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The 'Learning to Enjoy Activity with Friends' programme

Evaluation of an extra-curricular school sport programme designed to promote lifetime physical activity for adolescents

Schools are commonly recognised as important settings for the promotion of physical activity among youth, as children and adolescents spend most of their waking hours in schools or school-related activities (Department of Health, Physical Activity, & Health Improvement & Prevention, 2004).

While the physical education (PE) curriculum is largely responsible for the promotion of physical activity at school (Biddle & Mutrie, 2001), physical activity recommendations cannot be met through PE alone (Sallis et al., 1997). Health education, break periods, active transportation to school and extra-curricular school sport have been identified as additional opportunities for promoting physical activity in the school setting (Wechsler, Devereaux, Davis, & Collins, 2000).

However, the majority of school-based physical activity interventions have evaluated enhanced physical education lessons (Stone, McKenzie, Welk, & Booth, 1998). Although some interventions have evaluated the impact of additional aspects of the school setting on physical activity, such as the school environment (e.g. Sallis et al., 2003), the relative contribution of school sport to behaviour change has not been studied extensively (Pate et al., 2006).

Lifelong physical activity

To promote lifelong physical activity, students should be provided with activities

that reflect the choices available to individuals once they leave the structure of school (Corbin, 2002). These activities may be referred to as lifetime activities as they generally only involve one or two people and require little organization (e.g. swimming, tennis and exercise-based activities).

An important subset of lifetime activities are gym-based health-related fitness (HRF) activities. Unfortunately, very few schools are equipped with the facilities to provide meaningful experiences in gym-based HRF activities. Many schools offer gym-based HRF activities at commercial health and fitness centres as weekly sport options. However, students are rarely provided with the necessary structure, information and teaching to have a positive effect on their short and long term physical activity behaviour during these sessions.

Learning to Enjoy Activity with Friends

The Learning to Enjoy Activity with Friends (LEAF) programme was an innovative physical activity intervention for adolescents delivered as an extra-curricular school sport option. The programme was developed with reference to Bandura's Social Cognitive Theory (SCT., 1986) and combined health-related fitness activity with behavioural modification strategies including goal setting with pedometers.

Because interventions are often criticised for failing to explain why behaviour change takes place (e.g. Pawson & Tilley, 1997), the researchers completed a process evaluation of the LEAF intervention. It has been suggested that the low efficacy or effectiveness of physical activity interventions may be due to a lack of knowledge regarding the mechanisms responsible for behavior change (Baranowski & Jago, 2005). The assessment of participant perceptions through a process evaluation can help to determine why an intervention failed or succeeded. The purpose of this paper is to describe the theoretical foundation of the LEAF programme and to describe the findings from the process evaluation of the intervention.

Methods

Sample selection

Six secondary schools in Newcastle, New South Wales (NSW), Australia met the eligibility criteria and were invited to participate in the study. Three schools indicated agreement and were accepted into the study. The programme was made available as an extra-curricular, weekly school sport option for secondary school students ($N = 116$, mean age = $14.18 \pm .71$).

Design

The LEAF study involved a quasi-experimental design with treatment allocation of condition occurring at the year level. At Schools 1 and 2, students in year 8 were allocated to the treatment group and students in year 9 acted as the comparison groups. At School 3, students in year 9 were assigned to the intervention group and year 8 students acted as the comparison group. Two 8-week programmes were offered to each school as extra-curricular school sport options (LEAF intervention & exercise only comparison group). The intervention was delivered at the University of Newcastle health and fitness centre. The practical

components for all students were delivered by trained instructors from the health and fitness centre. A training day was provided for instructors before the commencement of the programme and the researchers met regularly with the instructors to ensure programme fidelity. The information component for the intervention group was delivered by a member of the research team in a university classroom adjacent to the health and fitness centre.

Intervention

The LEAF intervention consisted of three components: structured exercise activity, information session focusing on behavioural modification strategies and physical activity monitoring using pedometers. The 8-week programme included weekly sessions lasting approximately 70 minutes (15 minutes information component, 55 minutes participation in physical activity). The information component focused on health/fitness concepts and physical activity behaviour modification strategies (e.g. identifying barriers to physical activity). Students in the intervention group were provided with pedometers and training handbooks for the study period.

Students in the comparison group participated in a modified 8-week HRF programme designed by the research team. The structured exercise sessions were identical to the practical sessions for the intervention students and lasted a similar duration. Students in the comparison group were provided with training booklets which provided an outline of all sessions with suggested intensities and descriptions of techniques involved. However, students in the comparison group did not receive any information sessions.

Intervention outcomes

As the intervention outcomes are not described in this paper, only a brief summary of the outcomes is described here. The primary outcome measured was mean steps/day as determined by four days of

pedometer monitoring. Time spent in non-organised physical activity and sedentary behaviour were also measured. All assessments were completed at baseline and post-test immediately following the intervention.

Process evaluation

The process evaluation of the LEAF included quantitative and qualitative assessment of the intervention. Following the intervention, students completed a questionnaire to determine what aspects of the programme were appealing. This information could also be used to identify potential barriers to the implementation of the programme in the future. An additional aim of the process evaluation was to assess the impact of the programme on specific behavioural modification strategies. The process evaluation questionnaire consisted of two sections and involved both quantitative and qualitative responses:

1. Use of behavioural modification strategies - The first section of the process evaluation asked the students to report on their use of specific behavioural modification strategies. The six items included the common stem: 'As a result of the LEAF programme'. Individual items referred to behavioural modification strategies e.g. 'I reward myself when I reach my physical activity goals'. Items were anchored by 1 (Strongly Disagree) and 4 (Strongly Agree).

2. Enjoyment of practical sessions - In this section students were asked to response to six statements regarding their enjoyment of specific practical sessions. For example: 'I enjoyed the weight training sessions'. Students were provided with a 5-point Likert scale anchored by 1 (Strongly Disagree) and 5 (Strongly Agree). In addition to the closed questions described above, students were asked to answer two open-ended questions: 'Where there any additional aspects of the programme that you liked? (Describe)' and 'What did you dislike about the programme? (Describe)'.

Data Analysis

The data were analyzed using SPSS software (version 12.0). Independent samples t-tests were used to compare group responses. For all calculations, alpha levels were set at $p < .05$, and marginally significant results ($.05 \leq p \leq .10$) were also noted. The qualitative comments were grouped into themes in order to answer two specific questions; what aspects of the LEAF programme were appealing to students? And what aspects of the programme could be identified as potential barriers to its implementation in the future?

Results

The majority of students were born in Australia (95%) and spoke English at home (98%). At baseline, the average age of the students in the comparison and intervention group was similar, 14.1 (± 0.7) years and 14.3 (± 0.7) years, respectively. Following the intervention, there was a marginally significant difference between comparison and intervention groups on the use of two of the different behavioural modification strategies. The intervention group reported greater use of physical activity monitoring (using diaries) than the comparison group (2.26 versus 1.98, $p = .097$). The intervention group also reported greater use of rewards after achieving physical activity goals (3.00 versus 2.70, $p = .070$). There were no statistically significant differences between groups on any of the other items, including physical activity and motivation rating. In addition, there were no statistically significant gender differences regarding the use of behavioural modification strategies.

There was a statistically significant difference in student enjoyment of weight training by gender. Boys reported enjoying weight training more than girls (3.54 versus 2.93, $p < .001$). There was a marginally significant difference between boys and girls in regards to the enjoyment of the Body Combat class (3.21 versus 2.92, $p = .086$). There were no statistically significant

gender differences in overall enjoyment of the programme or any of the other practical sessions.

When asked if they would recommend the LEAF programme to their friends, 88% of students agreed. Overall, the qualitative student comments supported the quantitative statistics indicating high levels of enjoyment in most aspects of the programme. The strongest theme to emerge from the qualitative data was that the programme provided students with an opportunity to exercise with their friends. Training with friends was identified as a positive by a number of students, one participant said *'It was fun because we got to hang out with our friends and go on the cool machines'*. Another student identifying the importance of peer interaction, *'Being with friends while exercising made it more enjoyable'*.

The variety of the sessions was identified as another positive aspect of the LEAF programme. While the programme was structured, it also permitted student choice. This was a positive for many students, for example, *'The amount of options that you had and the choice of exercise.... and just doing different workouts'*. Moreover, other students enjoyed the flexible structure of many sessions that enable them to train at their own level, for example, *'The way you could work to your own ability'*. Learning new techniques and exercise information was appealing to other students, *'I enjoyed the entire programme and looked forward to learning new techniques every week'*. Another student reported that the structure of the programme was appealing and the information component was helpful, *'The fact that you were talked through the programme'*. However, not all students enjoyed the information sessions and completing the training handbooks, *'There shouldn't be any booklet to fill out, the time should be spent on physical activity'*. The perceived impact of the programme on student fitness and body composition was another positive aspect of the programme. A number of students reported losing weight

and increasing their physical fitness, for example, *'I lost a whole 7 kilos in this programme, thank you! I feel a lot better about myself for this'*. Another student reported, *'It gave me a chance to try new things and it also helped me to lose weight'*.

The major criticism to emerge from the qualitative data was the perceived exercise intensity of the programme. A number of students described themselves as unfit and found the programme difficult. For example, *'I disliked some of the fitness classes because we were pushed to keep on doing it'*. Another student reported, *'I am not that fit so it was hard to do what was expected of me'*. While the majority of comments criticised the programme for being too difficult, one student suggested that the programme was not difficult enough, *'It got boring after a while, so it needs to be more challenging'*.

Discussion

The purpose of the LEAF programme was to increase lifestyle physical activity and decrease sedentary behaviour in a sample of secondary school students. The intervention was the first to incorporate pedometer monitoring into a HRF programme for adolescents. The process evaluation found that high levels of enjoyment were reported by students in both intervention and comparison groups. Additionally, the intervention was found to have a positive effect on behavioural modification strategies. Previous research has established that the use of behavioural modification strategies, such as physical activity monitoring, mediates behaviour change in adolescents (Dishman et al., 2005).

The analysis of qualitative responses identified some important aspects of the study. Exercising with friends emerged as the most appealing aspect of the programme. Throughout the study, students were encouraged to train with their friends and plan sessions together outside of school sport. Engaging in physical activity with friends may help to establish positive social norms within an individual's social

network (Haughton McNeill, Kreuter, & Suramanian, 2006). Furthermore, peer support has been found to mediate physical activity behaviour change in adolescent interventions (Neumark-Sztainer, Story, Hannan, Tharp, & Rex, 2003; Sallis, Calfas, Alcaraz, & Gehrman, 1999). Another appealing aspect of the programme was its perceived impact on physical fitness and body composition. Although a number of students reported losing weight and increasing fitness, it is unlikely that participation in the LEAF programme alone resulted in these outcomes.

The most common criticism of the programme was the high level of exercise intensity. Although students learnt to identify physical activity intensity through the use of rate of perceived exertion, many students found sessions were often too difficult. It would appear that students need to learn more about exercise intensity, as a greater awareness of physiological symptoms of effort and pain may contribute in a positive way to exercise adherence (Biddle & Mutrie, 2001).

As physical activity recommendations cannot be met through PE alone, physical educators and researchers need to identify and evaluate alternative opportunities to promote activity among adolescents. The successful implementation of the LEAF intervention has provided evidence that extra-curricular school sport is a viable opportunity for the promotion of activity among adolescents. Furthermore, the findings from this study provide valuable insight into the perceptions of adolescents regarding appropriately designed physical activity interventions.

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