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Physical activity during recess in low-income 3rd grade students in Texas

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Abstract

Objectives—We estimated the prevalence of recess-based moderate and vigorous physical activity (MVPA) and vigorous physical activity (VPA) among third grade students attending low-income, urban schools in Texas.

Methods—Structured observations (n=77 class and 616 student observations) using SOFIT were conducted over three-months in 8 elementary schools with majority Hispanic students.

Results—Students engaged in 66.4% and 19.2% of their ~20 minute recess time in MVPA and VPA, respectively. Boys engaged in more MVPA and VPA ($P<.007$). Contextual differences in activity (setting and activity type) were identified.

Conclusions—Findings underscore the importance of scheduled recess time for children's physical activity.

Keywords

children; recess; physical activity; Hispanic; ecological model; gender

INTRODUCTION

National recommendations for children's physical activity state that children should participate in 60 minutes or more of daily physical activity¹. Although schools provide an important context for promoting physical activity (PA) in children,² physical education class (PE) may provide only a limited contribution to national PA recommendations. National estimates indicate that elementary schools offer PE class on an average of only 2.5 days per week,³ with as little as 12 minutes of moderate-to-vigorous physical activity (MVPA) occurring during a typical PE class.⁴ Because children have been found not to compensate for PA after school when PA opportunities are restricted during the school day,⁵ additional school-based opportunities to engage children in PA beyond PE class are warranted.

Recess offers an important opportunity for physical activity during the school day, yet findings from a national survey indicate that scheduled time for daily recess in the U.S. has been on the decline.⁶ Despite recommendations that children receive 20 minutes of daily recess,⁷ over one in four elementary schools in the United States do not provide daily recess for elementary school students across all grade levels,⁸ and approximately one-third of

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public U.S. third grade students do not receive the recommended amount of 20 minutes of daily recess.⁹ Economically disadvantaged children living in predominantly Hispanic and African American communities in the U.S. are an important priority population for increasing physical activity during the school day given evidence of lower access to physical activity opportunities outside the school setting.^{10,11} Findings from a nationally representative sample of U.S. elementary schools indicate that elementary school students who attend predominantly Hispanic and African American schools are also less likely to receive recommended amounts of recess compared to students who attend predominantly White schools,⁹ underscoring the need to increase PA opportunities for this population.

Research on the physical activity benefits of recess is needed to inform local and state policy on the need for ensuring recess time for children. Prevalence estimates on the amount of time children engage in MVPA during recess vary considerably based on studies from Europe, Australia, and the United States, ranging from less than a quarter of recess time to over half the recess period.^{12–25} Although current research is limited on physical activity engagement in majority Hispanic elementary school students in the United States, research on low-income elementary school children in California²⁴ and majority Hispanic 3rd, 4th and 5th graders from the southwestern United States²⁵ indicate that children engage in more than half their recess time in MVPA. Confirmation of this finding as well as a deeper understanding of predominant recess-based activities are needed in order to better understand the value of scheduling recess as a strategy for providing physical activity to minority and low-income populations.

This study examines the prevalence of recess-based, moderate and vigorous physical activity (MVPA) across the course of a school semester among low-income third grade boys and girls from majority Hispanic schools in central Texas. In responding to calls for research on context during recess,^{18,26} we also explore contextual differences in children's engagement in MVPA during recess time. Ecological models of health behavior^{27,28} posit that children's physical activity is influenced by multiple environments, including the built environment, the social environment, and the policy and organizational environment. For the current study, modifiable factors within these multiple environments were assessed in relation to children's MVPA, including the playground setting- such as the field or playscape (built environment), the activity type- which include the games children play during recess (social and organizational environments), and structured activity time versus free-play recess (policy and organizational environment).

METHODS

Participants and setting

Participants were third grade students from eight low-income, public elementary schools located in a large urban school district in central Texas. Schools were selected as part of the *Active Play Project*, a multi-phase research project that included a prevalence study of PA during recess and activity break time as well as an experimental phase to test strategies to increase PA during activity break time. This paper presents data from the prevalence study. Schools with >60% school composition of economically disadvantaged students based on data from the Texas Education Agency and not participating in an ongoing school health study were first identified (n=24). Eight schools were then randomly selected, and all agreed to participate. Using a serial cross-sectional design, observations of children's PA and recess context were taken at multiple time points (n=27 observations in October, n=27 observation in November, and n=23 observations in December) during fall 2009. Study objectives and protocols were reviewed and approved by university and school district ethics review boards.

Measures and procedures

Physical activity was assessed using a modified SOFIT method. SOFIT is a direct observation method that utilizes momentary time sampling and an interval recording system to assess PA levels and lesson context.²⁹ SOFIT has strong evidence of reliability and validity for the measurement of MVPA and lesson context in PE class^{29–33} and has been applied to assessment of children's PA during recess.^{34, 35} Given our interest in assessing both free-play recess and structured activity time, we developed a modified SOFIT protocol ("SOFIT-Recess" or "SOFIT-R") that follows the original SOFIT protocol, but incorporates recess-specific activity and play area codes from the SOPLAY method²⁴ in order to collect data on the specific games and activities children engage in during recess as well as the settings where children play. This information is recorded at the same time children's activity levels are recorded, following the SOFIT momentary-time sampling approach. In addition to physical activity-related measures, school-level composition of economically disadvantaged students, a measure that is based on the number of students who qualify for free and reduced lunch, and school-level student ethnic composition were obtained from data from the Texas Education Agency for the year the study was conducted.

Data collectors were trained and certified in SOFIT-R. Two 3rd grade classes were observed independently at each school (n=8 schools), with at least two observations per class conducted in October, November, and December 2009. For each class, two data collectors observed a total of eight students by randomly selecting two students of each sex at the onset of the recess period and coding students' activity levels, activity (e.g., tag/chasing), settings (e.g., playscape) and recess condition (free-play recess, defined as students' ability to choose their activity; or structured activity time, defined as activity organized by teacher) over the duration of the recess period. Temperature for the day of data collection was also recorded. *Post hoc* reliability analyses based on a randomly selected 12% of n=97 class observations taken in fall 2010 indicated inter-observer agreement of 83% and 86% on coding of SOFIT-R *activity levels* and *type of activity* (e.g., playing tag), respectively.

Analysis

Analyses were conducted using Stata version 11. Descriptive statistics were conducted as well as ANOVA and chi-square test to examine differences within a given factor (e.g., gender). The unit of analysis was one class observation, which is based on the summary activity scores of students observed from a given class.

RESULTS

Seventy-seven class observations (mean class size: 18 students) comprising 616 student observations (50% female) were conducted in fall 2009. School student composition was primarily Hispanic (61.4%), followed by white (15.5%), African American (10.7%) and "Other" (mixed) ethnic group (12.4%). Schools were majority low-income, with a mean school composition of economically disadvantaged students of 77.4% (range: 64.5% – 92.0%). The average duration of a given recess period was 21.2 minutes (SD: 5.3).

Students spent an average of 66.4% and 19.2% of their free-play recess time in MVPA and vigorous physical activity (VPA), respectively (Table 1). A higher percentage of teacher-led compared to free-play time was spent in MVPA and VPA ($p<.02$). Boys engaged in more MVPA and VPA during free-play recess ($p<.007$); no significant gender differences were observed under the teacher-led condition. No significant differences in MVPA were found across the three month time span or by temperature [data not shown].

Children spent the most time during free-play recess in the playscape, blacktop and field (Table 1). Girls spent more time sitting/standing/talking with friends than boys ($p<.001$);

climbing/sliding/swinging comprised the second most popular activity for girls (17.8%). Boys spent a greater amount of time in sports activities such as *soccer* (26.4%) and games activities such as *tag/chasing* (11.8%). The two major teacher-led activities were *running the track* (36.0%) and *instruction/management* (34.1%).

Children spent roughly equal amounts of time during free-play recess engaging in MVPA and VPA in the playscape, blacktop and field areas (Figure 1). Activities with the greatest proportion of MVPA were running (100%) and specific ball games (soccer, football, basketball, volleyball and tetherball) (>82% MVPA); children who engaged in playground and jumping games had slightly lower levels of activity (54.6–58.1% MVPA). *Running* (60.0%) and *tag/chasing* (44.6%) were the activity categories with the greatest proportion of VPA time, followed by climbing/sliding/swinging (36.2%).

DISCUSSION

We found that a sample of 3rd grade students attending schools that serve predominantly low income children of Hispanic origin in a large urban school district in Texas spent over half of their recess time engaged in MVPA, a finding comparable with McKenzie and colleagues'²⁴ study of PA-based recess in low-income elementary school children in California using the SOPLAY method, and Beighle and colleagues'²⁵ pedometer-based study of majority Hispanic 3rd, 4th and 5th grade students in southwestern United States. Children in our study engaged in high MVPA levels when measured at different time points over the span of a school semester, mirroring recent findings by Ridgers et al.²³ that documented high levels of MVPA over an academic year in English primary school children. These findings- taken into consideration with recent research on the important contributions of recess to overall school-day physical activity^{26,37}- underscore the viability of recess in contributing to daily PA recommendations¹ for lower income elementary school children and reinforce the importance of scheduling and protecting recess time for children's PA.

Similar to previous research,^{14–17,18,19,21,22,24,25,36–38} we found that girls engaged in less activity during recess, which may be explained in part by more time talking with friends. Given that recess provides an important context not only for PA but also for children's social development,^{39–42} a balance is needed in promoting PA to ensure children have the opportunity to choose their activity and decide how to spend their time. The high proportion of time that both girls and boys in this study spent in both sitting/standing/talking with friends and active play suggests that the goals of self-determined activity and PA are not incompatible.

In states such as Texas, elementary schools are now mandated to provide a certain number of minutes of *structured* PA during the school day. As PE class is only provided in some school districts in the U.S. on one or two days during the week, classroom teachers are being charged with providing structured activity time in order to meet state mandates. In this study, while students were more active when classroom teachers engaged them in structured physical activity, much of this structured time was spent running laps or in management/instruction time. Recognizing the need to preserve recess as a necessary break time and a time for self-determined activity and discovery,⁴² scheduling a separate, structured activity time in which teachers are trained in the facilitation of games and dynamics has been found to be effective in providing MVPA to children^{34,43,44} and may broaden the variety of activities for students while contributing to state mandates for structured activity time.

Ecological models of health behavior^{27,28} provide a framework for targeting key aspects of children's environments (*policy, built, social, and information environments*) that hold

relevance for promoting child PA and enhancing recess time for PA. Beginning with the policy environment, our findings supplement previous research^{24,25} and underscore the value of recess time for providing physical activity opportunities for lower income children. School districts can increase children's PA by instituting the National Association for Sport and Physical Education recommendation of 20 minutes of daily recess.⁷ While we found similar levels of engagement in MVPA across built environment settings (playscape, blacktop and field), modifications to the playground built environment with markings such as four square, hopscotch, and other creative designs,^{12,45,46} enhanced play areas with PA amenities such as sports courts,^{47,48} and the provision of games equipment^{24,38,49} have been positively associated with greater levels of children's PA engagement. As recess time often competes with PE time for play area space, recess should not get the 'second choice' of play spaces. On the contrary, schools should explore how to increase space for free-play and structured activity break and PE time. In addition to harnessing the role of the classroom teacher or recess supervisor in encouraging and facilitating activity (social environment), emerging best practices such as creating a zoned approach with a menu of rotating recess activities (information environment) hold promise and merit further investigation.

Strengths of this study include an extensive assessment of children's PA over a school semester and the simultaneous assessment of recess context. This study was limited to third grade students, and observations were conducted during outdoor recess time and the fall semester, limiting their generalizability across these factors.

Conclusion

Recess offers an important opportunity for physical activity during the school day, yet a 2010 CDC report indicated that less than half of the 50 states that comprise the United States require or recommend that schools provide daily recess.⁵⁰ Urban school districts such as Chicago Public Schools are beginning to reincorporate recess into the school day after decades without recess;⁵¹ our findings provide further support for the importance of scheduling both free-play recess and structured activity time for PA engagement in lower-income student populations. Given the range of benefits of recess- which extend beyond PA to include positive social development³⁹⁻⁴² and increased student concentration and time-on-task in the classroom,⁵² further efforts are needed to establish district and state mandates to ensure children have access to recess time.

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CONFLICT OF INTEREST STATEMENT:

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REFERENCES

1. U.S. Department of Health and Human Services. 2008 Physical Activity Guidelines for Americans. Washington, DC: 2008. p. 16
2. Koplan, JP.; Liverman, CT.; Kraak, VI., editors. Preventing childhood obesity: health in the balance. Washington, DC: Institute of Medicine (U.S.); 2005. Committee on Prevention of Obesity in

Children and Youth, Food and Nutrition Board, Board on Health Promotion and Disease Prevention Committee on Prevention of Obesity in Children and Youth.

3. Robert Wood Johnson Foundation. Recess Rules: Why the Undervalued Playtime may be America's best investment for healthy kids and healthy schools. Princeton, NJ: 2007. Available at: <http://www.rwjf.org/files/research/sports4kidsrecessreport.pdf>. [Accessed May 8, 2012]
4. Nader PR. National Institute of Child Health and Human Development Study of Early Child Care and Youth Development Network. Frequency and Intensity of Activity of Third-Grade Children in Physical Education. *Arch Pediatr Adolesc Med*. 2003; 157(2):185–190. [PubMed: 12580690]
5. Dale D, Corbin CB, Dale KS. Restricting opportunities to be active during school time: Do children compensate by increasing physical activity levels after school? *Res Q Exerc Sport*. 2000; 71(3): 240–248. [PubMed: 10999261]
6. Center on Educational Policy. Instructional Time in Elementary Schools: A Closer Look at Changes for Specific Subjects. Washington, DC: Center on Educational Policy; 2008. Available at: <http://www.cep-dc.org/>. [Accessed March 13, 2012]
7. National Association for Sport and Physical Education. Recess for elementary school students [position paper]. Reston, VA: National Association for Sport and Physical Education; 2006. Available at: <http://www.aahperd.org/naspe/standards/upload/Recess-for-Elementary-School-Students-2006.pdf>. [Accessed May 7, 2012]
8. Lee SM, Burgeson CR, Fulton JE, Spain CG. Physical education and physical activity: results from the School Health Policies and Programs Study 2006. *J Sch Health*. 2007; 77(8):435–463. [PubMed: 17908102]
9. Turner, L.; Chaloupka, FJ.; Chiqui, JF.; Sandoval, A. School Policies and Practices to Improve Health and Prevent Obesity: National elementary School Survey Results: School Years 2—6-07 and 2007–08. Chicago, IL: Bridging the Gap Program, Health Policy Center, Institute for Health Research and Policy, University of Illinois at Chicago; 2010.
10. Powell LM, Slater S, Chaloupka FJ, Harper D. Availability of physical activity-related facilities and neighborhood demographic and socioeconomic characteristics: a national study. *Am J Public Health*. 2006; 96(9):1676–1680. [PubMed: 16873753]
11. Lovasi GS, Hutson MA, Guerra M, Neckerman KM. Built environments and obesity in disadvantaged populations. *Epidemiol Rev*. 2009; 31:7–20. [PubMed: 19589839]
12. Ridgers ND, Stratton G, Fairclough SJ, Twisk JWR. Long-term effects of a playground markings and physical structures on children's recess physical activity levels. *Prev Med*. 2007; 44(5):393–397. [PubMed: 17335891]
13. Ridgers ND, Stratton G, Fairclough SJ, Twisk JWR. Children's physical activity levels during school recess: a quasi-experimental intervention study. *Int J Behav Nutr Phys Act*. 2007; 4(1):19. [PubMed: 17517136]
14. Stratton G. A preliminary study of children's physical activity in one urban primary school playground: differences by sex and season. *J Sport Pedag*. 1999; 5(2):71–81.
15. Stratton G, Ridgers ND, Fairclough SJ, Richardson DJ. Physical activity levels of normal-weight and overweight girls and boys during primary school recess. *Obesity*. 2007; 15(6):1513–1519. [PubMed: 17557988]
16. Mota J, Silva P, Santos MP, et al. Physical activity and school recess time: differences between the sexes and the relationship between children's playground physical activity and habitual physical activity. *J Sports Sci*. 2005; 23(3):269–275. [PubMed: 15966345]
17. Zask A, van Beurden E, Barnett L, et al. Active school playgrounds- myth or reality? Results of the "Move It Groove It" Project. *Prev Med*. 2001; 33(5):402–408. [PubMed: 11676580]
18. Ridgers ND, Stratton G, Fairclough SJ. Assessing physical activity during recess using accelerometry. *Prev Med*. 2005; 41(1):102–107. [PubMed: 15917000]
19. Ridgers ND, Stratton G, Fairclough SJ. Physical activity levels of children during school playtime. *Sports Med*. 2006; 36(4):359–371. [PubMed: 16573359]
20. Sleaf M, Warburton P. Physical activity levels of 5–11 year-old children in England: cumulative evidence from three direct observation studies. *Int J Sports Med*. 1996; 17(4):248–253. [PubMed: 8814504]

21. Tudor-Locke C, Lee SM, Morgan CF, et al. Children's pedometer-determined physical activity during the segmented school day. *Med Sci Sports Exerc.* 2006; 38(10):1732–1738. [PubMed: 17019294]
22. Sarkin JA, McKenzie TL, Sallis JF. Gender differences in physical activity during fifth-grade physical education and recess periods. *J Teach Phys Educ.* 1997; 17(1):99–106.
23. Ridgers ND, Carter LM, Stratton G, McKenzie TL. Examining children's physical activity and play behaviors during school playtime over time. *Health Educ Res.* 2011; 26(4):586–595. [PubMed: 21422119]
24. McKenzie TL, Crespo NC, Baquero B, Elder JP. Leisure-time physical activity in elementary school students: analysis of contextual conditions. *J Sch Health.* 2010; 80(10):470–477. [PubMed: 20840656]
25. Beighle A, Morgan CF, Le Masurier G, Pangrazi RP. Children's physical activity during recess and outside of school. *J Sch Health.* 2006; 76(10):516–520. [PubMed: 17096825]
26. Erwin H, Abel M, Beighle A, et al. The contribution of recess to children's school-day physical activity. *J Phys Act Health.* 2012; 9:442–448. [PubMed: 21934153]
27. Sallis JF, Cervero RB, Ascher W, et al. An ecological approach to creating active living communities. *Annu Rev Public Health.* 2006; 27(1):297–322. [PubMed: 16533119]
28. Sallis, JF.; Owen, N.; Fisher, EB. Ecological models of health behavior. In: Glanz, K.; Rimer, BK.; Viswanath, K., editors. *Health behavior and health education: Theory, Research and Practice.* San Francisco, CA: Jossey-Bass; 2008. p. 465-482.
29. McKenzie TL, Sallis JF, Nader PR. SOFIT: System for observing fitness instruction time. *J Teach Phys Educ.* 1991; 11:195–205.
30. Keating XD, Kulinna PH, Silverman S. Measuring teaching behaviors, lesson context, and physical activity in school physical education programs: Comparing the SOFIT and the CSOFIT instruments. *Meas Phys Educ Exerc Sci.* 1999; 3(4):207–220.
31. Pope RP, Coleman KJ, Gonzalez, et al. Validating SOFIT during physical education in a predominantly Hispanic community. *Med Sci Sport Exer.* 2000; 32(5):S328.
32. Rowe P, Mars H, Schuldheisz J, Fox S. Measuring students' physical activity levels: Validating SOFIT for use with high-school students. *J Teach Phys Educ.* 2004; 23(3):235–251.
33. Scruggs PW, Beveridge SK, Eisenman PA, et al. Quantifying physical activity via pedometry in elementary physical education. *Med Sci Sport Exer.* 2003; 35(6):1065–1071.
34. Ernst M. Examination of physical activity during a physical activity intervention and recess. *Res Q Exerc Sport.* 2003; 74(1Suppl S) A-43.
35. Sit CHP, McManus A, McKenzie TL, Lian J. Physical activity levels of children in special schools. *Prev Med.* 2007; 45(6):424–431. [PubMed: 17337044]
36. Ridgers ND, Saint-Maurice PF, Welk GJ, Siahpush M, Huberty J. Differences in physical activity during school recess. *J Sch Health.* 2011; 81(9):545–551. [PubMed: 21831067]
37. Brusseau TA, Kulinna PH, Tudor-Locke C, et al. Pedometer-determined segmented physical activity patterns of fourth- and fifth-grade children. *J Phys Act Health.* 2011; 8:279–286. [PubMed: 21415455]
38. Ridgers ND, Fairclough SJ, Stratton G. Variables associated with children's physical activity levels during recess: the A-CLASS project. *Int J Behav Nutr Phys Act.* 2010; 7:74. [PubMed: 20937142]
39. Burdette HL, Whitaker RC. Resurrecting free play in young children. *Arch Pediatr Adolesc Med.* 2005; 159(1):46–50. [PubMed: 15630057]
40. Pellegrini AD, Bohn CM. The role of recess in children's cognitive performance and school adjustment. *Educ Res.* 2005; 34(1):13–19.
41. Pellegrini AD, Balthford P. The developmental and educational significance of recess in schools. *Early Rep.* 2002; 29(1):1–7.
42. Ramstetter CL, Murray R, Garner AS. The crucial role of recess in schools. *J Sch Health.* 2010; 80(11):517–526. [PubMed: 21039550]

43. Pangrazi RP, Beighle A, Vehige T, Vack C. Impact of Promoting Lifestyle Activity for Youth (PLAY) on Children's Physical Activity. *J Sch Health*. 2003; 73(8):317–321. [PubMed: 14593948]
44. Huberty JL, Beets MW, Beighle A, Welk G. Environmental modifications to increase physical activity during recess: preliminary findings from Ready for Recess. *J Phys Act Health*. 2011; 8(Suppl 2):S249–S256. [PubMed: 21918239]
45. Stratton G, Mullan E. The effect of multicolor playground markings on children's physical activity level during recess. *Prev Med*. 2005; 41(5–6):828–833. [PubMed: 16137756]
46. Stratton G. Promoting children's physical activity in primary school: an intervention study using playground markings. *Ergonomics*. 2000; 43(10):1538–1546. [PubMed: 11083134]
47. Colabianchi N, Kinsella AE, Coulton CJ, et al. Utilization and physical activity levels at renovated and unrenovated school playgrounds. *Prev Med*. 2009; 48(2):140–143. [PubMed: 19063915]
48. Sallis JF, Conway TL, Prochaska JJ, et al. The association of school environments with youth physical activity. *Am J Public Health*. 2001; 91(4):618–620. [PubMed: 11291375]
49. Verstraete SJM, Cardon GM, De Clercq DLR, De Bourdeaudhuij IMM. Increasing children's physical activity levels during recess periods in elementary schools: the effects of providing game equipment. *Eur J Public Health*. 2006; 16(4):415–419. [PubMed: 16431866]
50. Centers for Disease Control and Prevention. State Indicator Report on Physical Activity, 2010. Atlanta, GA: U.S. Department of Health and Human Services; 2010. Available at: http://www.cdc.gov/physicalactivity/downloads/PA_State_Indicator_Report_2010.pdf
51. Ahmed-Ullah, N. [Accessed May 7, 2012] Schools face new challenge: Return of recess. Next year's longer school day will include daily outdoor playtime, but many CPS sites have no playgrounds or limited space. *Chicago Tribune*. 2011 Oct 25. Available at: <http://www.chicagotribune.com/news/ct-met-cps-playground-20111013,0,6382250.story>.
52. Centers for Disease Control and Prevention. The association between school-based physical activity, including physical education, and academic performance. Atlanta, GA: U.S. Department of Health and Human Services; 2010.

Figure 1.

Proportion of time spent in moderate and vigorous physical activity (MVPA) and vigorous physical activity (VPA) during recess by 3rd grade students in different play areas and by different activities in 8 low income elementary schools in central Texas. *Active Play Project*, Fall 2009.

Table 1

Mean proportion of free-play recess and teacher-led activity time 3rd grade students from 8 low-income elementary schools in central Texas spent in MVPA and VPA and in different play areas & activities. *Active Play Project*, Fall '09.

	Free-Play Recess			Teacher-Led Activity Time		
	Overall	Girls % (sd)	Boys	Overall	Girls % (sd)	Boys
MVPA	66.44(12.37)	61.61(15.63)	71.21(16.49)	0.001	74.02(18.99)	72.22(20.59)
VPA	19.16(8.33)	16.69(10.97)	21.72(10.38)	0.007	24.15(15.53)	24.32(17.00)
Time spent by play area						
Playscape	40.79	48.30	33.41	0.000	2.62	2.29
Field	22.30	18.59	25.95	0.000	12.44	13.09
Track	1.54	1.07	2.00	0.005	31.36	26.70
Blacktop	34.27	31.04	37.45	0.000	39.98	44.70
Time spent by activity						
Sit/Stand/Talk with Friend	46.00	54.70	37.44	0.000	3.90	5.16
Playground Games	0.61	0.22	0.98	0.000	0.05	0.10
Climb/Slide/Swing	14.65	17.81	11.54	0.000	0.12	0.00
Jumping Games	1.01	1.89	0.15	0.000	0.17	0.24
Tag/Chasing	9.67	7.56	11.75	0.000	3.96	4.54
Baseball/Kickball	1.89	1.44	2.33	0.016	1.95	1.62
Basket/Volley/Tetherball	9.89	4.19	15.50	0.000	2.14	2.39
Soccer/Football	4.94	1.30	8.52	0.000	1.41	1.24
Running	0.46	0.63	0.29	0.064	35.98	30.32
Manipulative Games	5.03	4.15	5.90	0.003	4.17	4.20
Sedentary Games/Activities	0.22	0.00	0.44	0.000	4.10	3.20
Skills/Fitness	3.41	4.74	2.11	0.000	7.55	8.50
Instruction/Management	1.96	1.04	2.87	0.000	34.14	38.16

Each observation represents the average score from two observers, with two classes of 3rd graders from 8 schools.

^a Difference between girl and boy under free play condition.

^b Difference between girls and boy under Teacher-led condition.

^c Difference for Overall MVPA between Free-Play and Teacher-Led conditions (chi-square).

^d Difference for Overall VPA between Free-Play and Teacher-Led conditions (chi-square).

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