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Physical activity opportunities in afterschool programs

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Abstract

Afterschool programs (ASPs) have potential to provide children moderate-to-vigorous physical activity (MVPA). The availability and types (e.g., free play or organized activities) of physical activity opportunities, their structure (e.g., presence of lines, elimination games), and staff behaviors (e.g., encouragement, engaged) can influence children's MVPA. This study explored these factors in 20 ASPs serving over 1,700 elementary-age children. The occurrence, types and structure of physical activity opportunities, and staff behaviors were collected via the System for Observing Staff Promotion of Physical Activity and Nutrition (SOSPAN). A total of 4,660 SOSPAN scans were completed across 63 complete program days (1733 during physical activity opportunities). Physical activity opportunities were observed on 60 program days across all 20 sites, with 73% of those opportunities classified as free play. ASPs scheduled an average of 66.3 minutes (range 15-150min) of physical activity opportunities daily. Games played included basketball, tag, soccer and football. Staff rarely engaged in physical activity promotion behaviors, and the structure of organized games discouraged MVPA. For example, staff verbally promoted physical activity in just 6.1% of scans, while organized games were more likely to involve lines and elimination. Professional development training may enhance staffs' physical activity promotion and the structure of activity opportunities.

Keywords

Obesity; out-of-school-time; youth

Introduction

Afterschool programs (ASPs) are called to promote children's accumulation of moderate-to-vigorous physical activity (MVPA) through the introduction of national, state, and local physical activity standards and benchmarks (Beets, Wallner, & Beighle, 2010c). These standards specify varying amounts of MVPA children should accumulate during the

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afterschool program (e.g., 30 to 60 minutes, 20% of program time – see Table 1) but current research suggests children's MVPA levels are insufficient to meet any suggested benchmarks for MVPA (Beets et al., 2014a) and are less than half of the 60 minutes a day of MVPA recommended for children (U.S. Department of Health and Human Services, 2008). For example: studies report that children spend the majority of their time in sedentary and light activities and accumulate only 10-20 minutes of MVPA while in attendance at ASPs (Beets, Rooney, Tilley, Beighle, & Webster, 2010a; Trost, Rosenkranz, & Dzewaltowski, 2008). Therefore, it is essential to identify points for intervention to increase children's accumulation of MVPA during the ASP.

The most obvious avenue for increasing children's MVPA during ASPs is to allocate more time for physical activity opportunities in the daily schedule. However, children are sedentary and/or engaged in light activity for a large proportion of the time allocated for physical activity during ASPs (Trost, et al., 2008). Therefore, simply allocating more time for physical activity opportunities in ASPs may not be adequate to increase children's MVPA to the levels called for in physical activity standards. For example, one study projects that children would need to attend afterschool programs for 3.4 hours to accumulate 30 minutes of MVPA (Beets, Huberty, & Beighle, 2012). Further, ASPs typically offer a range of daily activities in addition to physical activity opportunities including snack, enrichment, and academics (America After 3 PM, 2011). It is unlikely that programs will reallocate time dedicated to these activities to increase time for physical activity opportunities. An alternative approach to increasing time allocated for physical activity opportunities is to identify components of the existing physical activity opportunities that are limiting children's MVPA and contributing to children's sedentary behaviors and light intensity activity. Identifying components that reduce children's MVPA can enhance physical activity opportunities to maximize the amount of MVPA children accumulate during existing physical activity opportunities.

Standards for the promotion of MVPA in ASPs call for staff to both encourage MVPA and engage in activity with children (Beets, et al., 2010c). These staff behaviors are thought to create a social environment that supports children's engagement in MVPA (Beighle et al., 2010), however the evidence for this is emerging and mixed in the ASP setting. Some research has shown that a greater percentage of children engage in MVPA when ASP staff encourage children to be physically active and engage in physical activities with children (Weaver, Beets, Webster, & Huberty, 2014a). On the contrary one study has found that when afterschool staff play the game with children, children did not accumulate more MVPA (Hastmann, Foster, Rosenkranz, Rosenkranz, & Dzewaltowski, 2013). Despite the contradicting evidence physical activity standards call upon ASP staff to both encourage children to be active and engage in the activities with children.

Another factor possibly influencing children's accumulation of MVPA is the type physical activity opportunities offered. Physical activity opportunities can be operationalized into two categories or types of physical activity, organized or free play (Trost, et al., 2008). *Organized* games, are planned physical activities led by staff, and include sports, games (e.g., tag, duck-duck goose), dances, and races. *Free play* activities are unplanned and/or not led by staff, and commonly consist of children being released to play in an area with fixed

(e.g., playground, basketball goals) and/or portable physical activity equipment (e.g., balls, jump ropes) while supervised by staff (Trost, et al., 2008). While research in the ASP setting regarding the structure of physical activity opportunities is limited, there is some initial evidence that children accumulate more MVPA during free play physical activity opportunities than during organized physical activity opportunities (Coleman, Geller, Rosenkranz, & Dzewaltowski, 2008; Trost, et al., 2008). Therefore, it is crucial to understand what aspects of organized games may be limiting children's accumulation of MVPA.

The structure of physical activity opportunities may influence children's engagement in MVPA as well. Evidence indicates that games where children stand and wait for their turn reduce the percent of children engaged in MVPA (Weaver, et al., 2014a). Because of the dearth of evidence in the ASP setting, studies conducted in similar settings like recess and physical education can provide some guidance as to what variables may relate to children's accumulation of MVPA during ASP. Smaller teams are associated with higher overall activity levels (Bell, Johnson, Shimon, & Bale, 2013). Games that have elimination as a primary component decrease children's opportunity to be physically active (Foster, Behrens, Jager, & Dzewaltowski, 2010; Trost, et al., 2008) and reduce the percent of girls engaged in MVPA (Weaver, et al., 2014a). Single gender activity opportunities may increase girls' engagement in MVPA. Several studies indicate girls would rather participate in single gender physical activities (i.e., girls only) (Cockburn, 2001; Olafson, 2002; Taylor et al., 2000) because girls may be embarrassed in physical activity settings (Olafson, 2002), have lower self-esteem related to physical activity (Garcia et al., 1995; Taverno Ross, Dowda, Beets, & Pate, 2013), and boys dominate physical activity opportunities (Carroll & Loumidis, 2001; Nilges, 1998). However, research indicates girls may be more active in coeducational physical education classes (McKenzie, Prochaska, Sallis, & Lamaster, 2004) or there is no difference between girls activity levels in coeducational and single gender classes (Hannon & Ratcliffe, 2005). While the evidence on these factors' individual contribution to children's MVPA is far from conclusive, initial studies within the ASP setting have shown that combining these strategies (i.e., small-sized teams, girls only PA, eliminating elimination, reducing lines) is feasible and effective at increasing children's engagement in MVPA (Beets, Webster, Saunders, & Huberty, in press-b; Weaver, Beets, Saunders, Beighle, & Webster, in press-b).

The amount and structure of physical activity opportunities provided and ASP staff behaviors may play an important role in children's accumulation of MVPA during the ASP. However, few studies have described staff physical activity promotion behaviors and the physical activity offerings in ASPs, even though ASPs are widely called upon to increase children's MVPA (Beets, et al., 2010c). Therefore, the purpose of this study was to describe staff promotion of physical activity and the physical activity opportunities offered to children in ASPs.

Methods

Participants and Setting

Twenty ASPs representing 13 different organizations in the Midlands area of South Carolina participated in this study. ASPs were defined as operating daily throughout the school year, immediately following the school day, for a minimum of 2 hours, serving a minimum of 30 children of elementary age (k-5th graders), operating in a school, community, or faith setting, and providing a snack, homework assistance/completion time, enrichment (e.g., coloring sheets, arts and crafts), and opportunities for physical activity (Beets, 2012). ASPs were randomly selected from a registry of 535 programs in South Carolina and invited to participate in a 3 year intervention targeting healthy eating and physical activity. The data presented herein represents information on activity opportunities and corresponding staff behaviors collected at baseline, Spring (February -April) 2013. Detailed information on participant ASPs and their selection has been presented elsewhere (Beets et al., 2014b). Program eligibility consisted of operating within 1.5hr drive from the university and classification as an ASP as defined above.

On average across the 20 ASPs, enrollment was 88 children (range 30 to 162) and sites employed 4 staff members (range 1 to 10) and 1 program director (range 1 to 3). A total of 121 staff members (77% female) were employed by the participating ASPs. The mean age of employees was 32 years (range 16 to 74). The median age of staff members was 25 years, with seven of the staff members having achieved a graduate degree, 29 a bachelor's degree, 59 attending at least some college, 23 with a high school diploma, and 3 still attending high school. According to site rosters, there were 1836 children (47% female) enrolled in the 20 participating ASPs. The average age of the children was 8 years (range 4 to 14 years). The average population and family in poverty status, based on 2010 US Census data, were 15.4% (range 2.7% to 50.5%) and 11.4% (range 1.4% to 47.6%), respectively. The ethnic/racial composition of the ASPs was 57% White non-Hispanic and 38% African American.

Staff Behaviors and Physical Activity Opportunities

Structure of the physical activity opportunities and staff behaviors measured were chosen based upon an extensive review of physical activity standards documents (Beets, et al., 2010c), "best practices" position statements from elementary and middle school physical education (National Association for Sport and Physical Education, 2008; National Association of Sport and Physical Education, 2009), literature on competencies for school wide and afterschool physical activity promotion (American Academy of Pediatrics, 2012; Beighle, et al., 2010; Kelder et al., 2005; North Carolina Afterschool Professional Development Work Group, 2010), health behavior theory (Deci & Ryan, 1987; Stuntz & Weiss, 2010), and numerous visits to ASPs in the surrounding area. A total of 12 variables were included (see Table 4). Staff behaviors and structure of physical activity opportunities were classified as physical activity promoting (n=6) or discouraging (n=6). Physical activity opportunities were dichotomized into organized or free play.

Measurement

System for Observing Staff Promotion of Physical Activity and Nutrition

(SOSPAN)—Context of the ASP, staff behaviors and the structure of the physical activity opportunities were measured via direct observation using SOSPAN. This instrument is based on a momentary time sampling and was designed to measure staff behaviors and the structure of physical activity opportunities that either promote (e.g. verbal promotion, modeling physical activity) or discourage (e.g. verbal discouragement of physical activity, staff leading elimination games) children's physical activity (Weaver, et al., 2014a). The instrument also provides information on the context of the ASPs' scheduled activity (i.e., physical activity, snack, enrichment, academics).

Observation Schedule and Protocol

Observation occurred on three unannounced nonconsecutive weekdays (Mon-Thurs) from February through April 2013. No observation occurred on inclement weather days defined as: any weather that caused the site to alter their schedule from a typical day. If an observation day was defined as an inclement weather day observations were rescheduled for another day. Observations occurred no more than once per week at each site with most observations occurring at least two weeks apart. Observing ASPs over multiple unannounced non-consecutive days is consistent with other research and provides a representative sample of a typical program day (Beets et al., in press-a; Coleman, et al., 2008). A schedule of the daily activities for all grade levels or groups of children was collected at the beginning of each observation day. Prior to observation, each site was visited to determine available spaces in which the program activities could occur. These spaces are referred to as "target areas" (Weaver, Beets, Webster, & Huberty, 2014b).

Target areas that were occupied by ASP attendees and staff were systematically rotated through by the observer from the beginning to the end of each observation day. Five SOSPAN scans were completed consecutively (i.e., one after another) in each occupied target area prior to the observer moving to the next occupied target area. A representative sample of all of the activities occurring over the course of one ASP day was collected, by systematically rotating through the occupied target areas and continuously completing SOSPAN scans (Weaver, et al., 2014b).

Observer Training and SOSPAN Reliability—Nine trained observers completed all observations. Observers completed classroom training, video analysis, and field practice prior to data collection. Classroom training lasted two days (i.e. 3 hrs/day) and included a review of study protocol, orientation to the instrument, and committing observational codes to memory. Video analysis included watching video clips from ASPs and rating those clips using SOSPAN protocols. Field practice/reliability scans were completed on at least six days in participating sites (i.e. 3 hours each day). Inter-rater agreement criteria were set at >80% using interval-by-interval agreement for each category (Ridgers, Stratton, & McKenzie, 2010b). Consistent with published reliability protocols (Ridgers, et al., 2010b), reliability was collected prior to measurement and on at least 30% of data collection days. Inter-observer reliability for the ASP context, staff behaviors, and structure of the physical activity opportunities was estimated via interval-by-interval percent agreement and weighted

kappa (κ_w). Percent agreement ranged from 87.5% to 100% (median 98.7%) and κ_w ranged from 0.57 to 1.0 (median 0.84).

Analysis

All analyses were completed using Stata (v.12.0, College Station, TX). Context of the ASP (i.e., scheduled activity and type of physical activity), structure of the physical activity opportunities, and staff behaviors were expressed as the percentage of total SOSPAN scans during physical activity opportunities [(scans with variable/total SOSPAN scans during physical activity opportunities)*100]. Additionally, ASP context and physical activities are expressed as the percent of days [(number of days a variable was observed/total observation days)*100] and number of sites [(number of sites a variable was observed/total sites)*100] in which they were observed. Time allocated for each program context was analyzed using program schedules. Scheduled activities were categorized into the SOSPAN contexts: enrichment, physical activity, snack, academics, other (transition, devotion, assembly, drop off pick up, water/bathroom break). Total time allocated for each activity was then averaged across sites (total time allocated for context/number of sites that offered that activity). Mixed effects logistic regressions, with scans nested within days nested within ASP sites, estimated the likelihood of observing structure components of physical activity opportunities and staff behaviors during organized physical activity as compared to free play physical activity.

Results

Types of Physical Activities by Afterschool Program Context

A total of 4,660 SOSPAN scans were completed across 63 program days. Three programs were visited on four days due to the program ending earlier than usual. A breakdown of the scans collected during each scheduled activity (i.e. enrichment, physical activity, academics) is presented in Table 2. Enrichment (1503 or 32.3%), physical activity (1733 or 37.2%), and academics (909 or 19.5%) composed the majority of scans and were observed the most frequently across days (58, 60, and 52 days, respectively). Snack was observed on all observation days as well. On average, programs scheduled 66.3 minutes (range, 15-150 minutes) of their daily 203.8 minutes (range, 120-255) for physical activity opportunities. Enrichment (60.3 minutes), academics (54.8 minutes) and snack (28.5 minutes) accounted for the remaining portion of the daily schedule. During physical activity opportunities, 73.3% of the scans were classified as free play physical activity. Free play physical activities were observed in 19 of the 20 ASPs on 54 of the 63 measurement days, while organized physical activity opportunities were observed in 15 of the 20 ASPs on 34 of the 63 measurement days.

The top 15 games in which children chose to engage during free play physical activity and led by staff during organized physical activity are presented in Table 3. During free play, children chose to engage in basketball (38.9%), soccer (22.2%), and tag games (20.4%) on the highest percentage of days. Basketball (12 sites), soccer (9 sites), and tag games (9 sites) were also observed across most of the ASP sites. During free play, children chose to engage in seated games (i.e., games where the majority of children are seated, such as, board games

and sand box play, etc.) on 13.0% of days and seated games were observed in 7 of the 20 ASP sites.

During organized physical activity, staff led tag games on the most observation days (32.4%). Dancing (26.5%), basketball (26.5%), kickball (23.5%), racing or running activities (23.5%), and follow the leader activities (20.6%) were the next most common staff-led activities observed. Dancing was observed in 8 of the 20 sites representing the most widely staff-led activity across ASP sites, followed by basketball (7 sites), tag games, kickball (6 sites) and dodgeball (5 site).

Structure of Physical Activity Opportunities and Staff Behaviors

The structure of the physical activities and staff physical activity promoting or discouraging behaviors for free play and organized activity opportunities are presented in Table 4. The presence of physical activity promoting variables ranged from 66% (i.e., physical activity equipment available) to 2.3% (providing girls with their own physical activity opportunity) of scans during scheduled physical activity. The presence of physical activity discouraging variables ranged from 14.0% (idle time) to 1.2% (staff disciplining children and withholding physical activity as a consequence for misbehavior).

Three physical activity promoting behaviors showed statistical differences between free play and organized physical activity opportunities. These differences range from 4.57 (95% CI, 2.63-7.97) times more likely to observe a staff verbally promoting physical activity to 0.49 (95% CI, 0.36-0.67) times less likely to observe physical activity equipment during organized activity. Staff were also 1.47 (95% CI, 1.02-2.12) times more likely to verbally encourage physical activity during organized physical activity opportunities. Three physical activity discouraging variables showed statistical differences between free play and organized physical activity opportunities. Elimination games were 66.54 (95% CI, 31.07-142.52) times more likely to be observed during organized physical activity, while staff giving instructions was 19.21 (95% CI, 8.82-41.85) times as likely, and children standing in line for their turn was 5.92 (95% CI, 2.56-13.68) times as likely during organized physical activity.

Discussion

To our knowledge, this is the first study to examine the structure and types of physical activity opportunities, and corresponding staff behaviors in a large diverse sample of ASPs. While this is the largest study to date it is only representative of 20 programs in the southeastern United States. While these programs did not display any unique characteristics (i.e., limited or ample resources, single gender program) interpretations of these findings are generalizable only to programs with similar characteristics. Despite the afterschool sites in this study scheduling ample time for physical activity, recent evidence suggests that ASPs are not meeting benchmarks identified in policy guidelines. This study suggests that the majority of opportunities offered in ASPs are free play, suggesting that free play opportunities may not be sufficient for meeting policy guidelines. Therefore, allocating more organized activities and modifying the structure of these activities to maximize children's MVPA may be warranted (Arnett & Lutz, 2003; Beighle, Morgan, Le Masurier, & Pangrazi,

2006; Foster, et al., 2010; Ridgers, Salmon, Parrish, Stanley, & Okely, 2012; Trost, et al., 2008).

The ASPs in this study provided daily physical activity opportunities for an average of 66.3 minutes. This finding reaffirms ASPs' potential to promote children's MVPA. The majority of those opportunities were free play (73% of scans, across 19 programs on 54 of 63 observation days). While free play physical activity opportunities can provide some children large amounts of MVPA, they are problematic for three reasons. First, free play physical activity opportunities do not provide all children MVPA. Research has shown that girls accumulate less MVPA during free play physical activities than boys, but organized physical activities such as physical education (Sarkin, McKenzie, & Sallis, 1997; Tudor-Locke, Lee, Morgan, Beighle, & Pangrazi, 2006) and structured recess (Connolly & McKenzie, 1995; Jago, Bailey, & Baranowski, 2003) elicit MVPA levels that are roughly equivalent for girls and boys. Physical activity standards call for ASPs to provide *all* children in attendance health-enhancing levels of MVPA (Beets, et al., 2010c). Given the fact that children choose their activity levels during free play opportunities, they may fall short of providing equal amounts of MVPA for all children. The second reason free play opportunities are limited is that research has shown that children's activity levels decrease as time elapses in free play opportunities (McKenzie et al., 1997; Pate, Dowda, Brown, Mitchell, & Addy, 2012). Therefore, simply extending free play physical activity opportunities may not increase children's MVPA to the recommended benchmarks (Beets, et al., 2012; Beets, Rooney, Tilley, Beighle, & Webster, 2010b). The final reason why free play opportunities are problematic is that there are a limited number of ways to modify these opportunities to enhance children's MVPA. Whereas, there are endless avenues for modification when staff structure the rules of the physical activities provided (i.e., organized activities). For example, kickball can be modified to remove lines and elimination, and elicit increased amounts of MVPA through different types of locomotion. Free play, by definition, is child initiated and driven. Although enjoyable, essential to the development of children, and can result in MVPA, during free play opportunities some children will choose activities that elicit little or no MVPA. Therefore, one strategy to increase children's MVPA in ASPs could be to provide an equal proportion of free play along with high quality, enjoyable, organized, physical activity opportunities for children. A variety of enjoyable organized activities from which children can choose should be offered so that children are still autonomous and empowered to make decisions about which activities they choose to engage (Stuntz & Weiss, 2010).

If programs intend to enhance all children's MVPA by scheduling organized physical activity opportunities, the structure of those activities need to be carefully examined. Compared to free play opportunities, children were more likely to stand in line, be eliminated from physical activity opportunities, and less likely to have access to physical activity equipment during organized physical activity opportunities. Elimination from physical activity opportunities and the presence of lines are associated with lower levels of MVPA (Foster, et al., 2010; Weaver, et al., 2014a) while providing children with physical activity equipment is consistently associated with higher levels of physical activity (Jago, et al., 2003; Ridgers, Fairclough, & Stratton, 2010a). These findings may explain why some

studies found that children are more active during free play activities than organized activities in ASPs (Rosenkranz, Welk, & Dziewaltowski, 2011; Trost, et al., 2008).

While staff verbal promotion of, and engagement with, children in physical activity was rare, staff were more likely to participate in both of these behaviors during organized physical activity opportunities. These behaviors are both theoretically (Stuntz & Weiss, 2010; Weaver, Beets, Webster, Beighle, & Huberty, 2012) and empirically (Huberty, Beets, Beighle, & McKenzie, 2012; Weaver, et al., 2014a) linked to increases in children's MVPA and have been called for in physical activity standards (Beets, et al., 2010c). Increasing organized physical activity opportunities may elicit these desirable staff behaviors.

The games observed in this study suggest that there is a relatively small set of physical activities offered across most ASPs. This finding may explain why previous interventions relying on physical activity curriculums have reported modest (Dziewaltowski et al., 2010; Nigg, Battista, Chang, Yamashita, & Chung, 2004) or no (Iversen, Nigg, & Titchenal, 2011; Sharpe, Forrester, & Mandigo, 2011) increases in MVPA. ASP staff have reported delivering a limited number of curriculum components (i.e. physically active games) because they did not understand the games or felt they did not possess the skills required to lead games in the curriculum (Sharpe, et al., 2011). Staff also refrained from delivering activities because they did not have the appropriate equipment (Hastmann, Bopp, Fallon, Rosenkranz, & Dziewaltowski, 2013). Physical activity curriculums often include hundreds of games designed to increase children's MVPA. These findings suggest that staff were overwhelmed by the volume of activities included in curriculums. An alternate strategy could be to identify a few key components that increase children's engagement in MVPA within organized physical activities. Staff can then be trained to identify and modify components of the few naturally occurring games in their ASP that limit children's MVPA. For example, staff can be trained to modify their games to align with the LET US Play principles (Weaver, Beets, Beighle, Saunders, & Pate, in press-a; Weaver, et al., in press-b) of removing Lines, eliminating Elimination, minimizing Team size, and getting Uninvolved staff/kids involved, and modifying Space, equipment and rules. Games that align with these principles increase children's engagement in MVPA (Beets, et al., in press-a; Weaver, et al., in press-a; Weaver, et al., in press-b).

This study has several strengths. It provides the first insight into the physical activity environments created by staff in a large diverse sample of ASPs. The number of observation days and SOSPAN scans completed suggests that these data are a comprehensive overview of physical activity promoting/discouraging staff behaviors displayed, the games played, and the context in which it occurred at the participating sites. However, this study has some limitations. The primary limitation is the lack of a child level measure of physical activity. Future, studies with a representative sample should also include a measure of children's activity levels at the child level to definitively answer what components of organized physical activity opportunities and staff behaviors are influencing children's accumulation of MVPA. Studies of this nature would help to answer why free play has been found to be more active in ASPs than organized activity. The findings in this study also represent a limited number of programs (n=20) when there are at least 535 operating in the state of South Carolina and many more operating nationwide. However, we believe these findings

do apply to a wide variety of programs because of the diverse nature of the participating programs (i.e., number of children attending; % in poverty; programs represent multiple organizations in faith, community, and school based settings). Another potential limitation is that programs did not always follow their daily schedules. Therefore, time allocated on the schedule for an ASP context may have differed from what the program delivered on any given day. The size of several of the programs and complexity of the schedules (i.e., several different scheduled activities occurring simultaneously) made it impossible to track every child throughout the entire program day. However, time scheduled does provide an indication of what ASP leaders intend to deliver to children and in turn what they value. Further, the proportion of SOSPAN scans in each ASP context provides a snapshot of the program components offered daily. In this study it was impossible to identify if the types or structure of physical activity opportunities and staff behaviors differed by grade level because many of the participating ASPs structured their programs to include many grade levels in one physical activity opportunity. Further work is needed to identify if there are differences between the types and structure of activities offered in ASPs by grade level. Different strategies may be needed for differing grade levels. For example if more activities include elimination in the younger age groups staff may need additional training to eliminate elimination games.

In conclusion, findings from this study suggest that ASPs require additional support if they are to meet existing MVPA standards for ASPs. Simply allocating more time in the schedule for physical activity opportunities may not be sufficient for increasing children's engagement in MVPA because the physical opportunities provided included components that limit children's MVPA. Professional development training for ASP staff focused on increasing organized physical activity opportunities, modifying the games that naturally occur in the ASP to align with the LET US Play principles, and increasing physical activity promoting behaviors is one strategy for increasing children's MVPA while in attendance.

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Table 1

Sample physical activity policies for afterschool programs

Policy	Organization	Source
"Provide a minimum of 30 to 60 minutes of MVPA during the after school program."	California After School Physical Activity Guidelines	http://www.cde.ca.gov/ls/ba/as/documents/paguidelines.pdf
"20% of daily program time for moderate-to-vigorous physical activity"	North Carolina Center for Afterschool Programs	http://www.nhealthyschools.org/docs/school/afterschoolstandards.pdf
"Dedicates at least 20% or at least 30 minutes of morning or afterschool program time to physical activity (60 minutes for a full day program)" "Provides physical activities in which students are moderately to vigorously active for at least 50% of the physical activity time"	National Afterschool Association	http://www.niost.org/pdf/host/Healthy_Eating_and_Physical_Activity_Standards.pdf
"Provide opportunities for light, moderate, and vigorous physical activity for at least 60 minutes per day while children are in care for a full-day program and 30 minutes for half-day program"	YMCA of USA	http://www.ymcaeuc.org/content/promo/2013%2004%20HEPA%20Standards.pdf

Table 2

Break down of the days, and percent of scans by afterschool program context

Scheduled Activity	Program Time Allocated ^{a,c}	Program Time Allocated Range	Number of Scans ^b	Percent of Total Scans ^b	SE	Percent of Observation Days ^b	Number of Observation Days ^b	Number of Sites ^b
Enrichment	60.3	(15, 90)	1503	32.3	0.7	92.1	58	20
Physical Activity	66.3	(15, 150)	1733	37.2	0.7	95.2	60	20
Free play ^d	-	-	1271	73.3	1.2	85.7	54	19
Organized ^{d,f}	-	-	462	26.7	2.1	54.0	34	15
Snack ^g	28.5	(15, 80)	-	-	-	100	63	20
Academics	54.8	(25, 90)	909	19.5	0.6	82.5	52	20
Other (transition, devotion, assembly, drop off pick up, water/bathroom break)	22.8	(0, 70)	515	11.1	0.5	81.0	51	20

A total of 4,660 scans were completed across 63 program days

Programs operated (i.e., time allocated for children to attend) for an average of 204 minutes with a range of 120 minutes to 255 minutes of operation time

^aData presented is collected from afterschool program schedules^bData presented is collected from SOSPAN^cProgram time allocated for each program context in minutes^dSchedules did not indicate whether physical activity opportunities were free play or organized therefore the allocated time could not be calculated^fIndicate times where at least one activity was staff led. These could happen in combination with other free play opportunities.^gOne snack observation was completed each day

Table 3

Physical activities in which children choose to engage during free play physical activity time

Free Play Physical Activity ^a	Percent of Days			SE	Percent of Scans			SE	# of Sites Observed
Basketball	38.9	6.7			15.0	1.0			12
Soccer	22.2	5.7			6.0	0.7			9
Tag Games	20.4	5.5			2.8	0.5			9
Football	13.0	4.6			3.0	0.5			5
Seated games (e.g., playing in sand box, sitting and playing with toys)	13.0	4.6			2.6	0.4			7
Kickball	9.3	4.0			1.3	0.3			5
Ball and bat games	5.6	3.1			2.8	0.5			1
Throwing and catching games	5.6	3.1			0.9	0.3			3
Jump roping	5.6	3.1			0.6	0.2			2
Dancing	5.6	3.1			0.4	0.2			2
Follow the leader activities (e.g. Simon says, poop deck)	3.7	2.6			0.7	0.2			1
Dodgeball	3.7	2.6			0.6	0.2			2
Ultimate Frisbee	3.7	2.6			0.2	0.1			2
Racing or running activities	1.9	1.9			0.4	0.2			1
Hula Hooping	1.9	1.9			0.3	0.2			1
Organized Physical Activity ^b									
Tag Games	32.4	6.0	11.5	1.6	6				
Dancing	26.5	5.6	8.3	1.4	8				
Basketball	26.5	5.6	7.0	1.3	7				
Kickball	23.5	5.4	11.5	1.6	6				
Racing or running activities	23.5	5.4	10.7	1.6	4				
Follow the leader activities (e.g. Simon says, poop deck)	20.6	5.2	10.7	1.6	4				
Dodgeball	14.7	4.5	11.2	1.6	5				
Circle Games (e.g. duck duck goose, parachute games)	14.7	4.5	3.9	1.0	4				
Soccer	11.8	4.1	2.6	0.8	4				
Other (e.g. pretending to be animals, jumping and landing game)	11.8	4.1	2.3	0.8	4				
Throwing and catching games	8.8	3.6	4.4	1.1	2				
Football	8.8	3.6	2.1	0.7	3				
Exercise routines (e.g., tae bo, aerobics)	5.9	3.0	4.2	1.0	2				
Ultimate Frisbee	2.9	2.2	3.1	0.9	1				
Free play ^c	26.5	5.6	6.3	1.2	8				

Based on 1271 scans during free play physical activity and 462 scans during organized physical activity

^aFree play physical activity was observed on 54 of the 63 measurement days in 19 of the 20 sites^bOrganized physical activity was observed on 34 of the 63 measurement days in 15 of the 20 sites^cFree play physical activity was observed in addition to organized staff led physical activity

Table 4

Percent of Total Scans/Days a Physical Activity Promoting/Discouraging Staff Behavior was Observed.

	Percent of total scans observed during scheduled PA (Spring 2013) ^a	SE	Odds of recording behavior during organized physical activity ^a	95% CI
PA Encouraging Staff Behaviors and Game Structure				
Staff verbally promoting physical activity	6.1	0.6	4.57	(2.63,7.97)
Staff engaged in physical activity with children (i.e. playing the game)	16.6	0.9	1.47	(1.02,2.12)
Choice provided (i.e. more than one activity opportunity provided)	7.4	0.6	1.05	(0.59,1.87)
Small game (i.e. games with less than 10 children participating)	3.9	0.5	6.20	(0.91,42.38)
Girls only physical activity	2.3	0.4	0.76	(0.31,1.86)
PA equipment available	66.0	1.1	0.49	(0.36,0.67)
PA Discouraging Staff Behaviors and Game Structure				
Children standing in line and waiting for turn	13.2	0.8	5.92	(2.56,13.68)
Playing elimination game (i.e. children eliminated from PA opportunities)	9.2	0.7	66.54	(31.07,142.52)
Staff giving instructions	3.7	0.5	19.21	(8.82,41.85)
Staff disciplining children	1.2	0.3	1.09	(0.35,3.47)
Idle time (i.e. children waiting for direction from staff with no specific task)	14.0	0.8	1.45	(0.96,2.20)
Withholding physical activity as a consequence of misbehavior	1.2	0.3	0.94	(0.25,3.50)

^aBased on 1,733 SOSPLAN scans during schedule physical activity opportunities (462 during organized physical activity), free play physical activity is the referent group, statistically significant differences are bolded