

RESEARCH ARTICLE

# The Value of an Informal Before-School Exercise Opportunity for Adolescent Girls Living in a Low-Socioeconomic Community

RHIANNON LEE WHITE, PhD<sup>a</sup>  JAMIE SHERSON,<sup>b</sup>  CARMEN YOUNG,<sup>c</sup> TED NOON, PhD<sup>d</sup>

## ABSTRACT

**BACKGROUND:** Physical activity is beneficial to physical, social, and emotional well-being, and schools are required to provide opportunities to engage in physical activity. While physical education and school sport have been extensively researched, little is known about the value of informal, unstructured, exercise opportunities.

**METHODS:** This study involved interviews with 19 adolescent girls who attended “extra” exercise opportunities provided by their school. The 3 opportunities were: (1) informal before-school exercise sessions at school, (2) before-school sport training, and (3) externally provided exercise sessions in a community setting during school hours.

**RESULTS:** Students perceived all opportunities as valuable with benefits to confidence, social well-being, and emotional well-being. The informal exercise sessions held greater benefits to confidence as confidence transferred from the physical activity context into the academic classroom more so than for those participating in sport. Social benefits were greater for those exercising before school as this opportunity created new relationships with teachers and with students from other classes and year groups.

**CONCLUSIONS:** The opportunity to engage in informal exercise with peers before school widened social networks, increased confidence, changed the overall school climate, and increased attendance.

**Keywords:** self-perception; school; well-being; exercise; sport; socioeconomically disadvantaged.

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Adolescence is a transformational period within the life course, defined by rapid changes in physical, cognitive, social, and emotional development.<sup>1</sup> While many changes take place during this period, one of the most crucial changes that takes place during adolescence is the development of one’s sense of self.<sup>2</sup> During adulthood, individuals tend to have a much firmer, or more concrete, sense of self-identity, whereas during early adolescence, individuals tend to struggle with confidence, self-esteem, and their sense

of self-identity, all of which are crucial to mental health and well-being.<sup>1</sup> While many factors influence the development of self-identity, self-esteem, and self-confidence, including cognition, parents, culture, personality, and opportunities to explore different interests, ideas, and contexts,<sup>2</sup> during adolescence, individuals are heavily influenced by their peers.<sup>1</sup>

Not only does adolescence mark a transformative period in terms of self-identity, but adolescence also presents an important and unique time in young

<sup>a</sup>Senior Lecturer, (rhiannon.white@westernsydney.edu.au), Health and Physical Education, School of Health Sciences, Western Sydney University, Sydney, New South Wales, Australia

<sup>b</sup>Research Assistant, (22056973@student.westernsydney.edu.au), Health and Physical Education, School of Health Sciences, Western Sydney University, Sydney, New South Wales, Australia

<sup>c</sup>Research Assistant, (19341978@student.westernsydney.edu.au), Health and Physical Education, School of Health Sciences, Western Sydney University, Sydney, New South Wales, Australia

<sup>d</sup>Principal, (edward.noon@det.nsw.edu.au), New South Wales Department of Education, Sydney, New South Wales, Australia

Address correspondence to: Rhiannon Lee White, Senior Lecturer, (rhiannon.white@westernsydney.edu.au), Health and Physical Education, School of Health Sciences, Western Sydney University, Locked Bag 1797, Penrith, New South Wales 2751, Australia.

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people's lives to develop positive health behaviors.<sup>1</sup> In fact, many future patterns of adult health originate during adolescence.<sup>1</sup> Physical activity is perhaps 1 prime health behavior that is not only important for adolescent and adult health, but indeed physical activity has been highly associated with self-esteem, self-confidence, and the development of self-identity.<sup>3,4</sup> Physical activity can also lead to psychological and emotional benefits for adolescents.<sup>5-7</sup>

While out of school activities during leisure-time can provide people with opportunities to engage in physical activity, adolescents who come from lower socioeconomic backgrounds access youth sport and recreational facilities to a lesser extent than those from higher socioeconomic backgrounds.<sup>8</sup> During adolescence, social learning and peer connections largely drive human behavior,<sup>1</sup> and while this makes schools an important environment for the development of healthy behaviors and the promotion of confidence, self-esteem, and self-identity for all students,<sup>1</sup> this is particularly the case for students from lower socioeconomic backgrounds who are less active during leisure-time.<sup>9,10</sup> While physical education provides opportunities for physical activity during school,<sup>11</sup> physical education can sometimes be viewed as too competitive, dominated by sports, boring, and lacking real-world exercise opportunities.<sup>12,13</sup> In addition, physical education is an educative subject<sup>12</sup> and indeed, low-perceived skill and a fear of ridicule from peers are barriers to engaging for adolescent girls.<sup>14</sup> Further, a recent systematic review of systematic reviews identified a lack of support from peers, family, and teachers as the most frequent barrier to physical activity participation among adolescent girls.<sup>15</sup>

While several research studies have examined the effects of before-school physical activity programs, a systematic review identified that these studies largely take place in primary schools.<sup>16</sup> While those conducted in high schools, secondary schools, or elementary schools showed increased physical activity levels, cardiorespiratory and muscular improvements, and an increased readiness to learn, psychosocial benefits were not often explored.<sup>16</sup> Further, programs involving adolescents included running,<sup>17</sup> yoga,<sup>18</sup> and a mix of aerobic and muscle-strengthening exercises.<sup>19</sup> While those participating in the running program were allowed to choose their running pace, both the yoga and exercise interventions were led by exercise professionals not by teachers or by students, meaning potential benefits are limited to the intervention period, or are influenced by financial factors influencing access to such programs. In fact, a recent study examining stakeholder perspectives of before-school physical activity highlighted the need for sustainable designs, indicating that program transience is often the result of individual teachers being responsible for programs.<sup>20</sup> Woodforde et al<sup>20</sup>

also reported, however, that empowering students through leadership and decision-making is a viable strategy to improve the sustainability of before-school physical activity programs.

At 1 secondary school in Western Sydney, Australia, many students struggle to arrive to school on time, attendance is low, and girls in particular have reported having a poor sense-of-self.<sup>21</sup> Interestingly though, the school had recently commenced running before-school exercise sessions for female students, and it was observed by staff that several students wanted to participate. In fact, they appeared eager and organized to arrive at school earlier than what would be expected for a normal school day. Given longstanding poor attendance at this school, the notion that students were eager to attend school was considered novel by school staff. As such, the school wanted to explore how physical activity opportunities that are not educative and not part of their normal academic classes could possibly be used to build peer connections, broaden one's sense of self, increase confidence, and develop a desire to attend school, all while engaging in a positive health behavior.

While adolescence is a key period for the development of self-identity, social-identity theory explains that individuals are members of several groups (ie, social categories) and group membership partly defines self-identity.<sup>22</sup> This is because social-identity (ie, the part of an individual's self-concept derived from group membership and the emotional value of being a member of that group)<sup>23</sup> is essential to maintaining self-esteem and meaning in life, as individuals make constant comparisons with those in other groups.<sup>22</sup> However, individuals belong to several groups simultaneously, based on age, gender, culture, school, and personal interests or hobbies. One literature review examined how schools influence identity development, and found that experiences aimed at exploring new identity positions, as well as experiences which further specify existing self-understandings are 2 methods via which schools can intentionally support adolescent identity development.<sup>24</sup> As such, it is certainly plausible that providing additional exercise opportunities could strengthen adolescent girls' sense of identity by either developing new identities as part of belonging to a new group, or by having the opportunity to engage in a behavior that highlights an existing strength.

While social-identity theory explains the importance of being associated with positively perceived social groups, self-determination theory similarly explains relatedness (ie, contributing to, and feeling a valuable member of, a group) as a basic psychological need that is essential for positive psychological functioning and well-being.<sup>25</sup> However, self-determination theory also explains that competence (ie, a sense of mastery and effectance) and autonomy (ie, engaging

in behaviors and actions that are in line with one's values and interests) are also essential for optimal well-being.<sup>26</sup> Physical activity can certainly provide opportunities for experiencing mastery, and if the participant is provided with choices and ownership over the way in which they exercise, it can also facilitate autonomy. Therefore, it is quite possible that autonomy, competence, and relatedness play a role in the positive emotional outcomes of engaging in additional exercise opportunities at school.<sup>6,27</sup>

Self-efficacy refers to an individual's belief in their ability to succeed in a particular situation.<sup>28</sup> While self-efficacy is considered situation-specific, research shows that exercise-specific self-efficacy can result in increased confidence toward other aspects of life among both adults and adolescents.<sup>6,29</sup> Self-efficacy theory explains that feedback, encouragement, and a sense of accomplishment, all which come from engaging in a behavior (eg, physical activity) increase self-efficacy towards that behavior.<sup>28</sup> Therefore, it is plausible that engaging in physical activity would increase exercise-specific self-efficacy, however, it is not as well understood how exercise-specific self-efficacy might influence confidence within the broader school environment.

The aim of this study was to explore the potential value of an informal before-school exercise program run at 1 school in Western Sydney. This particular opportunity was perceived as novel because it was largely run by the students themselves, meaning its sustainability is not dependent on teacher input, financial factors, or external expertise. It is also noteworthy that students choose to attend these sessions even at a school where attendance and lateness are both high. Guided by social-identity theory and self-efficacy theory, to explore the value of these sessions and understand why any potential benefits occur, we developed the following 2 research questions: (1) how does the program develop or influence students' social-identity, and possibly, self-identity; (2) how does the program influence students' self-efficacy, and are there any broader benefits of increased self-efficacy in relation to their time at school, beyond exercise-specific self-efficacy.

## METHODS

At the time of this study, 3 different physical activity opportunities were afforded to female students. To help understand whether benefits were unique to an informal before-school exercise opportunity, or consistent with any physical activity opportunity provided, we explored all 3 opportunities with participants. The school involved in this study runs 2 before-school physical activity opportunities. The first opportunity, and main reason for this study, was informal exercise sessions making use of the

schools' gymnasium and exercise equipment. During these sessions, female students typically follow online exercise videos or do exercise based movements of their own choosing in the gym with the other attendees. Sessions usually go for between 30 and 60 minutes in the hour before school starts 1 or 2 days per week. There is no cost to participate, and any female student in any grade can attend. These sessions are usually attended by a teacher for safety and supervision but are guided by the students attending and have no connection to physical education. Because the sessions are guided by those who attend, there are no set exercises or exercise topics. Activities range from a run, to yoga or Pilates movements, to strength-based exercises. This opportunity, at the time of the study was only afforded to female students.

The second opportunity is sport training before school. While these sessions are also run before school, they focus on competitive sport and involve training and game play, all based on the same sport each week to prepare for school-based competitions. Because of this, sessions are more structured, and are led by a PE teacher who is responsible for the sport. There is no cost to attend training, but training is only open to those in the specific sport team. While males and females both partake in school sport, they train and compete separately. The third opportunity involves attending physical activity sessions off school grounds (ie, within the community) with an external provider at a local youth center (ie, PCYC). These sessions are open to males and females and take place during school hours. For these sessions, there is a small cost to the school.

The school in which these opportunities are afforded is a government-funded secondary school in Western Sydney. The school is within the 5% most disadvantages based on an Australian Index of Community Socio-Educational Advantage. Approximately, 40% of year 7 students arrive at secondary school with complex learning, health, or behavior needs, and 70% of students speak a language other than English at home.

## Study Design and Philosophical Framework

Qualitative research consists of multiple interpretive processes that aim to understand, and make visible, a particular world, view, or phenomenon.<sup>30</sup> Phenomenological studies focus not on people, or stories, but on a phenomenon that is to be explored.<sup>30</sup> Within phenomenological studies, the interpretive processes focus on understanding, and portraying, the meaning that participants hold in relation to the phenomenon being studied.<sup>30</sup> Phenomenology also follows the basic principle that all knowledge begins with experience.<sup>31</sup> Transcendental phenomenology focuses on describing the participants' experiences, rather than focusing

on the interpretation of the researcher.<sup>30</sup> To conduct a transcendental phenomenology study, researchers must first identify a phenomenon, then collect data from several individuals who have experienced the phenomenon, and then develop a description of the participants' experiences to demonstrate the *essence* of the phenomenon.<sup>31</sup> This approach was appropriate to the current study because the aim was to develop an understanding of the essence of participant experiences with these specific physical activity opportunities provided.

While phenomenology aims to eliminate prejudices and presuppositions, and instead approach the phenomenon of interest openly, inter-subjectivity is still recognized and acknowledged.<sup>31</sup> Relativism subscribes to the notion that multiple realities can exist, and that our reality or truth is shaped by our lived experience.<sup>32</sup> Contextualism views knowledge and the construction of knowledge as contextually situated,<sup>33</sup> and the knowledge created through this research is certainly situated within the context of the school and the context of the students' experiences. The philosophical assumptions of this study were therefore grounded in a relativist ontology and a contextualist epistemology.

### Participants

When conducting phenomenological research, the focus is exploring the phenomenon with a group of people who have experienced it.<sup>30</sup> To achieve this, and because opportunity 1 is only open to female students, we invited all female students who had participated in one of the above physical activity opportunities during the most recent school term to participate. This enabled us to compare experiences across a range of physical activity opportunities to understand how social-identity and self-efficacy benefits are translated to the broader school environment in different contexts.

In qualitative research, the sample size, or the number of participants required, can be considered as dictated by the amount of information power that participants hold. If potential participants hold significant power in relation to their knowledge, thoughts, or experiences, relative to the research aim, then fewer participants are needed.<sup>34</sup> However, Braun and Clarke<sup>35</sup> further suggest that sample size is also dependent on the amount of variability expected within the participants' perceptions. The participants in the current study held great information power relative to the phenomenon being explored suggesting as little as 10 participants may be sufficient. However, potential participants were likely to have had diverse experiences across the different physical activity opportunities and they were also relatively young. Therefore, we aimed to recruit 20 participants. However, the final number of participants was also influenced by the number of students who returned

parental consent forms which was challenging when the sample attended a school that experienced longstanding challenges in relation to returning notes to school.

A total of 19 female students provided both parent consent and participant assent. These students were between 12 and 17 years ( $M$  age =  $13.90 \pm 1.68$  years) and across a range of academic years from year 7 to year 11. Across the 19 participants, nine participants engaged in the informal before-school exercise sessions, 5 attended before-school sport training, and 8 attended the external PCYC program. Three students attended multiple programs, with 1 student attending sport training and PCYC, and 2 students attending the informal before-school exercise and PCYC sessions.

### Procedure

After receiving ethical approval, the principal distributed participant information sheets and consent forms to eligible students. Students wishing to participate, returned their written consent forms to the principal and scheduled a convenient time for the students to participate in 1 one-on-one interviews on school grounds. The researchers then conducted 1 interview with each student during 2022. No participants refused, but only those who returned a consent form were able to partake. The school principal was not present during these interviews to minimize any perceived pressure to respond to questions in a certain way. The interviews were conducted by J.S. (male) and C.Y. (female), both research assistants with a Master of Research degree in physical education or adolescent well-being, and experience interviewing either secondary or tertiary education students.

### Instrumentation

Data collection for phenomenological studies typically involves interviewing participants who have experienced the phenomenon.<sup>30</sup> As such, we conducted 1 interview with each participant on school grounds in a comfortable location picked by the school principal. The interviewer first aimed to build rapport with the student and asked broad open questions to get the student to describe their experience in detail without any preconceived ideas or aspects of the experience to focus on (eg, "Can you describe what you usually do in the sessions before school?"). The participant's description of their experience was followed with several probing questions to understand more about the specific environment and conditions under which participation in the experience occurred (eg, Can you describe the types of activities you do? Who do you attend with? Who leads the activities? Why do you think you choose to go?) After this stage, questions became more specific. These questions were

guided by social-identity theory, self-efficacy theory, and self-determination theory. The language of these theories was not used in the questions, to keep questions simple at an easy reading level for participants, but these theoretical frameworks guided more specific questions to understand how participation may have led to positive moods and emotions or influenced self-identity and self-efficacy. For example, participants were asked whether attending the sessions in the morning led to the development of any new social connections or strengthened any existing relationships, whether their perception of themselves or their approach to school had changed, and whether they perceived there to be any impact on their confidence in any area. Interviews ranged from nine to 17 minutes ( $M = 12$  minutes,  $SD = 2.5$  minutes) equaling a total of 224 minutes of audio data. Interviews were transcribed verbatim producing 119 pages of textual data.

### Data Analysis

Data analysis in phenomenological studies involves systematic procedures to move from narrow units of analysis to broader units of meaning, before then providing a detailed description of the phenomenon as it was experienced by the participants.<sup>30</sup> This means that researchers first identify, and code or label, significant statements.<sup>31</sup> Researchers then develop themes based on these significant statements and the meaning they convey.<sup>31</sup> Finally, researchers then prepare a textual description which explains what participants experienced and a structural description which explains how their experience was situated in, related to, or was influenced by the context, the environment, or specific situations within the experience.<sup>31</sup> To achieve this, JS first approached the data in an exploratory manner, whereby he used predominantly inductive coding which sees the data itself as the starting point. After coding all useful data segments, both RLW and JS worked together to group similar codes together. At this stage, RLW used more deductive coding to make sense of the data and develop themes. During deductive coding, literature, knowledge, and theoretical frameworks are used as interpretive lenses to generate meaning. This later deductive approach was helpful in developing latent codes which focus on deeper meaning that sits beneath the surface level meaning.

### Quality Standards

When conducting transcendental phenomenology, it is critical that the essence of the phenomenon is derived from the participants' experiences, and not from preconceived assumptions.<sup>31</sup> As such, the methodology of transcendental phenomenology entails 3 critical processes. *Epoche* means to refrain from judgment, and is critical to enabling researchers

to truly see, or discover, something.<sup>31</sup> To achieve this, researchers must set aside their preconceived thoughts, beliefs, and perceptions. To ensure this happened, notes were made alongside coding that reflected the analyst's thoughts. While these judgments were noted down, they were noted down in a separate space to their thoughts that arose purely as a result of interacting with the data. This means that prejudgments could be bracketed out, ensuring that the meaning given to the experience by the participants was prioritized.<sup>30</sup> Secondly, transcendental phenomenological reduction refers to the process of considering each experience in its singularity.<sup>31</sup> This ensures all experiences are viewed for itself and the totality of the phenomenon is explained in relation to all experiences of the phenomenon, however, similar or varied they may be, not taking 1 truth or meaning as being more valuable or more real than others. This is crucial during the stage of writing the textual and structural descriptions. And for this reason, frequency counts and the notion of developing themes based on the amount of data are to be avoided. Lastly, imaginative variation is particularly essential to the structural description. During this process, the researcher needs to ensure that differentiation among the multiple realities is included in describing the essence of the phenomenon.<sup>31</sup> This is crucial to inter-subjectivity, and aligns with a relativist ontology where the researchers attest there are multiple varied realities, even within a singular phenomenon. To ensure subjectivity was valued and variation in meaning was described, all authors met many times to discuss varied perspectives, and the lead analyst returned to the original data and coding many times. This cyclical analysis process ensured less frequent meanings were not ignored or devalued.

## RESULTS

We developed 4 themes which best capture the findings of the study. While the themes are the result of both inductive and deductive coding, these themes were developed to convey meaning that sits beneath the surface-level data, rather than simply describing the experiences at a semantic level. Each theme is presented below with illustrative quotes from participants. Participants are simply numbered to use pseudonyms (eg, participants 1-19). Each quotation from a participant is accompanied by the participant's pseudonym and the specific physical activity opportunity the quote refers to.

### Peers, Health Benefits, and Boredom Predominantly Drove Participation

The most common response in relation to why students chose to attend sessions was directly tied to other people, with many students explaining the key

driver for participation was that their friends attended. For example, “Um probably the people there. Like, my friends and I and my friends are gonna be there” (participant 18, external youth club) and “um to meet up with a friend—see the girls” (participant 10, external youth club). Interestingly, some students referred to their teachers when describing their reason for attendance, with 1 student stating “my teachers are pretty kicked back too, so I like hanging out with them” (participant 18, female, external youth club). A smaller number of students chose to attend the sessions because they perceived it as an important health behavior.

Those attending either the before-school exercise sessions or the before-school sport training, commonly discussed the idea of being bored at home, and explained that they initially chose to attend due to boredom or having nothing else to do before school. For example, “I went because I always came to school early and I had nothing else to do” (participant 16, before-school sport training). While boredom drove the initial decision to attend, students also stated that they “try and make a connection with other people” (participant 9, before-school exercise). The notion of continuing to build more connections with new peers was shared across all 3 opportunities—“I keep going, you build more like connections to everyone. So, you might want to keep going and like me, just challenge yourself with what they give you” (participant 6, external youth club). Overall, participants of all 3 opportunities discussed the benefit of increased social connections, however, the 2 before-school opportunities were particularly appealing for those who felt a desire to improve their social well-being.

### Students Particularly Enjoyed Guiding or Selecting Activities Themselves, but the Other People Present Were Mostly Responsible for the Sense of Joy Experienced

Students spoke positively of all 3 physical activity opportunities, although many suggested they most preferred activities that were led by the students themselves. For example, participant 11 who participated in before-school sport training stated—“ask the players if they want to run a session. Like, let us do it ... just getting the players more involved with each other.” Similarly, participant 3 stated “we had choices and we get to pick what we want to do” (before-school exercise) and participant 18 explained “when we get there, they usually have, um, these cards all set out, and then like, they will have a different exercise on it, and then we just pick whatever one we want to do” (external youth club). These quotations indicate that students experienced some sense of autonomy across all 3 physical activity opportunities, and students appeared to reflect positively on such activities, particularly describing them as fun.

Although activity selection was important to enjoying the sessions themselves, other people were described in a way which represented a greater sense of joy, enthusiasm, and energy overall, both during and after the sessions. For example, participant 3 stated “they get you to pump up your energy like while we’re there. And it gets you like a better start to the day” (before-school exercise). Overall, participants spoke of autonomy as essential to enjoying the exercises and wanting to do them, but of relatedness and peer communication as responsible for enjoying oneself more globally and finding happiness and joy within the school day.

### Before-School Sessions Led to the Development of New Social Groups, Increased Social-Identity, and Greater Student-Teacher Relationships which Had Large Impacts on Confidence in Social Settings

Participant 13 (before-school exercise) stated “I’ve met new friends, from like all over the place [all different year groups].” Similarly, participant 3 (before-school exercise) stated:

*we all became a new friend group and it made it like, we must have a strong relationship with each other. Like it just made us come together. And it made us have a relationship with all of us instead of me just having separate friend groups.*

These quotations highlight how the before-school exercise opportunity at this school not only strengthened relationships, but enhanced relatedness by feeling valued within a group, and also led to the development of new social groups within the school that spanned across different academic grades and different existing peer groups. Students further explained how this led to increased confidence in social settings. For example, participant 16 (early-morning exercise) stated:

*It made me become more confident and talkative within the community of people. I became more open, because I was only a shy girl when I’m at school when I was younger. So made me become like a better person. within myself. I wasn’t a very interactive person. Like, I didn’t interact with a whole lot of people. And now that I’m more opened about myself I reckon it’s changed me a lot. I’ve been confident and especially like public speaking. I used to not be very good at that but now I’m more confident in myself.*

Similarly, another participant stated, “it definitely built up my confidence, like I feel like I can talk to more people now and I’m also meeting new people by exercising” (participant 11, sport training). Many of the respondents further explained how this sense of confidence or comfortability around other students translated into the school classroom. For example, “when working in groups with other people I can just

be myself with them now” (participant 15, external youth club). This demonstrates the value of non-academic opportunities to build social connections and practice engaging with peers that aren’t in one’s immediate friendship circle.

Students also spoke fondly of how much they enjoyed the extra time they got to socialize and interact with their teachers. Although the morning exercise sessions were not run by teachers, some teachers attended, watched, or even joined in from time to time, and participants particularly enjoyed this. Positive interactions in a nonacademic context appear to have strengthened the relationships between the students who participate and the teachers who oversee the physical activity opportunities. “. . . especially the ones that are always there in the morning, we’re pretty close” (participant 18, before school sport-training). The joint participation in exercise, between students and teachers, when teachers joined in, was particularly positively received by participants. “Sometimes the teachers joined in, and it was like, it wasn’t just us kids, it was like a mixture” (participant 1, external youth club). The extra out-of-class contact hours between students and teachers were perceived by students as feeling as though their teachers cared about them and were invested in their goals overall, not just their academic performance.

### **Participation in Non-Academic Physical Activity Opportunities Changes the School Climate, Increases their Confidence in an Academic Setting, and Develops a New Desire to Attend School**

The mere opportunity to attend exercise sessions was well received and made students feel as though their school cared about them more holistically. For example, participant 4 (before-school exercise) stated “I feel like the school, they care about our health, and they give us every chance to just come together and be active.” The before-school sessions particularly (including sport training and informal exercise) also created a desire to go to school in the morning. For example, participant 3 (before-school exercise) stated:

*The fact that I had sessions made me you know, look at school in a better way, I actually felt excited [about coming to school]. Yeah, because I was happy knowing that I have a session and then next I have school. And like, my blood just felt pumped.*

The sessions not only created a desire to attend school because they had something enjoyable to do in addition to schoolwork, but their newfound self-confidence appears to have increased confidence in an academic context. As a result of increased physical confidence (eg, “I feel stronger every day,” participant 14, before-school exercise) and increased social confidence, some students discussed a newfound

comfortability in trying new things when they weren’t particularly competent. For example, participant 6 (external youth club) stated that “people will be like, who wants to go first? Before I used to normally say nah, I don’t want to do that, but like now, I normally say yes.” For some students, this comfortability and openness appears to have translated from the exercise context to the classroom. For example, participant 6 (external youth club) stated that she now “put[s] my hand up more and share what I think.”

Overall, while the exercise opportunities before school might provide an additional reason to attend school, and certainly a reason to attend early, the confidence drawn from these sessions that translates into social settings and academic tasks, creates a different view of school, whereby school is seen as more closely aligned with their identity or their strengths, when previously they perceived school as *not being their thing*. “That’s why I like coming to school now. I used to always think that going to school wasn’t my thing, and that [it] wasn’t worth it. But now, I love to come to school” (participant 3, before-school exercise). Overall, students appeared to view school differently. They discussed benefits such as paying more attention in class, feeling more confident, and being excited to attend school. “From the start I would kind of not pay attention at school. But now I think that I am focusing on schoolwork more” (participant 9, before-school sport training).

## **DISCUSSION**

This project was designed to understand how participation in early morning exercise sessions, on school grounds, before school, might influence adolescent girls’ self-perceptions, contribute to increased self-confidence and social well-being, and change perceptions toward school. The project also aimed to understand what motivated students to attend these sessions, and how they compared to other physical activity sessions on offer within the school, including sport training, and an external youth club exercise session run during school hours.

Peer friendships, and social support, have long been shown to influence levels of physical activity among adolescent girls.<sup>36-38</sup> In fact, research shows positive correlations between adolescent girls’ levels of physical activity and the physical activity levels of their nominated friends,<sup>39,40</sup> with longitudinal data even showing that individual levels of physical activity often change over time to reflect the activity level of one’s friends.<sup>41</sup> This notion was evident in the current study, with adolescent girls explaining they were more likely to attend the external exercise sessions at the community youth club if their friends went. Adolescents also spoke of attending before-school exercise and before-school sport training due

to their friends attending, but not exclusively. In fact, those opting to attend before school sessions did so out of either boredom and a desire to have something to do, or out of the desire to meet new people they weren't currently friends with. Regardless of their initial motive for attending, participants in both before-school sessions explained that they developed new friends as a result. This is not surprising, given that research has shown that children and adolescents tend to develop friendships from organized activities like sport and art,<sup>42</sup> meaning that those who engage in sport outside of school have greater social resources to draw on.<sup>42,43</sup> However, these studies explain the value of friendships developed through out-of-school physical activity. Another study, however, similarly showed that within-school friendship choices were predicted by similar levels of physical activity, yet engagement in physical activity did not impact the likelihood of which an adolescent girl developed a new friend.<sup>37</sup> However, this study recruited all participants from 1-year group. The results of the current study explain that when physical activity options are not restricted to the same year group, they can in fact bring together students from different friendship groups, of different ages, across different year groups, and with different backgrounds, leading to the development of new friendships. And these students tend to value the broadened social network as a result.

While previous research has shown that participation in physical activity outside of school can increase one's social network, little research has examined how physical activity opportunities within-school may be used to develop friendships, enhance peer support, and increase one's social network. From the current study, it appears that offering before-school physical activity opportunities that are informal and not bound by age groups (ie, competitive sport) or year groups (ie, physical education or external exercise sessions), adolescent girls are able to build and develop their social network within the school environment. This is particularly important for students in low socioeconomic areas who tend to be less likely to engage in youth sport outside of school.<sup>8</sup> In addition to greater friendships and increased peer connections, those who engaged in the before school sessions, particularly the exercise sessions (not sport training) also noted increased relationships with the teachers who attended and participated with them. Positive adult relationships are particularly important to adolescent well-being, especially for those from disadvantaged backgrounds who may be experiencing difficult parent relationships or challenging family environments. Overall, the informality of the before-school exercise sessions appeared to be a key strength as it led to many new relationships between peers, new friends, and teachers, all of which helped develop social-identity as

students belonged to a greater number of social groups within the school.

While having a place to go within the community, and having access to positive stable adult relationships, are crucial for adolescent development, particularly among at-risk youth,<sup>44,45</sup> participation both exercise sessions (before-school and externally run) appeared to increase students' confidence in a much broader way than just increased social confidence, as confidence transferred from physical activity competence, into social confidence, and finally, into academic confidence within the classroom. While qualitative research among adults certainly shows that mastery and achievement derived from exercise pursuits can lead to increased confidence in other contexts,<sup>29</sup> and abundant research has examined associations between physical activity and either academic engagement,<sup>46</sup> or academic achievement,<sup>47</sup> much less research has examined a relationship between physical activity and academic confidence. However, the results of the current study seem to suggest that informal exercise can be a method of developing confidence in the classroom among adolescent girls from disadvantaged backgrounds. It does appear though that the physical activity opportunities need to be informal, or at least not competitive and not focused on performance. For those engaged in before-school sport training, confidence was tied to physical performance meaning students may feel less confident after some training sessions. However, for those engaged in the exercise opportunities, confidence was tied to individual improvement. The before-school informal exercise sessions, however, appeared most valuable in terms of confidence within the classroom. Perhaps confidence transferred from the physical domain to the academic domain more for these students because their increased confidence was related to their own decision making, their ideas, and their commitment, innovation, and communication, all of which are essential academic skills.<sup>48</sup> However, it is also possible that students simply felt more comfortable engaging in conversation and offering answers within a classroom context due to their increased social-identity within the school context as a result of increased peer and teacher relationships.

Students engaging in the 2 before school options also explained how they experienced an increased desire to attend school and in fact, they explained a rather different perception of the entire school climate. This might suggest that before school activities that are not academic, and are instead focused on an enjoyable health behavior, may hold value in terms of promoting school as a more holistic place that engages students in a range of pursuits beyond academia. This notion has the possibility of benefiting not only attendance, but well-being, mental health, confidence, self-esteem, and academic achievement. Indeed previous research



has shown that increased opportunities to participate in extra-curricular activities are associated with greater academic outcomes.<sup>49</sup> Research also shows that students who spend more time engaged in structured out-of-school activities report higher school self-esteem and school bonding.<sup>50</sup> The findings of the current study, however, suggest that these outcomes may also be possible from activities that are held before school, but on school grounds, which is advantageous for those living in low socioeconomic areas with reduced access to extra-curricular activities outside of the school context.

There were 2 relatively novel aspects of the before-school physical activity offered at this school in comparison to many other research studies, and both of these novel aspects appeared to be well received and highly valuable in terms of perceived benefits. Firstly, the program was not bound to, or guided by, a specific type of physical activity. For example, Kalak et al<sup>17</sup> implemented a daily running program before school, and Verma and Shete<sup>18</sup> implemented a before school yoga program. While both interventions led to psychological benefits, little choice or variety were embedded within the program and the appeal of these approaches may be limited to a smaller proportion of students. This is particularly important given that motivation, enjoyment, and attitude are important individual predictors of engagement in before school physical activity.<sup>20</sup> Alternatively, Jung et al<sup>19</sup> implemented a morning exercise program that involved a range of different aerobic and anaerobic exercises. However, these sessions were delivered by an exercise professional. In the current study, the sessions were rather informal compared to typical before-school interventions. This was advantageous because it provided students with choice and flexibility over exercises and exercise types. However, it was also advantageous in terms of the sustainability of the program. While availability of staff supervision can influence whether a program is sustainable, having students provide input and lead the sessions reduces requirements on staff making long-term implementation more likely.<sup>20</sup>

## IMPLICATIONS FOR SCHOOL HEALTH POLICY, PRACTICE, AND EQUITY

While all schools are required to provide opportunities to engage in physical activity, physical education has been criticized for lacking choice, and not including activities that prepare adolescence to be active outside of school. Additionally, school sport is often perceived as too competitive. Providing “extra” informal exercise opportunities, on school grounds, that are not educational and not mandated, and enable students to provide input, appears to be a valuable method of enhancing social-identity and increasing confidence

across physical, social, and academic domains. Based on the results of the current study, the following practical strategies could be considered when planning to implement such a program. However, it is important to note these strategies were informed by qualitative data, and future research should consider measuring a broader range of outcomes from a larger number of students: (1) provide a suitable space and access to equipment, (2) consider providing technology devices to aid students in accessing resources to minimize staff input in leading sessions and satisfy student autonomy, (3) plan session times for before, or after, normal school hours as this is most likely to facilitate new relationships between students, (4) involve students in the design of the sessions through choice of activities and being flexible regarding the timing and length of sessions, (5) encourage teachers to attend, and if possible, join in occasionally, (6) avoid restricting participation to specific year groups to facilitate the development of new friendships across grades or year groups, and (7) focus on individual improvement and encourage communication during exercises. While school curriculums are crowded and teacher responsibilities are extensive, a before-school exercise opportunity appears viable, in addition to being valuable, because it is largely un-structured and involves minimal planning or organization. Students simply need to be allowed to, and encouraged to, arrive early to exercise with their peers.

## Limitations

While abundant research has examined the benefits of physical activity, research has predominantly focused on white participants from middle-class backgrounds<sup>51</sup> and findings are sometimes not translatable to different contexts or demographics. The focus on a low socioeconomic community that experiences elevated levels of hardship was a strength of this project as was the in-depth and systematic process of transcendental phenomenology. Limitations, however, include the small sample size, the fact that findings reflect only the views of female students, and that only 1 school was involved. Further, interview lengths were shorter than typical qualitative research indicating short answers were provided to many questions. Obtaining more depth in the data may have resulted in different or additional findings. Future research could consider providing similar opportunities at other schools and conducting interviews with a greater number of both female and male students.

## Conclusions

Providing informal, unstructured exercise opportunities, separate from physical education and school sport, is a valuable method of enhancing student

confidence, enhancing social support and belonging, and increasing positive emotions while at school. The opportunity to engage in informal exercise with peers before school widened social networks, increased confidence, changed the overall school climate, and increased attendance.

### Human Subjects Approval Statement

Ethical approval was granted by the University Human Research Ethics Committee and by the NSW Department of Education.

### CONFLICT OF INTEREST

The authors declare no conflicts of interest.

### REFERENCES

1. Sawyer SM, Afifi RA, Bearinger LH, et al. Adolescence: a foundation for future health. *Lancet*. 2012;379(9826):1630-1640.
2. Sigelman CK, De George L, Cunial K, Rider EA. *Life Span Human Development*. Victoria, Australia: Cengage AU; 2018.
3. Stevens M, Rees T, Coffee P, Steffens NK, Haslam SA, Polman R. A social identity approach to understanding and promoting physical activity. *Sports Med*. 2017;47:1911-1918.
4. Rhodes RE, Kaushal N, Quinlan A. Is physical activity a part of who I am? A review and meta-analysis of identity, schema and physical activity. *Health Psychol Rev*. 2016;10(2):204-225.
5. White RL, Bennie A. Resilience in youth sport: a qualitative investigation of gymnastics coach and athlete perceptions. *Int J Sports Sci Coach*. 2015;10(2-3):379-393.
6. White RL, Olson R, Parker PD, Astell-Burt T, Lonsdale C. A qualitative investigation of the perceived influence of adolescents' motivation on relationships between domain-specific physical activity and positive and negative affect. *Ment Health Phys Act*. 2018;14:113-120.
7. White RL, Parker PD, Lubans DR, et al. Domain-specific physical activity and affective wellbeing among adolescents: an observational study of the moderating roles of autonomous and controlled motivation. *Int J Behav Nutr Phys Act*. 2018;15(1):87.
8. Giles-Corti B, Donovan RJ. Socioeconomic status differences in recreational physical activity levels and real and perceived access to a supportive physical environment. *Prev Med*. 2002;35(6):601-611.
9. Santos MP, Esculcas C, Mota J. The relationship between socio-economic status and adolescents' organized and nonorganized physical activities. *Pediatr Exerc Sci*. 2004;16(3):210-218.
10. Stalsberg R, Pedersen AV. Effects of socioeconomic status on the physical activity in adolescents: a systematic review of the evidence. *Scand J Med Sci Sports*. 2010;20(3):368-383.
11. Sallis JF, McKenzie TL, Beets MW, Beighle A, Erwin H, Lee S. Physical education's role in public health: steps forward and backward over 20 years and HOPE for the future. *Res Q Exerc Sport*. 2012;83(2):125-135.
12. Banville D, Marttinen R, Rodrigues A. The secondary school curriculum: Teachers' and students' perspectives. *J Teach Phys Educ*. 2022;42(1):97-105.
13. Abildsnes E, Rohde G, Berntsen S, Stea TH. Fun, influence and competence—a mixed methods study of prerequisites for high school students' participation in physical education. *BMC Public Health*. 2017;17(1):1-12.
14. Corr M, McSharry J, Murtagh EM. Adolescent girls' perceptions of physical activity: a systematic review of qualitative studies. *Am J Health Promot*. 2019;33(5):806-819.
15. Duffey K, Barbosa A, Whiting S, et al. Barriers and facilitators of physical activity participation in adolescent girls: a systematic review of systematic reviews. *Front Public Health*. 2021;9:743935.
16. Woodforde J, Alsop T, Salmon J, Gomersall S, Stylianou M. Effects of school-based before-school physical activity programmes on children's physical activity levels, health and learning-related outcomes: a systematic review. *Br J Sports Med*. 2022;56(13):740-754.
17. Kalak N, Gerber M, Kirov R, et al. Daily morning running for 3 weeks improved sleep and psychological functioning in healthy adolescents compared with controls. *J Adolesc Health*. 2012;51(6):615-622.
18. Verma A, Shete S. Effect of yoga practices on general mental ability in urban residential school children. *J Complement Integr Med*. 2021;17(4):20190238.
19. Jung D, Lee J, Kim S, Kang B. Effects of morning exercise on blood BDNF level and its associated factors in elementary school students. *Arch Sci Med*. 2014;173:447-456.
20. Woodforde J, Kuswara K, Perales F, Salmon J, Gomersall S, Stylianou M. A qualitative exploration of multi-stakeholder perspectives of before-school physical activity. *Int J Behav Nutr Phys Act*. 2024;21(1):25.
21. AHS Student Leadership Council. *Student Leadership Council Meeting Notes*. Western Sydney, Australia: AHS Student Leadership Council; 2021.
22. Scheepers D, Ellemers N. *Social Identity Theory. Social Psychology in Action: Evidence-Based Interventions From Theory to Practice*. Switzerland: Springer Nature; 2019:129-143.
23. Tajfel H. *Social Categorization, Social Identity and Social Comparison. Differentiation Between Social Group*. London: Academic Press; 1978:61-76.
24. Verhoeven M, Poorthuis AM, Volman M. The role of school in adolescents' identity development. A literature review. *Educ Psychol Rev*. 2019;31:35-63.
25. Deci EL, Ryan RM. *Handbook of Self-Determination Research*. Rochester, New York: University of Rochester Press; 2002.
26. Ryan RM, Deci EL. *Self-Determination Theory: Basic Psychological Needs in Motivation, Development, and Wellness*. New York, NY: Guilford Publications; 2017.
27. Lonsdale C, Rosenkranz RR, Sanders T, et al. A cluster randomized controlled trial of strategies to increase adolescents' physical activity and motivation in physical education: results of the Motivating Active Learning in Physical Education (MALP) trial. *Prev Med*. 2013;57(5):696-702.
28. Bandura A. Self-efficacy: toward a unifying theory of behavioral change. *Psychol Rev*. 1977;84(2):191-215.
29. White RL, Ryan D, Young C, Elston R, Rossi T. How does the context of physical activity influence perceived mood and wellbeing after exercise? *Ment Health Phys Act*. 2023;24:100504.
30. Creswell JW, Poth CN. *Qualitative Inquiry and Research Design: Choosing among Five Approaches*. 5th ed. California: Sage publications; 2023.
31. Moustakas C. *Phenomenological Research Methods*. Thousand Oaks, California: Sage publications; 1994.
32. Poucher ZA, Tamminen KA, Caron JG, Sweet SN. Thinking through and designing qualitative research studies: a focused mapping review of 30 years of qualitative research in sport psychology. *Int Rev Sport Exerc Psychol*. 2020;13(1):163-186.
33. Braun V, Clarke V. *Thematic analysis: a practical guide*. California: SAGE Publications; 2021:1-100.
34. Malterud K, Siersma VD, Guassora AD. Sample size in qualitative interview studies: guided by information power. *Qual Health Res*. 2016;26(13):1753-1760.
35. Braun V, Clarke V. One size fits all? What counts as quality practice in (reflexive) thematic analysis? *Qual Res Psychol*. 2020;18:1-25.
36. Simpkins SD, Schaefer DR, Price CD, Vest AE. Adolescent friendships, BMI, and physical activity: untangling selection

- and influence through longitudinal social network analysis. *J Res Adolesc.* 2013;23(3):537-549.
37. De La Haye K, Robins G, Mohr P, Wilson C. How physical activity shapes, and is shaped by, adolescent friendships. *Soc Sci Med.* 2011;73(5):719-728.
  38. Mendonça G, Cheng LA, Mélo EN, de Farias Júnior JC. Physical activity and social support in adolescents: a systematic review. *Health Educ Res.* 2014;29(5):822-839.
  39. Schofield L, Mummery KW, Schofield G, Hopkins W. The association of objectively determined physical activity behavior among adolescent female friends. *Res Q Exerc Sport.* 2007;78(2):9-15.
  40. Macdonald-Wallis K, Jago R, Sterne JA. Social network analysis of childhood and youth physical activity: a systematic review. *Am J Prev Med.* 2012;43(6):636-642.
  41. Sawka KJ, McCormack GR, Nettel-Aguirre A, Hawe P, Doyle-Baker PK. Friendship networks and physical activity and sedentary behavior among youth: a systematized review. *Int J Behav Nutr Phys Act.* 2013;10:1-9.
  42. Jago R, Brockman R, Fox KR, Cartwright K, Page AS, Thompson JL. Friendship groups and physical activity: qualitative findings on how physical activity is initiated and maintained among 10-11 year old children. *Int J Behav Nutr Phys Act.* 2009;6:1-9.
  43. Anderson-Butcher D. Youth sport as a vehicle for social development. *Kinesiol Rev.* 2019;8(3):180-187.
  44. Melton TN, Brehm MV, Deutsch NL. Broadening the perspective on youth's systems of support: an ecological examination of supportive peer and adult relationships during adolescence. *J Community Psychol.* 2021;49(5):1334-1357.
  45. McLaughlin MW. *Community Counts: How Youth Organizations Matter for Youth Development.* Washington, DC: Public Education Network; 2000.
  46. Owen KB, Parker PD, Van Zanden B, MacMillan F, Astell-Burt T, Lonsdale C. Physical activity and school engagement in youth: a systematic review and meta-analysis. *Educ Psychol.* 2016;51(2):129-145.
  47. Lubans DR, Beauchamp MR, Diallo TM, et al. School physical activity intervention effect on adolescents' performance in mathematics. *Med Sci Sports Exerc.* 2018;50(12):2442-2450.
  48. Feraco T, Resnati D, Fregonese D, Spoto A, Meneghetti C. An integrated model of school students' academic achievement and life satisfaction. Linking soft skills, extracurricular activities, self-regulated learning, motivation, and emotions. *Eur J Psychol Educ.* 2023;38(1):109-130.
  49. Stearns E, Glennie EJ. Opportunities to participate: extracurricular activities' distribution across and academic correlates in high schools. *Soc Sci Res.* 2010;39(2):296-309.
  50. Dotterer AM, McHale SM, Crouter AC. Implications of out-of-school activities for school engagement in African American adolescents. *J Youth Adolesc.* 2007;36:391-401.
  51. Ference R, Muth KD. Helping middle school females form a sense of self through team sports and exercise. *Women Sport Phys Activity J.* 2004;13(1):28-35.

## SUPPORTING INFORMATION

The following Supporting Information is available for this article:

**Data S1.** Supplementary Information.

Additional supporting information may be found online in the Supporting Information section at the end of the article.