

Examining PLAY to increase levels of physical activity among youth during leisure time

By

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Abstract

Physical activity has a number of benefits for people of all ages. For children and youth, regular physical activity improves health and well-being, including attention and academic performance. The Centers for Disease Control and Prevention recommends that youth between the ages of 6 to 17 years participate daily in at least 60 minutes of physical activity. One of the Healthy People 2020 objectives is to increase the proportion of youth meeting the federal physical activity guidelines. The present study examined the effects of providing opportunities for youth to engage in preferred types of physical activities on levels of participation in physical activity during leisure-time. Study participants were youth ages 6 to 13, who resided in a low-income housing complex and participated in an after-school program. The Assessment of Preferred Leisure Alternatives for Youth (A-PLAY), a web-based preference assessment tool, was used to identify activities that were highly preferred by the youth. A reversal design using momentary time sampling was used to examine whether access to highly preferred activities increased the percentage of youth engaged in moderate to vigorous physical activity. Results suggest an increase in participation in physical activities occurred from baseline to intervention phases. The results have implications for examining the efficacy of using online preference assessments to inform interventions that may be used to increase youth physical activity in community-based settings.

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Examining PLAY to increase levels of physical activity among youth during leisure time

Regular physical activity ensures good health and long-term fitness for youth. It is important for youth to engage in physical activity because it improves cardio health, muscular fitness (Pate, Trost, Levin, & Dowda, 2000) and enhances food absorption, which can help to reduce risk for obesity, cardiovascular disease, and diabetes. Regular physical activity can also reduce anxiety and improve cognition (Office of Disease Prevention and Health Promotion, 2017), which can lead to improved academic achievement, in the form of grades, concentration and attentiveness to tasks (Hillman & Biggan, 2017). The Centers for Disease Control and Prevention (CDC) recommend that children ages 6 to 17 should accumulate at least 60 minutes of physical activity daily, which may include a combination of moderate-intensity aerobic activities and activities to help strengthen the muscle and bone (Chapter 3 - 2008 Physical Activity Guidelines - health.gov, n.d.). The World Health Organization specifically recommends that children and youth should accumulate at least 60 minutes of moderate to vigorous intensity physical activity daily (World Health Organization, 2017). Although the benefits of engaging in physical activity are commonly known, more than 80% of the adolescent population in the world do not meet the physical activity recommendations (“WHO | Physical activity,” n.d.). In the U.S., only one-quarter of children and youth, 6 to 19 years meet physical activity guidelines. An objective in Healthy People 2020 is to increase the proportion of adolescents who meet current federal physical activity guidelines for aerobic physical activity to 31.6%. According to the Healthy People 2020 indicators, in 2015 only 27.1% of adolescents met current physical activity guidelines for aerobic physical activity (Office of Disease Prevention and Health Promotion, 2017).

Physical inactivity rates are higher among individuals who have physical disabilities, older adolescents, females, members of a racial and ethnic group, and live in lower socio-

economic conditions. According to Healthy People 2020, males (36%) are more likely to meet federal physical activity guidelines compared to females (17.7%). Among racial and ethnic groups, Asians, African-Americans and individuals identifying as Hispanic or Latinos are less likely to meet the physical activity guidelines compared to Whites. There is a need to address disparities in levels of physical activity and implement strategies that increase physical activity among all youth, especially for racial and ethnic minorities. For example, 70% of African-American neighborhoods and 81% of Hispanic neighborhoods lack access to recreational facilities compared to 34% of White neighborhoods (Moore, Roux, Evenson, McGinn, & Brines, 2008). Thus, there is a need to increase physical activity programming for youth who are racial and ethnic minorities and/or reside in areas of lower socioeconomic status.

Many reasons can be attributed to the lack of physical activity amongst youth. Sallis and Prochaska (2000) in their review of over 100 interventions to increase physical activity among children and adolescents, found that some of the variables positively correlated to children's physical activity levels include gender (being male), history of previous physical activity, community sports, and sensation seeking. Those variables that were negatively correlated included parental overweight status, sedentary behavior during out-of-school time, and lack of opportunities to exercise. Some other variables that had consistent positive correlations in their review include opportunities to exercise physical activity preferences and intention to be active (Sallis, 2000). The authors reported that community sports participation was related to adolescent physical activity, whereas participation in school sports was not. Community sports refers to opportunities to engage in physical activity, during out-of-school time and weekends; whereas, school sports refers to physical activity opportunities during school hours. These findings support CDC's recommendations to increase the number of community programs that encourages young people to participate and provides an opportunity for after-school and

weekend programs to help youth become more physically active. Additionally, an assessment of environmental contexts was conducted to identify environmental factors that produce the most and least levels of activity. Hustyi et al (2012) found that fixed playground equipment condition produced the most activity among preschoolers. Although the study participants were 4 years old, the findings could have implications for youth with respect to the availability and condition of playground equipment.

After-School Physical Activity Programs for Youth

In the United States, opportunities to engage in physical activity are promoted both during in-school and out-of-school time. In general, there is more known about how to increase physical activity in school-based settings than in non-school environments. During the school year, youth spend nearly 6 to 8 hours every day in school for at least 9 months out of the year. However, only a few schools offer the recommended levels of physical education opportunities, and for those that do, there are often challenges in the quality of equipment, frequency of physical education (PE) classes, and student participation in activities (School Health Policies and Practices Study 2014 - shpps-508-final_101315.pdf, n.d.). More recently, systematic efforts have been undertaken to better understand physical activity of youth in community settings. For example, the Healthy Communities Study (HCS) is an important 5-year study that includes over 120 communities and about 5,000 families. The HCS study collects information retrospectively from families, healthcare providers, schools, and community leaders to better understand the impact of local programs and policies on children's health (Healthy Communities Study, 2017). Research shows that after-school programs have the potential to contribute to at least one-third of a child's recommended daily physical activity (Troost, Rosenkranz, & Dzewaltowski, 2008). After-school programs provide learning opportunities that happen after regular school hours on school days. Additionally, after-school programs provide a safe environment for kids and serve

as an alternate setting to support physical activity. Out-of-school programs, on the other hand, cater to youth during periods school is not in session such as on the weekend and during school breaks. Out-of-school time programs offer safe learning opportunities and facilitate healthy behaviors such as physical activity during leisure-time (Beets, Huberty, Beighle, et al, 2012).

Approaches to Measuring Physical Activity of Youth in Community Settings

Although physical activity research has made much progress in determining the environmental influences on behavior in addition to individual constructs such as motivation and skill, there is limited information available about youth's physical activity behaviors and the contexts in which they occur. Small sample sizes and lack of instruments to record contextual information are some of the barriers to measuring physical activity (Corder, Ekelund, Steele, Wareham, & Brage, 2008). Currently, the most frequently used methods for assessing physical activity include self-reported instruments and movement sensing devices. Multi-sensor systems can combine readings from all sensors on the body to compute accurate representations of activities (Matthews, Hagströmer, & Pober, 2012). Self-report and heart-rate monitoring are indirect measurement methods and has advantages and limitations. Self-report instruments can be used to collect data from a large group of people and can be used with participants across wide age ranges. Some limitations include social desirability bias leading to over-reporting, memory and recall skill limitations of participants, and reactivity to the presence of the measurement instrument (Sallis & Saelens, 2000). One of the merits of measuring physical activity using devices is the ability to derive a linear relationship between energy expenditure and heart rate during activity. Secondly, physical activity devices have data storage capabilities that can record data over longer periods of time. Physical activity devices also help measure several variables such as frequency, intensity, duration, cost-effectiveness and relative ranking of participation in physical activity (Troost, 2001). The demerits of using electronic devices include

lack of predictive validity of laboratory-based calculations in field settings, insensitivity to some forms of activity, and measurement lags that may influence changes in activity patterns (Trost, 2001).

Systematic observation is a method for generating data on occurrence of behaviors of interest (McKenzie, 2002). Direct observation is an objective method of data collection and provides an opportunity to examine how physical and social environments influence physical activity. Direct observation has been incorporated for measuring children's physical activity participation and helps collect data on behavioral categories of interest and measure frequency, duration and latency of behaviors. Some systems also examine the context in which the activity occurs (e.g. home, school, community). Obtaining data through direct-observation involves attention to defining appropriate classes of physical activity behavior, identifying suitable sampling methods, and pacing the observations. Location, posture, social interactions and physical activity are examples of classes of behavior that may be assessed. Sampling methods specify which subjects to watch, when to watch them, and how to record their behavior. Momentary time sampling, partial time sampling, and whole-interval sampling are some of the sampling techniques available (Sulzer-Azaroff & Mayer, 1977). Using accurate assessment procedures for any population requires clear understanding of the nature of individuals studied and the research questions that need to be answered (McKenzie, 2002).

Although numerous objective methods to measure physical activity are available, there are a relatively limited number of tested and objective tools that can measure physical activity of groups in open environments. Some factors such as number of people in groups and the multiple activities that they engage in, make direct observation complicated. The SOPLAY (System for Observing Play and Leisure Activity in Youth) is a direct observation instrument that has been used for measuring physical activity in leisure and sports settings (McKenzie, 2002). The

SOPLAY instrument was designed to measure levels of physical activity and types of activities that participants engaged in open settings. The data collected by the instrument have high correlation with measures gathered through self-reports. Activity codes used in the instrument correlate with energy expenditure measurement. For instance, activity codes may include sedentary, walking, and very active to measure intensity of activities. The tool is useful to measure a group or large number of participants and physical activity levels in leisure settings (McKenzie, 2002). Studies that validated the SOPLAY instrument compared physical activity data collected by direct observation and accelerometer data for the same participants (Saint-Maurice, Welk, Ihmels & Krapfl, 2011).

Evidence-based Strategies to Improve Youth Physical Activity

Evidence of successful strategies to improve physical activity in afterschool environments is emerging. However, findings are not strong due to methodological limitations. One challenge is the poor description of the intervention, which is often insufficient for replication. Often, staff training practices, environment setting, and implementation activities are not discussed in sufficient detail. Several evidence-based strategies that have empirical evidence in other settings or promising strategies without empirical evidence, but are intuitively and theoretically linked to increased physical activity levels have been recommended (Beighle et al., 2010). Research findings show that children in afterschool settings are active 57 percent of the time that is allocated for physical activity, and at a moderate-to-vigorous level 19 percent of the time (Trost et al., 2008). Offering opportunity to engage in physical activity in bouts no more than 15 to 20 minutes in duration may increase minutes of physical activity among youth (Tudor-Locke, Lee, Morgan, Beighle, & Pangrazi, 2006). In addition to increasing physical activity time and scheduling to maximize activity, it is important to ensure that staff are trained in motivation, behavior management and developmentally appropriate activities. Favorable weather conditions

to play outside is often a barrier to increased physical activity time in afterschool settings that do not have available indoor play spaces to use during inclement weather. Availability and quality of equipment such as playground balls, jump ropes, beanbags and soccer balls also helps increase physical activity participation (Beighle et al., 2010).

In providing recommendations for activities, it is encouraged that afterschool programs are offered in either a free play or structured environments (Beets, et al., 2009; Trost et al., 2008). In free play, participants engage in activities with playground structures or equipment individually or in small groups. In a structured environment, activities are organized and led by a staff (Beighle et al., 2010). Structured activities are defined as opportunities to engage in organized physical activities facilitated by an adult. Whereas, unstructured activities support informal opportunities to engage in free-play environments (Mota & Esculcas, 2002). Another approach is one in which participants are offered choices of activities. A number of studies have found environments that promote choice are effective in promoting physical activity (Gutin, Yin, Johnson, & Barbeau, 2008; Wilson et al., 2008; Yin et al., 2005a; Yin et al., 2005b).

Afterschool programs can improve physical activity levels and promote positive health behavior. Although many studies have found that afterschool programs can help improve the duration of moderate-vigorous physical activity time accumulated by children (Trost et al., 2008), additional research is necessary to come up with theoretical models, implementation steps and proper measures of the behavior (Beets, 2009). Some of the strategies that could help increase the minutes of moderate to vigorous physical activity (MVPA) accumulated by children include increasing frequency and duration of free play and organized physical activity sessions. Bicycling at the rate of 10 to 12 mph for up to 14 to 16 mph or playing a game of basketball are examples of moderate to vigorous activity. Although most interventions have observed significant increases in physical activity levels, the differences in levels of physical activity

observed among sub-groups of children such as boys and girls or youth from high and low-income neighborhoods may be a function of preference for lower-intensity or higher intensity activities (Troost, 2008). Key mediators such as self-efficacy, enjoyment of physical activity and perceived importance of sport and physical activity participation may also be attributed to the difference in levels of PA observed among children across race, age and co-ed groups (Troost, 2008). Considering these differences, it is important that afterschool programs further examine the disparity in levels of PA accumulated by participants by providing activity choices that more appropriately respond to the needs and interests of individual participants (Troost, 2008).

Physical activity interventions have often included common behavior analytic principles including self-monitoring, goal setting and behavioral skills training. However, limited attention has been given to programs that include youth in developing program ideas and PA choices presented through programs. It is developmentally appropriate to provide more autonomous choice-making opportunities during adolescence because it acknowledges the need for independence and self-initiated behavior change (Wilson et al., 2008). Research suggests that perceived choice and self-initiated behaviors may be instrumental in increasing intrinsic motivation, effort and persistence for engaging in PA (Thompson & Wankel, 1980). Leisure activities refers to “freely chosen activities performed when not involved in self-care or school work.” Some personal factors that determine a youth’s participation are age, gender and preference for activities. Currently, very few studies (Sankovich, 2013; Wilson et al, 2005; Weintraub et al, 2008) have looked into preference of youth to engage in physical activities.

Preference Assessments in Applied Behavior Analysis

In the field of Applied Behavior Analysis, selection of reinforcers are considered as an important process in the development of behavioral interventions for individuals with severe disabilities (Hanley, Iwata, & Roscoe, 2006). Preference assessments are commonly used to

identify items that are preferred by an individual and therefore may serve as a reinforcer. Reinforcement is an event that increases the frequency of the behavior occurring in the future (Fantino & Logan, 1979, p.82). When one of many events have a higher probability of increasing the frequency of the behavior, it is called a preference (Catania, 1998). According to Cooper, Heward, Heron (2007), stimulus preference assessment allows the individual to organize items from an array in order of preference. Reinforcer assessment allows the researcher to verify whether the items identified as preferred have a tendency to increase the frequency of a desired behavior (Cooper, Heron, Heward, 2007).

The preference assessment methodology is more commonly used among atypically developing populations or with preschool children who lack the verbal skills to effectively make their preferences known (Fisher et al., 1992; Hanley, Cammilleri, Tiger, & Ingvarsson, 2007; Pace, Ivancic, Edwards, Iwata, & Page, 1985; Paramore & Higbee, 2005; Layer, Hanley, Heal, & Tiger, 2008). The results have been replicated over time, using multiple methods and are found to be predictive of the reinforcing efficacy of the items identified as preferred. Therefore, valid and reliable techniques for reinforcer assessment exists for some populations (Rush, Mortenson, & Birch, 2010). Although reinforcers are used to address a wide variety of problems with both typical and atypically developing populations, studies using preference assessment to identify reinforcers among typically developing populations, especially youth are more limited (Wilson et al, 2005). Consequently, there is limited knowledge about valid and reliable techniques for typically developing youth to engage in healthy behaviors such as increased physical activity. Offering preferred activities to typically developing participants tends to increase engagement in activities offered, which has led to improved program success (Wilson et al, 2005). Preference assessments among typically developing youth may assist in systematically identifying preferences, particularly when working with a large group of participants. Additionally,

systematically identifying preferences from a large array of items may also be appropriate to support through preference assessment.

The different types of preference assessment methods noted in the literature include single stimulus preference assessment, paired choice preference assessment, multiple stimulus with replacement, and multiple stimulus without replacement. In single stimulus, an individual's reaction to the presentation of a stimulus is noted. In paired choice assessment, two items from the array are presented simultaneously and the individual selects one item. The chosen stimulus is consecutively presented with all other stimuli in the array until all items in the array have been paired. Then the items are ranked as high, medium, and low preferred items based on the number of times chosen. In multiple stimulus with replacement, the chosen item is replaced in the array, but all other items are replaced with new ones. In multiple stimulus without replacement, the chosen item is not placed back in the array. The remaining items are rearranged and preference is ranked a high, medium, or low based on the order of selection (Cooper, Heron & Heward, 2007).

Preference assessments are conducted through both direct and indirect methods. Surveys and interviews are common indirect methods of gathering information on preferences. Direct preference assessment methods include forced-choice assessment (Fisher et al., 1992), single-stimulus assessment (Roane et al., 1998), single stimulus engagement or successive choice assessment (Hagopian, et al 2001), multiple stimulus with replacement (MS), and multiple stimulus without replacement (MSWO) (DeLeon & Iwata, 1996). The majority of research suggests that indirect measures are not as accurate as direct measures in identifying preferred items that may serve as reinforcers. Reinforcers identified through indirect means are often not as potent as direct methods (Cote, Thompson, Hanley, & McKerchar, 2007).

Computerized Preference Assessments. In the last few decades, computerized preference assessments have become more common; however, there are still limited applications

Dattilo and Rusch (1985) conducted a study using a computerized preference assessment for people with reduced motor abilities and showed they could “indicate consistent and reliable individual preferences among choices.” More recently, practitioners have integrated direct assessment procedures for children with autism through computerized assessments (www.touchautism.com). The computer assessment generated user-based preference assessment data automatically for use by not only professionals, but also caregivers. Sankovich (2013) developed and implemented a video-based physical activity preference assessment for children with autism and their parents. The study explored self and parental perceptions of physical activity preferences for children with autism. The results indicated that participants in this study selected a few activities as the most preferred activities in the home setting. Although the study tested the reliability between parent and child preferences, the study does not include any information about the predictive validity of the assessment.

Preference assessment studies have been conducted with limited populations such as people with intellectual or developmental disabilities and preschool children. In general, there has been modest progress in utilizing technology-based preference assessment methods. Studies are mostly conducted among individuals (participants fewer than ten) in homes, schools and care-provider settings. Moreover, the behaviors addressed by preference assessment interventions have often focused on reducing problem behaviors with atypically developing populations.

Purpose of Present Study

The purpose of the present study was to evaluate the reinforcer effectiveness of the activities identified as highly preferred using the Assessment of Preferred Leisure Alternatives for Youth (A-PLAY). A-PLAY is a web-based computer application that was used to identify preferences of typically developing youth. The purpose of the present study was to examine if

participation in physical activity increases when activities identified as preferred (through a web-based preference assessment tool) are made available to youth.

The research questions to be examined in the study include the following: (1) What are the effects of PLAY on physical activity participation among youth when activities identified as preferred are made available. (2) What are types of preferred physical activities identified by youth participants in the Full Circle Youth Program?

Methods

Participants and Settings

The study was conducted with youth participants at an after-school center in a low-income housing community complex in Lawrence, Kansas. The Lawrence Douglas County Housing Authority (LDCHA) has a few properties in Lawrence that serve low-income residents in Lawrence. Edgewood Homes is the housing complex that served as the setting for the present study. The Full Circle Youth program is offered by the LDCHA to its residents at Edgewood to help them transition to better jobs and home ownership. While most programs offered by the LDCHA are for services to the adult residents, the youth program provides supports for school-aged children residing in the housing complex. The Full Circle Youth program operates at the Barbara Huppee Community Facility that is located at Edgewood Homes. The youth programs offered include tutoring, computer time, cooking activities, arts and crafts, gardening, and opportunities to engage in physical activities. Edgewood Homes served as a study partner because of the interest of program staff in increasing youth participation in physical activity, as well as established relationships between the program and the study team. The youth and program staff were already familiar with the study team as students from service learning courses at the University of Kansas regularly engage with youth in the study setting by playing games, helping with homework, and assisting staff with projects.

Materials and equipment. The Edgewood Home facility has some materials and equipment available to support physical activity. There is stationary physical activity equipment at the site including playground facilities, a rock wall, and basketball courts. Additionally, the Full Circle Youth program secured funding to purchase some play equipment such as bicycles. There was also additional materials such as a street tennis set made available to the site by the KU Center for Community Health and Development.

Demographic Distribution

Table 1 represents the demographic distribution for the 17 participants who completed the A-PLAY preference assessment as part of the study. Approximately, 29% of the participants were African-American and or White. About 12% of participants did not identify the race. There were slightly more males (59%) than female participants. The majority of participants were 10 years or younger (47%). The range of participant ages were 6 to 13 years.

Table 1:

Demographic Distribution of Participants

Demographic Characteristics		Total No. of Youth (n=17)	Percentage Distribution (n=17)
Race	African American	5	29%
	White	10	59%
	Other	2	12%
Sex	Male	10	59%
	Female	7	41%
Age	10 and under	8	47%
	11 and over	9	53%

Dependent Variable

The PLAY study includes observing changes in levels of participation in physical activity. For this study, the dependent variable was the percentage of youth participants who were physically active. For activity measures, head counts were recorded to measure participation in either sedentary or physical activity behaviors in the target area. There were 32

types of activities observed and coded as a part of the PLAY study (Appendix E). Observers were provided with observation forms for recording. A detailed description of the observation form is provided in Appendix D. The rank order assessment method was used through A-PLAY to identify preferred activities that were then made available through the PLAY intervention.

PLAY observation protocol. An observation protocol was developed to guide observers in systematically conducting the study. The PLAY observation protocol included a weather procedure to determine when it was appropriate to conduct observations. The System for Observing Play and Leisure Activity in Youth (SOPLAY) instrument developed to study leisure-time physical activity in school environments was referenced in developing the observation procedures for this study (McKenzie, Marshall, Sallis, & Conway, 2000).

Weather protocol. A weather protocol was followed to ensure that variability in levels of physical activity due to weather were controlled. The Weather Channel was used to access the wind-chill and heat index for each day of observation. Heat index, in simple terms refers to the ‘feels-like’ temperature when the “relative humidity is factored in with the actual air temperature in the hotter months.” The Weather Channel advises caution when the Heat-index is between 80-90 and extreme caution for heat-index above 90 (Weather Channel, 2017). A protocol on similar lines was followed for the study. If the Heat-Index was below 80, observations were conducted. If it was 80-90, the program supervisors of the Full Circle Youth program at Edgewood were consulted, and when it was over 90, observations were not conducted.

For the colder months, wind-chill was considered before determining if observations would be made on a particular day. Observations were conducted on days when the wind-chill was above 30. The supervisors were consulted when wind-chill was between 20-30 and observations were not conducted when it was below 20. No observations were conducted on rainy or snowy days.

Table 2:

Weather Protocol Chart

Measure	Yes, observations were conducted outside	Maybe	No. Observations were not conducted outside.
Heat- Index	Below 80	80-90	Above 90
Wind-Chill	Above 30	20-30	Below 20

Observation Area. A protocol was established for the momentary time sampling procedure to ensure that multiple observers reliably recorded observations. Observation areas were identified at Edgewood Homes. The Huppee Community Center and several outdoor areas around the Edgewood Homes complex were divided into target areas and a scan space was designated in each observation area.

An observation area in which students were likely to engage in leisure time physical activity was referred to as a target area. Six target areas were identified for observation within the Edgewood Homes complex. Target Area 1 was the only observation area that was conducted indoors and was located inside the Huppee Center. The other target areas were located outside of the Huppee Community Center, but on the property of Edgewood Homes.

The observers moved across target areas in a timed sequence and conducted observations using an observational scanning procedure. The full observational procedure for scanning the six target areas was completed within a 15-minute interval for observation. The duration of the observation in each target area was 10 seconds. The observation period was 10 seconds to minimize variability in data and to avoid double counting participants that might leave the target area or join the target area during an observation period. Between the 10 second observation

periods, the observers walked from one target area to the next. On each day of observation, three to four intervals, each 15 minutes in duration were completed within an hour session. During the study period, data were collected three days each week. Each daily session was one hour in duration.

Each observer was provided a PLAY Physical Activity Recording Form to record observations of youth participation in physical activity during each interval. The data recording form is displayed in Appendix D. The purpose of the PLAY Recording Form was to obtain data on the number of youth who were participating in a type of physical activity or sedentary behavior in the designated target area. Each target area had a scan space and the observer had a designated position to conduct the observation. A single observation scan from left to right was considered a sweep. During a sweep, individual participants were counted and coded for activity participation. Each sweep was 10 seconds in duration.



Figure 1: Map of intervention site. This figure shows the area that was observed in each interval of the study.

The codes listed on the PLAY Physical Activity data recording form are described. Code “S” refers to sedentary, as in lying, sitting or standing, Code “LW” refers to leisure walking and Code “P” refers to when the participant engages in physical activity. The activities were also coded on whether they were “structured” as in facilitated by an adult supervisor, or “unstructured” as in not facilitated or supervised by adults. The activities that the participants were engaged in the target area was recorded on the PLAY Physical Activity Data Recording Form. A sample observation form is attached (Appendix D).

As part of the PLAY observation protocol, the following procedures were followed:

1. The observers scanned each target observation area from left to right, observing each youth only once. If an observed youth reappeared in the scanning area, they were not recorded a second time during the observational scan. If a new youth appeared in part of the area already scanned area, they were not counted during the interval.

2. All target areas were scanned and observations were recorded within a 15 minute interval. All observers downloaded a Tabata exercise timer app on their cellphones. The app allows users to set multiple rounds of timer within the same interval. A timer was set to signal the end of a 15 minute interval. Within the 15 minute interval, there were 6 target area observations conducted. The timer was also set for the 10 second observation period for each target area. After a 10 second observation in which a head count was conducted, the observer then recorded the response on the data collection form. Since there were six target areas, six rounds of timers were set within each 15-minute interval. Timers would go off at the end of every round. The cellphone was kept on ‘vibrate’ mode to minimize distraction to participants.

Interval 1		
Target Area 1: Start at 00:00:00		
Get ready:	00:00:00	
Start observation:	00:00:10	Scan for the total number of participants and activities
Record:	00:00:20	Record the total number of participants and activities
Start observation:	00:00:30	Part of data collection procedures for another study
Record:	00:00:40	Part of data collection procedures for another study
Move to next target area: 00:00:50		
Target Area 2: Start at 00:03:00 Repeat observe and record as in first interval		
Target Area 3: Start at 00:05:00		
Target Area 4: Start at 00:07:00		
Target Area 5: Start at 00:09:00		
Target Area 6: Start at 00:11:00		
Head back to Target Area 1 and start all over again for Interval 2 at 00:00:00		

Figure 2: Synchronized Timer set- up.

Reliability. Reliability was calculated in 33.3% of the intervals in which observations were conducted. A primary and secondary observer independently recorded observational data using the PLAY Physical Activity Recording Form. A reliability level of 80% or higher was considered acceptable. Exact count-per-interval inter-observer agreement (IOA) was used, which is a rigorous method of count recording (Cooper, Heron & Heward, 2007). For each interval,

reliability was calculated based on the percentage of the six-target area observations for which there was agreement (100%). The observations in a target area were considered reliable if the primary and secondary observer agreed (100%) on the activity counts. A score of “0” was assigned to target areas in which there was disagreement. The computation for calculating exact count-per-observation reliability is (# of target area observations of 100% / # of target area observations) X 100. The overall reliability was then computed by calculating the reliability for target area observations for an interval and then taking the mean across intervals for reliability for a daily session.

Table 3

Sample Calculation of Reliability for one Interval of Observation

Number of target areas in the interval = 6

Reliability in each target area (TA):

TA 1 = 100% (There was agreement between observers)

TA 2 = 100%

TA 3 = 0% (There was not agreement between observers)

TA 4 = 100%

TA 5 = 100%

TA 6 = 100%

Reliability in target areas = $5/6 = 83.3\%$

Research Design

Researchers used an ABAB Reversal Design to examine the study questions. The study was conducted over a period of eighteen observation sessions. The sessions were discontinuous to support the study schedule and the arrangement between program staff and the researchers, as well as to ensure appropriate weather conditions based on the established protocol. A criterion level of 40% of youth at the program participating in physical activity during a session. The criterion level was used to consider a change of phase based on discussions with program staff regarding target levels of participation by study youth.

Independent Variable: PLAY Intervention

The present study consists of a few phases, including Assessment, Baseline and Intervention.

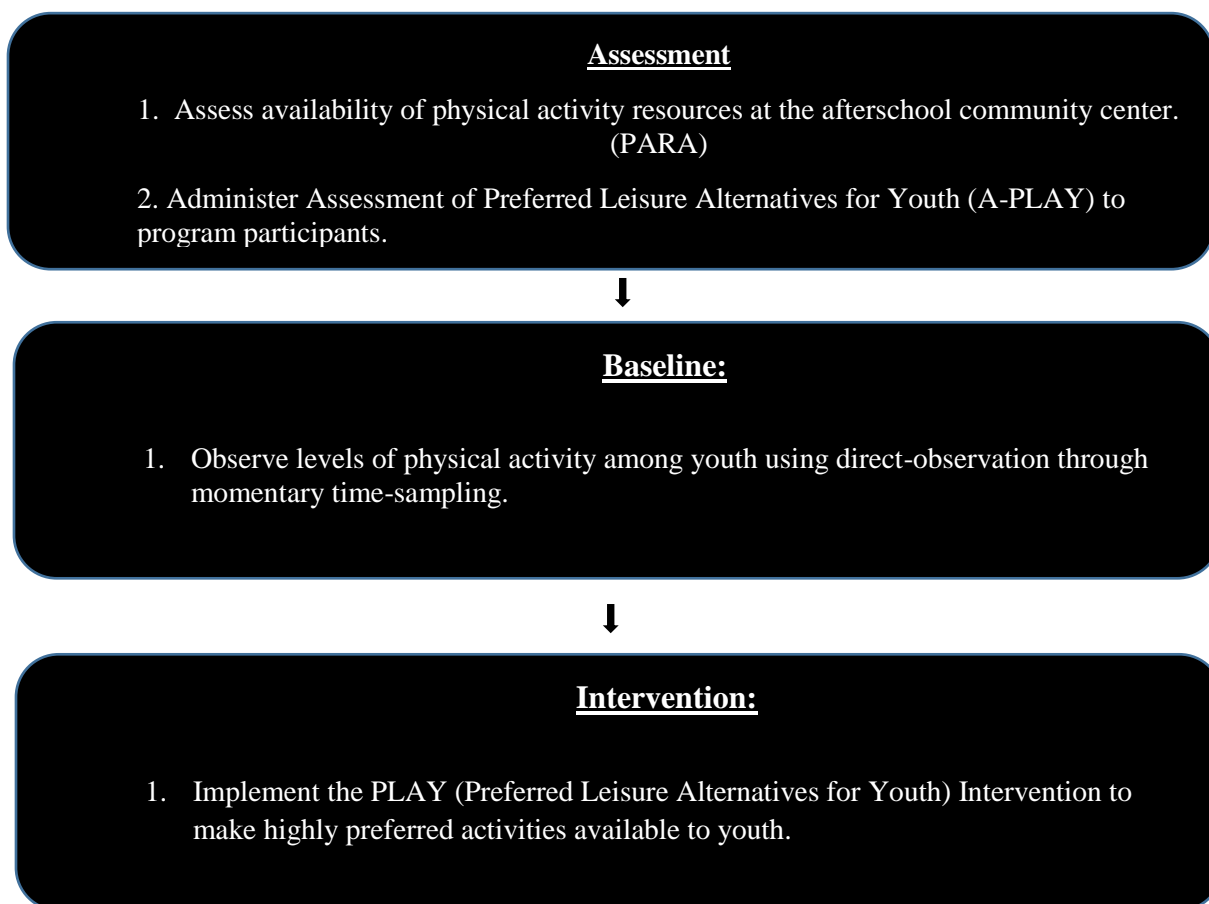


Figure 3: Study Phases. This figure depicts study phases.

Assessment phase.

Physical activity resource assessment (PARA). In the assessment phase of the intervention, data were collected using both environmental and preference assessments. The Physical Activity Resource Assessment (PARA) was conducted at the low-income housing complex at Edgewood, to understand the potential resources for increasing physical activity engagement among youth participants in the after-school program. The goal of the PARA is to identify the infrastructure strengths and needs to be addressed in order to make preferred physical activity opportunities available to youth who live in Edgewood Homes. The Physical Activity Resource Assessment (PARA) is a 25-item instrument that helps assess “activities available for physical activity, counts of play equipment available in the target location, the condition of the equipment and other concerns such as signs of vandalism, abuse or neglect” (Lee, et al, 2005). Features, amenities and incivilities (graffiti, drug paraphernalia, trash) are rated using discrete operational definitions on rating scales of poor, mediocre or good.” The PARA tool was adapted for this study to a 64-item instrument by a former student who conducted the assessment earlier. Further modifications were made for this study to include physical activity kits located indoors. The scale used for rating the play equipment and condition of play areas is attached as Appendix H.

Data were collected by direct observation by a primary and secondary observer at the intervention site. Primary and secondary observers made observations of activities available simultaneously on the same day and agreement was computed based on the type of activity scored and the condition of the equipment. Both observers examined equipment and jointly conducted interviews with the supervisors on the same day. Although the observers interviewed program supervisors together, each recorded responses to the questionnaire independently. The

data gathered through observation were supplemented by the information collected in the interviews. Data on reliability between observers are presented in the Results section

Identifying preferred types of physical activities.

Background on A-PLAY computerized web-based assessments. In the assessment phase of the study, a preference assessment was conducted in the computer lab within the facility. The computerized A-PLAY technology (Taylor, 2014) was developed by the Team for Community Youth Development and Prevention within the Center for Community Health and Development at the University of Kansas. In a prior study, the reliability of A-PLAY was tested. It was found that participants reliably selected preferences across sessions, time, and methodologies using the A-PLAY instrument (Assessment of Preferred Leisure Alternatives for Youth). The types of preference assessment methodologies tested for reliability in the former study included rank order, paired-choice, multiple stimulus, and multiple stimulus without replacement. Study results indicated that a majority of the highly preferred activities identified by a participant remained as top choices across multiple preference assessment methods and tests within and across trials. Whereas, the previous study tested the reliability of the instrument in selecting preferences (Taylor, 2014), the current study aimed to examine if making preferred activities available, would result in increased levels of physical activity among participants.

A-PLAY administration in present study. The A-PLAY was administered by program staff, undergraduate and graduate research assistants with the Team for Community Youth Development & Prevention through the KU Center for Community Health and Development at the University of Kansas. All researchers underwent training on implementing the A-PLAY, conducting the intervention, adhering to protocols, and ensuring reliable observations during data collection. Training lasted about two weeks until observers were able to reach a reliability of 80% or above with the primary observer in observing physical activity in target areas.

Researchers provided verbal instructions to each participant prior to conducting the assessment and were available during the administration of the computerized assessment to answer questions. Youth participants of A-PLAY were ages 6 years or older and were able to read. Prior to implementation, the University of Kansas' Institutional Review Board reviewed and approved the study instruments and protocols. Parental consent was obtained for participants under the age of 18.

Activity participation survey. The first computerized assessment presented in the A-PLAY was the Activity Participation survey. This survey asks participants to select all of the activities that they engaged in during the past seven days (“Check any activities that the respondent was engaged in during the past seven days”). In the survey, all 32 pictures are visible in a single page and arranged randomly on the screen. Participants can scroll down to view more pictures in the array. Each picture has a check box below for participants to select and check (via mouse click). If selected, the activity was self-reported by the participant as having engaged in the previous week. The activity participation survey had two purposes. First, to determine activities that youth participated in during the past seven days. Secondly, it served as a practice survey to orient youth to the preference assessment that followed (Taylor, 2014). A screenshot of the Activity Participation Survey is in Appendix F.

Rank order assessment. The rank order assessment displays all items on a single screen in one panel (See Appendix G). Participants can hover or roll over the picture to obtain a picture name. The participant was asked to rearrange the picture items in the panel from the most to the least preferred activity by drag and drop of the mouse. This process continues until all items have

been rearranged in preferred order in the second panel. Then participants review their selections and save their choices (Taylor, 2014).

After the youth participants completed the assessment, the assessment results were exported into an Excel file from the computerized A-PLAY program. A rank order listing of the 32-items in the array from most to least preferred were obtained. The rank order results are summed across participants to calculate the overall or group rank. The item with the lowest ranking is the most highly preferred activity. Based on the ranked value of the 32-items in the array, the items are assigned to a category of either high, medium, or low preferred activities.

During the PLAY intervention phase, a rank order listing of preferred activities was generated each day for youth who were at the program on that day. Then, on each day of the intervention, the top ten preferred items were identified from the rank-order assessment using the following procedure:

1. The results from the rank-order assessment were exported as an Excel file. In the Excel file, the data were filtered for participants who were present on the day of the intervention.
2. The value of the ranked items were summed for each activity for the participants present on that day.
3. The activities were ordered from low to high, or corresponding from most to least preferred based on the value of the ranking.

Sample Calculation:

	Activity A1	A2	A3	A4	A5.....An
Participant P1	RankP1A1	P1A2	P1A3	P1A4	P1A5...n,
Participant P2	RankP2A1	P2A2	P2A3	P2A4	P2A5
Participant P3	RankP3A1	P3A2	P3A3	P3A4	P3A5
Participant P4	RankP4A1	P4A2	P4A3	P4A4	P4A5
Total rank of A1	$(\sum P1A1+P2A1+P3A1+P4A1)$				

PLAY implementation.

Baseline phase. *Direct observation through momentary time sampling.* Direct-observation was conducted to observe baseline levels of physical activity. Momentary time sampling was used to record group-level observational data. Momentary time sampling has been previously used to record group-level observational data. The PLACHEK method has been previously used to observe aggressive behavior of children in playgrounds (Murphy, H.A, et al, 1983). More recently, McKenzie and colleagues (2000) used the momentary sampling method to develop a system of observation of physical activity in leisure settings called System of Observing Play and Leisure Activity among Youth (SOPLAY). The SOPLAY tool was adapted as the observation instrument for this study.

The baseline condition was a free operant or free play condition that supported naturalistic observation of physical activity participation. Throughout all phases of the study, youth could request access to items or activities from program staff, which was standard practice prior to the study. Youth had access to requested items (e.g., balls, jungle gym) and activities

(e.g., youth-initiated request to play tag, dodge ball) at any time. Additionally, youth had open access at any time to outdoor or fixed play equipment.

Intervention phase.

Direct observation through momentary time sampling. During the intervention phase, the following steps were implemented as part of the intervention on days the weather was in the study range:

1. Generate list of participants who were present at the site before beginning observations: Supervisors at the intervention site provided the researchers with a list of names of the youth who were at the center prior to the beginning of each daily session.

2. Identify preferences for the group present on the day of intervention: When there were more than five participants who had taken the A-PLAY assessment, the study team generated a list of highly ranked items from the preference assessment for the youth present during that session. An excel export of the A-PLAY data was used to generate a list of preferred activities on each day of intervention for the youth present at the session. A rank order listing of activities was generated based on activities preferred by the participants present at the beginning of the session.
3. Present the highly preferred activities to the participants: After the list of preferences was generated on a particular day, the program supervisors presented the youth with the activities from the preferred list by announcing the highly preferred activities that were available. Then, the youth participants would choose one to three of the preferred activities to engage in during the session.

4. Youth engage in activity: Youth could choose to engage in the selected activities. Youth did not have to participate in the selected activities, but were given a choice for what activities to participate.

5. Physical activity levels were observed using the momentary time-sampling procedure.

Results

Physical Activity Resource Assessment (PARA)

The results show the types of activities that were available at the site for physical activity and the condition of the play equipment. In addition to the data collected by direct observation, survey interviews were conducted with Edgewood supervisors about the facility and opportunities offered to participants. Data for activities, incivilities, vandalism and neglect is presented in Appendix H. Inter-observer agreement for the PARA observations was 85% for the assessment of physical activity resources. The PARA Assessment indicated that 33% of the items in the PARA Assessment were available at the site. Activities that were available at the site include basketball courts, bike racks, play equipment (Rockwall), dodgeball pit, walking trail, ping-pong, street tennis, obstacle course, soccer goals, volleyball, and badminton. Trampoline, swimming, baseball, boxing were not available. Most of the equipment at the site was of moderate or good condition. Incivilities such as littering and graffiti were visible only in a few places.

Youth Participation in Physical Activities Survey Results

Seventeen youth completed the computerized assessments. Table 5 shows youth participation in activities in the week prior to when the A-PLAY assessments were administered to participants. The Activity Participation survey in the A-PLAY tool was used to assess youth participation in physical activity prior to completing the preference assessment. Of the 32 activities in the survey, at least one or more youth self-reported participating in 87.5% of the activities in the prior week. The results of the survey indicate that most participants self-reported

engaging in bicycling (n=12), basketball (n=8), and tag (n=9). Some participants (n=7) engaged in dancing, dodge ball, running and Wii Fit, kickball (n=6), soccer (n=5) and yoga (n=4).

Table 4:

Summary of A-PLAY physical activity survey results of youth participation in physical activities prior to assessment

Activities	Percentage of participants who engaged in the activity within the past week	Activities	Percentage of participants who engaged in the activity within the past week
Bicycling	67% n=12	Frisbee	11% n=2
Tag	50% n=9	Jump Rope	11% n=2
Basketball	44% n=8	Roller Skating	11% n=2
Dancing	39% n=7	Rock Climbing	11% n=2
Dodge Ball	39% n=7	Tether Ball	11% n=2
Running	39% n=7	Treadmill	11% n=2
Wii Fit	39% n=7	Badminton	6% n=1
Kickball	33% n=6	Boxing	6% n=1
Soccer	28% n=5	Football	6% n=1
Yoga	22% n=4	Golf	6% n=1
Gymnastics	17% n=3	Volleyball	6% n=1
Swimming	17% n=3	Weightlifting	6% n=1
Trampoline	17% n=3	Ping Pong	6% n=1
Baseball	11% n=2	Tennis	6% n=1

A-PLAY Rank Order Results of Preferences of Youth at Edgewood Homes

Table 6 shows the 32 activities that were ranked by the 17 participants who completed the rank order assessment method using the A-PLAY. The rank order assessment was used to identify activities that were highly preferred by program youth. Bicycling, trampoline, tag, dodgeball and swimming were the top five activities that were indicated as highly preferred among the 32 activities that were offered. The activities are presented in order of their sum of ranks.

Table 5:

Preferences of youth at Edgewood Homes

Activities	Sum of Rank	Activities	Sum of Rank
Bicycling	1	Volleyball	17
Trampoline	2	Dancing	18
Tag	3	Roller Skating	19
Dodge Ball	4	Obstacle Course	20
Swimming	5	Wall ball	21
Kickball	6	Badminton	22
Baseball	7	Golf	23
Basketball	8	Yoga	24
Running	9	Football	25
Rock Climbing	10	Weightlifting	26
Tennis	11	Treadmill	27
Soccer	12	Frisbee	28
Ping Pong	13	Street Hockey	29
Tether Ball	14	Boxing	30
Wii Fit	15	Exercise Equipment	31
Jump Rope	16	Gymnastics	32

PLAY Baseline and Intervention Results

Figure 4 shows the baseline and intervention data, based on the PLAY results. The criterion level established by the program staff and researchers was for 40% or more of

participants to be engaged in physical activity, which was used to consider a change of phases between conditions. A noted increase in the percentage of participants who were engaged in physical activity was observed from the initial baseline to intervention phases (M=4% to M=66%). Subsequently, a decrease in the percentage of participants who were physically active was observed in the withdrawal stage (M=66% to M=7%) and a corresponding increase in the final intervention phase (M=7% to M=60%) was observed again.

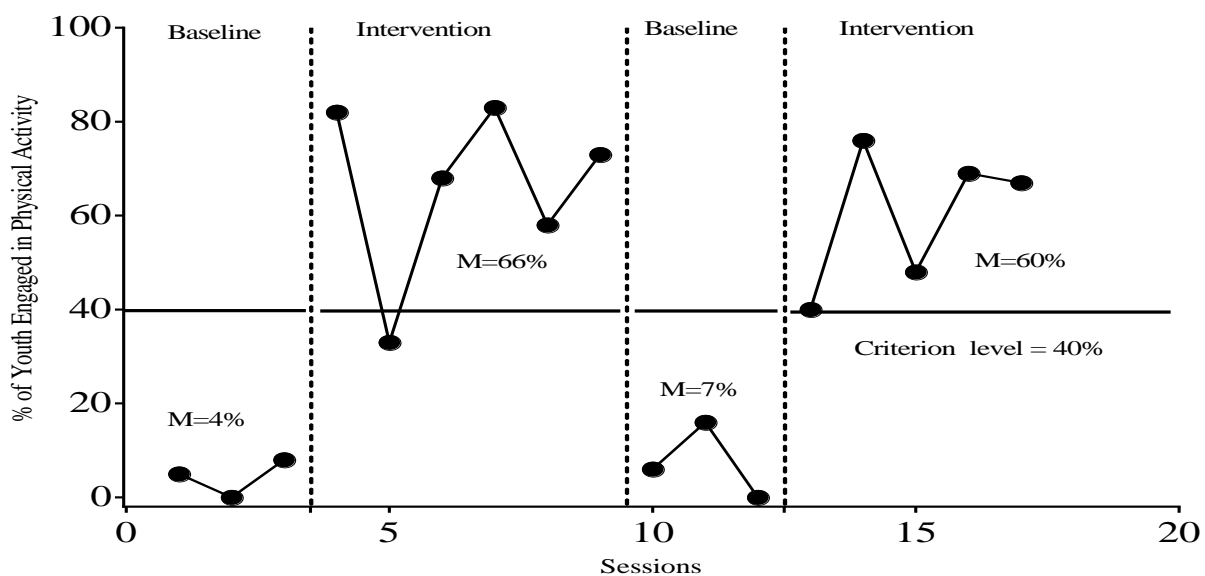


Figure 4: Percentage of youth engaged in physical activity (n=17). Criterion level was set at 40% of youth engaged in physical activity and is depicted by the horizontal solid line.

Youth Participation in activities in baseline and intervention phases

Figure 5 shows the activity types that youth engaged in during baseline and intervention phases. The same activities, including both sedentary and physical activities, were available at the Edgewood Homes site during both the baseline and intervention phases. The percentage of intervals in which participation in the activity was observed is depicted on the graph. Each of the intervals were of 15 minutes in duration. Sedentary activities such as computer and board games showed a decrease (45%) in the intervention stage compared to baseline, whereas physical activities such as dodge ball increased 60% from baseline to intervention. Additionally,

participants engaged more and in different types of activities such as kickball and soccer that were identified as highly preferred activities during the intervention phase. Bicycling was a common activity during both the baseline and intervention phase, with it being the only type of physical activity youth were observed to be engaged in during the baseline phase.

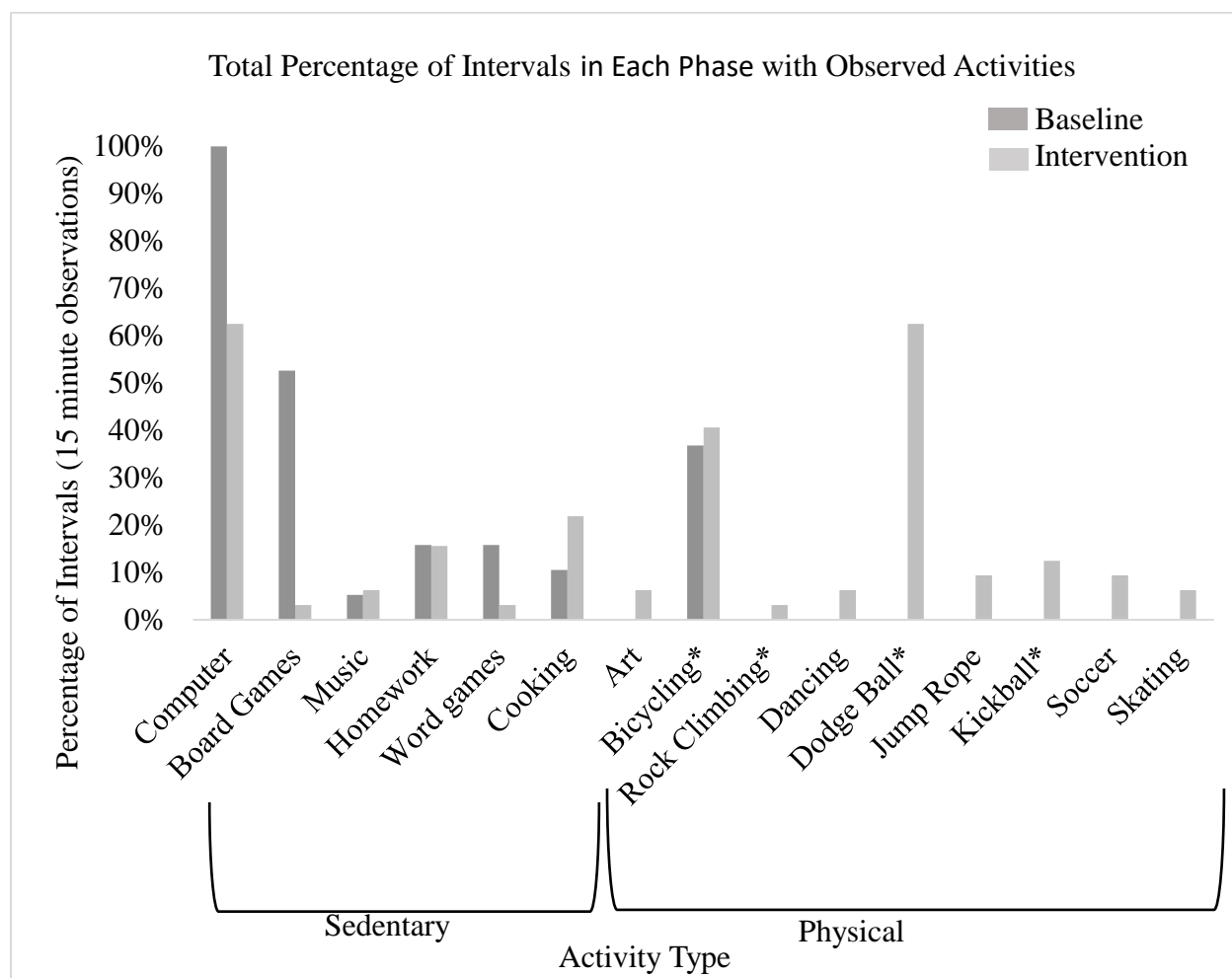


Figure 5. Types of Activities Available at Site during Baseline and Intervention Phases. The asterisk indicates the highly preferred activities identified by the participants using A-PLAY.

Structured and Unstructured Activities

Figure 6 shows the percentage of structured intervals facilitated by an adult and unstructured interval not facilitated by an adult in both baseline and intervention phases. One or two person activities such as computers and board games were more likely to be unstructured; whereas group activities such as dodge ball and soccer were more likely to be structured. More

activities were unstructured in the baseline than in the intervention phases, in which adults facilitated activities with participants. During the intervention phase, there was also less participation in sedentary activities compared to in baseline.

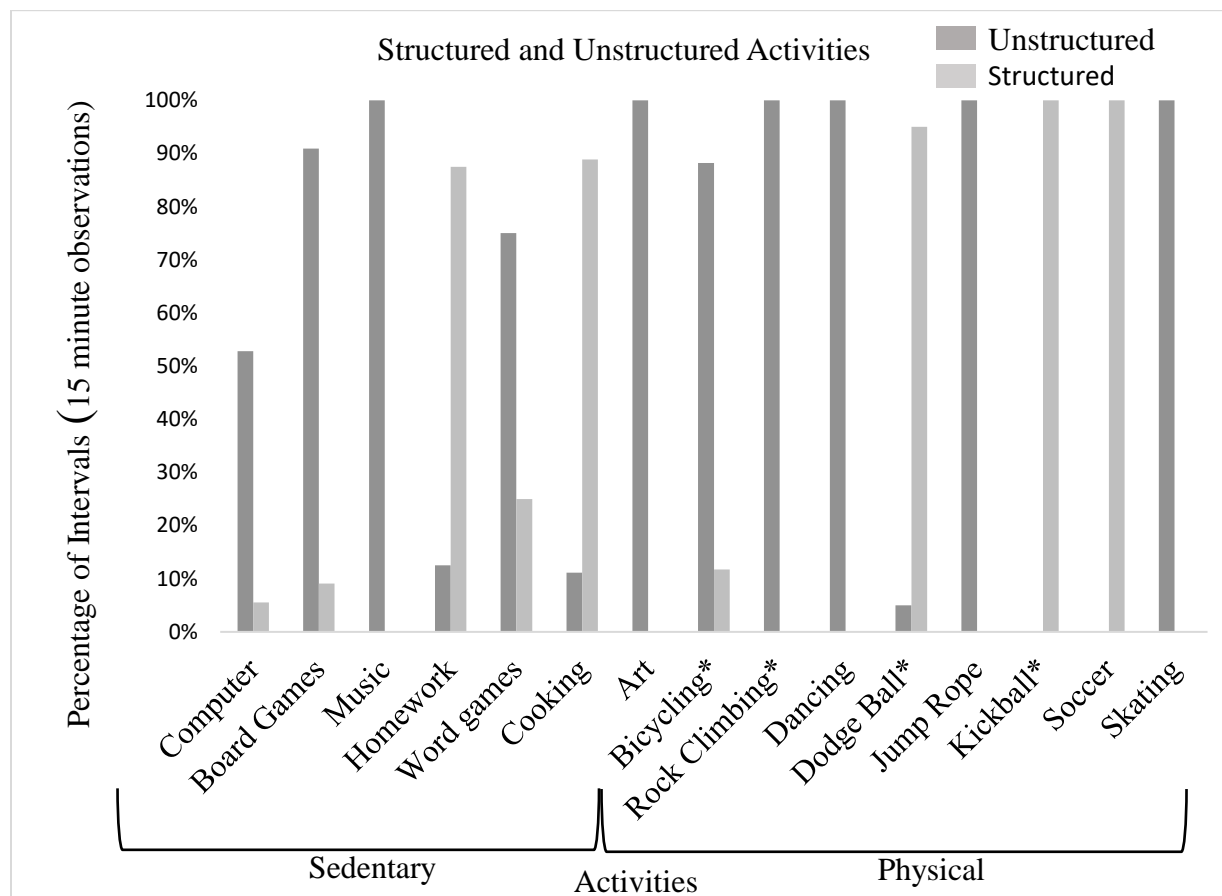


Figure 6: Structured and Unstructured Activities.

Discussion

The results suggest that the intervention increased physical activity participation among the youth participants. The intervention produced notable increases in levels of physical activity among the youth between both the baseline and intervention phases. The study may be helpful in determining how to better support physical activity participation in youth through community programs.

The PARA assessment revealed that three of the top ten items identified as preferred were not available at the site. Most of the equipment available at the site are usable and of good condition. Additionally, the housing complex facility is well maintained, with no unlawful behavior such as drug paraphernalia use, observed. There was good lighting identified on the site. Thus, the limitations to physical activity engagement does not seem to be related to the condition of available equipment or risk of harm in the environmental conditions.

The most prominent barrier to physical activity participation are limited types of equipment and activities available at Edgewood home. It might be useful to work with other youth organizations within a mile of the after-school program to provide access to preferred opportunities like swimming, that are unavailable at the site. A possible option is to identify other organizations, such as the Boys and Girls Club of Lawrence, located within a mile of Edgewood that may have these activities available at their site and make cooperative arrangements to let Edgewood youth utilize facilities at these sites.

The purpose of the Activity Participation Survey was to document what activities youth had access to and were using, within or outside the after-school program setting. The Activity Participation Survey results indicated that youth participated in many activities that were indicated as preferred such as swimming or trampoline, even though they were not available at

the study setting. It is not clear where youth had access to these opportunities and how it might have influenced the preferences of youth to engage in particular activities on intervention days, and how access to activities in other settings may relate to deprivation or satiation. It might be useful to understand youth access to preferred opportunities outside of the study setting to understand the effect of making preferred activities available. The study provided youth and program staff with a choice and occasioned the selection of several activities each day from the list of highly preferred activities, which may also begin to reduce satiation.

Youth participation in activities during baseline and intervention showed notable increases when preferred activities were made available (Figure 4). In the baseline and intervention phases, all activities were available to youth, but supervisor participation by presenting preferred activities to the participants, and engaging in play with the participants, may have resulted in higher levels of activity (Figure 6). Zerger (2016) and his colleagues found that adult attention and interaction could possibly increase physical activity in young children. Although the participants in the Zerger study were 3 to 4 year olds, future research should consider how adult interaction influences physical activity participation among youth older than preschoolers. During the intervention phase, youth seemed to engage more in activities involving a ball as structured activities. The increase in physical activities also seemed to relate more to one-person activities (e.g., skating, jump rope, rock climbing). Additional research should be conducted regarding the types of physical activities that youth engage in and the potential mediators such as availability and the social interaction and reinforcement of peers and/or adults.

Bicycling was an activity that youth engaged in both baseline and intervention phases of the study. Bicycling was observed as a major activity in the study possibly because the Full Circle Youth Program had a bicycling program in place, independent of the current study. Since the summer of 2015, at least 42 bicycles were distributed to youth with the help of a grant from

the Douglas County Community Foundation. The supervisors started the program originally when they noticed bicycles in dumpsters that were in good condition, but had a flat tire or rusted chain. The intent of the bicycle program was that by educating the youth and providing repairs, it may reduce waste and allow youth to make the best out of their bikes. The efforts of the bicycle program possibly resulted in an increase in general bike ridership of youth at the site.

The type of activities that youth engaged in, suggests that youth participation in sedentary activities like computers declined markedly from baseline to intervention. Simultaneously, youth participation in preferred activities also seemed to show an increase compared to baseline phase. Although it is not clear if it was a significant increase, visual analysis of the data suggests that there was a substantial increase in physical activity participation in preferred activities.

Strengths of Study

The study has some strengths. The study was implemented in a naturalistic setting with participation by program staff, which increases the likelihood of generality. The A-PLAY and PLAY intervention was developed based on feedback from program staff at Edgewood Homes. The data results were shared with the program and the components of the intervention has been refined over time based on program staff input. The A-PLAY preference assessment as well as the PLAY intervention should be able to be replicated by program staff in other settings after being trained on the protocol. The A-PLAY as a computerized program may be useful to not only identify physical activity preferences, but also other behaviors such as preference for healthy foods and preference for academic activities in schools, homes or community center settings.

A strength of the A-PLAY procedures is that a listing of highly preferred activities could be generated daily from the exported file, which allowed research and program staff to identify the preferences of youth who were present at the program on the given day. Additionally, the

PLAY intervention procedures provided youth participants with a choice to select from activities identified as highly preferred based on the generated listing for youth who were present on a given day. The intervention protocol ensured that preferences generated on intervention days were sensitive to the participants who were present at the daily session. The study also provided an opportunity to support deeper analysis of changes in the format of physical activity opportunities, such as structured versus unstructured, which is important for considering how to increase participation.

The present study examined the group, rather than the individual, as the unit of analysis using a single-subject reversal design. Future studies may consider the use of quasi-experimental and other experimental methods. The study permits an opportunity to collect and examine both individual-level and group data to more fully explore a line of research questions. The present study focused on the group as the unit of analysis, as the goal of the intervention was focused on an approach that could be used by community programs in after-school and out-of-school time settings.

The reversal design experimentally demonstrated that the percentage of youth who participated in physical activities increased, as preferred activities were made available and decreased when there was a withdrawal. The level of changes during the baseline and intervention replications were similar during the reversal phases. All youth who attended the after-school program were able to participate in the study, thereby reducing threats to selection. The study involved youth who were low-income and the majority were racial and ethnic minorities, which begins to support implementation of the intervention with groups experiencing greater disparities in physical activity participation.

Limitations of Study

Additionally, it is important to note a few limitations, which may be further examined in future research. First, the intervention period was brief. Evaluating data over longer periods including over multiple periods and seasons may identify differences or increases in activity levels. The study was conducted during the fall months when the weather permitted. The study ended right before colder temperatures. The facility does not permit enough space for indoor activity to be solely within the facility. Future studies may support implementing the study with a community partner that experiences less seasonal and weather changes (e.g., partner with indoor gym like Boys and Girls Club).

Second, some activities identified as preferred, like swimming, boxing, or trampoline were not available at the site. Additionally, only physical activity opportunities available within the after-care setting were evaluated in the study. Access or lack of access to preferred physical activity opportunities outside of the housing complex setting may have influenced activity participation on a particular day of observation. Future studies should consider examining this variable.

Third, direct observation was conducted using momentary time sampling. Additionally, paired use of movement monitor systems (e.g., accelerometers, pedometers) to measure the intensity levels and energy expenditure of physical activity would strengthen study in the future. The use of movement monitor systems would also allow for better examination of the level of physical activity engagement of youth when outside of the after-school program setting.

Fourth, observer reactivity is a possibility given that there were multiple observers involved in the study. The researchers took efforts to ensure that interaction between observers was minimal such as using synchronized timers and establishing procedures where observers could not see each other's responses. Additionally, observers engaged in a series of training and

feedback with the primary observer until they reached a reliability of 80% or above. Observers built a rapport with participants by engaging in play and other activities on the days when observations were not conducted to minimize reactivity. Additionally, the program often involves college students at the study setting through service-learning course activities. Therefore, the presence of college students in the environment was common, which also may help to reduce observer reactivity.

Fifth, the intervention providing verbal prompts for participants to consider participation in physical activity by announcing activities available. Although all activities were available during the baseline phase, there was no verbal prompting to engage in play. The verbal prompts, accompanied by the availability of highly preferred activities likely resulted in higher levels of participation. This limitation may be addressed by examining prompts as an independent component in the intervention in future research. For example, the same procedures could be replicated to make activities identified as least preferred available to participants in the intervention and examining corresponding changes in activity participation. Or, another consideration is to write the list of available activities on a board during both the baseline and intervention phases to eliminate additional verbal prompting during intervention.

Finally, the study was conducted among participants in the 6 to 13 year age group. Although, it is important to study physical activity participation in this age group, the involvement of older youth between 14 to 18 years should also be considered for future research. Preferences of participants were assessed once at the beginning of the study. Previous research shows that preferences change over time and that stability of preferences is determined by individual differences (Zhou, Iwata, Goff, & Shore, 2001). Tracking preferences of participants over time may help determine temporal shifts in preferences over time. The participants in the current study could serve as participants in future studies as they grow older, and variables that

influence their physical activity participation could be explored further through a longitudinal study.

Conclusion and Future Research

Future directions for research would be to examine if the increases in physical activity levels observed in this study maintained for longer periods. Weather changes did not allow for extending the present study. In addition, the study setting did not have options for participants to engage in physical activity indoors. It would be useful to understand how participants responded to preferred activities in different seasons. Also, examining if there are seasonal changes in preferences would be interesting and possible to support through more monthly or quarterly administration of the A-PLAY with youth participants.

Adult interaction with participants during the intervention phase is a variable that needs to be investigated further in further studies. The current study did not parse out the effects that any prompting might have had on youth participation in physical activity during the intervention. The effect of making preferred activities available was studied as one unit of analysis. However, the effect of prompts is an important variable to study. Additionally, the current study made highly preferred activities available to participants. Making least preferred activities available to participants and studying the effects of making those activities available, on the physical activity participation of youth may help explain the role of other variables such as prompting even better. Future research may also examine the effects of providing feedback to the youth participants and their parents regarding the types of activities youth are engaged in when at the program may be helpful.

Physical activity participation among youth is an important health behavior that may help alter the incidence of many chronic health conditions later. Based on the present study and prior research, making preferred activities available seems to have increased youth participation in

physical activity in the short-term. If further research can demonstrate that making preferred activities available for youth can help increase participation, the results may be extended to other populations, including youth at risk for problem behavior and with specific health condition, such as obesity, functional or mobility limitations, who may particularly benefit from physical activity interventions. It is important to further examine opportunities for increased physical activity participation in community-based settings, as opportunities for not only improved health, but also for healthy and positive youth development.

References

- Beets, M. W., Beighle, A., Erwin, H. E., & Huberty, J. (2009). Impact of after-school programs to increase physical activity and fitness: A meta-analysis. *American Journal of Preventive Medicine*, 36(6), 527–537.
- Beets, M. W., Huberty, J., Beighle, A., & Network, T. H. A. P. (2012). Physical activity of children attending afterschool programs: research-and practice-based implications. *American journal of preventive medicine*, 42(2), 180-184.
- Beighle, A., Beets, M. W., Erwin, H. E., Huberty, J., Moore, J. B., & Stellino, M. (2010). Promoting Physical Activity in Afterschool Programs. *Afterschool Matters*, 11, 24–32.
- Catania A.C. Learning. Englewood Cliffs, NJ: Prentice Hall; 1998. (4th ed.).
- Chapter 3 - 2008 Physical Activity Guidelines - health.gov. (n.d.). Retrieved August 25, 2017, from <https://health.gov/paguidelines/guidelines/chapter3.aspx>
- Corder, K., Ekelund, U., Steele, R. M., Wareham, N. J., & Brage, S. (2008). Assessment of physical activity in youth. *Journal of Applied Physiology*, 105(3), 977–987.
- Cote, C. A., Thompson, R. H., Hanley, G. P., & McKerchar, P. M. (2007). Teacher Report and Direct Assessment of Preferences for Identifying Reinforcers for Young Children. *Journal of Applied Behavior Analysis*, 40(1), 157–166.
- Dattilo, J., & Rusch, F. R. (1985). Effects of choice on leisure participation for persons with severe handicaps. *Journal of the Association for Persons with Severe Handicaps*, 10(4), 194–199.
- DeLeon, I. G., & Iwata, B. A. (1996). Evaluation of a multiple-stimulus presentation format for assessing reinforcer preferences. *Journal of Applied Behavior Analysis*, 29(4), 519-533.

- Fantino, E., & Logan, C. A. (1979). *The experimental analysis of behavior*. San Francisco: WH Freeman.
- Fisher, W., Piazza, C. C., Bowman, L. G., Hagopian, L. P., Owens, J. C., & Slevin, I. (1992). A Comparison of Two Approaches for Identifying Reinforcers for Persons with Severe and Profound Disabilities. *Journal of Applied Behavior Analysis*, 25(2), 491–498.
- Gutin, B., Yin, Z., Johnson, M., & Barbeau, P. (2008). Preliminary findings of the effect of a 3-year after-school physical activity intervention on fitness and body fat: The Medical College of Georgia Fitkid Project. *International Journal of Pediatric Obesity*, 3(Suppl. 1), 3–9.
- Hagopian, L. P., Rush, K. S., Lewin, A. B., & Long, E. S. (2001). Evaluating the predictive validity of a single stimulus engagement preference assessment. *Journal of Applied Behavior Analysis*, 34, 475-486.
- Hanley, G. P., Cammilleri, A. P., Tiger, J. H., & Ingvarsson, E. T. (2007). A Method for Describing Preschoolers' activity Preferences. *Journal of Applied Behavior Analysis*, 40(4), 603–618.
- Hanley, G. P., Iwata, B. A., & Roscoe, E. M. (2006). Some Determinants of Changes in Preference Over Time. *Journal of Applied Behavior Analysis*, 39(2), 189–202.
- Healthy Communities Study*. (2017, December 01). Retrieved from National Heart, Lung and Blood Institute: <https://www.nhlbi.nih.gov/research/resources/hcs/index.shtml>
- Hillman, C. H., & Biggan, J. R. (2017). A review of childhood physical activity, brain, and cognition: Perspectives on the future. *Pediatric Exercise Science*, 29(2), 170–176.
- Hustyi, K. M., Normand, M. P., Larson, T. A., & Morley, A. J. (2012). The effect of outdoor activity context on physical activity in preschool children. *Journal of applied behavior analysis*, 45(2), 401-405.

- Larson, T. A., Normand, M. P., Morley, A. J., & Hustyi, K. M. (2014). The role of the physical environment in promoting physical activity in children across different group compositions. *Behavior modification*, 38(6), 837-851.
- Layer, S. A., Hanley, G. P., Heal, N. A., & Tiger, J. H. (2008). Determining individual preschoolers' preferences in a group arrangement. *Journal of Applied Behavior Analysis*, 41(1), 25-37.
- Lee, R. E., Booth, K. M., Reese-Smith, J. Y., Regan, G., & Howard, H. H. (2005). The Physical Activity Resource Assessment (PARA) instrument: evaluating features, amenities and incivilities of physical activity resources in urban neighborhoods. *International Journal of Behavioral Nutrition and Physical Activity*, 2(1), 13.
- Matthews, C. E., Hagströmer, M., Pober, D. M., & Bowles, H. R. (2012). Best practices for using physical activity monitors in population-based research. *Medicine and science in sports and exercise*, 44(1 Suppl 1), S68.
- Mota, J., & Esculcas, C. (2002). Leisure-time physical activity behavior: structured and unstructured choices according to sex, age, and level of physical activity. *International journal of behavioral medicine*, 9(2), 111-121.
- McKenzie, T. L. (2002). Use of direct observation to assess physical activity. *Physical Activity Assessments for Health-Related Research. Champaign, IL: Human Kinetics*, 179–195.
- McKenzie, T. L., Marshall, S. J., Sallis, J. F., & Conway, T. L. (2000). Leisure-time physical activity in school environments: an observational study using SOPLAY. *Preventive Medicine*, 30(1), 70–77.

- Moore, L. V., Roux, A. V. D., Evenson, K. R., McGinn, A. P., & Brines, S. J. (2008). Availability of recreational resources in minority and low socioeconomic status areas. *American Journal of Preventive Medicine, 34*(1), 16–22.
- Murphy, H. A., Hutchison, J. M., & Bailey, J. S. (1983). Behavioral School Psychology Goes Outdoors: The Effect Of Organized Games On Playground Aggression. *Journal of Applied Behavior Analysis, 16*(1), 29-35.
- Office of Disease Prevention and Health Promotion. (2017, December 01). *Physical Activity*. Retrieved from Healthy People: <https://www.healthypeople.gov/2020/topics-objectives/topic/physical-activity>
- Pace, G. M., Ivancic, M. T., Edwards, G. L., Iwata, B. A., & Page, T. J. (1985). Assessment of stimulus preference and reinforcer value with profoundly retarded individuals. *Journal of Applied Behavior Analysis, 18*(3), 249–255.
- Paramore, N. W., & Higbee, T. S. (2005). An evaluation of a brief multiple-stimulus preference assessment with adolescents with emotional-behavioral disorders in an educational setting. *Journal of Applied Behavior Analysis, 38*(3), 399–403.
- Pate, R. R., Trost, S. G., Levin, S., & Dowda, M. (2000). Sports participation and health-related behaviors among US youth. *Archives of pediatrics & adolescent medicine, 154*(9), 904-911.
- Roane, H. S., Vollmer, T. R., Ringdahl, J. E., & Marcus, B. A. (1998). Evaluation of a brief stimulus preference assessment. *Journal of Applied Behavior Analysis, 31*(4), 605-620.
- Rush, K. S., Mortenson, B. P., & Birch, S. E. (2010). Evaluation of preference assessment procedures for use with infants and toddlers. *International Journal of Behavioral Consultation and Therapy, 6*(1), 2.

- Saint-Maurice, P. F., Welk, G., Ihmels, M. A., & Krapfl, J. R. (2011). Validation of the SOPLAY direct observation tool with an accelerometry-based physical activity monitor. *Journal of Physical Activity and Health, 8*(8), 1108-1116.
- Sallis, J. F., & Saelens, B. E. (2000). Assessment of physical activity by self-report: status, limitations, and future directions. *Research Quarterly for Exercise and Sport, 71*(sup2), 1–14.
- Sallis, J. F., Prochaska, J. J., & Taylor, W. C. (2000). A review of correlates of physical activity of children and adolescents. *Medicine & science in sports & exercise, 32*(5), 963-975.
- Sankovich, L. (2013). Development and Implementation of a Video-Based Activity Preference Assessment for Children with Autism and Their Parents.
- Sulzer-Azaroff, B., & Mayer, G. R. (1977). *Applying behavior-analysis procedures with children and youth*. Harcourt School.
- Taylor, E. (2014). An evaluation of web-based preference assessment methods using the Assessment of Preferred Leisure Alternatives for Youth (A-PLAY): Identifying physical activity preferences of youth (master's thesis). Retrieved from KUScholarWorks database. (Accession ID: 2015-10-13T04:42:44Z)
- Trost, S. G. (2001). Objective measurement of physical activity in youth: current issues, future directions. *Exercise and sport sciences reviews, 29*(1), 32-36.
- Thompson, C. E., & Wankel, L. M. (1980). The effects of perceived activity choice upon frequency of exercise behavior. *Journal of Applied Social Psychology, 10*(5), 436-443.
- Trost, S. G., Rosenkranz, R. R., & Dzewaltowski, D. (2008). Physical activity levels among children attending after-school programs. *Medicine & Science in Sports & Exercise, 40*(4), 622–629.

- Tudor-Locke, C., Lee, S. M., Morgan, C. F., Beighle, A., & Pangrazi, R. P. (2006). Children's pedometer-determined physical activity during the segmented school day. *Medicine and science in sports and exercise*, 38(10), 1732-1738.
- Weather Channel*. (2017, December 2). Retrieved from The Weather Channel:
<https://weather.com/safety/heat/news/heat-index-feels-like-temperature-summer>
- Weintraub, D. L., Tirumalai, E. C., Haydel, K. F., Fujimoto, M., Fulton, J. E., & Robinson, T. N. (2008). Team sports for overweight children: The Stanford sports to prevent obesity randomized trial (SPORT). *Archives of pediatrics & adolescent medicine*, 162(3), 232-237.
- World Health Organization | Physical activity. (n.d.). Retrieved August 25, 2017, from
<http://www.who.int/mediacentre/factsheets/fs385/en/>
- Wilson, D. K., Evans, A. E., Williams, J., Mixon, G., Sirard, J. R., & Pate, R. (2005). A preliminary test of a student-centered intervention on increasing physical activity in underserved adolescents. *Annals of Behavioral Medicine*, 30(2), 119.
- Wilson, D. K., Kitzman-Ulrich, H., Williams, J. E., Saunders, R., Griffin, S., Pate, R. (2008). An overview of “The Active by Choice Today”(ACT) trial for increasing physical activity. *Contemporary Clinical Trials*, 29(1), 21–31.
- Yin, Z., Hanes, J., Jr., Moore, J. B., Humbles, P., Barbeau, P., & Gutin, B. (2005a). An after-school physical activity program for obesity prevention in children: The Medical College of Georgia FitKid Project. *Evaluation & the Health Professions*, 28(1), 67–89.
- Yin, Z., Moore, J. B., Johnson, M. H., Barbeau, P., Cavnar, M., Thornburg, J., et al. (2005b). The Medical College of Georgia Fitkid Project: The relations between program attendance

and changes in outcomes in Year 1. *International Journal of Obesity*, 29(Suppl. 2), S40–45.

Zerger, H. M., Normand, M. P., Boga, V. and Patel, R. R. (2016), Adult attention and interaction can increase moderate-to-vigorous physical activity in young children. *Jnl of Applied Behav Analysis*, 49: 449–459. doi:10.1002/jaba.317

Zhou, L., Iwata, B. A., Goff, G. A., & Shore, B. A. (2001). Longitudinal analysis of leisure-item preferences. *Journal of Applied Behavior Analysis*, 34(2), 179-184.

Appendix A:
Parent Guardian Consent Form

PARENT-GUARDIAN INFORMED CONSENT STATEMENT

Increasing Youth Participation in Leisure-Time Physical Activity by Assessing Youth Preferences and Environmental Determinants

INTRODUCTION

As a participant of this project, you and your child will help us better understand how to engage youth in physical activities that are reinforcing during out-of-school time.

The University of Kansas (Department of Applied Behavioral Science) supports the practice of protection for human subjects participating in research projects. The following information is provided for you to decide whether you wish for your child to participate in the present study. You may refuse to sign this form and not allow your child to participate in this study. You should be aware that even if you agree to allow your child to participate, you are free to withdraw at any time. If you do withdraw your child from this study, it will not affect your relationship with this unit, the services it may provide to you, or the University of Kansas.

PURPOSE OF THE STUDY

The purpose of the project is to identify the types of physical activity youth, ages 7 to 18 years, prefer to be engaged in during their leisure time (i.e., non-school hours). The two components of the project includes: (a) Assessment of Preferred Leisure Alternatives for Youth (A-PLAY) and (b) the Preferred Leisures Alternatives for Youth (PLAY) program. The assessment results will be used by the community organization to better identify types of activities to provide for youth in the community. Your child may participate in only the assessment or in both the assesment and PLAY program.

The Assessment of Preferred Leisure Alternatives for Youth (A-PLAY) will assess the types and availability of physical activities that youth like to participate. The Preferred Leisure Alternatives for Youth (PLAY) intervention is a 10-week program that will provide semi-structured opportunities for youth to participate in preferred types of physical activities they find rewarding.

PROCEDURES

Youth, between the ages of 7 to 18 years, who agree (based on parental consent) to be involved in this project will be invited to participate in both components of the project including the assessment (A-PLAY) and 10-week PLAY program. The project is being supported by a partnership between researchers at the University of Kansas (KU) and local community organizations and agencies.

Assessment of Preferred Leisure Alternatives for Youth

If you consent to the participation of your child in the assessment component of this project, two surveys will be administered to your child during an assessment session. It is estimated that the total time your child may be involved in an assessment session is for 45 minutes. The surveys will be administered by the researchers at the community organization site using a web-based application.

The first survey is the Assessment of Preferred Leisure Alternatives for Youth (A-PLAY), which may take approximately one hour to complete. The A-PLAY includes several computer-based assessment methods that presents either pictures or video clips of 31 different types of physical activities. Each type of physical activity is presented (i.e., paired) with all other types to help identify your child's more preferred types of activities.

The other survey is the Youth Leisure-Time Activity Survey, which includes 87-items to assess the frequency of your child's current level of participation in leisure-time activities, including physical activity and other appropriate (e.g., watch T.V.) and inappropriate (e.g., use drugs) behaviors youth may engage in during leisure time. There are some items of the survey that ask your child about involvement in inappropriate activities such as skipping school, fighting, or using drugs. We understand that these questions may be uncomfortable for your child to answer. Please know that any information your child provides regarding these sensitive questions are only to help us understand what kids do in their spare time, and will only be reported aggregately and anonymously (deidentified) for all the youth in the program. The Youth Leisure-Time Activity Survey may take your child approximately 15 minutes to complete.

Participation in the Preferred Leisure Alternative for Youth Intervention

If you consent to the participation of your child in the 10-week PLAY program, the researchers will request that your child complete two assessment sessions prior to beginning the 10-week program. The assessment may be given to your child twice before the program begins (to ensure consistency in responses), and then once after the program ends.

As part of the leisure-time physical activity program, your child will be able to participate in preferred types of physical activities, which will be accessible through the community partner sites for 10 weeks between 4:00 and 8:00 pm. Participation and the frequency of attendance at program sessions are voluntary for your child. After each program session, the researcher will collect basic information regarding your child's participation in the program such as attendance, types of preferred activities selected, and basic demographic data (i.e., age, race, gender). Weekly, your child will complete a web-based log of the types of physical activities that engaged in that week.

Your child may be requested to wear an accelerometer while at the program. An accelerometer is a small device that your child will wear on his or her waist or wrist that measures his or her level of physical activity. The researchers will also provide instructions on how and when the device should be worn. At the end of the 10-week program, you and your parent will receive information regarding your level of physical activity based on the data collected when an accelerometer was worn while at the program.

RISKS

There are no known risks associated with participation in this study. However, this study may involve your child participating in daily physical activity. By signing this consent form, you are verifying that the health condition of your child will permit their participation in this type of physical activity, in a self-paced fashion. You are also agreeing that you will not hold the University of Kansas or any of its faculty, staff, or students liable for any injury, accident, or health emergency that results from your participation in this study.

If your child is physically injured during program activities, parents/guardians will be immediately notified by the representatives from the community partner organization through phone or in-person communication. If your child experiences a major injury or emergency, representatives from the community partner organization or program will immediately notify the parents/guardians and also call for emergency medical response (i.e., 911). The community partner organization will maintain records with emergency medical and contact information.

BENEFITS

There are many benefits associated with the participation of your child in the program including knowing if this program can contribute to improvements in the health outcomes of program participants. This study will help the University of Kansas and community organizations better understand how to involve youth in physical activity programs that are reinforcing outside of school.

PARTICIPANT CONFIDENTIALITY

Your child's name will not be associated in any publication or presentation with the information collected about your child or with the research findings from this study. Instead, the researcher(s) will use a study number or a pseudonym rather than your child's name. Your child's identifiable information will not be shared unless (a) it is required by law or university policy, or (b) you give written permission. It is possible, however, with internet communications, that through intent or accident someone other than the intended recipient may see your response.

Permission granted on this date to use and disclose your information remains in effect indefinitely. By signing this form you give permission for the use and disclosure of your child's information, excluding your child's name, for purposes of this study at any time in the future.

REFUSAL TO SIGN CONSENT AND AUTHORIZATION

You are not required to sign this Consent and Authorization form and you may refuse to do so without affecting your right to any services you are receiving or may receive from the University of Kansas or to participate in any programs or events of the University of Kansas. However, if you refuse to sign, your child cannot participate in either component of this study.

CANCELLING THIS CONSENT AND AUTHORIZATION

You may withdraw your consent to allow participation of your child in this study at any time. You also have the right to cancel your permission to use and disclose further information collected about your child, in writing, at any time, by sending your written request to: *Jomella Thompson, University of Kansas, 1000 Sunnyside Ave, Rm 4082, Lawrence, KS 66045.*

If you cancel permission to use your child's information, the researchers will stop collecting additional information about your child. However, the research team may use and disclose information that was gathered before they received your cancellation, as described above.

QUESTIONS ABOUT PARTICIPATION

Questions about procedures should be directed to the researcher(s) listed at the end of this consent form.

PARTICIPANT CERTIFICATION:

I have read this Consent and Authorization form. I have had the opportunity to ask, and I have received answers to, any questions I had regarding the study. I understand that if I have any additional questions about my child's rights as a research participant, I may call (785) 864-7429, write to the Human Subjects Committee Lawrence Campus (HSCL), University of Kansas, 2385 Irving Hill Road, Lawrence, Kansas 66045-7568, or email irb@ku.edu.

Please note that you will need to check the appropriate boxes below indicating your authorization for participation in the project components. If you are providing consent for your child to participate in both the assessment and PLAY program components, then check both boxes below.

CONSENT FOR PARTICIPATION IN THE SURVEY- I agree to allow my child to take part in the assessment (A-PLAY) component of the study as a research participant. By my signature I affirm that I have received a copy of this Consent and Authorization form.

CONSENT FOR PARTICIPATION IN THE PLAY PROGRAM- I also agree to allow my child to take part in the PLAY program components of the study as a research participant. By my signature I affirm that I have received a copy of this Consent and Authorization form.

Type/Print Participant's Name

Date

Parent/Guardian Signature

[If signed by a personal representative, a description of such representative's authority to act for the individual must also be provided, e.g. parent/guardian.]

Appendix B:
Information Statement

The University of Kansas (Department of Applied Behavioral Science) supports the practice of protection for human subjects participating in research projects. The following information is provided for you to decide whether you wish to participate in the present study. You should be aware that even if you agree to participate, you are free to withdraw at any time without penalty.

We are conducting this study to better understand the types of physical activity youth, ages 7 to 18 years, prefer to be engaged in during their leisure time (i.e., non-school hours). The project will also assess the types of physical activities that (a) are available to youth, and (b) youth in the neighborhood find rewarding to participate.

To better understand the types of physical activity resources available to youth in the neighborhood, we are administering a brief physical activity resource assessment. This will entail your completion of a questionnaire. The questionnaire is expected to take approximately 5 minutes to complete, and only consists of eight questions.

The questionnaire asks basic questions about the use and availability of resources in the facility. The content of the questionnaires should cause no discomfort. Although participation may not benefit you directly, we believe that the information obtained from this study will help us gain a better understanding of the types of physical activity resources that are already available to youth in the neighborhood. Your participation is solicited, although strictly voluntary. Your name will not be associated in any way with the research findings. If you would like additional information concerning this study before or after it is completed, please feel free to contact us by phone or mail based on the information below. It is possible, however, with internet communications, that through intent or accident someone other than the intended recipient may see your response.

Completion of the survey indicates your willingness to participate in this project and that you are over the age of eighteen. If you have any additional questions about your rights as a research participant, you may call (785) 864-7429 or write the Human Subjects Committee Lawrence Campus (HSCL), University of Kansas, 2385 Irving Hill Road, Lawrence, Kansas 66045-7563, email irb@ku.edu.

Sincerely,

Jomella Watson-Thompson, Ph.D.

Assistant Professor, Department of Applied Behavioral Science

Associate Director for Community Participation and Research, KU Work Group

University of Kansas

1000 Sunnyside Ave, 4082 Dole Center

Lawrence, KS 66045

p. 785.864.1563; f. 785.864.5281

Appendix C:
Child Assent Statement

CHILD ASSENT STATEMENT FOR PARTICIPATION IN THE ASSESSMENT

"I am interested in finding ways to help kids become more physically active outside of school so we can start to do more of those activities here. To help us understand what types of physical activities you may like, we will ask you to complete several picture surveys. If you don't feel like completing the surveys, you don't have to, and you can stop doing this any time and that will be all right. The first survey will help us to better know the types of physical activity you may prefer. The other surveys will let you choose pictures to help us better understand what you like to do during your free time outside of school. Don't worry, any information we use from the picture survey will never identify a certain child by name and we will only share you information together with all the other youth that complete the survey so no one will ever know your answer. After I will be happy to answer any questions you may have now or whenever you have them. Do you want to take part in this project?"

CHILD ASSENT STATEMENT FOR GENERAL PROGRAM PARTICIPATION

"I am interested in finding ways to help kids become more physically active outside of school, so I would like you to take part in this program, which will be available from 4:00 to 8:00 pm for 10 weeks. You will be doing fun physical activities with other youth. To help us understand what types of physical activities you may like, we will ask you to complete two surveys both at the beginning and end of the program. If you don't feel like participating in the 10-week program or completing the surveys, you don't have to, and you can stop doing this any time and that will be all right. The first survey will help us to better identify the types of physical activity you may prefer. The second survey will help us better understand what youth do during the leisure time outside of school. The majority of the survey will ask questions about how physically active you are, and there are some other questions related to possible types of appropriate activities (such as watching T.V.) or inappropriate activities (such as fighting or using drugs). Don't worry, any information we use from the survey will never identify a certain child by name and we will only share summarized information about all the youth that complete the survey so no one will ever know your response. I will be happy to answer any questions you may have now or whenever you have them. Do you want to take part in this project?"

CHILD ASSENT STATEMENT FOR ACCELEROMETER USE

“I am also interested in knowing about your level of physical activity (i.e., exercise) when you are at the program. To help us know more about how much exercise you get each day through the program, I would like to ask you to wear an accelerometer. An accelerometer is a small device that I would give you to wears on your waist or wrist to track your amount of physical activity each day. If you are willing to wear an accelerometer, I’ll also demonstrate how the device should be worn. If you don't feel like wearing the accelerometer any more when you are at the program, you don't have to, and you can stop wearing it at any time and that will be all right. Are you willing to wear an accelerometer?”

RESEARCHER CONTACT INFORMATION

Jomella Watson-Thompson, Ph.D.

Assistant Professor, Department of Applied Behavioral Science, University of Kansas

1000 Sunnyside Ave, 4082 Dole Center, Lawrence, KS 66045; p. 785.864.0533; f. 785.864.5281

Appendix D:
Physical Activity Recording Form

PLAY PHYSICAL ACTIVITY RECORDING FORM

Your Observer Initials: _____

Other Observers Initials: _____

Location: _____ Date: _____

Day of Week: M T W Th F S

Start Time: _____ A.M. P.M.

End Time: _____ A.M. P.M.

Interval Duration (circle one): 5 min. 10 min. 15 min. 20 min.

Temp/Heat Index: ____/____

Other:

Activity	Type		Group			Interval 1 (4:00 – 4:15 PM) Target Area 1															
	S	U	#	P	S	LW	Ai			Le			Ca			Ja			Al		
Computer	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Board Games	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Art	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Books	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Music	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Homework	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW

Activity	Type		Group				Interval 1 (4:00 – 4:15 PM) Target Area 2														
	S	U	#	P	S	LW	Ai			Le			Ca			Ja			Al		
Badminton	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Baseball/softball	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Basketball	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Bicycling	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Boxing/KB	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
CFT/Tag	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Climbing Wall	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Dancing	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Dodge ball	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Exergaming	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Football	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Frisbee	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Golf	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Gymnastics	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Hand/Wall ball	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Hockey	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Jump rope	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Kickball	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Martial arts	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Obstacle course	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Playground	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Ping pong	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Running	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Soccer	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
St.Equipment	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Swimming	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Tennis	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Tetherball	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Trampoline	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Volley ball	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Weight lifting	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Yoga/Tai chi	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW

Activity	Type		Group				Interval 1 (4:00 – 4:15 PM) Target Area 3														
	S	U	#	P	S	LW	Ai			Le			Ca			Ja			Al		
Badminton	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Baseball/softball	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Basketball	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Bicycling	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Boxing/KB	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
CFT/Tag	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Climbing Wall	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Dancing	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Dodge ball	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Exergaming	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Football	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Frisbee	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Golf	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Gymnastics	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Hand/Wall ball	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Hockey	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Jump rope	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Kickball	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Martial arts	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Obstacle course	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Playground	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Ping pong	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Running	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Soccer	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
St.Equipment	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Swimming	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Tennis	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Tetherball	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Trampoline	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Volley ball	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Weight lifting	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Yoga/Tai chi	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW

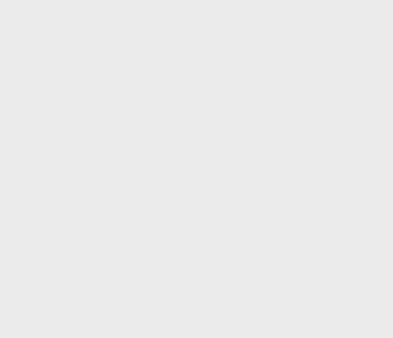
Activity	Type		Group				Interval 1 (4:00 – 4:15 PM) Target Area 4														
	S	U	#	P	S	LW	Ai			Le			Ca			Ja			Al		
Badminton	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Baseball/softball	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Basketball	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Bicycling	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Boxing/KB	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
CFT/Tag	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Climbing Wall	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Dancing	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Dodge ball	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Exergaming	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Football	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Frisbee	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Golf	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Gymnastics	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Hand/Wall ball	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Hockey	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Jump rope	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Kickball	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Martial arts	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Obstacle course	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Playground	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Ping pong	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Running	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Soccer	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
St.Equipment	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Swimming	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Tennis	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Tetherball	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Trampoline	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Volley ball	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Weight lifting	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Yoga/Tai chi	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW

Activity	Type		Group			Interval 1 (4:00 – 4:15 PM) Target Area 5															
	S	U	#	P	S	LW	Ai			Le			Ca			Ja			Al		
Badminton	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Baseball/softball	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Basketball	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Bicycling	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Boxing/KB	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
CFT/Tag	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Climbing Wall	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Dancing	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Dodge ball	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Exergaming	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Football	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Frisbee	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Golf	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Gymnastics	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Hand/Wall ball	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Hockey	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Jump rope	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Kickball	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Martial arts	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Obstacle course	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Playground	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Ping pong	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Running	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Soccer	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
St Equipment	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Swimming	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Tennis	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Tetherball	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Trampoline	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Volley ball	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Weight lifting	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW
Yoga/Tai chi	S	U					P	S	LW	P	S	LW	P	S	LW	P	S	LW	P	S	LW

Appendix E: Activities available on A-PLAY







Appendix F: Activity Participation Survey

A-PLAY

Home | Surveys | Logout | Contact Us

A-PLAY SURVEYS

Physical Activity Surveys | My Profile | Admin Home

Check any activities that you have done in the past seven days (week)

Instructions: Check the box for any activities you have done in the past seven days (within the past week). Save Choices

1. Be sure to look at all the pictures so you will know the types of activities available in the survey. Scroll down to the bottom of the screen to see all available choices.
2. If you are unsure of what activity is being displayed, roll over the center of the picture with your mouse and the name of the activity will appear.
3. After you've selected all of the appropriate activities based on anything you've done in the past week, then review your checked boxes to make sure it's right.
4. Lastly, select the button "save choices" when done. Button is located in the top right corner.



Appendix G: Rank order Assessment

A-PLAY SURVEYS

[Physical Activity Surveys](#) [My Profile](#) [Admin Home](#)

Rank Order the Activities According to Your Interest

Rank the pictures by rearranging them to display in the order you would be most interested in doing these activities. Reorder the pictures by dragging and dropping them in the order of your preferences, from most preferred (at the top left) to least preferred (at the bottom right). Then, be sure to Save after completing the survey to store your responses and return back to the listing of Assessment Surveys. [Save Choices](#)

Instructions: Start with the activities that you are most interested in doing, and arrange the pictures in order of interests from left to right.

1. Before selecting an activity, review all the pictures so that you will know the types of activities available.
2. To identify the type of activity shown in the picture, roll over the picture box with your mouse, and hover or place your mouse over the center of the picture and the activity name will appear.
3. To select an activity, click on the picture and move the picture by holding down the mouse button and dragging and releasing the mouse at the desired location.
4. Review the order of your selected pictures to make sure the picture boxes are arranged correctly based on your interests. You can reorder the pictures by dragging the pictures to the desired location.
5. Remember to push the save button at the top of the screen after you have selected all the pictures.



Appendix H: Report on the Physical Activity Resource Assessment

Frequency Tables of Activities available at Edgewood

Pool > 3ft

Rating	Frequency	Percent
None available	1	100%
Poor	0	0%
Mediocre	0	0%
Good	0	0%
Total	1	100%

Basketball Courts

Rating	Frequency	Percent
None available	0	0%
Poor	0	0%
Mediocre	3	75%
Good	1	25%
Total	4	100%

Rooms with Wii & A/V Setup

Rating	Frequency	Percent
None available	0	0%
Poor	0	0%
Mediocre	0	0%
Good	1	100%
Total	1	100%

Bike Rack

Rating	Frequency	Percent
None available	0	0%
Poor	0	0%
Mediocre	0	0%
Good	1	100%
Total	1	100%

Exercise Stations

Rating	Frequency	Percent
None available	1	100%
Poor	0	0%
Mediocre	0	0%
Good	0	0%
Total	1	100%

Play Equipment

Rating	Frequency	Percent
None available	0	0%
Poor	0	0%
Mediocre	2	67%
Good	1	33%
Total	3	100%

Wading Pool <3ft

Rating	Frequency	Percent
None available	1	100%
Poor	0	0%
Mediocre	0	0%
Good	0	0%
Total	1	100%

Play Fountain

Rating	Frequency	Percent
None available	1	100%
Poor	0	0%
Mediocre	0	0%
Good	0	0%
Total	1	100%

Dodge Ball

Rating	Frequency	Percent
None available	0	0%
Poor	0	0%
Mediocre	1	100%
Good	0	0%
Total	1	100%

Sidewalk

Rating	Frequency	Percent
None available	0	0%
Poor	0	0%
Mediocre	0	0%
Good	1	100%
Total	1	100%

Skating Area

Rating	Frequency	Percent
None available	1	100%
Poor	0	0%
Mediocre	0	0%
Good	0	0%
Total	1	100%

Hockey area

Rating	Frequency	Percent
None available	1	100%
Poor	0	0%
Mediocre	0	0%
Good	0	0%
Total	1	100%

Trampoline

Rating	Frequency	Percent
None available	1	100%
Poor	0	0%
Mediocre	0	0%
Good	0	0%
Total	1	100%

Racquetball rooms

Rating	Frequency	Percent
None available	1	100%
Poor	0	0%
Mediocre	0	0%
Good	0	0%
Total	1	100%

Grassy Areas for free play

Rating	Frequency	Percent
None available	1	100%
Poor	0	0%
Mediocre	0	0%
Good	0	0%
Total	1	100%

Boxing rooms

Rating	Frequency	Percent
None available	1	100%
Poor	0	0%
Mediocre	0	0%
Good	0	0%
Total	1	100%

Kickball

Rating	Frequency	Percent
None available	0	0%
Poor	0	0%
Mediocre	0	0%
Good	1	100%
Total	1	100%

Martial Arts/wrestling mats

Rating	Frequency	Percent
None available	1	100%
Poor	0	0%
Mediocre	0	0%
Good	0	0%
Total	1	100%

Poles for tetherball/flag games

Rating	Frequency	Percent
None available	1	100%
Poor	0	0%
Mediocre	0	0%
Good	0	0%
Total	1	100%

Rockwall

Rating	Frequency	Percent
None available	0	0%
Poor	0	0%
Mediocre	0	0%
Good	1	100%
Total	1	100%

Tennis Courts

Rating	Frequency	Percent
None available	1	100%
Poor	0	0%
Mediocre	0	0%
Good	0	0%
Total	1	100%

Trails- running/biking

Rating	Frequency	Percent
None available	1	100%
Poor	0	0%
Mediocre	0	0%
Good	0	0%
Total	1	100%

Access Points

Rating	Frequency	Percent
None available	1	100%
Poor	0	0%
Mediocre	0	0%
Good	0	0%
Total	1	100%

Bathrooms

Rating	Frequency	Percent
None available	0	0%
Poor	0	0%
Mediocre	0	0%
Good	2	100%
Total	2	100%

Benches

Rating	Frequency	Percent
None available	0	0%
Poor	0	0%
Mediocre	0	0%
Good	1	100%
Total	1	100%

Fountain

Rating	Frequency	Percent
None available	0	0%
Poor	0	0%
Mediocre	0	0%
Good	0	0%
Missing	1	100%
Total	1	100%

Drinking
Fountains

Rating	Frequency	Percent
None available	1	100%
Poor	0	0%
Mediocre	0	0%
Good	0	0%
Total	1	100%

Landscaping efforts

Rating	Frequency	Percent
None available	1	100%
Poor	0	0%
Mediocre	0	0%
Good	0	0%
Total	1	100%

Lighting

Rating	Frequency	Percent
None available	0	0%
Poor	0	0%
Mediocre	0	0%
Good	3	100%
Total	3	100%

Picnic tables

Rating	Frequency	Percent
None available	1	100%
Poor	0	0%
Mediocre	0	0%
Good	0	0%
Total	1	100%

Shelters

Rating	Frequency	Percent
None available	1	100%
Poor	0	0%
Mediocre	0	0%
Good	0	0%
Total	1	100%

Trash Containers

Rating	Frequency	Percent
None available	0	0%
Poor	0	0%
Mediocre	0	0%
Good	6	100%
Total	6	100%

Non-stationary play equipment

Balls

Rating	Frequency	Percent
None available	0	0%
Poor	0	0%
Mediocre	0	0%
Good	9	100%
Total	9	100%

Jump ropes

Rating	Frequency	Percent
None available	0	0%
Poor	0	0%
Mediocre	0	0%
Good	3	100%
Total	3	100%

Play nets

Rating	Frequency	Percent
None available	0	0%
Poor	0	0%
Mediocre	0	0%
Good	1	100%
Total	1	100%

Frisbee

Rating	Frequency	Percent
None available	0	0%
Poor	0	0%
Mediocre	0	0%
Good	4	100%
Total	4	100%

Street Tennis Kit

Rating	Frequency	Percent
None available	0	0%
Poor	0	0%
Mediocre	0	0%
Good	1	100%
Total	1	100%

Croquet ball Kit

Rating	Frequency	Percent
None available	0	0%
Poor	0	0%
Mediocre	0	0%
Good	1	100%
Total	1	100%

Badminton Kit

Rating	Frequency	Percent
None available	0	0%
Poor	0	0%
Mediocre	0	0%
Good	1	100%
Total	1	100%

Obstacle Course Kit

Rating	Frequency	Percent
None available	0	0%
Poor	0	0%
Mediocre	0	0%
Good	1	100%
Total	1	100%

Ping Pong Kit

Rating	Frequency	Percent
None available	0	0%
Poor	0	0%
Mediocre	1	100%
Good	0	0%
Total	1	100%

Soccer Goals

Rating	Frequency	Percent
None available	0	0%
Poor	0	0%
Mediocre	0	0%
Good	1	100%
Total	1	100%

Volleyball Net

Rating	Frequency	Percent
None available	0	0%
Poor	0	0%
Mediocre	0	0%
Good	1	100%
Total	1	100%

Bean Bag Toss

Rating	Frequency	Percent
None available	0	0%
Poor	0	0%
Mediocre	1	100%
Good	0	0%
Total	1	100%

Golf Course

Rating	Frequency	Percent
None available	1	100%
Poor	0	0%
Mediocre	0	0%
Good	0	0%
Total	1	100%

Volleyball Nets/courts

Rating	Frequency	Percent
None available	1	100%
Poor	0	0%
Mediocre	0	0%
Good	0	0%
Total	1	100%

Outdoor Exercise Stations

Rating	Frequency	Percent
None available	1	100%
Poor	0	0%
Mediocre	0	0%
Good	0	0%
Total	1	100%

Incivilities

Auditory Annoyance

Rating	Frequency	Percent
None available	1	100%
Poor	0	0%
Mediocre	0	0%
Good	0	0%
Total	1	100%

Broken Glass

Rating	Frequency	Percent
None available	1	100%
Poor	0	0%
Mediocre	0	0%
Good	0	0%
Total	1	100%

Dog refuse

Rating	Frequency	Percent
None available	1	100%
Poor	0	0%
Mediocre	0	0%
Good	0	0%
Total	1	100%

Dogs unattended

Rating	Frequency	Percent
None available	1	100%
Poor	0	0%
Mediocre	0	0%
Good	0	0%
Total	1	100%

Evidence of alcohol use

Rating	Frequency	Percent
None available	1	100%
Poor	0	0%
Mediocre	0	0%
Good	0	0%
Total	1	100%

Evidence of substance use

Rating	Frequency	Percent
None available	1	100%
Poor	0	0%
Mediocre	0	0%
Good	0	0%
Total	1	100%

Graffiti/tagging

Rating	Frequency	Percent
None available	1	100%
Poor	0	0%
Mediocre	0	0%
Good	0	0%
Total	1	100%

Littering

Rating	Frequency	Percent
None available	0	0%
Poor	1	100%
Mediocre	0	0%
Good	0	0%
Total	1	100%

No Grass

Rating	Frequency	Percent
None available	1	100%
Poor	0	0%
Mediocre	0	0%
Good	0	0%
Total	1	100%

Overgrown grass

Rating	Frequency	Percent
None available	1	100%
Poor	0	0%
Mediocre	0	0%
Good	0	0%
Total	1	100%

Sex paraphernalia

Rating	Frequency	Percent
None available	1	100%
Poor	0	0%
Mediocre	0	0%
Good	0	0%
Total	1	100%

Vandalism

Rating	Frequency	Percent
None available	1	100%
Poor	0	0%
Mediocre	0	0%
Good	0	0%
Total	1	100%

Appendix I: PARA Form and Interview Questions

Adapted Physical Activity Resource Assessment				2017			
Google Street View <input type="checkbox"/> Foot Canvas <input type="checkbox"/>							
1) Date _____		2) Data collector _____		3) HD/PA Resource ID _____			
4) Time start: _____ stop: _____		5) Phone Call departure: _____ arrival: _____		7) Approximate Size: 1 sm 2 med 3 lg			
6) Type of Resource 1 fitness club 2 park 3 sport facility 4 trail 5 community center 6 church 7 school 8 housing complex 8 vacant lot 9 combination							
8) Capacity (indoor) _____							
9) Cost 1 Free 2 Pay at the door 3 Pay for only certain programs 4 Other _____							
10) Hours a) open _____ b) close _____							
11) Signage – Hours yes <input type="checkbox"/> no <input type="checkbox"/>				12) Signage – Rules yes <input type="checkbox"/> no <input type="checkbox"/>			
Feature	Count	Rating	Amenity	Count	Rating		
13) Baseball field	Count:	0 1 2 3	41) Access Points	Count:	0 1 2 3		
14) Basketball courts	Count:	0 1 2 3	42) Bathrooms	Count:	0 1 2 3		
14) Basketball courts	Count:	0 1 2 3	43) Benches	Count:	0 1 2 3		
14) Basketball courts	Count:	0 1 2 3	44) Drinking fountain	Count:	0 1 2 3		
14) Basketball courts	Count:	0 1 2 3	45) Fountains	Count:	0 1 2 3		
15) Rooms with Wii & A/V Setup	Count:	0 1 2 3	46) Landscaping efforts	Count:	0 1 2 3		
16) Bike Rack	Count:	0 1 2 3	47) Lighting	Count:	0 1 2 3		
17) Exercise Stations (treadmills, weights, etc.)	Count:	0 1 2 3	48) Picnic tables shaded	Count:	0 1 2 3		
18) Play equipment	Count:	0 1 2 3	49) Picnic tables no-shade	Count:	0 1 2 3		
18) Play equipment	Count:	0 1 2 3	50) Shelters	Count:	0 1 2 3		
18) Play equipment	Count:	0 1 2 3	51) Shower/Locker room	Count:	0 1 2 3		
18) Play equipment	Count:	0 1 2 3	52) Trash containers	Count:	0 1 2 3		
19) Pool > 3 ft deep	Count:	0 1 2 3	Non-Stationary play equipment	Count:	0 1 2 3		
20) Wading Pool < 3 ft.	Count:	0 1 2 3	Ball	Count:	0 1 2 3		
21) Play fountain	Count:	0 1 2 3	Jump Rope	Count:	0 1 2 3		
22) DodgeBall/CagaBall pit	Count:	0 1 2 3	Play Net	Count:	0 1 2 3		
23) Sidewalk	Count:	0 1 2 3	Frisbee	Count:	0 1 2 3		
24) Skating areas	Count:	0 1 2 3	Bike	Count:	0 1 2 3		
25) Hockey (ice or street) area	Count:	0 1 2 3		Count:	0 1 2 3		
26) Trampoline	Count:	0 1 2 3		Count:	0 1 2 3		
27) Racquetball rooms	Count:	0 1 2 3		Count:	0 1 2 3		
28) Grassy areas for free play	Count:	0 1 2 3		Count:	0 1 2 3		
29) Boxing rooms	Count:	0 1 2 3		Count:	0 1 2 3		
30) Martial arts/wrestling mats	Count:	0 1 2 3		Count:	0 1 2 3		
31) Poles for tetherball/ flag games	Count:	0 1 2 3		Count:	0 1 2 3		
32) Rock wall or natural climbing structure	Count:	0 1 2 3		Count:	0 1 2 3		
33) Tennis courts	Count:	0 1 2 3		Count:	0 1 2 3		
34) Trails – running/biking	Count:	0 1 2 3		Count:	0 1 2 3		

Adapted Physical Activity Resource Assessment

2017

35) Golf or putting course	0	1	2	3		0	1	2	3	
36) Obstacle course	0	1	2	3		0	1	2	3	
37) Music system	0	1	2	3		0	1	2	3	
38) Volleyball courts/nets	Count:	0	1	2	3		0	1	2	3
39) Soccer goals	Count:	0	1	2	3		0	1	2	3
40) Outdoor exercise stations		0	1	2	3		0	1	2	3
Incivilities	Rating				Incivilities	Rating				
53) Auditory annoyance	0	1	2	3	59) Graffiti/tagging	0	1	2	3	
54) Broken glass	0	1	2	3	60) Littering	0	1	2	3	
55) Dog refuse	0	1	2	3	61) No grass	0	1	2	3	
56) Dogs Unattended	0	1	2	3	62) Overgrown grass	0	1	2	3	
57) Evidence of alcohol use	0	1	2	3	63) Sex paraphernalia	0	1	2	3	
58) Evidence of substance use	0	1	2	3	64) Vandalism	0	1	2	3	

*****PARQ Protocol*****										
A. The questions may be asked of facility personnel either before or after the PARA is conducted.										
C. Items 1-5 and 7a allow for multiple selections. Please select all that apply.										
D. Whenever "Other" is identified as a selection, be sure to prompt the respondent for specific information.										
Physical Activity Resource Questionnaire										
Facility Name:		Facility Address:			Key Contact and Position:					
					Name:					
					Position:					
		Is public transportation available to facility? (circle) no yes			Contact Info:					
1. Number of staff/volunteers per shift ____		Are staff and volunteers CPR, First-Aid, and AED Certified? (circle) CPR Certified First-Aid Certified AED Certified								
		2-4 years old			11-13 years old					
		5-7 years old			14-16 years old					
		8-10 years old			17-18 years old					
		organized sports (i.e. league games)			free-play outdoors (i.e. kickball, etc.)					
		fitness classes (i.e. aerobics)			free-play indoors (i.e. basketball, etc.)					
		Structured physical activity			Other (please describe)					
4. Youth Engagement in Activities										
4a. How frequently would you say that youth engage in activities at your facility?				(circle) 1 day 2 days 3 days 4 days 5 days 6 days 7days						
				Mon	Tues	Wed	Thurs	Fri	Sat	Sun
				Morn.	Morn.	Morn.	Morn.	Morn.	Morn.	Morn.
				Aftern.	Aftern.	Aftern.	Aftern.	Aftern.	Aftern.	Aftern.
				Even.	Even.	Even.	Even.	Even.	Even.	Even.
4c. How many youth show up on the day that they utilize the facility most?				Number of youth: ____ (approx.)						
4d. How many youth show up on the day that they utilize the facility the least?				Number of youth: ____ (approx.)						
4e. Within the past week, how many youth utilized your facility?				Number of youth: ____ (approx.)						
5. Are there any seasonal changes in activities that are typically provided (i.e. pool closures in the fall)?		No, all activities are available year-round			Yes, a rotating sports schedule exists					
		Other (Explain):			Yes, all outdoor amenities are closed during colder months					
		1.			2.					
		3.			4.					
		5.			6.					
		Yes, the following amenities support multiple activities:								
		1.								
		2.								
		3.								
		4.								
7. Are the resources at this facility available to all members of the community?		No, some restrictions apply			Yes					
		parental enrollment required			must reside within catchment area					
		registration fees apply			1. Other:					
		2. Other:			3. Other:					