

Developing Physical Activity Habit in Schools for Active Lifestyle

Among Children and Adolescents

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Abstract

This study sought to identify and suggest ways to develop physical activity habits in school-aged children and adolescents that could help them continue healthy active practices throughout their lifespan. A systematic review of the literature identified 4 key factors that may influence school-based physical activity habit formation—motivation, enjoyment, commitment, and sustainment—and how each may be achieved in schools. The research paper begins by exploring the definitions and meaning of a *habit*, how it is developed, and its effect on a healthy active lifestyle. The study proposes a framework comprising 3 major components (i.e., programs, teachers, students) and offers practical strategies that support and nurture the development of students' physical activity habits in schools. The study concludes by making recommendations for further study.

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CHAPTER ONE: INTRODUCTION

Throughout my experiences as a student-teacher and volunteer with youth in the community, it became clear to me that many children and adolescents do not take part in enough physical activity for a healthy active lifestyle. As an active child and athlete growing up, I have always had a passion for physical activity and physical education and I continue to work toward a career as a physical educator. I believe that educators can have a great impact on student learning and behaviour; specifically, educators can play a key role in teaching and modelling healthy active lifestyles. By doing so, schools may be able to help encourage regular physical activity habits in students.

Background

Physical inactivity has been identified as the fourth-leading risk factor for global mortality, causing an estimated 3.2 million deaths globally (World Health Organization [WHO], 2013a). Along with the general health benefits to be gained with regular physical activity, it is important to remember that physical fitness also reduces the risk of premature death caused by cardiovascular disease, diabetes, cancer, hypertension, obesity, depression, et cetera (Warburton, Nicol, & Bredin, 2006). It is widely acknowledged that physical activity is an essential part of healthy living and is crucial to the growth and development of children and adolescents; however, many children do not meet the daily recommendation for physical activity (Government of Canada, 2013; WHO, 2013a). Promoting 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). Research shows that school-based physical activity programs not only improve health during growth and maturation but can

also enhance learning and social skills, and promote healthy active living (Veugelers & Fitzgerald, 2005). However, there is a paucity of research examining how and where children develop physical activity habits throughout school years so that students will maintain an active lifestyle beyond adolescence.

Research Questions

The specific research questions guiding this study are as follows:

1. What is a habit?
2. How is a habit developed?
3. Why are physically active habits important?
4. How can schools support the development of physically active habits?

Purpose of the Study

The purpose of the study is fourfold. First, the study will briefly explore and define the word habit. Second, the study will explore how physical activity habits can be developed in schools. Next, it explores the relationship between physical activity habits and child and adolescent healthy lifestyles. Finally, a framework is offered to support the development of physical activity habits in schools.

In addition, the study will enrich the body of research in the physical activity habit domain, as there is minimal literature directly related to this topic. While much of the research focuses on the psychology involved in habit formation (Aarts, Paulussen, & Schaalma, 1997; Danner, Aarts, Papies, & de Vries, 2011; Lally, Van Jaarsveld, Potts, & Wardle, 2010) and the influence that habits have on activity patterns (Barnekow-Bergkvist, Hedberg, Janlert, & Jansson, 1996; Gardner, de Bruijin, & Lally, 2011; Hirvensalo & Lintunen, 2011; Kremers, Dijkman, de Meij, Jurg, & Brug, 2008; Neal,

Wood, Labrecque, & Lally, 2012; Tammelin, Nayha, Laitinen, Rintamaki, & Jarvelin, 2003), few studies provide insight into *how* children and adolescents can develop positive physical activity habits that are part of a healthy active lifestyle.

Conceptual Framework of the Study

In the literature regarding habit, researchers often identify habit development as a process, whereby individuals may go through behaviour changes in order to develop new habits. Thus, there are four concepts that may have a significant influence on child and adolescent habit formation: motivation, enjoyment, commitment, and sustainment. These key concepts will be explored further, as part of a larger framework that targets the development of school-based physically active habits. The literature review will outline the importance of motivation, enjoyment, commitment, and sustainment as part of physical activity habit formation in children and adolescents, while the findings will discuss practical strategies for habit development by exploring the role of the program, the teacher, and the student in schools regarding physical activity habits.

Overview of Chapters

Chapter 2 provides a literature review corresponding to the main concepts involved in developing habits (motivation, enjoyment, commitment, and sustainment), illustrates how each contributes to the development of physical activity habits among children and adolescents, and offers practical suggestions for students to develop physical activity habits in schools. Chapter 3 outlines the study's methodology and the steps involved in the research process. Chapter 4 consists of the paper itself, which answers the main research questions. Finally, chapter 5 presents a discussion and conclusion that provide further insight on study findings, as well as recommendations for future research.

CHAPTER TWO: REVIEW OF THE LITERATURE

While many studies discuss the benefits of physical activity habit formation, and physical activity habits as predictors of exercise, minimal research has emphasized *how* to develop physical activity habits for a sustained active lifestyle. Many factors must be in place in order to initiate a change in behaviour for habit formation. Through the Transtheoretical Model of Behaviour Change developed by Prochaska and DiClemente (1984), it is understood that individuals must go through five stages of change in order to transform their behaviour patterns: precontemplation, contemplation, preparation, action, and maintenance; the Stages of Change framework provides individuals with strategies to develop new healthier behaviours, based on their readiness (Prochaska & DiClemente, 1984). Since developing physically active habits also involves a transformation of behaviour patterns, four key components can be introduced as part of the transformation, which models the Stages of Change framework. The review of literature suggests there are four main factors (i.e., motivation, enjoyment, commitment, and sustainment) that should be addressed in schools in order to foster school-based physically active habits.

Motivation

Theorists have described a habit as a goal-directed automaticity, demonstrating repetition and lack of awareness (Aarts et al., 1997; Bargh, 1994; Verplanken & Melkevik, 2007). Although automaticity is a key component of a habit, it is important to note that motivation plays an important role in habit development; that is, it involves planned intention to enact behaviour (Rhodes, Bruijn & Matheson, 2010). Initially, this intention, or motivation, comes from personal attitudes, values, enjoyment, et cetera. Eventually, once behaviour becomes habitual in nature, it is likely to be practiced without a need for motivation (Rhodes et al., 2010).

The driving force of motivation for physical activity habit development can be both intrinsic and extrinsic. Intrinsic motivation is attributed to the enjoyment of the task itself, and exists within the individual; therefore, when individuals experience pleasure in the activity, they may be more likely to engage in the behaviour regularly (Aarts et al., 1997; Lally et al., 2010). Contrarily, extrinsic motivation comes from outside the individual and refers to attaining a specific outcome or reward; thus, it is important for individuals to place a high value on their physical health in order to be driven towards goal-attainment (Kremers et al., 2008).

In the case of 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 in each individual, and for many it takes a significant number of repetitions (Lally et al., 2010). Thus, creating physical activity habits will require *continued* motivation in order to maintain the necessary practice it takes before the behaviour can be performed with automaticity.

Furthermore, 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 et al., 1997; Anderson, Masse, Zhang, Coleman, & Chang, 2009; Kremers et al., 2008). Thus, students may be able to reach this level of motivation through enjoyment in physical activity.

Enjoyment

When one aims to form a new physical activity habit, it is suggested that individuals should choose an activity that is enjoyable and that they *want* to pursue regularly. It is assumed that if one chooses this activity, it will be intrinsically rewarding and they will be more likely to continue (Lally et al., 2010). Likewise, people are more likely to develop physically active habits if they are experiencing enjoyment (Lorusso, Pavlovich, & Lu, in press).

In schools, teachers should prioritize teaching physical activities that engage students and create an enjoyable and positive atmosphere, contributing to a student's willingness to remain active (Lorusso et al., in press). Even more, teachers should pay attention to students' emotions experienced in physical activities and make efforts to develop students' enjoyment because students' positive emotions (e.g., enjoyment, hope, pride) are more likely to drive them for lifetime physical activity (Lorusso et al., in press; Lu & Buchanan, in press). Student enjoyment in school-based physical activity education is often achieved when there is positive student–teacher interaction, perceived competence and ability, and positive social interactions (Smith & St. Pierre, 2009).

In addition, research shows that students experience enjoyment when they are experiencing success (Lorusso et al., in press). If students experience negative consequences during physical activities or attempt goals that are too difficult, they may be more likely to quit the program; therefore, students should be encouraged to choose a type of activity that is among their personal capabilities and that results in immediate 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). Finally, 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 (Lorusso et al., in press; St. Leger, Young, Blanchard, & Perry, 2010); thus, students should be encouraged to get involved in the organization of enjoyable physical activity programming with their teachers and peers to further habit development.

Commitment

Commitment to a physical activity program must be in place in order for individuals to maintain the regular practice required to form a habit; this commitment is often achieved through goal-setting. Goals are motivated states that energize and direct action; although they do not influence actual habit mechanisms, goals are important at certain stages of habit formation (Neal et al., 2012). For example, habit formation often occurs in 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 individuals to set personal goals toward a physical activity program. For example, students can create a personal fitness plan to work toward developing physical activity habit in a meaningful and concrete way.

In addition, students must commit to a program by choosing physical activities that are conducive to their school and home environment since habit formation requires repetition in everyday life (Verplanken & Melkevik, 2007). For example, if the child does not have access to organized activities outside of school, he or she may choose to join a lunchtime program at school, and take on physical activities of low-organization at home, such as walking, yoga, et cetera. Furthermore, group activities can be especially

beneficial to one's commitment to a program, considering students may be held accountable to each other and can encourage each other to participate. Since peers often have a profound influence on adolescent life (Lorusso et al., in press; Smith & St. Pierre, 2009), suggesting that students be active together may help in developing lasting physical activity habits. By doing so, children and adolescents could be exposed to positive peer impact and added social support for program commitment.

Sustainment

Sustainment can be described as the stage whereby an individual reaches the point of automaticity and no longer requires effort to execute a behavioural response. It appears that 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 will demonstrate regularity and automaticity by displaying some or all of the following features: lack of awareness, unintentionality, uncontrollability, and efficiency (Bargh, 1994).

More specifically, a sustained habit is developed when a behaviour pattern is repeated in a consistent situation, allowing a cue-response link to be formed (Lally et al., 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). Together, the cue-response link gradually increases the automaticity of the behaviour as the person continues to respond in a recurring context (Neal et al., 2012; Wood & Neal, 2007).

In order for children and adolescents to reach the stage of sustained habit, they must have regular opportunities for physical activity. Considering most children can be

reached in school, schools are positioned to play a critical role in enhancing children's physical activity level (Joint Consortium for School Health [JCSH], 2009). In addition to the scheduled physical education classes during instructional time, schools have the opportunity to provide additional physical activity sessions to ensure students are meeting the recommended amount of moderate- to vigorous-intensity physical activity. These opportunities include before-, during-, and after-school physical activity programming (JCSH, 2009; Lu, Steele, & Barrett, 2010). Understandably, if a student has more opportunities to be active throughout the day, he or she will be more likely to develop physical activity habits.

Therefore, an individual requires planned intention via personal effort (motivation, enjoyment, commitment) until the habit can be sustained. 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).

CHAPTER THREE: METHODOLOGY

Considering there are many theories relevant to habit development, a conceptual research approach was chosen in order to connect major aspects of habit development and to provide practical suggestions for schools. The phases of this study included a literature search, a conceptual framework for the literature review, and a conceptual framework for the research paper.

Literature Search

To begin the literature search, I first exhausted the literature available in the Physical Education and Psychology research databases (e.g., ERIC, Academic Search Complete, PsycINFO) using search terms such as “physical activity habit” and “habit formation.” Next, I supplemented the academic literature by searching for additional information accessible online through public organizations (e.g., WHO, Government of Canada, International Union for Health Promotion and Education, etc.).

After reading through the articles, each one was graded based on its significance to the research questions. I then began a systematic review of the literature, grounded on the evidence relevant to developing physical activity habits, and guided by the following research questions:

1. What is a habit?
2. How is a habit developed?
3. Why are physically active habits important?
4. How can schools support the development of physically active habits?

Conceptual Framework for the Literature Review

When organizing the research into categories for a literature review, I searched for themes related to habit development. I found that much of the research described habit formation as a *process*, similar to Prochaska and DiClemente's (1984) Transtheoretical Model of Behaviour Change. The Stages of Change model provides individuals with strategies to develop new healthier behaviours, based on their readiness; these stages include precontemplation, contemplation, preparation, action, and maintenance (Prochaska & DiClemente, 1984). Since developing physically active habits also involves changes in behaviour patterns, four key factors can be introduced as part of the habit formation, modelling the Stages of Change framework; thus, the relevant literature was organized into what I found to be the four key components of school-based physically active habit development: motivation, enjoyment, commitment, and sustainment.

Conceptual Framework for the Research Paper

With respect to the overall findings, a research paper was proposed and guided by the complementary research questions guiding the Major Research Paper (MRP):

1. What is a habit?
2. How is a habit developed?
3. Why are physically active habits important?
4. How can schools support the development of physically active habits?

Next, a framework containing three major components (i.e., programs, teachers, students) was proposed to inform the development of physical activity habits among children and adolescents in school. Practical strategies were provided to support efforts to nurture students' physically active habits. The program component was based on the

comprehensive school health model (JCSH, 2009; Lu et al., 2010; WHO, 2013b), with the aim of children and adolescents to obtain maximal health benefits through physical activity. Practical suggestions for the role of the teacher and the student were also made, guided by the four key components of physical activity habit development: motivation, enjoyment, commitment, and sustainment.

CHAPTER FOUR: FINDINGS

This chapter presents the study's findings through a research paper that was developed as the result of the literature review.

Developing Physical Activity Habit in School for Active Lifestyle among Children and Adolescents

This paper outlines the importance of developing physical activity habit among children and adolescents in schools, in order to continue healthy active practices throughout the lifespan. Through examining current literature, this article explains the meaning of *habit*, how physical activity habit is developed, and why it is important to develop a healthy active lifestyle. A framework containing three major components (i.e., programs, teachers, students) was proposed to help the development of physical activity habit for active lifestyle among children and adolescents in school. Practical strategies were provided to nurture students' physical activity habit. Future research directions are also discussed.

It is widely acknowledged that physical activity is an essential part of healthy living, and is crucial to the growth and development of children and adolescents (WHO, 2013a). Making regular physical activity a habit at an early age can provide children with lifelong benefits; however, many children do not meet the daily recommendation for physical activity (Government of Canada, 2013; WHO, 2013a). Research shows that school-based physical activity programs not only improve health during growth and maturation, but can also 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 (St. Leger et al., 2010). However, scant literature examines

how children develop physical activity habit throughout school years so that students will maintain an active lifestyle beyond adolescence. The purpose of this paper is to examine what habit is, how it is developed, why it is important for children and adolescents to develop physical activity habit, and to provide a framework for the development of physical activity habit in order to assist them to maintain a healthy active lifestyle into adulthood.

What Is Habit?

The word *habit*, in its origin, is referred to as a “mental constitution, settled disposition, custom” (Hoad, 1996, p. 207). Habit is normally defined as “a behaviour pattern acquired by frequent repetition or physiologic exposure that shows itself in regularity or increased facility of performance” (“Habit,” 2013a, para. 7), or “a settled or regular tendency or practice, especially one that is hard to give up” (“Habit,” 2013b, para. 1). Although there are variations in definitions for the word *habit*, both the Merriam-Webster’s and the Oxford dictionaries used for the latter citations associate habit with the concept of regularity.

It appears that 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 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 habit, it is important to note that motivation is also a key predictor of behaviour (Rhodes et al., 2010). That is, it requires planned intention to enact behaviour. Initially, this intention, or motivation, comes from

personal attitudes, values, enjoyment, et cetera. Eventually, once behaviour becomes habitual in nature, it is likely to be practiced without a need for motivation (Rhodes et al., 2010).

How Is Habit Developed?

A habit is developed when a behaviour pattern is repeated in a consistent situation, allowing a cue-response link to be formed (Lally et al., 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). Together, the cue-response link gradually increases the automaticity of the behaviour as the person continues to respond in a recurring context (Neal et al., 2012; Wood & Neal, 2007).

In the case of 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). Thus, creating physical activity habits will require goal setting, enjoyment, motivation, and commitment in order to maintain the necessary practice it takes before the behaviour can be performed with automaticity.

First, one should set 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. Next, one should repeat this behaviour in the same situation regularly in order to develop the cue-like response (e.g., every day during lunch break). Further, individuals should choose an activity that is enjoyable and that they *want* to pursue regularly; it is assumed that if they choose such an activity, it will be intrinsically rewarding and they will be

more likely to continue (Lally et al., 2010). Lastly, it is important to monitor the behaviour and track progress to ensure goals are being met. Some may find it helpful to participate in group activities or group programs so as to be held accountable not only to oneself, but also to team members, which can be an additional motivating factor. 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).

In schools, teachers should prioritize teaching physical activities that engage students, give students a sense of ownership of physical activities, and create an enjoyable and positive atmosphere (Lorusso et al., in press). All of these components may contribute to a student's willingness to remain active. Among children and adolescents, physical self-concept has been significantly linked with physical activity, fitness, and sport participation (Anderson et al., 2009). To create these positive impacts within school programs, students should feel competent in their movement abilities, participate in physical activities that they find to be valuable, and receive positive encouragement from parents, teachers, and peers (Anderson et al., 2009; Hirvensalo & Lintunen, 2011). This positive physical self-concept is a key factor in influencing children and adolescents to remain active, since people are more likely to develop physical activity habits if they are experiencing enjoyment (Lorusso et al., in press).

Why Is Physical Activity Habit 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, et cetera. (Warburton et al.,

2006; WHO, 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 (for team sports), stress relief, feeling energized, positive mental health, positive body image, and so forth (JCSH, 2009).

Fundamentally, promoting 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 plenty of research to show 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; St. Leger et al., 2010; Tammelin et al., 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 which include social changes 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 becomes a routine in nature and hard to discontinue (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 (WHO, 2013a). This amount of exercise is sufficient to improve health, reduce the risk of premature death, and increase psychological well-being (Warburton et al., 2006). However, typical school physical education may not be sufficient to follow these guidelines and many children are unable to meet these guidelines outside of school. Almost all children can be reached in school and schools are positioned to play an important role in enhancing children's physical activity level (JCSH, 2009). Evidently, in order for children and adolescents to obtain the health benefits of physical activity, it is imperative to supplement physical education with extracurricular physical activities for all students in school, and develop wholistic physical activity programs guided by the comprehensive school health model (JCSH, 2009; Lu et al., 2010; WHO, 2013b). Thus, we propose a framework including three major components (i.e., programs, teachers, students) to focus on the development of physical activity habit for active lifestyle among children and adolescents in schools.

Programs

In addition to the scheduled physical education classes during instructional time, schools should provide additional physical activity opportunities to ensure students are meeting the recommended amount of moderate to vigorous-intensity physical activity. These opportunities include before-, during-, and after-school physical activity programming (JCSH, 2009; Lu et al., 2010). Understandably, the more active a child is

throughout the day, the more health benefits a child will gain (WHO, 2013a); thus, providing opportunities for physical activity several times throughout the day is favourable. 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, Francis, & Lodewyk, 2013).

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 alleviate fatigue and improve mental alertness and overall mental health; consequently, if children are active before school prior to instruction, they may have more success in their morning school work (Government of Canada, 2013; St. Leger et al., 2010).

One suggestion for before-school programs is to provide opportunities for students to partake in active free play. Teachers or students may bring sporting equipment to the playground for free play (e.g., shooting basketball, throwing and catching football, four-square, tag games) with mild intensity, such that students will be able to join an activity as they arrive to school. The teachers who are on duty must ensure safe play and

should also encourage students to be active up until the school day commences.

Additionally, schools can create before-school initiatives such as *active commuting*—an approach to let students actively travel to school by walking or biking (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 (JCSH, 2009; St. Leger et al., 2010). During-school physical activity programs may include scheduled physical education classes, activity break (recess), or lunchtime intramural programs and clubs.

Regular physical activity at school can improve students' motivation, with no negative effects on cognitive development, even if less time is allotted for cognitive tasks (St. Leger et al., 2010). However, with an ever-increasing focus on academic achievement in literacy and numeracy as per the schools' governing curriculum demand, many students are not receiving regular physical education (Barrett, 2013; Beighle & Moore, 2012); thus, schools should proactively supplement the curriculum with additional physical activity programming.

For example, recess or activity break is an optimal time 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, 2013). Besides free play, it is also possible for teachers to organize leadership

programs that allow for organized play at recess. For example, the older students can develop and referee games for younger students as part of a leadership initiative in schools (Barrett, 2013). This practice could reap many benefits such as bringing the school community together, developing ongoing leadership skills, social interactions, enjoyment, and of course exercise.

Moreover, many middle and high schools 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, regardless of a child's physical activity background, through inclusivity and enjoyment in participation. Intramural activities can include non-competitive sports, games of low organization, and special clubs (Barrett, 2013). 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 gender, race/ethnicity, weight or fitness level, and socioeconomic status.

After-school physical activity programs. After-school physical activity programs are typically delivered immediately after 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 ability 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, which allows students to compete in sports against other school teams in the community; these programs allow for more competitive students to experience enjoyment and success within games between other schools (Barrett, 2013; Lu et al., 2010). Although these programs may not be suitable for all students, they are often beneficial for more elite athletes who have a competitive drive to improve skills, enhance physical fitness, and fulfill personal satisfaction.

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 for those who are not interested in sports, a group workout. Offering unique activities such as yoga, tai chi, or dance aerobics gives students an opportunity to try something unique and enjoyable (Lorusso et al., in press). All after-school physical activity programs must be supervised by at least one school official, staff member or approved volunteer (Barrett, 2013).

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 safely monitoring 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 education facilitators in the classroom, and volunteer to lead or coach in extracurricular programs (Barrett, 2013). When teachers ensure that regular physical activity guidelines are being met, this demonstrates to students the importance of exercise as part of the regular routine. Teachers can also be role models by demonstrating their own participation in regular lifetime physical activity. The simple act of participating alongside students in physical activity not only promotes the teachers' health, but may also influence student participation in and perceptions of physical activity (Barrett, 2013). It is crucial for teachers to be role models, since demonstrating a positive attitude toward physical health may not only increase student participation, but also enhance student enjoyment in physical education (Barrett, 2013; Lorusso et al., in press).

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 et al., 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 curriculum in many jurisdictions. Outside of the curriculum, teachers supported by their principals can also start a physical activity initiative in their classroom or school, which rewards students for being active. For example, one could create a passport-type notebook, whereby a student will receive a stamp after participating in various physical activities for a certain period of time. The school could then recognize one student each month for demonstrating commitment to regular physical activity.

Furthermore, teachers should pay attention to students' emotions experienced during physical activities and make efforts to develop students' enjoyment because students' positive emotions (e.g., enjoyment, hope, pride) are more likely to drive them for lifetime physical activity (Lorusso et al., in press; Lu & Buchanan, in press). Student enjoyment in physical education is often achieved when there is positive student–teacher interaction, perceived competence and ability, and positive social interactions (Smith & St. Pierre, 2009). Teachers can contribute to student enjoyment by being enthusiastic, having a positive attitude, and encouraging students. Teachers can also promote positive social interactions and positive self-concept in students by instructing a variety of different activities that include teamwork, challenge, competition, and learning because a broad range of activities will be likely to reach most students' interests, allow students to improve in physical and social domains, and keep students engaged by introducing new games and skills (Smith & St. Pierre, 2009).

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 et al., 1997; Anderson et al., 2009; Kremers et al., 2008); students may be able to reach this level of motivation through enjoyment in physical activity.

Research shows that students experience enjoyment when they are experiencing success (Lorusso et al., in press). If students experience 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 immediate 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 (Lorusso et al., in press; St. Leger et al., 2010); thus, students should be encouraged to get involved in the organization of enjoyable physical activity programming with their teachers and peers.

Moreover, habit formation often occurs in 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 in a physical activity program. For example, the student can create a personal fitness plan to work toward developing physical activity habit in a meaningful and concrete way.

Students must set goals and choose physical activities that are conducive to their school and home environment since habit formation requires repetition in everyday life (Verplanken & Melkevik, 2007). For example, if children do not have access to organized activities outside of school, they may choose to join a lunchtime program at school, and take on physical activities of low organization at home, such as walking or yoga. Students can also engage in group activities by organizing active games at recess, or starting neighbourhood groups of jogging, cycling, skateboarding, street hockey, basketball, or soccer. These types of activities can be beneficial, since students are held accountable to each other and can encourage each other to participate. Peers often have a profound influence on adolescent life (Lorusso et al., in press; Smith & St. Pierre, 2009); therefore, encouraging students to be active together may help the development of their physical activity habit, since children and adolescents could be exposed to positive peer impact and added social support.

Conclusions

Regular physical activity as habit 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; St. Leger et al., 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 (JCSH, 2009). The framework with three important components (i.e., programs, teachers, students) proposed in the present study can be employed as guidelines for developing students' physical

activity habit. The implementation of these guidelines should be positioned in the comprehensive school health model (JCSH, 2009; Lu et al., 2010; WHO, 2013b).

Future research should focus on long-term studies to analyse the impact of school-based physical activity programs on habit development in students who are physically active outside school and to investigate the relationship between those programs and adults who remain physically active in life. Researchers should also continue to study the cognitive processes underlying habit development, specifically in the physical activity habit domain. Undeniably, developing physical activity habit in children and adolescents in school will increase the likelihood of maintaining healthy active practices throughout their lives.

CHAPTER FIVE: DISCUSSION AND CONCLUSION

The purpose of this study was to explore the relationship between physically active habits and healthy lifestyles among children and adolescents, as well as to provide practical suggestions for children and adolescents to develop positive physical activity habits in school. One of the most interesting themes identified in the research is the profound link between physical activity patterns in childhood and adulthood (Barnekow-Bergkvist et al., 1996; Hirvensalo & Lintunen, 2011; St. Leger et al., 2010; Tammelin et al., 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). This evidence highlights the importance of developing school-based physical activity habits in children and adolescents to increase the likelihood of regular physical activity behaviours into adulthood.

Most children spend a significant part of their developing lives in educational organizations; thus, schools have the opportunity to provide students with physical activity opportunities on a regular basis which can lead to physical activity habit development. Although physical activity and proper nutrition are equally important in the health and well-being of children and adolescents, the focus of this study was placed on physical activity because it is one aspect that can be monitored in elementary schools. For example, most students in public education organizations bring their own lunch to school, leaving elementary schools with little to no impact on and/or way of measuring nutritional intake. Contrarily, by providing a comprehensive school physical activity program, it is much more possible to reach all students and measure the impact of those programs on students' physically active habits (Lu et al., 2010).

Physical activity programming in school can be more effective if they adopt a comprehensive approach; this includes the development of skills, establishing and maintaining suitable physical environments and resources, and upholding supportive policies to enable all students to participate (JCSH, 2009; St. Leger et al., 2010). The more inclusive the program is within the school community, the more likely we may see students participate.

First, it is imperative that schools and communities are on board with current health initiatives; when the staff, environment, policies, and community are cohesive in physical activity programming, students are more supported in their learning and physical activity journey (JCSH, 2009). Specifically, teachers and other school staff may act as role models for students and must demonstrate and provide health and physical activity knowledge. Especially in elementary schools, professional development is likely required in order for non-specialist teachers to implement regular physical activity programs in their classrooms.

Other factors that were identified as important in student participation include maintaining a positive attitude towards exercise and positive self-concept; these factors often coincide with enjoyment in physical activity. Precisely, students experience enjoyment in physical activity when they are experiencing success (Lorusso et al., in press). Enjoyment was found to be a significant factor in the physical activity habit research, since individuals are more likely to continue behaviour patterns that are pleasurable (Aarts et al., 1997; Lally et al., 2010); this may be especially true when motivating children and adolescents to participate in physical activity.

Government initiatives can also help enhance regular physical activity in schools. For example, several provinces in Canada have implemented the Daily Physical Activity (DPA) policy. The DPA consists of sustained moderate- to vigorous-intensity physical activity for a minimum of 20 minutes every school day, in order for students to maintain or enhance physical fitness, overall wellness, and the ability to learn (Ontario Ministry of Education, 2010). This policy is an example of a positive government initiative to improve the health and well-being of Canadian children and adolescents; however, it is important to note that the whole school community (i.e., administrators, teachers, parents, students) must be willing and put effort forth to make a DPA program successful.

Recommendations

Although there is some research in the physical activity habit domain, more conceptual and empirical studies would enrich the body of literature and understanding of this important topic. Future research should focus on long-term studies to analyze the impact of school-based physical activity programs on habit development in students who are physically active outside school and to investigate the relationship between those programs and adults who remain physically active in life. Researchers should also continue to study the cognitive processes underlying habit development, explicitly in the physical activity habit domain. There is plenty of literature on habit development in the general sense; however, since *physical activity habit* is complex, specific studies are essential to increasing the knowledge base on this topic.

Moreover, continued research in all health promotion areas is needed, considering that the population of overweight and obese children is on the rise. It is hoped that this study can contribute to the health and physical education field by providing insight to

why physical activity habit is important for children and adolescents, and by suggesting practical ideas for schools to make habit development a priority in teaching and programming.

Personal Reflection

After completing my Honours Bachelor of Kinesiology and Bachelor of Education, respectively, I knew that I was not finished learning and wanted to pursue a Master of Education degree. Not only would it help to advance my career in the future, but I was also eager to meet and work with new colleagues in my field of interest. Coming from a Physical Education background, I was interested in working with Dr. Chunlei Lu. I knew his work in the Teacher Education department at Brock University, and shared similar research interests with respect to school physical activity programs. When Dr. Lu shared his idea with me on developing physical activity habit in schools for active lifestyle, I was intrigued. I felt that this area of research was very important and would enhance my knowledge base for future teaching practices; I began reading on the topic immediately.

Throughout the Master of Education program, I took several courses which helped guide me to complete my MRP. I learned about different perspectives in education, especially regarding administration and leadership roles. I considered my research topic with respect to constructions of organizations, ethical decision making, and the social context of leadership. Whenever possible, I read articles and wrote essays that linked the course content with my research topic to further my understanding of the literature. Additionally, I completed an educational research course and an independent

study, where I began to understand how to put a research paper together. I enjoyed working with Dr. Lu and receiving feedback throughout the early stages of my research.

The most challenging aspect of completing an MRP is the self-regulated learning and goal-setting. For the first time in my educational career, it was up to me to decide when I would complete my work. Dr. Lu guided me when necessary throughout different researching and writing phases; otherwise, the rest was up to me. I learned a lot about myself—what motivates me, what distracts me, what environment I learn best in. It was difficult to make progress at times, when I was dealing with personal issues; overall, I am proud of what I accomplished in one year.

Contrarily, the most exciting part of this process was working with two highly respected academics to write a research article on physical activity habit. Dr. Joe Barrett joined Dr. Lu and I to write this paper, and it was an invaluable experience for me to collaborate and share ideas with two individuals who have so much expertise in the subject area. I look forward to completing the process and hope that publication is an option in the near future.

Overall, I am glad that I chose to work with Dr. Lu and Dr. Barrett, because my passion for teaching truly is underscored by physical education and I will always enjoy learning more about the field. I have gained much knowledge and insight within my topic of research, and will be glad to share my findings with future colleagues and students. I maintain that developing physical activity habit in schools is a relevant research topic, and I am pleased to be able to contribute my findings to the existing body of research and my teaching practice.

Concluding Remarks

The suggestions made in this study for developing physical activity habit among students were made with two main goals in mind: promoting healthy growth and development for children and adolescents by providing them with the opportunity for the regular recommended dose of physical activity; and promoting active habits to show students the importance of physical activity, encouraging lifelong healthy active living. These are two goals that can be met in any school, when following the guidelines for the program, teachers, and students, provided the school community is on board to engage in healthy school initiatives.

As a final point, educational organizations play a large part in influencing student behaviours since children and adolescents are under the care of their teachers for major parts of each day. However, educators have little-to-no control over what happens during the time children and adolescents spend outside of school, since parental behaviour is often the largest predictor of child behaviour patterns (Olstad & McCargar, 2009). Specifically, within the scope of healthy active living, many children may not have positive role models at home. Therefore, it is hoped that these school-based physical activity programs engage students during instructional time and also aim to give students knowledge and skills to take with them into their homes and communities for lifelong healthy active practices.

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