Effectiveness of a Physical Activity Promotion Program on Perceived Self-efficacy, Physical Activity and Physical Fitness among Thai Adolescent Girls

Narumon Teerarungsikul, Rutja Phuphaibul, Carol J. Loveland-Cherry, Renu Pookboonmee, Kallaya Kijboonchoo, Dechavudh Nityasuddhi

Abstract: The purpose of this quasi-experimental study was to investigate the outcomes of a physical activity promotion program on perceived self-efficacy, physical activity and physical fitness among Thai adolescent girls. The study sample was recruited from grades seven and eight in two public schools in Chonburi province, Thailand. Simple random assignment was used to assign students from one school as the experimental group and students from the other school as the control group. Both groups received general information on physical activity. However, the experimental group also received the physical activity promotion program based on Pender's Health Promotion Model and Bandura's Self-efficacy Theory. Data were collected at baseline, on the eighth week when the intervention ended, and on the 12th week.

The results revealed that, by the eighth week, the experimental group's scores for perceived self-efficacy, physical activity and light activity were significantly higher than those of the control group. However, these effects could not be maintained by the 12th week. Furthermore, the physical fitness scores were not significantly different between the experimental and control groups at the eighth and 12th weeks.

The findings suggest the program resulted in short-term enhanced perceived self-efficacy and physical activity, among Thai adolescent girls, at eight weeks post-intervention. Therefore, implementation of this program to promote perceived self-efficacy and physical activity, among adolescent girls in school, is encouraged since the students became interested and active in participating in the activities. However, this program should be further developed to sustain changes in perceived self-efficacy and physical activity, including increased physical fitness.

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Key words: adolescent girls, perceived self-efficacy, physical activity, physical fitness

Introduction

Physical activity has multiple health benefits for children and adolescents, including the enhancement of normal growth and development, weight control and protection from chronic diseases. Also, it is beneficial to psychological well-being, such as decreased anxiety, decreased anger and improved adolescent academic performance.[1, 2, 3] However,

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levels of physical activity decline with age and gender during adolescence. After the age of 13,[4] girls are significantly less active than boys.[5, 6, 7] In Thailand, 82.2% of boys, 12 to 14 years of age, generally perform more physical activity, compared to 80.9% of girls. Similarly, 78.6% of boys, 15 to 19 years of age, participate in physical activity compared to 59.3% of girls, in Thailand.[7]

At present, the most important health problems in Thailand are non-communicable diseases (NCD) or chronic diseases, such as cardiovascular disease, diabetes mellitus, cancer, and hypertension, which were the major causes of death and disability in 2005. Cardiovascular disease is the major cause of death among women, and the prevalence rapidly increases as women age. Physical inactivity is one of five major risk factors of chronic diseases.[8, 9] Further, the incidence of diabetes in children and adolescence has increased.[10] Recent data suggest that more Thais are overweight, and their sedentary behavior has been increasing, especially among children, with 13 to 18 year olds being the most obese.[11] In grades seven to nine,[12] the percentage of overweight girls (18.6%, 17.6% and 14.8%, respectively) is higher than those of overweight boys (10.1%, 13.0% and 12.7%, respectively). These adolescents reported more sedentary behaviors, i.e. viewing television and playing computer games, than those age six to 12 years.[11] Based on these findings, one may concluded that adolescent girls constitute a segment of the population threatened by an extremely high risk of inactivity[13, 14] and, consequently, of chronic diseases. To increase physical activity, therefore, intervention programs should be implemented among adolescent girls.

Additionally, targeted interventions should be designed, which include strategies and methods, especially for girls. However, no study has been done specifically to increase physical activity among Thai adolescent girls. Thus, in order to fill the gap of knowledge on the effectiveness of intervention programs, in promoting physical activity among Thai adolescent girls, the purpose of this study was to determine the effects of a physical activity promotion program on perceived self-efficacy (PSE), physical activity (PA) and physical fitness (PF) of Thai adolescent girls.

Review of literature

This study was guided by Pender's Health Promotion Model (Pender's HPM)[15] and Bandura's Self-efficacy Theory[16] (**Figure 1**). Pender's HPM posits that health behavior is influenced by multiple factors, that are both internal and external to the individual, and that it is appropriate to understand the personal, cognitive and environment factors that influence health behavior.

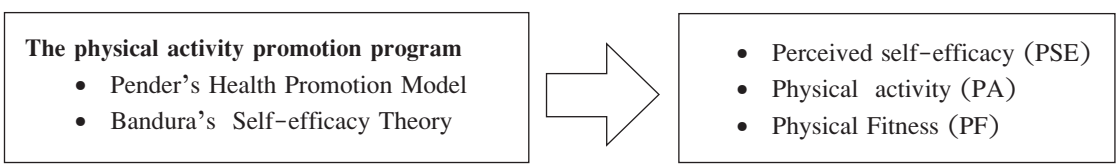

Figure 1 Conceptual framework of the study

Pender's HPM includes perceived self-efficacy; therefore, self-efficacy theory was included in this study. Self-efficacy Theory, one of the constructs within social cognitive theory, indicates that the stronger an individual's belief in their ability to perform a course of action, and in the positive outcomes of those actions, the more likely he or she will initiate and persist in a given activity.[16, 17]

If perceived self-efficacy is high, the outcome expectation is also high and the individual's likelihood of doing it is high. In order to increase outcome expectancy, individuals should set a goal and conduct self-monitoring.

Bandura[16] delineates four ways that self-efficacy belief can be changed in relation to health behaviors. Individuals develop their self-efficacy by interpreting information, primarily, through: enactive mastery experiences, vicarious experiences or modeling, verbal persuasion, and physiological and affective states.

Previous studies on health promotion in adolescents, using Pender's HPM and social cognitive theory, have revealed that perceived benefits, perceived barriers, interpersonal influences (social support, social norms, and modeling) and perceived self-efficacy[18, 19, 20] have an influence on physical activity. Of these, self-efficacy is the strongest predictor of physical activity among adolescents.[3] Empirical evidence has shown that children and adolescents, who enjoy physical activity, are more likely to participate in physical activity.[20] Thai children and adolescents have reported their reasons for participating in physical activity are having to comply with the required physical education lessons and for enjoyment.[7]

Empirical evidence regarding physical activity intervention with adolescent girls came from studies that employed different physical activity intervention programs. Results have shown that in one intervention study, conducted with girls and women, using the DAMET (Daughters and Mothers Exercising Together) Project and based on social cognitive theory (perceived self-efficacy), the subjects' physical activity increased significantly after attending the program.[21] In another study, the Active Winners Program was implemented, using social cognitive theory and Pender's HPM in a community-based intervention, among students in grade five who were followed to grade seven. According to the study's findings, neither physical activity, nor psychosocial variables, increased.[22]

The self-efficacy strategies of the current study consisted of increasing perceived self-efficacy, by enhancing the benefits of physical activity, limiting barriers, increasing interpersonal influences, i.e. social support from peers, enjoyment,[23, 24, 25, 26] and outcome expectation for physical activity, through goal setting and records,[27] in order to increase PSE, PA, and PF.

Method

A quasi-experimental research design was used to determine the effects of a physical activity promotion program on PSE, PA and PF among Thai adolescent girls. The population of the study was Thai adolescent girls in grades seven and eight at two public schools in Chonburi province, Thailand. Inclusion criteria, for the sample, were Thai adolescent girls who were not participating in any athletic programs and whose parents had given consent for them to participate. Potential participants were excluded if they had any illnesses or conditions that would limit physical activity. There were 59 participants in the experimental group and 47 in the control group. To protect participants' human rights, the study proposal was approved by the researcher's University Ethical Committee. Parents of the students were given an information sheet explaining the study's purpose, procedure and benefits. Those parents who allowed their daughter(s) to take part in the study indicated their consent by signing a consent form. Potential adolescent participants were informed about the details of the study and what their participation would entail prior to being asked to sign an assent form to participate.

Instruments

1. The manual of the physical activity promotion program

The manual of the physical activity promotion program was developed, by the primary researcher, based on Pender's HPM and self-efficacy theory. The program consisted of the provision of knowledge, discussion of participants' experiences, modeling, increasing social support from peers, promoting enjoyment and motivation, and practice of aerobic dances via video compact disks (VCDs) and a research assistant, with the use of goal setting and self-monitoring.

2. Instruments for data collection

2.1 Personal Data Sheet: A researcher designed questionnaire was used to collect demographic and socioeconomic data of the participants, such as body weight, height and family income.

2.2 The Perceived Self-efficacy to Physical Activity Questionnaire (PSEPAQ): The PSEPAQ was modified from the Perceived Self-efficacy to Physical Activity Scale questionnaire,[18] and was translated into Thai by Deenan.[19] The PSEPAQ was a unidimensional instrument composed of 14 items. Participants were required to rate each of the items with the responses ranging from 'not at all confident' (0%) to 'very confident' (100%). Internal consistency reliability of the PSEPAQ was .89 and .90 when applied with 311 bilingual Thai high school students for the English and Thai versions.[19]

2.3 The Physical Activity Questionnaire (PAQ): The PAQ for Thai children was developed by Kijboonchoo and colleagues.[28] The questionnaire assessed how often participants performed physical activity within the past seven days, number of minutes that participants had sedentary behavior (i.e. watching TV), exercising, playing sports, doing housework and having transportation physical activity. Sedentary behavior and transportation physical activity were calculated to describe the characteristics of the participants who recorded each item of physical activity. Validation of secondary school children questionnaire was 0.260, while the cross-validation was 0.33. Results also showed the intra-class correlation for test-retest repeatability was 0.74.[28]

2.4 Physical fitness test: A battery of simple field tests was used. There were four fitness assessments, including: sit-ups, push-ups, sit-and-reach, and run.[26] Sit-ups and push-ups were recorded in terms of the number of times (repetitions) in 30 seconds. Sit-and-reach was recorded twice and the further reach (cm.) was used. Run was tested by the time it took to run, or walk, 800 meters. Outcomes were recorded in minutes and seconds.

These instruments were tested to ensure their reliability with 30 Thai adolescent girls whose characteristics were similar to those of the participants. Cronbach's alpha coefficient of PSEPAQ and PAQ were 0.86 and 0.74. Inter-rater reliability by two observers of sit-ups was 1.0, while that of push-ups was 0.997, and of test-retest of sit-and-reach was 0.971. Mean score of the run was 4.95 minutes.

Data collection

Simple random assignment was used to assign the schools into the experimental and the control groups, with one school in each group. The students in grade seven and eight, at both schools, also were randomly selected from one classroom in each grade. The selected students were Thai adolescent girls who were willing to be participants in this study. Baseline data were collected from both the experimental and control groups using the questionnaires. After that, all study participants were tested to determine their physical fitness. During the first session, both groups received general information on physical activity and a physical activity booklet for adolescents. The experimental group also received the physical activity promotion program of three sessions per

week with each session lasting 50 minutes, totaling eight weeks (24 sessions). At the eighth and 12th weeks data were collected in both groups.

Data Analysis

Descriptive statistics were employed to describe participants' characteristics. Independent t-test, chi-square test, and Mann-Whitney test were used to examine differences between groups at baseline. The repeated measures analysis of variance (ANOVA) was employed to examine the differences in four PA components and PF (sit-ups, sit-and-reach, and run components), between the experimental and the control groups, during different time points and over time. Moreover, the repeated measures analysis of covariance (ANCOVA) was employed to examine the differences in PSE, PA and push-ups, between the experimental and the control groups, during the different time points and over time.

Results

Seven of the 59 original participants in the experimental group and five of the 47 original participants in the control group withdrew from the study. Also, nine participants in the experimental group and four in the control group were removed before data analysis commenced, due to having results that were outside the range of potential values for the variables. Consequently, there were 43 participants in the experimental group and 38 participants in the control group, with a mean age of 13.12 years (SD = .66) and 13.10 years (SD = .81), respectively. They also had menarche at 10.30 years (SD = 4.26) and 10.53 years (SD = 3.76), respectively. The experimental group had a median of 260 minutes (IQR= 44.45) of inactivity per week, compared to a median of 840 minutes (IQR= 37.09) of weekly inactivity among the control group.

The participants in the total sample were in the seventh (46.9%) and eighth (53.1%) grades. With regard to family income, close to half (48.1%) of the participants had a family income of 5,001-10,000 baht per month. Almost half (49.4%) of their parents earned their living as laborers. Although, 27.2% of all the participants perceived they were overweight, 54.3% perceived their body shape was good. The perceived physical activity behavior of the majority (79.01%), in both groups, was moderate activity. Most (92%) of the participants came to school by car or bus.

The differences in the mean age and age of menarche between the experimental and control group were examined via independent *t*-test, while inactivity was examined using the Mann-Whitney test. In addition, differences in level of grade, family income, parental career, perceived body shape, perceived physical activity and transportation were examined using Chi-Square. No significant differences were found ($p > .05$).

Comparisons of study variables between groups at baseline

The mean scores of dependent variables in the experimental and control groups were compared with the independent *t*-test. Results showed that the values for PSE, PA and push-ups had no significant differences at baseline among the two groups (see **Table 1**). Therefore, a repeated measure ANOVA was used to test the hypotheses of differences in those outcome variables. The PSE, PA and push-up scores at baseline were controlled for covariate testing (ANCOVA).

Table 1 Comparisons of perceived self-efficacy, physical activity and physical fitness variables between the experimental and control groups at baseline

	Experimental group		Control group		t	p-value
	Mean	SD	Mean	SD		
Perceived self-efficacy (PSE)	580.23	140.82	666.05	171.85	-2.469*	.008
Physical activity (PA)	75.42	30.54	86.31	24.41	-1.757*	.046
SQRT Light Activity	9.93	8.62	10.98	6.63	-0.607	.273
SQRT Moderate Activity	20.15	11.13	24.14	10.63	-1.647	.052
SQRT Sports	16.36	9.18	19.63	9.88	-1.542	.063
SQRT Housework	28.95	10.94	31.55	10.03	-1.105	.136
Physical fitness (PF)	47.48	8.70	50.27	11.21	-1.237	.110
Sit-up	20.23	6.50	20.37	8.36	-0.082	.462
Push-up	14.51	2.34	15.74	2.89	-2.105*	.019
Sit-and-reach	7.06	5.65	8.72	6.20	-1.254	.106
Run	5.67	0.82	5.44	0.79	1.264	.105

*Significance at $p < .05$

Comparisons of study variables mean scores between the experimental and control groups at each time point and overtime

Perceived self-efficacy (PSE): Results revealed that the mean scores of PSE for the experimental group were significantly higher than those of the control group at the eighth ($F = 20.896$; $df = 1, 78$; $p < .001$) and 12^{th} week ($F = 5.288$; $df = 1, 78$; $p = .024$) (see **Table 2**). However, the PSE scores of both the experimental and control groups at the 12^{th} week were lower than at baseline (see **Figure 2**). At different time points, the PSE mean scores were significantly different between the eighth and 12^{th} week ($F = 4.649$; $df = 1, 78$; $p = .034$). Pair-wise comparisons showed significant differences between the eighth and 12^{th} week ($p < .001$). An interaction effect between group and time had no significant differences ($F = 2.805$; $df = 1, 78$; $p = .098$).

Table 2 Comparison of perceived self-efficacy and physical activity mean scores between groups across different time points

	Between group difference		Pairwise Comparison p-value	
	F-test	p-value	Baseline	8 weeks
Perceived self-efficacy (PSE)#	13.700*	<.001		
8 weeks	20.896*	<.001	-	-
12 weeks	5.288*	.024	-	<.001
Physical activity (PA)#	3.850	.053		
8 weeks	8.584*	.004	-	-
12 weeks	.636	.428	-	.869
SQRT Light Activity	.287	.593		
8 weeks			.127	-
12 weeks			.367	.012
SQRT Moderate Activity	.163	.687		
8 weeks			.397	-
12 weeks			<.001	<.001
SQRT Sports	.051	.822		
8 weeks			.765	-
12 weeks			.030	.002
SQRT Housework	.151	.699		
8 weeks			.422	-
12 weeks			.012	.029

*Significance at p < .05

By repeated measures ANCOVA

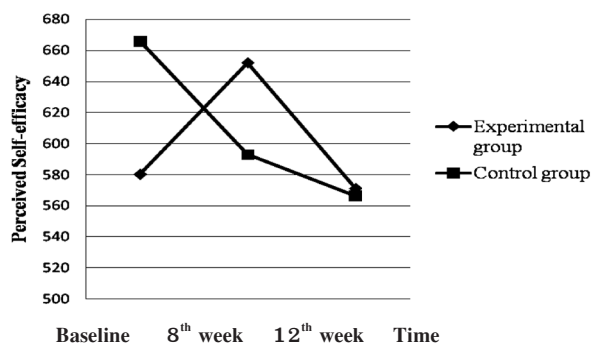

Figure 2 Comparison of the mean perceived self-efficacy scores over time

Physical Activity (PA): Four PA components had positive skewness. Therefore, transformations of component variables by square root (SQRT) were performed before data were analyzed. Results indicated that PA, and the mean scores of all components, of the experimental group, at the eighth and 12th week, were not significantly higher than those of the control group (see **Table 3**). All component mean scores of the experimental group increased at the eighth week, and they were higher than those of the control group, but did not differ significantly, except for light activity. The independent t-test showed a significant difference between the experimental group and the control group (t = 2.496, df = 79, p = .007). Additionally, at the 12th week follow-up, the mean scores of PA among both the experimental and control groups decreased, but revealed no significant differences between the groups (p = .428) (see **Figure 3**). At different time points, there was no significant difference in the mean scores of PA between the eighth and 12th week (F = .027; df = 1, 78; p = .869). However, an interaction between groups and times had a significant effect on the mean scores of PA (F = 6.944; df = 1, 78; p = .010).

Physical fitness (PF): The mean score of PF, among both the experimental and control groups, increased at the eighth and 12th week. The mean scores of PF, and all its components, for the experimental group at the eighth and 12th weeks were not significantly lower than those of the control group (F = .013; df = 1, 79, p = .908) (see **Table 3**). Also, the mean scores of all components (sit-up, push-up, sit-and-reach, and run) of the experimental group at the eighth and 12th week were not significantly higher than those of the control group. (see **Table 3** and **Figure 3**).

Table 3 Comparison of physical fitness mean scores between groups across different time points

	Between group difference		Pairwise Comparison p-value	
	F-test	p-value	Baseline	8 weeks
Physical fitness (PF)	.013	.908		
8 weeks			.913	-
12 weeks			.955	.911
Sit-ups	.013	.911		
8 weeks			<.001	-
12 weeks			<.001	.005
Push-ups #	2.155	.146		
8 weeks	3.375	.070	-	
12 weeks	.939	.335	-	<.001
Sit-and-reach	.075	.785		
8 weeks			.012	-
12 weeks			.045	<.001
Run	.007	.932		
8 weeks			.036	-
12 weeks			<.001	.306

*Significance at p < .05

By repeated measures ANCOVA

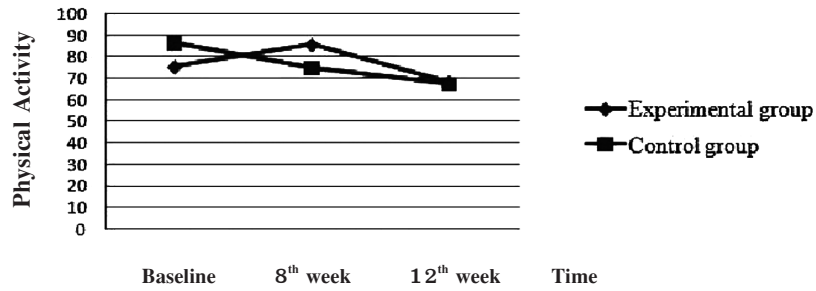

Figure 3 Comparison of the mean physical activity scores over time

Discussion

Perceived self-efficacy (PSE): After completing the 8th week physical activity promotion program, the experimental group's PSE scores were significantly higher than those of the control group. However, four weeks later (12th week) the PSE scores for both the experimental and control groups were lower than at baseline. These findings show that the program increased the PSE scores of the experimental group only at the eighth week, when compared to the control group. This may have been due to the fact that participants in the experimental group developed self-efficacy through interpreting information primarily from the four major sources[17] of the physical activity promotion program. In particular, it is believed that enactive mastery (the power to enact or establish) experience is the most powerful means to change self-efficacy beliefs.[17] Participants in the experimental group shared and discussed benefits of physical activity, considered strategies to overcome barriers, and participated in aerobic dance or exercise as they desired. This is regarded as actual engagement in the activity. The primary researcher introduced a live model of all problems, the barriers of physical activity, and methods of solving problems of the live model. Using a live model that shares similar characteristics with the observers helps them realize their behavior can be changed. Moreover, verbal persuasion, with positive feedback from the primary researcher, research assistant and peers, was given, which may have strengthened the participants' efficacy beliefs.

However, the mean scores, of both the experimental and control group's PSE, at the 12th week were lower than at baseline. Therefore, the intervention program did not increase their PSE scores from baseline at 8 or 12 weeks. The reason for this may be that the participants did not receive information regarding physical activity after the termination of the intervention program. Thus, their self-efficacy belief was not boosted, or enhanced, by the researcher, the research assistant or the social support from their family and peers. Such findings are consistent with the of Lubans and Sylva.[30] In contrast, Kuysuwan's quasi-experimental research[31] found that students, aged ten to 12 years, in his experimental group, had significantly higher perceived self-efficacy and practice in weight control than those of his control group at the fourth and eighth weeks. This may have been because that their parents continued to encourage and support the students after they finished the program. Thus, the results of this study imply that a method to booster the adolescents' PSE needs to be incorporated in the program.

Physical activity (PA): At the eighth week, the experimental group's PA and light activity mean scores were significantly higher than those of the control group. One plausible explanation for such findings is that the present study employed the self-efficacy strategy. This method enhanced perceived self-efficacy and physical activity. Perceived self-efficacy has an important influence on physical activity in adolescents.[18, 20] Those who had increased PSE upon completing the program also had increased PA. PSE is known to play an important role in overcoming barriers to and maintaining physical activity.[32] In addition, discussion of benefits of the activity has been shown to serve as a reinforcement of the positive consequences of physical activity.[17] When individuals realize the benefits, or positive outcomes, of physical activity, they tend to adopt these behaviors.[16] Perception of barriers has been identified as a significant predictor of physical activity.[19] Individuals with fewer perceived barriers are more likely to participate in physical activity.[15]

Self-efficacy strategies, including games, aerobic dance and competition were employed, in this study, to enhance enjoyment. Most participants expressed high satisfaction and enjoyment with this program. Therefore, those who indicated that physical activity was enjoyable were more likely to participate in physical activity.[20, 33]

The participants also had a chance to learn about physical activity and its definition, including daily activities, such as transportation, play, games, exercise, sports and housework. Therefore, they planned to perform these physical activities in their goal setting and recorded what they performed weekly for eight weeks. When they had developed strong perceived self-efficacy and perceived benefits of PA, and came up with strategies to overcome barriers to these activities, they tried to perform the activities.

However, only the light activity mean score, of the experimental group, was significantly different with that of the control group. The reason for this may have been that the participants felt tired when they performed exercise or sports. Therefore, they preferred to perform light activities. Thus, in the eighth week, their scores of PA and light activity were significantly higher than those obtained before they participated in the program, and also were higher than those of the control group. This finding also is consistent with those of prior research, using self-efficacy theory, in combination with another theory, to enhance the PA of adolescents,[23, 26, 34] as well as to increase the PA of girls.[21, 24, 25]

Physical fitness (PF): Neither PF, nor any of its four components, were significantly different between the eighth and 12th weeks among either the experimental or the control group. Although they did not significantly differ, the PF scores, as well as the scores of its four components, for both groups, at the eighth and 12th week, were better than those at baseline. This may be because the activity promotion program did not focus specifically on flexibility, muscle strength or cardio-respiratory endurance, but rather on activities to encourage and enhance aerobic dance skills and games. No vigorous training was involved in the program, aerobic dance lasted ten to 25 minutes each session and not all sessions included aerobic dance. Participants in the experimental group performed, during some sessions, whatever physical activity they desired, i.e. volleyball, basketball or trakraw.

Prior studies have shown that only high intensity (over 6 metabolic equivalents) improves physical fitness.[35] This may be due to the fact that genetic and maturational status tends to affect one's physical fitness, and the relationship between physical fitness and physical activity has been shown to be generally low among children[36] and adolescents.[37]

The relationship between physical activity and physical fitness among children and early adolescents is less clear. However, moderate to vigorous physical activity has been found to be positively related to physical fitness among adolescents, independent of age.[37] Some of the participants, in this study, also stated they disliked the physical fitness test and were tired after completing it. These findings yield full support to the findings of Robbins and colleagues,[38] and Kijboonchoo and colleagues,[39] as well as partial support to the findings of Amitrapai.[40]

Limitations

Limitations of this study include the lack of generalization to adolescent girls who are studying at both public and private school in Thailand. This program may have limited application for students who were more interested in their studies than in doing physical activities. Also, the study was conducted for only 12 weeks, due to the students needing to prepare to take mid-term examinations during the tenth to 12th week.

Conclusions

Results of this study indicate that a physical activity promotion program had an effect on the PSE, PA and light activity of Thai adolescent girls, in grades 7 and 8, after eight weeks of participation in the program. The experimental group's PSE, PA and light activity component scores were significantly higher than those of the control group at the eighth week. While such a program may enhance the PSE and PA of Thai adolescent girls, one must recognize that the program had only short term effects. Thus, while it may be beneficial for nursing education programs to teach nursing students to promote, encourage and support physical activity among adolescent girls, and for nurses to be role model in promoting physical activity, a physical activity promotion program, that will sustain adolescents' PSE, PA and PF, needs to be developed and implemented throughout Thailand. A method needs to be built in the program that will provide a boost to those participating in such a program, so as to enhance goal setting of doing physical activity weekly to maintain one's physical health and physical fitness. In addition, a longitudinal study, lasting one to two years, with repeated follow-ups, needs to be carried out to further evaluate the effectiveness of the physical activity promotion program.

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ผลของโปรแกรมส่งเสริมการออกกำลังกายต่อการรับรู้ความสามารถในการออกกำลังกาย การออกกำลังกาย และสมรรถภาพทางกายในหญิงไทยวัยรุ่น

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บทคัดย่อ: การวิจัยครั้งนี้เป็นการศึกษาแบบกึ่งทดลอง มีวัตถุประสงค์เพื่อศึกษาผลของโปรแกรมส่งเสริมการออกกำลังกายต่อการรับรู้ความสามารถในการออกกำลังกาย การออกกำลังกาย และสมรรถภาพทางกายของหญิงวัยรุ่น กลุ่มตัวอย่างเป็นหญิงวัยรุ่นชั้นมัธยมศึกษาที่ 1 และ 2 จากโรงเรียนรัฐบาล 2 แห่งในจังหวัดชลบุรีกลุ่มทดลองได้รับการสุ่มอย่างง่ายจากหนึ่งโรงเรียน ที่เหลือเป็นกลุ่มควบคุม ทั้งสองกลุ่มได้รับความรู้ทั่วไปเกี่ยวกับการเคลื่อนไหวออกแรง และออกกำลังกาย แต่กลุ่มทดลอง ได้รับโปรแกรมส่งเสริมการออกกำลังกายเพิ่ม ซึ่งใช้กรอบแนวคิดการส่งเสริมสุขภาพของเพนเดอร์ และทฤษฎีการรับรู้ความสามารถของแบนดูร่า เก็บรวบรวมข้อมูลก่อนได้รับโปรแกรม สัปดาห์ที่ 8 หลังสิ้นสุดโปรแกรม และสัปดาห์ที่ 12

ผลการศึกษาพบว่ากลุ่มทดลองมีระดับการรับรู้ความสามารถในการออกกำลังกาย การออกกำลังกาย และกิจกรรมการเล่นสูงกว่ากลุ่มควบคุมในสัปดาห์ที่ 8 แต่พฤติกรรมเหล่านี้ไม่สามารถคงอยู่ถึงสัปดาห์ที่ 12 นอกจากนั้นสมรรถภาพทางกายของหญิงวัยรุ่น ทั้งสองกลุ่มไม่แตกต่างกันทั้งสัปดาห์ที่ 8 และ 12

ผลการศึกษานี้เสนอแนะถึงประสิทธิภาพของโปรแกรมส่งเสริมการออกกำลังกายในหญิงวัยรุ่นมีผลต่อการเพิ่มการรับรู้ความสามารถในการออกกำลังกายและการออกกำลังกายของหญิงวัยรุ่นในสัปดาห์ที่ 8 หลังสิ้นสุดโปรแกรม ดังนั้นจึงควรนำโปรแกรมนี้ลงสู่การปฏิบัติเพื่อส่งเสริมการรับรู้ความสามารถในการออกกำลังกาย และการออกกำลังกายของหญิงวัยรุ่นในโรงเรียนต่อไป เพราะทำให้หญิงวัยรุ่นสนใจและเข้าร่วมกิจกรรมการออกกำลังกาย แต่ควรพัฒนาโปรแกรมเพื่อติดตามระดับการรับรู้ความสามารถของตนเองในการออกกำลังกาย และการออกกำลังกายให้ดำรงอยู่ต่อไป รวมทั้งการเพิ่มสมรรถภาพทางกาย

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คำสำคัญ: หญิงวัยรุ่น, การรับรู้ความสามารถตนเอง, การเคลื่อนไหวออกแรง/ออกกำลังกาย, สมรรถภาพทางกาย

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