**TITLE**

*Investigating Adolescent Girls’ Perceptions and Experiences of School-Based Physical Activity to Inform the Girls’ Peer Activity (G-PACT) Intervention Study*

**ABSTRACT**

**BACKGROUND**

Adolescent girls are more likely to be inactive than boys. A range of factors including multiple psychosocial aspects are thought to influence their engagement in physical activity (PA). This study aimed to explore adolescent girls’ perceptions and experiences of school-based PA to inform a subsequent intervention, the Girls Peer Activity (G-PACT) project.

**METHODS**

The Youth Activity Profile was used to assess adolescent girls’ current PA levels. Open-ended questions were used to investigate girls’ perceptions and experiences of school-based PA. Focus groups stratified by PA level were then conducted to explore their perceptions and experiences in depth. The focus group data were analysed using inductive thematic analysis.

**RESULTS**

The master themes emanating from the focus groups were non-competitive activities and after-school sport culture for lower active girls. Higher active girls’ master themes were PA perceptions and PE. Regardless of activity level, participants reported greater enjoyment from PA when participating with friends and having choice over activities provided within the school setting.

**CONCLUSIONS**

The findings highlight the importance of choice, peer groupings, non-competitive opportunities and PA competence to adolescent girls’ school-based PA behaviours. The school environment can support and restrict girls’ engagement in PA. The findings will be applied to the design, content and implementation of the G-PACT project.

**Keywords:** Physical Activity, Adolescent, Girls, School, Exploration

Regular PA is associated with numerous health benefits in children and adolescents including positive effects on cardiometabolic health, mental health and cognitive functioning.1-3 However, physical inactivity is a global problem across all age ranges and is the fourth leading cause of death worldwide.4 Adolescents are particularly at risk of physical inactivity,5 with girls being less active and more sedentary throughout adolescence compared to boys.5,6 The average annual reduction in girls’ total PA from the age of 5 years to 18 years is 4.6% compared to a 3.7% in boys.6 For high-risk adolescents (e.g. girls, overweight or obese) even modest amounts of PA can have health benefits.3 Thus, it is critical to provide adolescent girls with appropriate opportunities to be physically active to help them achieve these health benefits.

Adolescent girls are more active during the school day compared to weekends and evenings.7 This is linked to the structured nature of the school day and numerous opportunities for PA (e.g., Physical Education (PE) lessons and break-times).8Thus**,** schools are a popular and accessible setting for PA promotion among adolescents. For example, previous school-based interventions have shown promise in slowing the decline in PA for this population.9-11

There are multiple psychosocial factors which influence adolescent girls’ engagement in PA including perceived competence, self-efficacy, motivation, peer support, perceived barriers and enjoyment.12-14 Psychosocial PA influences can be location-specific. For example, peer support, enjoyment and perceived competence have been found to be significant influences on before, during and after-school PA.15 Enjoyment of PA has been found to mediate the impact of previous school-based PA interventions among adolescent girls, with increased enjoyment leading to increased PA levels.16 When interventions target girls with lower levels of PA enjoyment this increase in PA levels can be more pronounced.17

Engaging with adolescent girls to explore their current PA school-based behaviours, perceived PA competence, PA peer support, and PA enjoyment could identify areas for school PA improvements and targeted interventions. This exploratory study was used as a formative assessment,18 to inform the development and design of a physical activity intervention as part of the Girls Peer Activity (G-PACT) project. The primary aim of this study was to explore adolescent girls’ perceptions and experiences of school-based PA and PA development opportunities within the school setting. The study objectives were to qualitatively explore adolescent girls’ (a) understanding of PA, (b) experiences of and perceptions towards engagement in school-based PA, and (c) beliefs about factors important to facilitate PA engagement.

**METHODS**

There were three components to the exploration study: (1) a questionnaire to assess adolescent girls’ current PA levels, (2) an open-ended questionnaire investgating girls’ perceptions and experiences of PA, and (3) focus groups exploring girls’ perceptions and experiences in greater depth.

**Participants**

Theoretical sampling was used to ensure the exploration was focused on the section of the population that provided the most meaningful information relative to the research aims and objectives.19 Adolescent girls (N=110) from a school in an area of low-deprivation20 in the West Lancashire region of England, were recruited to the study. The school’s PE teachers initially presented an overview of the study and invited the students to participate. Following the questionnaire phase, a sample of girls (N= 30) were selected to participate in the focus group sessions.

**Instruments**

The Youth Activity Profile (YAP)21 was used to identify the adolescent girls’ overall PA levels. This questionnaire has been validated and calibrated against an objective method to provide a reliable estimate for youth moderate to vigorous PA and sedentary behaviour levels at group level.22 The YAP contained 15-items scored on a 5-point Likert scale with three sections each containing five questions relating to: school-based PA, out of school PA, and sedentary habits out of school over the previous 7 days.

The open-ended questionnaire was designed by the research team to gain insight into girls’ perceptions and experiences of school-based PA. The questionnaire contained six questions closely linked to PA correlates for adolescent girls14 and related to knowledge about PA, enjoyment of PA and friend’s engagement with school-based PA.

The focus groups were used to explore participants’ in-depth perceptions and experiences of school-based PA opportunities including PE and after-school PA clubs. Focus groups are commonly used with adolescent girls and help provide a comprehensive understanding of their PA behaviours.23-25 The focus groups were facilitated by two trained researchers (MO & CK) with experience in conducting focus groups with adolescents. A short icebreaker activity was used preceding the focus group to build rapport with the adolescents as the researchers were older (> 10 years) and one was a male. The focus groups were semi-structured in nature and lasted between 25-40 minutes. The focus group questions were based on the Health Belief Model (HBM),26,27 which attempts to explain and predict health behaviours through focusing on individuals’ attitudes and beliefs. The questions related to perceived benefits, perceived barriers, and cues to action and were linked to correlates of adolescent girls PA14 and future intervention design. Participants were informed that the focus groups would be audio-recorded but individual responses to questions would not be shared or reported back to their teachers. However, verbatim quotations may be used in the analysis, with any personal identifiable material removed or anonymized (e.g. names replaced with pseudonyms).

**Procedure**

All participants were provided with a brief overview of the study and provided assent to complete the YAP. Participants completed the YAP using school iPads at the start of a PE lesson under the supervision of trained researchers. One week later, girls across various PA levels were asked to complete the open-ended questionnaire using the same procedure stated above.

The YAP data was checked and collated. Participants’ scores were stratified into quintiles which represented their overall PA habits, ranging from low (quintile 5) to high active (quintile 1). Ten girls from each of the low, mid and high active groups were then randomly selected, and invited to participate in focus groups to discuss their PA behaviours. From the 30 girls invited to participate, eight provided written parental consent and assent and these were categorised as a high active group (HA, N= 4) and a low-to-mid active (LMA, N= 4) group. Both groups received the same semi-structured focus group questions. All participants were given the opportunity to respond to each question and additional discussion developed from the responses provided by participants.

**Data Analysis**

*PA Questionnaire (YAP)*

Mean scores were created for each of the three sections of the questionnaire to provide an overview of the girls PA and sedentary behaviour habits. The two sections (10 questions) relating to PA provided an overall mean PA score for each participant. As stated above, this mean individual PA score was used to purposefully group participants by activity level to partake in the focus groups.

*Open-Ended Questionnaire*

All free-text responses from the online open-ended questionnaire were analysed through conceptual content analysis28 to provide an overview of adolescent girls’ thoughts and perceptions. Frequency tables were created for the open-ended questionnaire responses to illustrate the frequency of responses.

*Focus Groups*

Audio-recordings from the focus groups were transcribed verbatim. Inductive thematic analysis of the data was completed using a step-by-step guide set out by Braun and Clarke:29 (1) familiarising yourself with your data, (2) generating initial codes, (3) searching for themes, (4) reviewing themes, (5) defining and naming themes, and (6) producing the report. An inductive analysis allowed for the exploration of unanticipated findings. To ensure methodological rigour, credibility, and trustworthiness30 steps 2-5 were also competed by a second author (MCK) and any disagreements were discussed until a consensus was reached. Triangulation of data was achieved through comparison of the open-ended questionnaire and focus group data.31

**RESULTS**

**PA data**

One hundred and ten girls completed the YAP (Mean age = 14.26, SD = 0.30 years). The YAP revealed that the participants engaged in more activity at school compared to out of school. Overall YAP scores ranged from 1.3 – 2.9 for the LMA group and 3.9 – 4.6 for the HA group.

**Open-ended Questionnaire data**

Fifty-two participants fully completed the open-ended questionnaire.

*Understanding of PA*

Participants showed a limited understanding of importance of PA and the health benefits (Figure 1). This understanding related to physical benefits of PA rather than wider social or psychological benefits.

[\*\*Insert Figure 1\*\*]

*Enjoyment of PA*

For participants who reported enjoyment of PA, 46% recorded the main reason they enjoyed PA was because it was fun, with 23% reporting that they enjoyed PA because it helps with fitness and feeling healthier. Some participants reported they were unsure as to whether they enjoyed PA, as it was dependent on the type of activity they were doing.

*Enjoyable Activity with Friends*

Tennis was reported as being the most enjoyable activity to do with friends closely followed by running and rounders (Figure 2).

[\*\*Insert Figure 2\*\*]

*Friends’ Engagement with School-based PA*

Only 7 participants provided responses as to why their friends engaged with current school-based physical activities. The main reason given for their friends attending school-based PA sessions was enjoyment (fun) (Figure 3).

[\*\*Insert Figure 3\*\*]

A higher proportion of responses focused on why their friends do not attend school-based PA sessions (N= 46). The main reasons stated were too busy to attend, lack of motivation, not sporty, and lack of options (Figure 4).

[\*\*Insert Figure 4\*\*]

**Focus Group Data**

LMA group

The master themes for the LMA group were non-competitive activities and after-school sport culture.

*Non-Competitive Activities*

When given the freedom to choose physical activities that they would like to do within the school setting, participants reported the desire for more non-competitive activities. Specifically, participants reported that these non-competitive activities were more enjoyable and there was less pressure on performing or winning.

*“R2: probably a team sports like rounders … so like everyone is involved*

*I: … ok so team sports and rounders, why rounders?*

*R1: because even if you miss it, nobody’s bothered because you could be really good and miss it. If you don’t hit it, you still run anyway, so you are not out straight away” (LMA, R2 & R1, P.3, L.64-68)*

Skill level not being the priority of the activity appealed to participants. Participants identified a desire for the provision of more non-competitive activities. They stated that non-competitive opportunities could focus on improved competence but should avoid the primary focus of these activities being on winning or losing. Participants suggested doing activities for enjoyment and no pressure being placed on performance.

*After-School Club Culture*

Participants reported current after-school clubs as being for school team members only and that the same girls go to these clubs on a regular basis.

*“We have after-school clubs like netball or cricket, but usually it is just the same people who do that” (LMA, R1, P.5, L.155)*

They viewed after-school clubs as having a membership process where certain requirements and qualities were needed to attend. For example, only girls who were highly competent and on the school teams went to after-school clubs and they have always gone to these clubs.

*“It just seems to be the schools teams are more or less the same people” (LMA, R4, P.6, L.163)*

Participants that did not go to after-school clubs were fearful of attending because they would not fit in or lacked sporting competence and they displayed low levels of self-efficacy.

*“I wouldn’t like to go because everyone is really good … I don’t think I’d be good enough to go” (LMA, R3, P.9, L.261)*

Participants indicated a lack of teacher encouragement for the lower skilled girls, while girls with higher sporting competence were actively recruited to attend the sessions. The participants suggested separate after-school clubs sessions for school teams and separate ‘fun’ sessions to encourage more girls to attend.

*“They could do practices for people who are actually in the team and one for fun separately, otherwise you can feel like you are intruding on the team practice” (LMA, R3, P.9, L.277)*

The type of activity was mentioned as being a crucial factor to friends and peers attending the sessions, which linked to the desire for non-competitive activities.

HA group

The master themes for the HA group were PA perceptions and PE.

*PA perceptions*

HA participants perceived PA as an activity that was done for fun and because they enjoyed it. They linked physical activities to working as a team and being active with friends.

*“Being with your friends, it makes it more fun … it’s more enjoyable when you’re like having fun with it” (HA, R2, P.2, L.54)*

HA participants perceived PA to be more fun when it was done with friends. Additionally, the HA participants perceived certain forms of PA as an opportunity to compete with their friends, which motivated their PA behaviours.

*“R1: I like the competitive side of it as well… so if you want to win at something you put like maximum effort into it…*

*R4: Well… Like if you get to do it with your friends, it like motivates you, to get better… So, like if one of your friends is like better at something you’d want to get better as well” (HA, R1 & R4, P.2, L.58)*

Participants reported the desire to want to win and needing to give maximum effort to beat their friends. These participants also reported engagement with sports teams outside of school for hobbies.

*Physical Education*

The HA participants identified a preference towards ‘sporty’ children in their PE lessons which was linked to grouping and interactions with teachers. Participants reported that less active peers felt uncomfortable in PE with some peers being ‘forced’ to engage in the activities.

*“I think favouritism is a big thing in PE my sister has told me that I get favouritised because I do a lot of sport over someone who doesn’t do a lot of sport … some people dread going to PE because they noticed because they don’t have any interest in sports and they are forced to do it among people who do like to do it” (HA, R3, P.7, L.199)*

Having greater autonomy within PE was identified by the HA participants as a method to increase participation and enjoyment for their peers.

 *“I: How do you think that could be improved for those people that don’t like it?*

*R1: Choice*

*R3: Choice*

*R2: If they were able to pick what they want to do they would have more interest in it” (HA, R1, R3, & R2, P.7, L.209)*

Participants reported suggestions to engage peers in PE lessons and other school-based PA programmes, regardless of activity level or sporting competence. Grouping with friends and having a level of autonomy over the activities were noted as key components for themselves and their peers. One example given is the utilization of circuit training for fitness.

*“A circuit training one which is more like a fitness thing… so they could go more for themselves rather than competitive sports, as that might be why they don’t like it because they don’t want to compete with anyone, because they know they are not very good at it” (HA, R3, P.8, L.248)*

They suggested a focus on individual improvement rather than competition between peers being the focus to after-school clubs to increase participation and retention.

**DISCUSSION**

The primary aim of the study was to explore adolescent girls’ perceptions and experiences of school-based PA and investigate how school-based PA opportunities could be developed. The exploration study revealed differences in perspectives of school-based PA based on participants’ overall level of PA. Girls with lower levels of activity appeared to enjoy, and desire more non-competitive PA opportunities within the school setting. Whereas, higher active girls enjoyed the competitive elements of PA. Regardless of activity level, participants gained greater enjoyment from PA when participating with friends and having greater autonomy over activity within the school setting. Girls with lower levels of PA perceived the after-school club environment as being for sporty girls only and there is a certain sporting competence required to attend.

It is well established that enjoyment of PA is positively correlated with PA participation levels for adolescents.16 The findings indicate a desire for greater enjoyment within school-based PA, especially for LMA girls. One method to achieve this would be through greater autonomy through freedom of choice during school-based PA opportunities. Researchers have shown that through increased choice of activities, girl only classes, inclusion and small group interaction, girls’ enjoyment of PE was higher, and their daily levels of PA were higher.16 Similarly, making PE more enjoyable for adolescent girls and increasing the amount of activity choice and non-competitive opportunities were central to increasing girls PA in previous school-based interventions.32-34 This suggests that for the G-PACT project, the provision of an array of non-competitive opportunities for adolescents to choose from may be useful to increase adolescent girl’s enjoyment and engagement in school-based PA.

Based on adolescent girls’ desire for greater autonomy, peer support and enjoyment, the Self-Determination Theory (SDT)35 provides an appropriate structure to formulate future interventions and school-based programmes with this population. According to the SDT increasing girls’ three basic psychological needs (autonomy, relatedness and competence) could lead to greater intrinsic motivation and enjoyment of PA and thus, greater engagement with PA in the school setting. A recent study based on the SDT found that positive changes in PA were associated with increases in autonomous motivation.36 Additionally, Mitchell, et al.25 found that when the girls were consulted about PE and offered a choice of activity, this lead to increased participation and more positive perceptions of the subject. This intervention created a more needs supportive environment for disengaged adolescent girls leading to attitude and behaviour changes.25 This approach may be particularly useful when targeting LMA girls in the G-PACT project.

Additionally, the HBM26,27 can be applied to help explain the girls’ health behaviours. The LMA reported the after-school club culture, which directly related to their perceived barriers to PA. Girls’ lack of PA knowledge, as found in the open-ended questionnaire responses and focus groups, illustrated a gap in knowledge and understanding. This may have potentially influenced their perceptions and understanding on the benefits of PA. The importance of enjoyment to adolescent girls in relation to PA engagement highlights the need for fun opportunities (cues to action) being provided within the school setting.

The current findings are further supported by qualitative work by Brooks and Magnusson,37 who reported lack of enjoyment due to less choice in PE and greater enjoyment during activities in which they felt they have more control and choice over. Providing girls with control and choice is not always possible in fluid environments such as schools. PE resources and teacher expertise can restrict the provision of choice but negotiating the curriculum and giving adolescent girls a voice is crucial to their engagement in PE and PA.38 Additionally, the degree to which teachers support girls’ PA autonomy compared to attempting to control their behaviour, has been found to be a strong influence on PA engagement.39

It should be noted that PA is a complex multi-dimensional behaviour that is influenced by several psychological, biological, environmental and sociocultural factors.14 This exploration study primarily focused on intrapersonal and interpersonal factors (i.e. perceived competence, enjoyment and peer support) but organizational and environmental factors such as the school structure and setting also play a key role in girls’ PA behaviours.40,41 Similar to previous research,7 this exploration study found that girls are more active in school than out of school, providing support for the structure of the school day positively influencing PA behaviours.8

The school environment helps provide a peer supportive environment for the promotion of PA.25,41,42 Girls, regardless of PA level, depict a strong preference towards doing PA with their friends, which was related to greater PA enjoyment and engagement. Positive peer support has been found the increase in importance throughout adolescence,42 resulting in higher levels of total and discretionary MVPA43 and is consistently associated with smaller declines in PA.12 Therefore, it is clear that peer groupings within the school setting are very important to perceptions, experiences and engagement of school-based PA for adolescent girls.42

Intrapersonal factors such as perceived health benefits and perceived competence have been identified as being vital to increase PA in adolescent girls.41 Yet, the current study shows a limited understanding of the health benefits for adolescent girls. This could be an important area for future interventions to target. The current study highlighted that LMA girls felt hindered by their perceived sporting competency to attend after-school PA opportunities. Girls’ perceptions of their own competency have been found to be a barrier to PE participation.44 During the transition from adolescence to adulthood, perceived sports competency has been found to be positively associated with being continuously active.45 Interventions, such as the G-PACT project, that can develop perceived sport competence and perceived health benefits, may promote short-term and lifelong PA engagement.45

**Limitations**

Although a modest sample size was used for this formative exploration study, the primary aim was to inform the development of the G-PACT project. The sample comprised participants with the same geographic and demographic characteristics as the G-PACT project target population and allowed for an in-depth insight into their perceptions of school-based PA. Additionally, similar qualitative work with adolescent girls regarding PA has been completed with smaller sample sizes.25 The recruitment of girls to attend the focus group sessions was particularly difficult and illustrated some of the challenges researchers face when working with this population. Teachers reported to the research team that a lack of interest from the girls and involvement from their parents (consent) were the main contributing factors to low engagement in the focus groups. In the future, taster sessions and ‘word of mouth’ campaigns could be utilized to increase participant engagement in exploratory research.46

**Conclusion**

This study provides an insight into adolescent girls’ perceptions and experiences of school-based PA. The study shows the usefulness of exploring these perceptions and experiences by PA level and not as a homogenous group. The findings highlight the importance of choice, peer groupings, non-competitive opportunities and PA competence to girls’ school-based PA behaviours. The results demonstrate how the school environment can support and restrict girls’ engagement in school-based PA. These outcomes will directly inform the design, content and implementation of the G-PACT project. Allowing adolescent girls, separated by PA level, the opportunity to provide meaningful accounts of school-based PA opportunities is important to the development and improvement of these provisions.

**Implications for School Health**

This exploratory study provides useful information for PA promotion with adolescent girls within the school setting. The findings illustrate the importance of consultation with adolescent girls. Schools should look to increase non-competitive PA opportunities within the school setting especially for those girls not highly active. These PA opportunities should provide adolescent girls with autonomy in the form of control and choice of activities, competence through providing a skill improvement option and should allow the girls to participate with their friends for to increase enjoyment. For example, giving girls the choice of multiple team games were winning is not the primary focus and allowing self-selected teams. Teachers should be provided with the support and encouragement to implement these provisions both during PE teaching and after-school PA opportunities.

**Human Subjects Approval Statement**

Ethical approval was granted from the Faculty of Arts and Sciences Research Ethics Committee at Edge Hill University (SPA-REC-2016-340).

**Acknowledgements**

**Thanks to the school, teachers, parents and most importantly the adolescent girls for their time and engagement in the study.**

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Figure 1. Frequency Count of Adolescent Girls' Responses on Their Understanding of the Benefits of PA

Figure 2. Frequency Count of Adolescent Girls' Responses on the Most Enjoyable Physical Activities to do With Friends.

Figure 3. Frequency Count of Adolescent Girls' Responses on Why Their Friends Engage in School-Based PA

Figure 4. Frequency Count of Adolescent Girls' Responses on Why Their Friends Do Not Engage in School-Based PA