International Journal of EXERCISE SCIENCE

Original Research

Perceptions of Peer and Parental Support: Feasibility of a Physical Activity Intervention for Adolescent Girls

AVERY G. DOUGLAS*[1], JOHANNA M. HOCH‡[2], and DEIRDRE DLUGONSKI‡[2]

[1]College of Health Sciences, University of Kentucky, Lexington, KY, USA; [2]College of Health Sciences, Department of Athletic Training and Clinical Nutrition, University of Kentucky, Lexington, KY, USA

*Denotes undergraduate student author, ‡Denotes professional author

ABSTRACT

International Journal of Exercise Science 17(5): 1352-1360, 2024. Physical activity (PA) has a wide range of health benefits. Children with high levels of social support are more likely to achieve adequate levels of PA. The purposes of this pilot study were to examine the impact of an after-school intervention on perceived peer and parental support among adolescent girls and to identify correlates of support to explore in future studies to increase PA. Seventeen low-active girls in 6th–7th grade were recruited from a local middle school to participate in an 8-week intervention where they were exposed to various types of PA and discussed PA topics with their peers and college-aged mentors. Peer and parental support, self-reported physical activity, moderate-to-vigorous physical activity, and physical literacy self-evaluation were measured before and after the 8-week intervention. Paired samples *t*-tests indicated that parental support increased from pre- to post-intervention ($t = 4.4$, $p < .001$, $d = 1.2$, 95% CI = 1.7, 5.18), whereas there was a small, non-statistically significant increase in peer support ($t = 1.5$, $p = 0.15$, $d = .4$, 95% C I = −.89, 5.04). Correlations for the variables at pre-intervention indicated that there were significant correlations between peer and parental support ($r = 0.74$, $p = 0.004$), whereas at post-intervention there were significant correlations between peer and parental support ($r = 0.83$, $p < .001$), and physical literacy with peer support ($r = 0.70$, $p = 0.008$) and parental support ($r = 0.69$, $p = 0.009$). These preliminary results suggest that a PA intervention may increase perceptions of parent support and that physical literacy may be a variable to target in future interventions to address PA in this population.

KEY WORDS: School-based intervention, female, confidence, exercise

INTRODUCTION

In the United States, physical inactivity among adolescents is a growing issue, with less than a quarter of children aged 6 to 17 years participating in the daily 60 minutes of physical activity recommended by the Physical Activity Guidelines for Americans (6). Research shows that once adolescents reach about 11–13 years of age, their physical activity participation begins to decrease (15). Physical activity is associated with positive health outcomes for health issues that many adolescents face such as weight management, reducing risk of type II diabetes, decreasing anxiety, and many other aspects of mental and physical health (6). While physical inactivity is

prevalent among all youth, it is higher in adolescent girls than their male counterparts (23). Not only does this lack of physical activity lead to a higher risk for many poor health outcomes in adolescence, but it may also lead to lifelong physical inactivity and poor health outcomes since health habits established in adolescence are often continued in adulthood (1). It is important to find ways to help increase physical activity levels for adolescents in order to improve their overall health and potentially lead to better health outcomes in adulthood.

Adolescents are heavily influenced by their peers and their parents, and the support of these two groups are driving factors for adolescent behaviors (3). Children who have high levels of support from their parents or peers are more likely to complete adequate levels of physical activity (13). When parents are actively involved in encouraging physical activity, adolescents are more likely to demonstrate healthy physical activity habits (26). The same thing is true of peer support, with adolescents who receive more peer support having higher odds of being physically active (12). This relationship lends itself to the idea that physical activity interventions that involve parents and/or peers will increase physical activity levels, especially in populations with low activity levels like adolescent girls. Past research and interventions that have explored the relationship between physical activity and social support tend to look at the effect that social support has on physical activity (16) but have not investigated the impact that an intervention can have on social support.

Physical literacy is another important factor related to physical activity, since higher levels of physical literacy are associated with higher levels of physical activity participation (5). Physical literacy is defined as the motivation, confidence, physical competence, knowledge, and understanding to value and take responsibility for engagement in physical activities for life (25). Currently, the relationship between physical literacy and social support is not well researched. However, the relationship between the two might be important because factors of physical literacy like motivation and confidence are related to social support (10, 17). Cairney's conceptual model shows that environmental context, like social support, can have a direct impact on physical literacy (4). Investigating the relationship between physical literacy and social support may provide information on how to further increase levels of physical activity participation.

The primary purpose of the current study was to examine the feasibility of an after-school intervention to impact perceived peer and parental support among adolescent girls. The secondary purpose was to identify correlates of peer and parental support to explore in future studies. It was hypothesized that perceptions of peer and parental support would increase with a physical activity intervention and that both types of support would be positively associated with physical activity and physical literacy.

METHODS

Participants

All female students from one central Kentucky middle school, who met the inclusion criteria, were invited to participate in the study. Seventeen individuals were recruited through this

convenience sample. Since this was a feasibility trial, the sample size was determined by interest within the school site and the number of staff and space available to facilitate the intervention. To be eligible for the study, participants were required to identify as female, be enrolled in 6th through 8th grade at the school, be physically able to participate in physical activity, and consider themselves to be low-active. Low-active was defined as participating in 60 minutes of moderate-to-vigorous physical activity (MVPA) on three or fewer days a week (2). All experimental procedures were approved by an Institutional review board. Parents and/or guardians provided consent and participants provided written assent before the start of the intervention. This research was carried out fully in accordance to the ethical standards of the *International Journal of Exercise Science* (20). The final sample includes 13 participants who completed the study (Table 1). Completion was achieved by completing pre-intervention surveys, the intervention, and post-intervention surveys. The participants who achieved completion attended an average of 13 of the 16 sessions.

Table 1. Participant demographic data.

Variable	Category	M ± SD/*n* (%)
Age, years		11.62 ± 0.65
Grade	6th	10 (76.9)
	7th	3 (23.1)
Race	White	3 (23.1)
	African American	5 (38.5)
	Multiracial	5 (38.5)

Values represent mean ± standard deviation or number of participants and number (percentage of total) participants.

Protocol

Participants completed pre-intervention testing prior to the start of the physical activity intervention. Pre-intervention testing included completing surveys to assess peer and parental support, physical activity, and physical literacy and wearing an ActiGraph GT3X-BT accelerometer for a week before the intervention began. Participants received $10 as compensation for completing the pre-intervention testing.

The Social Support for Exercise Scale was used to determine perceptions of peer and parental support. The survey included four questions regarding the frequency of peer support and five questions regarding the frequency of parental support for physical activity. Each question was scored on a Likert scale of 0 (Never) to 5 (Everyday). The scores for each section were summed, to give a possible total of 20 for peer support and 25 for parental support, with higher scores indicating a greater level of perceived support for exercise (22).

The Youth Risk Behavior Survey (YRBS) (7) was used to measure self-reported physical activity. The YRBS includes questions regarding demographics and health. Self-reported physical activity was determined using a single item that asked participants how many days they spent being physically active for at least 60 minutes. This was scored on a scale of 0–7, with 0 being no days physically active for 60 minutes and 7 being physically active every day for at least 60 minutes. ActiGraph GT3X-BT accelerometers with 60 second EPOCH length and 30 Hz were

used to measure physical activity over a 7-day period. Participants wore the monitor around their waist for one week, except while sleeping or engaging in water-based activities. Participants were asked to complete a paper log to record the times they wore the monitor. Participants who had at least two valid days (≥ 10 hours of wear time) were included in the analysis (n = 11 at pre, n = 8 at post). Accelerometer data was processed with ActiLife Software using Evenson cut points (11).

The Physical Literacy Assessment for Youth Self-Evaluation (PLAYself) was used to determine perceptions of physical literacy. The PLAYself survey is comprised of 27 questions that assessed confidence to be active in different environments, perceptions of ability to participate in physical activities, and the importance of physical literacy compared to math and reading. Each question was scored on a scale of 0–100 and were combined for a possible total of 2700. This score was divided by 27 to get a score ranging from 0–100, with higher scores indicating positive perceptions of physical literacy (24).

The Girls Can...Move! Intervention took place over the course of 8-weeks and 16 sessions, with participants attending an hour-long session twice a week. Each session was split into two parts, it began with engagement in physical activity, followed by a small group discussion of physical activity related topics. Over the course of the intervention, participants were introduced to four different types of physical activity that each lasted four sessions. The difficulty of exercise increased over the course of the intervention. It began with yoga, and moved to strength-focused body weight training, cardio-based games, and ended with X-treme Step Hip-Hop. At the beginning of the intervention, participants were placed into small groups that were led by 2–3 active female college-aged mentors (I.e., movement mentor). Movement mentors attended training prior to the start of the intervention and had weekly meetings to prepare for the sessions and topics they would discuss. Each session, movement mentors participated in physical activity alongside the participants before transitioning into a discussion of physical activity related topics with their small groups. Topics included benefits of physical activity, physical activity guidelines, variety of physical activity, trying new types of physical activity, barriers to physical activity, goal setting, social support, finding an active identity, and celebrating success. Movement mentors introduced these topics and facilitated the discussion of them between the participants and their peers. The mentors also advised the participants on how they could take what they were learning and apply it to their lives.

After the completion of the intervention, post-intervention testing occurred in the same manner as pre-intervention, with the addition of a focus group interview session. Participants received an additional $10 for completing post-intervention testing.

Statistical Analysis

All analyses were conducted in IBM SPSS Version 28. Paired samples t-tests were used to compare changes from pre- to post-intervention in perceptions of peer and parental support. Given the small sample size, we have included 95% confidence intervals of the differences as recommended for pilot studies. Bivariate correlation analysis was used to examine physical

literacy, self-reported days physically active, and objectively measured physical activity separately at pre-intervention and post-intervention as correlates of peer and parental support.

RESULTS

Paired samples *t*-tests between pre- and post-intervention values for peer and parental support showed that parental support (Table 2) increased from pre- to post-intervention ($t = 4.4$, $p < .001$). There was not a statistically significant increase in peer support ($t = 1.5$, $p = 0.15$).

Table 2. Results of paired samples *t*-test examining changes in social support from pre-to-post intervention.

Variable	Pre	Post	*d*	95% CI
Peer Support	8.2 ± 5.1	10.3 ± 5.5	0.4	−.89, 5.04
Parental Support	10.4 ± 7.0	13.8 ± 6.5	1.2	1.7, 5.18

95% CI = 95% confidence interval of the difference.

Correlations among self-reported peer support, parental support, physical activity, objective physical activity, and physical literacy at pre-intervention (Table 3) showed a positive correlation between peer and parental support ($r = 0.74$, $p = 0.004$). There were small-to-moderate, non-statistically significant relationships between peer and parental support with physical literacy.

At post-intervention, there was a strong, positive correlation between peer and parental support ($r = 0.83$, $p < .001$). Peer ($r = 0.70$, $p = 0.008$) and parental ($r = 0.69$, $p = 0.009$) support had strong, positive correlations with physical literacy. No significant correlations were identified between physical literacy and physical activity (Table 4).

Table 3. Correlation coefficients at pre-intervention.

Subscale	1	2	3	4	5
1. Peer Support	-				
2. Parental Support	.74**	-			
3. Physical Literacy	.31	.22	-		
4. PA Days	.49	.09	.67*	-	
5. MVPA	−.53	−.46	.37	−.05	-

** $p < .01$; *$p < .05$

Table 4. Correlation coefficients at post-intervention.

Subscale	1	2	3	4	5
1. Peer Support	-				
2. Parental Support	.83**	-			
3. Physical Literacy	.70**	.69**	-		
4. PA Days	−.16	.29	.26	-	
5. MVPA	−.48	−.69	−.36	−.69	-

** $p < .01$

DISCUSSION

This study examined the feasibility of an after-school intervention to impact perceived peer and parental support among adolescent girls and correlates of peer and parental support to examine in future studies. The results from this pilot study suggest that the Girls Can...Move! physical activity intervention may increase perceptions of parental support and that physical literacy has a correlation with peer and parental support.

There was a large (d = 1.2) increase in perceptions of parental support from pre- to post-intervention. Parents/guardians were not directly involved in Girls Can…Move! However, this intervention may have provided parents/guardians with an opportunity to take a specific interest in their child's physical activity. All of the participants were low-active at pre-intervention and parents were directly involved in the recruitment and consent process. Although parents were not directly targeted within this study, the parents/guardians were aware that the participants were participating in and learning about physical activity twice a week. This may have allowed them an opportunity to talk with their children about the physical activity/exercise sessions each week. The questionnaire used to measure parental support asked specific questions about how often they felt encouraged to participate in physical activity by their parent/guardians and how often their parents/guardians' provided transportation to places where they could participate in physical activity. By signing their child up or by picking them up from the intervention twice a week, participants may have felt more supported in those aspects. This support may have even allowed participants to initiate conversations about physical activity with their parents/guardians and share their experiences in the intervention. Research shows that adolescents feel more supported by parents who take an active role in what they are doing (9). Therefore, if the parents take more of an interest in their physical activity by asking them questions or driving them to the activity, it may result in the participants feeling more supported even if parents are not directly involved in the intervention.

While the intervention increased perceptions of parental support, the program may still be improved by the addition of direct parental support. This study mainly targeted parental support through discussions within small groups on how to ask parents/guardians for support in physical activity. Inviting the parents/guardians to attend a session to learn about and participate in physical activity with the participant may help to increase how much support they feel that they have. Studies have shown that parental involvement is as important to adolescents as peer support (21). Future studies could explore the feasibility and impact of directly involving parents in interventions to promote physical activity among adolescent girls.

There was a smaller, yet still positive, change in perceptions of peer support from the beginning to the end of the intervention. There are several possible reasons for this finding. One reason could be that the questionnaire was not sensitive enough to detect small changes in peer support. For example, participants may have had an increase in support, but not enough to change their answer on a scale of 1–5. Another reason peer support did not significantly increase could be due to participants receiving support from the Movement Mentors instead of their peers. This intervention was designed to have college-age mentors serve as role models for

physical activity since their involvement has been shown to be beneficial in similar physical activity interventions for adolescent girls (19). Participants may have relied on encouragement and support from the mentors rather than their peers in the intervention. Implementing mentors closer to the age of participants, like high school students, may facilitate similar peer support experiences from mentors closer in age. Future iterations of this model should determine if inclusion of high-school aged students may increase the amount of peer support that the younger girls experience.

The correlation results for this study have slight differences from other studies investigating relationships of peer and parental support. Correlations for social support and physical literacy typically show positive correlations (18), which was found in this study. Research shows that an increase in support leads to increased confidence and motivation which are important aspects of physical literacy (10, 17). Correlations between peer/parental support and physical activity tend to be positive as well (13,16), however this was not seen in this study for either self-measured (PA Days) or objective physical activity (MVPA). This may be attributed to participants who have lower levels of support having more opportunities to be active on their own, like walking home. This freedom that stems from lack of support could have allowed for opportunities to actually increase levels of physical activity.

Future research should explore methods for having a stronger impact on peer support. The majority of literature that has explored the peer support variable in physical activity interventions did not try to change levels of peer support, but rather only made observations. Allowing participants to play a bigger role in the physical activity intervention with their peers could help to improve peer support. For example, utilizing peer accountability partners or doing partnered workouts may allow participants to feel more supported by their peers. Researchers may also aim to further investigate the relationship between social support and physical literacy. Individuals with higher levels of physical literacy are more likely to engage in physical activity (5) and have better health outcomes (8). If social support is found to have an impact on physical literacy, then increasing social support may be another way to help improve health outcomes.

There are several limitations that may have impacted the results of this study. The main limitations were the small sample size and the lack of a control group. Thus, results from this study should be interpreted with caution and confirmed with a larger, randomized controlled trial. A second limitation was the shorter accelerometer wear-time inclusion criteria of a minimum of 2 days of 10 hours or more. We chose this as a marker of inclusion in order to maximize the data that could be used in the study due to the small sample size. Another limitation was that there were only a few types of physical activities introduced to the participants and the majority were individual activities done in a group setting that involved little to no interactions among participants. When the participants engaged in the activities by themselves, it may have limited their ability to feel supported by their peers. Research shows that adolescent girls would prefer to engage in more sociable types of physical activities, such as partnered exercises or sport-related activities that are not focused on competition (14). An additional limitation could be that the 5-point Likert scale used may not be sensitive enough to

detect changes in peer support. Participants could have felt a change in peer support, but that may not have been reported due to the limited scale being used to measure the changes.

In summary, results from this feasibility study suggest that a physical activity intervention may increase perceptions of parental support for adolescent girls and that there are correlations between peer and parental support as well as between physical literacy and social support. These findings have relevance because it gives researchers variables to explore in further studies in order to increase physical activity among adolescent girls.

ACKNOWLEDGEMENTS

This study was funded by The University of Kentucky College of Health Sciences Office of Research & Scholarship Pilot Award.

REFERENCES

1. Azevedo MR, Araújo CL, Silva MC da, Hallal PC. Tracking of physical activity from adolescence to adulthood: A population-based study. Rev Saúde Pública 41: 69-75, 2007.

2. Belton S, O'Brien W, Meegan S, Woods C, Issartel J. Youth-Physical Activity Towards Health: Evidence and background to the development of the Y-PATH physical activity intervention for adolescents. BMC Public Health 14(1): 122, 2014.

3. Biddle BJ, Bank BJ, Marlin MM. Parental and peer influence on adolescents. Soc Forces 58(4): 1057-1079, 1980.

4. Cairney J, Dudley D, Kwan M, Bulten R, Kriellaars D. Physical literacy, physical activity and health: Toward an evidence-informed conceptual model. Sports Med 49(3): 371-383, 2019.

5. Caldwell HAT, Di Cristofaro NA, Cairney J, Bray SR, MacDonald MJ, Timmons BW. Physical literacy, physical activity, and health indicators in school-age children. Int J Environ Res Public Health 17(15): 5367, 2020.

6. Center for Disease Control and Prevention. Physical activity facts | Healthy Schools | CDC [Internet]; 2022. https://www.cdc.gov/healthyschools/physicalactivity/facts.htm

7. Center for Disease Control and Prevention. 2021 youth risk behavior survey [Internet]. Kentucky Department of Education; 2021.

8. Cornish K, Fox G, Fyfe T, Koopmans E, Pousette A, Pelletier CA. Understanding physical literacy in the context of health: A rapid scoping review. BMC Public Health 20(1): 1569, 2020.

9. Cripps K, Zyromski B. Adolescents' psychological well-being and perceived parental involvement: Implications for parental involvement in middle schools. RMLE Online 33(4): 1-13, 2009.

10. Crisp DA, Rickwood D, Martin B, Byrom N. Implementing a peer support program for improving university student wellbeing: The experience of program facilitators. Aust J Educ 64(2): 113-126, 2020.

11. Evenson KR, Catellier DJ, Gill K, Ondrak KS, McMurray RG. Calibration of two objective measures of physical activity for children. J Sports Sci 26(14): 1557-1565, 2008.

12. Finnerty T, Reeves S, Dabinett J, Jeanes YM, Vögele C. Effects of peer influence on dietary intake and physical activity in schoolchildren. Public Health Nutr 13(3): 376-383, 2010.

13. Haidar A, Ranjit N, Archer N, Hoelscher DM. Parental and peer social support is associated with healthier physical activity behaviors in adolescents: A cross-sectional analysis of Texas School Physical Activity and Nutrition (TX SPAN) data. BMC Public Health 19(1): 640, 2019.

14. James M, Todd C, Scott S, Stratton G, McCoubrey S, Christian D, Halcox J, Audrey S, Ellins A, Anderson S, Copp I, Brophy S. Teenage recommendations to improve physical activity for their age group: A qualitative study. BMC Public Health 18(1): 372, 2018.

15. Kahn JA, Huang B, Gillman MW, Field AE, Austin SB, Colditz GA, Frazier AL. Patterns and determinants of physical activity in U.S. adolescents. J Adolesc Health 42(4): 369-377, 2008.

16. Khan SR, Uddin R, Mandic S, Khan A. Parental and peer support are associated with physical activity in adolescents: Evidence from 74 countries. Int J Environ Res Public Health 17(12): 4435, 2020.

17. Klootwijk CLT, Koele IJ, van Hoorn J, Güroğlu B, van Duijvenvoorde ACK. Parental support and positive mood buffer adolescents' academic motivation during the COVID-19 pandemic. J Res Adolesc 31(3): 780-795, 2021.

18. Lane C, Naylor P-J, Predy M, Kurtzhals M, Rhodes RE, Morton K, Hunter S, Carson V. Exploring a parent-focused physical literacy intervention for early childhood: A pragmatic controlled trial of the PLAYshop. BMC Public Health 22(1): 659, 2022.

19. Morgan K, Van Godwin J, Darwent K, Fildes A. Formative research to develop a school-based, community-linked physical activity role model programme for girls: CHoosing Active Role Models to INspire Girls (CHARMING). BMC Public Health 19(1): 437, 2019.

20. Navalta JW, Stone WJ, Lyons TS. Ethical issues relating to scientific discovery in exercise science. Int J Exerc Sci 12(1): 1-8, 2019.

21. Ruholt RE, Gore J, Dukes K. Is parental support or parental involvement more important for adolescents? Undergrad J Psychol 28(1): 1-18, 2015.

22. Sallis JF, Grossman RM, Pinski RB, Patterson TL, Nader PR. The development of scales to measure social support for diet and exercise behaviors. Prev Med 16(6): 825-836, 1987.

23. Slater A, Tiggemann M. Gender differences in adolescent sport participation, teasing, self-objectification and body image concerns. J Adolesc 34(3): 455-463, 2011.

24. Sport for Life Society. Physical literacy assessment for youth [Internet]. https://play.physicalliteracy.ca/

25. Tremblay MS, Costas-Bradstreet C, Barnes JD, Bartlett B, Dampier D, Lalonde C, Leidl R, Longmuir P, McKee M, Patton R, Way R, Yessis J. Canada's physical literacy consensus statement: Process and outcome. BMC Public Health 18(2): 1034, 2018.

26. Wilk P, Clark AF, Maltby A, Tucker P, Gilliland JA. Exploring the effect of parental influence on children's physical activity: The mediating role of children's perceptions of parental support. Prev Med 106: 79-85, 2018.