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Yona Cass and Polly Price

Moorefield – increasing physical activity in adolescent girls using the Health Promoting Schools framework

Changes in the environment and the curriculum supported enjoyable, informal, non-competitive physical activities in a mainly non-English speaking girls’ high school in Australia.

A partnership between the Health Promotion Service, South East Health, the Department of Education and Training (DET), a local girls’ high school and other agencies guided this project to address the issues of physical inactivity in adolescent girls. The government school is in Sydney’s south with a mixed socio-economic population of more than 800 girls, 80% of whom are from non-English speaking, mainly Middle Eastern and Asian backgrounds. The initial project from 1998 to 2001 using the Health Promoting Schools framework as a guide.13 The Health Promotion Service provided a $7,000 grant and a part-time project officer to support the project.

Why physical activity?

Adequate physical activity is known to have a positive impact on a variety of lifestyle diseases and conditions. Physical activity and improved fitness are also known to increase self-confidence and control over people’s health (e.g. bone mass, weight, social skills and the ability to concentrate and learn).15

Why adolescent girls?

Studies have shown that women are generally less physically active than men, the level of physical activity affects the lifestyle strategies women girls reach puberty and continues to do so throughout adolescence.15 The 1997 New South Wales (NSW) Schools Fitness and Physical Activity Survey16 found adolescent girls to be less physically active, less fit and to have poorer motor skills than boys. Factors that appear to contribute to this are socio-economic status, attitudes, school norms and efficacy for physical activity, peer and family support and access to facilities.20 Women from non-English speaking backgrounds were found to be less likely than women from English-speaking backgrounds to play sport. Since health behaviours adopted in childhood and adolescence are carried into adulthood,17 a project to increase physical activity levels among adolescent girls could be expected to have long-term benefits.18

Why schools?

The World Health Organization (WHO) has identified schools as settings for health-promotion action.13 While health education in schools may improve knowledge and skills, it is less likely to have an impact on health behaviours.14 Evidence suggests, however, that school-based programs are comprehensive and integrated and include the curriculum, the environment and the community are more likely to lead to advancements in the health of school children and adolescents.15 The Health Promoting Schools framework for action encompasses such a multi-strategy, comprehensive approach, recognised as best practice by WHO.

Methods

Advisory, planning and student committees developed and implemented the strategies selected. The Health Promotion Schools framework (see Table 1). Strategy development was informed by a literature review examining adolescent physical activity, focusing on females, especially those from culturally and linguistically diverse backgrounds; consultations with more than 40 parents to gain insight into parent/school communication16 baseline attitudes, social norms and efficacy for physical activity, peer and family support and access to facilities.20 The focus groups investigated students’ attitudes on perceptions of barriers and enables to physical activity at their school. Strategies (see Table 1) took into account the expressions of less active students for enjoyable, informal, non-competitive physical activities, rather than traditional sports, and for changes to the school environment to support these.

Table 1: Project strategies guided by the Health Promoting Schools framework.

<table>
<thead>
<tr>
<th>Element:</th>
<th>Physical environment</th>
<th>Social environment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Professional development workshops for:</td>
<td>Sports uniform modified for cultural groups</td>
<td>Health education activities</td>
</tr>
<tr>
<td>- Physical activity class options (e.g. ball sports)</td>
<td>Health environment activities</td>
<td></td>
</tr>
<tr>
<td>- HSC option in Personal Development, Health and Physical Education</td>
<td>Cross-curriculum focus on physical activity</td>
<td></td>
</tr>
<tr>
<td>- Physical activity curriculum resources</td>
<td>School clubs and activities</td>
<td></td>
</tr>
<tr>
<td>- Cross-curriculum focus on physical activity</td>
<td>Peer physical activity leaders training</td>
<td></td>
</tr>
<tr>
<td>- Physical activity options e.g. yoga, dance for in-school dance campaigns</td>
<td>Whole school physical activity days to encourage physical activity</td>
<td></td>
</tr>
<tr>
<td>- Free extra-curricular activities for students</td>
<td>Teen dances needed after famous music concert</td>
<td></td>
</tr>
<tr>
<td>- Free sports for Aboriginal and Torres Strait Islander students</td>
<td>Registration as an Active Australia school</td>
<td></td>
</tr>
<tr>
<td>Organisational focus:</td>
<td>School health and health promotion officer to deliver the project</td>
<td>Changes in school curriculum to allow whole-school activities</td>
</tr>
<tr>
<td>- Advisory, planning and student committees</td>
<td>Community partnerships between schools and local government</td>
<td></td>
</tr>
<tr>
<td>- School-based health and health promotion service to deliver the project</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

School home pages

- School home page
- Community links
- School newsletters
- English/health education resources for parents
Tools
The project officer monitored strategy implementation using meetings of students' meetings and recorded processes and staff comments in a diary. Impact evaluation assessed changes in students' physical activity, behaviour and attitudes, and the social, physical, and organisational environments within the school. Data were collected in pre- and post-self-administered quantitative surveys with historical controls. Surveys measured changes in students' participation in and attitudes towards physical activity, and their perceptions of barriers and enablers. The use of a historical control group allowed a comparison of behavioural and attitudinal changes between the 2001 Year 10 group after three years of intervention and the 1998 Year 10 girls that were not influenced by the project. At base line, in October 1998, the survey was administered to 111 Year 7 students (intervention group) and 127 Year 10 students (historical control group). Administration of the survey was repeated in October 2001, with 94 Year 10 students (i.e. the intervention group) and 93 Year 7 students. The survey was based on the 1997 NSWS Schools Fitness and Physical Activity Survey. Prior to the project, the survey instrument was administered to students in 90 schools across NSW.

The questionnaire that was used in MuccioScit included an additional question on time spent doing homework and chores and two additional items relating to perceptions of the sports uniform and their cultural background as barriers. These additional items resulted in the two focus groups and with permission of the author. The amended questionnaire was piloted in another girls' school with a similar population. A pre and post environmental audit, from the 1997 NSWS Schools Fitness and Physical Activity Survey, provided evidence of perceived changes to the school environment to support physical activity. The intervention group was administered to the deputy principle, one teacher from each faculty and all of the Personal Health/Health/Physical Education (PHFE) staff. At baseline it was administered to 10 staff members and at post-test 12. A documented attendance of meetings of the project committee confirmed the teachers' self-reports on the environmental changes.

Telephone interviews conducted by an independent interviewer with seven key staff members, selected by the teachers, were an insight into perceptions of the project's success and were used to triangulate the focus group survey and environmental audit. Interviews were audio-taped, with consent, and transcripts provided on request.

At the end of the project, health promotion staff conducted two focus groups of Year 10 students (10 each) to investigate perceived changes at school. Procedures for administering the groups at post were the same as those at the beginning of the project. Trained health promotion staff facilitated the focus groups, which consisted of approximately 10 students from a number of cultural backgrounds in youth groups according to year and whether they were intervention or control group members or non-participants in physical activity. Parental consent was required. To ensure confidentiality, no teachers were present and, with the students' consent, all discussions were audio-taped and monitored by trained observers.

Analysis
Student survey data were analysed on Surveycyst and SPSS for Windows. Aggregation of variables followed the guidelines outlined in the 1997 NSWS Schools Fitness and Physical Activity Survey report. Students participating in 'vigorous activity' have been defined as those who participate in vigorous aerobic activities at least three times per week for at least 20 minutes per session i.e. activities with a metabolic cost (MET) of greater than 6.0 or greater and which require rhythmic usage of the large muscle groups. Students participating in 'moderate activity' have been defined as those who participate in at least three and a half hours of moderate intensity over at least five days in a normal week. Moderate intensity activities were defined as requiring at least three and a half METs. All other students were considered as 'inadequately active'. The environmental audit data were analysed on SPSS for Windows.

Categorical data were assessed using the chi-square test. T-tests for independent samples were used to assess whether the changes in mean scores between baseline and post were statistically significant. Descriptive statistics such as means and proportions were used to provide additional detail.

All taped telephone interviews and student focus groups were transcribed. Analysis involved sorting data into categories and identification of the most common themes. The questionnaire provided the initial outline for the themes. Data analysis was guided by the work of Miles and Huberman (1984).

Results
The project mainly influenced students with inadequate levels of physical activity. A proportion of students in the intervention group and the control group who were vigorously active were the same. One of Tables 2 and 3.

Girls in the intervention group participated in more activities than girls in the control group (63% more in summer and 43% more in winter). Results indicated that increases in levels of participation occurred during school hours and in activities generated by the project. This was confirmed by teachers' observations:

- "When I [the project] first started I remember sitting in the staff room and saying 'this is the first time I've ever seen the girls doing anything in a break. ... it's not something the staff have considered, the kids just get up and do it in the quad, and I don't see that prior to the project.'" (Teacher)

- "-in a football test with the girls I haven't really seen them improve their physical activity on the weekends but definitely they're increased their physical activity at school." (Teacher)

- "-in physical activity, sport at school - but at home I have no friends to do that." (Student)

- Students from the intervention group reported spending less time on sedentary behaviours (4% less than students from the control group). 32 hours per day of 3.9 respectively. Independent sample t-test, t=2.46, p=0.05. Fifty per cent of students in the intervention group, however, reported participating in paid work compared with 36% of the students in the control group. Results do not identify clear differences in attitudes between the intervention and control group.

Discussion
The use of formative research identified the importance of the intervention to the appropriate strategy development. This approach is in line with the fundamentals of community development work where the people are at to achieve ownership and success in the change process. The results show that environmental and the curriculum supported enjoyable, informal, non-competitive physical activities. These appear to have facilitated improved attitudes, perceptions and increased participation in physical activities not outside school.

The 1997 NSWS Schools Fitness and Physical Activity Survey showed that girls in Year 10 were less active than in Year 8. The decline in physical activity was shown to be greater for girls from Middle Eastern and Asian backgrounds. The project has attempted to change this trend by increasing levels of "vigorous activity" from Years 7 to Year 8, but does not appear to have increased the proportion of Year 10 students who are inadequate active. The project appears, therefore, to have had an impact on those students who could be said to need it most.

Changes in students' perceptions of physical activity as fun might be due to the activities offered by the project. Various forms have been found that girls from culturally diverse backgrounds enjoy being involved in physical activity because they consider them to be fun and recommended that schools increase the fun elements in their physical activity programs and demonstrate an emphasis on competition. Similarly, Kandy found that girls seemed to want to participate in activities that they enjoyed and

Table 1: Changes in students' summer activities.

<table>
<thead>
<tr>
<th>Intervention group</th>
<th>Control group</th>
<th>Significant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Swimming</td>
<td>70</td>
<td>68</td>
</tr>
<tr>
<td>Basketball</td>
<td>43</td>
<td>30</td>
</tr>
<tr>
<td>Volleyball</td>
<td>19</td>
<td>18</td>
</tr>
<tr>
<td>Yoga</td>
<td>13</td>
<td>2</td>
</tr>
<tr>
<td>Cricket</td>
<td>12</td>
<td>2</td>
</tr>
<tr>
<td>Fishing</td>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td>Horse riding</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>Sailling</td>
<td>3</td>
<td>0</td>
</tr>
</tbody>
</table>

(a) Significance calculated only for comparison between intervention group 2001 and the historical control group.

Table 2: Changes in students' winter activities.

<table>
<thead>
<tr>
<th>Intervention group</th>
<th>Control group</th>
<th>Significant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Swimming</td>
<td>49</td>
<td>48</td>
</tr>
<tr>
<td>Volleyball</td>
<td>32</td>
<td>30</td>
</tr>
<tr>
<td>Beta-ball</td>
<td>17</td>
<td>15</td>
</tr>
<tr>
<td>Sailling</td>
<td>10</td>
<td>8</td>
</tr>
</tbody>
</table>

(a) Significance calculated only for comparison between intervention group 2001 and the historical control group.

Teachers, however, noticed a change in the perceptions of barriers among girls from the intervention group (see Table 3).

In the environmental audit, teachers reported increased utilisation of facilities such as the gymnasium, fitness rooms, fields and indoor and outdoor playing spaces. More teachers at post than at baseline thought that the school facilities and equipment for sports and physical education (PE) were in good condition (85% vs 47%). A reported an increase in average of 12.5% of students, organised lunchtime physical activities for students (60% of 20%, p<0.05) and an increase in a range of strategies to promote physical activity among students.

Students interviewed considered the whole-school focus days to be successful and reported increased access to facilities, provision of lunchtime activities and increases in physical activity during breaks as benefits of the project. They also attributed improvements in facilities and equipment to the project and reported a more positive influence from the staff towards physical education.

...I think the staff were getting enthusiastic and enjoying thinking about physical activity, like at sport they don't do it on the go, we might as well do it... there was a change in the attitude that it would be active..." (Teacher)

Discussion
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that some schools had found that options such as dance were more appealing to girls than boys. Changes in students' physical activity levels seem to be related to the type of activities offered and encouraging parental involvement in after-school hours, with more students in the intervention group being involved in a variety of activities such as swimming, walking, football, and volleyball, etc. A study in the United States also found that the activities reported as most enjoyable and beneficial for boys were those involving, among others, the school’s physical and social environment.

Partnerships, including links with parents and community organizations, are also regarded as a key factor in enhancing health promotion in schools. Involve parents and family members proved to be more difficult. Results of many studies identify a wide range of barriers to parental participation and reinforce the difficulty observed in this study in involving parents. Studies have also found that parental involvement is more likely to occur in primary schools than in high schools. This may indicate that parental involvement in health promotion is more likely to occur in primary schools and may be an area for further research.

Stud limitations

Resources available determined the decision to utilise historical data rather than current controlled trials. Although this was a critical aspect of the study, it was not able to control the conditions level of physical activity when they were in Year 7 with that of the intervention group. Both Year 7 and 9, while both groups had similar activities when they started high school. It also did not allow the monitoring of external variables that could have influenced the girls’ behaviour.

Conclusion

Continuing school-based programs and their communities about attitudes and barriers to physical activity for students from different backgrounds should lead to further improving women's involvement in physical activity as adolescents and then into adulthood.

Acknowledgements

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References


