



**Developing Physical Activity Habits in Schools for Active Lifestyle  
among Children and Adolescents**

*Le développement de l'habitude de la pratique de l'activité physique  
des enfants et des adolescents à l'école*

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**Abstract**

This paper outlines the importance of developing physical activity habits among children and adolescents in schools, in order to continue healthy active practices throughout the lifespan. Based on current literature, we explore the definition of a habit, how physical activity habits can be developed in schools, and the relationship between physical activity habits and a healthy lifestyle. A framework containing three major categories (i.e., programs, teachers, students) was proposed to support the development of physical activity habits among children and adolescents in school. Within each of the presented categories, four factors were considered (i.e., goal setting, motivation, enjoyment, commitment). Practical strategies were provided to support efforts to nurture students' physical activity habits. Future research directions were also discussed.

**Résumé**

*Cet article souligne l'importance d'encourager les enfants et les jeunes à être plus actifs physiquement et ainsi adopter des habitudes menant à des modes de vie sains et actifs à l'âge adulte. Partant de la documentation actuelle, l'article présente les caractéristiques d'une habitude, les actions possibles à entreprendre dans les écoles pour développer l'habitude de la*

*pratique de l'activité physique de même que les liens entre l'activité physique et les modes de vie sains. Il propose un cadre de travail en trois volets (programmes, personnel enseignant, élèves) pour inciter les enfants et les jeunes à acquérir une telle habitude. Chaque volet examine quatre facteurs, soit la détermination des buts, la motivation, le plaisir et la participation. L'article formule ensuite des stratégies pratiques pour aider les écoles à développer l'habitude de la pratique d'activité physique chez les élèves et discute des pistes d'avenir de la recherche.*

## **Introduction**

It is widely acknowledged that physical activity plays a crucial role in the healthy growth and development of children and adolescents (World Health Organization, 2013a). Making regular physical activity a habit at an early age can provide children with lifelong benefits; however, many Canadian children and youth devote a disproportionate amount of their time to sedentary pursuits and, as such, do not meet the daily recommendation for physical activity (Colley et al., 2011; Government of Canada, 2012; World Health Organization, 2013a). Research shows that school-based physical activity programs can improve health during growth and maturation, enhance learning and social skills, and promote healthy active living among children and adolescents (Veugelers & Fitzgerald, 2005). Further, there is strong and direct correlation between undertaking physical activity at school and being physically active in adulthood (International Union for Health Promotion and Education, 2010). However, minimal literature examines how children and adolescents develop physical activity habits throughout their Kindergarten—Grade 12 (K-12) school years. The purpose of this paper is four-fold. First, we will briefly explore and define the word *habit*. Second, we will explore how physical activity habits can be developed in K-12 schools. Next, we explore the relationship between physical activity habits and child and adolescent healthy lifestyles. Finally, we will offer a framework to support the development of physical activity habits.

## **What is a Habit?**

The word *habit*, in its origin, is referred to as a “mental constitution, settled disposition, custom” (Hoad, 1996, p. 207). A habit is normally defined as a behaviour pattern obtained by frequent repetition or physiologic exposure that displays itself in regularity or increased ability of performance (Merriam-Webster Dictionary, 2013.), or a established or regular tendency or practice, especially one that is difficult to give up (Oxford Dictionaries, 2013). Although there are variations in definitions for the word *habit*, both resources in this case associate habit with the concept of regularity.

A habit is developed when a behaviour pattern is repeated in a consistent situation, allowing a cue-response link to be formed (Lally, van Jaarsveld, Potts, & Wardle, 2010). The cue is the environment or situation where the behaviour is performed; the response is the repetition of the behaviour in a consistent context (Lally et al., 2010). When an activity is repeated regularly, the behaviour begins to display itself more efficiently and with less thought, until an automatic response is activated and a habit is formed (Lally et al., 2010). One's habit or habits will demonstrate regularity and automaticity by displaying some or all of the following features: lack of awareness, unintentionality, uncontrollability, and efficiency (Bargh, 1994).

Although automaticity is a component of a habit, it is important to note that motivation is also a key predictor of behaviour (Rhodes, Bruijn, & Matheson, 2010). That is, a habit requires

planned intention to enact behaviour. Initially, this intention or motivation comes from personal attitudes, values, enjoyment, etc. Eventually, once behaviour becomes habitual in nature, it is likely to be practiced without a need for motivation (Rhodes et al., 2010).

### **How Can a Physical Activity Habit be Developed in Schools?**

Participation in and exposure to a variety of school-based physical activities may lead to the development of a number of physical activity habits, each unique to a particular activity and/or school context. Schools can and should be called upon to help students learn to move with competence and confidence across a wide variety of physical activities, effectively helping students develop lifelong physical activity habits.

In the case of school-based physical activity, it takes time and planning in order to develop the cue-response link that ultimately leads to habitual behaviour. Literature shows that the time it takes to develop automaticity within physical activity varies for each individual, and for many it takes a significant number of repetitions (Lally et al., 2010). Schools can provide a framework for physically active habit development emphasizing and addressing the following factors: (a) goal setting, (b) enjoyment, (c) motivation, and (d) commitment.

#### **Goal Setting**

Setting goals (e.g., the number of physical activity sessions per week) with the aim of committing to a program and being accountable for the behaviour is a necessary first step in developing physically active behaviour patterns. The repetition of physically active behaviour consistently can lead to development of the cue-response link (e.g., every day during lunch break). It is important to monitor the behaviour and track progress to ensure goals are being met. The results of a planned program can lead to habit development when the automatic component is strengthened, as exercising becomes a routine and is incorporated in everyday life (Verplanken & Melkevik, 2007). We suggest that goal setting across a wide variety of school-based physical activities (e.g., physical activity goals in physical education class, extracurricular physical activity goals, personal health and wellness goals) may provide a foundation for the development of health promoting physical activity habits.

#### **Enjoyment**

The selection of activities that are enjoyable may lead to children and adolescents choosing to participate in physical activities with regularity, since individuals are more likely to continue activities that are enjoyable (Lorusso, Pavlovich, & Lu, 2014). Conversely, it is logical to suggest that the choosing of activities that are less enjoyable may lead to a negative cue-response relationship where children and adolescents avoid physically active behaviours. We would encourage teachers to: (a) plan classes and activities with enjoyment as an objective, (b) empower students to help choose activities that are enjoyable, (c) offer diverse and developmentally appropriate programming that is relevant and meaningful to students, (d) actively participate in class activities with students when possible, and (e) maintain a welcoming, supportive, respectful, and positive learning environment (Lorusso et al. 2014; Smith & St. Pierre, 2009).

#### **Motivation**

In schools, teachers can prioritize teaching physical activities that engage students, give students a sense of ownership of physical activities, and create an enjoyable and inclusive

atmosphere (Lorusso et al. 2014). All of these components may contribute to student motivation and, more specifically, a student's intrinsic and extrinsic orientations relating to their willingness to remain active. From an intrinsic standpoint, it is assumed that if a student consciously chooses an activity, it will be intrinsically rewarding and he or she will be more likely to continue with that physical activity (Lally et al., 2010). In contrast, among children and adolescents, physical self-concept has been significantly linked with physical activity, fitness, and sport participation (Anderson, Masse, Zhang, Coleman, & Chang, 2009). To create these positive impacts within school programs from an extrinsic orientation, students should be made to feel: (a) competent in their movement abilities, (b) proud of their participation in physical activities, and (c) supported through the provision of positive encouragement from parents, teachers, and peers (Anderson et al., 2009; Hirvensalo & Lintunen, 2011).

### **Commitment**

Commitment to a physical activity program must be in place in order for an individual to maintain the regular practice required to form a habit or series of habits (Lally et al., 2010). It is not only important for students to set goals and choose enjoyable activities as part of their commitment to exercise, but teachers should also endeavour to choose school-based physical activity, as a central component of the student experience. To support cue-response development across a wide range of school-based physical activities, we suggest the inclusion of socially oriented group activities. Since peers often have a profound influence on children and adolescent choices and decisions (Lorusso et al. 2014; Smith & St. Pierre, 2009), students, being active together across wide-ranging school-based physical activities, may help their peers develop lasting physical activity habits.

### **Why are Physical Activity Habits Important?**

Participating in *regular* physical activity allows for many positive health benefits, since physical fitness reduces the risk of premature death caused by cardiovascular disease, diabetes, cancer, hypertension, obesity, depression, etc. (Warburton, Nicol, & Bredin, 2006; World Health Organization, 2013a). The benefits of physical activity are not limited to decreasing the risk of chronic diseases; ultimately, those who have a positive physical self-concept and are lifelong active individuals can experience many other advantages to being active; for example, social inclusion (e.g., recreation, team sports), physical literacy, stress relief, feeling energized, positive mental health, positive body image, etc. (Joint Consortium for School Health, 2009; Mandigo, Francis, Lodewyk, & Lopez, 2009). There is also substantive evidence that school-based physical activity will not adversely affect student performance and achievement (Centers for Disease Control, 2010; Trudeau & Shephard, 2008). Participation in school-based physical activity can have a positive impact on students' academic behaviours, cognitive skills and attitudes all of which can support improvements in students' academic performance (Centers for Disease Control, 2010).

Fundamentally, promoting physically active behaviours which can lead to health and physical fitness must begin at a young age and continue throughout the lifespan, since the risk of chronic disease starts in childhood and increases into adulthood (Warburton et al., 2006). In addition to the medical health evidence, there is a body of behavioural research highlighting that physical activity patterns during childhood and adolescence are key predictors of physical activity habits during adulthood (Barnekow-Bergkvist et al., 1996; Hirvensalo & Lintunen, 2011;

International Union for Health Promotion and Education, 2010; Tammelin, Nayha, Laitinen, Rintamaki, & Jarvelin, 2003). This trend is especially observed with physical inactivity, where low physical activity levels during adolescence are linked with low physical activity participation during adulthood (Hirvensalo & Lintunen, 2011). Since physical activity is often reported to decline from adolescence to adulthood (Barnekow-Bergkvist et al., 1996; Ortega et al., 2013; Tammelin et al., 2003), it is important to identify which factors lead to such decline, and alternatively, which factors stimulate the development of physical activity habit for lifelong healthy active living.

Long-term studies of physical activity *patterns* identify risks for declining activity participation associated with changes in social condition such as marriage, having children, and establishing a career, as well as amount of education and socioeconomic status (Barnekow-Bergkvist et al., 1996; Ortega et al., 2013). When individuals experience changes across the life-course, it can be difficult to maintain personal healthy living goals; thus, it is critical to develop physical activity habits early on in life so that physical activity participation becomes routine in nature and hard to discontinue even after students leave the school environment (Hirvensalo & Lintunen, 2011).

### A Framework for Developing Physical Activity Habits

The global recommendation for children and adolescents is to have at least 60 minutes of moderate to vigorous-intensity daily physical activity each day (Canadian Society for Exercise Physiology, 2011; World Health Organization, 2013a). This amount of exercise is sufficient to improve health, reduce the risk of pre-mature death, and increase psychological well-being (Warburton et al., 2006). However, typical school physical education alone may not be sufficient to follow the recommended 60 minutes of physical activity. Due to the fact that almost all children can be reached in school, schools are positioned to play an important role in enhancing children's physical activity level (Joint Consortium for School Health, 2009). In order for children and adolescents to tap the potential associated health benefits of school-based physical activity, it is imperative to supplement physical education with cross-curricular, intramural, and interscholastic physical activity offerings. Together, these broad offerings make up a comprehensive school-based physical activity program that can be wholistically developed to serve the needs of all students in school (Joint Consortium for School Health, 2009; Lu, Steele, & Barrett, 2010; World Health Organization, 2013b). Thus, we propose a framework inclusive of three major categories (i.e., programs, teachers, students). Within each of these categories, we address four factors to be considered (i.e., goal setting, motivation, enjoyment, and commitment) in the development of physical activity habits among children and adolescents in schools.

Table 1

*A framework for the development of physical activity habits in schools*

Physical Activity Habit Development				
Factors	Goal Setting	Motivation	Enjoyment	Commitment
Categories				
Programs	• Provide students with opportunities to be physically	• Involve students in physical activity choices and	• Choose a variety of activities across	• Design inclusive programs to

<b>Physical Activity Habit Development</b>				
Factors	Goal Setting	Motivation	Enjoyment	Commitment
Categories				
	<p>active before, during, and after, school.</p> <ul style="list-style-type: none"> <li>• Across all physical activity programs, help students to develop goals.</li> <li>• Teach students to track and revise goals based on their progress</li> </ul>	<p>decisions</p> <ul style="list-style-type: none"> <li>• Ensure program choices allow for students to feel competent in their movement abilities</li> <li>• Help students find satisfaction in their participation efforts</li> </ul>	<p>various movement domains</p> <ul style="list-style-type: none"> <li>• Foster social interaction--a key component of all program offerings</li> <li>• Consider the efforts being made to foster a positive atmosphere</li> </ul>	<p>meet all student needs</p> <ul style="list-style-type: none"> <li>• Provide students with options to commit across a wide spectrum (i.e., before, during, and after school physical activity programs)</li> <li>• Attempt to make links to future and lifelong physical activity options for students</li> </ul>
Teachers	<ul style="list-style-type: none"> <li>• Help students find their way to many physical activity offerings provided</li> <li>• Facilitate goal setting/activity participation</li> <li>• Monitor goal achievement/ provide individualized feedback</li> </ul>	<ul style="list-style-type: none"> <li>• Participate with students</li> <li>• Help students find relevance in physical activity offerings</li> </ul>	<ul style="list-style-type: none"> <li>• Consider positive student-teacher interactions in school-based physical activity</li> <li>• Share your enthusiasm for school-based physical activity with students</li> <li>• Participate in school-based physical activities with students</li> <li>• Provide students with opportunities for social interactions through physical activity</li> </ul>	<ul style="list-style-type: none"> <li>• Organize classroom or school-wide physical activity initiatives</li> <li>• Serve as a volunteer coach/ physical activity program leader and a healthy role model</li> <li>• Encourage physical activity participation at home and in the community</li> </ul>
Students	<ul style="list-style-type: none"> <li>• Set personal goals</li> </ul>	<ul style="list-style-type: none"> <li>• Be open to novel physical activity</li> </ul>	<ul style="list-style-type: none"> <li>• Experience success</li> </ul>	<ul style="list-style-type: none"> <li>• Monitor goals</li> <li>• Join</li> </ul>

Physical Activity Habit Development				
Factors	Goal Setting	Motivation	Enjoyment	Commitment
Categories				
	<ul style="list-style-type: none"> <li>• Develop personal and meaningful fitness plans</li> <li>• Consider both short-term and long-term physical activity goals</li> </ul>	opportunities <ul style="list-style-type: none"> <li>• Be aware of the influence that physical activity can have on social, emotional, and physical development</li> </ul>	<ul style="list-style-type: none"> <li>• Choose enjoyable activities</li> <li>• Interact with peers</li> <li>• Collaborate with staff</li> <li>• Attribute success in physical activity to own actions</li> </ul>	group/team activities <ul style="list-style-type: none"> <li>• Engage in physical activities at school, at home, and in the community</li> </ul>

### Programs

In addition to mandated physical education classes during instructional time, schools should provide additional physical activity opportunities to help students achieve the recommended amount of moderate to vigorous-intensity physical activity. These opportunities include before, during, and after school physical activity programming (Joint Consortium for School Health, 2009; Lu et al., 2010). In Canada, school physical activity programs can also include outdoor activities and field trips (e.g., hiking, canoeing, and orienteering in the warmer months; snowshoeing, winter games, and skiing in the winter months). It is beneficial to develop a variety of movement domains (e.g., dance, alternative environment activities, individual activities, gymnastics, games) to promote sustainable, inclusive, and enjoyable physical activities in programs to meet diverse needs among all students (Lu, Lodewyk, & Francis, 2014). Understandably, the more active a child is throughout the day, the more health benefits a child will gain (World Health Organization, 2013a); thus, providing opportunities for physical activity several times throughout the day is favourable.

#### **Before school physical activity programs.**

Before school programs offer excellent opportunities for children to participate in adult-supervised physical activity on a regular basis (Beighle & Moore, 2012). Although traditional after-school programs are more common, before school physical activity programs can also provide health-enhancing learning, and positively impact children and adolescents of various skill levels and socioeconomic statuses (Beighle & Moore, 2012).

Offering a before-school physical activity program in schools can also be a valuable way to contribute to student success and overall well-being. Research shows that physical activity can improve mental alertness, fatigue, and overall mental health; consequently, if children are active before school prior to instruction, they may have more success in their morning school work (International Union for Health Promotion and Education, 2010; Government of Canada, 2012).

One suggestion for before-school programs is to provide opportunities for students to partake in active free play. Teachers or students may bring physical activity equipment to the playground and utilize playground markings for free play (e.g., shooting, catching, and throwing of various implements, low organizational games such as four-square) with mild intensity, such that students will be able to join an activity as they arrive to school. In the cases where students travel by school bus, it is important to consider utilizing the available time before school to give

all students the opportunity to engage in physical activities. The teachers who are on duty at this time must ensure safe play and could also encourage students to be active up until the school day commences. Additionally, schools can encourage and explore before school initiatives such as *active commuting*—an approach to let students actively travel to school by walking, biking, skateboarding, scootering, or skating (Active Healthy Kids Canada, 2012; Beighle & Moore, 2012). With collaboration from students, parents, staff, and community organizations, these programs may encourage students to remain active throughout the school year (Beighle & Moore, 2012).

#### **During school physical activity programs.**

In order for students to gain more benefit from physical activity, it is important for schools to provide opportunities for regular activity during the school day (Joint Consortium for School Health, 2009; International Union for Health Promotion and Education, 2010). In addition to mandated physical education programming, physical activity programs during school may include cross-curricular physical activity programming built into instructional programming, activity breaks (recess/fitness breaks), lunchtime intramural programs, and recreational club activities.

Regular physical activity at school can improve students' motivation, with no adverse effects on cognitive development, even if less time is allotted for cognitive tasks (International Union for Health Promotion and Education, 2010). However, with an ever-increasing focus on academic achievement in literacy and numeracy, teachers should endeavour to manage the curricular tensions in schools providing students with regular and consistent opportunities to be physically active during the school day (Barrett, 2014; Beighle & Moore, 2012). If we are aiming to help students develop physical activity habits that offer an appreciable number of health and cognitive benefits, part of the changing of students' behaviours and attitudes toward physical activity will involve more concerted efforts on the part of teachers to adhere to mandated and recommended policies that prominently highlight the importance of school-based physical activity (Barrett, 2014).

Recess or activity breaks are also optimal times for students to be physically active in elementary schools since it does not interfere with class time (Beighle & Moore, 2012). Students may engage in supervised free play together in a less structured environment, where participation is based on one's own level of comfort (Barrett, 2014). Besides free play, it is also possible for teachers to organize leadership programs that allow for organized play at recess. For example, older students can develop and referee games and/or activities for younger students as part of leadership capacity building in schools (Action Schools! BC, n.d.; Barrett, 2014). Teachers should be mindful of the needs of students in these free play settings paying particular attention to ensure that all students are comfortable, safe, and challenged by the pace and complexity of the selected physical activities.

Many middle and secondary school students may also participate in lunchtime intramural activities, which occur outside of formal classes and include physical activity clubs within the school (Lu et al., 2010). These types of extracurricular programs are particularly beneficial for students who are unable to commit to before and after school activities. Also, offering a variety of programs at lunchtime is a valuable way to target *all* students through inclusivity and enjoyment in participation regardless of a student's physical activity background; intramural activities can include traditional and non-traditional physical activities, less competitive sports, low organizational games, special clubs, and recreational physical activities that align with community opportunities (Barrett, 2014). Besides being enjoyable and improving health, these



programs provide a safe environment for children and adolescents to learn lifelong health-enhancing skills for continued practice (Beighle & Moore, 2012). For example, jogging and walking clubs are both easy to organize and do not require a particular need for facilities or equipment. These types of activities can engage all students regardless of sex, race/ethnicity, body weight or fitness level, and socioeconomic status.

#### **After school physical activity programs.**

After school physical activity programs are typically delivered immediately following the school day and are directed by school districts or other community organizations; activities may include interscholastic sports between schools, or non-competitive physical activity clubs (Beighle & Moore, 2012).

After school programs have the capacity to offer quality physical activity programming outside of the school day, for improved health and well-being (Beighle & Moore, 2012). Whether the school is providing general programs for all, or specialized programs for competitive athletes, students are able to stay engaged with the school community, have more opportunities for social interaction, and improve their health through additional physical activity occasions (Lu et al., 2010).

In fact, many schools offer special programs such as interscholastic athletics, in which students to compete in sports against other school teams in the community; these programs allow for more competitive students to experience enjoyment and success in games between schools (Barrett, 2014; Lu et al., 2010). Although these programs may not be suitable for all students, they are often beneficial for those students who have a competitive drive to improve skills, enhance physical fitness, and fulfill personal satisfaction through competition.

Conversely, general programs for all can include recreational games, sports, or fitness clubs in a less competitive setting (Beighle & Moore, 2012). For example, students may be able to stay after school for a pick-up soccer or football game, or a group workout for those who are not interested in sports. Community groups or individuals (e.g., parents, experts) can be invited to voluntarily offer a variety of unique activities such as yoga, taijiquan, Pilates, or dance aerobics to expose students to novel and enjoyable ways to be active (Lorusso et al. 2014). It would also be valuable for schools and districts to consider ways in which bussed students may be afforded opportunities to participate in after school programming (e.g., adjusting bus departure times one or twice a week) while being mindful of system and family transportation needs. All after school physical activity programs must be supervised by a school official, staff member, or approved volunteer (Barrett, 2014).

#### **Teachers**

Since teachers are responsible for the planning and execution of daily lessons and routines, it is essential for them to provide opportunities for their students to be active every day. This responsibility includes effectively teaching activities during regular physical education classes, or leading other physical activities when physical education is not scheduled. Teachers are the central figures in physical activity program delivery, since they act as physical activity/education facilitators in the classroom, and volunteer to lead or coach in extra-curricular programs (Barrett, 2014). When teachers provide regular physical activity programming as extrinsically orientated offerings, students are helped to live and experience the link between intentions and behaviours which can lead to physical activity habits. Moreover, we choose to make the distinction here that all teachers play a vital role in the provision of school-based physical activity offerings. While we would prefer to see physical education taught across K-12

education exclusively by specialist teachers, we also recognize that this is not the reality. It is with this in mind that we wish to prominently highlight the important role that all teachers play in the provision of rich and meaningful school-based physical activity programming. We believe the collective efforts of all teachers can play an important role in helping children and adolescents develop physical activity habits.

Teachers can also be physically active role models by demonstrating their own participation in regular lifetime physical activity. The simple act of participating alongside students in physical activity may help maintain and/or improve the teacher's health, and the act may also influence student participation in and perceptions of physical activity (Barrett, 2014). It is crucial for teachers to be role models, since demonstrating positive attitudes and behaviours associated with physical health may not only increase student participation, but also enhance student enjoyment in physical activity and/or education (Barrett, 2014; Lorusso et al. 2014).

Moreover, it is important for teachers to raise students' awareness and understanding of health benefits from the development of physical activity habits; this awareness can be achieved by providing students with personal feedback on their physical activity levels and to teach them to recognize their own needs to exercise (Kremers, Dijkman, de Meij, Jurg, & Brug, 2008). For example, teachers can introduce activity logs or journals to students, having them track their physical activity levels during school and also at home. Even more, teachers can include the physical activity journal as part of assessment and evaluation for physical education since regular active living is likely part of the curricular goals in many jurisdictions. Outside of the curriculum, teachers, supported by their principals, can also initiate physical activity programming in their classroom or school, which celebrate students' physical activity participation. For example, one could create a passport type notebook, whereby a student will receive a stamp after participating in various physical activities for certain period of time. The school could then recognize students' commitment to regular physical activity in a variety of ways (e.g., announcement, personal note, assembly celebrations).

Furthermore, Teachers can also promote positive social interactions and positive self-concept in students by instructing a variety of different activities that address important living skills (e.g., critical thinking skills, interpersonal social skills) while carefully managing students social, emotional, cognitive, and physical well-being within the context of school-based physical activities.

## **Students**

Motivation is a key factor in habit development for children and adolescents, since planned intention is required to begin habit formation, and must be maintained for a significant period of time before automaticity of the behaviour is acquired (Lally et al., 2010; Rhodes et al., 2010). In order for students to be motivated to participate in regular physical activity, they must have a positive attitude toward exercise, a positive physical self-concept, and place a high value on their physical health (Aarts, Paulussen, & Schaalma, 1997; Anderson et al., 2009; Kremers et al., 2008).

Students may also be more motivated to participate in physical activities that they enjoy. Research demonstrates that students feel enjoyment when they are experiencing success (Lorusso et al. 2014). If students undergo negative consequences during physical activities or attempt goals that are too difficult, they will be more likely to quit the program; therefore, students should be encouraged to choose a type of activity that is within their personal capabilities and that results in enjoyment and satisfaction (Aarts et al., 1997). Enjoyment in

physical activity is also achieved when students interact with their peers and have opportunities for socialization (Smith & St. Pierre, 2009). In addition, it is evident that enjoyment and participation in physical activity is maximized when students are able to collaborate with school staff and participate in activity selection (International Union for Health Promotion and Education, 2010; Lorusso et al. 2014); thus, students should be encouraged to get involved in the organization of enjoyable physical activity programming with their teachers and peers. In addition, students should be encouraged to make efforts to maintain positive emotions (e.g., enjoyment, hope, pride) and avoid negative emotions (e.g., anxiety, anger, shame, hopelessness, boredom) as positive emotions help develop positive attitude toward active lifestyle while negative emotions discourage participation in physical activities in later life (Lu & Buchanan, 2014; Robazza, Bortoli, Carraro, & Bertollo, 2006 ).

Moreover, students' habit formation as an outcome may be achieved through their pursuit of goal attainment, considering individuals are likely to continue behaviours that are rewarding in nature (Neal et al., 2012); thus, to further habit development, it is important for students to set personal goals across a wide variety of physical activity programming. For example, a student can create a personal fitness plan tailored toward their before school physical activities (e.g., student chooses to walk to school three times per week with friends and, also, chooses to participate in games each morning in the school yard). Setting and measuring developed goals that emphasize repetitive behaviours, may lead to more clearly visible physical activity habits (Verplanken & Melkevik, 2007).

### **Conclusions**

Regular physical activity habits can provide individuals with lifelong benefits for health and well-being. It is essential for children and adolescents to develop positive habits early on, since physical activity patterns during childhood and adolescence are key predictors of physical activity habits during adulthood (Barnekow-Bergkvist et al., 1996; Hirvensalo & Lintunen, 2011; International Union for Health Promotion and Education, 2010; Tammelin et al., 2003).

Considering almost all children can be reached in school, schools are positioned to play a crucial role in enhancing children's physical activity level (Joint Consortium for School Health, 2009). The proposed framework addresses four factors (i.e., goal setting, motivation, enjoyment commitment) across three important categories (i.e., programs, teachers, students). The framework may provide a structured way of developing and assessing school-based physical activity opportunities that support physical activity habit development. We suggest that the implementation and interpretation of this framework should be positioned within the comprehensive school health approach in order to make such framework more holistic, meaningful, and effective in complex school settings (Joint Consortium for School Health, 2009; Lu et al., 2010; World Health Organization, 2013b).

We recognize that the health and wellness of children and adolescents is often predicated on the establishment of a variety of physical activity habits, not just a single habit. Moreover, we recognize that the development of physical activity habits is highly complex and influenced by multiple factors. With that in mind, we offer future research recommendations specifically pertaining to school-based physical activity habits. Efforts should be directed toward the continued study of the cognitive processes underlying habit development, specifically examining the interplay between intrinsic and extrinsic motivation orientations associated with intent to participate in school physical activity. Schools, as learning communities, have a moral

imperative to help constituent students maintain and/or improve their health and wellness through the provision of school-based physical activity. This can be achieved and we would be wise to seek out and understand schools that have successfully faced the challenge of creating a school culture and educational context that embraces and fosters physical activity habits across a wide variety of school-based physical activity offerings in rural, urban, and suburban settings.

Further, exploring and better understanding student needs, interests, and behaviours associated with physical activity may also have the potential to influence school-based physical activity programming choices and habit formation. Additionally, it goes without saying that teachers play a critical extrinsic role in the development of students' physical activity habits. Research should endeavour to further understand and clarify the relationship between teachers' own physical activity biographies, intent to teach and offer physical activity programming, and actual school-based physical activity teaching behaviours. Moreover, we need to continue to assess and re-assess physical activity programming options juxtaposing program options and decisions against teachers' beliefs and behaviours associated with school-based physical activity and students' physical activity needs, interests, and beliefs.

It is our opinion that these actions are essential if we are to challenge and support students' efforts to maintain and/or improve their health and wellness through physical activity habits derived, in part, out of school-based physical activity. We offer that schools play a central role in the development of physical activity habits and we believe our legacy in education may stretch far beyond the scope of academic achievement. Concomitantly, may we fulfill a crucial societal responsibility in our efforts to help develop lifelong physical activity habits through our teaching and programming in schools!

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