Changes in Commitment to Physical Activity among 8-to-11-Year-Old Girls Participating in a Curriculum-Based Running Program

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ABSTRACT

Background: Despite findings that support physical activity (PA) as an effective means of improving health and quality of life, PA levels among girls tend to decline with age. Purpose: The purpose of this study was to assess changes pertaining to PA commitment following a curriculum-based running program designed for 3rd-to-5th-grade girls. Methods: Participants (n=196) were given paper-and-pencil surveys containing an adaptation of the “Feelings about Physical Activity Scale” in addition to items related to demographics, PA behaviors, and curriculum content. Results: Paired-sample t-tests revealed statistically significant differences in overall commitment to PA (p=.006) and attitudes regarding PA (p=.001) from pre-intervention to post-intervention. Results also suggest increases in value of PA. Discussion: The study’s findings have important implications for those public health education professionals who develop PA programs for female children and adolescents. Prior to initiating programs to promote PA for girls, it is important to include educational programs that promote positive attitudes toward exercise, the value of PA, and the behaviors necessary to sustain PA. Translation to Health Education Practice: Programs that are designed only to initiate PA among young girls may not be addressing sustainability. It is through regular and sustained PA that associated health benefits can be achieved.

BACKGROUND

The fundamental need for childhood obesity prevention programs is well justified. Data from the third National Health and Nutrition Examination Survey (NHANES III) indicates that 18.8% of children and 17.1% of adolescents in the United States are considered overweight. These statistics reflect a twofold increase in overweight children and a threefold increase in overweight adolescents within the past 20 years. Moreover, adolescent girls are at greater risk than boys of becoming overweight. NHANES data shows an increase in the prevalence of overweight among girls from 13.8% in 1999 to 16% in 2004. This increase raises two major concerns: (1) the predisposition for overweight girls to become obese women—specifically, 80% of overweight children reportedly grow to become obese adults; (2) physical and psychosocial health problems associated with obesity.

Childhood overweight/obesity is a multifactorial health issue resulting from an imbalance between caloric intake and physical activity (PA). Participation in regular PA may reduce girls’ risk for later development of obesity, certain cancers, osteoporosis, stress, and depression, in addition to improving body image, self-esteem, and self-confidence. Results from a recent multicenter longitudinal study found that when comparing 9- and 10-year-old active girls (defined as engaging in the equivalent of 5 or more brisk 30-minute walks per week) to inactive girls (engaging in the equivalent of 2.5 or fewer brisk 30-minute walks...
per week), there were only small differences in BMI. However, results from the 9-year follow-up revealed significant differences in BMI, with the inactive girls becoming an average of 10 to 15 pounds heavier than the active group by the tenth year of the study.9 This data indicates the importance of getting girls physically active and sustaining their involvement throughout adolescence to reduce the likelihood of overweight/obesity and associated comorbid health issues.

Despite findings that support PA as an effective means of improving health and quality of life, researchers note that as girls move from preadolescence to adolescence to young adulthood, their PA levels decline.4,10-12 Results of the aforementioned longitudinal study found that PA levels of girls between the ages of 9 and 19 declined by an average of 7.5 brisk, 30-minute walks per week.9

Factors that influence lower PA participation rates among girls include lack of motivation or interest, low self-esteem, and being shy or withdrawn.13 Interventions aimed at engaging adolescents in PA and healthy eating habits need to address the various motivators that affect decisions to participate. Researchers have suggested three main motives for participating in PA: to demonstrate physical competence, to seek social support/acceptance, and to have fun.13,14 Providing incentives and multiple opportunities for PA also may be motivational.13 For example, Vu et al. (2006) found that any physical activities perceived as "exercise" or "sports" were associated with competition and selectiveness and therefore not perceived as fun. Further, future participation in PA is positively related to the perceived value of the activity.15-17 As such, youths attach value to activities when they judge participation to be of some use to them. These factors must be considered in developing programs to address the PA needs of girls. Because boys are more likely than girls to have higher self-esteem and greater physical strength, programs addressing the needs of girls should provide instruction and experiences that increase their confidence and their opportunities to participate in activities, as well as social environments that support involvement in a range of physical activities.4

Girls on the Run is an example of an experiential learning program for girls in 3rd-5th grade. The Girls on the Run mission is "educating and preparing girls for a lifetime of self-respect and healthy living." The 12-week program combines training for a 5K (3.1-mile) running event with curricular lessons that encourage positive emotional, social, mental, spiritual, and physical development.

The Girls on the Run program is based on the conceptual framework that adolescents' greatest concerns are rooted in three core issues: lack of identity, lack of connectedness, and lack of voice in their lives.19 As such, the Girls on the Run curriculum comprises three parts: "Part 1: All about Me—Getting to Know Who I Am and What I Stand For"; "Part 2: Building My Team—Understanding the Importance of Cooperation"; and "Part 3: Community Begins with Me—Learning about Community and Designing Our Community Service Project." Each part includes components of physical, mental, social, and emotional health. Based on this framework, the 24-lesson curriculum uses PA, and running in particular, as experiential learning activities that teach the various lessons. Because a key objective of the program is to increase PA self-efficacy, alternatives to running such as walking, skipping, and jogging are promoted.

**PURPOSE**

The purpose of this study was to assess changes pertaining to PA commitment following a 12-week curriculum-based running program (Girls on the Run) designed for 3rd-to-5th-grade girls.

**METHODS**

**Design**

The results presented here are part of a larger formative evaluation of the Girls on the Run intervention. A nonexperimental pretest/post-test study design was used to...
assess program effects on commitment to PA. This type of design is considered appropriate for evaluation of programs in the formative stages.20 University Institutional Review Board approval was granted prior to implementation of the study.

Participants
A convenience sample of six Girls on the Run councils representing four geographical locations across the United States was identified for participation (Table 1). A program council is a geographic service delivery area for the Girls on the Run program. Each council may have one or more program sites located within community-based organizations (e.g., local YMCA, parks and recreation departments, Boys & Girls Clubs) or in the form of after-school programs. Each program site has a coach and an assistant coach and can have a maximum of 15 participants.

Participants self-select to be part of the program. At each program delivery site, flyers and posters are used to advertise the program and registration periods. Parents or guardians of interested participants must register the children for the program. Program councils provided a total of 196 program participants. Prior to participating in the study, children were required to have written parental consent as well as passive assent.

Intervention
As discussed previously, Girls on the Run is a 12-week program that combines training for a running event with curricular lessons that encourage positive emotional, social, mental, spiritual, and physical development. Appendix 1 provides an example of a lesson within the curriculum. Each lesson begins with an introduction and a “getting on board” experiential activity, followed by processing time, a warm-up, workout, and wrap-up. All “getting on board,” warm-up, and workout sessions contain activities that reinforce the goals of the lesson. As part of the overall program, girls also choose and conduct a community service project and complete a 5K (3.1-mile) running event with their team members.

Interested community residents who attend a weekend training session held by the national Girls on the Run organization become official “coaches” who facilitate the 12-week program. All coaches participate in a 2-day training session facilitated by the founder of the Girls on the Run program. The training consists of (1) business aspects of program delivery, including evaluation training and evaluation protocol; (2) program mission, goals, objectives, and curriculum; and (3) how to deliver the program curriculum to 8-to-10-year-old girls. In addition, each coach must hold a current certification in first aid and CPR.

Instrument
A self-report paper-and-pencil questionnaire assessed demographics (age, grade in school, ethnicity), PA commitment, PA behaviors, and curriculum content. The Likert-type survey was an adaptation of the “Feelings about Physical Activity Scale.”21,22 The adaptations were primarily aimed at improving the questionnaire’s readability and comprehensibility among 3rd-to-5th-graders. The 4-point scale assessed overall commitment to PA.23 The original version of the scale reported reliability estimates

Table 2. Three-Factor Solution for Principal Axis Factor Analysis of ‘Feelings about Physical Activity Scale’

<table>
<thead>
<tr>
<th>Item Content</th>
<th>Factor Loadings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical activity is important to me</td>
<td>.750 .246 .043</td>
</tr>
<tr>
<td>Physical activity is the best part of my day</td>
<td>.728 .060 .002</td>
</tr>
<tr>
<td>I would change my schedule to participate in physical activity</td>
<td>.623 .071 .208</td>
</tr>
<tr>
<td>Life is better because I am physically active</td>
<td>.630 .013 .261</td>
</tr>
<tr>
<td>Physical activity feels good</td>
<td>.630 .288 .063</td>
</tr>
<tr>
<td>I look forward to physical activity</td>
<td>.501 .407 .159</td>
</tr>
<tr>
<td>I do not enjoy physical activity</td>
<td>.074 .810 .037</td>
</tr>
<tr>
<td>I don’t like thinking about doing physical activity</td>
<td>.179 .660 .321</td>
</tr>
<tr>
<td>When I miss a day being physically active, I like it</td>
<td>.322 .515 .471</td>
</tr>
<tr>
<td>Physical activity is hard work</td>
<td>.099 .003 .765</td>
</tr>
<tr>
<td>I wish there were better ways to get healthy than being physically active</td>
<td>.156 .123 .679</td>
</tr>
<tr>
<td>I have to force myself to be physically active</td>
<td>-.077 .483 .603</td>
</tr>
</tbody>
</table>

Eigenvalue for three extracted factor 2.717 1.923 1.880
% of the variance accounted for 22.638 16.024 15.665

Note: Kaiser-Meyer-Olkin measure of sampling adequacy = .819; Bartlett’s test of sphericity = 518.494 (p<.001); n=183
A factor analysis was conducted to establish validity, and Cronbach’s alpha was calculated as an estimate of internal consistency reliability with respect to the current sample of children. A scree plot of eigenvalues from a principal axis factoring showed three factors with eigenvalues ≥1.0: “Value of PA” items loaded on Factor 1 (6 items; scores ranged from 0 to 18; higher scores indicated greater perceived value of PA); “Attitudes about PA” items loaded on Factor 2 (3 items; scores ranged from 0 to 9; higher scores indicated fewer negative attitudes toward PA); and “Motivation Regarding PA” items loaded on Factor 3 (3 items; scores ranged from 0 to 9; higher scores indicated fewer motivational barriers to PA). Eigenvalues for the three factors extracted were 2.7, 1.9, and 1.9, respectively. The percent of variance accounted for by each factor was 22.6, 16.0, and 15.7, respectively; 54.3% of the total variance was explained by this solution. Cronbach’s alphas for Factors 1, 2, and 3 were .75, .64, .59, respectively for pre-intervention, and .75, .66, and .59 for post-intervention (Table 2).

**PROCEDURES**

At each program site, questionnaires were administered by Girls on the Run site coaches prior to the first program session (T1) and at the last session (T2). All coaches were trained on survey administration via an evaluation manual describing the purpose, assessment tools, evaluation protocol, and survey administration. During the survey itself, all coaches read the questions out loud as the participants followed along and recorded their answers on the questionnaire. Participants took approximately 30 minutes to complete both the pre- and post-questionnaires.

**Statistical Analysis**

Data was entered and analyzed using the SPSS V14 statistical program for Windows. Analysis included descriptive statistics in addition to paired-sample t-tests. An alpha level of 0.05 was used as the measure of statistical significance.

**RESULTS**

Of the 193 participants who completed pretests, 183 also completed the post-test—a 95% response rate (10 participants were absent on the day the post-test was administered). As depicted in Table 1, more than half of the participants identified themselves as White (56%), followed by 21% African American. Forty-five percent of the participants indicated that they were in the 4th grade, with a mean age of 10.92 years.

Table 3 presents the mean values pertaining to overall commitment to PA as well as the PA value, attitudes, and motivation subscales. Paired-sample t-tests revealed statistically significant differences in overall commitment to PA (p=.006) and attitudes regarding PA (p=.001) from pre-intervention to post-intervention. That is, following the 12-week intervention, participants increased their overall commitment to PA as well as decreased their negative attitudes pertaining to PA. In addition, although only approaching statistical significance (p=.051), results also suggest increases in value of PA from pre-intervention to post-intervention. No statistically significant differences from pre-intervention to post-intervention were observed with regard to motivation to be physically active (p=.682).

**DISCUSSION**

Childhood overweight and obesity is a multifactorial health issue, with insufficient PA as a major contributing element. Studies have noted the following observations: (1) an increase in the prevalence of overweight girls, and (2) a decrease in PA levels as girls age into young adulthood. Accordingly, one mechanism for decreasing female childhood overweight and subsequent transition to adult obesity involves increasing PA levels—notably, sustaining PA though adulthood. Existing research related to developing interventions to increase PA participation among adolescent girls has suggested that programs should increase perceptions of physical competence, provide social support and acceptance, increase perceived value of the activity, and be fun (i.e., not perceived as exercise or sport).

The present study sought to examine changes in commitment to PA among girls age 8 to 11 who participated in an experiential curriculum-based running program.

The results of this study indicate an increase in commitment and a decrease in negative attitudes pertaining to PA following participation in the Girls on the Run program. These findings may be explained, in part, by the structure and format of the curriculum. For example, although one aim of the program was to increase PA in this group, running was used as a mechanism to teach and explore specific curricular objectives. Therefore, because PA and running were not the main focus of the program (see Appendix 1, for example), the participants may not perceive the program as a “sport”...
or “exercise” program. This supposition supports the work of Vu et al., who indicated that when PA is perceived as exercise or a sport, it is also perceived as not being fun and, therefore, is not motivational.13

Interpretation of the present study must consider certain limitations. One important limitation was the lack of a control or comparison group. Although useful in formative program evaluation to assess immediate effects of knowledge and skill, this design does present weaknesses, such as the regression due to participant self-selection. Because the participants self-selected to participate in the program, they may have presented with higher motivation and commitment than girls who did not self-select to participate. In addition, although statistically significant, the changes in commitment and attitudes were small, perhaps due to self-selection bias. Another limitation was the lack of ethnic diversity among participants.

As such, we were unable to determine whether the changes observed were a direct function of the intervention. Thus, we were unable to determine the overall effectiveness of the Girls on the Run program. However, due to the short time interval between pre- and post-observations, it is possible that the threats associated with historical events and maturation were limited. Due to the increasing trend in childhood overweight and obesity, it may be unrealistic to wait for evidence based on efficacy and effectiveness trials46; therefore, promising interventions such as the one presented here may provide opportunities for addressing this need. Nevertheless, a larger study with a control or comparison group is recommended to provide additional evidence suggesting the influence of the Girls on the Run curriculum.

TRANSLATION TO HEALTH EDUCATION PRACTICE

Although the present study has certain limitations, it still provides an interesting example of a curriculum-based running program that suggests improvements in commitment and attitudes regarding PA. Thus, one may theorize that if a PA program increases the participants’ commitment, improves their perceptions of the value of PA, and decreases their negative attitudes pertaining to the activity, then the likelihood that the participants will sustain their activity is strengthened. Getting girls involved in PA programs that are fun and not viewed as sports or exercise may enhance the prospects for increased commitment and long-term sustainability.

In sum, these findings have important implications for those public health education professionals who develop PA programs for female children and adolescents. Health educators should be mindful of the importance of creating a safe, positive environment for young girls wherein PA is not perceived as a sport or exercise program. Furthermore, prior to initiating programs to promote PA for girls, it is important to include educational programs that promote positive attitudes toward exercise, the valuation of PA, and the behaviors necessary to sustain PA. Programs designed only to initiate PA among young girls may be missing a key component: sustainability. Long-term sustainability is key because PA is a principal mechanism by which later obesity and associated health issues can be reduced.

REFERENCES


## Appendix 1. Sample Girls on the Run Lesson

### LESSON 3: MAKING IMPORTANT CHANGES

#### Learning Goals

1. To learn the importance of assessing current behaviors and ways of thinking
2. To learn how to change behaviors that need improvement

#### Materials

- Markers
- Four index cards per girl
- A box that the girls have jointly decorated with monster teeth or something similar, in which they can “slam dunk” their negative behavior cards (created in a previous lesson)
- Poster board or large paper
- Three objects small enough and soft enough to be tossed around a group circle (e.g., bean bag, lemon, Nerf ball, tennis ball, Beanie Baby)

#### Introduction

Before beginning this group of activities, you might find it helpful to play another quick name game. Have the girls stand in a circle. Explain that you will start by throwing one small object to a girl across from you while saying her name. She must then throw it to someone else and say her name. The game continues until everyone has had a chance to catch the object. The key for the group is that they must remember what order the object was thrown. Another object is then added so that two objects are being tossed at the same time. The second object follows the first, so that they go in the same order; the girls must still say the name of the teammate to whom they are throwing. You may stop at two objects or add a third if you think your group is up for it. Alternatively, you may deem it necessary to repeat the first step, with just one object going in the same order as the first time. In any case, the game is a fun way to get the group to interact and help them continue learning each other's names.

Next, spend some time introducing the day's lessons and themes, using language such as the following: “Last time we learned about promises, respecting one another, and being girls of our word. Today we'll be doing some activities that will help us see areas in our lives that might need a little work or improvement. We are going to talk about change. What do I mean by change? [Answers may include money, coins, change of seasons, change of clothes, etc.] All of these are correct. But the kind of change we are talking about today is changing something about yourself that does not make you feel good about yourself. I am not talking about changing our appearance—like our hair color or the way we dress. I am talking about things we do that are not good things to do, or things that make us feel bad about ourselves. For instance, being mean to your brother, saying unkind things when you get upset about something, not doing your homework, not trying your best, biting your fingernails when you are nervous. What are some other examples of things we may do that do not make us feel good about ourselves? Now, let us spend some time thinking about some of the things that we might want to work on.”

#### Getting on Board

Instruct the girls to sit in a circle. Hand each girl 4 index cards. Instruct them to write down four negative behaviors that they need to work on, one behavior on each card—for example, “calling my brother names,” “not cleaning up my room.” Girls should not put their name on any of the cards.

#### Processing

Once the cards have been filled out, you can use the following language to advance the lesson: “Let's go around the circle and ask each person to name one of the negative behaviors that she would like to work on and/or change…. Why is it important to be aware of these negative behaviors?” [Sample answer: Because if we want to improve ourselves, we have to know what we need to change.]
### Warm-Up

Stay in the circle and ask the girls to put their negative behavior cards next to them. Explain that one of the coaches will be the leader. Then, describe the upcoming game: “The object of the game is to observe the group carefully. There will be one leader in the group who will begin making a small motion. Do the same motion that she is doing. Then, when she changes motions, you must change too. It is similar to Simon Says.”

The girls must sit/stand silently and observe the behaviors of those around them. The leader/coach begins by doing a small movement, like tapping her nose with her index finger or patting her head with the palm of hand. Girls must copy this movement. Silently, the leader changes to a new movement. Girls must observe this new movement (without talking) and change their actions to copy this new movement. You may start with obvious movements and then introduces motions that are more difficult to see (e.g., tapping toes, gently swaying arms). Once the girls have the hang of the activity, stop, have them close their eyes, and explain that you will tap one of the girls on the shoulder to become the next leader. The girls then open their eyes and continue playing the game. The object of the game is for the girls to watch closely and try to identify the leader of the group, and then follow that leader through several motions. This game can be repeated several times with different leaders.

### Processing

After a brief stretch, ask the following sorts of questions: “Was it hard to figure out who was leading the group? What kinds of things did you have to be aware of or watch for to decide who the leader was? Were the movements subtle or small? Or were they more obvious behaviors? Do changes in our daily behaviors have to be obvious to be important? How do subtle changes make a difference? Can you give me some examples?” (Possible answers to the latter question include smiling, cleaning up after yourself, saying “Good morning,” etc.)

### Workout

Ask the girls to stand up and hold their negative behavior cards. Instruct them to begin running on the track. They are to take their negative cards with them. When they complete a lap, they are to slam-dunk (or choose some other dramatic manner to deposit) one card into the “monster” box. (Note: You may want to let the girls give the monster box a name!) They continue running until they have deposited all of their negative behavior cards into the box. They may then continue running, and each time they pass you, they should write a positive behavior (i.e., “exercising at least three times per week,” “trying to cooperate with my family,” “respecting myself for the way I am”) that they either engage in or would like to engage in on the poster board. At the end of the workout, the poster board should be filled with many examples of positive behaviors or habits.

### Processing

Allow the girls to take turns reading some of the positive behaviors from the poster board. Ask them questions like the following: “We got rid of our negative behaviors in the ‘monster box.’ Why do you think it is important to replace negative behaviors with positive ones? Do you see a positive behavior on the poster board that you had not thought of before? How can we continue or start doing some of these positive behaviors?” Then, brainstorm ways to take on two or three of the positive habits, reminding the girls that “we must be aware of our negative behaviors and work hard to replace them with positive ones. We want to feel good about all of the things that we do.”

### Wrap-Up

Have the girls stretch as they cool down. Gather them in a circle and highlight the positive behaviors you noticed during the day’s session. Finish with a closing cheer created by the girls. Encourage them to create a cheer that has to do with changing behaviors.