

Expectancy Value and Motivation of Physical Activity in Grade Eight Students

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Research clearly indicates that physical activity is correlated with positive health (Sothorn, Loftin, Suskin, Undall, & Blecker, 1999; WHO, 2010). However, children and youth in Ontario do not fulfill the recommended daily level of physical activity (CAN PLAY, 2009). Specifically, 15% of children aged 5 to 9 years, 12% of children aged 11 to 14 years, and 7% of youth aged 15 to 19 years are meeting the physical activity guidelines. It is clear that the decline in physical activity levels begins somewhere between ages of 11 to 14 years. A critical objective of physical educators and researchers is to identify motivations and develop strategies to increase the physical activity level of students, particularly adolescents.

Whether or not children wish to engage in an activity, the amount of effort they expend on the activity and persistence level can be explained by their beliefs about how well they will perform the activity (expectancy beliefs) and the degree to which they value the activity (subjective task values) (Wigfield & Eccles, 2002). Most research has compared task value across multiple grades and content (Wigfield et al., 1997 & Chen, et al., 2008). Comparing adolescents' value of physical activity in one domain may provide more specific results. Exercise is defined as physical activity intended to improve one's health or alter the appearance of one's body, whereas sport involves movement performed to achieve a specific goal in a manner specified by established rules (Hoffman, 2005). Previous studies tend to focus on motivations for sport, rather than exercise (Stuart, 2003; McDonough & Crocker, 2005; Wigfield et al., 1997). It is essential for researchers to determine motivation for adolescents to exercise because many students do not enjoy participating in sport (Butcher, Linder, & Johns, 2002).

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To improve the physical activity levels of children and youth, the government of Ontario has promoted “Healthy Schools” as an initiative to increase physical activity and health awareness among students (OPHEA, 2010). Most schools in the Hastings and Prince Edward County District School Board have become “Healthy Schools”. Nonetheless, it is interesting that a few schools in this board have yet to become recognized as “Healthy Schools”. Thus, the goal of this study is to evaluate the grade eight students at “Healthy Schools” versus schools that have not been recognized as “Healthy Schools” to see if there are differences based on the measures of expectancy value and exercise motivation. It is hypothesized that students in “Healthy Schools” will place higher expectancy value on physical education and have greater motivation to engage in physical activity, compared to students in schools that are not designated as “Healthy Schools”.

Benefits of Physical Activity and Risks of Physical Inactivity

There are multiple benefits of physical activity for adolescents. Reduction of low density lipoprotein while increasing high density lipoprotein, improvement of glucose metabolism in patients with type 2 diabetes, improved strength, self-esteem, and body image, and reduction in the occurrence of back injuries (Sothorn, Loftin, Suskin, Undall, & Blecker, 1999). Physical activity may also have stress-reducing benefits, which may enhance the immune system (Sothorn et al.) Regular physical activity can reduce the risk of cardiovascular disease, diabetes, and osteoporosis, help control weight, and promote

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psychological well being (WHO, 2010). Research has indicated that physical activity is associated with reduced depression and anxiety levels (Parfitt & Eston, 2005), and reduced peer victimization (Storch, Milsom, Debraganza, Lewin, Geffken, & Silverstein, 2007). Some research has indicated a positive relationship between physical activity and body satisfaction (Neuomark-Sztainer, Goeden, Story, & Wall, 2004) while others have found no relationship between physical activity and body image (Duncan, Al-Nakeeb, & Jones, 2004). It is clear that physical activity has numerous psychological, sociological, and biological benefits.

However, physical inactivity can have the opposite effect. TV viewing and computer game playing is associated with negative psychological consequences such as increased aggression, reduced academic achievement and cognitive functioning, reduced sleep time, and earlier initiation of high-risk behaviours (Active Healthy Kids Canada, 2010). Physical inactivity is an independent risk factor for chronic disease, and overall is estimated to cause 1.9 million deaths globally (WHO, 2010). It is evident that physical inactivity is becoming a health concern for all Canadians, especially the adolescent population.

Physical Activity Levels of Adolescents

The recommendation for children and youth (6 to 14 years) is 60 minutes of moderate physical activity and 30 minutes of vigorous activity per day (Active Healthy Kids Canada, 2010). However, only 12% of Ontario children and youth attain the

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recommended daily level of physical activity and only 5% of adolescent girls are meeting the guidelines (CAN PLAY, 2009). There is a clear decline in physical activity levels that begins somewhere between ages of 11 to 14 years, the age referred to as adolescence. Physical education is a great opportunity for students to engage in physical activity on a regular basis. However, it is clear that many students are not receiving adequate time in physical education classes. Dwyer, Allison, Barrera, Hansen, Goldenburg, and Boutilier (2003) examined Toronto teachers' perspective on barriers to implementing physical activity guidelines in the health and physical education curriculum. After numerous interviews, they found that children were not engaged in moderate or vigorous physical activity daily for the expected duration. The three barriers to physical activity were deemed as lower priority, lack of performance measures, and lack of sufficient infrastructure (Dwyer et al.). More specifically, inadequate facilities and equipment, use of portables for classrooms, cancelling physical education to have events in the gymnasium, and unavailability of teachers to supervise off-school physical activities were specific responses from teachers (Dwyer et al.). Thus, It is clear that interventions need to be implemented to improve these statistics.

“Healthy Schools”

The government of Ontario has promoted “Healthy Schools” as an initiative to increase physical activity and health awareness among students. “Healthy schools” focus on a broad range of topics including healthy eating, physical activity, bullying

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prevention, personal safety and injury prevention, substance use and abuse, healthy growth and development, and mental health. The physical activity component of “Healthy Schools” promotes high quality instruction and programs by providing staff training, implementing daily physical education for all classes, and providing programs that include a wide range of physical activities (OPHEA, 2010). “Healthy schools” may provide physical activity equipment for all classes, convert an unused room to a physical fitness centre, purchase bicycle racks, and paint lines on the playground pavement for games to promote an active lifestyle (OPHEA). Organizing intramural programs for the students, training student leaders to lead other students in physical activities, and organizing school events that require physical activity are key to a supportive social environment in “Healthy Schools” (OPHEA). Schools may coordinate a “walking Wednesday” program, partner with a local high school to offer a fitness club, and establish a partnership with a local university to research the impact of the physical activity program on student achievement to contribute to the community partnership aspect of “Healthy Schools” (OPHEA). Most of the schools in the Hastings and Prince Edward County District School Board have become “Healthy Schools”; however, a few schools have not. It is unknown whether “Healthy Schools” do in fact influence students’ motivation to participate in physical activity.

Expectancy Value Motivation

Wigfield and Eccles (2002) suggested that whether or not children wish to engage in an activity, the amount of effort they expend on the activity, and their persistence can be explained by their beliefs about how well they will perform the activity (expectancy beliefs) and the degree to which they value the activity (subjective task value). Subjective task value includes attainment value (importance), intrinsic value (interest), and utility value (usefulness). Xiang et al. (2004) used the expectancy task value scale and found that children tended to devalue physical education as they progressed through grades 2 to 5, which is consistent with the physical activity levels report for children and youth from CAN PLAY (2009).

Expectancy Beliefs

Xiang, McBride, and Bruene (2006) inferred that expectancy beliefs are essential to motivation and achievement in elementary physical education. Specifically, Xiang et al. indicated that expectancy beliefs are the strongest predictor for running performance and motivation for running overtime. Therefore, the expectancy beliefs of students in “Healthy Schools” may predict increases of physical activity and future participation. Chen, Martin, Ellis, and Sun (2008) studied a similar program to “Healthy Schools,” called “Be Active Kids,” which provided students with a meaningful learning context that helped them relate the content learned in physical education with their life

experiences. The researchers found that the students in the “Be Active Kids” program demonstrated stronger expectancy beliefs than those in the comparison curriculum.

Subjective Task Value

Attainment.

Goal attainment was a factor that affected the importance placed on sport (Stuart). It might be assumed that the importance placed on sport coincides with the importance placed on physical activity. The importance of sport is inversely related to grade level (Wigfield et al., 1997), which parallels the CAN PLAY (2009) report on physical activity levels of children and youth. Researchers also found that attainment value is a predictor for motivation to continue participation (Xiang, McBride, & Bruene, 2006). Therefore, if students believe that physical education is important, they will have stronger motivation to continue to exercise in the future. Thus, improving the decline in physical activity levels of adolescents.

Intrinsic value.

Similarly, Xiang et al. found that interest was the strongest positive predictor of run performance and intention for future running participation (2006). Running can be a lifelong participation in physical activity, whether it is for exercise or sport. However,

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future research should focus more on exercise motivations. Xiang, McBride, and Bruene (2006) found that interest is essential to motivation and achievement in elementary physical education. Researchers found that students in the “Be Active Kids” program were as intrinsically motivated as those in the conventional curriculum (Chen, et al). Perhaps students at “Healthy Schools” influence students’ intrinsic motivation to participate in physical activity.

Utility value.

Stuart (2003) found that the parents’ beliefs about the usefulness of sport as well as their expectations for their child to achieve in something other than sport had a negative influence on the adolescents’ utility value for sport. Parental expectations may affect adolescents’ utility value for physical education and exercise as well. However, research exploring this issue is limited. The initiatives promoted in “Healthy Schools” may affect the usefulness of physical education for adolescent students. If students believe that physical education is useful, then they may participate more frequently in physical activity. However, students’ motivation to participate in physical activity is also influenced by their psychological needs.

Self-Determination Theory

Self-determination theory assumes that individuals strive to satisfy the basic psychological needs for competence, autonomy, and relatedness, which determine the quality of engagement in a given domain (Deci & Ryan, 2000). Recent studies have focused on self-determination theory to predict students' motivation in sport and physical education. Koka and Hagger (2010) found that feedback, situational consideration, and teaching and instruction are essential antecedents to self-determination motivation. According to Cox, Duncheon, and McDavid (2009), students' relationships with their teachers are more important than their peer relationships for motivational experiences in physical education. Cox et al. suggest that if teachers communicated more information about the value of physical education compared to one's peers, it might help explain why they play a greater role in fostering students' feelings of self-determination in class. It may be assumed that teachers in "Healthy Schools" communicate more information about the value of physical education; therefore, the students may be highly motivated to participate in physical activity. Cox, Smith, and Williams (2008) found that students who experience more self-determined motivation in physical education are more physically active during their leisure time. If students from "Healthy Schools" experience high levels of self-determined motivation, then they may be more active during their leisure time. Thus, if all schools adopt the "Healthy Schools" program, we may see an increase in physical activity levels of adolescents.

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One of the major tenets of self-determination theory concerns the distinction of intrinsic and extrinsic motives. Intrinsic motivation is thought to be the primary source of energy for human behaviour and its presence facilitates behavioural maintenance and adherence (Kilpatrick et al., 2005). In contrast, motives that are based on extrinsic factors and rewards create a condition that may or may not facilitate adherence.

Kilpatrick et al. found that motivation for sport participation is linked more closely to intrinsic reasons (challenge, social recognition, and enjoyment), whereas motivation for exercise is tied to more extrinsic reasons (appearance, health pressures, stress management). Kilpatrick et al. found that overall college students were more motivated to engage in physical activity as a means for enjoyment and to achieve positive health benefits, than to achieve social recognition from peers. These results also suggest that motives associated with sport participation may more likely lead to long-term adherence than the motives associated with exercise, and that some of the difficulties in long-term maintenance of exercise programs are the results of the extrinsic goal motivations underlying exercise (Kilpatrick et al.). It is clear intrinsic motivation is more beneficial to long-term adherence of exercise. Thus, if “Healthy Schools” are successful in increasing student participation in physical activity, the students at “Healthy Schools” may have high intrinsic motivation for exercise, which is likely to lead to long-term adherence. The intention for future physical activity is also related to expectancy value motivation.

Intention for future physical activity

Xiang, McBride, and Bruene (2006) found that interest consistently emerged as the strongest predictor of intention for future running participation. Similarly, Wigfield and Eccles (1992) suggest that perceptions of expectancy values determined students' long-term motivation. Xiang, McBride, Guan, and Solomon (2003) found that fourth grade girls scored lowest on expectancy-related beliefs about physical education and intention for future participation in physical education, compared to fourth grade boys and second grade boys and girls. The results suggest that girls are already beginning to show declines in motivation by fourth grade. If students who attend "Healthy Schools" place higher expectancy task value on physical activity, then all schools should adopt this program because it is clear that high expectancy task value is associated with increased motivation for physical activity and intention for physical activity in the future. Intention for future physical activity is important during adolescence because once grade eight students enter high school; physical education will not always be compulsory. Students across Ontario are only required to take one physical education credit in high school. Thus, a critical objective of future physical educators is to find ways to motivate students to participate in physical activity.

Most research has compared expectancy beliefs and subjective task value across grades or content (Wigfield et al., 1997 & Chen et al., 2008). Simplifying the study to one domain and one age group may provide more specific results than previous studies.

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Previous researchers have investigated subjective task value in sport, rather than exercise. It is evident that adolescents aged 11 to 14 represent a clear decline in physical activity levels. Thus, the goal of this study is to evaluate the grade eight students at “Healthy Schools” versus schools that have not been recognized as “Healthy Schools” to see if there are differences based on the measures of expectancy value and exercise motivation. It is hypothesized that students in “Healthy Schools” will place higher expectancy value on physical education and have greater motivation to engage in physical activity, compared to students in schools that are not designated as “Healthy Schools”.

Method

Participants

Fifty-four students were recruited from grade eight classrooms in the Hastings and Prince Edward District School Board. Twenty-six students from two schools recognized as “Healthy Schools” and 28 students from two schools not recognized as “Healthy Schools” were surveyed.

Procedure

Ethics approval was obtained from the School of Kinesiology Ethics Committee at Lakehead University and from the Hastings and Price Edward District School Board. Consent was obtained from the principals and grade eight teachers at the schools involved in the study. The researcher distributed consent forms to the participants approximately two days prior to data collection, as parental consent was required. The researcher, in coordination with the grade eight classroom teachers, returned at a pre-determined time to collect the consent forms, and provide instructions so the students were able to complete the survey online at that time. The questionnaires, which were accessed by computer, via survey monkey, required approximately 15 to 20 minutes to complete.

Instruments

An online survey tool called Survey Monkey was used to distribute the questionnaire. The expectancy value scale and the exercise motivation inventory-2 (EMI-2) were used. Basic demographic questions were also included.

The expectancy value scale is a 12-item, 5-point Likert scale used to determine students' value of physical education. The expectancy value scale measures expectancy beliefs and subjective task value, which includes three subscales of: attainment (importance), intrinsic (interest), and utility (usefulness) in physical education. Validity

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and reliability of the expectancy-value scale was established by Xiang, McBride, Guan, and Soloman (2003).

The EMI-2 is a 51-item, 6-point Likert scale used to establish motivators to exercise. The EMI-2 measures 14 subscales of motivation. The EMI-2 is applicable to both exercisers and non-exercisers. The factorial validity and invariance of the factor structure across gender were rigorously tested using confirmatory factor analytic procedures (Markland & Ingledew, 1997). Markland and Hardy (1993) found that the internal consistency of the original 12 subscales was generally acceptable with Cronbach's alpha reliability coefficients ranging from 0.63 to 0.90. Test-retest reliability coefficients over a four to five week period ranged from 0.59 to 0.88.

Research Design

Students from "Healthy Schools" and schools that are not recognized as "Healthy Schools" were compared using t-tests on the dependent variables. The dependent variables are expectancy value and exercise motivation.

Results

Mean scores were calculated for each of the 14 EMI-2 subscales for students in "Healthy Schools" and students in schools that are not yet recognized as "Healthy Schools". Table 1 indicates the mean scores that range on a Likert scale from 0 to 5

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(0=not true at all for me, 5=very true for me). Not true at all implies that the students are not motivated at all to exercise for a particular subscale, whereas very true for me infers that the students are highly motivated to exercise for the relating subscale. An independent samples *t*-test was used to compare the means of students at “Healthy Schools” versus students at schools not yet recognized as “Healthy Schools”.

Alternatively, a Non-parametric Mann-Whitney U Test was used if variances were different between the groups.

The mean score for each subscale in the Expectancy Value Scale was calculated for students in “Healthy Schools” and students in schools that are not yet recognized as “Healthy Schools”. Table 2 indicates the mean results based on a Likert scale that ranges from 1 to 5 (5=high value of physical education, 1=low value of physical education). An independent samples *t*-test was used to compare means of students at “Healthy Schools” versus students at schools not yet recognized as “Healthy Schools”.

The mean age for the participants was 13 years old. The average frequency of exercise for both groups was five to ten hours per week, four to five days per week. Results indicated that “Healthy Schools” had a significantly higher effect on the students’ motivation to exercise on the enjoyment subscale ($t(48) = 2.23, p < 0.05$). The stress management subscale approached the significance, with students at “Healthy Schools” being higher than students at schools that are not recognized as “Healthy Schools” ($t(49) = 1.61, p = 0.09$). There was no difference in the four subscales and the overall measure of expectancy value of physical education for students who attend “Healthy Schools” and students who attend schools not yet recognized as “Healthy

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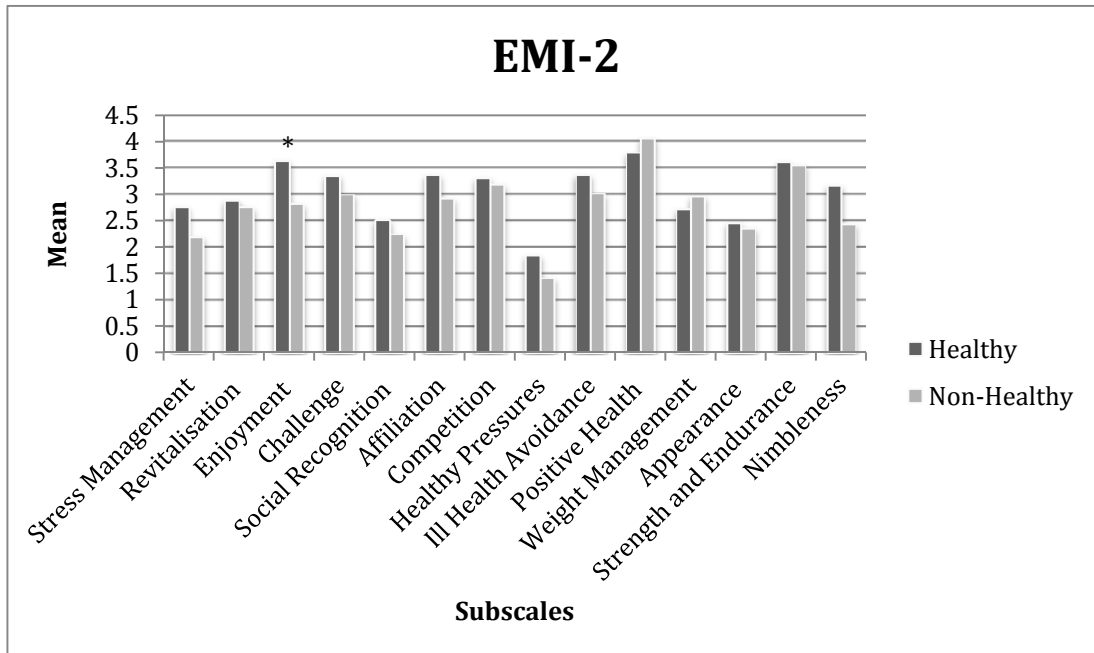
Schools". Overall, the grade eight students did not place high value on physical education and did not have high motivation to exercise, which is evident in the mean values displayed in table 1 and 2.

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Table 1.
Descriptive statistics for EMI-2

Subscale	Mean for Healthy	Mean for Non-Healthy	df	t
Stress Management	2.76	2.19	49	1.61
Revitalization	2.88	2.75	47	0.39
Enjoyment	3.62	2.81	48	2.23 *
Challenge	3.35	2.99	47	0.98
Social Recognition	2.51	2.24	46	0.74
Affiliation	3.36	2.91	45	1.25
Competition	3.31	3.19	50	0.33
Health Pressures	1.84	1.41	49	1.21
Ill Health Avoidance	3.36	3.01	49	0.94
Positive Health	3.78	4.05	49	0.94
Weight Management	2.71	2.95	49	0.58
Appearance	2.46	2.35	46	0.28
Strength and Endurance	3.6	3.54	48	0.23
Nimbleness	3.16	2.44	50	1.92
Total EMI	41.15	39.69	32	0.58

Note. All variables were measured on a 6-point scale.
* $p < .05$.



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* $p < 0.05$.

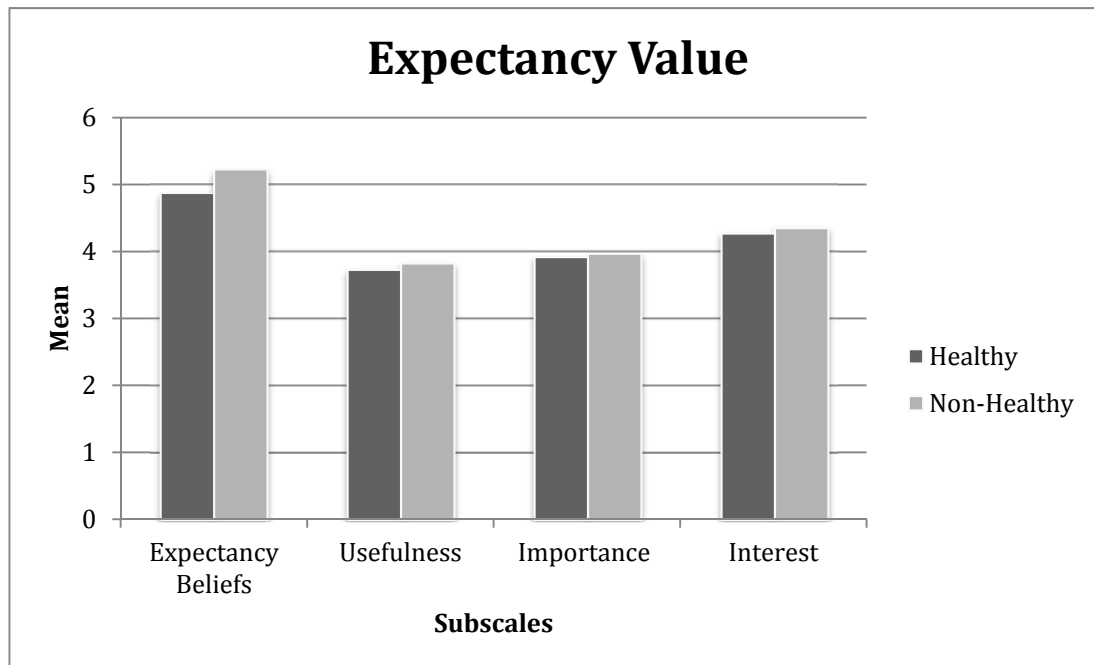
Figure 1. Mean values for the 14 subcategories of the Exercise Motivation Inventory-2 are displayed.

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Table 2.
Descriptive statistics for expectancy value

Subscale	Mean for Healthy	Mean for Non-Healthy	df	t
Expectancy Beliefs	4.87	5.22	46	-1.65
Usefulness	3.73	3.83	49	-0.58
Importance	3.92	3.96	50	-0.21
Interest	4.27	4.35	51	-0.46
Total Expectancy Value	16.51	17.52	43	-1.49

Note: All variables were measured on a 5-point scale.



Note: All variables were measured on a 5-point scale.

Figure 2. Mean values for the subscales of the Expectancy Value Scale.

Discussion

In this study, grade eight students at “Healthy Schools” versus schools that have not been recognized as “Healthy Schools” were evaluated to see if there were differences based on the measures of expectancy value and exercise motivation. Results indicated that students who attend “Healthy Schools” in the Hastings and Prince Edward District School Board have higher motivation to engage in exercise for enjoyment compared to students who attend schools not yet recognized as “Healthy Schools”. The initiatives that “Healthy Schools” engage in may influence the feeling of enjoyment that students receive from exercise. Positive health was the strongest motivator for students at both “Healthy Schools” and students at schools not yet recognized as “Healthy Schools”. Students may be well educated about the health benefits of physical activity through a variety of sources, such as school, media, or family. Kilpatrick et al. (2005) found that overall college students were motivated to engage in physical activity for enjoyment and positive health benefits than to achieve social recognition from peers, which parallels the results of the current study. Thus, college students and grade eight students may have similar motivation to engage in exercise despite the age difference.

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However, Kilpatrick et al. also found that motivation for sport participation is linked more closely to intrinsic reasons (challenge, social recognition, and enjoyment), whereas motivation for exercise is tied to more extrinsic reasons (appearance, health pressures, stress management). Although the participants from both groups in this study reported the same frequency of exercise, students from “Healthy Schools” may have been more involved in sport than exercise because enjoyment is an intrinsic motivator. Thus, enjoyment may be a stronger motivator for students in “Healthy Schools” based on the frequency of participation in sport. Regardless of the participants’ engagement in sport, the “Healthy Schools” program had a significant influence on students’ intrinsic motivation to exercise for enjoyment. In other words, students in “Healthy Schools” were more intrinsically motivated to exercise than students who attend schools not yet recognized as “Healthy Schools”.

The results from the EMI-2 also indicate that stress management approached the significance. Therefore, we can speculate that with a larger sample size the students at “Healthy Schools” may be more likely to exercise to regulate stress levels than students at schools not yet recognized as “Healthy Schools”. Future research may focus on educating students about the psychological benefits of exercise and discovering why grade eight students are stressed. The scores for all participants’ motivation to exercise (EMI-2) were not considerably high. Thus, it can be inferred that grade eight students are not highly motivated to engage in exercise, which may explain the low levels of physical activity reported from CAN PLAY, 2009.

The current study found that students at “Healthy Schools” valued physical education as much as students at schools that have not yet been recognized as “Healthy Schools”. Chen et al. (2008) found that students in the “Be Active Kids” program were as physically active and as intrinsically motivated as those in the conventional curriculum, which is similar to the findings of this study. The “Be Active Kids” program promotes healthy initiatives comparable to those in the “Healthy Schools” program. However, the students in Chen, et al.’s study were in grades 3 to 5, whereas the students in this study were in grade 8. Furthermore, the students in the “Be Active Kids” curriculum demonstrated stronger expectancy beliefs than those in the comparison curriculum, suggesting that expectancy beliefs, to a degree, may rely on what content the students are learning. Data from this study indicate that students at “Healthy Schools” do not have higher expectancy beliefs than those in schools not yet recognized as “Healthy Schools,” suggesting that expectancy beliefs may not rely on what content the students are learning. The mean scores for expectancy value indicate that all participants did not place high value on physical education, which parallels the results from Chen, et al.’s study. However, the results may be due to the limitations of the study.

Limitations

A limitation to the study is that the sample size is not significant to generalize the results to an entire population. The participation may have been influenced by incentives, teachers’ attitude, and an inconsistent introduction to the study. At three

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out of four of the schools, the principal spoke to the students prior to distribution of the consent forms and cover letters. If the researcher had been present to explain the study, then perhaps more students would have been encouraged to participate. One of the schools not recognized as a “Healthy School” was able to contact parents to remind them to sign and return the consent form and provided gum as an incentive for participating in the study. Thus, the results of the study may be affected. The Health Unit in the Hastings and Prince Edward District School Board (HPEDSB) also works with the schools to encourage healthy initiatives. Prior research regarding healthy initiatives that the selected schools in the HPEDSB participate in may have been helpful. “Healthy Schools” are a recent initiative that the government of Ontario is promoting. Therefore, future research may be more reliable as students may have higher value of physical activity and be more motivated to participate in exercise once they have attended a “Healthy School” for a longer period of time. The wording of the surveys may have affected the results as many participants questioned the word “agile”.

Conclusion

Motivation is the starting block to increasing participation in physical activity. Students’ levels of motivation to participate in physical activity may assist researchers and physical education teachers in understanding how to encourage adolescents to increase levels of exercise. The findings of this study may encourage the development of additional workshops and training, which can focus on the enjoyment of exercise.

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Future research should focus on stress management because it approached the significance. Future research could focus on why students are stressed, possibly investigating self-esteem. The mean values for both groups were highest for positive health. Thus, positive health may be a strong motivator for all grade eight students to participate in exercise. However, the mean values from this study show that overall grade eight students are not highly motivated to exercise, and do not place high value on physical education. It is clear that physical educators and other health professionals need to conduct future research to discover what does highly motivated adolescents to participate in physical activity.

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