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Feasibility of an After-School Physical Activity Intervention for Adolescent Girls

Deirdre Dlugonski, Avery Douglas, Jamie Henning, and Johanna M. Hoch

University of Kentucky

ABSTRACT

Background: Adolescent girls are at an increased risk of low physical activity and the associated health consequences. Girls Can Move!, an after-school intervention guided by social cognitive theory, was designed to increase physical activity.

Purpose: To examine the feasibility and initial effectiveness of Girls Can Move!

Methods: The 8-week pre-post intervention provided low-active adolescent female participants with a variety of physical activities led by active female role models. Attendance, weekly process evaluations, and a post-intervention focus group were used to assess satisfaction and feasibility. At pre- and post-intervention, participants wore an accelerometer for 7 days to measure physical activity.

Results: Of the 17 enrolled participants, 13 (11.7 ± .7 years, 82% Black/African American or multiracial) completed the intervention. The average attendance rate was 82%. On a scale from 1 to 5, participants reported the sessions were fun (4.5 ± .6) and increased their confidence (4.1±.5) and physical activity (4.1±.5). There were moderate-to-large increases in objectively measured physical activity ($d = .71$).

Discussion: Girls Can Move! is feasible and should be tested using a randomized controlled trial design.

Translation to Health Education Practice: Girls Can Move! can be implemented in after-school settings with the support of university and community partners to promote physical activity among adolescent girls.

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Background

Disparities in physical activity by sex that begin in childhood have long-term implications for health across the lifespan (World Health Organization, 2022). Despite the known benefits of an active lifestyle, rates of physical activity decline from childhood into adolescence (Farooq et al., 2018). Physical activity is particularly low among adolescent girls compared to boys (Farooq et al., 2018). Globally, 84.7% adolescent girls and 77.6% of adolescent boys are not meeting physical activity recommendations (Guthold et al., 2020). These trends are consistent at the local level in Kentucky, with only 24.4% of middle-school-aged girls engaging in the recommended 60 minutes of daily moderate-to-vigorous physical activity (MVPA), compared to 36% of boys (Centers for Disease Control and Prevention, 2021). Physical inactivity is associated with negative health consequences, such as obesity. Rates of obesity are higher among female Black (33.6%) and Hispanic (25.1%) compared to White (16%) adolescents (National Center for Health Statistics, 2019). An intervention to improve physical activity amongst adolescent females is warranted.

Numerous studies have identified physical activity barriers and facilitators among adolescent girls. A recent systematic review of systematic reviews found that a lack support (from peers, family, and teachers) and a lack of time were the most commonly reported barriers among this population (Duffey et al., 2021). Other barriers included a lack of perceived competence, discomfort during or after activity, and preference for other leisure activities (Duffey et al., 2021). The few facilitators that girls cited were externally-focused factors such as weight loss/maintenance and looking good, whereas physical activity benefits and enjoyment were less frequently mentioned (Duffey et al., 2021). At the environmental level, accessible recreational centers and the ability to explore new activities were reported as facilitators whereas program costs and safety were the primary physical activity barriers (Duffey et al., 2021). These studies suggest that interventions for adolescent girls could provide support, promote perceived competence, introduce a variety of activities, and facilitate physical activity enjoyment while reducing barriers to increase physical activity.

Despite numerous studies examining physical activity correlates among adolescent girls, interventions for girls have produced only small, statistically significant increases in physical activity (Camacho-Miñano et al., 2011; Pearson et al., 2015). The most effective

CONTACT Deirdre Dlugonski dee.dlugonski@uky.edu University of Kentucky, 720 Sports Center Drive, Lexington, KY 40506
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interventions for adolescent girls have used multicomponent strategies (Pearson et al., 2015), such as social support from friends and family, individual tailoring, and educational lessons. Interventions were more successful when they targeted girls-only, were designed with theory, and occurred in school settings (Pearson et al., 2015). As an example, the Lifestyle Education for Activity (LEAP) program demonstrated statistically significant increases in the frequency of self-reported vigorous physical activity among 8th – 9th grade girls after a 2-year intervention that were mediated by increased self-efficacy (Dishman et al., 2004) and enjoyment (Dishman et al., 2005). The LEAP intervention used multiple strategies to make changes to the school environment and physical education classes guided by social cognitive theory (Dishman et al.,2004, 2005). Similarly, Jones et al. (2008) reported that 6th grade girls who participated in an 18-month comprehensive school-based intervention had 6 more daily minutes of self-reported vigorous physical activity compared to control participants. While these and other studies have demonstrated modest success in increasing adolescent girls' physical activity, they may be difficult to implement in practice because of the significant time and resources that are necessary to produce small changes in physical activity. Given the persistent gap in physical activity participation between girls and boys, it is essential to identify interventions that increase physical activity among adolescent girls and have the potential to be implemented and sustained in real world settings.

Disparities in physical activity and health could be reduced through interventions delivered in public schools that prioritize equitable access to programming. School-based programs have been effective for increasing physical activity among preadolescent girls (Duffey et al., 2021). For example, Bronikowski and Bronikowska (2011) reported positive changes in self-reported physical activity for both adolescent girls and boys after a 15-month intervention delivered by physical education teachers during the school day. Changes in physical activity were sustained for 15-months after the intervention. There are examples of effective school-based interventions, but these interventions may be difficult for schools to adopt because they require significant time, resources, and expertise to implement. There is a need for effective interventions that can easily be integrated with existing school practices, spaces, and resources.

Interventions designed for adolescent girls could be strengthened by including active females to serve as role models for physical activity. Self-efficacy, an individual's belief in his or her capacity to execute behaviors necessary to produce specific performance attainments, is a core construct within social cognitive theory that can be improved through vicarious experiences with active role models (Bandura, 1986). Vicarious experiences are strongest when the role model is perceived to be similar to the observer (Bandura, 1977). Dudley et al. (2010) incorporated a female physical education teacher in her 20s as the intervention facilitator. This brief study (6 sessions over 11-weeks) resulted in increased enjoyment and a smaller decrease in physical activity for the intervention compared to the control group. Neumark-Sztainer et al. (2010) included role models from the community who taught a variety of exercises in an intervention designed to prevent obesity among high school girls. There was a statistically significant reduction in sedentary behavior for the experimental group compared to the control group. Among a sample of adolescents in California, having an athlete role model and having higher levels of support at school were associated with higher levels of physical activity among females (Babey et al., 2016). Thus, engaging active female role models in an after-school intervention may improve the effectiveness of physical activity interventions for adolescent girls.

Purpose

The purpose of the present study was to examine the feasibility and initial efficacy of Girls Can Move!, an after-school intervention for adolescent girls. Girls Can Move! is grounded in social cognitive theory and exposes girls to a variety of physical activities with the support of active female role models to increase physical activity. The three specific aims were to: examine the feasibility of the intervention, estimate the initial intervention efficacy for increasing physical activity, and understand participant experiences in the intervention.

Methods

Participants

Participants were recruited from one middle school in central Kentucky from December 2021 through January 2022. Most students (60%) at this school are considered economically disadvantaged and over half of students identify as nonwhite. The research team worked with a school contact who supported recruitment efforts. Recruitment methods included paper and e-mail flyers, an infomercial on the school's morning news, and an in-person presentation during physical education classes. Participants who were female, enrolled in 6th, 7th, or 8th grade, healthy enough to participate in physical activity, and self-reported

being low-active (participating in 60 minutes of MVPA on ≤3 days per week (Belton et al., 2019) were eligible.

Procedure

This study used a pre-post mixed methods study design. Procedures were approved by an institutional review board at the University of Kentucky (IRB #59680). The study was conducted from February 2022 through April 2022. Parents/guardians who expressed interest in enrolling their daughter in the study received a brief written or verbal study description and then scheduled a phone or video conference call with the principal investigator as part of the parental permission/consent and assent process. Once the parental consent documents were returned, the participant was scheduled for pre-intervention testing.

Pre-intervention testing occurred in a group setting, after school, in the same location as the intervention. During the pre-intervention testing session, the principal investigator described the study, allowed participants to ask questions, and then participants provided written assent. Participants completed each of the paper surveys independently and then received their accelerometer and log sheet. Participants returned their accelerometer during the first intervention session. Participants completed the same surveys and received their accelerometer immediately following the final intervention session. Participants returned their accelerometers at the focus group interview approximately one-week later. Participants received $10 remuneration after the pre- and post-intervention timepoints for a total of $20.

Intervention

The 8-week Girls Can Move! intervention included two primary components to support the development of self-efficacy. The first primary intervention component was connecting with an active female role model to increase self-efficacy through vicarious experiences and verbal persuasion. In week 1, each participant was placed into a small group of 3–4 participants that was led by one or two college-aged active female role models (i.e., Movement Mentors). All Movement Mentors were part of a university-based student group that exists to promote physical activity among youth in community settings. Individuals who served as Movement Mentors in this research study received training on youth physical activity rates and benefits and strategies for engaging youth. All Movement Mentors consistently attended and engaged in the intervention sessions with their small group. Movement Mentors taught brief educational lessons to facilitate behavior change that are aligned with social cognitive theory (e.g., self-monitoring, goal setting, overcoming barriers, and identifying community resources for physical activity) during each intervention session. These lessons incorporated positive feedback and encouragement for participants. Movement Mentors met weekly as a group with the principal investigator to prepare for teaching the educational lessons, receive training on how to provide positive and motivational messages to participants, and discuss challenges from the previous week.

The second primary intervention component was exposing participants to a variety of physical activities to build self-efficacy through mastery experiences. Participants met in-person twice per week for 8-weeks to engage in four different physical activities (yoga, strength-focused body weight training, cardio-focused games, and Xtreme Hip Hop). Participants completed the same activity, taught by a certified instructor, for two consecutive weeks. Instructors were asked to slowly progress each of the four sessions to prioritize enjoyment and facilitate mastery experiences. The specific activities were selected intentionally to expose participants to activities with different characteristics and environments (e.g., quiet versus loud, individual versus group, choreographed versus non-choreographed, strength and aerobic, etc.) to allow all participants to find at least one activity that they enjoyed and felt confident doing.

Each session lasted approximately 1-hour. All sessions included the following components: a welcome and introduction to the day's activities led by the principal investigator, a 5-minute warm up session led by a Movement Mentor, a 30-minute exercise session led by a community exercise instructor, and a 10–15 minute small group session led Movement Mentors.

Instrumentation

Attendance

Attendance was recorded during each of the 16-sessions. Attendance is reported as a percentage (sessions attended divided by 16).

Satisfaction

Satisfaction was assessed once per week, at the end of the second session. Participants responded to three single-item questions on a paper survey on a scale from Strongly Disagree (1) to Strongly Agree (5). These items were "This week's sessions… 1) helped me to become and remain physically active, 2) helped me to increase my confidence to become and remain physically active, and 3) were fun and enjoyable." The average for each item was calculated separately for

each week and across the intervention. Participants also listed three things they "liked or enjoyed" and "did not enjoy or could have been improved" about that week's sessions.

Physical activity

Physical activity was measured over a 1-week period with ActiGraph GT3X-BT accelerometers at pre- and post-intervention. Participants wore the monitor around the waist over their right hip for 7-days, except while sleeping or engaging in water activities. Participants were asked to complete a paper log to record the time they put on/took off the unit daily, non-wear times, and other problems they experienced. Participants who had at least two valid days (≥10 hours of wear time) were included in the analysis. Accelerometer data were processed with ActiLife Software using Evenson (Evenson et al., 2008) cut points to yield average daily MVPA minutes. Accelerometers have demonstrated good reliability for measuring MVPA among school-aged girls (ICCs = .70–.89) (Barreira et al., 2015).

Focus group interview

Participants who completed the intervention were invited to a single, audio-recorded focus group interview to explore their experience in the intervention. All participants were part of the same focus group interview. The focus group was led by the principal investigator, after school, in the same setting as the intervention sessions. Participants were told that there were no right or wrong answers and that the research team wanted to use the information gathered to improve the program for future participants. The focus group interview followed a semi-structured interview guide that explored the participants:' motives for enrolling, likes (and dislikes) about the intervention, favorite (and least favorite) physical activities, interactions with peers and mentors, positive changes, lessons learned, and suggestions to improve the intervention. Sample questions include: Why did you sign up for this program? What were your favorite (and least favorite) activities that we did in the program? If a friend was going to sign up for this program, what would you tell them about your experience?

Data analysis

Quantitative

All analyses were conducted in IBM SPSS Version 28. Descriptive statistics are presented as mean ± standard deviation within the text for feasibility outcomes. Paired samples *t*-tests were used to compare changes from pre- to post-intervention in self-reported and objectively measured physical activity. An intent-to-treat analysis with the last value carried forward was used to examine intervention effect. Given this is a feasibility trial, 95% confidence intervals of the difference from pre- to post-intervention were calculated, along with Cohen's *d* effect sizes to examine the magnitude of the difference between pre- and post-intervention (Thabane et al., 2010). Cohen's *d* effect sizes were interpreted as small (.2), moderate (.5), and large (.8) (Cohen, 1992).

Qualitative

Qualitative data from the weekly process evaluations and the focus group interview were analyzed together. Participant responses from the weekly process evaluation were transferred from paper surveys to an electronic document and collated by each week of the intervention. The focus group interview was audio-recorded and transcribed verbatim and de-identified by a member of the research team.

The purpose of collecting qualitative data in this study was to inform future iterations of the Girls Can Move! intervention. Specifically, data analysis was focused on understanding how participants experienced the current intervention and identifying modifications that are necessary for delivering the Girls Can Move! intervention in the future. Qualitative data were coded inductively by the lead author using a qualitative content analysis process (Elo & Kyngäs, 2008) in Microsoft Excel. Using this process, a member of the research team read and re-read the qualitative data, developed a list of inductive codes, coded all qualitative data, and then categorized the codes into themes. This process was reviewed and confirmed by another member of the research team.

Results

Sample

The final sample included 17 individuals who completed pre-intervention testing, including 13 participants who completed the intervention and 4 participants who dropped out after attending zero ($n = 1$) or one ($n = 3$) intervention session (Figure 1). Participants ($N = 17$) were aged 11.7 ± .7 years, enrolled in 6th (70.6%) or 7th (29.3%) grade, and primarily African American/Black (47.1%) or multiracial (35.3%).

Attendance

Among the 13 participants who completed the intervention, participants attended an average of 13.1 ± 2.2 (out of 16) sessions (82% attendance rate). Individual

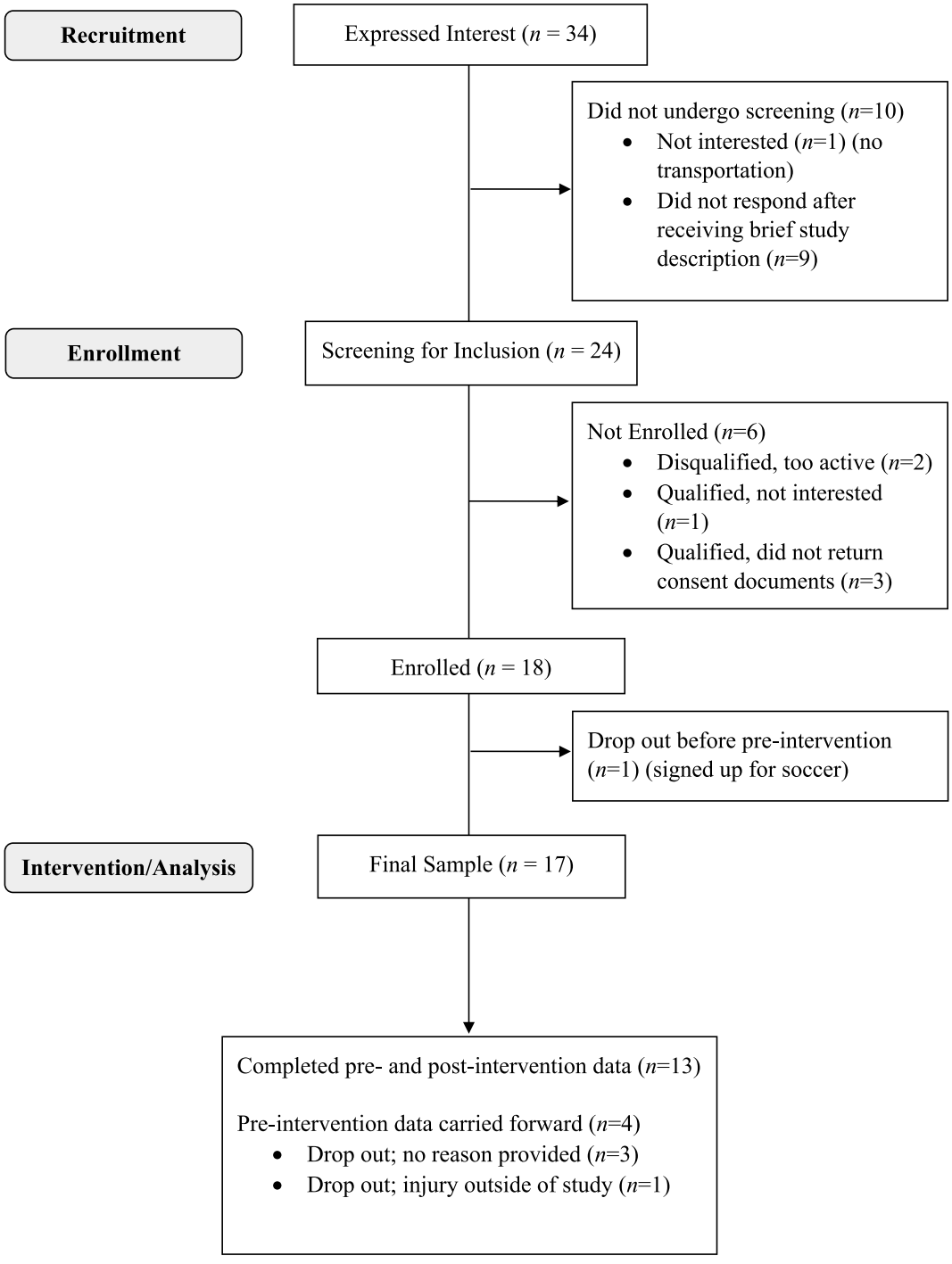

Figure 1. CONSORT flow diagram.

session attendance ranged from 38% (school sponsored field trip) to 100%. All participants who completed the intervention attended at least 10 sessions, 75% attended 12 or more sessions, and two individuals attended all 16 sessions. Common reasons for absence included dentist appointments, other nonphysical activity extracurricular activities such as drama club, and a school-sponsored field trip.

Satisfaction

Intervention completers reported that the sessions helped them to become and remain physically active (4.1 ± .5), increased their physical activity confidence (4.1 ± .5), and were fun and enjoyable (4.5 ± .6). Ratings were positive across the entire 8-week intervention (Table 1).

Table 1. Weekly process evaluation scores.

Variable	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8
Become physically active	4.2 ± .6	4.5 ± .7	3.9 ± .6	3.9 ± .8	4.4 ± .5	4.2 ± .6	4.0 ± 1.1	4.4 ± .7
Increase confidence	4.2 ± .8	4.2 ± .8	4.2 ± .8	4.1 ± .5	4.3 ± .7	4.1 ± .7	4.0 ± .8	4.5 ± .8
Fun and enjoyable	4.7 ± .6	4.6 ± .5	4.1 ± .7	4.6 ± .7	4.4 ± .9	4.7 ± .6	4.7 ± .6	4.6 ± .5

Pre- to post-intervention changes in physical activity

Eight participants met the wear time requirements for valid accelerometer data at pre- and post-intervention. An intent-to-treat analysis, with 14 participants who had valid pre-intervention accelerometer data, indicated that there was moderate-to-large increase (d=.71) in average daily MVPA minutes from pre-intervention (11.5 ± 6.5) to post-intervention (15.5 ± 8.8). Self-reported days per week with at least 60 minutes of MVPA increased from 3.1 ± 2.1 at pre-intervention to 4.2 ± 1.9 at post-intervention (d=.49). See Table 2 for pre- and post-intervention physical activity data.

Participant experiences (qualitative data)

Participant responses from the weekly process evaluation surveys and the post-intervention focus group were categorized into three overarching themes: positive aspects of the program, areas for improvement, and program impacts. Each theme is summarized below.

Positive aspects of the program

Participants signed up for the program for internal (fun, try new things) and external ("my mom made me;" money) reasons. When asked what they liked about this program, participants listed several reasons that included: getting paid, "fun to try new things," the opportunity to interact with their friends and classmates, "getting to meet new people," and specific activities (e.g., yoga and dance). When asked directly about whether participants liked that the program was for girls only, nearly all participants agreed this was a positive aspect of the program. One participant said, "I don't want boys to be here because I feel like the boys that would do it, they would bring something up because I probably have classes with them, so they would bring something up. They're just immature so they probably wouldn't take it seriously." Another said, "Boys are annoying, they stare at you, especially yoga, the ones that you like, and when you mess up on things you wouldn't want them looking at or making fun of you." One participant wanted boys to be involved because "it would be more fun to play with them."

Open-ended responses from the weekly process evaluations indicated that participants liked "getting to hang out with friends," the workout music, "learning new things" and having fun. Participants also noted specific activities that they enjoyed, such as, yoga, hula-hooping, the arm workouts, the fun games, dancing, etc.

Areas for improvement

Participants shared what they disliked about the program and provided the research team with ideas for how to improve the program for future participants. Participants disliked wearing a mask (COVID mask mandates in public schools were in place through the middle of the program), wanted to be paid more money, and requested snacks for each session. While most participants liked engaging in the program alongside their friends, at least one participant did not like exercising with classmates because "if I did something wrong they would probably talk about it outside of this." Participants noted that it was challenging to get to know the mentors at the beginning of the program. One participant said, "I feel like when we first like met you all, you all were like I guess intimidated by us? I just wanted us to have normal conversations without it being awkward." Regarding the physical activities included in the program, participants suggested many new activities that they would like to try (swimming, basketball, golf, football, cheerleading, badminton, pickleball) and suggested that future programs switch activities each week to include more activities. Finally, participants thought they should be involved in planning the activities, with one participant saying, "Ask us what we like and then like go from there to see what we do."

The weekly process evaluations included some similar suggestions for improvement such as providing snacks and exercising without a mask. Participants

Table 2. Descriptive statistics and confidence intervals for change from pre- to post-intervention in physical activity.

Variable	Pre-Intervention	Post-Intervention	CI	Effect Size
MVPA (OBJ)	11.5 ± 6.5	15.5 ± 8.8	.72, 7.20	.71
MVPA, (SR)	3.1 ± 2.1	4.2 ± 1.9	−.06, 2.29	.49

Intent-to-treat analysis with pre-intervention values carried forward.
Abbreviations: Moderate-to-Vigorous Physical Activity (MVPA); Objective (OBJ); Self-Reported (SR); Confidence Interval (CI) is 95% CI of the difference between pre- and post-intervention means.

also suggested changing some of the activities (e.g., "things that were hard/tiring" or "things that I wasn't good at doing") and highlighted challenges that were specific to the environment (e.g., dirty floor, distractions from other groups using the space).

Program impacts

Participants described several lessons they learned about physical activity and themselves during this program. Two participants shared how the program impacted their thoughts about physical activity, "I thought more about being active. I didn't do it, but I thought about it" and "I thought about being active differently. I didn't think of it as a pain, I thought of it as like an activity." Another participant shared, "I've found things I can do at home with my mom." Other participants described general lessons that they learned, such as, "If you try hard enough, you can do new things."

In the weekly process evaluations, participants consistently reported experiencing a wide range of positive benefits of participation, such as, "not worrying about anything," "having time to enjoy stuff," "it's a good break from life," "it helped me release stress and other held-up emotions," "it helped my confidence," "helped my physical appearance," "helped me be able to engage," "I felt energized," and "it made me feel more powerful."

Discussion

The purpose of the present study was to examine the feasibility of Girls Can Move!, an after-school intervention to increase physical activity among adolescent girls. The first aim was to examine participant attendance and satisfaction. The second aim was to estimate the initial intervention effectiveness for increasing physical activity. The final aim was to understand participant intervention experiences using qualitative data.

Overall, the Girls Can Move! intervention was feasible to implement in an after-school setting. We enrolled 17 low-active participants in the intervention. This sample size is similar to the 22 low-income youth of color who were recruited on average per school to participate in a trial to promote wellness and emotional regulation (Mendelson et al., 2021). To recruit this sample, we identified a school "champion" as recommended Mendelson et al. (2021). The school "champion" who supported the research team's recruitment efforts was critical to sharing information with students and their families, coordinating school visits for recruitment, and scheduling school space for baseline testing and intervention sessions. Researchers who want to reach a larger sample within a school setting could consider including a longer recruitment window, recruiting at the beginning of the school year when many new programs begin, or training adolescent students to assist with recruiting their peers. It is possible that school-based programs may need to be implemented successfully several times before the program is actively sought out by parents and students. Further, there is evidence from a previous study that a research team's recruitment strategies may improve over time (Mendelson et al., 2021), perhaps by adjusting to the local needs and preferences. Study retention was good with most of the enrolled participants completing the intervention (n = 13; 76%). Participants who completed the intervention attended >80% of sessions on average. Common reasons for missing sessions included illness, doctor/dental appointments, and mandatory drama club rehearsals. This study provides support for recruiting participants with the support of school leaders and retaining participants across an 8-week period.

Participants were highly satisfied with the intervention. Specifically, they reported the intervention was fun, helped them to become physically active, and increased their confidence for becoming and remaining physically active. Summaries of the open-ended responses from the weekly process evaluation indicate that participants overwhelmingly had more positive than negative feedback. It is especially encouraging that participants reported having fun and spending time with friends as positive aspects of the program. Enjoyment (Biddle et al., 2005) and peer support (Haidar et al., 2019) are positive correlates of physical activity among adolescents. Thus, creating a fun, supportive environment is essential for impacting physical activity among adolescent females. Participants reported a wide range of positive outcomes and feelings after each week of the program that were nearly all intrinsic, including feeling happy, calm, and energized. Intrinsic motives are positively associated with physical activity (Owen et al., 2014) and may contribute to the maintenance of physical activity beyond the intervention. Future studies should explore the impact of the intervention on mental health and psychosocial outcomes.

The second purpose of this study was to examine the initial efficacy of Girls Can Move! for increasing physical activity. There were moderate increases in objectively-measured and self-reported physical activity from pre- to post-intervention. On average, participants increased their MVPA by 4 minutes per day and reported a 1 day per week increase in meeting physical activity guidelines. This small increase in physical activity is similar to the increase in self-reported physical activity that was reported after a school-based intervention that was much longer

and more intensive than the current study (Jones et al., 2008). The present study had slightly larger increases in objectively measured physical activity (4 minutes compared to 1.5 minutes) compared to a study that was similar in length and delivered by after school staff members (Huberty et al., 2014). Although the physical activity changes were small, a 4-minute increase in daily MVPA would result in nearly 30 minutes of additional activity each week. If sustained, 30 minutes of extra MVPA per week could have a meaningful health impact for youth with low levels of physical activity (Physical Activity Guidelines Advisory Committee, 2018). Thus, the present study represents a promising method for increasing physical activity that could be efficiently implemented in after school settings with the support of school and community partners to increase physical activity among adolescent girls.

Participant feedback highlighted specific aspects of the intervention to keep and to improve for future iterations of Girls Can Move! It is encouraging that participants enjoyed trying new activities with their friends. This suggests that we successfully created an environment where girls felt safe trying novel activities alongside their peers. It seems that the Girls Can Move! intervention overcame the accessibility, lack of support, and time barriers that have been previously reported by adolescent girls (Duffey et al., 2021). However, some possible changes to improve the intervention could include: providing more time and opportunities for mentors and participants to build relationships, seeking participant input prior to the intervention, and providing snacks.

Limitations

Although this study included a small sample, we demonstrated that the intervention could reach a diverse group of low-active adolescent girls. Once enrolled in the program, satisfaction was high and participants attended most sessions. Limitations included a small sample from only one school without a comparison group. This limits any conclusions that can be drawn about the efficacy of the intervention. Additionally, satisfaction was measured with three single-item questions. While these brief measures were practical to implement, their reliability and ability to fully capture satisfaction is unknown. Finally, we did not measure the impact of the program on any psychological or mental health outcomes. Given participants responses about how the weekly activities made them feel, it is important to explore the intervention's impact on both physical and psychological health outcomes.

Conclusions

Adolescent girls have high levels of physical inactivity and schools offer a safe place to provide access to novel forms of physical activity. This feasibility study provides evidence that the 8-week Girls Can Move! intervention is ready to be tested in a larger randomized trial that includes a control group. Future iterations should continue to focus on diverse samples of low-active adolescent girls who have limited access to physical activity programming.

Translation to Health Education Practice

Physical activity participation has a wide variety of physical, mental, and cognitive health benefits for youth (Physical Activity Guidelines Advisory Committee, 2018). There is a well-established disparity in physical activity participation by sex, with girls engaging in less physical activity compared to boys (Guthold et al., 2020). This study presents a novel intervention that can be implemented by schools with the support of university and community partners to increase physical activity among adolescent girls, aligned with Area 7, Competency 7.1.3, Involve partners and stakeholders throughout the health education and promotion process in meaningful and sustainable ways of the National Commission for Health Education Credentialing Inc. (2020). Leaders of after school programs, Certified Health Education Specialists (CHES), and other school personnel can use the intervention strategies in this paper to lead a Girls Can Move! program or a similar program at their school.

Previous interventions for girls and school-based interventions have had some success with increasing physical activity. However, the majority of previous interventions are unlikely to be implemented by schools because they are complex, require too much time and resources, or are costly. Girls Can Move! reduces the burden on school staff because it only requires an 8-week commitment and exercise programs are led by community exercise instructors with the support of college students. Exercise instructors for this study were paid $25/session for a total cost of $400 (16 sessions x $25). College students volunteered their time or earned course credit for guiding small groups of participants through the program. The college students benefited by having the opportunity to gain hands-on health promotion experiences in a community setting. All equipment required for the program was borrowed from the school or the exercise instructor. The ActiGraph accelerometers used to

measure physical activity are research-grade devices that cost $225 dollars at the time of purchase and require processing software that is approximately $1,700. For school or community implementation, these costs could be eliminated by using a validated physical activity survey, such as the Youth Activity Profile (Welk et al., 2021). Thus, Girls Can Move! may be a cost-effective way to increase physical activity among girls.

Based on the focus group data from this study, CHES and other school personnel who want to implement a Girls Can Move! program should involve youth participants in the selection of the types of physical activities to offer, in alignment with Area 1, Competency 1.3.2, Determine the knowledge, attitudes, beliefs, skills, and behaviors that impact the health and health literacy of the priority population(s) (National Commission for Health Education Credentialing Inc., 2020). In the present study, we conducted a weekly process evaluation to continuously assess participant experiences in the program. Program leaders should consider using this approach to learn about the local and contextual needs and preferences of girls who are participating at their schools, as described in Area 3, Competency 3.3, Monitor Implementation. Using the intervention strategies described in this paper, in alignment with the Areas of Responsibility, Competencies, and Sub-Competencies for Health Education Specialists (National Commission for Health Education Credentialing Inc., 2020) should result in the successful implementation and evaluation of the Girls Can Move! program.

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Disclosure statement

No potential conflict of interest was reported by the author(s).

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Data availability statement

The datasets generated and/or analyzed during the current study are available from the corresponding author on reasonable request.

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