

Running head: MOTIVATION AND PHYSICAL LITERACY

A Qualitative Approach Using the Self Determination Theory To Understand Motivation Within
the Concept of Physical Literacy

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THESIS

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Abstract

The relevance of motivation has saturated many physical literacy definitions (Mandigo et al., 2006); however, the study of motivation in this context has generated minimal attention. Thus, the purpose of this study was to explore motivation with respect to physical literacy related to self-reported variety of physical activity engagement and predilection towards physical activity. Participants included 218 male and female students in grades 4-6. Deci and Ryan's (1985) basic needs theory guided a thematic analysis of open-ended questions from the Canadian Assessment of Physical Literacy. Results indicated participants' engagement in a variety of physical activities, and predilection towards physical activity was influenced by self-reported need satisfaction. Competence related more to engagement in a wide variety of physical activities while relatedness was found to relate more to predilection towards physical activity. Children who engaged in their physical activities for fun, and health benefits on average participated in a greater variety of physical activities.

Chapter One: Introduction

Physical activity engagement, play and sport was once perceived to be a right of passage for children and youth (Active Health Kids Report Card, 2011). Much like water is fundamental for the nourishment and development of a plant, physical activity engagement was, and continues to be, an essential part of my life. A normalcy surrounding engagement in sport and physical activity developed throughout my involvement as an athlete, coach, academic, and, in the near future, an educator. Due to the normalcy I associated with physical activity and sport engagement, it was interesting for me to learn that only 5% of youth currently achieve the new Canadian physical activity guidelines, which state that in order for youth to reap health benefits, they must accumulate at least 60 minutes of moderate to vigorous physical activity per day (Colley et al., 2011). Numerous studies have documented the health benefits associated with physical activity including improvements in aerobic fitness, motor skills, as well as improved cognitive abilities (Active Healthy Kids, 2012). Despite the numerous health benefits documented, the number of children and youth achieving physical activity levels across Canada remain poor, and suggest a present day norm of physical inactivity (Active Healthy Kids Canada, 2013). More alarmingly, this normalcy of physical inactivity has coincided with a rise in obesity-related health problems that have exacerbated health care costs and threatens to make the current generation of children the first in history that will not outlive their parents (Whitehead, Maccallum, & Talbot, 2012).

Despite numerous recommendations for physical activity engagement, Canada has received an 'F' for physical activity levels for seven consecutive years in the Active Healthy Kids Report Card (2013). The fact that youth must attend school until the age of 16 and that 50% of their waking hours are spent at school (Patton & McDougall, 2009), creates a large onus on

health care professionals and educators to work collaboratively to create physical activity opportunities that optimize the potential of physical education to influence the healthy development of the whole person.

An effort to enhance Ontario's youth participation in physical activity was made by the Ministry of Education (2010) and led to a reform of the Ontario Health and Physical Education (HPE) curriculum for grade one to eight in 2010. The Ontario Health and Physical Education curriculum k-8 (2010) is highly concentrated on the development of physical literacy in children and youth (The Ontario HPE curriculum, 2010). Individuals who are physically literate are identified as people who move with competence and confidence in a wide variety of physical activities across multiple environments that promote the healthy development of the whole person (Physical and Health Education [PHE] Canada, 2011). More specifically, physical literacy is "the motivation, confidence, and physical competence, understanding and knowledge to maintain physical activity at an individually appropriate level throughout life" (Mandigo, Francis, Lodewyk, & Lopez, 2006, p. 28).

Motivation has been identified as a critical and foundational characteristic related to being physically literate as it highlights the importance of the affective domain and influences ongoing participation and development (Mandigo et al., 2006). Motivation, with respect to my own sport and physical activity endeavours, has seldom been problematic as I can identify the majority of my experiences as being extremely satisfying and rewarding. In fact, I believe that I possess a number of characteristics associated with physical literacy. As a former coach, and aspiring physical educator the concept of physical literacy is something that aligns with my own personal view of what is critical for ongoing participation and development in sport and physical

activity. More specifically, I believe that this concept serves as critical to address the holistic development of the child at an individually appropriate level.

The Canadian Assessment of Physical Literacy (CAPL) was designed to provide a valid, reliable, feasible and informative tool to assist in the assessment of physical literacy in Canadian youth (Tremblay & Lloyd, 2010). The test is designed to assess physical literacy in four domains: (1) motor skills; (2) physical activity behaviours; (3) physical fitness; and (4) awareness, knowledge, and understanding (Tremblay & Lloyd, 2010). The concept of motivation has been identified as integral to the development of physical literacy by a number of academics (Mandigo, et al. 2006; Sheehan & Katz, 2010; Whitehead, 2010), yet the concept of motivation within the CAPL has generated little attention. There is a disconnect that exists between what is known about the benefits of achieving recommended physical activity levels and what youth are actually achieving, which has created a demand to better understand youth motivation with respect to the development of physical literacy. It is evident that research surrounding motivation has not generated adequate attention within the CAPL due to the fact that it has not been included in their current model of physical literacy. This current gap in the literature provides rationale for the objective of the proposed study.

Given the aforementioned lack of attention on motivation in the realm of physical literacy, the purpose of the present study was to explore and better understand the role of basic needs satisfaction related to self-reported engagement in a wide variety of physical activities, and predilection towards physical activity for pre-adolescent youth. A thematic analysis was used for a secondary data analysis to determine basic needs satisfaction through a series of open-ended questions in the Physical Education Knowledge portion of the CAPL for 218 male and female students in grades 4-6. The basic needs theory, which is a sub theory of Deci and Ryan's (1985)

self-determination theory, was used to understand self-determined motivation to engage in sport or physical activity. The theory suggests that individuals who possess more self-determined types of motivation are more likely to satisfy the needs of competence, autonomy, and relatedness. Previous literature supports the notion that the ability to fulfil the three basic needs is linked to improved motivational states in sport and physical activity contexts (Bryan & Solomon, 2007); thus it is assumed that the satisfaction of the three basic psychological needs will relate to specific constructs of physical literacy: engagement in a wide variety of physical activities and enhanced predilection towards physical activity engagement.

The present study addressed the lack of information on motivation within the concept of physical literacy through the following research questions: (a) How do children's likes and dislikes about physical activity in grades 4-6 suggest feelings of competence, autonomy and relatedness?; (b) How does the inference of the basic psychological needs relate to self-reported selection of a wide variety of physical activities?; and (c) How does the inference of the three basic psychological needs relate to self-reported predilection towards physical activity?

Chapter Two: Literature Review

The purpose of the present study was to explore and better understand the role of motivation in terms of basic needs satisfaction related to self-reported engagement in a wide variety of physical activities and predilection towards physical activity for pre-adolescent youth. Three primary areas were focused on for this study: physical literacy development, physical literacy assessment, and basic needs theory related to sport, physical activity, and physical education contexts. The following sections discuss literature related to the the concept of physical literacy, physical literacy assessment, and the basic needs theory. The final section of

the literature review illustrates the limitations of previous research done, and how the present study addressed some of these gaps in the literature.

The Concept of Physical Literacy

The concept of physical literacy has generated a significant amount of attention recently, as it is on the agenda for the Ontario Health and Physical Education k-8 (HPE) Curriculum (2010), Physical and Health Education (PHE) Canada, and part of the Long Term Athlete Development plan from Canadian Sport for Life (2009). Physical literacy, as defined by Canadian Sport for Life (2009), focuses on the development of physical attributes through the development of fundamental movement skills in order to take part in sport and physical activity for life-long enjoyment and sporting success. Such a focus on physical attributes associated with the concept of physical literacy does not give justice to other integral cognitive and psychosocial factors, and discounts holistic tenancies latent in the concept's meaning (Whitehead, 2010). Although physical literacy is highly concentrated in the domain of physical attributes, the concept of physical literacy extends beyond simple notions of muscle contractions and joint flexibility (Whitehead, 2001). Rather, the concept of physical literacy addresses the development of the individual from the cognitive, social, and affective domains (Sheehan & Katz, 2010).

British researcher Margaret Whitehead, who has been identified as the matriarch of physical literacy (PHE Canada, 2011), lends the following and concise definition of physical literacy: "As appropriate to each individual's endowment, physical literacy can be described as the motivation, confidence, physical competence, knowledge and understanding to maintain physical activity throughout the life course" (Whitehead, 2010, p. 12). More specifically, Whitehead (2010) discussed several attributes that are thought to describe an individual who is physically literate, which are also available in Figure 1 (Appendix B). The inclusion of this

figure for understanding physical literacy is critical, as it is important to conceptualize physical literacy as a holistic concept that captures the synergy of attributes of the mind and body. The following sub-sections discuss these attributes, and how they relate to other literature that discusses characteristics of being physically literate.

Motivation. Whitehead (2010) acknowledged motivation as being essential to promote the necessary application and concentration to excel in movement contexts, maintain ability, make progress possible, develop a positive attitude towards physical activity and take the initiative to participate in physical activity on a regular basis. The development of a positive attitude towards physical activity is suggested to instil physical literacy throughout the life course, enriching one's life at all ages (Whitehead, 2010). De Rossi (2013) further acknowledged the importance of motivation to establish lifelong physical activity behaviour derived from sheer pleasure of engaging in physical activity for its own sake, and the joy that one experiences through movement. The concept of motivation within physical literacy was further discussed by Mandigo, Francis, Lodewyk and Lopez (2009) through PHE Canada's position on physical literacy for educators as essential to understand, communicate, apply and analyze different forms of movement. Mandigo et al. (2009) justified the inclusion of motivation in their definition, as it is essential to highlight the affective domain and to reinforce development throughout the life course.

Confidence and physical competence. Individuals who are physically literate orchestrate movement with poise, economy, and confidence in a wide variety of physically challenging situations (Whitehead, 2010). The development of movement competence emerges from the learning and practice of fundamental movement skills (PHE Canada, 2011). Fundamental movement skills are thought to be the building blocks of movement and thus the

foundation of physical literacy, much like knowledge of phonics is essential to read (PHE Canada, 2011). The development of fundamental movement skills, such as running, hopping, kicking and throwing can lead to enhanced feelings of confidence and competence and often precede more sport specific skills such as agility, balance and laterality (Sheehan & Katz, 2010).

Feelings of confidence and competence in fundamental movement skills can lead to fulfillment of basic psychological needs that are necessary for development of intrinsic motivation (Whitehead, 2010). The inability to develop these skills can affect children's daily participation in school activities and can lead to feelings of exclusion, which not only affect a child's self-esteem, but also their academic performance (Sheehan & Katz, 2010). The development of fundamental movement skills is essential for youth as it is important to feel confident when they engage in physical activity whether it is for fun and health, or for competition and the pursuit of excellence (PHE Canada, 2011). The inability of youth to develop fundamental movement skills at a young age can lead youth to become disengaged from physical activity, and thus further inhibit their development of the vital building blocks of movement necessary for life-long participation in sport and physical activity (Sheehan & Katz, 2010).

Interaction with the Environment. An individual's ability to execute appropriate movement in a given environment builds on the development of movement competence (Whitehead, 2010). An individual who has developed competency in a wide variety of environments will be able to respond effectively to demands that are encountered (Whitehead, 2010). The ability to respond appropriately and effectively to challenges encountered in one's environments enables an individual to feel satisfied and rewarded, as they are able to produce desired outcomes, and leads to enhanced feelings of competence (Deci & Ryan, 1985). Lloyd and Smith (2013) referred to this attribute as expressive possibilities. Expressive possibilities are

suggested to be developed through competence in a wide variety of physical activity contexts that lead an individual to learn how to physically interpret the intentions of others and to communicate (Lloyd & Smith, 2013). Other literature has acknowledged the importance of being able to read the environment effectively to become competent across all domains of movement (Canadian Sport for Life, 2009; Mandigo et al., 2009).

Sense of self and self-confidence. Satisfaction of the three aforementioned attributes is proposed to enhance self-confidence and self-esteem (Whitehead, 2010). Whitehead (2010) suggested that an individual's self-confidence is the result of rewarding experience of effective interaction with the environment. Furthermore, Whitehead (2007) discussed the impact of capitalizing on our embodied potential and the effect that this can have on enhancing quality of life. The importance of confidence within physical literacy is further highlighted by Mandigo et al.'s (2006) definition as he posits, "individuals who are physically literate move with competence in a wide variety of physical activities that benefit the development of the whole person" (p.28).

Self-expression and communication with others. The ability to confidently capitalize on one's embodied potential enables the development of appropriate communication with others (Whitehead, 2010). The ability for an individual to effectively communicate with others enables them to "sense what another is feeling and so can respond with support and understanding" (Whitehead, 2010, p. 14). Other definitions of physical literacy by Mandigo et al. (2009) highlight the importance of physical activity to promote social development through positive peer interactions, communication, teamwork and cooperation. PHE Canada (2011) encourages educators to foster physical literacy development through using movement experiences as opportunities to foster peer relationships and develop a sense of relatedness among peers.

Positive relationships are also encouraged as a part of the Ontario HPE curriculum k-8 through the inclusion of living skills, which are integral to all other strands of the curriculum. Students are encouraged to develop living skills through developing personal skills, interpersonal skills, and finally critical and creative thinking.

Knowledge and understanding. Individuals who are physically literate are able to reflect intelligently on their movement experiences through a developed awareness of their embodied ways of knowing (Whitehead, 2010). Embodied ways of knowing is knowledge of how to enact movement that is dependent on a specific situation (Whitehead, 2010). The development of embodied ways of knowing is thought to develop as a result of competence in a given context, and helps to interpret and understand our environments (Whitehead, 2010). Such knowledge would allow an athlete to understand that similar techniques, with respect to trunk rotation and weight transfer that are effective in a golf swing, may also apply to a baseball swing. The ability to effectively respond to a given situation relies on our previous experiences in that context (Whitehead, 2010). As individuals develop embodied ways of knowing, they can use this information to respond effectively to similar situations, thus creating a rich bank of responses (Whitehead, 2010).

Assessment of Physical Literacy

Given the number of attributes associated with being physically literate, and the various domains they occur in, the process of assessing physical literacy is certainly complex, and furthermore one that is understudied (Tremblay & Lloyd, 2010). In an attempt to measure physical literacy levels in Canadian youth, there are several tools that have been developed: the Physical Literacy Assessment in Youth program (PLAY), the Passport for Life program, and the Canadian Assessment of Physical Literacy (CAPL).

The PLAY Program. The PLAY program was designed by Dr. Dean Kriellaars and encompasses a series of physical literacy assessment tools that is recognized by Canadian Sport for Life (Canadian Sport for Life, 2013). The PLAYbasic tool allows for an assessment of children's movement skills, and is made up of eight tasks that cover a child's physical abilities. The PLAYself assessment is completed by the child to determine their perceived abilities. The PLAYparent and PLAYcoach tool is intended to assess questions that focus on their child's ability, confidence, participation levels. An account of children's activities throughout the year can be done using the PLAYinventory. Finally, the PLAYfun tool encompasses assessment of 18 tasks that are focused on determining a child's physical abilities.

While the PLAY program offers a variety of tools to assess physical literacy levels in youth, it lacks connections to previously defined characteristics of physical literacy. For example, the PLAYcoach and PLAYparent forms include a scale that suggests youth exist on a continuum ranging from "not physically literate" to "perfect physical literacy". Such a scale suggests that the development of physical literacy is finite, which contradicts the notion by other researchers that individuals pose an unlimited potential for movement receptivity and creativity. Lloyd and Smith (2013) suggested that:

...with this unlimited capacity, a caveat is worth mentioning: At no point in time can one claim to be fully physically literate. In other words, becoming physically literate, in this manifold sense, is an aspiration rather than ever being a fully-fledged achievement. (p. 19)

Furthermore, previously discussed attributes such as knowledge and understanding, self-expression and communication with others, and interaction with the environment (Mandigo et al., 2009; PHE Canada, 2012; Whitehead, 2010) have failed to be included in the PLAY

program. However; the PLAY program, promoted by Canadian Sport for Life focuses on physical literacy development in the realm of sport and recreation, and thus a focus on these attributes may not reflect their specific physical literacy definition.

Passport for Life Program. The Passport for Life Program is a tool that is currently under development by PHE Canada. The program is intended to increase knowledge, awareness and understanding of physical literacy among parents, educators and students (PHE Canada, 2013). The program includes assessment in the following areas: fitness skills, movement skills, active participation, and living skills. The program also provides tools and resources that help to interpret results, as well as resources that are specific to HPE curricula to help improve physical literacy levels in youth, as well as to help educators enhance their knowledge and competence. While the program displays positive connections to the curriculum, it is still in its pilot phase.

The Canadian Assessment of Physical Literacy. The CAPL was created to assess physical literacy in the domains of physical activity behaviours, physical fitness, awareness, knowledge/understanding, and motor skill proficiency (Tremblay & Lloyd, 2010). Motor skills are assessed using an obstacle course that includes both static and dynamic motor skills as identified by the Ontario HPE grades 4-6. Physical activity behaviour is objectively measured using pedometers to determine the number of steps taken, and an account of activities participated in per week. Physical fitness is determined through tests that measure cardio-respiratory health, musculoskeletal strength and endurance, and flexibility. Finally awareness knowledge and understanding is assessed using the Physical Education Knowledge questionnaire. The Physical Education Knowledge questionnaire (see Appendix A) assesses youth's knowledge regarding health, physical fitness, motor skills, physical activity preferences, as well as attitudes and beliefs regarding health and fitness related variables (Tremblay & Lloyd,

2010). The questionnaire was designed based on common elements of nationwide grade 4-6 physical education curricula (Tremblay & Lloyd, 2010). Feedback was obtained through teachers and an expert advisory committee to refine the questions being asked.

A number of aspects of the CAPL offer a strong connection to curricular aspects of becoming physically literate, as well as connections to previously defined attributes of becoming physically literate. Aspects such as confidence, physical competence, relatedness, communication, as well as knowledge and understanding are covered through the CAPL; however, little focus has been given to the concepts of sense of self, self-expression, and interaction with the environment. Furthermore, the current model of physical literacy does not include motivational elements (Tremblay & Lloyd, 2010). Earlier versions of the CAPL provided open-ended questions where students were asked to convey their perceptions regarding their sport or physical activity experiences using short answer questions. Whitehead (2010) stated that the development of knowledge within physical literacy is “best fostered in the context of a wide range of structured activity settings and through teaching approaches that incorporate observation, analysis, description and evaluation on the part of the participant” (p. 187). Further work by Koekoek, Knoppers, and Stegeman (2009) also suggested that nutriments of student learning outcomes are better understood through quality research that investigates the perspective of the student. The Physical Education Knowledge questionnaire offers valuable insight into learner perspectives, as it is the only assessment tool that includes open-ended questions in assessing physical literacy levels in Canadian youth, thus it was chosen for the present analysis.

Theoretical Framework

Although a breadth of literature exists on the philosophical concepts and attributes of physical literacy, there is a lack of research focused on these attributes (Whitehead, 2007). The concept of motivation within physical literacy is well documented in a number of definitions of the concept (Mandigo et al., 2009; PHE Canada, 2011; Whitehead, 2001). Motivation is focused on energy, direction, persistence and all aspects of activation and intention; making it central to the field of psychology, cognitive and social development (Ryan & Deci, 2000). Within physical literacy literature, motivation has also been regarded as central to promote the necessary application and concentration to excel in movement contexts, maintain ability, make progress possible, develop a positive attitude towards physical activity and take the initiative to participate in physical activity on a regular basis (Whitehead, 2010). If youth do not feel motivated to participate in regular physical activity, they are missing out on vital opportunities to develop the fundamental movement skills that lead to further engagement in physical activity (Sheehan & Katz, 2010). Furthermore, the concept of motivation is regarded as foundational in Whitehead's (2010) depiction of physical literacy attributes; without motivation one cannot continue to develop other attributes associated with physical literacy.

Given the acknowledged importance of motivation in physical literacy, the current study chose to use Deci and Ryan's (1985) basic needs theory, which is a sub theory of the self-determination theory of motivation. The basic needs theory resides on the tenets that regulation of behaviour is guided by fulfillment of the three basic psychological needs: competence, autonomy, and relatedness (Ryan & Deci, 2000). The self-determination theory suggests that human beings will always choose their behaviour in order to satisfy their basic psychological needs. The need for competence is defined as producing desired outcomes, mastery experiences

and effectiveness (Wang & Biddle, 2001). The need for autonomy is characterized by experiencing choice and freedom in one's actions, and feeling ownership over one's behaviour, whereas relatedness is characterized by the need to relate to others and society in general (Wang & Biddle, 2001). According to Deci and Ryan (1985), individuals will display more self-determined motivation under conditions that fulfil these needs. For example, an individual is more likely to be self-determined when they are able to produce desired outcomes (competence), when they can exercise choice in their activity (autonomy) and when they feel supported by significant others through their activity (relatedness).

The basic needs theory is based on the most fundamental components of human functioning (Deci & Ryan, 2000). Given that the current study was focused on an understudied topic, the basic needs theory was deemed as essential to understand the basic nutrients of functioning with respect to motivation within the context of physical literacy. Furthermore, the basic needs theory is seen as an ideal theory for children and youth in physical activity contexts as it can provide youth the opportunity to exercise choice in their activities, youth can strive to feel effectiveness in their actions and seek social acceptance through interactions with others (Deci & Ryan, 2000). Numerous research has shown the relevance of basic need satisfaction to sport, physical activity, leisure activity and physical education contexts (Levenson, Danielsen, Birkeland, Samdal, 2012; Ntoumanis, 2001; Standage, Duda, Ntoumanis, 2005; Zhang, Solomon, Kosma, Carson, Gu, 2011). The following subsections are designed to specifically discuss the constructs of the basic needs theory within sport, leisure, physical activity, and physical education contexts for youth.

Competence. An individual who fulfills the basic need of competence is more likely to feel energized, intrigued, self-assured in the activity they are engaged in (Deci & Ryan, 2000).

Within physical activity settings, greater levels of competence have shown to yield higher levels of self-determination and intrinsic motivation (Ntoumanis, 2001; Standage et al., 2003). An individual's perception of competence is associated with their likelihood to engage in an activity (Bryan & Solomon, 2007). The fact that competence is related to the likelihood that an individual will undertake an activity is central to physical literacy development as it prepares students to develop fundamental movement skills in a wide variety of physical activity contexts.

Throughout the present study, the construct of competence was conceptualized using the following literature. An individual who possesses perceived competence would be more self-determined, and believe that their ability is improved through effort (Wang, Chatzisarantis, Spray, & Biddle, 2002). Conversely, individuals who possess a low level of perceived competence will believe that their abilities are fixed. Furthermore, an individual who has higher levels of perceived competence will be focused on self-improvement and task mastery, rather than external comparisons (Ntoumanis, 2001). Few qualitative studies have used the basic needs framework to examine this concept. However, Podlog and Dionigi (2009) used focus groups to understand psychological needs fulfilment among workers in an exercise intervention.

Throughout this study, competence was understood as a sense of satisfaction and accomplishment that participants attributed to their abilities, acquiring new skills, displaying their physical capabilities, as well as a feeling of comfort or ease associated with their activity, which were consistent themes throughout past research (Dionigi, 2007; Duncan, & Mummery, 2005).

Autonomy. The satisfaction of autonomy is related to the feeling that one's selection of activities is volitional, parallels their intrinsic interests, and is highly determined of one's behaviour (Deci & Ryan 1985). Goudas and Biddle (1994) assert that although an individual

may possess a high level of perceived competence, they may not internalize the behaviour if they are performing under an external pressure, thus perceived autonomy is proposed to have a greater influence on intrinsic motivation than perceived competence. Deci and Ryan (2000) suggested that autonomy will be enhanced when an individual feels that their opinions are valued, they have the power to make choices and self-manage. Hagger, Chatzisarantis, Culverhouse and Biddle (2003) found that perceived autonomy support in physical education positively influenced participation in free-time activity.

According to Whitehead (2010), the ability to seek out opportunities to be physically active is something that is integral to being physically literate. Within the current study, autonomy is characterized by participation in leisure activity that is voluntary, self-initiated, and founded on independent choices and interests (Levenson et al., 2012). Aspects that decrease volitional control, such as other conflicting obligations, time commitments, travel, and scheduling difficulties were proposed to contribute to lower levels of autonomy (Podlog & Dionigi, 2009).

Relatedness. Physical activity, sport and physical education are proposed to create an ideal context for individuals to satisfy the need of relatedness (Ntoumanis, 2001). Relatedness is suggested to be more distally associated with internalization of the behaviour, as it presents an external construct, rather than engagement in the activity for the pure enjoyment of the activity itself (Ryan & Deci, 1985). Furthermore, it is possible for an individual to engage in an activity without connection to another person (Deci & Ryan, 2000). Within the realm of physical literacy, relatedness is proposed to contribute to effective interaction with the environment, as well as self-expression and communication with others. In the present study, relatedness was conceptualized as reported connectedness, and support from others (Podlog & Dionigi, 2009).

Perceptions that undermined feelings of connectedness to others were proposed to decrease feelings of relatedness.

Basic needs theory and physical activity contexts. Research involving sport, leisure, physical activity and physical education settings has commonly utilized the basic needs theory (Levenson et al., 2012; Ntoumanis, 2001; Standage et al., 2003). Physical activity settings have been deemed as ideal contexts to apply the basic needs theory, as it can provide youth an opportunity to exercise choice in their activities, youth can strive to feel effectiveness in their actions, and seek social acceptance through significant others (Ntoumanis, 2001; Standage et al., 2005).

While basic needs theory has been applied to a number of populations within the context of sport and physical activity (Levenson et al., 2012; Podlog & Dionigi, 2009; Standage et al., 2003), research that has been done on pre-adolescent youth (grades 4-6) is slim (Rutten, Boen, & Seghers, 2012). Ronneau Koestner and Abela (2005) used the basic needs theory to understand needs satisfaction in relation to overall well-being in youth grades 3 and 7. They determined that the satisfaction of the need for competence was the best predictor of overall well-being, and that relatedness was significantly related to future levels of positive affect. Levels of autonomy were found to be low for this population.

Other research by Zhang et al. (2011) examined the association of basic needs satisfaction, intrinsic motivation and engagement in physical activity within and beyond school contexts for a sample of youth grades 6-8. Results of Zhang et al.'s (2011) study generated support for original theoretical assumptions of Deci and Ryan's (1985) self-determination theory as competence and autonomy were identified as the most significant contributors of physical activity engagement. Relatedness was found to play a less significant role in the prediction of

physical activity engagement (Zhang et al., 2011). Further support of needs satisfaction for youth in grade 6 was generated by Rutten, et al. (2012) who examined basic needs satisfaction in associated with levels of self-determined motivation in physical education, under the pretence that this in turn leads to heightened levels of physical activity during leisure time. Results of Rutten et al.'s (2012) research displayed the strength of competence and autonomy to predict self-determined motivation in physical education, while relatedness did not mediate this relationship at all.

Limitations of Previous Research

Given the current state of literature that addresses basic needs satisfaction of pre-adolescent youth in grades 4-6, there are a number of areas that demand further understanding. Although a breadth of literature currently exists that applies the basic needs theory to sport, physical activity and exercise settings (Levenson et al., 2012; Ntoumansis, 2001; Standage et al., 2003;), minimal research exists that applies this theory to younger children. Given that Deci and Ryan (1985) suggest that the basic needs are universal regardless of age, gender, sex, and culture, a more thorough understanding of this theory is warranted with respect to sport, physical activity and leisure activity engagement.

Although research that has been done on this age group by Zhang et al. (2011), and Rutten et al. (2012) have generated support for Deci and Ryan's (1985) original theoretical tenets, tools to assess the theoretical constructs may not allow for answers that capture participants' perspectives. For example, both studies by Zhang et al. (2011) and Rutten et al. (2012) sought to explain physical activity engagement inside and outside of school. The scales they developed to measure basic needs constructs captured only elements occurring within school, and may have failed to capture contributors outside of school. While the concept of

physical literacy is highly concentrated within the domain of school (Ontario HPE curriculum, 2010), it is important to note that the development of physical literacy can happen in a number of environments (Healthy Active Living Obesity [HALO] Research Group, 2010). For example, physical literacy development can also occur through free play, community, sports and recreation in addition to school contexts (HALO Research Group, 2010). Thus, it is important to use methods that capture the various nutrients that can develop motivation necessary for physical literacy development. In light of these reasons, the present study was designed to address these limitations through an exploratory study that utilized both an inductive and deductive approach. The purpose of the present study was to explore and better understand the role of basic needs satisfaction related to self-reported engagement in a wide variety of physical activities, and predilection towards physical activity for pre-adolescent youth. As previously mentioned, this objective was explored using the following research questions: (a) How do children's likes and dislikes about physical activity in grades 4-6 suggest feelings of competence, autonomy and relatedness?; (b) How does the inference of the basic psychological needs relate to self-reported selection of a wide variety of physical activities?; and (c) How does the inference of the three basic psychological needs relate to self-reported predilection towards physical activity?

Chapter Three: Methodology

Research Design

Epistemology. The current study used a constructivist epistemology, in which it is understood that meaning is formed as a result of interaction between an experience or object (Crotty, 1998). Previous research that has been done on youth development parallels a constructivist epistemology, as it assumes that a youth's perspective is grounded in pre-existing experiences, learning occurs in social settings and learners play a fundamental role in

constructing their own knowledge and competence (Koekoek et al., 2009). Crotty (1998) suggests that constructivism captures the essence of how an individual makes sense of the world, and asserts that knowledge is jointly constructed. The foundation of constructivism resides in individual interpretations and meanings, which is contrary to objectivists' understanding that there exists one truth to be "discovered" (Crotty, 1998). Rather, in accordance with a constructivist epistemology the process of meaning is made possible through interactions with the object and observer where both contribute to the interpretive process (Crotty, 1998). As a researcher with this lens, I believe that an individual's mind is shaped through a continuous interplay between with their interaction with their external environment including their body. The mind body connection is suggested to be a philosophical underpinning of physical literacy, as the concept captures a monist perspective (Whitehead, 2010).

Constructivism was deemed valuable to this study as the purpose was focused on exploring and better understanding how both intrinsic and extrinsic processes related to motivation can effect predilection towards physical activity, and engagement in a wide variety of physical activities. Thus, the current study demanded an epistemology that understood how children construct meaning in respect to their sport or physical activity experience.

Qualitative approach. Historically, research on determinants of sport and physical activity participation has focused on quantitative methods, which utilize surveys of predetermined questions on an individual's knowledge, attitudes and beliefs about sport and physical activity (Allender, Cowburn, & Foster, 2006). Smith and Lloyd (2006) assert that current health related fitness assessment parameters are no exception to the use of quantitative criteria, as they require students to recall minutes of activity, perform repetitions of muscular conditioning exercise, or take part in other anthropometric measurements, which creates

movement experience and curriculum shaped around the *scientization* of movement. An emphasis on these factors can leave little room to understand aspects of what children like and don't like about the sports and physical activities they engage in. Qualitative research approaches are becoming recognized as increasingly important as an evidence base for public health as they offer an in depth look at individuals' experiences, perceptions of motives and barriers to participation in sport and physical activity (Allender, et al., 2006).

The inclusion of qualitative research within the classroom setting acknowledges the fact that what occurs within the classroom is composed of complex layers of meanings, interpretations, values and attitudes (Hitchcock & Hughes, 1995). More specifically, within a school context, qualitative research is thought to offer unique opportunities, as it is able to understand the dynamics of educational change as characterized by interactions between relative content and variables in society (Hitchcock & Hughes, 1995). The current study has taken a qualitative approach to gain an understanding of youth's engagement in sport and physical activity beyond recalled minutes of activity, or performed repetitions of muscular conditioning. Rather the current study aims to understand motivation in terms of basic need satisfaction related to engagement in a wide variety of physical activities and predilection towards physical activity.

Exploratory and descriptive strategy. There are a number of different ways to orchestrate qualitative research depending on the purpose, the data that is collected, and how it is analyzed (Gratton & Jones, 2010). Given that there is little to no prior knowledge of motivation in the realm of physical literacy, the present study used an exploratory approach. Gratton and Jones (2010) suggest that an exploratory strategy is valuable when there is little or no prior knowledge of a particular phenomenon, and often constitutes an initial exploration that results in more research in that area. Furthermore, this strategy aims to gain familiarity with concepts, and

understand patterns or ideas that appear from the data devoid of preconceived ideas or explanations (Gratton & Jones, 2010).

Credibility, transferability and dependability in qualitative research. There are several authors that lend criteria for evaluating qualitative research. Merriam (2009) suggests that the following strategies can increase credibility in qualitative research; (a) triangulation, (b) member checks, (c) research reflexivity, (d) peer review, and (e) adequate engagement in data collection. Triangulation was achieved throughout data analysis by consulting other researchers to ensure themes were coded accurately and appropriately. Maxwell (2005) asserts that credibility in qualitative research is not generated by eliminating variance between researcher and their values and perceptions, but rather through an understanding of *how* the researchers' values and perceptions influence the study through reflexivity. Lincoln and Guba (2000) define reflexivity as, "the process of reflecting critically on the self as a researcher, the human as an instrument" (p. 183). Research reflexivity was established throughout the transcription and analysis as I took notes to capture my thoughts, impressions or assumptions regarding the data and analysis. Furthermore, I engaged in an on going dialogue about these thoughts with fellow researchers. Although I was not involved in the data collection for the present study, my extensive involvement with subsequent CAPL data collection has enabled me to experience adequate engagement in data collection using this tool. Other aspects associated with providing quality to qualitative research are identified as transferability and dependability (Merriam, 2009). Merriam (2009) suggests that transferability can be achieved by having a vast number of participants, which was demonstrated in the present study.

Chapter Four: Method

Context

The current study examined physical activity perceptions from 218 elementary school youth in grades 4-6. Their perceptions were explored through a secondary data analysis of responses to a series of open-ended questions in the Physical Education Knowledge questionnaire of the CAPL. Researchers circulated the questionnaire and were instructed to provide clarification of questions for children who did not understand the questions without leading them to an answer. Participants were instructed to answer the questions to the best of their ability and were given as much time as needed to complete the questionnaire. Questions from the Physical Education Knowledge questionnaire were chosen, as they were open ended and aimed at exploring the participants' motivation related to physical activity and physical literacy development. Participants' responses to selected open ended questions were analyzed using a thematic content analysis to identify basic need inference, inductive themes and corresponding engagement in a wide variety of physical activities, and their predilection towards active or sedentary pursuits after school.

Participants

Participants of this study included 218 male and female students in grades 4-6 from urban and rural public school boards in Ottawa. Information packages were sent home to parents that included informed consent forms, as well as a medical screening to inform researchers of any medical conditions that may put a child at risk from participating in physical activity. Participants were only allowed to participate in the study with written parental approval and completed packages. Verbal consent was obtained from student participants after researchers

had explained the details of the study. Students were reminded that the study was voluntary and they could withdraw at any time.

Ethical approval of original data collection was done through the Children's Hospital of Eastern Ontario's (CHEO) Research Ethics Board, and then through both school boards: Ottawa-Carleton Research Advisory Committee for the Ottawa Catholic School Board participants, and the Upper Canada District School Board. Ethical approval for the current study was obtained through an amendment made to the existing ethics approval for the data collection through the CHEO Research Ethics Board, and the University of Ottawa Research Ethics Board. Data analyzed was anonymous, as participants were only identified using an identification number.

Instrument

Physical Education Knowledge Questionnaire

The Physical Education Knowledge questionnaire (PEK) (see Appendix C) assesses youth's knowledge regarding health, physical fitness, motor skills, physical activity preferences as well as attitudes and beliefs regarding health and fitness related variables (Tremblay & Lloyd, 2010). The questionnaire was designed based on common or key elements of nationwide grade 4-6 physical education curricula (Tremblay & Lloyd, 2010). Feedback was obtained through an expert advisory committee as well as teachers to refine the questions being asked.

The following questions were chosen from the PEK questionnaire due to their focus on motivation: (1) Name three things you like about playing sports or being physically active?; (2) name three things you don't like about playing sports or being physically active?; (11) what sports/exercises/activities do you do during the year? Please circle all that apply; (12) give three reasons why you like doing the sports that you circled above; and (18) if you were allowed to

pick what you do after school, what activity would you pick? During analysis, responses from questions one and 12 were combined, as they were both focused on similar responses.

A list of 33 sports and physical activities was provided for children in question 11, as well as blank space to write answers that did not appear in the list. Responses were categorized according to PHE Canada's (2011) definition of a wide variety of physical activities including activities that are in the air, on the ground, on snow and ice, and in the water. Participants were given a score ranging from zero-four that captured the number of physical activity contexts they reportedly engaged in. Participants had the choice of seven different activities to choose from when answering question 18. Responses to question 18 were categorized into either active or sedentary pursuits. Active pursuits were categorized as, "go to my sports team's practice", "walk my dog", "play with my friends on the playground". Conversely, sedentary pursuits were categorized by, "do homework", "chat with friends online", "watch television", "play video/computer games", "read". Participants were given a score of either zero (sedentary pursuits), or one (active pursuits), depending on what they chose after school.

Data Analysis

Inductive and deductive approach. Analysis of participants' responses was done using both an inductive and deductive approach. The process of an inductive analysis involves allowing the themes to emerge from the data, without trying to fit it into a pre-established coding frame, or the researcher's assumptions (Braun & Clarke, 2006). The strength of this approach to understand understudied topics generates appropriateness for this study as the focus of motivation in the context of physical literacy has not generated adequate attention. This approach allowed the researcher to uncover reasons why children liked or did not like participating in their sport or physical activities that were not included in the basic needs theory.

Conversely, a deductive approach is guided by a theoretical interest and thus tends to yield less rich description of the data (Braun & Clarke, 2006). Deductive themes captured data related to the basic psychological needs such as competence, autonomy and relatedness. The inclusion of both approaches allowed for a more rich and detailed thematic analysis that was able to capture unique elements of the data, and elements related to basic need fulfilment.

Thematic analysis. The ability of thematic analysis to explore large amounts of textual information to discover trends, emergent themes, as well as their relevance to structures and discourses has made this method integral to this study (Grbich, 2007). Responses to selected questions from the PEK questionnaire were transcribed verbatim using Microsoft Word. Transcribed files were then imported into Nvivo10 (QSR International, 2011) and analyzed using Braun and Clarke's (2006) six-step approach to thematic analysis. Gaining familiarity with the data is the first step outlined in Braun and Clarke's (2006) six-step approach. To ensure familiarity, data was transcribed, notes were made to capture initial ideas, and the raw data was read, and re-read for quality assurance. Step two involved generating initial codes for the data. This was done through creating deductive themes that included the basic needs competence, autonomy, and relatedness (as conceptualized in the literature review and throughout the results) and through a word frequency query using Nvivo10 software that allowed the researcher to become aware of common words that may have been over-looked.

Once initial codes were identified, step three allowed the researcher to combine these codes into potential themes, and comb through the data to find other related data. Step four included a review of themes on two levels: the coded text, and the entire data set. This allowed the researcher to check each theme on two levels to ensure data was coded properly, and that there wasn't any data missing from the themes. Ongoing analysis constituted step five in which

each theme was refined to tell a stronger story of analysis and to generate clear definitions of themes. The researcher read through data coded at each theme, to ensure clarity of themes. The final step included producing the final report and the final opportunity for analysis with relation to the research questions and the literature. During this step, basic needs literature was used to confirm data coded at themes.

Analysis of themes. Given the large number of participants and data in the present study, matrices were created in Nvivo10 and exported into Excel to allow for a better understanding of the data. Spreadsheets were used to display the coding matrices to determine frequencies of basic need inference, number of physical activity contexts participants participated in, as well as inductive themes. More thorough analysis across themes was done using pivot tables to determine, for example, the number of participants with ‘x’ number of basic need fulfilment, who engaged in ‘Y’ number of activity contexts or ‘Y’ engagement in active or sedentary pursuits. Pivot tables were also used to understand other inductive themes of interest, which were informed by previous research (ie. the percentage of individuals who identified fun reported participation in three physical activity contexts, the percentage of individuals who reported satisfaction of fun and competence).

Chapter Five: Results

The following chapter discusses both inductive and deductive themes that emerged through the analysis. As specified in the previous methods section, participants were asked, “name three things you like about playing sports or being physically active”, “name three things you don’t like about playing sports or being physically active”, and “give three reasons why you like doing the sports that you circled above”. Initial analysis of the two questions focused on why they like doing their sports or physical activities revealed a number of similar themes.

Consequently, the themes from these two questions were merged to gain a general understanding for reasons why children like being active or playing their sports. Themes coded from these questions are displayed in Table 1 (Appendix A). Criteria for undermined basic psychological needs was based on themes discussed in the literature review, and is available in Table 2 (Appendix A).

Frequency of self reported basic needs satisfaction of competence, autonomy and relatedness were calculated to determine basic need satisfaction among participants. Participants were given a score ranging from zero (no basic needs reported), to three (reported satisfaction of all three basic needs). These frequencies revealed that 39% of participants fulfilled zero basic needs, 49% fulfilled one basic need, 12% fulfilled two basic needs, and only one participant (equivalent to .004%) fulfilled all three basic needs. As discussed in the previous sections, relatedness was the most commonly reported basic need (42%), followed by competence (31%), and then autonomy (2%).

The majority of participants in the study (59%) participated in three physical activity contexts, followed by 30% who participated in two physical activity contexts, 8% who participated in one physical activity context, 2% who participated in four physical activity contexts, and finally 1% who participated in zero physical activity contexts. The most common physical activity context that participants reported participation in was on the ground. Of participants who participated in only one physical activity contexts, 100% of them participated in physical activities that were on the ground. Participants who participated in two activity contexts either participated in activities that were on ground and water (42%), or on ground and snow and ice (55%). Only 3% of participants who engaged in two physical activity contexts reported engagement in activities that were on water and snow and ice.

Significant inductive and deductive themes that emerged from the analysis have been organized into a visual representation of the heart of physical literacy, as these themes were identified as important to physical activity engagement for children in the present study (Figure 2, Appendix B). The heart was proposed to be an appropriate and effective image to convey salient themes throughout the analysis, as the heart is central to the Healthy Active Living diagram in the Ontario Health and Physical Education (HPE) Curriculum k-8. Additional themes throughout physical literacy literature that were identified as critical for physical literacy development, such as fundamental movement skills and expressive possibilities, were also included although we were not able to assess these factors. Detailed discussion regarding the heart of physical literacy will take place throughout the discussion section.

The following chapter will discuss inductive and deductive themes that constitute the heart of physical literacy, as well as their relation to Deci and Ryan's (1985) basic needs theory. Following the discussion of themes in the heart of physical literacy, the role of autonomy will be discussed with respect to the current analysis. The conclusion of the chapter will discuss how these themes are associated with engagement in a wide variety of physical activities, and predilection towards physical or sedentary pursuits after school, as well as inductive themes that emerged for why children don't like participating in their sport or physical activity.

Fun. A number of themes in addition to competence, autonomy and relatedness emerged from the data. The most prominent theme was fun, as 91% of participants cited this as a reason they enjoyed participating in their sport or physical activity, and thus constitutes the centre of the heart. Given the relatively short answers obtained from youth in the present study, it was difficult to determine what basic needs constructs youth associated with fun. Research focused on the concept of fun and enjoyment, with respect to basic needs satisfaction, has variously suggested

that fun is more proximal to certain basic needs (Cox, Smith, & Williams, 2008; Deci & Ryan, 2000; Sollerher, Apitzsch, Rastam, & Ejlertsson, 2006). In an attempt to accurately represent the data, fun in the present study was conceptualized as it's own inductive theme, as opposed to representing satisfaction of a basic need. Thus, fun was conceptualized in the current study through participants conveying enjoyment or positive affect achieved through their sport or physical activity, "I love to run and play all kinds of sports", "I love being physically active and playing sports because it is fun".

Deci and Ryan's (2000) original theoretical tenets suggest that fun and enjoyment will be an outcome of the satisfaction of the three basic psychological needs, however; this was not substantiated in the present study. While Cox, Smith, and Williams (2008) found results that substantiated Deci and Ryan's (2000) theoretical tenets in youth grades 6 and 7, they found that relatedness and competence made the most significant contribution to fun and enjoyment. Other research by Sollerher, Apitzsch, Rastam, and Ejlertsson (2006) generated support for the importance of competence to fun and enjoyment for youth. When this notion was analyzed using the present data, 86% of individuals who reported competence also reported fun. Of participants who identified fun as a reason they like to participate in their sport or physical activity, 56% of them reported participating in three or more physical activity contexts.

Of participants who identified fun, 40% fulfilled 0 basic needs, 48% only fulfilled one basic need, and 12% fulfilled 2 basic needs. Analysis in the present study also sought to determine if there were associations between major deductive and inductive themes and self reported engagement in specific physical activity contexts (ie. Individuals who reported more fun engaged in more activities on the snow and ice), however; there were no associations found.

Competence. The overall theme of competence was identified by 43% of children as a theme affecting their sport or physical activity participation. Throughout the present analysis, the overall theme of competence was broken into subthemes of sport skill competence, challenging, learn, and goal or task achievement. These themes were generated according to previously established criteria of competence identified in the literature review section, and Table 1 (Appendix A) of the present study.

Competence that was specific to a certain sport or skill was cited by 12% of children as a reason why they like to engage in their sport or their physical activity. A number of children who identified sport or physical activity specific competence revealed a sense of ease associated with playing their sport or physical activity, “I like football because it’s easy”, “easy to play”, “because it’s easy to do at home”. A number of children identified a feeling of pride attributed to their sport or physical activity specific competence, “I like the feeling of success”, it makes me feel good about myself”, “when I feel proud of myself”, “they make me feel I can be good at something and graceful”. Finally many children revealed that they enjoyed doing their sport or physical activity because they were successful at it, “I like playing baseball because I can throw good”, “I’m good at sports”, “getting to show off your skill”. Individuals who identify perceived skill with respect to specific physical tasks have been linked to possessing perceptions of competence (Hodge, Danish, & Martin, 2012).

The subtheme of challenging was identified by 11% of children in the study. Deci and Ryan (2000) suggest that individuals who perceive themselves as confident are more willing to expend effort in the face of challenges. With respect to physical literacy, Whitehead (2001) states that individuals who are physically literate will seek out challenges and opportunities to apply their skills. Furthermore, Whitehead (2010) acknowledges that a physically literate individual

will respond to physical demands effectively that challenge their physical competence. A number of children revealed a motivation to push themselves to work hard, “trying my best”, “it makes you work”, “to push yourself forward”, “challenging in a good way”, “I like being able to go through challenges”, “take skill”, “they take a lot of effort”. A number of other children identified the challenge of trying new experiences through their sport or physical activity, “it encourages me to try new things”, “figuring out how to play”, “I like being able to try new things”. Wang, et al., (2002) suggest that an individual who possesses perceived competence will be more self-determined, and thus believe that their ability improves through expended effort and in the present study “push themselves”.

The subtheme of learn was discussed by 8% of participants as they enjoyed their sport or physical activity because, “I learn new things”, “you get to learn lots of stuff”, “build skill”, “because you get better at it”, “I learn stuff while doing it”. A few other participants identified the ability to apply their learned skills to other areas, “they are valuable life skills”, “I can use those skills on the farm”. The ability to learn has been discussed as belonging to the fulfilment of both competence, and autonomy (Nishida, et al., 2007), However; within the realm of the current study, the context of responses from participants indicates learned abilities in relation to physical competence. Pelletier, et al. (1995) discuss that higher levels of competence and more self determined behaviour is associated with an inherent pleasure in learning something new within the sport context. Furthermore, the concept of learning within competence is closely related to effort, as an individual will seek out opportunities to expand their movement vocabulary (Whitehead, 2010).

Goal or task achievement, was cited by 5% of participants and was identified as self referenced improvement such as, “you can set goals for yourself”, “you can have goals”, “I like

achieving goals”, “gets you better at the sport” as reasons for liking their sport or physical activity. Support for self-learning within the construct of competence has been generated by Nishida et al., 2007. Engagement in three or more physical activity contexts was reported by 70% of children who reported satisfaction of competence. Only 56% of participants who did not identify competence reported engagement in three or more physical activity contexts. Self reported satisfaction of competence was not found to be associated with a higher predilection towards active pursuits after school, as 32% of children who reported satisfaction of competence reported engagement in an active pursuit after school.

Low competence. Overall, 12% of participants cited low competence as a reason they did not like participating in their sport or physical activity. A number of children expressed low competence through performing the sport or skill incorrectly, “I don’t like it when I do something wrong”, “getting embarrassed when I’m not as good at a sport than other people”, “messing up”. A number of children described low competence in sport specific settings, “I don’t like hockey because I am not good”, “it is easy to let your team down”. Of individuals who identified low competence, 27% of them also identified high competence. Out of the participants who reported low competence, 54% of them reported relatedness.

Relatedness. The theme of relatedness was consistent throughout the analysis as 65% of children identified this as significant to their sport or physical activity experience. The overall theme of relatedness was broken into subthemes of friends, meeting new people, family, team, and the feeling of being involved. The majority of children (20%) discussed being able to spend time with friends as reasons why they enjoy participating in their sport or physical activity, “being with friends”, “play with friends”, “playing with friends makes me happy”, “seeing friends”. A large portion of the sample (18%) indicated that they enjoyed participating in their

sport or physical activity because it enabled them to meet new people, “you meet new people”, “make new friends”, “fun to meet people”, “meet all the new people I can play with”. Being a part of a team, or having a chance to be with teammates was significant to 7% of children surveyed, “I get to play with a team”, “I like teamwork”, “you get to work in a group”, “its fun playing sports in a team”. A small number of participants (3%) identified family involvement as a form of relatedness for their engagement in sport or physical activity, “I like playing volleyball with my family”, “it lets me have more time with my family”. The feeling of being involved was captured through a small portion of the participants (2%), as participants identified, “you’re not alone”, “I like being involved” as reasons why they engage in their sport or physical activity.

The feeling of being involved or supported by others is consistent with Deci and Ryan’s (2000) original theoretical tenets. Although Deci and Ryan (2000) suggest that relatedness is more distally related to more self regulated behaviour, as an individual can find inherent pleasure in their activity without support from others, there were no participants in the present study reported they enjoyed being alone during their activities. Predilection towards active pursuits after school was reported by 84% of participants who identified the satisfaction of relatedness. Of the participants who satisfied the need for relatedness, 63% of these participated in 3 or more physical activity environments, whereas 59% of individuals without relatedness engaged in 3 or more physical activity environments.

Low relatedness. Low relatedness was identified as a reason why 23% of participants in the present study did not enjoy participating in their sport or physical activity. A number of participants described negative experiences with teammates, friends, or coaches, “you could get into a fight, you could be made fun of”, “hazing”, “sometimes people make fun of you”, “I don’t like to be yelled at by the coach”, “your team might not like you”, “there can be mean people on

your team”, “Messing up and someone yells at you or puts you down”. Overly competitive individuals were identified by 6% of children through responses as, “people who gloat about winning”, “people being over competitive”, “people get too competitive”, “in sports, some people are negatively competitive”. Of participants who identified fulfilment of relatedness, 100% of them also reported low relatedness.

Feeling good. Although the theme of feeling good was not related to self-reported engagement in a wide variety of physical activities, it was a common reason to participate in sport or physical activity for 17% of children in the study. Many children in the present study reported intrinsic positive feelings, or physiologically good feelings through their participation, “it works your body muscles so it makes you feel good”, “after I play sports it makes me feel better”, “I like the feeling of adrenaline”, “you feel good after you play”, “it makes me feel better about myself”, “you feel refreshed after playing”, “feeling the beat of my heart”. While the theme of feeling good shares similarities with the theme of health knowledge, it was included as a separate theme as feeling good was meant to capture more intrinsic aspects associated with why participants like their sport of physical activity.

Health knowledge. Most children (85%) were able to identify that participating in sports or physical activity was healthy or good for them, “it makes your lungs and breathing better”, “Its good for your body to be physically active”, “get stronger”, “because I want to stay in shape”, “it’s good for when I get older”. The theme of health was then broken down into sub themes of being active and avoiding sedentary behaviour. A large portion of children (28%) realized that staying active was good for them, “it keeps me active”, “you get to be active”, “it’s good for your body to be physically active”, “I like sports because you’re active and you move your feet”. Nearly 13% of the children surveyed were able to realize that participating in their

sport or physical activity was better for them than being sedentary, “Don’t be lazy”, “its better than sitting on the couch”, “gets you going”, “because they get me moving”. Of these children who identified healthy reasons for being active, 52% of them participated in three or more physical activity contexts. While Ryan and Deci (2008) recognize that fulfillment of the basic needs relate to health and well-being, they refer to psycho-social aspects associated with health. While it is possible that some of the same tenets may apply to physical health, as Ryan and Deci (2008) suggest that individuals with basic need satisfaction will evolve to greater states of health and well-being, this has not been substantiated in the literature. Thus, Health knowledge constitutes an inductive theme in the present study.

Autonomy

Although relatedness and competence were identified as factors influencing what children like about their sport or physical activity, autonomy was only reported by 2% of participants in the present study. Due to the fact that the majority of participants did not identify autonomy as a reason why they enjoy their sport or physical activity, this concept is absent from the heart of physical literacy. Themes coded for autonomy were strongly linked to Deci and Ryan (2000) as they suggest autonomy is characterized by experiencing choice in one’s actions (Deci and Ryan, 2000). Criteria for the concept autonomy in the context of the present study are available in Table 1 (Appendix A). Participants who were able to identify criteria of autonomy revealed, “I like the activities that I chose”, “I like to have choice”, “I want to” as reasons for engaging in their sport or physical activity.

Low autonomy. The most common theme for why children do not like participating in their sport or physical activity was low autonomy, which was cited by 31% of children in the present study. A number of children felt their autonomy was undermined through their sport, “I

don't enjoy some of the sports I have to do in school", "you don't have time to play with your friends in an organized sport", "there's too many rules". A number of children revealed that in some circumstances they were being forced to run, "you can't run anymore, but you still have to", "we have to run".

A portion (6%) of children remarked that taking the time to participate in sport would often take away from something else they would rather be doing, "It can take time off your day", "I don't like that can take up time that you need for other stuff", "because sports takes up a lot of time", "takes me away from playing with friends", "sometimes can waste time", "it uses a lot of time, it's not always free time". Deci and Ryan (2000) state that autonomy encompasses activities that occur naturally, are freely chosen, and that follow their inner interests. The fact that participants state that they would rather be doing something else indicates control from an external force that is causing them to engage in a particular sport or physical activity that does not parallel their inner interests. Similarly, a small number of children (5%) reported that they viewed their sport or physical activity as work, and something they did not enjoy but they had to participate in from some external source, "having to always push myself", "if it's a sport sometimes I don't like waking up, sometimes I don't feel like it", "I don't like that you work really hard". Such statements contradict Deci and Ryan's (2000) concept of autonomy as characterized by experiencing choice in one's actions, as the children suggest the presence of an external pressure to work hard at their sport.

Inference of Basic Needs Related to Engagement in Number of Physical Activity Contexts

Despite the fact that the majority of participants only fulfilled one basic need, 61% of the population reportedly engaged in three or more physical activity contexts. Basic need satisfaction was not related to engagement in specific physical activity contexts (e.g. basic need

fulfilment with participating in activities on snow and ice). In fact, a large portion of children who fulfilled zero basic needs still reported engagement in at least three physical activity contexts. Graphic representation of this data is available in Figure 3 (Appendix B).

Inference of Basic Needs and Engagement in Active vs. Sedentary Pursuits

Given the choice, 78% of children indicated that they would prefer a physically active pursuit after school. Of the participants who chose an active pursuit after school, 61% of them fulfilled one or more basic psychological need. Relatedness was found to be more related to physically active pursuits (by 84%) than competence (32%). Graphical representation is available below in Figure 4 (Appendix B). A slightly greater number of individuals who satisfied relatedness indicated they would prefer sedentary activities after school (26%), as opposed to those who reportedly fulfilled competence (22%).

Inference of Undermined Basic Needs and Engagement in Physical Activity Contexts

When themes that undermined the basic psychological needs were analyzed, 50% of participants identified zero undermined basic need, 37% identified one undermined basic need, 11% identified two undermined basic needs, and 2% identified three undermined basic needs. A total of 59% of participants with zero undermined basic needs reported participation in three or more physical activity contexts, 61% of participants with one undermined basic need reported participation in three or more physical activity contexts, 71% of participants with two undermined basic needs reported participation in three or more physical activity contexts, and 60% of participants with three undermined basic needs reported participation in three or more physical activity contexts. Graphic representation of this data is available in Figure 5 (Appendix B).

Inductive Themes for not Enjoying Their Sport or Physical Activity

The majority of the population identified undermined basic needs as reasons they do not like participating in their sport or physical activity, however; there were a few inductive themes that emerged. The most common theme identified by participants, described uncomfortable feelings associated with participation in their sport or physical activity. These themes were categorized into two themes of “getting hurt” or physiologically negative feelings associated with participating in their sport or physical activity. Getting hurt was identified by 26% of children through phrases such as, “you can get badly injured”, “you could twist your ankle”, “hurting feet from running too much”, “sometimes its too rough”.

Physiologically negative feelings experienced during engagement in participants’ sport or physical activity was significant for 39% of the population. Children described feelings such as, “you get tired after the sport, you sweat a lot in certain sports, and your legs and arms get sore”, “it makes my throat hurt, it makes me tired, it makes me breathe heavy”, “I don’t like playing sports because they tire me out a lot”. Although getting hurt did not affect the number of self reported physical activity contexts children engaged in, physiologically negative reasons associated with their sport or physical activity did have an effect. Only 49% of children who cited physiologically negative reasons for liking their sport or physical activity reported engagement in three or more physical activity contexts, whereas 70% of individuals who did not cite this theme participated in three or more physical activity contexts. Given this finding, it was proposed that perhaps individuals who possessed health knowledge would report fewer physiologically negative consequences, as they may be more likely to tolerate physiologically negative feelings through an understanding. This connection was not validated as 88% of

participants who experienced physiologically negative feelings also cited health as a reason they engage in their sport or physical activity.

Chapter Six: Discussion

The purpose of the present study was to explore and better understand the role of motivation, in terms of basic needs satisfaction, with respect to physical literacy development related to self-reported engagement in a wide variety of physical activities and predilection towards physical activity for pre-adolescent youth. This purpose was addressed through the following research questions: a) How do children's likes and dislikes about physical activity in grades 4-6 suggest feelings of competence, autonomy, and relatedness?; b) How do the fulfillment of the basic psychological needs relate to self reported selection of a wide variety of physical activities?; and c) How does the fulfillment of the three basic psychological needs relate to self reported predilection towards physical activity?

Overall, the findings of the current study suggest that: (a) a child's self reported participation in a wide variety of physical activities was not influenced by overall satisfaction of the basic needs; (b) a child's overall basic needs fulfilment was not related to their predilection towards physical activity after school; (c) competence was found to relate more to engagement in a wide variety of physical activities than relatedness; (d) relatedness was found to be more closely associated with predilection towards active pursuits after school; (e) a child's participation in self reported wide variety of physical activity contexts was not influenced by undermined basic psychological needs; and (f) children who reported having fun, and possess health knowledge while participating in their sport or physical activity on average reported engagement in three or more physical activity contexts. This chapter will discuss my overall findings with respect to the research questions, and the extent to which these results relate to

relevant literature. More specifically, this section will demonstrate how this study's findings support and expand on existing research related to physical literacy and basic needs satisfaction, the implications of the results for applied recommendations, limitations and directions for future research.

Importance of Positive Competence and Relatedness

The results of the present study indicated high levels of relatedness and competence, and low levels of autonomy. Despite reportedly low levels of autonomy, the majority of pre adolescent youth in the present study participated in 3 physical activity contexts. Although previous assumptions that satisfaction of the three basic needs would be associated with increased engagement in sports or physical activities were not substantiated, this is not uncommon to other basic needs literature. Research by Levenson, et al. (2012) sought to understand the relationship between satisfaction of the three basic needs and participation in a variety of leisure activities and life satisfaction. The study used an adapted subset from the Basic Need Satisfaction at Work Scale (Deci et al. 2001; Ilardi et al., 1993) to assess a sample of 3, 273 Norwegian students 15-16 years of age. Participation in leisure activities was done similarly to the present study as participants were asked to indicate from a list of 22 activities the ones they participate in. The study also asked participants to indicate the frequency they participated in those activities. Results of the study indicated that only competence and relatedness satisfaction in leisure activities explained level of participation in leisure activities, as well as life satisfaction. Furthermore, the study found that competence satisfaction was the strongest predictor of the model followed by relatedness in terms of leisure activity selection, which was also supported in the current study.

Further support for the importance of competence and relatedness fulfilment during leisure time activities for adolescents was generated by Barkoukis, Hagger, Lambropoulos, and Tsorbatzoudis (2010) using a group of 274 male and female students with a mean age of 16.89. Barkoukis et al. (2010) used an adaptation of Sheldon et al.'s (2001) measure of need satisfaction adapted for leisure time physical activity context. Results indicated autonomous engagement in leisure time was significantly predicted by the satisfaction of the need for competence and relatedness, but not autonomy. Similar results were found by Ntoumanis (2001) who found that competence was the highest predictor for future intention to exercise, followed by relatedness for 424 youth 14-16 years of age. Ntoumanis (2001) further noted that scores of autonomy in their study were low.

More specific to the population of the current study, Ronneau, Koestner and Abela (2005) sought to understand basic needs fulfilment in other domains of life for children and pre adolescents. Ronneau, et al. (2005) found that satisfaction of the need for competence was the best predictor of overall well-being in a sample of 331 third and seventh graders. The same study determined that relatedness was significantly related to future levels of positive affect. Such findings were further supported through the current study as competence was reported as a significant factor to physical activity participation by 31% of the population, and relatedness was cited by 42% of the population.

Previous research has suggested that competence and relatedness were significant predictors of autonomous motives in leisure activities outside of school (Barkoukis et al., 2010). While Barkoukis et al. (2010) noted relatedness as significant, competence was seen as more significant. The present study found results contrary to this finding. Results of the current study suggest that individuals were more likely to select active pursuits after school when they satisfy

relatedness as opposed to individuals who reported fulfilment of competence. This result makes sense given that individuals may choose more active pursuits after school if they have significant others to be active with. Although it is possible that perhaps individuals of the present study would report factors that they are more familiar with, it is worth noting that Barkoukis et al. 's (2010) study used a sample of youth 17 years of age who still reported low levels of autonomy.

Competence and relatedness and engagement in a wide variety of physical activities.

In the present study, pre adolescent youth who indicated that competence was an important need for their physical activity participation were also more likely to report participation in more physical activity contexts, as opposed to those who reported relatedness. Such findings coincide with physical literacy literature as it is thought that the development of movement competence leads to engagement in a wide variety of physical activities (PHE Canada, 2011).

Elevated scores of competence and relatedness in the present study could also be in part due to the fact that these two constructs are related. For example, if an individual is competent at an activity, this may in turn provide peer acceptance and praise and consequently higher reports of both relatedness and competence. Noom et al. (1999) found that higher levels of relatedness in children were found to be associated with higher self-esteem. If an individual feels a higher level of self-esteem perhaps they would be more likely to report feelings of competence.

The strong influence of competence and relatedness contradict theoretical assumptions of the basic needs theory as Deci and Ryan (2000) have asserted that competence and autonomy are the most influential of all three needs on self-determined behaviour, whereas relatedness is assumed to play a more distal role. Interestingly, of participants who identified low relatedness, 100% of them also indicated levels of high relatedness. This could be indicative of a fixation on relatedness that perhaps this construct is more significant to some children, than others with

respect to their sport or physical activity engagement. Results of the current study indicate that relatedness may be more important to pre-adolescent youth, as they may rely more heavily on peer or parental support for sport or leisure activity engagement. In particular, in the present study, a large portion (26%) of children indicated that they enjoy participating in their sport or physical activity because it allows them to meet new people. Early morning practices on a Saturday were a common occurrence in my sport experience. Although I did not want to attend these early practices, my parents would always encourage me to attend. Despite the fact that I ultimately possessed a low level of autonomy in such situations, this did not affect my impression of my sport experience, as I always ended up making the best of these practices by creating my own enjoyment through the time I got to spend with my teammates and friends.

Research has shown that relationships that are developed during pre-adolescence (10-12 years of age) are integral for healthy development as peer influence serves as a powerful source for feedback and self-regulation (Lox, Martin Ginis & Petruzzello, 2003), which are also essential components of self-determined behaviour (Bryan and Solomon, 2007). This may indicate that this population of children seek out sport or physical activity as an opportunity to fulfil this need (and meet new people), rather than gaining this fulfilment through their engagement.

Differences in Autonomy

It is possible that the satisfaction of the need for autonomy becomes increasingly more important for adolescents, as opposed to pre-adolescent youth. Research from Eccles et al. (1993) supports this notion and states that adolescents have an increased desire for autonomy during this stage of development. An individual at the stage of adolescence will begin to develop their sense of self (Eccles, et al., 1993). During this stage, personal issues often arise

from conflict between choices that adolescents see as representative of the self, and adult authority (Eccles et al., 1993). For example, an adolescent may get into an argument with their parents about making their bed in the morning because they now see this matter as a personal issue that involves choice on their part. Thwarted decision making often doesn't only apply to a family setting, and is common to school contexts (Eccles et al., 1993). In particular middle school classrooms are typically characterized by a greater emphasis on teacher control and discipline (Eccles et al., 1993). Eccles et al., (1993) further suggests that due to the emergence of the self in adolescence, autonomy is typically more important during this stage than in childhood. Changes in autonomy have been characterized by decreases in motivation and negative psychosocial well-being (Eccles, et al., 1993). The acknowledged importance of autonomy for adolescents creates recommendation for the inclusion of this concept on the heart of physical literacy for individuals in this stage of development.

Basic Needs Theory Related to Sport and Physical Activity Engagement

Deci and Ryan (2000) state that, "the basic needs for competence, autonomy, and relatedness must be satisfied across the life span for an individual to experience an ongoing sense of integrity and well-being" (p.75). Although literature exists that discusses basic need fulfilment for children with respect to psychosocial health and well-being (Ronneau et al., 2005), research involving basic need satisfaction and physical activity or sport engagement is limited. Despite this fact, research involving, Zhang, et al. (2011) assessed the relationship between psychological need satisfaction, intrinsic motivation and engagement in physical activity within and beyond physical education for 286 youth grades 6-8. Their results support the original tenets of Deci and Ryan's (1985) self-determination theory as competence and autonomy were identified as the most significant contributors to physical activity engagement. Rutten, Boen and

Seghers (2012) also found that competence and autonomy fulfilment were strongly associated with physical activity engagement among 2418 children in grade 6. Rutten et al. (2012) assessed basic needs satisfaction in relation to levels of self-determined motivation in physical education class, and suggested that it could in turn lead to heightened levels of physical activity during leisure time.

Although Zhang et al. (2011) found competence and autonomy satisfaction to be the most significant positive predictors of physical activity engagement within and outside of physical education class; relatedness was still found to be predictive. Results from Rutten et al. (2012) found that satisfaction of relatedness did not mediate the relationship at all between autonomous motivation to engage in physical education. Both studies measured relatedness using likert-type scales that situated relatedness satisfaction specific to a physical education context. Thus, the measurement of relatedness may have been too specific towards physical education environments and consequently failed to capture other elements associated with a child's perception of relatedness such as parents and friends. Furthermore, the use of these scales may have failed to capture inductive items within relatedness such as meeting new people, which was significant in the present study. Given that both studies were interested in understanding physical activity engagement within and *beyond* the school setting, it is possible that the tool used to measure relatedness failed to capture elements aligned with relatedness that occurred outside of a physical education context.

Contributions of Using Children's Perspectives

Koekoek et al. (2009) asserts that a substantial amount of research related to childhood development is based primarily on internal cognitive and motivational processes and related outcomes. Consequently, very little research focuses on perspectives and experiences of the

learner (Koekoek et al., 2009). The ability to understand children's perspectives related to developmental processes has the ability to create enriched instructions for educators that ultimately enhance student learning (Koekoek et al. 2009).

The focus of the present study on understanding pre adolescents' perceptions regarding basic need satisfaction through open ended questions allows a more nuanced approach to understanding motivation with respect to physical literacy development. More specifically, using open-ended questions allows youth to expand on what they like about their sport or physical activity without being prompted by an itemized questionnaire that have been used in previous basic needs research (Zhang et al., 2011; Rutten et al., 2012; Ntoumanis, 2001). The analysis of open-ended questions was able to provide insights into inductive themes that emerged such as health knowledge, feeling good, physiologically negative feelings, and getting hurt. Such emergent themes allow for data that is more thoroughly grounded in pre adolescent youth's perspectives. This enables themes to emerge that are more connected to pre adolescents, which the Ontario Health and Physical Education curriculum k-8 (2010) states is essential for effective curricula. Thus the ability of the current study to identify both deductive and inductive themes related to youth motivation in the context of physical literacy has allowed for a perspective that provides valuable new insight, that is grounded in the perspective of the learner.

The Heart of Physical Literacy

The heart of physical literacy offers a visual representation of important themes with respect to motivation in the context of physical literacy for children grades 4-6. Whitehead (2010) acknowledges that individuals will be self determined to seek out active opportunities on a regular basis that are challenging. Given that themes in the heart of physical literacy were suggested to be associated with engagement in a wide variety of physical activities, and/or a

higher predilection towards physical activity it is suggested that the themes may be related to more self-determined behaviour with respect to these important aspects of physical literacy.

The symbol of a heart was selected as it is central to a child who embodies healthy active living as is depicted on p. 5 of the Ontario Health and Physical Education (HPE) curriculum k-8 (2010). The connection of the heart of physical literacy to the diagram in the Ontario HPE curriculum k-8 (2010) is thought to capture aspects associated with physical literacy that are connected to the learner. The design of the heart was done thoughtfully as although all themes are connected, some are suggested to be more proximal to one another. Furthermore, the size of the sections of the heart represents the importance of these themes, as identified by children in the present study. Finally, blended colours (e.g. orange is created by combining red and yellow) represent themes that overlap. Additional themes, that were regarded as important to being physically literate throughout the literature, have also been included in the heart, although they could not be assessed in the current study (ie. fundamental movement skills, and expressive possibilities).

Fun. Fun was a concept that was the most commonly cited by participants (91%). As previously discussed in the results section, in an attempt to best represent the data, fun was conceptualize as an inductive theme. Various literature regards fun as being an outcome of the satisfaction of the basic psychological needs (Deci & Ryan, 2000), or more closely related to feelings of competence and relatedness for children (Cox et al., 2008; Sollerher et al., 2006). Due to the fact that the present study was not able to ask probing questions to clarify self reported feelings of fun, this concept was given it's own theme.

The Canadian Sport for Life manual on developing physical literacy for youth 0-12 years of age suggests that children's skills naturally emerge through learning opportunities that

optimize fun practice. Physical and Health Education (PHE) Canada (2012) endorses opportunities to develop physical literacy that include fun, creative games, and play. Simply stated, if a child does not associate fun with their sport or physical activity, they will not continue to participate. Furthermore, as I experienced throughout my own sport experience, fun can be integral to create a buffer for potentially negative aspects of a sport. For example, during my first year of t-ball I had a coach who would create a negative environment by yelling at players. Although I did not feel supported by my coach, I enjoyed being with my friends, and had fun hitting the ball and running around the bases. If I did not find elements of fun associated with my t-ball experience, it is unlikely that I would have continued on in this sport for over 20 years and counting. Thus, fun constitutes the center of the heart, as it is suggested to be central to the function, and perseverance, to develop all other elements.

Fundamental movement skills. Fundamental movement skills have been praised as foundational to physical literacy development (Sheehan & Katz, 2010; Mandigo et al., 2009), and thus constitutes the upper section of the heart. The development of fundamental movement skills is of particular importance to the age of participants in the present study as PHE Canada (2011) suggests that most children should have developed the majority of fundamental movement skills by the age of 7. The inclusion of fundamental movement skills on the heart of physical literacy provides a check to ensure that these skills are in fact being developed. The presence of fundamental movement skills can lead to the development of movement competence, which was identified as meaningful to 43% of our participants for participation in their sport of physical activity. The term physical competence is intended as an inclusive term, which implies that competence in the realm of physical literacy development is based on the individual, rather than norms of skill acquisition (Mandigo, et al., 2006). For this reason, it is important for

educators to encourage self-referenced improvement and learning in pursuit of fundamental movement skills development (PHE Canada, 2011). Deci and Ryan (2000) further acknowledge the importance of self-referenced learning as essential to nurture intrinsic forms of motivation.

Movement competence. Movement competence has been placed in the heart next to fundamental movement skills as the refinement of these skills and opportunities for success can create movement competence (PHE Canada, 2011). Children who possess self-perceived competence are more likely to be more active, self-determined and have a belief that their ability levels will improve with effort (Wang et al., 2002). Such findings were consistent with the present study as a number of children identified that they enjoyed challenging themselves, expending effort, and achieving their goals. Thus this quality is important in the overall development of physically literate individuals to instill appropriate concentration of effort and persistence.

Engagement in a wide variety of physical activities. PHE Canada (2011) has suggested that future skill achievement is dependent on early success in movement, which can impact participation in physical activities and ultimately can affect leisure activities as an adult. The results of the present study suggest that the majority of individuals who reported competence also participated in three or more physical activity contexts. The development of competence should not be done in isolation, and incorporates proficiency in a number of different environments. Whitehead (2010) suggests that physically literate individuals develop capacities in a range of environments. Competence has thus been placed next to engagement in a wide variety of physical activities, as it is understood that mastery experiences in various physical activity contexts will in turn lead to increased levels of competence (Deci & Ryan, 2000).

Relatedness. Engagement in a wide variety of physical activities can lead to an increase in number of opportunities for the satisfaction of relatedness, which was identified as significant by 42% of pre-adolescent youth in the present study. Conversely, given that a number of individuals in the study cited ‘meet new people’ as a reason to engage in a sport or physical activity, it is possible that children seek out engagement in a wide variety of physical activities to fulfill their need for relatedness, rather than gaining the fulfillment by simply being in the sport. A number of participants in the present study identified team mates, friends, family, meeting new people, or the feeling of being involved as a reason why they enjoy being physically active or playing their sport. As discussed earlier in the present chapter, peer relationships are especially important to pre-adolescent youth as a means for developing self-regulation and to obtain feedback (Lox, et al., 2003). PHE Canada (2011) further acknowledges relatedness as integral to physical literacy as positive and cooperative interactions that take place in movement contexts can enable learning through problem solving and group work. Furthermore, relatedness is an integral structure to promote adherence to sport or physical activity, enjoyment, and future levels of well being (Ronneau, Koestner., & Abela, 2005; Ryan, Williams, Patrick, & Deci, 2009; Williams, Whipp, Jackson, & Dimmock, 2013). Relatedness was significant to my own sport participation as it can encourage perseverance in the face of challenges. If there were a particular sport, or skill that I wasn’t competent at, I would still engage in the sport or physical activity because it enabled me to feel connected to my friends. With respect to physical literacy development, if enhanced feelings of relatedness can lead to adherence to sport and physical activity, this can lead to further development of fundamental movement skills, and movement competence. Thus, relatedness is deemed as a significant theme in the current study.

Expressive possibilities. Through the ability to interact and build relatedness with others through movement, individuals learn how to read and interpret movement intentions of others and react appropriately with their own movement (Lloyd & Smith, 2013). The ability to effectively communicate with one's environment is referred to as expressive possibilities (Lloyd & Smith, 2013) and constitutes a section of the Heart of Physical Literacy. Whitehead (2010) incorporates expressive possibilities through describing interaction with the environment, "physically literate individuals will be perceptive in 'reading' all aspects of the physical environment, anticipating movement needs or possibilities and responding appropriately to these with intelligence and imagination." (p.13). The ability to interact effectively with one's environment can in turn lead to enhanced satisfaction of relatedness as individuals are able to communicate their movement with peers in a cooperative and positive way.

Feeling good. The ability for an individual to develop relatedness, and effectively enact movement strategies to accommodate for environmental factors instills a heightened movement capacity, and an intrinsic inclination to move (Lloyd & Smith, 2011). This concept was captured in the present study by 17% of participants who reported that they enjoyed their sport or physical activity because it just feels good. Thus the concept of feeling good constitutes another section of the heart of physical literacy. These participants reported some sort of description of feeling good that revealed mindfulness and intrinsic focus towards their movement. Whitehead (2001) further establishes the notion of an intrinsic inclination to move by suggesting that individuals who possess a wide range of effective movement responses that are developed through interaction through one's environment moves with a flow of motion as opposed to stopping to think about their next movement.

Health knowledge. The final section of the heart of physical literacy is health knowledge. A large number of participants (85%) were aware that being physically active and playing sports were good for them. Whitehead (2010) suggests that individuals who are physically literate are able to assess and understand the effects of exercise on their lifestyles and articulate this effectively. Through an understanding of health knowledge, individuals can develop a holistic understanding of the impact of activity on their health and wellbeing (Whitehead, 2010). Whitehead (2010) further acknowledges the ability of an individual to be able to communicate and articulate aspects of their health and wellbeing, which is why health knowledge is more proximal to relatedness, and intrinsic aspects of movement. If individuals enact a mindful connection with their body, they will be able to articulate aspects of their health and wellbeing more effectively (Whitehead, 2010). Furthermore, if students poses a strong knowledge of health related to physical activity it can help to mitigate physiologically negative feelings, which was significant for 39% of participants in the study as a reason why children in the present study did not like participating in sports and physical activity.

Synergy of the Heart of Physical Literacy

The combination of fun, fundamental movement skills, movement competence, engagement in a wide variety of physical activities, relatedness, expressive possibilities, feeling good, and health knowledge combine to create characteristics that are proposed to be common amongst physically literate individuals as suggested through the present analysis and literature. When these conditions combine in the heart of physical literacy, the heart is able to function at it's full capacity and enrich the body with elements necessary to enjoy sport and physical activity at an individually appropriate level. In the event that one or two of these sections becomes disconnected, the heart can still partially function. An example of this would be a child that may

not possess competence but they have fun at their sport and enjoy spending time with their friends, thus they are still engaged in the sport and will continue to develop. In the present study, for example, 54% of participants who reported low competence also reported satisfaction of relatedness throughout their sport or physical activity endeavors. Thus, this illustrates how the disconnection of a section creates importance in the presence of another section. However, if the heart loses too many of these sections it becomes weakened and is unable to fulfill its potential.

Although the current design of the heart of physical literacy is suitable for pre-adolescent youth, hearts for individuals at other ages may look different. For example, it is well documented in the literature that autonomy is extremely important for adolescents (Eccles et al., 1993), thus the inclusion of this construct may be valuable for this group. The circular shape associated with the heart is intended to convey that the process of developing physical literacy is one that occurs throughout the life course. Lloyd and Smith (2013) state that, “at no point in time can one claim to be fully physically literate”. Rather physical literacy enables the endless development of movement patterns from the foundation of fundamental movement skills, to enjoy a variety of physical activities, or sport throughout the life course.

Implications

The results of the present study yield several implications that are proposed to contribute to a better understanding of attributes associated with becoming physically literate for pre-adolescent youth. Recommendations of this study are proposed to contribute to areas of the Canadian Assessment of Physical Literacy (CAPL), the Ontario Health and Physical Education (HPE) curriculum grades k-8 (2010), as well as the development of physical literacy through relatedness.

Although the results of the present study did not support basic need satisfaction with engagement in a wide variety of physical activities, it was evident that both competence and relatedness were significant contributors for the present age group to their sport and physical activity engagement. Currently, the CAPL has integrated motivational concepts of competence and relatedness into the physical education knowledge questionnaire (Borghese, Boyer, McClelland, Longmuir, & Tremblay, 2013). Given the previously discussed importance of autonomy for adolescence (Eccles et al., 1993), it is recommended that, when administered to adolescence, a subscale of autonomy be developed and included in the assessment.

Whitehead (2010) acknowledges motivation as foundational and a nutriment to develop all other elements associated with physical literacy. Given that elements displayed in the heart of physical literacy are suggested to lead to more self determined behavior with respect to physical literacy, as exemplified by self reported engagement in a wide variety of physical activities and predilection towards physical activity, the heart of physical literacy is thought to nurture the model of the CAPL. Without youth developing self determined behaviour to engage in a wide variety of physical activities on a regular basis, it is unlikely that they will develop characteristics of a physically literate individual (Mandigo, 2009; Sheehan & Katz, 2010; Whitehead, 2010), or in the case of the CAPL: Motor skills, knowledge awareness and understanding, physical fitness, and physical activity behaviours. Thus, the heart of physical literacy is seen as having a reciprocal relationship with the CAPL model.

The Ontario HPE (2010) curriculum suggests the importance of students being able to recognize themselves in the curriculum in order to help each student reach their potential. The heart of physical literacy can offer the greatest contribution in terms of helping students feel connected to the curriculum as it presents concepts that are significant to students with respect to

their physical activity and sport enjoyment. Furthermore, the heart of physical literacy offers a number of connections specific to curricular expectations as specified through three strands: Active living, movement competence, and healthy living. The strand of active living encompasses the development of skills and knowledge to participate regularly in physical activity. This includes engagement in a wide variety of physical activities, to determine what activities they enjoy, which will ultimately contribute to their success. The strand of active living connects with aspects of fun and engagement in a wide variety of physical activities on the heart of physical literacy. This strand also includes physical fitness components that are present in the CAPL.

Movement competence constitutes the second strand, and includes the development of fundamental movement skills and movement concepts. The development of these movement skills is also related to engagement in a wide variety of physical activities. The curriculum underlines the importance of fun being foundational for skill development. The development of movement competencies is anticipated to nurture cognitive development as well as enhance interpersonal skills, which are captured on the heart of physical literacy through relatedness. The development of movement concepts include how to respond tactfully in a game situation with respect to a students' environment, which is captured by the concept of expressive possibilities in the heart of physical literacy. The final strand: Healthy living includes the knowledge necessary to make healthy active choices, and to connect this knowledge across various other aspects of their well being, as well as the health of others. Such concepts connect with the heart of physical literacy's health knowledge section, and feeling good.

Integral to all three curricular strands is a further subset of expectations: Living skills (Ontario HPE curriculum k-8, 2010). The living skills strand is suggested to relate to the theme

of relatedness in the heart of physical literacy. The Ontario HPE curriculum k-8 (2010) identifies living skills as personal skills, interpersonal skills, and critical and creative thinking. The curriculum further states that the development of these living skills should be done in conjunction with the three aforementioned strands, which connects to the heart of physical literacy as the theme of relatedness is connected to all other themes. The Ontario HPE Curriculum as well as the present study provides support for the importance of relatedness to be connected to other aspects of healthy active living. Given the aforementioned importance of relatedness to promote adherence to sport and physical activities (Ryan, Williams, Patrick, & Deci, 2009), it is suggested that further attention be given to relatedness in the pursuit of the development of fundamental movement skills for youth. Currently, the focus of many resources for fundamental movement skill development is based on the skill itself, with a minimal mention of how to enhance feelings of relatedness with these skills (PHE Canada, 2010). Due to the significance of relatedness to pre adolescent youth of the present study as well as the curriculum, it is suggested that future resources be designed with a higher focus on developing relatedness among peers and fostering interpersonal skills to promote adherence to sports, as well as the development of the fundamental movement skills and movement competence.

Limitations and Future Directions

The current study was designed thoughtfully to generate a deeper understanding of motivational attributes related to the development of physical literacy in pre adolescent youth. Despite the study's careful design, there are a few limitations that need to be addressed. While open-ended questions were helpful to gain an inductive understanding of reasons why pre adolescents like their sport or physical activity, it is possible that low reports of basic needs, such as autonomy, could be due to the fact that participants were not able to articulate autonomous

feelings. Other research that has investigated basic need satisfaction in grade 6 and grade 3 has used likert-type scales (Ronneau et al., 2005; Rutten et al., 2012; Zhang et al., 2011). However; studies were conflicted as to the significance of the basic needs constructs for this age group. Some research found that even when using likert-type scales, reports of autonomy remained low (Leverson et al., 2012; Veroneau et al., 2005), while others reported a stronger mediating effect of autonomy on leisure activity selection (Rutten et al., 2012; Zhang et al., 2011).

Furthermore, the use of short answer questions may not allow for an in depth understanding of responses. Future research is encouraged to use semi-structured interviews focus groups too allow for a more in depth understanding of basic need satisfaction with respect to physical literacy development. Furthermore, the inclusion of participant observation may allow for a more holistic understanding of physical literacy in pre adolescent youth. Interviews conducted by Orlick (1972) developed a deeper understanding of the impact of various factors influencing sport participation among children and youth such as external environment, the availability of significant sport role models available to the child, expectations the child had about sport, and contingencies of reinforcers related to sport participation. The contribution that Orlick (1972) made to further understanding early participation in sport suggested that there is great value associated with in-depth open-ended interviews focused on identifying motivational aspects of on-going participation in sport.

Furthermore, the current study did not look at age and gender differences. Although Deci and Ryan (2000) suggest that the basic needs theory is universal regardless of age and gender, further investigation exploring potential differences may be insightful. Despite this limitation, the present study was concerned with generating an initial exploration of motivation in relation to physical literacy development. Results gained from this initial exploration will be valuable to

inform future interview or focus group guides that could focus on a deeper understanding of satisfaction of the basic need constructs. Furthermore, participant observation would be a valuable method to use in order to gain a more holistic perspective of participants' movement abilities in a dynamic environment.

The current measure of physical activity contexts may not have allowed for an accurate depiction of engagement in a wide variety of physical activities. While participants were able to select from a large bank of activities, there were no indications of frequency for participation. Future studies and assessment should incorporate methods used by Levenson et al. (2012) that uses a composite measure of participation in leisure activities that includes frequency of participation ("two to three times a month", "about once a week", "two times a week or more"). Furthermore, PHE Canada's (2011) Definition of sport as occurring in the air, in the water, on the ground, or on snow and ice may not capture the dynamic nature of sport, or more importantly the ability of a physically literate individual to evoke expressive possibilities to meet the challenges of their environment (Lloyd & Smith, 2013). Despite this limitation, the current definition serves as a good starting point to understand movement in various contexts; however, it is important to keep in mind that movement in sport can occur across a number of contexts.

Conclusion

The purpose of the present study was to explore and better understand the role of motivation, in terms of basic needs satisfaction, with respect to physical literacy development related to self-reported engagement in a wide variety of physical activities and predilection towards physical activity for pre-adolescent youth. An inductive and deductive approach to a thematic analysis was used to understand emergent themes related to basic need satisfaction, as well as significant inductive themes.

The results of the current study indicated that while 59% of participants participated in three physical activity contexts, inference of basic need satisfaction was not related to engagement in a wide variety of physical activities, or predilection towards active or sedentary pursuits. Although both competence and relatedness were significant reasons for why pre adolescent youth enjoyed participating in their sport or physical activity, levels of autonomy were reported as low. Individuals who reported the satisfaction of competence were more likely to engage in three or more physical activity contexts, as opposed to individuals who did not. Relatedness was more highly associated with predilection towards active pursuits after school. Inductive themes that were revealed as significant reasons for why pre adolescent youth enjoy participating in their sport or physical activity included fun, feeling good, and health knowledge. The constructs of fun and health knowledge were found to relate to engagement in a wide variety of physical activities. Self reported undermined basic needs did not relate to engagement in a wide variety of physical activities. Major inductive themes for why adolescent youth do not enjoy participating in their sport or physical activity include physiologically negative feelings associated with the sport or physical activity, and getting hurt.

Implications for educators and health practitioners suggest the inclusion of motivation in the current Canadian Assessment of Physical Literacy model. Furthermore, constructs included in the heart of physical literacy are proposed to reflect important themes and concepts with respect to motivation and physical literacy for children grades 4-6. These themes and constructs are suggested to be a valuable tool for educators as it is grounded in learner perspective and possesses curricular connections. Future studies should utilize interview and focus group discussions to gain a better understanding of basic need satisfaction among pre adolescent youth. Furthermore, future research that uses participant observation would be helpful to gain a more

holistic perspective of participants' movement competency, and interaction with their environment.

In addition to the aforementioned implications, the current study provides a number of personal implications. My life long involvement with sport and physical activity continues to evolve as I embark on my first year as a teacher candidate, specializing in health and physical education. Through the current study, I have gained an understanding of aspects to promote within the classroom that are central to what youth regard as important towards their sport and physical activity involvement. Furthermore, I have gained an understanding of how these factors can ultimately influence their development of aspects associated with physical literacy. The understanding of these factors has extended my own perspective regarding motives for sport and physical activity engagement, and has developed a perspective that is more connected to the learner. An appreciation of these aspects will be important to ensure I provide positive environments for students that nurtures motivation to maintain physical activity throughout their life course.

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Appendix A

Table 1.

Themes for why Pre Adolescent Youth Enjoyed Their Sport or Physical Activities

Theme	Definition	Example	Reported Fulfillment (%)
Fun	Enjoyment or positive affect associated with sport engagement	“I love being physically active”, “I love to run and play all kinds of sports”, “I love being physically active and playing sports because it is fun”	91%
Competence (sport skill, challenging, learn, task achievement)	Ease and capabilities associated with movement attributed to abilities and is focused on self improvement and task mastery ^{1, 2, 3} , Enjoys challenges ⁵	“I like football because it’s easy”, “challenging in a good way”, “I learn new things”, “you can set goals for yourself”	31%
Engagement in a wide variety of physical activities	Activities occurring on the ground, in the water, on snow and ice, and in the air ⁴	Soccer (ground), swimming (in the water, skating (on snow and ice), gymnastics (in the air)	0 PA contexts: 1% 1 PA context: 8% 2 PA contexts: 30% 3 PA contexts: 59% 4 PA contexts: 2%
Relatedness (friends, meeting new people, family, team, being involved)	Connectedness and support from others ³	“being with friends”, “meet all the new people I can play with”, “being a part of a team”, “it lets me have more time with my family”, “I like being involved”	43%

Feeling Good	Intrinsic positive feelings, or physiologically good feelings	“it works your body muscles so it makes you feel good”, “you feel good after you play”, “feeling the beat of my heart”	17%
Health Knowledge (being active, avoiding sedentary behaviour)	Knowledge that participation in sports or physical activity was good for their health and well being	“it makes your lungs and breathing better”, “it keeps me active”, “it’s better than sitting on the couch”	85%
Autonomy	Experiencing choice in one’s actions	“I like activities that I chose”, “I like to have choice”, “I want to”	2%

*Note:*¹ Wang, Chatzisarantis, Spray, & Biddle, 2002, ²Ntoumanis, 2001, ³ Podlong & Dionigi, 2009, ⁴ Physical and Health Education Canada, 2011, ⁵Deci and Ryan (2000). Physical activity (PA).

Table 2.

Themes for Why Pre Adolescent Youth Did Not Enjoy Their Sport or Physical Activities

Theme	Definition	Example	Reported Fulfillment (%)
Low competence	Perceived low ability ¹	“I don’t like hockey because I’m not good”, “I don’t like when I do something wrong”	12%
Low relatedness	Undermined feelings of connectedness to others ^{1,2}	“Your team might not like you”, “I don’t like to be yelled at by the coach”	23%
Low Autonomy (time, work)	Undermined ability to express choice in one’s actions ¹	“I don’t enjoy the sports I have to do in school”, “It uses a lot of time, it’s not always free time”, “having to always push myself”	31%
Getting hurt	Physical	“You can get badly injured”, “hurting feet from running too much”	26%
Physiologically Negative	Intrinsic positive feelings, or physiologically good feelings	“You get tired after the sport, you sweat a lot in certain sports, and your legs and arms get sore”, “it makes my throat hurt, it makes me tired, it makes me breath heavy”	39%

*Note:*¹ Wang, Chatzisarantis, Spray, & Biddle, 2002, ²Podlong & Dionigi, 2009

Appendix B

Figure 1.

The Relationship Between all the Attributes of Physical Literacy

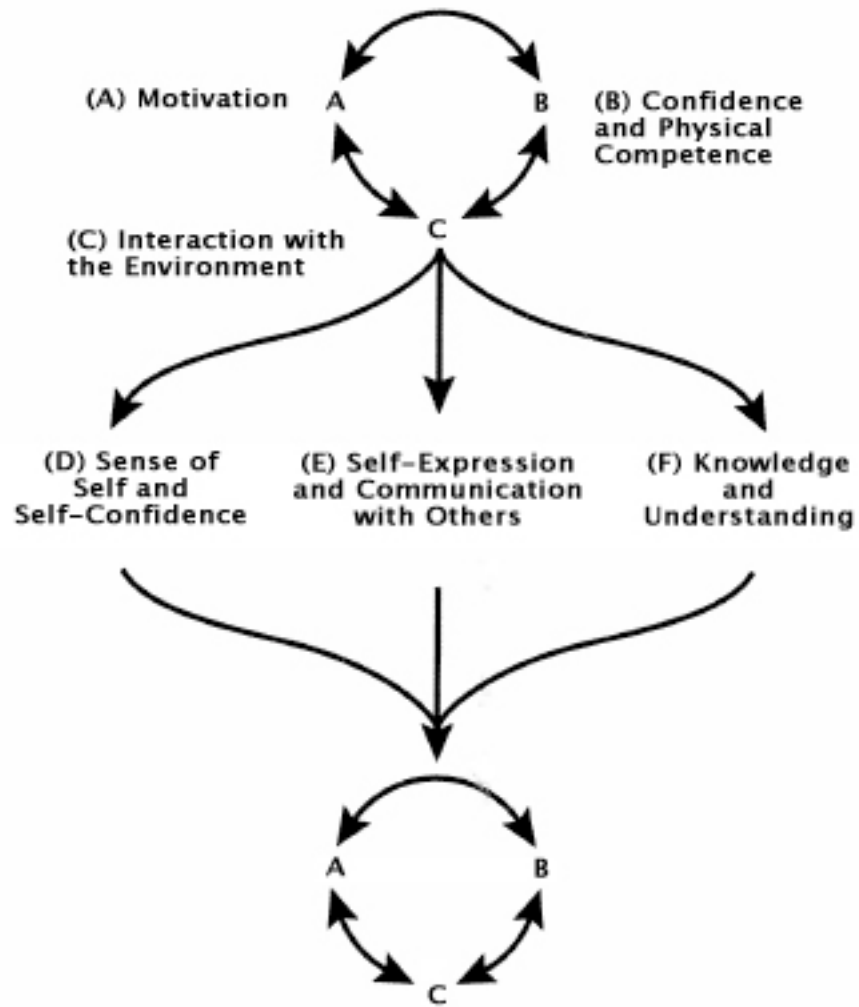


Figure 1. Visual representation of the relationship between attributes associated with being physically literate. Adapted from Whitehead (2010).

Figure 2.

The Heart of Physical Literacy

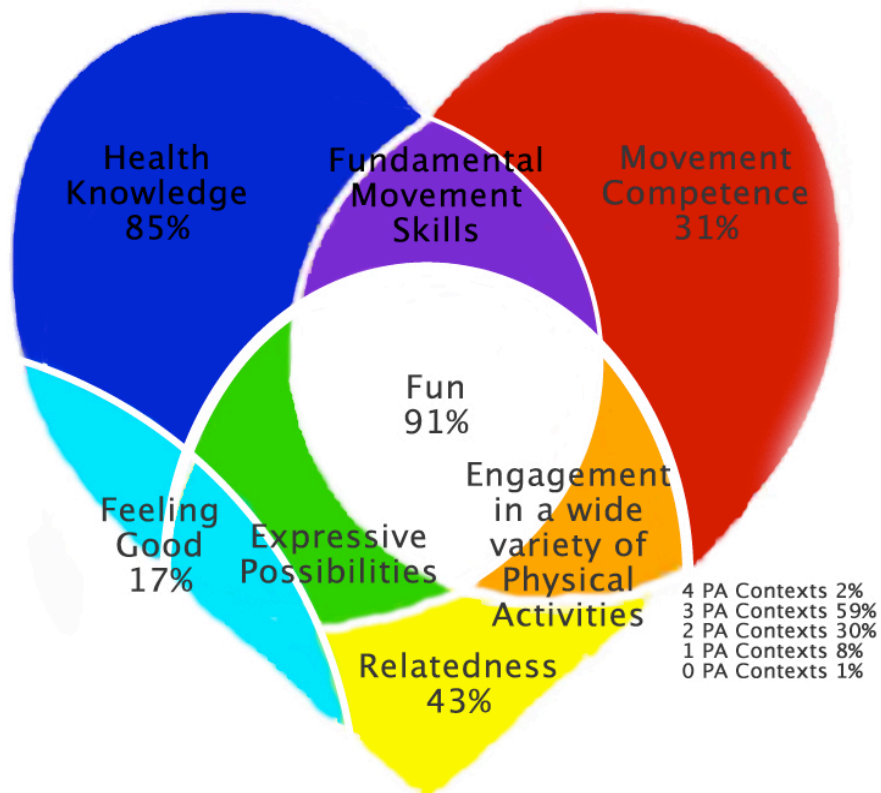


Figure 2. Visual representation of salient themes from the present analysis, as well as the literature with respect to engagement in a wide variety of physical activities, and predilection towards physical activities. Blended colours represent themes that overlap.

Figure 3.

Basic Need Satisfaction and Engagement in Physical Activity Contexts

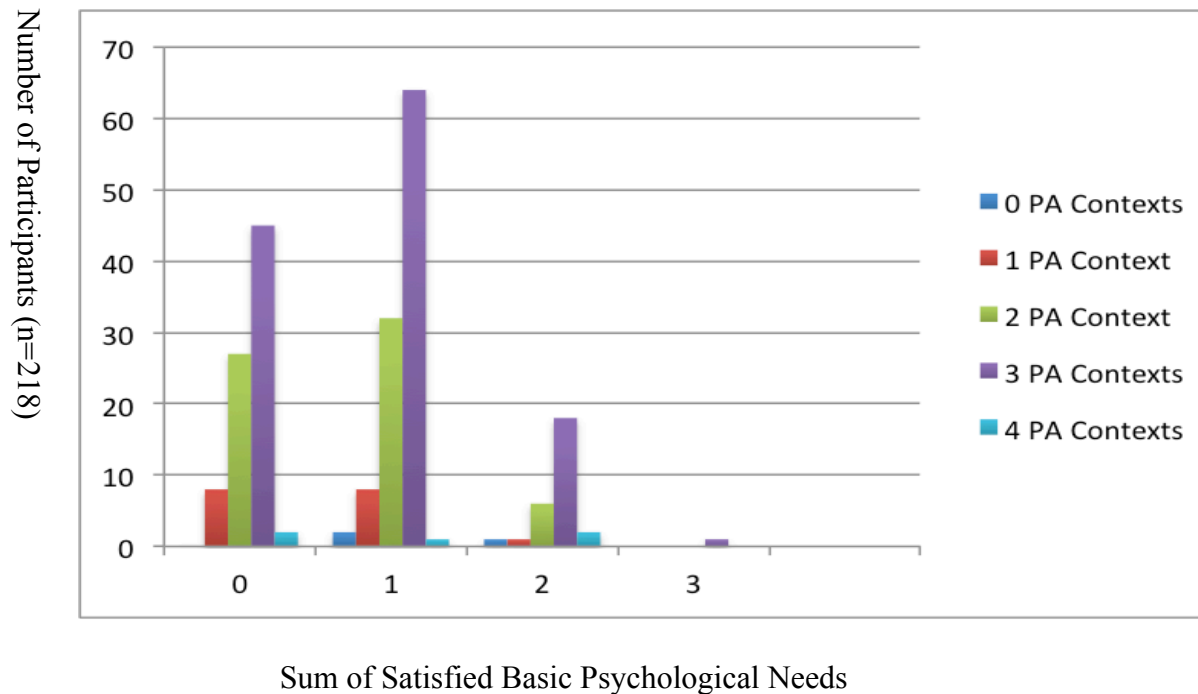


Figure 3. Sum of self reported measure of basic need satisfaction and engagement in a wide variety of physical activities.

Figure 4.

Basic Need Satisfaction and Predilection Towards Sedentary and Active Pursuits

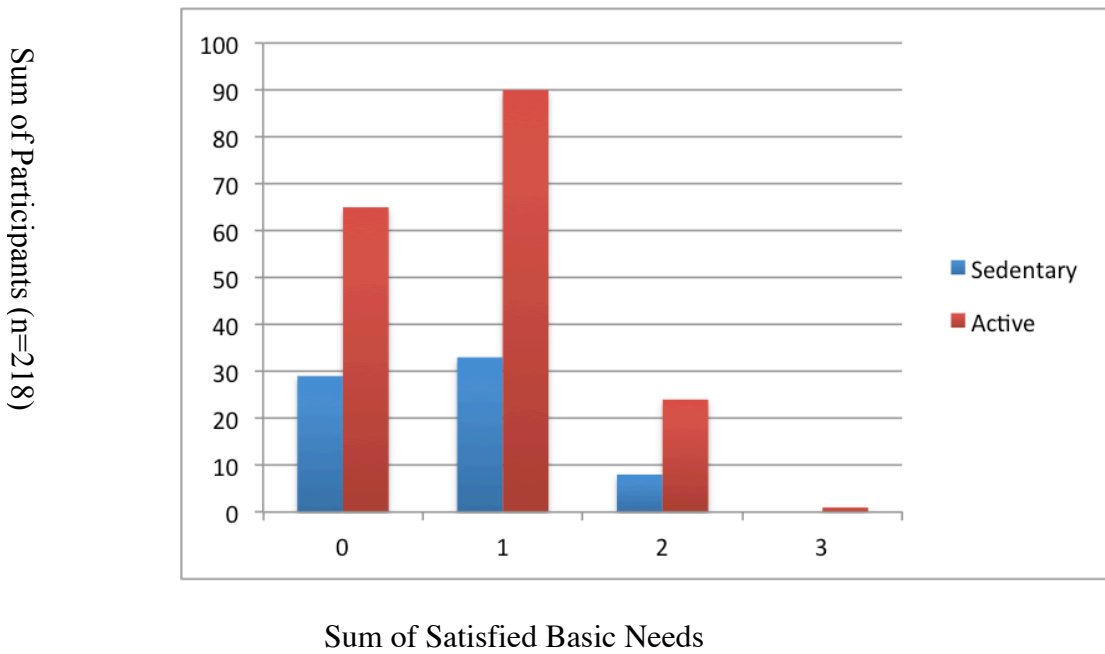


Figure 4. Sum of self reported satisfied basic psychological needs and predilection towards active or sedentary pursuits after school.

Figure 5.

Undermined Basic Needs and Engagement in Physical Activity Contexts

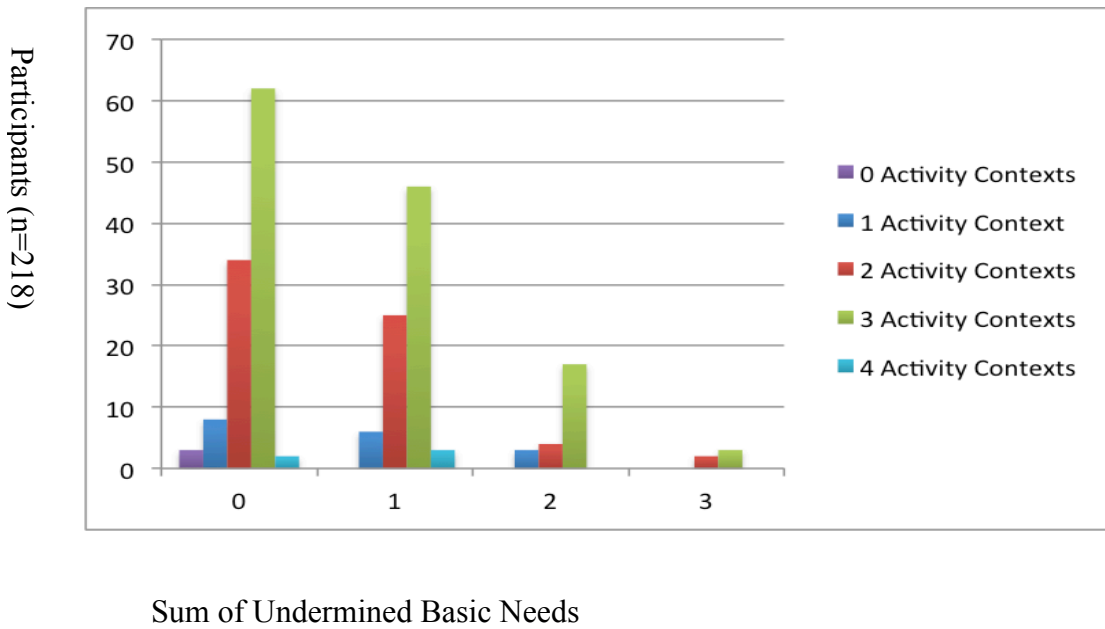


Figure 5. Sum of self reported undermined basic needs and engagement in a wide variety of physical activities.

Appendix C

Physical Education Knowledge

(Canadian Assessment of Physical Literacy)

Name: _____

Age: _____

I am in grade: 4 5 6 (please circle one)

I am a: boy girl (please circle one)

What is "physical activity"? In this project, when we talk about physical activity, we mean things that you do for at least 20 minutes that make you breathe harder.

Why are we asking you these questions? We want to know what kids like you know about physical activity, sports and exercise.

Please remember:

- There are no right or wrong answers. If you do not know the answer, please give your best guess.
- There is no time limit, so please take all the time you need.
- Please use the space under each question to write your answer.

1. Name 3 things you like about playing sports or being physically active?

2. Name 3 things you don't like about playing sports or being physically active?

3. Why do you think schools make you take physical education?
(please circle all that apply)

- | | |
|------------------------------|--|
| being active | doing lots of new kinds of activities |
| getting fit | learning how to play different sports |
| having fun | spending time with friends |
| nothing | learning about healthy bodies |
| to give the teachers a break | learning the rules of different sports |

4. Complete the sentence. It is important to learn different physical activities and sport skills because....

What are sports skills? Running, throwing, jumping, catching, kicking...

5. What are the 4 main reasons that we exercise to keep our body healthy?

6. Do you think it is important to be physically fit?

Yes No (please circle one)

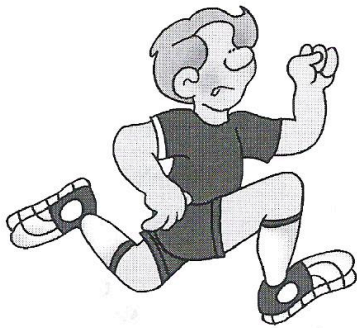
Why? _____

7. How long should you and other Canadian children exercise every day?
(please circle one)

- | | | |
|-------------|------------|------------|
| 10 minutes | 20 minutes | 60 minutes |
| 120 minutes | 90 minutes | 5 minutes |

8. Can you name 4 reasons why can't some children participate in physical activity or sports?

9. What is Jim doing in this picture?



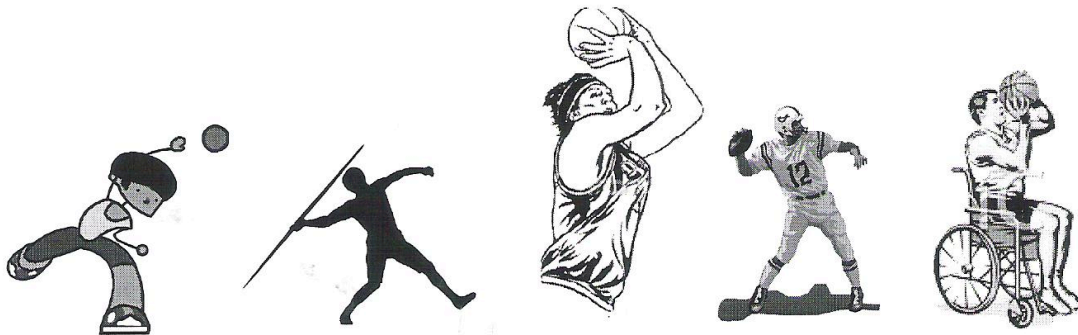
Walking

Running

Hopping

(Please circle your answer)

10. All of the athletes in the photos below are doing the same action.
What are they doing? _____



11. What sports/exercises/activities do you do during the year? Please circle all that apply.

- | | | |
|---------------------------------|----------------------------------|-------------------------------------|
| Badminton | Field hockey | Soccer |
| Baseball or softball | Figure skating | Squash |
| Basketball | Football | Swimming |
| Bicycling | Gymnastics | Tennis |
| Bowling | Hiking | Track and field |
| Canoeing | Ice hockey | Ultimate Frisbee |
| Cricket | Ice-skating | Volleyball |
| Cross-country skiing | Jogging or running | Walking for exercise |
| Curling | Kayaking | Weight-training |
| Dance | Martial Arts (Judo, Karate, etc) | I don't do any of these activities. |
| Downhill skiing or snowboarding | Rollerblading | I also like:
_____ |
| | Rugby | _____ |

12. Give 3 reasons why you like doing the sports that you circled above.

13. Why do your friends like to exercise/play sports/be physically active?

14. Use the word below to complete the sentences. Remember, you can only use each word once!

endurance
feel
fun

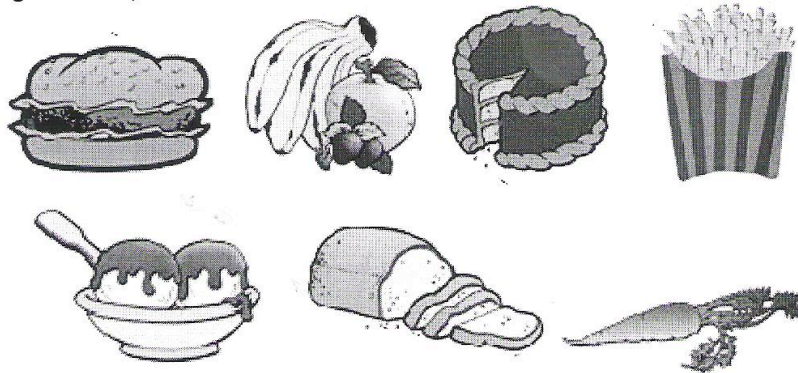
good
heart
lungs

perform
pulse
strength

- a) Being fit helps me to: _____ better, _____ better.
- b) Two reasons why people get involved in daily activity are because it is _____ and _____ for you.
- c) Physical activity improves the health of your _____ and _____.
- d) An increase in exercise can help improve your muscular _____ and _____.
- e) Another name for your heart rate is your _____.

15. Fill in the blank. Jogging for 20 minutes improves _____ fitness?

16. Please circle all of the healthy foods. Put an X through the foods that are not good for you.



17. Please circle how you get to school every day.

bus	walk	skate board	bike
car / truck	rollerblade	scooter	dog sled

18. If you were allowed to pick what you do after school, what activity would you pick?

Play video/computer games	Go to my sports team's practice
Read	Walk my dog
Do homework	Chat with friends online
Play with my friends at the playground	Watch television

19. How much TV do you watch after school?

- a. Less than 1 hour
- b. 1 to 2 hours
- c. 3 to 4 hours
- d. More than 5 hours

20. How much time do you spend on the computer after school?

- a. Less than 1 hour
- b. 1 to 2 hours
- c. 3 to 4 hours
- d. More than 5 hours

😊 Thank you for your help! 😊