The Influence Of Friendships and Friendship-Making Ability in Physical Activity Participation In Chiang Mai, Thailand High School Students

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Abstract

English:

Unfortunately, the influence of friendships is a neglected area of investigation in studies of youth physical activity. This study investigated the degree to which three friendship variables (ability to make friends, level of involvement with friends, perceived friends' involvement in exercise/physical activity) was associated with physical activity participation in a sample of 2,519 secondary level students from Chiang Mai Province, Thailand. In general, results showed that overall participation in physical activity was lowest among adolescents who said that making new friends was difficult, who were less involved with friends, and who reported that no or only some of their friends participated in exercise/physical activity. Conversely, adolescents who said that making new friends was easy, who were more involved with friends, and who reported that most of all of their friends were more likely to engage in physical activity themselves. Although physical activity participation among girls was lower than boys, the association between the three friendship variables and participation in physical activity was found for both boys and girls. The results of this study suggest that school health educators should give serious consideration to including friendship skill-development strategies in the mix of strategies currently used to improve participation in physical activity.

Key words: **Friendship, Social Influences, Physical Activity Level, Social Skills, Health Education**

Introduction

The extent to which youth engage in physical activity is of great interest to health and education professionals. Physical activity is an integral part of healthy lifestyle and has been associated with many health benefits,[1, 2] including reduced risk of overweight and obesity.[3, 4] The health benefits of physical activity appear to not only include physical health but also emotional well-being. For example, children who are more physically active have higher levels of self-esteem and healthy body image.[5, 6] In addition, physical activity may have benefits on the academic performance of youth. Physical activity has been shown to increase concentration levels in students[7] and to have a positive effect upon children's academic achievement, academic readiness, and perceptual skills.[8] There is concern that many young people do not get enough physical activity and are missing out on the associated benefits.[9] The levels of physical activity begin to decline before high school and continue to drop through the high school grade levels.[10] The determinants of physical activity (and inactivity) among young people have been studied to gain insight into factors that explain participation in physical activity. Research shows that determinants of levels of youth physical activity and sports participation are complex and include a myriad of factors.[11] Among the identified determinants are: physical environment factors such as opportunities and access to physical activities; demographic factors such as sex, age, and ethnicity; physical traits such as fitness level, body composition, and motor skill development; children's beliefs and expectations; personality characteristics such as achievement, motivation, self-confidence, independence, and one's

perceived self-efficacy to be active; enjoyment of physical activity; and parental and peer influences.[11, 12] Significant others and social influences have been identified as important influences in the major theoretical models guiding research on the determinants of physical activity in youth.[13] Bandura's Social Cognitive Theory (SCT) has been the predominant model in this research and in this model social environmental factors play important roles in influencing the activity actions of individuals.[13] Other prominent models such as the Youth Physical Activity Promotion (YPAP)[14] model and Susan Harter's [15] mediational model of global self-worth customized for the physical activity domain recognize the critical importance of social influences in explaining physical activity behavior in youth. The research literature suggests that parents, teachers, coaches, and peers are among significant others who shape youth physical activity experiences. Smith[16] points out that the overwhelming bulk of research on social influence in youth physical activity and sport has focused upon the role of adults (parents, teachers, coachers) while research on peers has paled in comparison. According to Weiss,[17] one's peer group and friends (classmates, teammates, neighborhood friends) are powerful socializing agents who contribute beyond the influence of adults to children's psychosocial development in school and also to physical activity involvement. Both peer acceptance and close friendships are salient aspects of peer relationships and interactions. Peer acceptance refers to one's degree of social acceptance (popularity) or status within a peer group, while friendship refers to specific aspects of a dyadic peer relationship. The ability to make friends is a key variable impacting peer acceptance and friendship development.

The current study focuses on the relationship between selected friendship variables and physical activity participation among a sample of high school students in Chiang Mai, Thailand. Thus, the specific purpose of this study was to investigate the degree to which three friendship variables (ability to make friends, level of involvement with friends, and perceived friends' involvement in exercise/physical activity) was associated with participation in physical activity participation. . It is hypothesized that youth who have difficulty making new friends and lower levels of involvement with friends will be less likely to participate in physical activity, while those who are at ease in making friends and have greater involvement with friends will participate at higher levels. It is also hypothesized that youth who have no or only some friends who participate in physical activity and exercise participate at lower levels of physical activity themselves than youth who report that most of their friends engage in physical activity.

METHOD

Ten co-educational high schools in Chiang Mai (Thailand) Province, representing a mix of rural and urban and public and private, were contacted about participation in the study. Administrative officials within these schools agreed to have teachers in selected English or Ethics classes administer a survey instrument to their students. Classes were selected by administrative officials on the basis of their judgment of which classes were most representative of their student body and specific logistical concerns relative to the administration of the survey.

This resulted in a sample size of 2,519 students with a mean age of 16.2 (SD=1.33). Of the students in the sample, 91.2% were in grades 10-12 (656 tenth graders, 738 eleventh graders, and 900 twelfth graders) and 8.8% were in grades 7-9 (40 seventh graders, 144 eight graders, and 38 ninth graders). The sample consisted of 830 boys and 1662 girls (27 students did not report gender). The higher number of girls in the sample reflects the fact that considerably more girls are enrolled in co-educational high schools in Chiang Mai Province. Thus, the gender distribution reflects current enrollment trends.

The survey instrument administered during July 2004 in these schools included items concerned with friends and physical activity. These items were largely taken from the World Health Organization's Health Behaviour of School-aged Children (HBSC) survey[18] and the Centers for Disease Control Youth Risk Behavior Survey.[19] Survey items addressing friendship variables were based on both theoretical hypotheses related to the social context of adolescents and measurements that had been validated in other studies or previous WHO-HBSC surveys.[18] This included the following item measuring friendship-making ability (the ease or difficulty in making new friends) "Is it easy or difficult for you to make new friends?" with the following response options: very easy, easy, difficult, and very difficult. Three other items measuring involvement with friends were summed to form an Involvement with Friends Index: number of close friends, how often do you spend time with friends right after school, and how many evenings per week do you usually spend out with friends. An additional friendship variable was developed by the researchers to assess perceived friends' involvement in exercise/physical activity. This item asked respondents to identify how many of their friends

exercise or participate in physical activity on most days. Respondents could mark none of them, some of them, half of them, most of them, or all of them.

Items from CDC's Youth Risk Behavior Survey[19] were primarily used as the physical activity measures in this study. Vigorous physical activity was assessed by asking respondents "On how many of the past 7 days did you exercise or participate in physical activity for at least 20 minutes that made you sweat and breathe hard, such as basketball, soccer, running, swimming laps, fast bicycling, fast dancing, or similar aerobic activities?" Muscle-strengthening exercise was measured by the item "On how many of the past 7 days did you do exercises to strengthen or tone your muscles, such as push-ups, sit-ups, or weight lifting?" Sports team participation was assessed by asking respondents to indicate the number of sports teams they played on in the past 12 months. An additional item (activity outside of school) developed by the researchers asked respondents to report the amount of time outside of school during an average school day that they play outside or are involved in physical activity. The four physical activity measures were also summed to form a physical activity summary variable (Physical Activity Index).

The survey instrument included items assessing age, grade level, mother's highest level of education, father's highest level of education, urban or rural residence, subjective family affluence (how well-off respondents perceived their family to be on a 5-point scale), times vacationing with family in the past year, and number of cars owned by one's family. Times vacationing with family in the past year and family car ownership were used as proxy socio-economic indicators. These variables were used as control variables in data analysis. Directions on the survey instrument alerted students to the fact that the survey was anonymous and instructed them not to write their name anywhere on the survey. Students were also informed that their participation was voluntary and that the decision to participate would not affect their grade in the class. There were no reports of students declining to participate.

The survey instrument was translated from English to Thai by native Thai-speaking translators. Thai-speakers back-translated survey items to make sure that the Thai translation accurately reflected the meaning and intent of each item in the English version of the survey instrument. The Thai version of the survey instrument is available from the contributing author.

The friendship variables served as categorical independent variables in the study. Categories for friendship-making ability (ease or difficulty in making friends) were very easy, easy, difficult, and very difficult. The three categorical levels for involvement in friends were based on scores on the Involvement with Friends Index and included low (scoring in the lowest quartile range), middle (scoring in the middle two quartile ranges), and high (scoring in the highest quartile range). The three categorical levels of perceived friends' involvement in exercise/physical activity included none or some of them, half of them, and most or all of them. Dependent measures included the five physical activity variables described above: vigorous physical activity, muscle-strengthening exercise, sports team participation, activity outside of school, and the Physical Activity Index.

Analysis of covariance (ANCOVA) was used to test whether levels on the independent variables (friendship variables) differed with respect to the dependent variables (physical activity variables). The following variables were used as covariates and statistically controlled for in ANCOVA tests: grade, age, mother's highest level of education, father's highest level of education, urban or rural residence, subjective family affluence, times vacationing with family in the past year, and family car ownership. Least squares means were calculated to determine how levels on the independent variables differed from each other. These tests were calculated separately for boys and girls using SAS version 8.2. ANCOVA testing was also conducted to determine whether boys differed from girls on dependent measures.

RESULTS

Most of the students in this sample report that making new friends is either easy (59.2%) of boys, 61.3% of girls) or very easy (25.5% of boys, 21.6% of girls). However, 13.5% of boys and 15.2% of girls reported that making new friends was difficult and 1.8% of boys and 1.8% of girls responded that making new friends was very difficult.

On the variable perceived friends' involvement in exercise/physical activity, the majority of students reported that none or some of their friends exercised or participated in physical activity on most days (55.4% of boys, 76.53% of girls). Smaller percentages of students reported that half of their friends (34.7% of boys, 19.7% of girls) and most or all of their friends (9.9% of boys, 3.8% of girls)

exercised or participated in physical activity on most days.

Table 1 presents adjusted means for the dependent variables (physical activity variables) for boys and girls. Boys reported higher participation than girls on vigorous physical activity [F (1, 2337) = 329.10, $p < .0001$], muscle-strengthening exercise [F (1, 2335) = 160.31, $p < .0001$], sports participation [F (1, 2321) = 137.62, $p < .0001$], activity outside of school [F (1, 2328) = 147.11, $p < .0001$], the physical activity index [F (1, 2300) = 414.29, $p < .0001$]. Boys also scored significantly higher on the involvement with friends index [F (1, 2307) = 25.01, $p < .0001$].

ANCOVA tests for main group effects for self-perceived friendship making ability (very easy, easy, difficult, or very difficult) were significant for both boys and girls on vigorous physical activity [F (3, 758) = 4.72, $p < .01$ for boys and F (3, 1558) = 4.99, $p < .01$ for girls], muscle-strengthening exercise [F (3, 760) = 4.05, $p < .01$ for boys and F (3, 1555) = 5.80, $p < .0001$ for girls], activity outside of school [F (3, 758) = 5.79, $p < .001$ for boys and F (3, 1549) =11.77, $p < .0001$ for girls], and the physical activity index [F (3, 750) = 6.87, $p < .0001$ for boys and F (3, 1530) = 13.93, $p < .0001$ for girls]. The main group effect for self-perceived friendship making ability on sports team participation was significant for girls [F (3, 1543) = 4.41, $p < .01$], but not for boys [F (3, 757) = 1.04, $p = .37$]. Table 3 displays means adjusted for several control variables for each of these groups by gender.

ANCOVA tests for main group effects for involvement with friends (low, middle, high) were significant for both boys and girls on vigorous physical activity [F (2, 762) = 11.39, $p < .0001$ for boys and F (2, 1576) = 7.09, $p < .001$ for girls], muscle-strengthening exercise [F (2, 761) = 12.77, $p < .0001$ for boys and F (2, 1573) = 3.23, $p < .05$ for girls], activity outside of school [F (2, 762) = 21.12, $p < .0001$ for boys and F (2, 1567) =16.73, $p < .0001$ for girls], and the physical activity index [F (2, 753) = 18.81, $p < .0001$ for boys and F (2, 1548) = 14.96, $p < .0001$ for girls]. The main group effect for involvement with friends on sports team participation was significant for girls [F (2, 1561) = 4.36, $p < .05$], but not for boys [F (2, 763) = 1.93, $p = .14$]. Table 3 displays adjusted means for each of these groups by gender.

ANCOVA tests for main group effects for perceived friends' involvement in exercise/physical activity (none or some of them, half of them, most or all of them) were significant for both boys and girls on vigorous physical activity [F (2, 762) = 40.30, $p < .0001$ for boys and F (2, 1576) = 54.39, $p < .0001$ for girls], muscle-strengthening exercise [F (2, 761) = 12.77, $p < .0001$ for boys and F (2, 1573) = 3.23, $p < .05$ for girls], sports team participation [F (2, 761) = 33.53, $p < .0001$ for boys and F (2, 1561) = 19.41, $p < .0001$ for girls], activity outside of school [F (2, 762) = 24.01, $p < .0001$ for boys and F (2, 1567) =8.37, $p < .001$ for girls], and the physical activity index [F (2, 753) = 56.50, $p < .0001$ for boys and F (2, 1548) = 45.03, $p < .0001$ for girls]. Table 4 displays adjusted means for each of these groups.

Table 1

Adjusted Mean Scores on Physical Activity Variables and Involvement with Friends Index by Gender

	Boys *M* (*SD*)	Girls *M* (*SD*)
Vigorous Physical Activity (Days engaging in vigorous physical activity in the past week)	3.80 (2.07)	2.32 (1.74)
Muscle-Strengthening Exercise (Days engaging in muscle strengthening or toning exercises in the past week)	2.60 (2.21)	1.49 (1.80)
Sports Team Participation (Number of sports teams played on in the past 12 months)	1.99 (1.80)	1.18 (1.42)
Activity Outside of School (Hours playing outside or involved in physical activity during an average school day outside of school)	2.56 (1.60)	1.76 (1.43)
Physical Activity Index (The sum of the physical activity variables)	10.99 (5.47)	6.75 (4.25)
Involvement with Friends Index (The sum of three items	9.11 (2.51)	8.58 (2.26)

assessing involvement with friends)

Note. Means appearing in this table are adjusted for grade, age, mother's highest level of education, father's highest level of education, urban or rural residence, subjective family affluence, times vacationing with family in the past year, and family car ownership. ANCOVA tests showed that boys differed significantly ($p < .0001$) from girls on all of the variables in this table.

Table 2

Adjusted Mean Scores on Physical Activity Variables by Ease or Difficulty Making New Friends and by Gender

	Boys *M* (*SD*)	Girls *M* (*SD*)
Vigorous Physical Activity		
Very Easy	4.19[a] (2.05)	2.64[a] (1.85)
Easy	3.76[b] (2.05)	2.24[b] (1.63)
Difficult	3.50[b,c] (2.07)	2.22[b] (1.77)
Very Difficult	2.62[c] (2.22)	2.27[a,b] (2.08)
Muscle-Strengthening Exercise		
Very Easy	2.94[a] (2.44)	1.81[a] (2.01)
Easy	2.56[b] (2.14)	1.43[b] (1.73)
Difficult	2.31[b,c] (2.12)	1.26[b] (1.67)
Very Difficult	1.31[c] (1.23)	2.00[a,b] (2.07)
Sports Team Participation		
Very Easy	1.98[a] (1.91)	1.42[a] (1.61)
Easy	2.02[a] (1.76)	1.17[b] (1.34)
Difficult	1.78[a] (1.72)	1.00[b] (1.36)
Very Difficult	1.38[a] (1.99)	1.16[a,b] (1.52)
Activity Outside of School		
Very Easy	2.92[a] (1.74)	2.16[a] (1.56)
Easy	2.47[b] (1.50)	1.70[b] (1.35)
Difficult	2.27[b] (1.66)	1.50[b] (1.38)
Very Difficult	1.92[b] (1.43)	1.69[a,b] (1.85)
Physical Activity Index		
Very Easy	12.10[a] (6.05)	8.03[a] (4.59)
Easy	10.82[b] (5.06))	6.55[b] (3.99)
Difficult	9.87[b,c] (5.58)	5.99[b] (4.34)
Very Difficult	7.24[c] (5.03)	7.12[a,b] (5.62)

Note. Means in the same column for each variable with the same superscript letter are not significantly different. Means appearing in this table are adjusted for grade, age, mother's highest level of education, father's highest level of education, urban or rural residence, subjective family affluence, times vacationing with family in the past year, and family car ownership.

Table 3

Adjusted Mean Scores on Physical Activity Variables by Level of Involvement with Friends Index and by Gender

	Boys *M* (*SD*)	Girls *M* (*SD*)
Vigorous Physical Activity		
Low	3.28[a] (2.11)	2.23[a] (1.74)
Middle	3.87[b] (2.03)	2.26[a] (1.67)
High	4.26[c] (2.04)	2.68[b] (1.93)
Muscle Strengthening Exercise		
Low	2.42[a] (2.15)	1.35[a] (1.73)
Middle	2.56[a] (2.29)	1.51[a,b] (1.80)
High	2.84[a] (2.14)	1.70[b] (1.91)
Sports Team Participation		
Low	1.54[a] (1.62)	1.10[a] (1.47)
Middle	1.95[b] (1.70)	1.18[a] (1.35)
High	2.43[c] (2.04)	1.41[b] (1.49)
Activity Outside of School		
Low	2.02[a] (1.44)	1.52[a] (1.34)
Middle	2.57[b] (1.53)	1.80[b] (1.41)
High	3.04[c] (1.72)	2.14[c] (1.57)
Physical Activity Index		
Low	9.25[a] (5.26)	6.17[a] (4.17)
Middle	11.00[b] (5.31)	6.77[b] (4.15)
High	12.61[c] (5.59)	7.93[c] (4.51)

Note. Means in the same column for each variable with the same superscript letter are not significantly different. Means appearing in this table are adjusted for grade, age, mother's highest level of education, father's highest level of education, urban or rural residence, subjective family affluence, times vacationing with family in the past year, and family car ownership.

Table 4
Adjusted Mean Scores on Physical Activity Variables by Perceived Friends' Involvement in Exercise/Physical Activity and by Gender

	Boys *M* (*SD*)	Girls *M* (*SD*)
Vigorous Physical Activity		
None or Some	3.23[a] (2.03)	2.11[a] (1.63)
Half	4.51[b] (1.80)	2.85[b] (1.80)
Most or All	4.60[b] (1.93)	4.01[c] (1.75)
Muscle-Strengthening Exercise		
None or Some	2.21[a] (2.05)	1.37[a] (1.71)
Half	3.01[b] (2.29)	1.92[b] (2.03)
Most or All	3.24[b] (2.45)	1.81[a,b] (1.75)
Sports Team Participation		
None or Some	1.53[a] (1.55)	1.09[a] (1.34)
Half	2.35[b] (1.85)	1.44[b] (1.47)
Most or All	2.99[c] (2.12)	2.09[c] (2.02)
Activity Outside of School		
None or Some	2.19[a] (1.51)	1.69[a] (1.40)
Half	2.94[b] (1.59)	1.98[b] (1.46)
Most or All	3.09[b] (1.63)	2.25[b] (1.53)
Physical Activity Index		
None or Some	9.18[a] (5.06)	6.27[a] (4.02)
Half	12.82[b] (5.06)	8.21[b] (4.47)
Most or All	13.95[b] (5.48)	10.17[c] (3.81)

Note. Means in the same column for each variable with the same superscript letter are not significantly different. Means appearing in this table are adjusted for grade, age, mother's highest level of education, father's highest level of education, urban or rural residence, subjective family affluence, times vacationing with family in the past year, and family car ownership.

DISCUSSION

This study investigated aspects of friendships and physical activity in a sample of Thai high school students. Results show that a high proportion of students (over 80%) rated themselves high on self-perceived friendship making ability by saying that making new friends is easy or very easy. A much smaller percent reported that making friends was difficult (13.5% of boys, 15.2% of girls) or very difficult (1.8% of boys, 1.8% of girls). Friendships provide many advantages or benefits in the lives of young people and meet many needs. Friendships provide a supportive context in addition to relationships with adults (parents, teachers, and others) in which self-exploration, emotional growth, and moral development can occur.[20] Through interactions with peers, children learn valuable social skills such as making new friendships, problem-solving, and managing competition and conflict.

This study brings attention to another possible advantage of being skilled in making friends and of having the association of friends during adolescence—higher likelihood of participation in physical activity and sports. In general, this study showed that overall participation in physical activity (vigorous physical activity, muscle-strengthening exercise, sports team participation, activity outside of school, and physical activity index) was lowest among adolescents who said that making new friends was very difficult, while the highest involvement was among those who reported that making friends was very easy. There was also an association between having friends and spending time with friends and participation in physical activity. Students who scored in the high range on the involvement with friends index showed the highest participation in physical activity, while those scoring in the low range showed the lowest participation. In addition, students who characterizing themselves as having most or all of their friends exercising or participating in physical activity on most days showed the highest levels of physical activity participation. Conversely, those with no or some friends engaging in exercise/physical activity showed the lowest levels of physical activity participation. These findings were generally true for both boys and girls, with the exception that friendship making ability groups and physical activity index category groups did not differ on sports team participation.

The results of the current study suggest that social skills could be an important factor in explaining the relationship between friendship variables and involvement in physical activity/sports. Research by developmental psychologists generally shows that popular children are more socially skilled than those who are less socially skilled.[21] Lack of social skills has already been identified as a risk factor leading to the following negative outcomes: interpersonal relationship difficulties with peers and adults; peer rejection; increased risk of violent behavior and aggression; increased criminality; depression and anxiety; and poor academic performance.[22] In addition to social skills, lack of physical skills may also play a role in explaining the relationship between friendship variables and involvement in physical activity. Further research is needed to identify specific social skills and physical skills

among youth who find it difficult to make friends and have low levels of involvement in physical activity/sports.

Given the cross-sectional nature of this study and the challenge of gaining insight into such complex human behaviors as friendships and physical activity behavior, readers need to exercise caution in interpreting the results. In looking at the relationship between friendship variables and physical activity involvement, it is important not to assign directionality to the relationship. A case could just as easily be made for inferring that the friendship variables influence participation as for the reverse, that participation influences friendship skills and outcomes. Thus, it may be that participation in physical activity and sports fosters the acquisition and development of skills that improve the likelihood of making new friends and developing close friendships. Participation in physical activity and sports provides additional opportunities for young people to develop friendships. Another possibility is that both friendship and physical activity/sports involvement are related, not because they influence each other, but because they are both association with other unaccounted for causal variables. For example, Weiss identifies that factors such feelings such as self-worth, positive affect for physical activity, and motivation to participate in physical activity may be related to dimensions of friendship and also to levels of physical activity/sports participation. The fact that both of these variables are related to certain third variables could then account for such a relationship.[17]

While this study suffers from the inherent limitations of cross-sectional research, it is important to point out that the statistical analyses used in the study (ANCOVA) to look for group differences controlled for the effects of several potential confounding variables. The potential confounding variables that were statistically controlled for included grade, age, mother's highest level of education, father's highest level of education, urban or rural residence, perceived socio-economic status, and two proxy measures of socio-economic status.

IMPLICATIONS FOR HEALTH EDUCATION

Health education is an important element in the strategy to increase the physical activity levels of youth.[23] The Center for Disease Control and Prevention's *Guidelines for School and Community Programs to Promote Lifelong Physical Activity among Young People* calls for schools to implement health education curricula and instruction that help students develop the knowledge, attitudes, behavioral skills, and confidence needed to adopt and maintain physically active lifestyles.[23] In addition to cognitive learning, health educators are encouraged to help children and adolescents develop behavioral skills such as self-assessment, self-monitoring, decision-making, goal-setting, identifying and managing barriers, self-regulation, reinforcement, communication, and advocacy that may help students adopt and maintain a healthy lifestyle that includes regular physical activity.

Weiss advocates that a physical activity intervention for early and middle adolescents would be remiss if peer relationships and interactions were not targeted as key components.[17] The current study showing a connection between friendship variables and involvement in physical activity and sports in youth, suggests that a possible addition to the behavioral skills mentioned in the CDC guidelines. Social skills which increase the capacity to of young people to develop friendships may be an additional skill area worthy of consideration for inclusion in school health education interventions designed to increase physical activity levels. Given the findings of this study, this appears to be a fertile area of future research. More research is needed to determine the precise role of friendship as a potential influence of physical activity and sports involvement. Additionally health educators need to determine if difficulty in making new friends is a trait or condition that can be modified and if so, can health education interventions demonstrate the capacity to improve students' skills to make friends? In the meantime, health educators should give serious consideration to including friendship skill-development strategies in the mix of strategies currently used to improve participation in physical activity. To maximize the likelihood of successfully teaching a skill in a health education intervention, Lavin stresses the use of active learning strategies that give students opportunities to practice, master, and develop confidence in a skill.[24] Fostering confidence in students' ability to learn and perform a skill is often a challenging task and may be particularly true for students who lack friendship skills. This is reinforced by the current study which showed that children who have difficulty making friends also reported lower levels of confidence in themselves and a tendency to feel helpless. Additionally, feelings of loneliness and a lack of experience in close friendships which are common among children having difficulty making friends and with few or no close friends, may compound efforts to teach friendship skills to students requiring such

skills in the context of a school health education program. However, health education and physical activity promotion efforts which emphasize building social networks among young people have the added potential benefit of not only promoting physical health but also the potential of increasing self-esteem and self-confidence through friendships.[25]

Future research efforts are needed to determine whether the associations observed in this study are also true in other adolescent populations. It is possible that the friendship variables investigated in this study may relate to physical activity in different ways in other adolescent populations and that cultural differences concerning the value of friendships may mediate these associations.

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