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Maximizing children's physical activity using the LET US Play principles

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Abstract

Background—Staff in settings that care for children struggle to implement standards designed to promote moderate-to-vigorous physical activity (MVPA), suggesting a need for effective strategies to maximize the amount of time children spend in MVPA during scheduled PA opportunities. The purpose of this study was to compare the MVPA children accumulate during commonly played games delivered in their traditional format versus games modified according to the LET US Play principles.

Methods—Children (K-5th) participated in 1-hour PA sessions delivered on non-consecutive days (summer 2014). Using a randomized, counterbalanced design, one of six games was played for 20min using either traditional rules or LET US Play followed by the other strategy with a 10min break in between. Physical activity was measured via accelerometry. Repeated-measures, mixed-effects regression models were used to estimate differences in percent of time spent sedentary and in MVPA.

Results—A total of 267 children (age 7.5 yrs, 43% female, 29% African American) participated in 50, 1-hour activity sessions. Games incorporating LET US Play elicited more MVPA from both boys and girls compared to the same games with traditional rules. For boys and girls, the largest MVPA difference occurred during tag games (+20.3%). The largest reduction in the percent of time sedentary occurred during tag games (boys –27.7%, girls –32.4%). Overall, the percentage of children meeting 50% time in MVPA increased in four games (+18.7% to +53.1%).

Conclusion—LET US Play led to greater accumulation of MVPA for boys and girls, and can increase the percent of children attaining the 50% of time in MVPA standard.

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Conflict of Interest

The authors declare no conflict of interest. There are no professional relationships with companies or manufacturers who will benefit from the results of the present study.

Keywords

MVPA; youth; games; play

Introduction

Standards specifying the amount of moderate-to-vigorous physical activity (MVPA) children should accumulate have been introduced across multiple settings (e.g., recess, physical education, afterschool programs, summer day camps) where staff (e.g., teachers, afterschool program/camp counselors, adult volunteers, supervisors) are responsible for the care of children. For example, the Institute of Medicine (IOM) and the American Alliance for Health Physical Education Recreation and Dance (AAPHERD) recommend that children should engage in MVPA for 50% of PE, while the National Institute on Out-of-School Time (NIOST) proposes staff engage children in MVPA for 50% of scheduled PA opportunities during out-of-school time settings (1, 18, 37). Further, interventions targeting children's PA levels during recess or other structured PA opportunities have targeted the 50% of PA time in MVPA benchmark when evaluating findings (21, 31).

Across these settings, a finite amount of time is scheduled for PA opportunities (e.g., 20min recess, 45min lesson, 60min during an afterschool program) with often little or no room to extend the time allocated for PA opportunities. Thus, it is imperative that staff maximize the amount of MVPA children accumulate during the available, scheduled PA time (8–10, 24, 28). However, a lack of training leaves many staff without the necessary skills to promote PA, therefore development of easily implemented strategies to maximize the amount of time children spend in MVPA during PA opportunities is paramount (33, 36).

Strategies to increase children's engagement in MVPA can target the types (e.g., free play or organized activities) (20, 28), structure (e.g., remove lines, elimination) (2, 15), location (e.g., indoor/outdoor) (23, 28, 30), and staff behaviors (e.g., verbal promotion) (11, 17) of the activity opportunity. Targeting staff behaviors and the structure of PA opportunities are two modifiable and promising strategies for increasing children's engagement in MVPA. Staff verbally promoting PA and/or engaging in PA with children is associated with an increase in the time children spend in MVPA (17, 32, 33). Modifying the structure of games to increase equipment, reduce team size and remove elimination can also increase children's MVPA (2, 3, 15, 31). Such strategies can maximize MVPA in a multitude of settings that care for children, and are necessary in order to assist these settings in reaching recommended levels of children's PA.

One approach for modifying the characteristics of activities is the LET US Play principles (lines, elimination, team size, uninvolved staff/kids, and space, equipment, and rules). These principles were designed to optimize MVPA levels during PA opportunities by modifying games. Further, these principles were established from elements identified as primary barriers to maximizing children's MVPA during commonly played games (34) and have been successfully incorporated into multi-component interventions to increase children's MVPA during out-of-school-time programs (10, 32, 33). Using a traditional game of tag, where a child is eliminated (i.e. sits out to the side of the activity area) from the game once

caught by the ‘catcher’, the LET US Play principles would suggest modifying the rules of this game to allow the child who is caught to remain physically active. One such modification could be to have this child become an additional ‘catcher’. This is just one example of how the LET US Play principles can be incorporated in to existing games to maximize children’s physical activity. However, experimental evidence on the effectiveness of LET US Play to elicit higher levels of MVPA compared to playing games using their traditional rules has yet to be established.

The purpose of this study was to compare the activity levels of children during games modified according to LET US Play, versus the same games played using traditional rules. Modified LET US Play games were hypothesized to elicit more MVPA and less sedentary activity than the same games played with traditional rules.

Methods

Participants and Setting

Children (K-5th grade) were recruited from a large-scale summer day camp (SDC) in the Columbia, SC metropolitan area, during the summer of 2014. The SDC was located in an area where the average percent of families in poverty status, based on program zip code in the 2013 US Census data was 23.6% (<http://factfinder2.census.gov>). This SDC served approximately 175 children per day. The average daily low and high temperatures during data collection were 76°F (range 71 – 80°F) to 97°F (range 90 – 101°F), respectively. The SDC had access to a large outdoor field and indoor gymnasium. Participants in the study had no limitation to be physically active (e.g. asthma, physical disabilities, or cardiovascular issues). Each child’s parent/guardian signed the University of South Carolina’s IRB approved informed consent, and the child participants gave verbal assent.

Experimental Design

The study was conducted for 8 consecutive weeks during the SDC. Four PA sessions were delivered per day on two week days (Monday to Friday) based on the SDC schedule. The four sessions comprised one early morning outdoor session (between 7:00AM–9:00AM) on a sports field (40 yards x 25 yards), and three indoor sessions in a gymnasium (27 yards x 17 yards). Each activity session was 60 minutes in duration. The breakdown of each activity session was as follows: 5min at the beginning and end for accelerometer placement/removal and demographic data collection (10min total), and two 20min gameplay segments split by a 10min water break. Each 20min activity segment, and corresponding water break, was monitored by the activity leader using a digital stopwatch.

Within each 60 minute session, the two 20min gameplay segments consisted of a game (e.g. soccer), using traditional rules in one segment and modifying the rules to adhere to the LET US Play principles in the other segment. Each game, modified and traditional versions, was played an equal number of times during the first or second 20min segments using a random counterbalanced design. Previous research assessing the effects of game modifications (e.g., elimination vs. non-elimination) on children’s PA levels has used this design (15). All sessions were led by the same trained member of the research team (activity leader). The

activity leader had a background in teaching physical education and a Master's degree in exercise science. Behaviors exhibited by the activity leader during traditional PA sessions were consistent with previous literature identifying staff behaviors during PA opportunities and included passively supervising children and instructing children on rules of the game (6, 9, 32, 33). The activity leader did not actively engage in the game or encourage children during traditional games as research has observed low levels of these staff behaviors in PA settings (11, 17, 32). Additionally, this was one of the key LET US Play principles and thus part of the experimental manipulation.

Six games commonly played across PA settings were used in this study (9, 13, 28). The six games were soccer, kickball, free play, dodgeball, tag games, and relay races. Soccer and kickball were always played during the outdoor session in the morning, with free-play, dodgeball, tag games and relay races taking place indoors. Descriptions of how these games were implemented, in both their traditional version and LET US Play, are presented in Table 1.

Protocol

Children were organized into camp groups (n~20) by school grade (K-2nd or 3-5th grade). Children remained in these groups for the entirety of the week at camp. For each day of data collection, the SDC site leader included four sessions to be led by the activity leader on the daily camp schedule. The SDC site leader assigned a camp group at random for each of the activity sessions. The first session of each day (Soccer and Kickball) took place during a 2-hour window (i.e., 7:00AM-9:00AM) when children were dropped off for camp. Children were not assigned to camp groups at this point; therefore, participating in these games was voluntary.

The group of children participating for each activity session was accompanied by camp counselors (e.g., staff-to-student ratio of 1:10) assigned to supervise the group for the week. Upon arrival to the activity area, accelerometer belts were fitted above the right hip of children, and demographic information was collected. Prior to leaving the activity area accelerometer belts were removed from the children.

Physical Activity Assessment

Participants wore the ActiGraph GT3X+ (Pensacola, FL) for the duration of each 60 minute activity session. Before each day of data collection, the accelerometers were initialized for the entire day. The accelerometers were set to collect data in five-second epochs to account for the transitory PA patterns of children (4, 5, 29). The watches of the activity leader and the research assistants logging child information were synchronized with the computer used to initialize, download, and process the accelerometer information. Each 20min segments' start and stop time was recorded to the nearest second. Members of the research team continuously monitored the activity sessions for compliance in wearing the accelerometers. A valid session of accelerometer data was defined as the child wearing the belt for the entirety of the first and second 20min activity segment. Cut point thresholds for MVPA (>2296 CPM) (14) and sedentary behavior (<100 CPM) (19) were used for children's accelerometer data.

Statistical Analysis

In order to capture the precise time spent in physical activity, the two 20min segments of each 60 minute activity session were used for all analyses (i.e. omitting water breaks and accelerometer placement time). All data were transformed into the percent of time spent sedentary or in MVPA for each 20min segment. An initial analysis was conducted to determine 1) if MVPA differences exist between children who attended one session only compared to children who attended more than one, for traditional and LET US Play activity segments, and 2) if sequencing effects exist between the first or second 20min segments for the traditional or LET US Play games. Repeated measures mixed effects models, accounting for multiple measures per child, were used to estimate differences in the percent of time children spent in MVPA and sedentary during LET US Play versus traditional PA segments across the six games. Models were run separately for girls and boys, and controlled for age, race, and sequence (i.e., traditional or LET US Play segment being first or second in an activity session). Individual children's attendance varied across different games (e.g., attends one soccer session vs. attends > one soccer session), therefore, attendance, and an attendance-by-sequence term were included in the model. All statistical analyses were performed using Stata (v.13.1, College Station, TX). Statistical significance was set at $p < 0.05$.

Results

Over eight weeks, 267 different children (mean age 7.5yrs, 43% girls, 29% African American) participated in 50, 60 minute activity sessions representing 100, 20min segments of the six games. Of these, 58% attended 2 or more sessions of the same game, that is, exposed to traditional then LET US Play, and LET US Play then traditional. Across all games, for boys and girls, there was no main effect for attendance ($p > 0.05$). Further, there was no significant interaction between attendance and sequence ($p > 0.05$). Children who attended more than one session of any game did not differ on the dependent variable (e.g., MVPA) in comparison to children who attended only a single session. As a result, all child observations were included for further analysis. The average number of 60 minute activity sessions by game was 8.3 (range; 7 kickball – 9 dodgeball, tag games, and relay races). The differences in the number of sessions was due to scheduling conflicts, slow transitions (i.e., a group arriving late to an activity session), and unsuitable weather conditions for outdoor activity in the morning, such as rain. The test for sequencing effects between traditional and LET US Play versions of the games are presented in Table 2. For MVPA and sedentary behavior, three of the 24 combinations were found to be statistically significant (Table 2). Based on these findings, there was limited evidence of a sequencing effect for traditional or LET US Play activity segments.

The comparison between the percentage of time spent in MVPA and sedentary for traditional or LET US Play games are presented in Table 3. For boys, statistically significant increases were found in the percent of time spent in MVPA across all six games incorporating LET US Play in comparison to traditional sessions. The largest and smallest MVPA differences for boys were during tag games (+20.2%) and free play (+8.6%), respectively. For girls, statistical significance was found in 4 games (free play, dodgeball, tag

games, and relay races) for differences in MVPA between traditional and LET US Play versions (Table 3). The largest difference was during tag games (+20.4%), and smallest during free play (+8.3%). During soccer and kickball, too few girls voluntarily participated in the early morning sessions to estimate models. Table 4 presents the percentage of children meeting the 50% time in MVPA standard. The largest difference saw an increase to 53.1% attainment during LET US Play dodgeball, with the smallest difference occurring during kickball (2% attainment).

Across all games, for boys and girls, a statistically significant reduction in the percent of time spent sedentary was also found, with the exception of soccer and kickball for girls. The largest reduction in sedentary time for boys and girls was during tag games (−27.7% and −32.4%, respectively). The smallest reduction in sedentary time for boys and girls was during free play (−7.3% and −8.6%, respectively, see Table 3).

Discussion

This study is one of the first to examine modifications targeting characteristics that limit activity within games commonly played in settings that care for children. The findings from this study support that LET US Play can lead to greater accumulation of MVPA for boys and girls in a variety of commonly played games, while decreasing the amount of time boys and girls spend sedentary. LET US Play can also increase the percentage of children attaining the 50% of time in MVPA standard widely adopted in many settings that care for children.

Within these settings, an often intuitive approach to increasing MVPA is to allocate more time for PA opportunities. However, research of 20 afterschool programs involving over 1200 children found that simply allocating more time in a daily schedule for PA opportunities did not necessarily lead to a greater accumulation of accelerometer-derived MVPA for children (12). Increasing the amount of time dedicated to PA opportunities may also be impractical due to competing activities/subjects, limited staff availability, and activity space (7). Therefore, incorporating LET US Play into existing PA opportunities may provide a feasible, effective, and economic solution to maximizing the PA levels of children and can contribute towards policy-recommended amounts of MVPA for attending children.

The results from this study align with findings from previous experimental approaches that have targeted individual components of games by addressing inactive characteristics inherent within the games (e.g., removing elimination, reducing team size) (2, 3, 15). However, this study provides the first comprehensive experimental evaluation of modifying multiple inactive characteristics of games, in a large sample of children, across numerous activity sessions, in a set of commonly played games that are both structured and unstructured. Across all games, boys spent more time in MVPA compared with girls. With the exception of kickball and soccer, LET US Play appeared to target both boys and girls equally with similar increases in the percent of time in MVPA observed for free-play, dodgeball, tag games and relay races. The percent of time spent sedentary decreased for both sexes across all six games in LET US Play. Within the context of the existing literature concerning girls' PA, LET US Play provides valuable information for future research intervening on girls' PA levels.

A key component of LET US Play is its simplicity. Staff tasked with providing PA opportunities for children have a tendency to stick with what they know, utilizing a limited number of games, even when provided with extensive resources from a pre-packaged curricula (16, 26). This can be problematic when the games staff regularly implement include inactive components. Further, LET US Play differs from pre-packaged curricula by focusing on easily learned modifications that can be integrated into games that are already being played. This reduces overall burden by saving time (e.g., learning/ preparing a new game to children) and minimizing disruption to routine running of PA opportunities.

Previous research has found that children participating in free play accumulate more MVPA in comparison to staff-led, structured games (13, 28), suggesting that the instructional skill-level of staff is a potential barrier to higher levels of MVPA. The current findings confirm structured games played with traditional rules fall short in MVPA levels, and have higher amounts of sedentary time, in comparison to unstructured games (i.e., free play). However, when structured games and free play were modified using LET US Play, structured games elicited equivalent, if not higher levels of MVPA, and lower sedentary time for boys and girls in comparison to free play. Where past literature has proposed scheduling free play as one of the best strategies to promote PA (13, 28), the findings herein are both novel, and promising. First, modifying structured games can accumulate similar levels of MVPA compared to free play. Second, being able to provide children with structured staff-led games can target children who tend to be sedentary during free play, aligning with standards calling for all children to spend 50% of time in MVPA (1, 18, 37). Providing a combination of structured and unstructured PA opportunities could be the optimal approach, although further research is needed to determine the effectiveness of such a strategy on children's MVPA.

Another notable finding is how implementation of LET US Play into the six games increased the percent of children attaining 50% of time in MVPA, a standard widely adopted in many settings that care for children. In the scope of this study, these results illustrate the positive effect the application of LET US Play can have in moving children towards policy-stated benchmarks. With the exception of kickball and relay races, the other four games raised the percent of children reaching this standard on average by 25%, with close to half the children (42.9%) who participated in LET US Play dodgeball reaching this benchmark. The inherent sedentary components of managing games like kickball (e.g., giving instructions, changing tasks) and relay races (e.g. high instruction time/organization required) are potential reasons why, despite game modifications, a large majority of children still fell short of achieving this goal in comparison to the other four activities.

These findings also provide experimental evidence showing that, despite best efforts (controlled setting, trained activity leader), standards calling for all children to spend 50% of PA time in MVPA (1, 18, 37) may be unrealistic. Findings from previous research addressing this specific benchmark support this notion. Studies using systematic observation (SOFIT) conclude children engage in MVPA anywhere between 8.6% to 48% of PA time (22, 27). It is important to note that these studies included walking as moderate PA and recent evidence suggests walking is equivalent to light activity, therefore, the MVPA presented in these findings may be overestimated (25). Nonetheless, accelerometry-reported

MVPA estimates from studies portray a similar picture, between 40%, and 50% of PA time children spent engaged in MVPA (15, 35). Regardless of PA setting, the majority of children are not meeting the 50% of time in MVPA standard, and best efforts may be unlikely to get them there.

Strengths of this study include the random counterbalanced design, use of accelerometry, the number and familiarity of the games examined, the multiple repetitions of both experimental conditions (traditional vs. LET US Play), the large sample size, the consistency of the experimental conditions (e.g., equipment, space, activity leader), and the specific analysis of 20 minute activity segments. From these, this study captured a good representation of the activity levels of children in different games across experimental conditions. There are limitations to this study that must be acknowledged. The study was conducted in one PA setting, a SDC, which therefore makes it difficult to generalize these findings. One of the main strengths of LET US Play is that it has multiple components that can be applied to games, and rarely is any game made more active by employing only one of the principles. Unfortunately, this limits our ability to delineate the exact impact each component of LET US Play has on children's PA. The number of girls attending the soccer and kickball sessions limited the study findings by preventing statistical analyses for these two games (girls only). Knowing that participation in this first session was purely voluntary, the lack of girls may give some insight for future lines of inquiry concerning girl's only PA opportunities or factors that influence their participation in PA.

In conclusion, implementing LET US Play can help maximize the amount of time children spend in MVPA and reduce sedentary behavior during commonly played games. Across settings that care for children, training and support for LET US Play is needed. The LET US Play principles can increase the percent of children attaining PA levels recommended for health benefits; however, these findings demonstrate that despite best efforts, having all children achieve 50% of PA time in MVPA standard may not be a realistic goal. Thus, the language used in MVPA policies for settings that care for children needs revisiting to identify the most appropriate MVPA goals.

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Table 1

Description of games and LET US Play Modifications

Game	Description	LET US Play Principles ^a					Modifications ^b
		L	E	T	U	S	
Kickball	2 teams (kicking and fielding). Kicker runs bases. Kicker eliminated if player/base is tagged, or ball is caught by fielding team.	X	X	X	X	X	Entire kicking team runs the bases together (L). Fielding team performs a task as a group (S). No 'outs', count number of 'runs' the kicking team can score in a given time (E.g. 5 minutes) (E). Split large groups of children into two separate games (T).
Soccer	2 teams, 1 game (e.g., 10 v 10). Goalkeepers on each team.			X	X	X	Split one large game (E.g. 10 v 10) into smaller games (E.g. two 5 v 5 games) (T). Remove goalkeepers and reduce the size of the goals (S).
Dodgeball	2 teams. If child is tagged with the ball or if the ball is caught they are eliminated from the game.		X	X	X	X	Have players switch to the other side when they are tagged with the ball (E/S). Split a large game into two smaller dodgeball games (T).
Relay races	Children in teams of 6 or more. Children wait in line for turn. Start and finish at one side of the activity area.	X		X	X	X	Remove lines by modifying the type of relay race (E.g. Teams start and finish in center, use different equipment and ways of moving) (L/S). Decrease the number of children on each team (T).
Tag games	"Cross the Ocean", "Line Tag", and "Dungeon Ball" ^c		X		X	X	Have children who are tagged become additional catchers (E). Children perform an active task when tagged (during "line tag") or sent to the dungeon (during "dungeon ball") (S). Multiple taggers at the beginning of every game (S).
Free play	Equipment left in the same area for children to choose from.				X	X	Organize the equipment into separate areas in the free play space (S). Target inactive children and encourage them to play with the equipment (U).

^a **L** = Lines, **E** = Elimination, **T** = Team size, **U** = Uninvolved staff/children, **S** = Space, equipment and rules

^b Staff verbally encouraging children to be active and playing the games with the children is a modification implemented in all activities (**U**)

^c "Cross the Ocean": One catcher in the middle of activity area. Children lined up at one side of activity. When called, children run to other side of activity area without being tagged. Eliminated if tagged

"Line Tag": One catcher, all children stay must stay on lines, when tagged, they sit down on line and act as a 'road block', game ends when everyone is seated

"Dungeon Ball": One catcher with a ball, if a child is tagged (dodgeball rules apply), the child is eliminated to the "dungeon"

Sequencing effects when exposed to traditional or LET US Play activity segments first or second

Table 2

Game	Percent of time in moderate-to-vigorous physical activity ^a				Percent of time sedentary ^a			
	Traditional		LET US Play		Traditional		LET US Play	
	First	Second	First	Second	First	Second	First	Second
Soccer	28.9	27.0	45.1	40.9	18.7	18.1	6.0	7.6
Kickball	17.4	15.1	29.5	35.7 *	45.6	46.0	29.8	21.8 *
Free play	35.3	32.9	42.7	42.4	22.4	25.9	16.8	15.3
Dodgeball	34.4	37.0	54.5	49.8	32.3	30.1	8.5	12.5 *
Tag games	21.4	19.8	41.7	40.3	47.0	48.1	16.7	18.3
Relay races	21.4	21.4	31.6	33.8	41.6	43.7	32.4	30.1
Overall	27.0	25.7	40.1	41.3	34.3	35.6	19.3	18.0

* statistical significance between exposure (first vs. second) to traditional or LET US Play activity segments (p<0.05)

^a based on a 20 minute activity segment

Table 3

Percentage of 20min activity segment in moderate-to-vigorous physical activity (MVPA) and sedentary for boys (top) and girls (bottom)

Gender	Game	Observations (n)	Percent Time in MVPA					Percent Time Sedentary						
			Traditional	±SD	LET US Play	±SD	Difference [†]	(95 % CI)	Traditional	±SD	LET US Play	±SD	Difference [†]	(95 % CI)
Boys	Soccer	134	26.3	±17.5	41.6	±12.7	15.2	(13.1, 17.4)	18.3	±18.3	6.5	±11.0	-11.8	(-13.6, -9.9)
	Kickball	111	16.7	±14.9	32.8	±10.0	16.1	(14.3, 18.0)	44.4	±17.6	24.6	±14.9	-19.7	(-22.5, -16.9)
	Free play	100	33.5	±18.9	42.1	±18.9	8.6	(4.9, 12.3)	24.1	±22.0	16.8	±16.9	-7.3	(-10.6, -4.0)
	Dodgeball	96	38.6	±16.0	55.5	±12.9	16.9	(14.3, 19.5)	28.6	±12.5	9.5	±12.9	-19.1	(-21.7, -16.5)
	Tag games	94	22.2	±15.5	42.4	±12.5	20.2	(17.7, 22.7)	43.1	±19.9	15.4	±13.5	-27.7	(-30.5, -25.0)
Girls	Relay races	113	22.8	±12.4	33.9	±10.6	11.1	(9.1, 13.1)	38.8	±17.8	28.2	±13.3	-10.6	(-13.1, -8.2)
	Soccer ^b	6	18.7	±7.8	31.2	±9.8	12.5	(n/a)	35.1	±9.8	26.0	±12.2	-9.1	(n/a)
	Kickball ^b	18	13.6	±14.1	28.4	±12.1	14.8	(n/a)	55.6	±18.6	37.0	±17.6	18.6	(n/a)
	Free play	80	28.6	±21.3	37.0	±15.3	8.3	(5.0, 11.7)	28.4	±21.9	19.7	±14.2	-8.6	(-11.7, -5.5)
	Dodgeball	67	28.5	±21.8	42.4	±12.6	14.0	(10.9, 17.0)	36.7	±20.1	15.0	±12.6	-21.7	(-24.7, -18.7)
	Tag games	71	18.7	±14.6	39.1	±12.6	20.4	(17.5, 23.4)	51.1	±21.8	18.7	±14.0	-32.4	(-35.7, -29.1)
	Relay races	59	16.9	±8.2	29.3	±7.6	12.3	(10.4, 14.3)	49.2	±12.8	35.5	±13.3	-13.8	(-17.2, -10.4)

[†] Bolded differences show statistical Significance at the p<0.05 level

^b Girl's data presented as raw means due to insufficient observations for statistical analysis. Soccer and Kickball took place during the first session of the day outdoors, during a 2-hour window when children were dropped off for camp. Children were not assigned to camp groups at this point; therefore, participating in these games was voluntary.

Table 4

Percent of children attaining 50% of time in moderate-to-vigorous physical activity (MVPA) standard.

Game	Number of child observations			Percent of children that meet 50% of time in MVPA Standard			
	Boys	Girls	Total	Traditional	LET US Play	Difference [†]	95 % CI
Soccer	134	6	140	5.8	30.8	25.0	(16.6, 33.5)
Kickball	111	18	129	0.5	2.0	1.6	(-0.5, 3.7)
Free play	100	80	180	12.2	26.7	14.5	(6.6, 22.5)
Dodgeball	96	67	163	10.3	53.1	42.9	(34.5, 51.3)
Tag games	94	71	165	1.2	18.7	17.5	(11.6, 23.4)
Relay Races	113	59	172	0.2	3.1	2.9	(-0.1, 5.8)

[†] Bolded differences show statistical significance at the p<0.05 level