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## A Comprehensive Professional Development Training's Effect on Afterschool Program Staff Behaviors to Promote Healthy Eating and Physical Activity

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### Abstract

**Objective**—Evaluate a comprehensive intervention designed to support staff and program leaders in the implementation of the YMCA of USA Healthy Eating and Physical Activity (HEPA) Standards for their afterschool programs (3-6pm).

**Design**—Pre (Fall 2011) and post (Spring 2012) assessment no control-group.

**Setting/Participants**—Four large-scale YMCA afterschool programs serving approximately 500 children.

**Intervention**—Professional development training founded in the 5Ms (i.e. Mission, Model, Manage, Monitor, Maximize) and LET US Play principles (i.e. lines, elimination, team size, uninvolved staff/kids, and space, equipment and rules), on-site booster training sessions, workshops, and ongoing technical support for staff and program leaders from January to May 2012.

**Main outcome measures**—System for Observing Staff Promotion of Activity and Nutrition (SOSPAN).

**Analysis**—Multilevel mixed effects linear (i.e., staff behaviors expressed as a percentage of the number of scans observed) and logistic regression.

**Results**—A total of 5328 SOSPAN scans were completed over the two measurement periods. Of the 20 staff behaviors identified in HEPA Standards and measured in this study, 17 increased or decreased in the appropriate direction. For example, staff engaged in physical activity with children increased from 26.6% to 37% and staff eating unhealthy foods decreased from 42.1% to 4.5%.

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**Conclusions**—Comprehensive professional development training, founded in the 5Ms and LET US Play principles, and ongoing technical assistance can have a sizable impact on key staff behaviors identified by HEPA Standards for afterschool programs.

### Keywords

Intervention; obesity; out-of-school-time; children

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## BACKGROUND

In recent years afterschool programs have been called upon to promote healthy eating and physical activity (HEPA) of the children they serve.<sup>1-3</sup> National and state organizations have responded to this call by developing HEPA Standards for afterschool programs.<sup>3,4</sup> These HEPA Standards outline key behaviors frontline-staff (i.e. those individuals interacting with children daily - hereafter referred to as “staff”) should exhibit to create a HEPA friendly afterschool program environment. These behaviors include modeling HEPA, verbally promoting HEPA, facilitating games that encourage child physical activity (e.g. modifying games that involve elimination or lines) and refraining from withholding or prescribing physical activity as punishment. The implicit belief communicated by the HEPA standards is that, by creating a more HEPA friendly environment, children will eat more healthy foods and accumulate health enhancing levels of physical activity. Little is known about the alignment of staff behaviors with HEPA standards and the validity of this assumption in afterschool programs.

To date only one study has examined staff behaviors and their alignment with HEPA standards in afterschool programs.<sup>5</sup> The study found that staff were not displaying HEPA promotion behaviors called for in HEPA Standards while they were engaging in behaviors discouraged by the HEPA Standards. For instance staff were verbally promoting physical activity a mere 3.2% of the scheduled physical activity time and children were standing in line waiting for their turn 24.3% of scheduled physical activity time. The study did find that when PA promoting behaviors were present children were more active. For instance when staff were playing the game with children 11.5% more boys and 4.7% more girls were engaged in MVPA. Another recent study in afterschool programs found that when staff verbally promoted physical activity 20.6% more girls engaged in MVPA.<sup>6</sup> No studies have examined staff behaviors and their link to children's healthy eating in afterschool programs. However, standards call for staff to display healthy eating promotion behaviors and these behaviors are theoretically and empirically linked to children's behavior in similar settings.<sup>7</sup> While there is a shortage of work in this area, early evidence indicates that staff are not engaging in behaviors that can influence children's HEPA in a positive way. If afterschool programs are going to meet the goals set forth in HEPA standards staff and site leaders will need support.

The YMCA of USA is one of the largest afterschool program providers in the country. In November 2011, the YMCA of USA adopted HEPA Standards to address the nutritional quality of snacks served and childhood inactivity in their afterschool programs.<sup>8</sup> Consistent with other HEPA Standards, the YMCA of USA standards describe key behaviors staff should exhibit that theoretically and intuitively lead to successfully meeting HEPA goals.

However the standards do not outline strategies for increasing staff behaviors that promote child HEPA or eliminating staff behaviors which are inconsistent with HEPA Standards.<sup>9</sup> This omission leaves program leaders with no guidance for how to incorporate standards into routine practice.

Several studies have intervened on child HEPA in the afterschool program setting.<sup>10</sup> These studies have used a variety of approaches including delivering physical activity curriculum, environmental changes driven by policy adoption and programs tailored to the cultural needs of afterschool programs but have resulted in limited success. Some studies have reported minimal increases in child activity<sup>11-13</sup> while other studies have reported no increase in child activity.<sup>14,15</sup> We hypothesize that, one reason for the limited success of these studies may be that staff are not displaying behaviors linked to child physical activity, and outlined in HEPA Standards, at a sufficient level to affect child physical activity.<sup>9</sup> Interventions targeting snacks served in afterschool programs have enjoyed more success<sup>16,17</sup> but there is a scarcity of these studies in the literature. To this point, no studies have evaluated interventions in respect to their effect on staff HEPA promoting or discouraging behaviors. This gap in the literature is problematic because there is no evidence for what intervention strategies align staff behaviors with HEPA Standards in the afterschool program setting, and what HEPA promoting or discouraging behaviors affect child HEPA. As a necessary first step, it is critical to develop strategies to align staff behaviors with HEPA Standards and to evaluate the effects of such strategies on staff HEPA promoting or discouraging behaviors. The purpose of this study is to describe the development and first year outcome evaluation of competency based professional development training<sup>18</sup> on staff engagement in HEPA promoting behaviors and the elimination of staff engagement in HEPA discouraging behaviors.

## METHODS

### Participants

Four large scale YMCA afterschool programs serving approximately 500 children daily in the Columbia, SC area participated in this pilot study. These programs were pre-existing community-based programs taking place immediately after the regular school day (typically 3-6pm), were located at a community organization outside the school environment (i.e., YMCA), were available daily throughout the academic year (Monday through Friday), and provided a combination of scheduled activities which included snack, homework assistance/tutoring, enrichment activities (e.g., arts and crafts, music), and opportunities for children to be physically active. All protocols were approved by the University's Institutional Review Board.

### Intervention

These results represent the baseline and first year findings of a two year evaluation using a pre/post-assessment no control group design. A comprehensive and coordinated approach was developed with the objective of identifying low- and no-cost strategies afterschool programs can employ to align routine practice with HEPA Standards. The approach was informed by social ecological models of health promotion,<sup>19</sup> complex systems change,<sup>20</sup> and

public health policy literature.<sup>21,22</sup> The conceptual model has been explained in detail elsewhere.<sup>23</sup> In brief, afterschool programs were conceptualized as complex systems in which multiple levels exist. Characteristics at each of these levels are capable of influencing the successful implementation of HEPA standards and, in turn, impact children's HEPA during the program. In this case, the system included standards at the national, state and organizational levels; site characteristics; individual program leaders; staff and the characteristics of children attending. Modifiable characteristics at each level were identified and targeted to help facilitate the achievement of the standards.

**HEPA Standards**—In November of 2011 the YMCA of USA adopted HEPA Standards for all of their afterschool programs, including the sites participating in this study.<sup>8</sup> Using principles of community-based participatory research,<sup>24</sup> university and afterschool program staff created a collaborative work group to review the HEPA Standards adopted by the YMCA of USA, in addition to all national, state and local afterschool program standards related to HEPA.<sup>3,4</sup> Utilizing an iterative process, the collaborative work group identified strategies to achieve HEPA Standards and meet the needs of each afterschool program site.

Standards identified five levels of influence on children's HEPA (i.e. child, staff, program leader, parent, and environment of the afterschool program). From the beginning it was a priority of the collaborative group to identify low-cost strategies to meet HEPA standards. Those influences deemed most salient and modifiable with a realistic input of resources were selected by the collaborative work group and targeted in this intervention. In line with this priority standards that targeted the physical and social environment of the afterschool program were selected because those are the standards over which staff and site leaders have direct influence and can be modified with minimal input of resources. These standards explicitly targeted appropriate and inappropriate behaviors of staff (e.g. removing elimination games from the program, prepare an activity plan, modeling HEPA) the physical environment (i.e. posters about HEPA, modifying games to increase activity) and schedule (i.e. non-sport activity daily, 60 min of program time for physical activity, snack time daily) of the afterschool program. Specific strategies were developed to support staff in the modification of the social and physical environment of the afterschool program to promote HEPA.

**Professional development training**—The primary strategy for the increased engagement of staff in HEPA promoting behaviors was through professional development training consisting of a 2 hour healthy eating training and 3 hour physical activity training. The trainings were incorporated into semi-yearly professional development trainings previously in place at the YMCA afterschool programs. All staff were required to attend along with their program leaders. The professional development training was founded on the 5Ms—*Mission, Manage, Motivate, Monitor, Maximize*<sup>18</sup> training model and was designed to develop afterschool program staff competencies related to increasing child engagement in HEPA. Competencies included in the trainings are consistent with policy documents,<sup>3,8,25,26</sup> “best practices” position statements from elementary and middle school physical education,<sup>27,28</sup> literature on competencies for school wide and afterschool physical activity promotion,<sup>2,29-31</sup> theory<sup>32,33</sup> and our extensive experiences working in afterschool

programs. During trainings staff participated in and led healthy eating exercises and physical activities in the five domains of the training program. Competencies included in the healthy eating training included role modeling healthy eating, promoting healthy eating, and safe food handling. The physical activity component of the professional development training utilized the LET US Play competencies nested within the 5Ms professional development training model. These competencies included the LET US Play (i.e. lines, elimination, team size, uninvolved staff/kids, and space, equipment and rules) principles. The LET US Play principles were introduced to staff in order to provide a reflective tool for the identification of barriers that limit children's activity during free-play and organized activity opportunities in the afterschool program setting. During trainings staff also practiced competencies related to managing children in physical activity environments (e.g. using countdowns to transition between activities quickly, actively supervising children, keeping all children in view) in order to reduce time children were idle and the time staff were instructing and disciplining children. The trainings were led by university personnel with expertise in HEPA promotion for all afterschool program sites.

**On-site booster sessions**—A total of 3 booster sessions were conducted in each afterschool program site. Booster sessions consisted of real-time feedback and modeling of HEPA promotion strategies over one complete program day (i.e. ~3-6pm). Program leaders and staff received feedback on successes and areas for improvement tailored specifically to each program. Observation notes were compiled, along with suggestions for program enhancement and emailed to program leaders and branch directors for dissemination to staff. Observations and suggestions were aligned with competencies presented to staff in the 5Ms professional development training and focused on modifying games to enhance child physical activity levels based on the LET US Play principles, managing physical activity environments effectively, as well as modeling and encouraging child HEPA.

**Ongoing feedback and technical support**—Weekly contact via phone, email or face to face conversation with program leaders was provided throughout the intervention (Spring 2012, Fall 2012 and Spring 2013) by the lead author to give ongoing feedback and technical support regarding each afterschool program site's progress toward goals outlined in the HEPA Standards. Feedback highlighted the level of implementation of staff HEPA promoting/discouraging behaviors in each site. Weekly contact also included follow-up on the professional development training and booster sessions. Furthermore, ongoing technical support for afterschool program leaders in regards to barriers to implementation of the staff HEPA promoting/discouraging behaviors and for immediate feedback and solutions for addressing the identified barriers.

### **System for observing staff promotion of activity and nutrition (SOSPAN)**

Implementation of the HEPA behaviors by staff was collected via direct observation using the SOSPAN instrument. Designed as a systematic observation instrument SOSPAN measures staff behaviors related to HEPA promotion and is aligned with HEPA standards.<sup>9</sup> Behaviors included in SOSPAN are described in Table 1. The SOSPAN instrument is based upon momentary time sampling techniques and is reliable and valid.<sup>9</sup> In brief, SOSPAN captures 20 staff behaviors (13 physical activity behaviors and 7 healthy eating behaviors)

that either promote (e.g. verbal promotion, modeling HEPA) or discourage (e.g. verbal discouragement of physical activity, unsafe food handling) HEPA. The instrument is divided into three subsections including staff management behaviors, staff promotion behaviors, and context of the afterschool program. Staff management behaviors (n = 10) consist of contextual factors of the activity (e.g. children eliminated from physical activity opportunities, children stand and wait in line for turn, unsafe food handling) occurring, over which staff have direct control. Staff promotion behaviors (n = 10) include actions that staff perform (e.g. supervise physical activity, engaged in physical activity with children, verbally promote HEPA, educating children about HE). The context of the afterschool program (i.e. scheduled physical activity, snack, enrichment, academics) in which staff behaviors occur is also recorded by the SOSPAN instrument.

### **Observation Schedule and Protocol**

Observation occurred on a minimum of four unannounced nonconsecutive weekdays (Mon-Thurs) throughout August, September, and October 2011 (baseline) and again during April and May 2012 (outcome) at each afterschool program. Data were collected over 50 program days across both measurement periods. Scans were completed continuously from the beginning to the end of each program day. Consistent with the SOSPAN protocol, each site was visited prior to data collection to identify size, location, and boundaries of each target area.<sup>9</sup> A total of 91 target areas were identified across the four afterschool programs, with each individual site having anywhere from 17-28 target areas (e.g. playgrounds, fields, gyms, pools). Variations in how the afterschool programs were structured required modified observation strategies as outlined below.

Afterschool programs, divided children using two strategies: by grade level (e.g. k-1, 2-3 and 4-5) or activity tracks (e.g., organized or free-play physical activity, arts and crafts, dance) lasting ~45-60 minutes from which children could choose. When children were divided by grade level observers rotated through each grade level's scheduled activity. When children were divided into activity tracks observers rotated through scheduled tracks. Observers completed five consecutive scans in each target area in which the track/grade level was located prior to moving to the next track/grade level. Two observers completed scans daily; systematically rotating through scheduled tracks/grade levels separately in order to maximize the amount of the program observed. No observations were made in target areas where no children were present.

### **Observer Training and SOSPAN Reliability**

Five trained observers completed all observations. Observer training was conducted by the lead author prior to baseline and post-assessment data collection. Observers completed classroom training and field practice. Classroom training lasted two days (i.e. 3 hrs each day) and included reviewing study protocol, orienting observers to the instruments, and committing observational categories and codes to memory. Observers completed at least three days (i.e. 3 hours each day) of field based observations including familiarization with target areas at program sites and completing practice/reliability scans. Inter-rater agreement criteria were set at >80% using interval-by-interval agreement for each category.<sup>34,35</sup> Consistent with published reliability protocols,<sup>35,36</sup> reliability was collected on at least 30%



of measurement days during baseline and post-assessment data collection. Reliability for SOSSPAN was collected over 34 days across all four participant afterschool programs. Estimates are based upon 952 reliability scans across baseline and post-assessment. Percent agreement between observers for staff behaviors ranged from 84-100 percent.

### Data Analysis

Changes over time in staff behaviors were examined using multilevel mixed effects linear (i.e., staff behaviors expressed as a percentage of the number of scans observed) and logistic regression. Logit models were used to analyze the odds of observing a behavior at post-assessment as compared to baseline. The models for staff behaviors were estimated including only those scans that were performed during scheduled snack or physical activity time because that is when staff had the greatest opportunity to display HEPA promoting or discouraging behaviors. For six variables (i.e. staff eating or drinking inappropriate foods, staff practicing unsafe food handling, children preparing food, children distributing food to other children and staff verbally educating children about healthy eating) data were converted into the percentage of days where the behavior was observed because HEPA Standards call for these behaviors to be displayed during a finite time period (i.e. children should prepare and distribute food at the beginning of snack) or call for a staff behavior to be displayed daily/weekly (i.e. staff should deliver nutrition education weekly). All models were estimated using Stata (v.12.0., College Station, TX).

## RESULTS

### Changes in staff behaviors

Observers completed 2976 SOSSPAN scans during scheduled physical activity and snack across the two measurement periods. At baseline, five of the 20 HEPA behaviors recorded in this study were not observed in any scans. Due to zero observations linear and logit models for these behaviors were not estimated, unadjusted means are presented instead (see Table 2). Overall, of the 20 HEPA staff behaviors observed at baseline and post-assessment, 17 moved in the desired direction (i.e. including behaviors that were not observed at baseline but were observed at post-assessment) with 10 staff behaviors reaching statistically significant changes. Changes in staff behaviors that promote physical activity ranged from a 1.9% increase for staff leading or instructing physical activity to a 14.1% increase for small games, while the odds of observing staff behaviors that promote physical activity ranged from no statistically significant increase for staff leading or instructing physical activity to 12.98 times more likely for small games at post-assessment. Changes in staff behaviors that discourage physical activity ranged from a 3.7% increase for staff engaged in other tasks, a behavior that has been linked to decreased child activity levels,<sup>6</sup> to a 26.4% decrease for children engaged in idle time (i.e. waiting for staff to give direction). Odds of observing physical activity discouraging behaviors at post-assessment ranged from 1.33 times more likely (i.e. staff engaged in other tasks) to 0.05 times (i.e. staff withholding physical activity as a consequence for misbehavior) as likely to be observed as at baseline.

Staff verbally promoting healthy eating was observed in 10.5% of scans at post-assessment while it was not observed at baseline. Staff eating or drinking inappropriate foods during

scheduled snack was observed on 37.6% and 20.1% fewer days at post-assessment while the odds of observing these behaviors were 0.07 and 0.42 times as likely at post-assessment as they were at baseline, respectively. Staff verbally educating children about healthy eating, children preparing and children distributing food were not observed on any days at baseline and were observed on 9.5%, 18.8% and 31.3% of days respectively at post-assessment.

## DISCUSSION

This study is the first to evaluate a professional development training to increase staff HEPA promoting behaviors and decrease HEPA discouraging behaviors. Findings indicate that after as few as four months changes in staff behavior can be amended to be more consistent with HEPA standards. Thus, these findings represent the first step towards creating HEPA friendly environments by demonstrating their impact on key staff behaviors.

An important aspect of the approach was that the strategies developed (i.e. initial and continuous training, feedback, technical support) and implemented involved minimal changes to routine practice and were continuously delivered over the two year partnership. Strategies that are easily integrated into routine practice are more likely to be adopted by afterschool programs and thus more likely to affect staff behaviors and ultimately child HEPA.<sup>37</sup> Furthermore, the strategies of ongoing professional development training, feedback and technical assistance can be easily implemented, through developing partnerships with HEPA experts, in a wide variety of settings including YMCAs and other afterschool programs across the country. Another key component of the strategies employed within this study was that they were ongoing. Evidence in the school setting has shown that professional development training and support that is consistently delivered over time is the most effective.<sup>38,39</sup> Thus, the strategies developed herein have the potential to impact a large number of children attending afterschool programs daily. However, a key limiting factor, at the moment, is that there is no information on the cost of employing such strategies (i.e. paying for staff training hours, paying for experts to deliver trainings, etc.). Therefore, the next step to disseminating these strategies on a large scale is to evaluate the cost associated with training, feedback and technical support.

The impact of these strategies extends beyond staff behaviors to child level outcomes, as well. Theoretically, changes in HEPA promoting and discouraging behaviors should be linked to increases in child HEPA. In a recent study, a limited number of staff physical activity promoting and discouraging behaviors included in the SOSPAN instrument (i.e. staff promotion of physical activity, staff engaged in physical activity) were related to a decrease in sedentary children and an increase in the proportion of children engaged in MVPA.<sup>6</sup> This study is part of the growing body of literature linking staff behaviors to child activity levels in the afterschool program setting.<sup>9</sup> For healthy eating, since all children receive the same snack, and the nutritional quality of the snack is often outside the control of staff, it is difficult to link the healthy eating staff behaviors to a child-level outcome. Nevertheless, the healthy eating behaviors (e.g., role modeling) outlined in the HEPA Standards documents are theoretically supported and therefore, it is important to ensure staff exhibit these behaviors during the afterschool program.



This study has a variety of strengths. The partnership between community and university personnel enabled the collaborative team to identify barriers to staff engagement in HEPA promotion behaviors. This collaboration also allowed for the development of strategies to address these barriers. The number of scans collected is also a strength of this study. The abundance of data collected (i.e. 2976 SOSPAN scans) allowed the researchers to capture a large number of instances where staff had the opportunity to demonstrate the HEPA promoting or discouraging behaviors. Thus, the data presented is representative of staff behavior occurring within these afterschool programs. This study also has limitations that must be considered when interpreting the findings. The small number of YMCA's included in this study (n=4) limit the generalizability to other YMCA afterschool programs. The lack of a control group also raises the concern that increases or decreases in staff behaviors may have occurred in the absence of the intervention (i.e. internal validity). In the future, randomized controlled trials with similar findings would strengthen the findings of this study. Future work is also needed linking staff behaviors aggregated at the site level to child physical activity time (i.e. are children accumulating more physical activity at sites that employ staff who display more promotion behaviors)?

In conclusion, the adoption and implementation of HEPA Standards and the collaborative effort of community and university staff to create HEPA promoting strategies to meet these standards led to increases in staff behaviors that promote HEPA and decreases in staff behaviors that discourage HEPA. Future work is necessary where changes in staff behaviors are linked to child-level outcome (e.g., objectively measured physical activity).

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**Table 1**

SOSPAN instrument sequence of scans and variables collected

Scan	Variable
<b>SOSPAN Physical Activity Promotion Scan<sup>†</sup></b>	
Activity Context	Scheduled activity Grade level of children Location of activity Equipment available
Staff Behaviors	Staff engaged in other tasks Staff leading or instructing physical activity Staff verbally promoting physical activity Staff verbally discouraging physical activity Staff engaged in physical activity with children (i.e. playing the game) Withholding physical activity as a consequence of misbehavior Staff eating inappropriate foods Staff drinking other than water
Staff Management	Staff giving instructions Staff disciplining children Idle time (i.e. children waiting for direction from staff with no specific task) Choice provided (i.e. more than one activity opportunity provided) Small game (i.e. games with less than 10 children participating) Children standing in line and waiting for turn Playing elimination game (i.e. children eliminated from PA opportunities)
<b>SOSPAN Nutrition Promotion Scan<sup>‡</sup></b>	
Staff Behaviors	Staff verbally promoting healthy eating Staff verbally educating children about healthy eating Staff eating inappropriate foods Staff drinking other than water
Management	Unsafe food handling Children preparing food Children distributing food to other children

<sup>†</sup> Scans completed during all scheduled activities

<sup>‡</sup> Scans completed during scheduled snack or lunch only

Table 2

Increase/Decrease in staff HEPA promotion/management behaviors from baseline to post-assessment.

	Fall 2011 (Sep-Oct)	Spring 2012 (Apr-May)	Percent Change	95% CI	Odds post assessment <sup>d</sup>	95% CI
<b>Percent of total scans observed during scheduled PA/snack time</b>						
<b>Staff Behavior<sup>a</sup></b>						
Staff engaged in other tasks	26.6	30.3	3.7	(-1.3, 8.7)	1.33	(0.91, 1.93)
Staff leading or instructing physical activity	16.0	17.9	1.9	(1.2, 4.2)	1.32	(0.81, 2.16)
Staff verbally promoting physical activity	4.7	13.2	8.5	(5.3, 11.8)	3.60	(2.17, 5.96)
Staff verbally discouraging physical activity	5.2	0.9	-4.3	(-6.3, -2.3)	0.21	(0.09, 0.46)
Staff engaged in physical activity with children (i.e. playing the game)	26.6	37.0	10.4	(4.5, 16.4)	1.66	(1.22, 2.2)
Withholding physical activity as a consequence of misbehavior	5.9	0.5	-5.4	(-7.6, -3.2)	0.05	(0.02, 0.16)
<b>Staff Management of PA<sup>a</sup></b>						
Children standing in line and waiting for turn	18.5	7.8	-10.7	(-17.5, -3.9)	0.41	(0.19, 0.89)
Playing elimination game (i.e. children eliminated from PA opportunities)	13.2	8.9	-4.3	(-11.3, 2.7)	0.64	(0.22, 1.89)
Staff giving instructions	15.7	14.5	-1.2	(-6.8, 4.4)	0.93	(0.56, 1.54)
Staff disciplining children	3.0	3.9	0.9	(-1.9, 3.6)	1.63	(0.66, 4.03)
Idle time (i.e. children waiting for direction from staff with no specific task)	40.9	14.4	-26.4	(-34.3, -18.6)	0.23	(0.14, 0.37)
Choice provided (i.e. more than one activity opportunity provided)	8.9	22.3	13.4	(5.2, 21.6)	6.11	(2.32, 16.04)
Small game (i.e. games with less than 10 children participating)	2.7	16.9	14.1	(7.2, 21.1)	12.98	(3.43, 49.18)
<b>Healthy Eating Staff Behaviors<sup>b</sup></b>						
Staff verbally promoting healthy eating <sup>c</sup>	0.0	10.5	-	--	-	--
Staff verbally educating children about healthy eating <sup>c, e</sup>	0.0	9.5	-	--	-	--
Staff eating inappropriate foods <sup>e</sup>	42.1	4.5	37.6	(-60.2, -14.9)	0.07	(0.01, 0.59)
Staff drinking other than water <sup>e</sup>	47.4	27.3	20.1	(-49.0, 8.8)	0.42	(0.11, 1.53)
<b>Staff Management of Snack<sup>b</sup></b>						
Unsafe food handling <sup>c, e</sup>	0.0	0.0	-	--	-	--

Percent of total scans observed during scheduled PA/snack time						
	Fall 2011 (Sep-Oct)	Spring 2012 (Apr-May)	Percent Change	95% CI	Odds post assessment <sup>d</sup>	95% CI
Children preparing food <sup>c, e</sup>	0.0	18.8	-	--	-	--
Children distributing food to other children <sup>c, e</sup>	0.0	31.3	-	--	-	--

All percentages derived from multilevel mixed effects linear regression models unless otherwise noted

Statistically significant changes are bolded

<sup>a</sup> 2,173 scans over 44 days (49.4 scans/day, 11 days/site)

<sup>b</sup> 803 scans over 40 days (20 scans/day, 10 days/site)

<sup>c</sup> Models were not estimated because behavior was not observed at baseline, post-assessment or both, unadjusted mean percentages are presented

<sup>d</sup> Odds ratios derived from multilevel mixed effects logit regression models (e.g. odds of observing staff engaged in other duties at post-assessment are 1.33 times more likely than at baseline)

<sup>e</sup> Presented as a percentage of days that the behavior was observed