

# High School Sport Participation: Does It Have an Impact on the Physical Activity Self-efficacy of Adolescent Males?

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**Abstract** Physical inactivity continues to be a major concern in the lives of youth. It is possible that participation in high school sport might contribute to enhancing self-efficacy which, in turn, would positively influence physical activity levels. In this study, the association between physical activity participation and self-efficacy for physical activity was measured in adolescent males from a private high school in Canada. Also, the possibility that self-efficacy levels differed between school sport participants and non-school sport participants was explored. The results of the Spearman's  $\rho$  test showed a moderate positive, and significant correlation between the Physical Activity Questionnaire for Adolescents (PAQ-A) and the Self-Efficacy for Daily Physical Activity Questionnaire (SEPAQ) scores,  $r(113) = .571$ ,  $p < .01$ . The multiple regression analysis showed that PAQ-A score significantly predicted SEPAQ scores,  $b = 10.95$ ,  $t(113) = 6.63$ ,  $p < .001$ . However, school sport participation did not significantly predict SEPAQ scores,  $b = 0.99$ ,  $t(113) = 0.97$ ,  $p > .05$ . Interestingly, PAQ-A scores and school sport participation explained a significant proportion of variance in SEPAQ scores,  $R^2 = 0.33$ ,  $F(2, 112) = 27.11$ ,  $p < .001$ . Results from this study support previous research regarding the positive connection between physical activity and self-efficacy. These results also suggest that small increases in physical activity, whether through school sport or physical education, may influence not only physical health but psychological health for youth. Implications for male participation in physical activity are discussed along with ideas for increasing self-efficacy within the physical education context.

**Keywords** High School Sport, Youth, Physical Activity, Self-efficacy

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## 1. Introduction

Research has shown that a physically active lifestyle leads to good health, and that physically active people live longer

and healthier lives [1] [2]. There is considerable evidence that inactivity leads to a multitude of health problems, and is responsible for many premature deaths worldwide [3] [4]. Despite the commonly known negative factors associated with inactivity, many people are still inactive, proven by the fact that 85% of Canadian adults currently do not meet the recommended amount of daily physical activity [5] [6]. In addition to the inactivity of adults, researchers have found that 93% of children and youth are not meeting the recommended daily levels of physical activity [5].

The Canadian Society of Exercise Physiology (CSEP) have recommended that children (aged 5-11 years) and youth (aged 12-17 years) accumulate 60 minutes of moderate to vigorous physical activity each day [7]. Since the introduction of the Canadian physical activity guidelines, there are considerations that various provinces in Canada have considered to improve health and physical activity. For example, one Canadian province has developed a physical education/health curriculum for high school students [8]. Another avenue available for high school adolescents to be active is participating in school sport. School sport is a way for students to remain active and allows them to reap the positive effects of physical activity including physical, emotional, individual, social, intellectual, and financial gains [9]. Further, participation in school sport has also been found to serve a protective role in later life (i.e., early adulthood) against depression symptoms and perceived stress and also enhances self-rated mental health [10]. This context of physical activity (i.e., sport participation) is therefore an important element to consider in the adolescent experience.

Physical activity, including sport experiences, is associated with a myriad of psychosocial benefits including combating depression and anxiety and improving positive affect, self-esteem, and motivation [9] [11] [12] [13]. One specific psychosocial variable that needs more research as it relates to physical activity is self-efficacy. Self-efficacy is the main component of Bandura's Social Cognitive Theory, which proposes that human behaviors are learned through social interaction. Albert Bandura's self-efficacy theory [14] refers to the beliefs in one's capabilities to execute actions. As a person's self-efficacy increases, the desired behavior

(i.e., increases in physical activity) increases as well [15]. Further, as the positive responses to the behavior increase, self-efficacy rises. Self-efficacy is not about one's skills; it is about a person's beliefs that he or she was able to produce a specific outcome. Bandura states that "people's level of motivation, affective states, and actions are based more on what they believe than what is objectively true. For this reason, how people behave can often be better predicted by the beliefs they hold about their capabilities, than what they are actually capable of accomplishing" [14]. In many situations, self-efficacy helps convert knowledge and skills into action [14].

A number of studies have shown that self-efficacy can significantly predict positive feelings during exercise. McAuley and Courneya [16] found that adults with high self-efficacy experienced more positive feelings during exercise than those with lower exercise self-efficacy. These results were supported by two studies, which found that efficacious female college students experienced more positive feelings during exercise than less efficacious women [17] [18]. These studies are consistent with Bandura's statement [14] that high self-efficacy for exercise results in more positive experiences. There is also research that supports the notion that self-efficacy can predict exercise or physical activity involvement, and adherence. In a review of 300 studies regarding determinants of adult physical activity, Trost, Owen, Bauman, Sallis, and Brown [19] found that self-efficacy was the most consistent link to active behavior. Van Der Horst, Paw, Twisk, & Van Mechelen [20], in a review of several studies, found a consistent link between physical activity participation and self-efficacy for youth. More research is needed to examine more factors surrounding the development of self-efficacy and specifically the contexts in which it is developed.

## 2. Rationale and Purpose

Schools serve as an important context to consider when examining active behavior for youth and links to self-efficacy. Some students engage in physical activity through school sport (i.e., sport-participants) while others choose not to be involved in school sport (i.e., non-participants). Due to the school curriculum in the area where this study was conducted, it is expected that all high school students participate in physical activity but it is crucial to consider activities not linked to the fulfillment of this requirement. It is paramount to consider whether students can receive the knowledge, skills, and attitudes to lead a healthy life from activities such as school sport [10], which can add to the same benefits of physical education. It is possible that, because sport team practices are structured, organized and deliberate, there may be a greater opportunity for increased self-efficacy in these sessions than in the various unstructured environments non-sport participants are privy to within the school setting. Researchers must work to explain the self-efficacy differences between school sport

participants and non-school sport participants because there are many youth who participate in school sport and the distinction between the two groups might affect their self-efficacy for physical activity. This difference could influence their long term participation in activity and health. The purpose of the study, therefore, is to determine whether high school sport participation has an impact on physical activity self-efficacy for adolescent males.

## 3. Methodology

### Participants

This study employed 115 male participants, ranging from age 14 to 16. The participants attended an all-boys private school in Western Canada and the focus for recruitment was grade 9 and 10 levels. Research suggests that boys participate in sport more than girls [21] however there is less research relating to perceptions and self-efficacy towards sport. The participants were chosen from these grades as they represent a sub-sample of the age that the study was geared towards. Further, as these young people are still developing their attitudes and thoughts towards physical activity, they are an ideal age group to consider. The average age of the sample was 14.44 years ( $SD=0.73$ ). The participants were identified and separated into two groups. The first group consisted of students who did not play an organized school sport, while the second group contained students who played at least one organized school sport. The participants from the sport-participant group chosen for this study included players from only team school sports because this research is specifically rationalizing that vicarious learning can be a source of self-efficacy in school sport participants, but not necessarily non-school sport participants. Those involved in school team sports might garner a better chance for vicarious learning.

### Materials

Each participant completed the Physical Activity Questionnaire for Adolescents (PAQ-A) [22] which consists of questions pertaining to the amount of time spent engaging in various levels of physical activity per week during a school year. Convergent validity has been found with the PAQ-A when tested on a group of high school students [21]. Questions are answered in a Likert-style. For example, one question asks the participants: "In the last 7 days, on how many days right after school did you do sports, dance, or play games in which you were very active?". Participants then have the option to check one of the following: 'none', '1 time last week', '2 or 3 times last week', '4 times last week', or '5 times last week'.

This project also used the Self-Efficacy for Daily Physical Activity Questionnaire (SEPAQ) [23]. The purpose of this scale was to measure participant's confidence in their ability to persist in regular physical activity. This scale operates on a Likert scale from 'not at all confident' to 'completely confident'. This questionnaire has been validated with youth

and includes questions such as: “How confident are you that you can complete 10 minutes of physical activity at a light intensity level five OR MORE days next week?”. Campbell’s study [23] validated the questionnaire using an exploratory factor analysis and confirmed that the SEPAQ is appropriate for measuring physical activity self-efficacy for youth.

Both questionnaires were in one package, with a cover sheet asking two questions: 1) Do you participate in high school sport? and 2) If yes, list the sports you have been involved in the past year. Those who responded ‘no’ were assigned to the ‘non-school sport’ group and those who replied ‘yes’ were assigned to the ‘school sport’ group.

#### Procedure

The study began after receiving approval from the university research ethics board. With permission from the school administrators, the lead researcher addressed groups of students during lunch hour, describing the study, and asking if they would like to participate. The consent and assent forms were given to the students who were interested, by the lead researcher, so that they may go home and discuss it with their parents. Once consent and assent forms were signed, the participants brought the signed forms back to the lead researcher during a scheduled meeting, and at that time, the participants completed the questionnaires, which took about 30 minutes to complete. I instructed the participants to put each completed questionnaire into one of two envelopes that were at the front of the classroom, since I was not present while they completed the surveys. Once the last participant finished, I went into the classroom and collected the two envelopes. The data obtained during the course of this study (paper and electronic) was stored in a secure location that was only accessible by the two researchers involved in the study.

This study followed a fixed research design that was correlational in nature. A convenient sample of high school males was recruited to answer the research question. In this research study, there were two independent variables. Using the scores from both questionnaires, a multiple regression analysis was used to measure the relationship and predictability between the dependent variable (self-efficacy scale score) and multiple independent variables. The main independent variable was each participant’s PAQ-A score. This project also used a discrete variable, specifically school sport participation. Although the PAQ-A score was an appropriate main IV for a multiple regression because it is a continuous variable (i.e., it can take on any value), this study also explored the possibility that sport participation added to the relationship and/or predictability of scores in self-efficacy for physical activity. Since school sport participation is a categorical variable, it was converted to an indicator variable (“dummy variable”) of 0 or 1 to indicate the absence or presence of a categorical effect on the outcome. Simply, if a participant was not a school sport participant, they were given an indicator code 0, and if the participant played at least one organized school sport, they

will be given an indicator code 1. This indicator code system allowed the categorical variable to be included in the regression analysis and enabled that variable to show an effect or no effect on the relationship and/or predictability between the main IV and DV. The results of the multiple regression will indicate if there is a predictable relationship between the amount of time one participates in strength or conditioning training, and score on the PASE scale.

## 4. Results

The average score on the PAQ-A was 2.84 ( $SD=0.62$ ), while the average score on the SEPAQ was 87.54 ( $SD=12.52$ ). See Table 1 for descriptive statistics. A pairwise and non-parametric correlation analysis showed a relationship between physical activity level and self-efficacy for physical activity. Specifically, PAQ-A scores showed a moderate positive pairwise correlation with SEPAQ score,  $r(113) = .566, p < .01$ . Also, since the SEPAQ scores were not normally distributed, the researcher used Spearman’s  $\rho$  correlation. The results of the Spearman’s  $\rho$  test also showed a moderate positive, and significant correlation between PAQ-A and SEPAQ scores,  $r(113) = .571, p < .01$ .

**Table 1.** Participant descriptive data for hierarchical regression

	Mean ( <i>SD</i> )
Age	14.44 (0.73)
PAQ-A Score	2.84 (0.62)
SEPAQ Score	87.54 (12.52)

n = 115

**Table 2.** Summary of hierarchical regression analysis for variables predicting physical activity self-efficacy

Variable	Model 1		Model 2	
	$\Delta R^2$	$\beta$	$\Delta R^2$	$\beta$
Physical Activity Participation	.321*	.566*	.321*	.541*
School Sport Participation			.006	.079
Total $R^2$			.327	

\* $p < .05$

A hierarchal multiple regression analysis (Table 2) was performed on the PAQ-A and the SEPAQ to predict the overall SEPAQ score from PAQ-A score and school sport participation. The predictors were the scores on the PAQ-A questionnaire and the participation in an organized school sport, while the criterion variable was overall score on the SEPAQ questionnaire. The regression analysis showed that PAQ-A score significantly predicted an increase in SEPAQ scores,  $b = 10.95, t(113) = 6.63, p < .001$ . However, school sport participation did not significantly predict SEPAQ scores,  $b = 1.975, t(113) = 0.97, p > .05$ . Also, PAQ-A score significantly explained a proportion of variance in SEPAQ

scores, when excluding sport participation,  $R^2 = 0.33$ ,  $F(2, 112) = 53.32$ ,  $p < .001$ .

## 5. Discussion

The main purpose of the current study was to determine if there was a relationship between physical activity participation and physical activity self-efficacy. More specifically, this study explored two possibilities. First, using a sample of high school males, this research investigated whether or not physical activity participation could predict physical activity self-efficacy. Second, the study examined the possibility that high school sport participation might add to physical activity's predictability of self-efficacy.

In this study, it was found that physical activity significantly predicted variability in physical activity self-efficacy among high school males. The correlation analysis results showed that physical activity behaviors were positively related to self-efficacy. The fact that there was a positive relationship between the two variables suggested that one's self-efficacy for activity was related to his ability to participate in physical activity. This finding was consistent with the results of previous research, which stated that self-efficacy was significantly related to physical activity behavior [24], specifically in high school aged participants [25]. The results of the correlation analysis were consistent with Bandura's Social Cognitive Theory [14]. Specifically, the results provided evidence that the sources of self-efficacy (i.e., mastery experience, verbal persuasion, and vicarious learning) can affect someone's physical activity participation. The positive relationship between the two variables suggested that the self-efficacy information sources for physical activity (i.e., mastery experiences, vicarious learning) encourage participation in physical activity in this sample of adolescent males. Lastly, the correlation results supported the first hypothesis that there is a relationship between physical activity and self-efficacy for physical activity. After the correlational analyses, multiple regression analyses were executed.

The multiple regressions analysis results showed that physical activity behaviors predicted variability in self-efficacy. Regarding the individual predictors, the results showed that a one-unit increase in PAQ-A performance significantly predicted a 10.95 unit increase in SEPAQ performance. This result showed that a small increase in physical activity can not only have a positive influence on physical health [2] [26] [27] [28] [29] but it also confirmed previous research that physical activity positively affected psychological health through an increase in self-efficacy [24] [25]. These findings supported the importance of the Canadian Physical Activity Guidelines. CSEP's [7] current set of physical activity guidelines reported that children (aged 5-11 years) and youth (aged 12-17 years) required 60 minutes of moderate to vigorous physical activity each day. The results of this study strengthened the importance of these guidelines, regarding improving physical and psychological

well-being through physical activity. The physical activity guidelines emphasize the fact that short bouts of physical (i.e., minimum of ten minutes) can have physical benefits, but these results also highlight that short bouts of physical activity can have psychological benefits as well.

The R-square value showed that 32 percent of the variation in self-efficacy could be explained by variability in a person's physical activity behaviors. More simply, this suggested that physical activity level contributed to predicting how confident a person feels about their ability to be physically active. These findings supported previous research, which stated that self-efficacy was a consistent link to active behavior [19]. Again, these results support the Bandura's rationale that self-efficacy information sources can affect behavior [14]. The participants with high self-efficacy might be privy to more of these information sources regarding physical activity, and thus engage in more active behavior. The relationship between physical activity and self-efficacy is consistent with recent research; specifically, a review on physical activity correlates in adolescents found that self-efficacy was significantly and positively related to physical activity in 28 studies [20]. In addition, Dwyer et al. [30] found evidence in a sample of Canadian high school students to support the findings of this review.

The regression showed that self-efficacy could predict some variability in physical activity behaviors however high school sport participation did not significantly predict active behavior or self-efficacy in this sample. There was no significant evidence supporting the notion that school-sport performance affected self-efficacy. This result could have been affected by the research design (i.e., single sport engagement). The addition of different criteria may yield more favorable results. In addition, high school sports create an environment that allows for self-efficacy information sources to thrive, but it may also vary from group to group. Furthermore, both groups in this sample might have had self-efficacy information sources equally available to them [31]. A possible explanation is that the participants who did not play a school sport found self-efficacy information sources somewhere else (e.g., running clubs, friends, recreational sports).

These findings are important because it lends information to what makes people engage in active behavior; it suggests that people who feel more confident about physical activity tend to participate in more physical activity. This insinuates that physical activity participation can be encouraged in individuals using self-efficacy as a target. The results of this study showed that physical activity and self-efficacy are linked. It supports the idea that a person's confidence in their ability to be active can have a positive impact on their participation in physical activity. The importance of physical activity is stated previously in this study, and the results of this study provide insight about what drives people to be physically active. The importance of this research is in the fact that it can give us a better understanding about how to encourage people to remain active for their lifespan.

Although this study provides pertinent information in the areas of physical activity and health, there are some limitations. First, the fact that the data was self-reported might have affected the results of this study. The unrealistic physical activities for high school males should have been omitted from the survey, and some additional physical activities (i.e., weightlifting, wrestling) should have been added. Also, the use of only one high school sport as the criteria for the 'sport participant' group might not have provided distinct enough groups for this study. Future research would benefit from using two or more high school sports as the criteria because it might create more distinct groups.

The school that was sampled was private, with an annual tuition fee, so it is safe to assume that the sample in this study was generally from the same socio-economic class. This might have limited the results because it was a fairly homogenous group, with similar opportunity to sport and physical activity, based on socio-economic status.

When trying to understand what makes children and adolescents active, there might be opportunity to research the method of delivery in physical education instead of comparing sport participation to non-participation. Ultimately, this could contribute to a set of structured information aids which intend to encourage the increase in self-efficacy, and thus increase physical activity participation. Parents, teachers, and coaches would be the best people to deliver this self-efficacy information aid. These mentors could include a self-efficacy aid in their practice plans, with the goal of increasing physical activity self-efficacy so that youth have a better chance of continuing to be physically active throughout their lives. Also, this research could inform how schools formulate and deliver their physical education program. Educators might structure their physical education with part of the goal being to increase self-efficacy for physical activity. Physical education could be an opportunity for not only physical activity and sport participation, but also for learning how to motivate through increasing self-efficacy. Future studies could test these exercises on a sample of participants to see if it increases self-efficacy for physical activity. Further, if there were significant results, a self-efficacy information aid could successfully be included in sport practices and physical education classes. Sport participants and students might greatly benefit from an increased exposure to self-efficacy exercises.

Lastly, there is interesting research regarding comparing general efficacy in adolescents, and how it might translate to physical activity self-efficacy. It is possible that adolescents with general efficacy and feelings of control over other parts of their lives, might be more inclined to feel efficacious about physical activity. For example, research showed that both academic self-efficacy and academic self-concept were linked to desired student outcomes, including persistence, intrinsic motivation [31] [32], and the adoption of task and achievement goals [33]. These results may help to

understand physical activity adherence, and research examining the possible link between academic self-efficacy and physical activity participation would be interesting.

## 6. Conclusions

Research has shown that a physically active lifestyle leads to good health, and that physically active people live longer and healthier lives [2]. Despite the commonly known negative factors associated with inactivity, many people are still inactive [5] [6]. Particularly, there is a large incidence of physical inactivity in youth throughout the world [5] [34]. In this study, it was found that physical activity significantly predicted variability in physical activity self-efficacy among high school males. This finding was consistent with the results of previous research, which stated that self-efficacy was significantly related to physical activity behaviour [24], specifically in high school aged participants [25] [30]. The implications for this research can lend information about physical activity participation, and a specific determinant that affects it. This study could inform physical educators by providing information about how physical activity self-efficacy may affect current physical activity participation in young males. Specifically, physical educators should be highlighting the physical and health benefits of physical activity, but also targeting psychosocial skills like self-efficacy. The intent should be to use the improvement of self-efficacy as a vehicle for promoting physically active behavior. This research should continue by using samples from different ages, genders, and socioeconomic classes to explore the possibility that these results would be consistent across different demographics. The evidence for the relationship between physical activity self-efficacy and physical activity participation is apparent in the results of this study, and these results should motivate physical educators, coaches, and parents to use self-efficacy to promote healthy lifestyles in adolescent males.

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