Summertime represents a critical period of intervention to reduce obesity risk among low-income, urban African American and Latina girls.

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Active summers matter: Evaluation of a community-based summertime program targeting obesogenic behaviors of low-income, ethnic minority girls

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OBESITY AMONG CHILDREN and adolescents in the United States has reached unprecedented levels, and low-income minority females have been disproportionately affected.[1] Despite concerns about schools providing healthy environments, how youth spend their out-of-school time may be more problematic. The relevance of the summer months, which represent a quarter of the calendar year for average youth, is often overlooked despite the fact that summertime waking hours nearly equal the number of hours spent in school over the entire academic year.[2] The few studies that have addressed this issue suggest that the summer months contribute disproportionately to weight gain.[3] In fact, youth gain weight twice as fast during the summer months as during the rest of the calendar

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year.[4] A recent study indicated that weight gain during elementary school occurs primarily during the short span of summer break.[5] Indeed, children's body mass index (BMI) in that study decreased by 1.5 percentile points during the school year, only to increase by 5.2 percentile points over the summer months.[6] This accelerated weight gain during the summer is more pronounced among youth who are already overweight and among low-income minority youth.[7]

That summer is a high-risk period for weight gain among youth is likely related to unstructured days leading to less physical activity (PA), more sedentary behavior such as television watching or video game playing, and less healthful eating.[8] Preliminary evidence suggests that summer programs like day camps that offer structured activities for extended periods of time appear to protect against weight gain. In fact, in a recent study, adolescents whose summers involved regular participation in organized, structured activities were found to have significantly lower BMIs than youth whose summer care arrangements consisted solely of parent care without organized activities and care by other adults.[9] Summertime arrangements that include involvement in organized activities appear to have long-lasting positive effects on youth including lower BMIs and increased social–emotional functioning the following school year.[10] Although the research exploring the summer context is limited to only a handful of studies, a recent narrative review of several studies reported that the benefits gained through school year PA intervention programs were lost during the summer months, again suggesting the importance of addressing how youth are spending their time during the summer.[11]

To date, most of the research on the health consequences of out-of-school time interventions has focused on afterschool programming during the school year rather than on summertime.[12] One recent study of summer programming considered the effects of four summer day camps that served a diverse set of children and adolescents in terms of age and ethnicity or race. All camps included a PA component in the curriculum and were founded on a positive youth development framework. These summer camps were

effective in increasing moderate-to-vigorous physical activity (MVPA) among youth, thus representing a potential "key antidote" to summertime obesity risk.[13] Another recent study investigated a two-week summer camp program designed specifically for obese youth (with BMIs in at least the 95th percentile). The camp, whose design included daily healthy-lifestyle lessons and controlled meals, was effective in decreasing body weight, BMI, and BMI *z*-scores (zBMI) among a diverse sample of forty-two children ages 9–14 years (twelve African American, twelve Latino/a, seventeen White, and one Asian).[14] Although overweight and obese youth are particularly vulnerable to accelerated summer weight gain, studies of summer camp effects on PA have overlooked weight status as a potential moderator.[15] Thus, more information is needed to determine whether summertime interventions may differentially affect weight status and obesogenic behaviors among normal and overweight youth.

Summertime programming may be particularly important for urban minority girls, who experience higher rates of obesity than other groups of youth.[16] These higher rates may be due in part to the well-documented decrease in PA that occurs during early adolescence, particularly for African American and Latina girls.[17] A large body of research has identified unique predictors of PA among girls, most notably bonding with other girls.[18] Community-based summer camps have been identified as one cost-effective strategy to address obesity over the summer months, and camps that are girl-specific may be particularly effective vehicles for promoting PA among girls.[19] Moreover, camps that target early adolescent girls most at risk for accelerated summer weight gain may be critical. Longitudinal research suggests that inactivity patterns among girls may be established and harder to change after age 14.[20]

This multidisciplinary, multimethod study builds on the out-of-school time literature by examining the effectiveness of the Girls in the Game summer camp program in reducing BMI and decreasing obesogenic behaviors—specifically, increasing PA and decreasing sedentary time and media use—among a group of urban, low-income, predominantly African American and Latina girls

10–14 years of age. Additionally, moderator analyses in our study focused on exploring whether younger or older girls and overweight and obese girls benefited more from involvement in the summer camp.

Method

The Girls in the Game summer camp program targets girls who reside in urban Chicago neighborhoods that have few resources and high numbers of ethnic and low-income youth. An innovative citywide collaborative, Girls in the Game provides six hours of daily programming for four weeks. The program provides instruction and PA through traditional and nontraditional sports and fitness activities together with age-appropriate health and nutrition education. It also focuses on developing self-control and leadership skills.

Program participants spend their days in age-based teams of approximately twenty girls each. Each team is supervised by three camp leaders. Each camp day is composed of three fifty-minute morning rotations (two sports lessons and one health and leadership lesson), a forty-minute lunch period, one hour of swimming, forty-five minutes of team fitness, and a ten-minute snack time. Daily lunch and snacks consist of healthy foods, such as fruits, vegetables, and milk. Program participants are provided with transportation to and from camp.

Study design and procedure

Participants were recruited using two methods: (a) a Girls in the Game mailing to parents and guardians of all 10–14-year-old girls enrolled in the program (sixty-nine girls in 2012, eighty-one in 2013) and (b) announcements at the summer program informational meeting. As part of the mailing, parents received a cover letter explaining the study as well as an informed consent document and an invitation to an informational camp meeting. During the informational meeting, parents received a brief overview, had the opportunity to ask any questions about the study, and filled out

informed consent forms. Consent forms obtained during this initial meeting also served as part of the initial data collection, Time 1 (T1). Families who did not attend this meeting but had eligible daughters (girls aged 10–14 years) enrolled in the program were invited to participate in a second T1 data collection session held several days later. The Institutional Review Board of Loyola University Chicago approved this study.

A multimethod assessment strategy was implemented utilizing anthropometric measurements, accelerometry, and questionnaires. At two time points, two weeks prior to the start of camp (T1) and during the last week of camp (T2), participants completed questionnaires and had their anthropometric measurements taken. In addition, participants wore accelerometers for six days two weeks prior to the start of camp (T1) and six days during the last week of camp (T2). Height and weight measurements were collected individually in a semiprivate location, and questionnaires were completed in small groups.

Participants

Participants ($N = 46$) in this study were 10–14-year-old urban girls ($M = 11.96$ years, SD = 1.15) enrolled in Girls in the Game in either the summer of 2012 or the summer of 2013. Identification of participants' race or ethnicity was obtained from parent questionnaires and from parent-completed camp enrollment forms. According to their parents, 52.2 percent of participants were African American, 39.1 percent were Latina, 4.3 percent were Asian American, 2.1 percent were Caucasian, and 2.2 percent were "other."

The average BMI for participants was 21.77, and the average standardized zBMI score was 0.78 suggesting that the majority of the girls were overweight. More specifically, girls in this sample had an average BMI percentile ranking of 71.58 (SD = 28.32), indicating normal-weight status (defined as being below the 85th percentile). Still, based on BMI-for-age percentiles, 23.9 percent of girls were overweight (between the 85th and 95th percentiles) and 26.1 percent were obese (at or above the 95th percentile). Descriptive information on study participants is presented in Table 7.1.

Table 7.1. Description of participant characteristics at baseline by participation year

	Overall (N = 46)	*Year 1 (N = 24)*	*Year 2 (N = 22)*
Age in years	11.96	12.27	11.63
Ethnicity			
African American	52%	54%	50%
Latina	39%	46%	32%
Asian American	4%	0%	9%
Caucasian	2%	0%	5%
Other	2%	0%	5%
Weight category			
Underweight	2%	4%	0%
Normal weight	48%	42%	54%
Overweight	24%	17%	32%
Obese	26%	37%	14%

All 150 camp participants who were aged 10–14 were sent recruitment information. Of these 150, seventy-six participants enrolled in the study—forty-six in 2012 and thirty in 2013. However, eight of the thirty participants in 2013 had also participated in 2012. We elected to use only the 2013 data for these repeat participants, leaving a smaller sample of sixty-eight participants: thirty-eight in 2012 and thirty in 2013. For this study, we analyzed data from forty-six participants, 31 percent of those recruited: twenty-four in 2012 and twenty-two in 2013. The twenty-two participants not included in analyses did not have complete data because they either dropped out of the summer program or did not attend both T1 and T2 data collection sessions. The most common reason participants dropped out of the program was that their schedules changed so that they were no longer available ($N = 2$ in 2012, $N = 4$ in 2013). The remaining data were missing for twelve participants in 2012 and four in 2013 for several reasons, including participants being absent from camp on follow-up data collection days, invalid accelerometer data or device malfunction, or participants declining to be weighed or to wear an accelerometer. Additionally, one accelerometer was lost each year at follow-up, and thus, no data were available for those participants. Participants who completed data collection at both time points did not differ from those

with missing data in terms of basic demographic characteristics including age, race, or T1 outcome variables including zBMI, BMI percentile, PA, and media use.

Measures

We describe measures of body mass index, physical activity, and media use below.

Body mass index. Anthropometric measurements were obtained following the protocol used in the National Health and Nutrition Examination Survey.[21] Research staff were trained to use the equipment and protocol and supervised by study author Dugas. Weight was measured, with participants wearing light clothing and no shoes, to the nearest 0.1 kg using a digital scale (Seca 770, Hamburg, Germany). Participants' height without shoes was measured to the nearest 0.1 cm without shoes and with head held in the Frankfort plane using a Seca 214 mobile stadiometer. These data were used to calculate BMI according to the following formula: BMI = kg/m^2. zBMI scores were calculated based on Centers for Disease Control and Prevention (CDC) growth charts using the Children's Hospital of Philadelphia online calculator. zBMI scores were used in all analyses.[22] Researchers have used zBMI scores as a standardized way to assess overweight because there is no ceiling at the upper limit or percentiles where values are collapsed.[23]

Physical activity. PA was measured using an accelerometer (Actigraph 3GTX), worn at the waist just behind the right hip. At baseline and follow-up, participants were monitored both in and out of camp for a total of six days including two weekend days. Participants were instructed to remove accelerometers when bathing and during the sixty minutes of pool time per day at camp. Accelerometer data were passed through a customized Visual Basic Excel macro designed to infer nonwear time and to determine the amount of time spent in sedentary activity and in light, moderate, and vigorous PA.[24] A valid day of PA monitoring was defined as having nine or more hours of wear time. Mean wear time

was approximately seventeen hours per day at both T1 and T2. Sedentary, light, moderate, and vigorous activity levels were defined using published cut-points for children and adolescents; these data were used to identify bouts of MVPA.[25] Data are reported as total PA time in minutes (light, moderate, and vigorous), MVPA time in minutes, number of ten-minute bouts spent in MVPA, number of minutes in MVPA in bouts of ten or more minutes, and time spent in sedentary activities.

Media use. Participants were individually administered self-report surveys that included two questions about media use: "In the past week, on average, how many hours did you watch TV each day?" and "In the past week, on average, how many hours did you play video or computer games or use a computer for something that is not school work each day? Include activities such as Xbox, PlayStation, Nintendo DS, iPod touch, Facebook, and the Internet." For each question, youth were asked to circle one of the following responses: zero hours, one hour, two hours, three hours, four hours, or five or more hours. Hours for both questions were added to capture total daily hours of media use across both types of media.

Analyses

Data were analyzed using Statistical Package for the Social Sciences version 19 (SPSS, Inc., Chicago, IL) and met assumptions for the use of parametric statistics. Descriptive information about study variables was initially examined. Paired-sample *t*-tests were used to determine changes in outcome variables before camp (T1) and after camp (T2), both in the whole sample and during each participation year separately. Separate analyses of variance (ANOVAs) were used to determine whether changes observed from T1 to T2 were moderated by age or weight status. Post hoc power analysis using the G*Power program determined that, given the sample size of forty-six, the study was powered above the recommended 0.80 level to detect both large and medium effect sizes through two-tailed paired-sample *t*-tests and ANOVAs.[26]

Table 7.2. Means and standard deviations of BMI and physical activity outcome measures using *t*-test equality of means, stratified by participation year

	Year	*Time 1* *M (SD)*	*Time 2* *M (SD)*	*t*
zBMI	Overall	0.78 (1.00)	0.84 (1.03)	−2.22*
	Year 1	0.91 (1.0)	0.98 (1.05)	−1.70
	Year 2	0.65 (1.01)	0.69 (1.00)	−1.43
BMI percentile	Overall	71.58 (28.33)	72.78 (27.43)	−1.97
	Year 1	75.41 (26.83)	76.86 (25.88)	−1.71
	Year 2	67.41 (29.93)	68.34 (28.96)	−1.04
Total PA (minutes/day)	Overall	353.32 (116.05)	505.11 (150.21)	−6.30***
	Year 1	382.16 (84.29)	492.67 (184.01)	−3.18**
	Year 2	321.87 (117.01)	518.68 (100.40)	−6.33***
MVPA (minutes/day)	Overall	12.09 (13.42)	38.09 (31.14)	−5.18***
	Year 1	13.77 (14.57)	38.31 (31.37)	−3.57**
	Year 2	13.05 (19.14)	40.76 (31.80)	−3.69**
Number of MVPA (10-minute bouts/day)	Overall	0.37 (0.56)	1.37 (1.16)	−5.27***
	Year 1	0.44 (0.56)	1.44 (1.31)	−3.54**
	Year 2	0.31 (0.57)	1.29 (1.01)	−3.90**
Minutes/day spent in MVPA bouts	Overall	4.82 (9.10)	23.58 (25.80)	−4.61***
	Year 1	5.63 (10.13)	23.54 (25.24)	−3.27**
	Year 2	3.94 (7.97)	23.63 (26.99)	−3.19**
Sedentary (minutes/day)	Overall	694.48 (128.80)	572.72 (119.31)	5.55***
	Year 1	704.88 (127.25)	584.92 (139.75)	3.74**
	Year 2	683.14 (132.49)	559.42 (93.57)	4.06**
Mean wear time (minutes/day)	Overall	1037.53 (124.24)	1076.47 (85.38)	−2.07*
	Year 1	1057.10 (118.18)	1076.80 (92.40)	−0.79
	Year 2	1015.43 (129.09)	1076.01 (76.06)	−2.10*
Media (hours/day)	Overall	4.27 (2.35)	4.82 (2.09)	−1.72
	Year 1	4.52 (2.25)	5.00 (2.13)	−0.91
	Year 2	4.00 (2.47)	4.62 (2.09)	−1.78

Note: PA = physical activity. MVPA = moderate-to-vigorous physical activity. Total PA includes light, moderate, and vigorous physical activity. Mean wear time refers to average minutes per day participants wore accelerometers.
*$p < .05$; **$p < .01$; ***$p < .001$.

Results

We describe changes from baseline to follow-up and discuss their moderation by age and weight status below.

Changes in outcomes

To determine the effect of participation in Girls in the Game on outcomes, paired-sample *t*-tests were run (see Table 7.2). Analyses

indicated that participants' zBMI scores at the end of camp had increased by 0.06, a statistically significant increase ($t(45) = -2.79$, $p = .008$); changes in BMI percentile scores were not statistically significant.

Statistically significant increases were observed in all four PA measures. Total PA (light, moderate, and vigorous) increased by more than 151 minutes per day ($t(45) = -6.30$, $p < .001$) and MVPA increased by twenty-six minutes per day ($t(45) = -5.18$, $p < .001$). The average number of ten-minute bouts of MVPA increased by one bout per day ($t(45) = -5.27, p < .001$). Similarly, the number of minutes participants spent in bouts of at least ten minutes of MVPA increased by 18.76 minutes per day ($t(45) = -4.61$, $p < .001$).

Sedentary time showed a statistically significant decrease of more than 121 minutes per day ($t(45) = 5.55, p < .001$). Interestingly, despite this decrease, there were no statistically significant differences in the amount of time participants reported spending on media use at the end of camp compared to baseline. Additionally, no statistically significant differences were observed in dietary intake.

Observed changes from baseline to the end of camp occurred consistently across both years of camp. Paired-sample *t*-tests were run for each year separately (see Table 7.2). Statistically significant increases in all four PA outcomes and statistically significant decreases in sedentary minutes per day were still found. However, caution should be exercised in interpreting these findings considering the small subsamples (twenty-four participants in Year 1 and twenty-two in Year 2).

Moderation of changes in outcomes by age and weight status

ANOVAs were used to determine whether the benefits of the camp differed for girls in different weight status categories at baseline—normal weight, overweight, or obese—or for girls younger or older than the median age of 11.71 years. Results revealed that the increases in PA were independent of BMI percentile categories, with no significant differences in PA among girls classified as normal

Table 7.3. Mean change in outcomes from baseline to program end by weight category

	Underweight (N = 1)	*Normal weight (N = 22)*	*Overweight (N = 11)*	*Obese (N = 12)*
zBMI	−0.25	+0.07	+0.01	+0.11
BMI percentile	−2.00	+2.36	+0.01	+0.44
Total PA (minutes/day)	+20.93	+151.04	+196.63	+122.94
MVPA (minutes/day)	+48.91	+23.56	+32.33	+22.74
Number of MVPA (10-minute bouts/day)	+1.96	+0.94	+0.99	+1.03
Minutes/day spent in MVPA bouts	+36.88	+16.86	+24.17	+15.76
Sedentary (minutes/day)	−118.73	−95.51	−150.75	−143.56
Media (hours/day)	+2.00	+0.36	+0.78	+0.58

Note: Changes did not differ significantly by weight category. PA = physical activity, MVPA = moderate-to-vigorous physical activity. Total PA includes light, moderate, and vigorous physical activity.

weight, overweight, or obese. Changes in PA were also found to be independent of age. Additionally, ANOVAs revealed that changes in weight over the course of camp did not differ by baseline weight status category or age (see Table 7.3).

Discussion

Increasing evidence suggests that youth are at risk for weight gain over the summer months. These effects are particularly pronounced among minority youth and those who are already overweight.[27] Evidence suggests that structured programming during the summer months has both short- and long-term benefits for youth and that summer camps that provide organized activities can increase PA among youth.[28] However, less is known about whether camps may be effective at increasing PA for youth, specifically adolescent girls, from low-income, urban settings or for youth who are already overweight.[29]

Influence of summer camp on activity levels and other factors

Girls who participated in the Girls in the Game summer camp significantly increased their overall daily PA, including MVPA, and increased the number of bouts of PA of ten or more minutes at one time. A recent study found that youth aged 8–17 who engaged in a greater number of bouts of activity were significantly less likely than those who engaged in fewer bouts of activity to be overweight, independent of the total time spent in MVPA.[30] Summer programming that encourages PA may result in activity levels that approximate those recommended by the US Department of Health and Human Services PA guidelines for youth, which suggest accumulating sixty or more minutes of MVPA per day.

In our study, the mean time spent in MVPA prior to programming was only twelve minutes a day, compared to thirty-eight minutes a day while in camp. These measurements do not take into account the hour each day participants spent in the swimming pool, when accelerometers were removed, so it is highly probable that the girls met or exceeded the guidelines.

Girls also significantly decreased their sedentary time by nearly two hours per day. Time spent inactive has been identified as a distinct predictor of chronic disease risk, independent of PA levels.[31] A recent review revealed a dose–response relation between sedentary time and detrimental health consequences among youth, including unfavorable body composition, decreased fitness, lower self-esteem, and decreased prosocial behavior and academic achievement.[32] Thus, interventions that both increase youth's PA and decrease sedentary time are essential.[33] The large amount of time that study participants spent in sedentary behavior during the summer before Girls in the Game (four hours per day of media use) and their low rates of PA (twelve minutes per day of MVPA) suggest that providing engaging and active summer programs for girls may be particularly critical.

Another noteworthy finding was that the significant improvements in PA and sedentary behavior did not vary by weight status or age. Thus, all girls apparently reaped these benefits of Girls in the Game programming, regardless of weight status or age.

Nonetheless, of the girls included in the analytic sample, almost 50 percent met criteria for being overweight or obese. Overweight and obese youth often perceive more barriers to PA than their normal-weight peers, including feeling insecure about their appearance during PA, not enjoying PA, and not seeing themselves as being good at it.[34] Girl-specific programs like Girls in the Game may reduce such psychological barriers for overweight and obese girls by removing potential evaluation by male peers and by framing PA as a way to bond with other girls and make friends.

Our findings suggest that the Girls in the Game program is effective in improving patterns of PA and sedentary behaviors among overweight, obese, and normal-weight early adolescent girls. Future studies should investigate whether such improvements may be mediated by reduction of perceived barriers to PA and by friendships and social factors. The long-term effects of girl-specific PA-promoting programming should also be investigated to determine whether these increases are maintained.

Despite significant increases in PA, participants in the Girls in the Game summer camp experienced statistically significant increases in zBMI (though not BMI percentile) over the observed five weeks of summer. Although it is heartening that girls significantly increased their PA, findings raise interesting questions for future research related to the variety of modifiable risk factors contributing to overweight among minority girls during the summer months, including not only PA but also nutrition and sleep.[35] Given that study participants were 10–14 years old, it is also possible that pubertal changes contributed to changes in zBMI, but this factor cannot be determined from the current data. The relative influence of pubertal changes and other variables such as sleep, in addition to dietary intake and PA, should be examined in the summertime energy balance equation.

Limitations

Limitations of this study include the lack of a control group and small sample size. A recent review of pediatric obesity

intervention programs found that attrition among those with higher levels of obesity in particular continues to be a significant challenge; these researchers highlighted the importance of developing tailored programming that takes into account race/ethnicity and developmental appropriateness of the curriculum.[36]

In addition, several problems should be noted with our measure of media use. First, our measures of media use likely underestimated screen time by capping response categories at five hours or more per day. Indeed, 52 percent of participants at T1 and 50 percent of participants at T2 reported using media (television and video games combined) for five hours or more per day. Recent estimates suggest that youth aged 11–14 may spend between more than eleven hours per day using media, and summertime media use is likely even higher due to increased unstructured time.[37] Second, our measure of media use did not differentiate between media that requires sedentary use, like television, and media that may involve activity, including iPod or Xbox. Future studies should utilize more sensitive measures of screen time, such as experience sampling methods, to better capture the full range of devices used and whether media use is sedentary or active.

Implications

Despite these limitations, this study highlights the importance of further examining the potential relationships among weight, PA, sedentary time, media use, and participation in summer programming.

Another noteworthy aspect of this project is that it is designed to be easily translated into efforts to improve health and behavioral outcomes among urban minority girls. Although the program evaluated in this study revolved around sports and a healthy lifestyle, most summer programs follow a structured agenda each day, incorporating a number of activities that may include PA programming. Thus, many types of summer programming, even those not focused on PA, may help attenuate summer weight gain and

reduce the effect of typical summertime behaviors on youth obesity. Despite the benefits of structured activities, options for appealing out-of-school time programming in low-income communities are often limited, perhaps particularly so during the summer months.[38] Little is known about either the options for summer programming in urban minority communities or the effects of various types of summertime experiences for youth. Results from this study should strengthen the case for school- and community-based programs that provide healthier alternatives for youth's summer months. Findings also support the need for future studies with larger samples and more rigorous designs, including randomized controlled trials, to investigate the effect of summer programming on youth obesity risk. Summer programming may be one cost-effective strategy for addressing the disproportionate rates of obesity among urban minority girls. Data demonstrating the effects of summer programs on obesity are essential not only for legislators and policy makers considering policies aimed at influencing youths' out-of-school time, particularly during the summer months, but also for healthcare providers and educators who are searching for ways to fight the obesity epidemic.

Notes

1. Ogden, C. L., Carroll, M. D., Curtin, L. R., Lamb, M. M., & Flegal, K. M. (2010). Prevalence of high body mass index in US children and adolescents, 2007–2008. *JAMA: The Journal of the American Medical Association*, *303*(3), 242–249; Ogden, C. L., Carroll, M. D., Kit, B. K., & Flegal, K. M. (2012). Prevalence of obesity in the United States, 2009–2010. *NCHS Data Brief*, *82*, 1–8.

2. Mahoney, J. L. (2011). Adolescent summer care arrangements and risk for obesity the following school year. *Journal of Adolescence*, *34*(4), 737–749.

3. Baranowski, T., O'Connor, T., Johnston, C., Hughes, S., Moreno, J., Chen, T. A., … Baranowski, J. (2014). School year versus summer differences in child weight gain: A narrative review. *Childhood Obesity*, *10*, 1–7.

4. Von Hippel, P. T., Powell, B., Downey, D. B., & Rowland, N. J. (2007). The effect of school on overweight in childhood: Gain in body mass index during the school year and during summer vacation. *American Journal of Public Health*, *97*(4), 696–702.

5. Moreno, J. P., Johnston, C. A., & Woehler, D. (2013). Changes in weight over the school year and summer vacation: Results of a 5-year longitudinal study. *Journal of School Health*, *83*(7), 473–477.

6. Moreno et al. (2013).

7. Von Hippel et al. (2007); Moreno et al. (2013).

8. Carrel, A. L., Clark, R. R., Peterson, S., Eickhoff, J., & Allen, D. B. (2007). School-based fitness changes are lost during the summer vacation. *Archives of Pediatrics and Adolescent Medicine*, *161*(6), 561–564; Tovar, A., Lividini, K., Economos, C. D., Folta, S., Goldberg, J., & Must, A. (2010). School's out: What are urban children doing? The summer activity study of Somerville youth (SASSY). *BMC Pediatrics*, *10*, 16–27.

9. Mahoney. (2011).

10. Parente, M. E., Sheppard, A., & Mahoney, J. L. (2012). Parental knowledge as a mediator of the relation between adolescent summer care arrangement configurations and adjustment the following school year. *Applied Developmental Science*, *16*(2), 84–97.

11. Baranowski et al. (2014).

12. Gutin, B., Yin, Z., Johnson, M., & Barbeau, P. (2008). Preliminary findings of the effect of a 3-year after-school physical activity intervention on fitness on body fat: The Medical College of Georgia Fit Project. *International Journal of Pediatric Obesity*, *3*(S1), 3–9; Yin, Z., Moore, J. B., Johnson, M. H., Vernon, M. M., & Gutin, B. (2012). The impact of a 3-year after-school obesity prevention program in elementary school children. *Childhood Obesity*, *8*, 60–70; Beets, M. W., Beighle, A., Erwin, H. E., & Huberty, J. L. (2009). After-school program impact on physical activity and fitness: A meta-analysis. *American Journal of Preventive Medicine*, *36*(6), 527–537.

13. Zarrett, N., Sorensen, C., & Skiles, B. (2013). Environmental and social-motivational contextual factors related to youth physical activity: Systematic observations of summer day camps. *International Journal of Behavioral Nutrition and Physical Activity*, *10*, 63–76.

14. Wong, W. W., Barlow, S. E., Mikhail, C., Wilson, T. A., Hernandez, P. M., Shypailo, R. J., & Abrams, S. H. (2013). A residential summer camp can reduce body fat and improve health-related quality of life in obese children. *Journal of Pediatric Gastroenterology and Nutrition*, *56*, 83–85.

15. Baranowski et al. (2014); Von Hippel et al. (2007).

16. Ogden et al. (2012).

17. Grieser, M., Vu, M. B., Bedimo-Rung, A. L., Neumark-Sztainer, D., Moody, J., Young, D. R., & Moe, S. G. (2006). Physical activity attitudes, preferences, and practices in African American, Hispanic, and Caucasian girls. *Health Education & Behavior*, *33*, 40–51; Kimm, S. Y., Glynn, N. W., Kriska, A. M., Barton, B. A., Kronsberg, S. S., Daniels, S. R., … Liu, K. (2002). Decline in physical activity in Black girls and White girls during adolescence. *New England Journal of Medicine*, *347*(10), 709–715; Treuth, M. S., Baggett, C. D., Pratt, C. A., Going, S. B., Elder, J. P., Charneco, E. Y., & Webber, L. S. (2009). A longitudinal study of sedentary behavior and overweight in adolescent girls. *Obesity*, *17*(5), 1003–1008.

18. Voorhees, C. C., Murray, D., Welk, G., Birnbaum, A., Ribisl, K. M., Johnson, C. C., … Jobe, J. B. (2005). The role of peer social network factors and physical activity in adolescent girls. *American Journal of Health Behavior*, *29*(2), 183–190.

19. Swinburn, B. (2009). Obesity prevention in children and adolescents. *Child and Adolescent Psychiatric Clinics of North America*, *18*, 209–223.

20. Zook, K. R., Saksvig, B. I., Wu, T. T., & Young, D. R. (2014). Physical activity trajectories and multilevel factors among adolescent girls. *Journal of Adolescent Health*, *54*, 74–80.

21. Centers for Disease Control and Prevention. (2007, January). *National Health and Nutrition Examination Survey (NHANES) anthropometry procedures manual*. Retrieved from http://www.cdc.gov/nchs/data/nhanes/nhanes_07_08/manual_an.pdf

22. Kuczmarski, R. J., Ogden, C. L., Guo, S. S., Grummer-Strawn, L. M., Flegal, K. M., Mei, Z., … Johnson, C. L. (2002, May). 2000 CDC growth charts for the United States: Methods and development. *Vital Health Statistics*, *11*(246), 1–190.

23. Daniels, S. R. (2009). The use of BMI in a clinical setting. *Pediatrics*, *124*(S1), S35–S41.

24. Trost, S. G., McCoy, T. A., Veur, S. V., Mallya, G., Duffy, M. L., & Foster, G. D. (2013). Physical activity patterns of inner-city elementary school children. *Medicine and Science in Sports and Exercise*, *45*(3), 470–474.

25. Evenson, K. R., Catellier, D. J., Gill, K., Ondrak, K. S., & McMurray, R. G. (2008). Calibration of two objective measures of physical activity for children. *Journal of Sports Science*, *26*(14), 1557–1565.

26. Faul, F., Erdfelder, E., Lang, A.-G., & Buchner, A. (2007). G*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods*, *39*, 175–191; Cohen, J. (1988). *Statistical power analysis for the behavioral sciences*. Hillsdale, NJ: L. Erlbaum Associates.

27. Von Hippel et al. (2007); Moreno et al. (2013).

28. Mahoney. (2011); Parente et al. (2012).

29. Baranowski et al. (2014).

30. Mark, A. E., & Janssen, I. (2009). Influence of bouts of physical activity on overweight in youth. *American Journal of Preventive Medicine*, *36*(5), 416–421.

31. Owen, N., Bauman, A., & Brown, W. (2009). Too much sitting: A novel and important predictor of chronic disease risk? *British Journal of Sports Medicine*, *43*(2), 81–83.

32. Tremblay, M. S., LeBlanc, A. G., Carson, V., Choquette, L., Connor Gorber, S., Dillman, C., … Spence, J. C. (2012). Canadian sedentary behaviour guidelines for the early years (aged 0–4 years). *Applied Physiology, Nutrition, and Metabolism*, *37*(2), 370–380.

33. Owen et al. (2009); Tremblay et al. (2012); Deforche, B. I., De Bourdeaudhuij, I. M., & Tanghe, A. P. (2006). Attitude toward physical activity in normal-weight, overweight and obese adolescents. *Journal of Adolescent Health*, *38*(5), 560–568.

34. Deforche et al. (2006).

35. Must, A., Barish, E. E., & Bandini, L. G. (2009). Modifiable risk factors in relation to changes in BMI and fatness: What have we learned from

prospective studies of school-aged children? *International Journal of Obesity*, *33*(7), 705–715.

36. Skelton, J. A., & Beech, B. M. (2011). Attrition in paediatric weight management: A review of the literature and new directions. *Obesity Reviews*, *12*(5), e273–e281.

37. Rideout, V., Foehr, U. G., & Roberts, D. F. (2010, January). *Generation M2: Media in the lives of 8–18 year olds* (A Kaiser Family Foundation Study). Retrieved from http://kff.org/other/poll-finding/report-generation-m2-media-in-the-lives/

38. Bouffard, S., & Little, P. (2004). *Promoting quality through professional development: A framework for evaluation*. *Issues and opportunities in out-of-school time evaluation*, *Number 8*. Cambridge, MA: Harvard Graduate School of Education, Harvard Family Research Project; Sanderson, R. C., & Richards, M. H. (2010). The after-school needs and resources of a low-income urban community: Surveying youth and parents for community change. *American Journal of Community Psychology*, *45*(3–4), 430–440.

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