. - 11.p.m. Under construction.

Mariposa Park (14.5 miles)

3150 W. Morten Ave.

31st Avenue and Morton Avenue

Lighted basketball, multi-purpose field, playground, ramadas and picnic area, lighted volleyball,grill, restrooms, lighted tennis. Open from 5:30 a.m.-10 p.m.

Marivue Park (13.5 miles)

5625 W. Osborn Road

55th Avenue and Osborn Road

Lighted basketball, grills, lighted playground with shade structure, pool, ramada and picnic area, restrooms, youth soccer, lighted softball, lighted volleyball. Open from 5:30 a.m.-11 p.m.

Maryvale Park (13.8 miles)

4420 N. 51st Ave.

51st and Campbell Avenues

Art sculpture, lighted basketball, exercise course, grills, playground with shade structure, pool, ramada and picnic area, recreation building restrooms, lighted softball, community center,lighted volleyball.

Open from 5:30 a.m.-11 p.m.

Maryvale Tot Lot (15 miles)

3206 N. 65th Ave.
65th Avenue and Cheery Lynn Road
Playground, drinking fountain.
Open from 5:30 a.m.-10 p.m.

Matthew Henson Park (4.3 miles)

803 W. Tonto
7th Avenue and Buckeye Road
Basketball, playground and playground structure, ramada.

Momo Mini Park (1 miles)

5447 S. 5th St.
Fifth Street and Sunland Ave.
Lighted basketball.
Open from 5:30 a.m.-10 p.m.

Mong Mini Park (2.6 miles)

1432 E Wood St.
Playground, lighted basketball.
Open from 5:30 a.m.-10 p.m.

Monterey Park (6.3 miles)

350 E. Oak St.
3rd Street and Oak Street
Lighted basketball, picnic areas, restrooms lighted soccer, lighted softball, lighted volleyball, grill, playground.
Open from 5:30 a.m.-11 p.m.

Mountain Vista Park (11.2 miles)

13647 S. 50th Street
48th Street and Knox Road
Lighted basketball, picnic area, playground, restrooms, lighted softball, lighted volleyball, grill, ramada, lighted soccer, spray pad, (splash pad area open approx. April 1-October 1 - call for exact dates), lighted sand volleyball.
Open from 5:30 a.m.-11 p.m.

Murphy Bridle Path (13.1 miles)

6005 N. Central Ave.
This recreational trail is located along the east side of North Central Avenue, from Bethany Home Road to the Arizona Canal. It spans approximately 3.5 miles through a residential neighborhood. The trail is used for hiking, bicycling, horseback riding, and walking. There are no parking areas to access the trail.

Nuestro Park (4.1 miles)

1433 S. Ninth St.

7th Street and Buckeye Road

Lighted basketball, play field, playground, picnic area, restrooms, spray pad, ramada.

Open from 5:30 a.m.-10 p.m.

Nueve Park (1.9 miles)

4418 S. Ninth St.

9th Street and Broadway Road

Lighted basketball, playground, ramada and picnic area, restrooms, lighted soccer/softball, lighted tennis, lighted volleyball.

Open from 5:30 a.m.-10 p.m.

Old Cross Cut Canal Park (8.9 miles)

40-44th Street

Thomas to McDowell Road

Benches, drinking fountain, biking, walking paths.

Open from 5:30 a.m.-10 p.m.

Orme Park (12.2 miles)

3201 N. 47th Drive

47th Avenue and Osborn Road

Lighted basketball, picnic area, playground, ramada.

Open from 5:30 a.m.-10 p.m.

Palma Park (13.6 miles)

1135 E. Dunlap Ave.

12th Street and Dunlap Avenue

Lighted baseball, lighted basketball, playground, restrooms, lighted softball, ramada, grill, picnic area.

Open from 5:30 a.m.-10 p.m.

Papago Park (13.3 miles)

625 N. Galvin Parkway

Galvin Parkway and McDowell Road

Multi-purpose trails, archery, lagoon, lighted softball, volleyball, hiking trails, ramadas. Gated parking areas open from 5:30 a.m.-7 p.m. (trails remain open until 11 p.m.)

Patriots Square Park (4.4 miles)

Central & Washington St.

Reborn into a new urban public space, Patriots Square is located within CityScape's eclectic mix of specialty stores, boutiques, restaurants and entertainment venues. Features approximately 50,000 square feet of landscaping with seasonal shading, a cooling splash pad, water features, Patriots wall of honor, and an event plaza.

Open: 5 a.m.-11 p.m.

Peace Mini Park (1.8 miles)

21 South 13th Place
(13th Place and Roeser Road)
Open from 5:30 a.m.-10 p.m.

Pecos Park (13.4 miles)

17010 South 48th St.
48th Street and Pecos Road (must enter the Park from 48th Street, via Chandler Blvd. - No access off of Pecos Parkway)
A 66-acre regional park with lit soccer, football and multipurpose athletic fields, skate plaza, PETsMART Dog Park at Pecos Park- 1.5 acre off-leash activity area for dogs, large playground with water play area, swimming pool, basketball and tennis courts, ramadas, sand and concrete volleyball courts. A .9-mile paved path circles the playing fields. Water play/splash pad area open approx. May 1-October 1 (call for exact dates).
Open from 5:30 a.m.-11 p.m.

Perry Park (9.6 miles)

2700 N. 32nd St.
32nd Street and Thomas Road
Lighted baseball, lighted basketball, playground, pool, ramada and picnic area, restrooms, lighted softball, lighted tennis, lighted volleyball, grill.
Open from 5:30 a.m.-11 p.m.

Piestewa Peak (14 miles)

2701 E. Squaw Peak Drive
The Phoenix Mountains Park and Recreation Areas is the gateway to the mountains in north central Phoenix that include Piestewa Peak. The Parks and Recreation Entrance to Piestewa Peak is located at Lincoln Drive and 24th Street. Amenities include hiking/multi-use trails and ramada picnic areas, park ranger station, restrooms, and trailhead parking lots. All picnic ramadas are available only on a first-come, first-served basis. Gated parking areas open from 5 a.m. to 7 p.m. (trails remain open until 11 p.m.)

Pierce Park (11.2 miles)

2150 N. 46th St.
44th Street and Thomas Road
Lighted basketball, playground, pool, ramada and picnic area, restrooms, lighted softball, lighted tennis, lighted volleyball, grill.
Open from 5:30 a.m.-11: 00 p.m.

Playa Margarita Park (4.6 miles)

3615 West Roeser Road
36th Avenue and Roeser Road
Lighted basketball, playground, ramadas and picnic area, recreation building, lighted softball, lighted volleyball, grill, restrooms, lighted tennis.

Open from 5:30 a.m.-10 p.m.

*Winter Hours begin August 18: Monday through Friday 4-8 p.m., closed Saturday & Sunday.

Rio Salado Park (2.5 miles)

1150 E. Elwood St.

12th and Elwood Streets

Basketball, lighted handball/racquetball, ramadas and picnic area, restrooms, softball, tennis, sand volleyball.

Open from 5:30 a.m.-10 p.m.

Roesly Park (2.6 miles)

4205 South 15th Ave.

15th Avenue Romley Avenue

Playground, ramada and picnic area.

Open from 5:30 a.m.-10 p.m.

Roosevelt Mini Park (4.3 miles)

837 North 3rd Ave.

Third Avenue and Roosevelt Street)

Open from 8 a.m. to sunset

Santa Maria Park (10.2 miles)

3425 S. 71st Ave.

71st Avenue and Elwood

Parking, restroom, soccer field, playground, lighted basketball court, sidewalks, and security lighting.

Open from 5:30 a.m. - 10 p.m.

Sherman Parkway (5.5 miles)

2124 West Sherman St.

21st Avenue and Grant Street

Basketball, playground, grill.

Open from 5:30 a.m.-10 p.m.

Smith Park (8.1 miles)

4030 West Sherman Road

43rd Avenue and Buckeye Road

Lighted basketball, picnic area, playground and shade structure, recreation building, restrooms, lighted youth baseball, ramada, grill, horseshoes, racquetball.

Open from 5:30 a.m.-10 p.m.

Sohu Mini Park (4.5 miles)

Monroe Street between 17th and 18th Streets

Open from 5:30 a.m.-10 p.m.

Solano Park (12.7 miles)

5625 North 17th Ave.

17th and Montebello Avenues

Lighted basketball, play field, playground, ramada and picnic area, restrooms, lighted soccer, lighted tennis, grill.

Open from 5:30 a.m.-10 p.m.

Sonrisa Park (12.2 miles)

12812 North 52nd St.

52nd Street and Sweetwater Avenue

Picnic area, play field, playground, soccer.

Open from 5:30 a.m.-10 p.m.

South Mountain Park (1.5 miles)

10919 S. Central Ave.

South Mountain is the world's largest desert municipal Park. Features include a seven-mile paved road to lookouts at 2,300 ft. and 2,600 ft. in elevation. There are miles of trails for hiking, climbing, horseback riding, and mountain biking.

Gated areas open from 5 a.m.-7 p.m. (trails remain open until 11 p.m.)

Steele Indian School Park (7.9 miles)

300 East Indian School Road

3rd Street and Indian School Road

75-acre Park includes a 2.5 acre lake, an outdoor amphitheater with seating for 1,500 people, the 15-acre Entry Garden, the 30-acre Phoenix Green and the 15-acre Neighborhood Park that includes: playground, lighted basketball, fishing, grill, picnic area, ramadas, restroom, lighted sand volleyball and a dog park.

Open from 6 a.m.-10 p.m

Sueno Park (11.1 miles)

4401 West Encanto Blvd.

43rd Avenue and Encanto Blvd.

Lighted basketball, exercise course, picnic area, playground and shade structure, restrooms, lighted soccer, lighted youth softball, lighted sand volleyball, ramada, grill.

Open from 5:30 a.m.-11 p.m.

Sumida Park (13.9 miles)

1817 E. Gardenia

16th Street and Glendale Avenue

Basketball, multi-purpose field, playground, ramada and picnic area, sand volleyball, grill, fitness cCourse.

Open from 5:30 a.m.-10 p.m.

Sun Ray Park (12.4 miles)

4059 E. Ray Road

41st Street and Ray Road

Lighted softball field, lighted basketball, picnic area, playground with shade structure, restrooms, soccer, lighted tennis, lighted volleyball, grill.

Open from 5:30 a.m.-10 p.m.

Sunridge Park (12.8 miles)

6201 West Roosevelt St.

63rd Avenue and Garfield Street

Playground, lighted basketball, ramada, picnic area, grill.

Open from 5:30 a.m.-10 p.m.

Toho Mini Park (7.6 miles)

724 S. 37th Ave.

35th Avenue and Sherman Street

Open from 5:30 a.m.-10 p.m.

Townsend Park (5.8 miles)

520 E. Lynwood St.

Seventh Street and McDowell Road

Lighted basketball, picnic area, playground, restrooms, spray pad, grill.

Open from Sunrise – Sunset

Trailside Point Park (8.8 miles)

7215 W. Vineyard Road

72nd Ave. & Vineyard

Lighted basketball courts (two), grill, ramada, restrooms, spray pad, lighted sand volleyball, age appropriate Tot Lots.

Open from 5:30 a.m.-10 p.m.

University Park (5.3 miles)

1002 W. Van Buren St.

10th Avenue and Van Buren Street

Lighted basketball, picnic area, playground and shade structure, pool, ramada and picnic area, restrooms, lighted volleyball, *Upton Youth Baseball Field*, grills.

Verde Park (4.9 miles)

916 E. Van Buren St.

9th Street and Van Buren

Open from 7 a.m. to 10 p.m.

Virginia Park (8.7 miles)

15th Street and Virginia Ave.

Playground, grill, picnic areas.

Open from 5:30 a.m.-10 p.m.

Washington Park (13.8 miles)

6655 North 23rd Ave.

23rd Avenue and Maryland

Lighted basketball, exercise course, playground, pool, ramada and picnic area, restrooms, soccer, lighted softball, lighted sand volleyball, lighted PETS MART Dog Park.

Open from 5:30 a.m.-11 p.m.

West Plaza Park (14.9 miles)

6549 N. 43rd Ave.

43rd and Maryland Avenues

Multipurpose field, playground, ramada and picnic area.

Open from 5:30 a.m.-10 p.m.

Western Star Park (8.9 miles)

4425 E. Western Star Blvd.

44th Street and Western Star Boulevard

Lighted basketball, playground, ramadas and picnic area, restrooms, lighted tennis, lighted sand volleyball.

Open from 5:30 a.m.-10 p.m.

Willow Park (7.8 miles)

2815 W. Taylor St.

28th Avenue and Polk Street

Lighted basketball, grill, picnic area, playground, ramada.

Open from 5:30 a.m.-10 p.m.

Yapa Mini Park (3.6 miles)

2732 E. Mobile Lane

Open from 5:30 a.m.-10 p.m.

Yunya Mini Park (7.6 miles)

2831 W. Washington St.

28th Avenue and Washington Street

Basketball, playground.

Open from 5:30 a.m.-10 p.m.

Zuni Mini Park (14.2 miles)

Seventh Avenue and Claremont Street

Open from 5:30 a.m.-10 p.m.