

Girls on the Run: Impact of a Physical Activity Youth Development Program on Psychosocial and Behavioral Outcomes

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Purpose: *Girls on the Run* is an after-school physical activity-based positive youth development program designed to enhance girls' social, psychological, and physical development. We evaluated the effectiveness of the program by employing a longitudinal design and mixed methods. **Methods:** Girls (N = 203; aged 8–11 y) completed survey measures of positive youth development constructs (competence, confidence, connection, character, and caring), physical activity, and sedentary behavior prior to, at the end of, and 3 months after the season. Subsamples of girls, coaches, caregivers, and school personnel participated in focus groups. Coaches completed information about their team's community impact project and number of girls who completed the season-ending 5k. **Results:** The full sample improved in confidence and connection, whereas girls who started below the preseason average showed the greatest gains from preseason to postseason on all measures, and scores were maintained or continued to improve at follow-up. All stakeholders in focus groups corroborated evidence of season-long improvement in social and emotional behaviors and health outcomes. Involvement in the community impact project contributed to girls' growth in character and empathy skills. **Conclusion:** Findings provide empirical evidence that *Girls on the Run* is effective in promoting positive youth development, including season-long and lasting change in competence, confidence, connection, character, caring, and physical activity, especially among girls who exhibited lower preseason scores than their peers.

Keywords: out-of-school time, evaluation research, community program, children

This manuscript introduces our comprehensive project evaluating the effectiveness of *Girls on the Run*, a physical activity-based youth development program. Considerable evidence reveals the many health benefits of regular physical activity for children and youth, including cardiorespiratory fitness, bone strength, cognitive functioning, and psychological well-being (4,31). Despite supportive data, a substantial percentage of elementary-age children are not engaged in sufficient activity levels to attain health benefits—at least 60 minutes daily of moderate to vigorous aerobic activity, along with muscle- and bone-strengthening activities at least 3 days per week (31,39). The Physical Activity Guidelines for Americans Midcourse Report (32) and National Physical Activity

Plan (29) accentuate the role of schools in contributing to required physical activity levels and consequent health and well-being of youth.

Schools are ideal settings for increasing physical activity, given the large percentage of time children spend at school and inclusion of all socioeconomic and ethnic groups (29,32). Sources for enhancing activity levels include physical education, recess, active transport (eg, biking to school), and after-school sports (11). However, physical education and recess have been eliminated or downsized in many districts, active transport is constrained by perceived safety concerns, and after-school sports emphasize competition that may not satisfy the interests of most children (7). Thus, efforts to increase physical activity in school settings are desirable—during the normal school day *and* in after-school hours. Given increasing demands on classroom learning, after-school programs have garnered greater interest as a source of increasing physical activity as well as improving social and emotional behaviors and academic performance (12,21,41).

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After-school physical activity programs can be delivered by schoolteachers and instructors of community programs and provide opportunity to nurture partnerships among schools, communities, and families (12,28). Some after-school programs are explicitly designed to promote positive youth development (PYD), including desirable social, psychological, and behavioral outcomes (43,45). PYD is a conceptual framework that emphasizes acquisition of competencies, core values, and healthy behaviors to help youth function effectively in the present and throughout their lifetime (25,33). PYD programs are distinguished by contexts that accentuate psychological and physical safety; appropriate structure; supportive relationships; opportunities for skill building; and integration of family, school, and community efforts, among other features (13). The goals and features of PYD programs are compatible with the American School Health Association's (www.asha.org) core beliefs of promoting holistic well-being of youth by acquiring healthy habits for a lifetime and ensuring safe, nurturing environments that facilitate learning. Thus, physical activity-based PYD (PA-PYD) programs located within school settings, such as *Girls on the Run*, may be particularly effective for addressing youth physical inactivity and associated psychosocial and behavioral health outcomes (12,41,43).

Youth physical activity researchers have embraced the PYD framework as a means of studying how to promote healthy attitudes and behaviors within an appropriate climate and through guidance by competent instructors (30,43). Studies using correlational designs have uncovered (1) positive relationships between environmental features (eg, mastery motivational climate) and developmental outcomes (eg, prosocial behavior) in community sports programs, and (2) pre-post program improvements in youths' self-perceptions in sport camp settings (eg, 16,38). Fewer intervention and evaluation studies have been conducted but show promise that PA-PYD programs can be particularly effective in improving physical and psychosocial health outcomes (41,43).

Some PA-PYD programs revealed positive outcomes with underserved or vulnerable youth (eg, 1,6). Most studies used pre-post designs without a comparison group and did not conduct a follow-up assessment to determine whether season-long improvements were maintained beyond program's end. Other studies evaluated impact of PA-PYD programs, such as *Teaching Personal and Social Responsibility* (40), *The First Tee* (42), and a national program in the United Kingdom (2). These studies employed longitudinal designs, comparison groups, and/or multiple methods. More evaluation studies of PA-PYD programs are needed to determine effects on social, psychological, and physical activity outcomes by employing rigorous designs, measures, and procedures (41). Few studies have evaluated PA-PYD programs that forge a partnership between schools and community programs, which is important given the potential for such partnerships to promote positive health outcomes (29,32). *Girls on the Run* is an after-school community program implemented in school settings and provided opportunity to pursue this goal.

Girls on the Run

Girls on the Run is primarily a school-based, after-school PA-PYD program¹ designed to enhance girls' social, psychological, and physical competencies to successfully navigate life experiences. The program uses running and other physical activities as a platform for promoting holistic health outcomes in third- through fifth-grade girls. The mission, "we inspire girls to be joyful, healthy and confident using a fun, experience-based curriculum which

creatively integrates running," is accompanied by a vision and core values that accentuate empowering girls to achieve their goals, stand up for self and others, and develop healthy connections with others (www.girlsontherun.org). *Girls on the Run* collaborates with elementary and middle schools to provide opportunities for all girls interested in participating. The organizational network consists of >200 councils serving more than 200,000 girls annually in all 50 states. Since its inception in 1996, over 1.5 million girls have participated in the program, with over 45% provided scholarship support. The culminating event is completing a 5k, with *Girls on the Run* hosting over 300 events annually. *Girls on the Run* was named a leading out-of-school-time social and emotional learning program in the United States (23).

Girls on the Run adopts the *Five Cs* approach to PYD that targets competence, confidence, connection, character, and caring—and a sixth C, contribution, accompanies the *Five Cs* (25). The program aims to help girls develop social, emotional, and physical *competence*, feel *confident* in who they are, create positive *connections* with peers and adults, develop strength of *character*, respond to others and oneself with *care* and compassion, and make a meaningful *contribution* to community (hereafter we refer to *Five Cs* + 1). The 10-week intentional curriculum (90-min lessons twice weekly) that combines physical activity with skill-building opportunities focuses on relevant concepts for 8- to 11-year-old girls: (1) identity—engaging in self-care and self-awareness, (2) connectedness—selecting and keeping healthy relationships, and (3) empowerment—celebrating and sharing our strengths. Coaches are trained to effectively deliver curricular lessons with emphasis on (1) building supportive and trusting relationships; (2) creating a positive, inclusive environment; and (3) fostering a mastery motivational climate (ie, a focus on self-referenced goals, such as learning and improving).

Preliminary studies of *Girls on the Run* provide initial evidence of effectiveness (10,15,27,34). These studies were a good start to evaluation but were characterized by some limitations, such as pre-posttest-only designs, small sample sizes, pretest data collected after lessons had begun, not including a retention assessment, measuring constructs that did not align with the program philosophy, and/or having coaches and teachers administer surveys, which could lead to social desirability effects. These initial studies prompted our overarching project goal to evaluate the impact of *Girls on the Run* on positive youth development using more rigorous methods.

Overall Project Goal and Aim of the Present Study

The present study is part of a larger project evaluating the effectiveness of *Girls on the Run*, a PA-PYD program. The 2 primary questions were: (1) Do *Girls on the Run* participants show improvements from preseason to postseason on PYD (*Five Cs*, physical activity, and sedentary behavior), and retain improvements at follow-up 3 months after season's end? (2) Do *Girls on the Run* participants differ from a matched comparison group at postseason on life skills learning and transfer? In this article, we focus on methods, results, and interpretation of the longitudinal component (question 1). This study aim extended past evaluation research in several important ways. First, our study design was compatible with the *Five Cs* philosophy of *Girls on the Run*, which meant purposefully selecting constructs and measures that align with program goals. Second, we assessed change in relevant constructs prior to the season, immediately after the season, and 3 months following season's end to determine whether any improvements from

preseason to postseason were maintained beyond exposure to coaches and lessons. Third, we used quantitative (survey) and qualitative (focus groups) methods to provide numbers and narrative to comprehensively seek evidence of effectiveness. Finally, we sought perspectives from multiple stakeholders—girls, coaches, caregivers, and school personnel—to identify converging and diverging evidence of program impact.

Methods

Quantitative survey methods were used to assess the *Five Cs*, physical activity, and sedentary behavior, and qualitative focus groups were conducted to further gather information about program impact. Coaches completed an online survey to describe their team's community impact project and documented number of girls completing the season-culminating 5k.

Participants: Survey

Girls representing 3 councils in different geographical regions of the *Girls on the Run* network completed a survey comprising study measures. In collaboration with the National office, councils were selected based on several inclusion criteria: (1) at least 5 years of delivering the curriculum as intended, (2) new and returning coaches required to complete mandatory training each year, (3) council conducts site visits to ensure that coaches deliver the curriculum as intended, (4) council director has a good working relationship with schools, and (5) council includes participants diverse in race, ethnicity, and socioeconomic status. Council directors were consulted on selecting schools and teams from which girls would be drawn for the study. Inclusion criteria for schools and teams were: (1) coaches having a good relationship with school personnel, (2) coaches who were also teachers in the school, (3) teams with returning coaches who have consistently delivered the curriculum as intended, (4) providing a site liaison to assist with study procedures, and (5) diverse in race, ethnicity, and socioeconomic status.

A total of 215 *Girls on the Run* participants in 14 schools across 3 cities and 3 states in different geographical regions provided complete preseason and postseason data, and we retained 203 (94.4%) at follow-up 3 months after season's end (mean age = 9.8 y, SD = 0.78). Girls self-identified as white (65.6%), Latina (10.7%), African American (8.8%), multiracial (7.0%), Native American (2.3%), Asian (1.4%), and other (4.2%).

Participants: Focus Group Interviews

Girls (n = 17), coaches (n = 19), caregivers (n = 10), and school personnel (n = 14) volunteered to participate in focus groups after the season ended. Focus groups were separately conducted for each stakeholder in each of the 3 councils, and interviews by stakeholder were combined to analyze responses. Girls averaged 9.5 years old and included third, fourth, and fifth graders. Seven girls self-identified as African American, 6 as white, and the rest as Latina, Asian, multiracial, and other. Coaches were female, ranged in age from 25 to 63 years (mean = 38.1), and served as an assistant or head coach in *Girls on the Run* for 1 to 14 years (mean = 5.1). Seventeen were white and 2 were African American. Sixteen coaches were classroom or specialty teachers, with others listing retired teacher, educator, and community school director. Caregivers were mothers and grandmothers and ranged in age from 29 to 59 years (mean = 44.0). Six identified as white and 4 as African

American. The 14 school personnel were female, ranged in age from 24 to 61 years (mean = 41.6), and worked at their school for 1 to 28 years (mean = 11.0). Eight identified as white, 4 as African American, 1 as multiracial, and 1 as other. Ten of 14 were teachers, with others listing educator, occupational therapist, and parent coordinator.

Survey Instruments

We selected valid, reliable, and developmentally appropriate measures that aligned with the *Five Cs* philosophy of *Girls on the Run*. Selection was informed by Geldhof et al's (17,18) measures of PYD, research with similar-aged samples (41), and pilot studies with *Girls on the Run* participants. Table 1 provides relevant information for each of the *Five Cs*—definition, assessment, instrument (including original citation and range of scores), and sample items. We assessed physical activity (number of days per week of MVPA ≥ 60 min) and sedentary behavior (number of hours watching TV and playing video/computer games on a school day) with items from the Youth Risk Behavior Survey (8). Demographic items were also completed.

Focus Group Interviews

Separate, parallel interview guides were prepared for youth, coaches, caregivers, and school personnel. Researchers derived questions to tap into *what*, *how*, and *why* girls may have learned various skills, attitudes, and behaviors through participating in *Girls on the Run*. Interview guides and procedures for conducting focus groups were based on recommendations by Krueger and Casey (24). A researcher conducted each interview, aided by an assistant moderator who distributed consent forms and summarized key points at the end of the interview. Interviews began with the moderator's introduction, statement of purpose, and guidelines for the session. An icebreaker followed along with a few general questions (eg, "What are some of the things you like about participating in *Girls on the Run*?"). Main questions included what changes in social, emotional, and physical behaviors might have occurred, and whether and how girls learned healthy habits at *Girls on the Run*. The interview concluded with wrap-up questions (eg, school personnel: "What would you tell other schools about *Girls on the Run*?"). Participants completed written demographic items after the interview.

Coaches' Online Survey

Coaches completed an online survey describing their team's community impact project, which serves as an index of *contribution* in the *Five Cs + 1* framework. Items included: (1) What group of people or cause was the focus of your community project? (2) What project did your team design and implement to help this group or cause? (3) Briefly describe your team's project. (4) Share any additional thoughts about your team's project. Responses were integrated with focus group commentary to provide a parsimonious view of girls' learning and experience.

5k Season-Ending Event

The culminating physical activity goal is completing a 5k, which girls train for throughout the season, representing an index of physical competence attained from participating (45). The 5k takes place in a fun and noncompetitive atmosphere, together with all teams in the same *Girls on the Run* council. Following the 5k event for each council, the principal investigator (PI) prompted coaches

Table 1 Definitions, Assessments, Instruments, and Sample Items for Survey PYD Constructs (*Five Cs*)

PYD construct	Definition (18)	Assessment	Instrument	Sample items
Competence	Positive views of one's actions in domain-specific areas including physical, social, and academic	Perceived physical competence (4 items) Perceived social competence (4 items)	Self-Perception Profile for Children (19) (scores range: 1–4)	Some kids do very well at all kinds of physical activities BUT Other kids don't feel they are very good when it comes to physical activities Some kids find it hard to make friends BUT Other kids find it pretty easy to make friends
Confidence	A sense of positive self-worth; global self-regard as opposed to domain-specific beliefs	Perceived physical appearance (4 items) Global self-esteem (4 items)	Self-Perception Profile for Children (19) (scores range: 1–4)	Some kids are happy with the way they look BUT Other kids are not happy with the way they look Some kids are happy with themselves as a person BUT Other kids are not happy with themselves as a person
Connection	Positive bonds with and exchanges between the individual and peers, family, school, and community	Perceived classmate support (4 items)	Social Support Scale for Children (20) (scores range: 1–4)	Some kids have classmates who like them the way they are BUT Other kids have classmates who wish they were different
Character	Respect for societal rules, possessing standards for correct behaviors, a sense of right and wrong, and integrity	Perceived social responsibility (4 items)	Personal and Social Responsibility Questionnaire (26) (scores range: 1–6)	I respect others; I help others; I am kind to others
Caring	A sense of sympathy and empathy for others	Perceived empathy/sympathy (4 items)	Sympathy Scale (14) (scores range: 1–6)	I feel upset when I see a girl getting her feelings hurt

Abbreviation: PYD, positive youth development. Note: Higher scores correspond to more favorable responses on each of the *Five Cs*. Additional details about survey questions/items, response format, and psychometrics for each measure can be found in the citations listed.

to identify which girls on their roster did and did not participate, and a percentage was calculated of the 203 girls in our longitudinal sample completing the 5k event.

Procedure

We obtained approval to conduct the study from University of Minnesota's institutional review board and secured youth assent and parental consent, as well as consent from adult participants prior to each data collection. A pilot study was conducted with 44 girls (mean age = 9.1 y) participating at a *Girls on the Run* council not involved in the main study. The purpose was to gauge comprehension of items and determine length of time needed to complete the survey. Girls easily understood all items and response formats and completed the survey within 30 minutes.

The PI made site visits to all schools prior to the first data collection. She met with school principals and site liaisons to explain study procedures, distributed a letter to send parents describing the study, and scheduled the survey date. The first data collection occurred prior to the start of the season. Researchers administered the survey to groups of girls in classrooms, libraries, or cafeterias. This process was repeated for the second data collection right after the season and for the third assessment 3 months after season's end. Three months allowed a reasonable time to assess retention after lessons concluded and avoided a confound of girls being exposed to further lessons in the upcoming season. Girls completed the survey within 30 minutes. Focus groups were conducted right after the season ended in locations convenient for participants in each council. Interviews lasted on average 45 minutes for girls and school personnel and 60 minutes for coaches and caregivers.

Data Analysis

First, measures at each time point were evaluated for validity and reliability using confirmatory factor analysis, a rigorous procedure

to determine measurement integrity based on model fit and factor loadings. Second, multivariate repeated-measures analyses of variance were conducted to determine if the *Five Cs* and physical activity improved, and sedentary behavior declined, from preseason to postseason and remained stable at follow-up. Statistically significant multivariate values were followed by univariate time comparisons. As a secondary analysis, we also observed pre to post to follow-up trends for girls who scored below the preseason average on a particular variable (eg, <2.88 on perceived physical competence) or above the preseason average for sedentary behavior (eg, >1.14 for TV watching), based on research showing youth who scored lower on key variables (eg, self-esteem) at preseason demonstrated the greatest gains (1,36). Effect size was assessed using Cohen *d* (9): ≥ 0.20 = small, ≥ 0.50 = medium, and ≥ 0.80 = large effects.

For focus groups, deductive and inductive content analyses were used to identify narrative that represented skills and behaviors attained through participation. Deductive analysis was used for questions guided by specific content in the curriculum, whereas inductive analysis enabled themes to emerge. Transcriptions were analyzed separately by stakeholder. We followed data analysis guidelines recommended by qualitative sources (eg, 24) and used in PA-PYD research (eg, 44). Researchers with training and experience in qualitative methods independently read transcriptions and coded narrative to serve as data units. They met to discuss and reach consensus on data units to include in subsequent steps. Data units with similar meaning were combined to form lower-order themes and labeled to describe meaning. Lower-order themes were reviewed to determine if they formed more parsimonious higher-order themes, which were labeled for similar meaning.

Results

We systematically report findings from survey data, focus groups, community impact project, and season-culminating 5k.

Survey Findings: Preseason to Postseason to Follow-Up

Based on confirmatory factor analysis, all multi-item measures showed good-fitting factor models (comparative fit index and goodness-of-fit index > .95) and statistically significant factor loadings, indicating strong psychometric properties. Based on multivariate repeated-measures analyses of variance for the full sample (N = 203), statistically significant improvements emerged for confidence and connection: (1) perceived physical appearance (preseason to follow-up and postseason to follow-up), (2) global self-esteem (postseason to follow-up), and (3) perceived classmate support (postseason to follow-up).² Girls improved in how happy they feel with the way they look, how much they like the kind of person they are, and how much they think classmates like them. Effect sizes were small for significant pre to follow-up and post to follow-up differences ($d = 0.12$ – 0.28). Table 2 displays means (SDs) at pre, post, and follow-up.

Girls scoring below the preseason average on a given variable (eg, <2.88 on perceived physical competence) showed statistically significant improvement from preseason to postseason on all variables representing the *Five Cs* and physical activity. Girls who scored above the preseason average on watching TV and playing video/computer games (ie, sedentary behavior) showed a significant decline.³ Scores remained stable from postseason to follow-up, indicating maintenance of preseason to postseason gains, and some scores continued to improve from post to follow-up (ie, perceived social competence, physical appearance, and classmate support, and global self-esteem). Effect sizes for all statistically significant variables ranged from small to large for preseason to postseason ($d = 0.32$ – 1.26 ; mean = 0.61), medium to large for pre to follow-up ($d = 0.52$ – 1.13 ; mean = 0.76), and small to medium for post to follow-up ($d = 0.22$ – 0.59 ; mean = 0.38). Table 2 displays means (SDs) at pre, post, and follow-up.

Focus Group Findings

Qualitative data supplemented quantitative findings to shed insight on girls' growth and development as a result of participating in *Girls on the Run*.

Changes in Girls' Behaviors. Girls, coaches, caregivers, and school personnel discussed whether they observed changes in girls' social, emotional, and physical behaviors. Similar higher-order themes emerged for all stakeholders: *increased positive emotional behaviors, emotion management, increased positive social behaviors, developing positive social relationships, improved running and motivation to run, standing up for self and others, and setting and accomplishing goals*. Lower- by higher-order themes can be seen in Table 3. Results provide evidence that *Girls on the Run* is having a positive impact on emotional, social, and physical *competence* (eg, expressing feelings, more outgoing, improved running); *confidence* (eg, feeling better about self); *connection* (eg, choosing the right friends); *character* (eg, acting nicer to others); and *caring* behaviors (eg, accepting of others).

Samantha⁴ shared, "Before I came to *Girls on the Run*, I used to like, whenever my friend would tell me to do things, I would just do it for the sake of being their friend . . . I used to try and do these things so I could fit in and stay friends with them . . . there was this girl and I used to not be nice to her because my friend said, 'oh, I don't like this kid, so you shouldn't' . . . After I came to *Girls on the Run*, I realized that I shouldn't do those things." A coach shared how a girl improved managing her emotions, "We had a girl speak and represent our team (at a banquet) . . . she has always had real anger and temper issues, and would lash out at kids, at adults, there was nobody spared in her path. She got up and spoke about how since she joined *Girls on the Run*, 'I feel calmer and happier at school' . . . it was really awesome to hear a kid be like, 'I feel so much better about myself' and speak to a room of adults about it."

Healthy Habits Learned. Girls, coaches, caregivers, and school personnel discussed whether participating in the program contributed to change in health-related behaviors. Higher-order themes included *physical, nutritional, emotional, mental, and social health*. Lower- by higher-order themes are seen in Table 4. Girls exclusively referred to changing physical health (eg, more active, run faster) and nutrition (eg, eat healthier food, more veggies/fruits), whereas coaches, caregivers, and school staff also noted changes in emotional (eg, greater confidence), mental (eg, setting goals), and social health (eg, bonding with girls). Because physical

Table 2 Means (SDs) for Entire Sample and Girls Starting Below the Preseason Mean

Variable	Entire sample			Girls starting below preseason mean*		
	Pre	Post	Follow-up	Pre	Post	Follow-up
Perceived physical competence	2.88 (0.69)	2.92 (0.66)	2.93 (0.67)	2.28 (0.47)	2.61 (0.61) ^a	2.58 (0.60) ^b
Perceived social competence	3.08 (0.77)	3.00 (0.72)	3.09 (0.72)	2.38 (0.60)	2.57 (0.72) ^a	2.71 (0.78) ^{b,c}
Perceived physical appearance	3.19 (0.66)	3.23 (0.70)	3.32 (0.66) ^{b,c}	2.55 (0.49)	2.79 (0.77) ^a	2.96 (0.75) ^{b,c}
Global self-esteem	3.55 (0.56)	3.52 (0.59)	3.61 (0.53) ^c	3.01 (0.50)	3.22 (0.65) ^a	3.41 (0.63) ^{b,c}
Perceived classmate support	3.17 (0.64)	3.09 (0.64)	3.26 (0.56) ^c	2.53 (0.48)	2.76 (0.67) ^a	3.04 (0.59) ^{b,c}
Perceived social responsibility	5.30 (0.66)	5.36 (0.61)	5.34 (0.57)	4.81 (0.64)	5.12 (0.62) ^a	5.14 (0.60) ^b
Perceived empathy/sympathy	5.42 (0.66)	5.49 (0.65)	5.41 (0.65)	4.76 (0.61)	5.23 (0.75) ^a	5.15 (0.78) ^b
Physical activity, d/wk	4.86 (1.71)	4.94 (1.87)	4.81 (1.89)	3.05 (1.03)	4.35 (1.86) ^a	4.22 (2.02) ^b
Watching TV, h/d	1.14 (1.23)	1.27 (1.31)	1.25 (1.26)	2.84 (1.07)	2.23 (1.40) ^a	2.12 (1.49) ^b
Playing video/computer games, h/d	1.12 (1.31)	1.24 (1.32)	1.26 (1.39)	3.12 (1.18)	2.50 (1.51) ^a	2.22 (1.69) ^b

Note: N = 203 for entire sample. N = 77 to 95 for girls starting below the preseason mean for the *Five Cs* and physical activity. N = 49 to 56 for girls scoring above the preseason mean for watching TV and playing video/computer games (sedentary behavior).

^aStatistically significant change from preseason to postseason. ^bStatistically significant change from pre to follow-up. ^cStatistically significant change from post to follow-up.

*Or starting above the preseason mean for sedentary behaviors.

Table 3 Focus Group Responses for Changes in Girls' Behaviors as a Result of Participating in *Girls on the Run*

Higher-order theme	Girls: lower-order theme	Coaches: lower-order theme	Caregivers: lower-order theme	School personnel: lower-order theme
Increased positive emotional behaviors	<ul style="list-style-type: none"> • Learn about self • Live in the moment • Be positive about self • Less self-conscious • Feel better about self • More self-aware • Being nonjudgmental 	<ul style="list-style-type: none"> • More confident • Beauty from within • Happier in school • More self-aware • Feeling empowered • Feelings of control • Accepting self 	<ul style="list-style-type: none"> • Improved confidence • Stronger emotionally • Setting boundaries • Expresses feelings • Loves self • Can-do attitude • Proud of achievements 	<ul style="list-style-type: none"> • Opens up more • More confident • More positive disposition • Greater sense of self • Pride in themselves • Feeling empowered • More self-aware
Emotion management	<ul style="list-style-type: none"> • Managing emotions • Expressing feelings • Changing negative statements to positive • Think before acting 	<ul style="list-style-type: none"> • Managing anger • Taking a breather • Expressing feelings • Deals with conflict • More collected/calm 	<ul style="list-style-type: none"> • Calmed herself down • Expresses feelings • Emotional control • Does not internalize criticism 	<ul style="list-style-type: none"> • Changes negative to positive statements • Resolves conflicts • Communicates calmly • Deals with negative situations
Increased positive social behaviors	<ul style="list-style-type: none"> • Considers others' feelings • More outgoing • Act like true self • Making good choices • Act nicer to others 	<ul style="list-style-type: none"> • More outgoing • Being a leader • Coming out of shell • Inclusive of others • Better social skills • Acting nicer 	<ul style="list-style-type: none"> • Encourages teammates • More social • Peer interactions • More friendly • Communicates better • Encourages other kids 	<ul style="list-style-type: none"> • More outgoing • More inclusive of others • More comfortable with peers • Shows greater respect • More responsible • Leadership skills
Developing positive social relationships	<ul style="list-style-type: none"> • Choose right friends • Improve friendships • Make new friends 	<ul style="list-style-type: none"> • Less self-centered • Accepting others • More inclusive • Finds positive friends • Supporting others 	<ul style="list-style-type: none"> • Befriends others different than self • Makes new friends • Gets to know more people • Gets to meet more people 	<ul style="list-style-type: none"> • Chooses positive friends • Closer friendships • Socializes more with peers • More accepting of others • Higher trust with teammates
Improved running and motivation to run	<ul style="list-style-type: none"> • Improved running • Faster runner 	<ul style="list-style-type: none"> • Motivation to run 	<ul style="list-style-type: none"> • Wants to keep running • Wants to do another 5k • Strives to do more physically 	<ul style="list-style-type: none"> • Found an enjoyable activity • More active mindset • Active behavior motivates younger kids
Standing up for self and others	<ul style="list-style-type: none"> • Stand up for myself 	<ul style="list-style-type: none"> • Standing up for self • Pride to be stand-byer • Stand up for new kids 	<ul style="list-style-type: none"> • Supporting a girl who was bullied 	<ul style="list-style-type: none"> • Confidence to stand up for self • Supporting peers • Persuade others to do right thing
Setting and accomplishing goals	<ul style="list-style-type: none"> • Completing each task before moving on • It is not about winning 			<ul style="list-style-type: none"> • Setting goals • Greater commitment • Works toward a greater goal

and nutritional health connote concrete behaviors, girls' responses are consistent with their developmental level.

Elle shared a change in physical activity, "Now I get outside a lot more. Like, I'll run around the yard, catch frogs, climb trees." Malia said, "I've been more active since I came to *Girls on the Run* because I used to do like 2 to 4 laps . . . and since I came to *Girls on the Run*, I got 18 laps and the fact that I have asthma, I was really surprised." A coach/teacher noted, ". . . a girl was always tired in class and would fall asleep . . . during the healthy habits lessons, we talked about how much sleep we should get . . . it was from this lesson that she realized she could choose to go to bed earlier." A caregiver shared a heartfelt example: "Makaila is in special education . . . they're separated from the general population . . . and with *Girls on the Run* they're introduced into the general population. She lives without a label in *Girls on the Run* and that's really important, not to be labeled. In *Girls on the Run*, with the volunteers, coaches, teachers . . . everyone takes it away. It's gone, it's lifted."

Community Impact Project

The concept of an attitude of gratitude by contributing to one's community is addressed in 5 lessons of this program's curriculum. The culminating activity is implementing a community impact

project, which is an index of *contribution* in the program philosophy. Sixteen coaches completed the online survey about their team's project, and girls, coaches, and caregivers in the focus groups described what girls learned from this experience.

Girls chose projects designed to benefit 5 causes, including animals, environment, hospital, school, and other. Four teams completed projects to provide support for people dealing with illness or injury. They collected donations or designed cards to be given to individuals in the hospital. One of these teams chose to collect toys, books, and stuffed animals to donate to a children's hospital after a team member shared a personal experience with long-term illness. Another 4 teams implemented projects concerning animal welfare. These involved gathering donations for animal shelters and advocating for animal adoption. Four teams chose to make a difference in their schools by implementing projects that showed appreciation of teachers and staff. Two teams collected and donated healthy snacks to food banks, and 2 teams made an environmental difference by cleaning up and beautifying their schools and communities.

Girls in the focus groups reported several benefits of completing community impact projects, and coaches provided convergent evidence of positive outcomes. They explained that involvement introduced them to issues of social justice. One girl said of her team's experience, "We learned that some people . . . like, they live

Table 4 Focus Group Responses for Healthy Habits Learned Through Participating in *Girls on the Run*

Higher-order theme	Girls: lower-order themes	Coaches: lower-order themes	Caregivers: lower-order themes	School personnel: lower-order themes
Physical health	<ul style="list-style-type: none"> • Exercising • Better hygiene (eg, brush hair, brush teeth) • Play outside more • How to stay fit • Do stretching if sitting • Skip, walk, and jump • Run at home • More active • Improved running 	<ul style="list-style-type: none"> • More physical activity • Better hygiene (eg, brush teeth, self-care) • Better sleep habits • Running a 5k • Joined school track team • Slimming down • Improving in running • Walking changed to running 	<ul style="list-style-type: none"> • Physical activity level • Running more • More physically active • Be physically fit • Active every day • Go to sleep earlier • Better hygiene (eg, brush teeth, shower everyday) 	<ul style="list-style-type: none"> • Exercising • Active way of being together • Lifelong physical activity • Movement • Physical activities
Nutrition	<ul style="list-style-type: none"> • Healthy eating/foods • Getting more protein • Look at nutrition facts • More veggies/fruits • Not eat junk food • Healthy snacks 	<ul style="list-style-type: none"> • Healthy plate • Healthy snacks • Healthy eating habits • Healthy drink choices • Drinking water • Healthy eating 	<ul style="list-style-type: none"> • Healthier eating • Drinking more water • Preparing meals • Makes healthy food choices • Goes food shopping to eat healthier 	<ul style="list-style-type: none"> • Learning healthier snack alternatives • More aware of good nutrition • Choosing healthier foods • Drinking more water • Eating more fruit
Emotional health		<ul style="list-style-type: none"> • Deals with peer pressure • Handling anger • Reduced anxiety • Greater confidence • Inner beauty • Self-acceptance • Healthy body image 	<ul style="list-style-type: none"> • Stronger emotionally • Channel emotions in a healthy way • Not as impulsive • Happier with self • Positive body image • Critical of media images 	<ul style="list-style-type: none"> • Body awareness • Managing stress • Okay to take time for self • Okay to have difficult feelings
Mental health		<ul style="list-style-type: none"> • Increased motivation • Love running • Wants to keep running • Setting goals 	<ul style="list-style-type: none"> • Accomplishing goal increases self-esteem 	<ul style="list-style-type: none"> • Goal setting
Social health		<ul style="list-style-type: none"> • Connecting with people • Bonding with girls • Encouraged by girls • Teaching others healthy habits 	<ul style="list-style-type: none"> • Has a strong core of friends • Positive peer influence to be healthy 	<ul style="list-style-type: none"> • Enjoy social aspects of running • Connecting face-to-face • Looking after each other • Learning to communicate

in poverty. I don't know how to say it." This girl's difficulty putting her experience into words suggests that such projects have the potential to expose participants to the less-pleasant realities of their communities. Other girls said that doing community projects helped them think more about other people's needs, suggesting that girls can develop a sense of empathy and sympathy through the program. Coaches suggested that girls developed empathy through involvement in their projects. One coach, whose team donated items to a children's hospital, described a positive change in sense of empathy, "They understood this could be any of us . . . anything could happen." Coaches reported that girls realized everyone has the potential to make positive contributions to society. As one coach put it, girls realized, "just little things can make a huge difference in someone's life."

5k Season-Ending Event

Of the 203 girls in our longitudinal sample, 167 or 82.3% completed the culminating 5k. Coaches disclosed that some absences were due to issues of transportation, illness, injury, or family obligations.

Discussion

The purpose of our study was to evaluate the effectiveness of *Girls on the Run* in promoting positive youth development. We

extended past evaluation studies in several ways by including a longitudinal design, quantitative and qualitative methods, constructs and measures that align with the program philosophy, and multiple stakeholder groups to share perspectives on program impact. Collective findings show that *Girls on the Run* is effective in attaining its goals of enhancing girls' social, psychological, and physical attributes and behaviors, which are compatible with PA-PYD program objectives. In the following paragraphs, we systematically discuss key findings, link findings to program features that may explain impact, and offer implications for school-based and out-of-school-time physical activity programs.

The strongest findings emerged for girls who entered the program with below-average scores. Meaningful, and in some cases, dramatic improvement from preseason to postseason were observed for competence, confidence, connection, character, and caring, as well as for physical activity and sedentary behavior. Physical activity improved from 3.0 to 4.4 days per week of ≥ 60 minutes per day—a 42% increase—and was sustained at follow-up. Hours of TV watching and playing video/computer games for nonschoolwork (ie, sedentary behavior) each decreased by 20% from preseason to postseason and remained stable at follow-up. This decrease in sedentary behavior is meaningful because of public health efforts to increase physical activity while simultaneously aiming to reduce TV watching and video game playing (31). *Girls on the Run* was especially effective for girls who

need it the most—girls who indicated at the outset that they do not feel they do physical activities as well as others their age, find it harder to make friends, and feel less happy with themselves as a person benefited from skill-building lessons and positive social relationships afforded from participating in *Girls on the Run*. Simpkins (35) suggests that organized activities can play a compensatory role for youth who are more fragile relative to peers in personal and social attributes, leading to stronger program effects. Our social, emotional, and behavioral findings for girls starting lower than their peers at the start of the program on the *Five Cs* and physical activity (and higher on sedentary behaviors) are supported in other studies indicating that youth who have the most to benefit from positive sport experiences show the greatest gains (1,36,37).

Girls who scored below the preseason average on particular variables also significantly improved from postseason to 3-month follow-up for perceived social competence, physical appearance, and classmate support, and global self-esteem. This finding was curious because follow-up assessments typically show retention of improved scores from pre to post because there is no further exposure to coaches, lessons, and activities. Simpkins (35) refers to this phenomenon of continued improvement after the end of a program as a “sleeper effect”—when effects emerge later or become larger over time (ie, continued improvement from post to follow-up). *Girls on the Run* spans 2 sessions weekly for 10 weeks, totaling 20 lessons and a culminating 5k. For girls starting below average, season-long improvements that continued to grow after the program ended may be an index of sleeper effects for competence, confidence, and connection. Improvement after lessons ended means these beliefs and behaviors might require even more time for the “lightbulb to come on” in children as young as 8–10 years old. Girls may encounter experiences that prompt use of learned skills in the program that may be reinforced by parents or friends, which in turn contributes to continued growth and development.

For the entire sample, statistically significant increases but small effect sizes emerged for indices of confidence and connection. Simpkins (35) suggests that a small effect size may still be meaningful due to the cumulative influence of multiple contexts (schools, families, and peers) on youth development and the relative time youth spend in these contexts (5). Given that youth typically spend a larger percentage of time in home and school settings, our findings may signify a positive effect of participating in a 10-week PA-PYD program. For other constructs, such as perceived physical and social competence and physical activity, preseason scores were relatively high (or low in the case of TV and video/computer games), which may have left little room to improve. Physical activity frequency was 4.9 days per week and TV and video/computer game playing were each only 1.1 hours per day. According to Simpkins (35), for some behaviors a positive effect may be maintaining relatively high levels that are prone to decline over time. Over the late childhood years, perceived competence and physical activity tend to show a downward trend for girls as they approach or go through puberty and make a transition to junior high school (22). Thus, stable high scores on variables that are potentially vulnerable to decline over time may represent a positive finding.

Evidence of season-long improvements in the *Five Cs* and physical activity also emerged from focus group responses by girls, coaches, caregivers, and school personnel. Use of multiple stakeholders enabled varying perspectives and evidence of converging data. Responses corroborated positive change in physical and social *competence* (eg, improved running, improved social

behaviors), *confidence* (eg, acceptance of self, feelings of empowerment), *connection* (eg, improving friendships, accepting others), and *character* and *caring behaviors* (eg, standing up for self and others). Stakeholders were unanimous in characterizing *Girls on the Run* as promoting a holistic healthy lifestyle, by describing season-long positive change in *physical health* (eg, more active, staying fit), *nutrition* (eg, not eating junk food), *emotional health* (eg, controlling anger, handling peer pressure), *mental health* (eg, increased motivation, setting goals), and *social health* (eg, stronger core of friends). Embracing a physically active lifestyle at a young age is important for maximizing positive and reducing negative health outcomes later in life (29,32).

Information about the community impact project revealed that *Girls on the Run* is successful in promoting a sense of civic engagement and positive attributes, such as character, empathy, and sympathy. Girls are given opportunities to work cooperatively, develop an awareness of other people’s circumstances, and recognize their potential to make a positive difference in the world. Girls supported individuals in need (eg, sick children in the hospital) and contributed to their school, community, and society (eg, food bank donations, environmental awareness). Girls learned the value of helping others and recognizing the joy brought to others from authentic kindness, philanthropy, and compassion. Implementing a community impact project is an innovative component of this PA-PYD program and consistent with recommendations for effective PYD programs (13). Based on coaches’ survey information and focus group data from girls, coaches, and caregivers, the community project was a memorable and enduring experience for the girls.

The 5k event reflects the cumulative physical activity training throughout the 10-week season and an important index of physical competence attained from participation (45). To prepare for this physical activity goal, lessons include learning to pace, building strength and stamina, and embracing a philosophy of “it’s all about finishing” and not what place or time one achieves. Girls are encouraged to keep moving even if they walk, hop, jump, or skip in addition to running. A practice 5k is included during week 8, and girls are encouraged to give their best effort and apply learned skills such as changing negative to positive self-talk. At the end of the practice 5k, girls identify a personal goal to prepare for the end-of-season 5k. As seen, 82% of the girls in our sample completed the 5k, demonstrating that the intentional curriculum was effective in developing skills for successfully achieving the capstone physical activity goal.

Collectively, findings provide evidence that *Girls on the Run* is having a positive impact on girls’ social, psychological, and physical behaviors. We attribute evidence of effectiveness to the intentional curriculum and coach training—the processes that form the foundation of the program. The curriculum that is deliberately structured to provide skill-building opportunities and intentionality of lessons means that coaches’ behaviors explicitly focus on helping girls achieve PYD goals (13,25,33). Coach training is systematic and interactive, including in-person workshops, online training, and access to additional resources. The focus is achieving high-quality delivery by assisting coaches to teach social, emotional, and physical skills and behaviors. This is accomplished by a focus on building positive relationships, creating a positive inclusive environment, and emphasizing a mastery climate—which map onto effective social-contextual features of PYD programs (13,25,33). The curriculum and coach training align with the mission, vision, and core values of the program and were developed based on evidence-based best practices in physical activity settings. Thus, favorable outcomes obtained from a longitudinal

design, quantitative and qualitative methods, and multiple stakeholders reflect efforts to successfully implement the intentional curriculum by coaches trained to deliver the lessons with fidelity.

Girls on the Run collaborates with schools to offer programming and resources that promote healthy youth development, including social and emotional learning and physical activity. This school–community partnership is compatible with the Whole School, Whole Community, Whole Child Model (3) that advocates educators, communities, families, and policy makers work together to ensure children are healthy, safe, engaged, supported, and challenged. This approach is also consistent with the goals of the National Physical Activity Plan (29), which focuses on strategies to increase physical activity and holistic health outcomes in multiple societal sectors including educational and community settings. The synergy between schools and *Girls on the Run* to offer a PA-PYD program featuring an intentional curriculum delivered by trained coaches is a strong example of meeting the goals of National Physical Activity Plan and Whole School, Whole Community, Whole Child Model.

Along with evidence that *Girls on the Run* is an effective PA-PYD program, we note some limitations and future research directions. First, implementation feasibility resulted in 3 councils being selected. It is possible that participants from councils that have fewer years of delivering the curriculum and/or less experienced coaches may not have shown the same degree of positive results. Second, the *Five Cs*, physical activity, and sedentary behavior were assessed using self-report, which may have resulted in some socially desirable scores. Thus, qualitative interviews were invaluable to offer open-ended responses about attitudes and behaviors learned in *Girls on the Run*. To this point, we relied on volunteers to participate in focus groups. Individuals may have been willing to dedicate time and energy in an interview because of favorable impressions of the program. This may explain why adverse program effects were not uncovered. Future research might recruit caregivers who hold varying perspectives about the program, which would potentially uncover areas for improving curricula and delivery. Third, it is possible that a self-selection bias exists in which girls and parents who choose to participate in *Girls on the Run* are different than those who choose to participate in other after-school activities. Finally, focus groups revealed that caregivers held favorable impressions about *Girls on the Run* but were not articulate about specific lessons that influenced their children's positive outcomes. As parents are a primary source for reinforcing lessons learned by their children in out-of-school-time programs, future research might focus on how parents can be best informed about program goals, curricular lessons, and core values to strengthen program impact.

In conclusion, using a longitudinal design, measures compatible with the *Five Cs* philosophy, quantitative and qualitative methods, and multiple stakeholders' perspectives, findings provide data-based evidence that *Girls on the Run* is effective in improving physical, social, and emotional behaviors, with particularly strong effects for girls who started the season with lower scores on the *Five Cs* and physical activity and higher scores on sedentary behavior. The intentional curriculum and coach training help explain why favorable findings emerged and suggest they can serve as exemplars for other after-school physical activity programs. We end with a compelling quote by a girl, written in response to an open-ended survey question, "Is there anything else you would like to share about your experiences in *Girls on the Run*?" She wrote: "If you are a girl that is bad at making friends, nobody listens or understands how you're feeling, and you sit alone

every day . . . that was me. Then I joined Girls on the Run. IT CHANGED MY LIFE. Now I have way more than one friend by the second week of school and I have people who UNDERSTAND ME. I used to yell out when I got very angry, now I can hold in my temper. I love my life because of Girls on the Run."

Notes

¹Most of *Girls on the Run*'s programs are located in schools, but they also offer some programs at nonschool sites.

²Significant multivariate *F* values = 5.64, 3.58, and 7.56. Significant follow-up *t* values = 2.50 to 3.90.

³Significant multivariate *F* values = 7.49 to 21.59. Significant follow-up *t* values = 2.29 to 6.61.

⁴Names used are pseudonyms.

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