Examining the Factors that Influence Successful Participation in Habitual Physical Activity of Children and Youth who are Blind or Visually Impaired: A Retrospective Study

by

SOFEYA DEVJI

A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF

MASTER OF ARTS

in

THE FACULTY OF GRADUATE STUDIES

(Special Education)

THE UNIVERSITY OF BRITISH COLUMBIA

(Vancouver)

August 2010

© Sofeya Devji, 2010
Abstract

The purpose of this study was to explore the factors that have influenced successful participation in physical activity of school-aged children and youth who are blind or visually impaired. Data for this study were gathered through analysis of the personal narratives of four blind, physically active young adults (one active adult and three competitive athletes) as they reflected on key childhood and youth experiences that positively influenced their participation in physical activity. Using a socio-ecological framework, the study sought to map out, in detail, the individual and interconnected factors (e.g. family, teacher, peer attitudes) that influenced success within and across three different environments (family, school and community). The results found common themes across participant narratives indicating identifiable success factors related to the family and school environments. While individual themes emerged related to the community environment, they did not recur across the participant narratives. Interconnections among the three environments were similarly evident in individual participant narratives, but no recurring themes were found for this across participant narratives. Taken as a whole, the results present a holist perspective of the complex web of factors that have helped craft successful experiences and foster continued participation in physical activity for the individuals in this study.
Preface

This graduate level research thesis is an original study in the field of education for students who are blind or visually impaired. Study procedures were conducted, with supervision from the research committee, in particular the study supervisor, Dr. Cay Holbrook, in the faculty of Educational Psychology and Special Education. The graduate student conducted all elements of this study including data collection and evaluations. Consequently, the graduate student is considered the primary researcher for this study. The UBC Behavioral Research Ethics Board (BREB) approved the study proposal on January 19, 2010 as a minimal risk study. The BREB research approval number is: H09-00774. The approval form is attached to this final thesis document as Appendix A.
Table of Contents

Abstract ................................................................................................................................. ii
Preface ................................................................................................................................... iii
Table of Contents ................................................................................................................... iv
List of Tables ........................................................................................................................ iv
Acknowledgements ............................................................................................................. vii
Chapter 1: Introduction ........................................................................................................ 1
  Definition of Terms ............................................................................................................. 5
Chapter 2: Review of the Literature ....................................................................................... 9
  Comparative Deficit Approach .......................................................................................... 14
  Social Interaction Approach ............................................................................................... 17
    Family ................................................................................................................................. 18
    School ................................................................................................................................. 21
    Community ......................................................................................................................... 25
  Theoretical Framework: The Socio-Ecological Model ......................................................... 27
  Research Questions ........................................................................................................... 31
Chapter 3: Research Method ................................................................................................ 32
  Introduction ....................................................................................................................... 32
  Rationale for Using Qualitative Research Methods .......................................................... 32
  Study Procedure ................................................................................................................. 33
    Criteria for participation ..................................................................................................... 33
    Recruitment ....................................................................................................................... 34
  Data Collection .................................................................................................................. 35
    Demographic evaluations ................................................................................................. 35
    Rating scales ..................................................................................................................... 35
    Descriptive interview data ............................................................................................... 37
    Rationale for using online interview methods ................................................................. 37
    Interview process ............................................................................................................. 39
  Validity and Reliability ...................................................................................................... 40
    Triangulation .................................................................................................................... 40
  Summary ............................................................................................................................... 41
Chapter 4: Results and Data Analysis

Demographic Data ........................................................................................................ 42
Triangulation .................................................................................................................. 45
  Environmental rating scales ....................................................................................... 46
  Characteristic rating scales ....................................................................................... 48
Primary participant interview data ............................................................................. 49
Primary and secondary interview data ....................................................................... 51
Interconnections .......................................................................................................... 52
Family ............................................................................................................................ 54
  Family characteristics rating scale ........................................................................... 54
  Family themes ............................................................................................................ 55
  Family themes across participants .......................................................................... 56
    Family attitude and encouragement ...................................................................... 56
    Parental involvement ............................................................................................... 56
    Parental support ....................................................................................................... 57
Family themes in competitive athletes ......................................................................... 60
  Beliefs and expectations ......................................................................................... 60
School .......................................................................................................................... 61
  School characteristic rating scale ............................................................................ 61
  School themes .......................................................................................................... 64
  School themes across participants ........................................................................... 65
    Elementary school learning physical skills ......................................................... 65
    Elementary school opportunities ......................................................................... 65
    High school creative PE programming .................................................................. 66
School themes in active adult ..................................................................................... 70
  Influence of TVI ........................................................................................................ 70
Community .................................................................................................................. 72
  Community characteristic rating scale .................................................................. 72
  Community themes .................................................................................................. 74
    Chantal .................................................................................................................... 74
    Darren ..................................................................................................................... 76
    Alexandria .............................................................................................................. 77
    Andrew ................................................................................................................... 78
### List of Tables

Table 1 Participant Demographics: Gender, Age and Year of Graduation ........................................... 43  
Table 2 Participant Demographics: Vision Status .................................................................................. 43  
Table 3 Participant Demographics: Active Adult vs. Competitive Athlete ............................................. 44  
Table 4 Demographic Data: Competitive Athlete Past and Future Competitions and Awards .... 45  
Table 5 Triangulation Data .................................................................................................................. 46  
Table 6 Rating Scale Results: Environments (Elementary School Years) ............................................. 47  
Table 7 Rating Scale Results: Environments (High School Years) ......................................................... 47  
Table 8 Environmental Rating Scales: Influential Environments ......................................................... 48  
Table 9 Triangulation: High Ratings - Environmental and Characteristic Scales for Family ...... 49  
Table 10 Triangulation: High Ratings - Environmental, Characteristic Scales with Primary Participant Narratives ........................................................................................................................................ 50  
Table 11 Triangulation: Primary and Secondary Narratives - Darren ................................................... 52  
Table 12 Triangulation: Interconnections between Environments-Chantal and TVI Narratives . 53  
Table 13 Rating Scale Results: Family Characteristics ........................................................................ 54  
Table 14 Rating Scale Results: Elementary and High School Characteristics ................................. 62  
Table 15 Rating Scale Results: Community Characteristics .............................................................. 73
Acknowledgements

I give my deepest gratitude to my faculty supervisor, Dr. Cay Holbrook, who took the time and energy to support me through my many research questions and guide me through the research process from conception to completion. Her knowledge in the field of education of students who are blind or visually impaired proved to be invaluable to this study and her patience in assisting me in my research completion was appreciated. This thesis would not have been possible without her support. I also wish to express my gratitude to my family, who gave me the time and space to complete my research. Your love and patience was noticed and appreciated.
Chapter 1: Introduction

Healthy habits start in childhood. Research has shown that healthy behaviours observed in adults are directly linked to the health-related habits that these individuals acquired during their school-aged years (Dennison, Straus, Mellits, & Charney, 1988; Janz, Dawson, & Mahoney, 2000). Habitual participation in physical activity is a component of healthy living and comes with many benefits, particularly when initiated in childhood. Indeed, children who take part in daily physical activity develop higher levels of lean muscle mass, build stronger bones, and maintain lower levels of body fat (Strong et al., 2005). As well, research has shown that physically active children experience increased self-confidence, exhibit improved concentration and alertness throughout the day, and possess a healthier sense of self-efficacy and body image (Cragg, Cameron, Craig, & Russell, 1999; Kirkcaldy, Shepard & Siefen, 2002; Strong et al., 2005), contributing to improved psychological and emotional health and wellbeing.

Despite this knowledge, research has shown that approximately two thirds of the world’s children are involved in an inadequate amount of physical activity to foster optimal health and development (WHO, 2002). Moreover, research on Canadian children and youth has clearly revealed that sedentary behaviours are on a rise: Almost half of Canadian children are involved in less than the bare minimum amount of physical activity needed to gain and maintain health and wellness (Boyce, 2004; Plotnikoff, Bercovitz & Loucaides, 2004). Rising levels of sedentary behaviours have resulted in new chronic health problems among children and youth. High blood pressure and heightened cholesterol levels along with Type-2 diabetes are but a few diseases that were once more commonly seen in adult populations, but are now increasingly affecting the lives of children and youth (Public Health Agency of Canada 2002, para. 1). The social, emotional, and physical implications of such a problem could be devastating from both a
personal and cultural perspective, affecting quality of life while increasing financial burden on the health-care system.

Even more troubling, there is evidence confirming that children and youth with disabilities are at a notably higher risk for developing unhealthy lifestyles. Research has shown that these children are typically involved in far less physical activity than even their most inactive peers without disabilities (Steele et al., 1996). Consequently, these children have an increased potential for developing secondary health disorders in their adult lives (Pope & Tarlov, 1991). Among this group, school aged children and youth who are blind or visually impaired, with no identified additional disability, have been documented as being at some of the greatest risk for developing sedentary behaviours and chronic health diseases (Kozub & Ho, 2004; Longmuir & Bar-Or, 2000; Sit, McManus, McKenzie & Lian, 2007). It is known, for instance, that these children generally exhibit some of the lowest fitness levels (Brambring, 2001; Kozub & Ho, 2004; Skaggs & Hopper, 1996) and perceive themselves as having more limitations in taking part in physical activity than even those peers with other types of disabilities (Longmuir & Bar-Or, 2000). On the other hand, there is also some evidence indicating that with appropriate environments and supports, this population can successfully participate in daily physical activity and achieve fitness levels that are comparable to their healthy and fit peers without disabilities (Ponchillia, Strause & Ponchillia, 2002). Clearly, there is a need to take a closer look at what factors influence the levels of participation in physical activity of children and youth who are blind or visually impaired, with no identified additional disability.

Studies that examine the health-related behaviours of children who are blind or visually impaired come from varied perspectives (Adelson & Fraiberg, 1974, 1976; Brambring, 2001; Bouchard & Tétrault, 2000; Kobberling, Jankowski & Leger, 1989; Lieberman, Houston-Wilson
& Kozub, 2002; Stuart, Lieberman & Hand, 2006; Winnick, 1985). On one hand, research from a comparative-deficit approach maintains that, compared to those children with sight, children who are blind or visually impaired are at a deficit, with the visual impairment itself deemed as being the main factor that limits their participation in physical activity (Adelson & Fraiberg, 1974, 1976; Bouchard & Tétrault, 2000; Kobberling et al., 1989). On the other hand, studies from the social-interaction perspective examine factors within the child’s environment in order to explain health-related behaviours. Such studies assert that challenges experienced by children who are blind or visually impaired are a result of imposed external social and environmental barriers, such as the negative attitudes of others and inaccessibility to equipment, trained personal and resources (Lieberman et al., 2002; Stuart et al., 2006; Winnick, 1985). In all likelihood, factors from each of these perspectives have an impact on the health-related behaviours of children and youth who are blind or visually impaired with no identified additional disability.

The World Health Organization (WHO, 2010) contends that “… physical activity is a societal, not just an individual problem” (para. 6). Therefore, in order to gain a thorough understanding of the different variables that affect health-related behaviours, both individual and societal factors need to be considered, along with the interrelationships that are made between them. Such an investigation can be undertaken using a socio-ecological approach to research. The socio-ecological model has been used by researchers to explain the many ways in which individual, social and environmental factors can either help or hinder the development of health and wellness behaviours. For instance, research has shown that families, particularly parents, can play an important role in developing healthy behaviours and habits in their children (Brustad,
1996; Jacobs & Eccles, 2000). Schools can provide additional opportunities for children and youth to develop motor and social skills needed to take part in sports, athletics and recreational activities (Ponchillia et al., 2002). Finally, community recreational facilities can open doors for individuals to participate and maintain involvement in neighbourhood recreational activities even after graduating from high school. Relationships among the environments can also exist. Families can take part in community recreational activities, community organizations can provide services through school facilities and schools can provide families with valuable resources on health-related topics and community recreational organizations.

There is currently a small body of research that specifically examines the factors that influence involvement in physical activity of children and youth who are blind or visually impaired, with no identified additional disability. Many of these studies focus predominantly on the barriers that hinder involvement in such actions. Surprisingly, research that examines the first-hand experiences of blind or visually impaired children and youth who have successfully taken part in regular physical activity are rarely seen; yet this type of investigation can provide valuable information as to how and why such factors can influence lifelong healthy behaviours. Further, while studies that focus on barriers may provide a glimpse into some of the participation challenges experienced by children who are blind or visually impaired, many of these studies only examine factors within a single environment, the most common being the school setting. There is value in examining factors that arise out of the many arenas of life, such as the family, school and community settings; such factors can influence the behaviours of individuals participating not only within a single environment, but also across many different environments (Bronfenbrenner, 1977).
The purpose of this study, therefore, was to examine the individual and interconnected factors that have influenced young active adults who are blind or visually impaired, with no identified additional disability, to successfully participate in habitual physical activity during their school-aged years. By investigating the facilitators rather than the barriers, the results of this study will identify factors that have been shown to provide opportunities for the participants in this study to take part in habitual physical activity. It is hoped that the results of this study can help to further the growing body of research examining the health-related behaviours of children and youth who are blind or visually impaired, and perhaps offer a new perspective on directions, placing more emphasis on facilitators of successful participation in physical activity.

**Definition of Terms**

*Active Adult and Competitive Athlete:* Participants in the current study were self-identified as either an active adult or competitive athlete. For the purpose of this study, an active adult is someone who participates in physical activity at least three times a week for a minimum of 45 minutes per session. An active adult may participate in community fitness classes, belong to a gym or recreational club, participate in intramural activities, or may exercise in the home setting, such as going for daily walks, exercising on a personal home gym or practicing yoga in a personal home space. A competitive athlete is defined as someone who has in the past or is currently competing in individual or team sports. This type of participant likely spends *more than* 45 minutes a session, three times a week training for competition. These competitions may take place on a local, provincial, national or international level. Moreover, a competitive athlete may be someone who is known in the wider local, provincial or national community as a competitor in their sporting category.
Blind or visually impaired: For the purpose of this study, the term blind or visually impaired describes those individuals who are at the least legally blind, with a best corrected visual acuity of 20/200 (CNIB, 2009). According to the WHO (2001) a severe visual impairment is defined using visual acuities that range from 20/200 (legal blindness) to 20/400. The term “visual impairment” implies that an individual has some usable functional vision while “blind” denotes that an individual has only light perception (LP) to no light perception (NLP), (WHO, 2001). In this study, the term impaired vision is the general name used when discussing both groups, blind and visually impaired.

Blind or visually impaired with no identified additional disability: The information gathered through the literature review and methodology of this study will only refer to those individuals who are blind or visually impaired, but do not have any additional documented or known disability.

Environment, Factor, Theme and Interconnection: The terms environment, factor, theme and interconnection are used to describe the different features of a participants’ life, as noted by personal narratives. The environment is the setting in which physical activity may take place, such as the family, school or community. A factor is the influential element within a single environment; this could be a person, organization, or action (e.g. attitude, support, involvement). The theme is a set of similar factors noted across multiple participant narratives. An interconnection describes a factor (such as a person or organization) that is seen across different environments within a participant’s life.

Participation: Participation is social and interactive in nature and is needed for learning social etiquette while influencing behaviour. For the purpose of this study, participation will be
used to define to what extent a child or youth interacts meaningfully in an inclusive physical activity within different environments, such as the family, school and community settings.

*Physical activity:* The WHO defines physical activity as “any bodily movement produced by skeletal muscles that require energy expenditure” (WHO, 2010, para. 1). Skeletal muscles are those muscles that are connected to a bone and are used for moving the skeleton for the purpose of locomotion. As such, physical activity is associated with physical movement. In addition, physical activity is used as an indicator of health and wellness, helping to control weight, while warding off the risk of developing chronic health diseases, such as heart disease and Type-2 diabetes. It includes activities that strengthen aerobic endurance, flexibility and muscular strength.

*Habitual physical activity:* The term habitual denotes that a behaviour (involvement in physical activity) takes place regularly and for an extended period of time. The WHO (2009) claims that children and youth should take part in at least 60 minutes of daily physical activity, including aerobic, flexibility and muscle strengthening routines, in order to gain health and wellness benefits. For the purpose of this study, habitual physical activity will imply that an individual will have participated in at least 60 minutes of physical activity five times a week throughout their childhood and youth years. Additionally, habitual physical activity also implies that the individuals in this study, as young adults, currently take part in at least 45 minutes of activity three times a week. Furthermore, the terms frequent, consistent, regular, and daily will be used as an alternative to the word habitual in order to offer variation of vocabulary in the text.

*Teacher of Students who are Blind or Visually Impaired or (TVI):* The TVI is a teacher who is trained to work specifically with children and youth who are blind or visually impaired.
For the purpose of this study, an abbreviation (TVI) will be used to refer to this type of specialized teacher.
Chapter 2: Review of the Literature

The benefits of habitual participation in physical activity are widely known: It reduces stress, lowers blood pressure, controls weight and decreases the prevalence of chronic diseases, such as diabetes and coronary heart disease (Warburton, Nicol, & Brendin, 2006; WHO, 2009). Several studies have found that children and youth who engage in regular physical activity are more likely to participate in such pursuits into adulthood (Perkins, Jacobs, Barber & Eccles, 2004; Sallis & Patrick, 1994). Consistent involvement in physical activity is particularly important for children and youth because it is vital for their optimal growth and development (Janz, Dawson & Mahoney, 2000). Apart from the physiological benefits, higher levels of physical activity are also associated with improved memory and greater success in academic achievement at school (Kirkcaldy, Shepard, Siefan, 2002; Strong et al., 2005). Moreover, research has shown that individuals who take part in daily physical activity are more likely to report experiencing improved self-esteem, increased confidence in facing activities of daily life and feel a sense of social acceptance through belonging to a sport or athletic group (Kirkcaldy et al., 2002).

Despite this evidence, research has shown that most children and youth are not involved in an adequate amount of physical activity to gain and sustain health and wellness (WHO, 2002; Heart and Stroke Foundation of Canada Position Statement, Facts section, 2008). Among this population, children and youth with disabilities are revealed to be at a higher risk for developing inactive lifestyles and habitual sedentary behaviours. Studies have shown that these children typically participate in fewer bouts of daily physical activity and have less nutritious diets than their already inactive peers without disabilities (Steele et al., 1996). Steele et al. (1996) used a cross-national questionnaire to assess the health, wellness and quality of life of children and
youth with disabilities living in Metropolitan Toronto. The researchers found that almost 40% of these young people did not participate in any physical activity compared to only 6% of the national average of youth without disabilities. Clearly, inactivity has become an evident health concern for children and youth with disabilities, making this group even more susceptible to developing chronic health diseases and affecting their quality of life (Pope & Tarlov, 1991).

One problem is that promotion of health, wellness and disease prevention for individuals with disabilities has typically been a neglected area of study (Rimmer, 1999). Until recently, health and wellness efforts have been linked to preventing disability in the general population, rather than preventing the development of chronic health diseases in individuals who are already living with a disability. As Rimmer (1999) explained:

the most widely accepted definition of health was the absence of disease. This antiquated definition may be one of the strongest reasons for the lack of attention given to people with disabilities in health promotion. If a person had a congenital disability…the individual was not considered a good candidate for a health promotion program because the aim of health promotion was not to take care of the “sick” and “disabled,” but rather to prevent disease and disability in the “healthy.” (497)

Moreover, for individuals with disabilities, health has historically been viewed as a rehabilitative process and health promotion interventions were created as a type of medical treatment for the sick, rather than existing as a component of a healthy lifestyle. The idea of being “sick” creates many misconceptions that this population cannot participate in activities of daily life, such as regular involvement in physical activity. Sadly, such misconceptions have provided grounds for exempting these individuals from taking part in health-related activities, a
problem noted in research and also clearly observed in the lives of many individuals living with a disability. Kaplan (n.d.), describes this phenomenon:

The individual with a disability is in the sick role. When people are sick, they are excused from the normal obligations of society: going to school, getting a job, taking on family responsibilities, etc. They are also expected to come under the authority of the medical profession in order to get better. (para. 5)

This antiquated view of health promotion continues to persist even in contemporary ideas about health and wellness promotion for individuals living with a disability, and this has particularly affected the lives of children and youth who are blind or visually impaired. Research has shown that these children are typically not provided with sufficient opportunities to participate in physical activities (Stuart, Lieberman & Hand, 2006) and consequently demonstrate some of the lowest amount of involvement in such health pursuits compared to most children, even those with other types of disabilities (Kozub & Oh, 2004). Longmuir and Bar-Or (2000), for instance, investigated the physical activity levels of 953 children and youth with physical, cognitive and sensory disabilities and found that the children with physical disabilities (cerebral palsy and muscular dystrophy) and those who were blind or visually impaired, with no identified additional disability, were at the greatest risk for developing inactive lifestyles. Similarly, Sit, McManus, McKenzie and Lian (2007), examined the physical activity levels of 172 children with different types of disabilities who attended residential schools in Japan. Although all students in the study displayed lower levels of physical activity, the children with physical disabilities and those who were blind or visually impaired were reported as being the least active of all.
With such low physical activity levels, it is not unusual to find children and youth with impaired vision possessing some of the poorest physical fitness levels (Kozub & Ho, 2004; Lieberman & McHugh, 2001; Longmuir & Bar-Or, 2000), typically exhibiting low cardiovascular conditioning, reduced muscular strength, poor flexibility and difficulty with carrying out activities that require dynamic balance (Lieberman & McHugh, 2001; Skaggs & Hopper, 1996). In addition, research has shown that compared to children with other types of disabilities, children and youth who are blind or visually impaired often perceive themselves as being less fit than their peers and identify themselves as having more restrictions in participating in most physical activities (Longmuir & Bar-Or, 2000; Lieberman & Houston-Wilson, 1999; Robinson, Lieberman & Rollheiser, 2006). Such findings place children and youth who are blind or visually impaired, with no identified additional disability, at among the greatest risk for developing health-related disorders in their adult lives (Longmuir & Bar-Or, 2000).

Clearly, the need for increased levels of fitness is particularly important for individuals who are blind or visually impaired. Studies have shown that this group typically consumes more energy in carrying out locomotive tasks due, in large part, to their reduced ability to gain visual feedback about their surroundings (Kobberling, Jankowski & Leger, 1989). Horvat et al. (2003) found that individuals who were blind or visually impaired in their study traded energy efficiency for moving safely and cautiously through their environments. Studies that have examined the biomechanical walking gait of individuals with impaired vision have found that this population usually moves with a stiffer, more reserved body posture and employs smaller steps to ensure safety, both of which affect locomotive efficiency (Sleeuwenhoek, Boter & Vermeer, 1995). Moreover, research has also shown that reduced visual feedback effects movements that require dynamic balance, such as the stability needed for walking and running,
making these common activities of daily living more energy-consuming tasks (Bouchard & Tétreault, 2002; Skaggs & Hopper, 1996). Unfortunately, it is often this inefficient energy expenditure, which is further hindered by habitual sedentary behaviours, that impede many individuals who are blind or visually impaired from fully taking part in activities of daily living. Without adequate levels of fitness, basic activities of daily life, such as walking on uneven terrain, or navigating a complex or cluttered environment, can become challenging, energy-consuming chores for those less-fit individuals who are blind or visually impaired. Consequently, the need for this population to participate in habitual physical activity is vital for sustaining their personal health, wellness and quality of life.

The literature that examines the factors that influence physical activity levels of children and youth who are blind or visually impaired can be categorized into two diverging theoretical approaches: the comparative deficit approach and social-interaction approach (Brambring, 2006). The comparative deficit approach asserts that children and youth who are blind or visually impaired are faced with delays (or deficits) in acquiring motor skills and that these delays are a direct result of their impaired vision (Adelson & Fraiberg, 1974, 1976). Studies that come from this perspective almost always compare the physical abilities of children and youth who are blind or visually impaired to other groups, the most notable being children with sight.

Alternatively, research that takes a social interaction approach proposes that inadequate physical skills are mainly a result of unfavorable learning environments and that external factors, such as the number of opportunities provided to the child, attitudes of others and accessibility options either facilitate or hinder habitual participation in physical activity (Lieberman, Robinson & Rollheiser, 2006; Skaggs & Hopper, 1996; Winnick, 1985). In all likelihood, components from each of these perspectives have some influence on participation levels in physical activity.
by children and youth who are blind or visually impaired. The following is a review of the existing literature originating from the two previously noted two perspectives.

**Comparative Deficit Approach**

Research that takes a comparative deficit approach highlights the significance of vision in learning motor movements at a developmentally appropriate rate. Adelson and Fraiberg (1974, 1976) were among the first early researchers to emphasize the importance of vision in learning and developing motor skills. Their study assessed the motor development of ten congenitally blind babies (ages one to 11 months) and found that these young children were on par with sighted norms for postural readiness, such as muscle growth and static body control. However, significant delays were noted in the acquisition of movements that required dynamic balance, such as the basic stability needed for crawling and walking. Since then, many researchers have observed similar results. For instance, in a more recent study, Bouchard and Tétrault (2000) distributed a developmental history questionnaire to parents of preschoolers who were blind or visually impaired and found that these children were typically late in developing crawling and creeping movements, fundamental dynamic motor skills needed to learn more complex locomotive tasks, such as walking or running. Similarly, in another study, Celeste (2002) asked parents to reflect back on the developmental motor patterns exhibited by their young blind or visually impaired child. Like the previous studies, the motor delays found in these children were also associated with locomotive, rather than stationary movements, again showing the importance of vision in developing movement skills. These studies are important because they show the early need for participation in physical activity to build skills necessary for basic locomotive tasks, such as balancing, walking and running. If intervention is not provided early
on, such delays can quickly contribute to poor motor competence later in life, potentially hindering these children from participating meaningfully in more complex physical activities.

Many researchers have attributed the motor delays often observed in young children who are blind or visually impaired to their lack of motivation to move, an incentive gained largely by means of using vision to interact in a visually stimulating environment. This is not surprising, as vision acts as an instant message, allowing immediate and incidental learning to take place. For instance, Adelson and Fraiberg (1974), found that the blind babies in their study were not motivated to reach for objects of interest because they could not see these items; instead, these young children were provided with sound cues to stimulate movement by rousing curiosity through auditory means. Even so, the researchers found these sound prompts to be less powerful than the use of vision. While newborns and infants gain curiosity about their world almost immediately with vision, the blind babies in this study seemed to need initial training, and additional time, before they found sounds to be interesting enough to move toward. Even though the babies in this study were presented with an intervention, they nevertheless were delayed in acquiring some basic motor skills.

Reinforcing the results of this study, Bishop (2000) noted that babies who are blind or visually impaired are often developmentally delayed in learning to lift and support their head, due, by and large, to their reduced opportunity to practice the motion of head-raising for the purpose of viewing objects of interest. This developmental skill of head-raising is required to prompt the learning of more complex movement skills, such as creeping and crawling movements. Similarly, Troster and Brambring (1993) found that the blind infants and babies in their study lacked the curiosity to move to an object of interest, as the action of head rising was not instantly reinforced through visual stimulation. Consequently, these babies were in deficit of
essential movement experiences from very early on. Such studies provide a background on the importance of vision in acquiring motor skills while offering insight into how impaired vision can slow and sometimes even inhibit the process of developing basic motor skills.

The importance of vision in developing movement proficiency has prompted researchers to compare the differences in the motor skills of children and youth with differing degrees of visual impairment. For instance, Kobberling et al. (1989) found that those individuals with more severe degrees of visual impairment consumed additional energy in completing walking and running tasks. Supporting their finding, Meek and Maguire (1996) assessed the physical fitness levels of sighted, low vision and blind children using tasks in the Kraus-Weber Minimal Physical Fitness Test. This assessment was used to determine the extent to which these three groups met minimal physical fitness levels needed to accomplish daily living tasks with relative ease. The results revealed that only 62% of the children with sight, 52% of the children with low vision, and 25% of children who were blind passed this test. Such outcomes suggest that intervention is needed for all students; however, the urgency of intervention is clearly seen with severity of visual impairment.

The factors that influence participation in physical activity that emerge from the comparative deficit approach are essential in understanding the importance of vision in learning and developing movement tasks. These studies provide evidence of the importance of vision in developing motor skills from very early on by describing how impaired vision can delay the acquisition of physical and motor basics. These motor basics are essential for participating not only in physical activity, but also in common pursuits of daily living. Without these necessary basic physical skills, children and youth who are blind or visually impaired will likely continue
to possess poor motor ability, contributing to low confidence in engaging in different types of physical activities as they progress through their childhood years and into adulthood.

Alternatively, other researchers have suggested that physiology alone (that is, the visual impairment itself) cannot fully account for the high sedentary behaviours and low fitness levels typically observed within this population (Lieberman & Houston-Wilson, 1999, Lieberman, Huston Wilson & Kozub, 2002). This is because studies from the comparative deficit approach merely explain physical activity behaviours from a biological perspective, but fail to consider the influences in the child’s immediate environment. After all, there are numerous individuals who are blind or visually impaired who have been able to successfully participate in habitual physical activity from childhood right into their adult lives (Ponchillia, Strause & Ponchillia, 2002; Sherrill, 2004). Why have these individuals been successful while others have not? This suggests that there is a need to look at other avenues in order to develop a more holistic understanding of the factors that influence the health-related behaviours of children and youth who are blind or visually impaired, with no identified additional disability.

**Social Interaction Approach**

Research that takes a social interaction approach examines factors within an individual’s social and physical environments to help understand their health-related behaviours. Specific to individuals with disabilities, factors such as accessibility to facilities, equipment and transportation, cost of participation and access to resources, training of teachers, instructors and staff members (Rimmer, Barth, Edward, Rauworth & Jurkowski, 2004) along with attitudes of others (Goodwin & Watkinson, 2000) have all been noted as either barriers or facilitators to healthful behaviours. Research examining the environmental and social factors that affect the health-related behaviours of children and youth who are blind or visually impaired, with no
identified disability, have also been noted; however, many of these studies are one-sided, focusing mainly on the barriers that hinder, rather than the factors that facilitate, daily participation in physical activity.

For instance, research from the social-interaction approach has shown that children and youth who are blind or visually impaired are typically not provided with opportunities to participate in physical activity (Lieberman & Houston-Wilson, 1999; Skaggs & Hopper, 1996). Factors such as low teacher/instructor ability due to insufficient pre-service training, inaccessibility to specialized equipment and individualized instruction (Lieberman & Houston-Wilson, 1999; Lieberman & Lepore, 1998) along with negative attitudes of others (Lieberman et al., 2002; Winnick, 1985) sometimes brought on by fears that the child may be injured while participating in the physical activity (Lieberman et al., 2002) have all been noted as ways in which opportunities to participate in physical activities have been thwarted. These barriers exist in the environments in which the child most frequently interacts, such as the family, school and community settings. The following is a review of the literature that examines family, school and community barriers from a social interaction approach.

**Family.** Families, particularly parents, can be influential in shaping their child’s lifelong physical activity habits and behaviours (Lau, Quadrel & Hartman, 1990). Jacobs and Eccles (2000) maintained that parents play an important role in influencing the value placed on physical activity by their children. Parents who place importance on physical fitness, through either encouragement or direct participation, are more likely to have children who also place high value on physical fitness, thereby increasing the likelihood of their child participating in daily physical activities (Jacobs & Eccles, 1992, 2000). This finding has been supported by previous research.
For instance, Brustad (1996) found that parental enjoyment and approval of participation in sport and athletics was directly tied to levels of participation in physical activity by the children in this study. Moore et al. (1991) found that children of physically active parents were six times more likely to participate in habitual physical activity. Such findings highlight the importance that parents can play in their child’s development of health-related behaviours.

Although parents of children who are blind or visually impaired believe that parental involvement is an important factor that influences their child's level of participation in physical activity (Ayvazoglu, Oh & Kozub, 2006), several studies have found that these same types of parents frequently impose barriers, commonly exercising overprotective attitudes toward their child’s choice and level of participation in a given physical activity (Lieberman & Lepore, 1998; Robinson & Lieberman, 2004). For instance, Sacks, Wolffè and Tierney (1998) found that children who were blind or visually impaired in their study tended to be sheltered by their families; consequently these children spent the majority of their time involved in home activities rather than taking part in extracurricular recreational or leisure pursuits. Indeed, such overprotective behaviours are due, in large part, to safety concerns of parents who fear that their blind or visually impaired child may be injured from taking part in these physical activities (Stuart et al., 2006). Accordingly, research has shown that the choice to participate or not to participate in activities, particularly in physical activities, is frequently made by the parents, rather than the child themselves. Kroksmark and Nordell (2001) found that the adolescents with low vision in their study took part in activities that were determined by significant others, such as parents. Such imposed barriers are known to have a negative effect on the child’s ability to take control of his or her life decisions (Robinson & Lieberman, 2004), potentially establishing a
misconception that participation in physical activity can only be made through the help of someone other than the child themselves.

Moreover, research has shown that parents who believe that their child can take part in physical activities are more likely to have children who place higher value on physical fitness (Jacobs & Eccles, 2000). Similar research using parents of blind or visually impaired children has shown that parental beliefs are associated with the severity of their child’s visual impairment. Stuart et al. (2006) surveyed 25 children, ages 10-12, with impaired vision and their parents and found that parental beliefs about their child’s ability to participate in physical activity was strongly associated with the level of their child’s visual impairment. That is, as the severity of visual impairment increased, parents’ beliefs that their child’s ability to participate in physical activity decreased, as did the expectation for their child to take part in such activities. Additionally, Stuart et al. (2006) also found that the barriers created by parental beliefs and expectations were tied to the value their child placed on being physically active. Accordingly then, those children with more severe levels of visual impairment placed lower importance on physical activity and fitness than those with more vision.

The family environment is one of the most intimate settings and for many children it is the most familiar and comfortable arena for learning. Indeed, the family setting is a place where children are subject to daily influences of ideologies imposed by kin, particularly parents, but also siblings, extended family members and even close family friends. Clearly, children witness, over numerous years, recurring familial behaviours, actions, attitudes, and patterns inspired by household principles and philosophies about the importance of health and wellness. These influences are powerful and can account, largely, for what motivates a child to take part in
physical activity in the first place. Without a doubt, the factors influencing participation in physical activity within the family environment need to be further explored.

**School.** The WHO (2009) recommends that children and youth spend at least 60 minutes a day participating in some form of physical activity, and the physical education (PE) class is one way to meet this goal. However, inclusion into the PE setting has not been easy for children and youth with disabilities. Some studies have found that these young children frequently experience feelings of social isolation and low competence in participating in activities within this general setting (Fitzgerald, 2005; Goodwin & Watkinson, 2000). One notable problem is that the persons hired to teach PE and promote health and wellnesses for all are often not trained in this specialized subject area. Such lack of teacher preparation can have an effect on how a student with a disability is included into the general PE class. A recent Canadian report examining PE for school-aged children and youth pointed out that less than half of the PE teachers working in the Canadian school system were fully qualified to teach PE class (Active, Healthy Kids Canada, 2009). Moreover, the majority of those qualified individuals taught mainly in the high school setting, rather than at the elementary level. This is concerning as childhood is an important time to develop basic physical and motor proficiency skills needed to participate in more complex physical activity later on in life (Deacon, 2001).

The effect of untrained PE teachers has created disappointing experiences for many students, but has particularly been damaging for children and youth who are blind or visually impaired. Research has shown that these young children are often not afforded opportunities to participate in inclusive PE activities (Lieberman & Houston-Wilson, 1999; Stuart et al., 2006; Winnick, 1985) due, in part, to lack of teacher training in how to effectively teach PE to not only the general population of students, but also students with disabilities, and specifically those who
are blind or visually impaired (Lieberman & Houston-Wilson, 1999; Lieberman et al., 2002). This insufficient teacher training has resulted in negative teacher attitudes toward the inclusion of the blind or visually impaired student in the general education PE class (Winnick, 1985). Clearly, this negative attitude stems, in part, from the reality that the teachers themselves are not made aware of the many adaptations that can create a more accessible physical environment for this type of student.

In their study, Lieberman et al. (2006) interviewed children with impaired vision who were mainstreamed into the general PE class and found that these students were often not fully included in PE activities. Comments such as “they make me sit on the bench; they never let me play” and “you need to go and lift weights with your vision teacher” were indicators of exclusion initiated by the teacher who, in part, simply did not know how to adapt an activity (p.40). Interestingly enough, physical educators have been truthful about their perceived inability to include these students into their PE classes. Lieberman et al. (2002) found that teachers often felt that they did not have the necessary training in adaptive PE in order to include blind or visually impaired students into their classes. Often times, this perceived lack of teacher ability resulted in anxiety and even fear about how the visually impaired student could possibly be included into a busy and sometimes cluttered and over-crowded PE environment.

Nevertheless, there are other ways in which teachers can ensure that their student is included in the general education classroom and one way is to develop PE goals within the student's Individual Educational Plan (IEP). The IEP is a legal document that is designed to plan how the student is to be afforded equal and appropriate access to their education. Yet PE goals are seldom included in these documents, and even when they are, students are often not informed of their PE objectives. Lieberman et al. (2006) found that physical education IEP goals were
only developed for those students in their study who had more severe degrees of visual impairment. Moreover, even though these students were aware that they had an individual educational plan, many were not familiar with their specific physical educational IEP goals and expectations. With this lack of information, students are often left with little understanding of how and why they are included in the PE setting in the first place.

Further, teachers may also lack an understanding about their student’s vision and visual capabilities, information that should be easily accessible in the student’s IEP. This information is particularly important for the physical educator who is required to teach movement-related skills of which vision is a crucial part in its learning. Often, decisions about how students with impaired vision are going to take part in physical activities are made based on teachers’ assumptions about the student’s abilities, perhaps without any input from the students themselves (Robinson, Lieberman & Rollheiser 2006; Stuart et al., 2006). This lack of knowledge can be detrimental to the inclusion of students who are blind or visually impaired into the general PE setting. On one hand, teachers may unknowingly create a stressful situation for the student by placing them into an activity without employing appropriate adaptations for their inclusion. Such an experience can create feelings of fear in the student, fostering negative attitudes toward their participation in future PE activities. On the other hand, a lack of understanding of the student’s ability can create overprotective attitudes by the teacher, an approach based on instructor fears that the student will be injured by participating in the class activity (Lieberman & Houston-Wilson, 1999). Such educational environments, in which teachers make decisions about what a student can and cannot participate in without further input from the student themselves, can hinder an individual’s opportunity to develop decision-making and self-
determination skills (Robinson & Lieberman, 2004) and reinforce the idea that participation in physical activity has to be determined by someone other than the student themselves.

Even when PE goals are included into the IEP plan and the teachers have a sound understanding of their student’s vision and physical abilities, other more distant barriers have been found to limit the student’s ability to participate in this general setting. For instance, Lieberman and Houston-Wilson (1999) found that teachers were often left without appropriate equipment, such as brightly coloured balls, or balls with bells inserted into them, tools needed to effectively include such students into PE activities. This shortage of adaptive equipment is often due to limited funding at the government, school district or school levels. Even when equipment is available, many teachers feel that they do not have the necessary time to pre-teach skills, an adaptive approach for including these young children into the general PE class (Lieberman & Houston-Wilson, 1999; Lieberman et al., 2002). Indeed, such accumulative barriers can provide grounds for frustrated physical educators to once again sit their blind or visually impaired student out of an activity.

Yet there is some evidence suggesting that inclusive PE class can be beneficial for school-aged students who are blind or visually impaired. For instance, Craft (1986) believed that the inclusion and proper integration of these students into the PE setting is possible and can help improve their fitness levels and help build skills for daily living. This point has been illustrated by Ponchillia et al. (2002). Their study investigated the factors that influenced blind athletes to participate in physical activity later in life. The researchers found that those athletes who were meaningfully included in PE class during their high school years were more likely to take part in habitual physical activity into their adult life. Moreover, although the study by Lieberman et al. (2006) indicated that students were often left out of activities during their PE class, the
researchers also noted that these same children found enjoyment in participating in the PE activities when they were provided with appropriate adaptations and supports. Such studies are limited in number, creating a need to further explore how and why some children and youth have been able to successfully participate in their inclusive PE classes.

Community. The research available on the impact of community on the participation of children and youth who are blind or visually impaired in physical activities is almost nonexistent. The information that is available is often embedded in research that looks at environmental barriers faced by individuals with disabilities as a whole. Some main themes that have been extracted from the research that is broader in scope include problems dealing with transportation to community recreational activities, the impact of community attitudes toward the participation of children and youth with disabilities into physical activity and the impact of peers and peer support on taking part in community activities (Rimmer et al., 2004).

The ability to travel in one's own community is an important life skill necessary for independent living. It is expected, for instance, that most adolescents will eventually have the necessary skills to travel by either foot, public transport or drive (if old enough) to community and leisure activities on their own. However, studies have found that both youth who are blind or visually impaired and their parents felt that transportation is a problem that often limits their involvement in afterschool and community activities (Ayvazoglu, Oh & Kozub, 2006; Stuart et al., 2006). Consequently, many young children who are blind or visually impaired are frequently driven, by their parents, to activity sites, a situation that often diminishes the opportunity for these children and youth to learn and practice independent travel skills while reinforcing the idea that the youth will always need someone to help them get to the community activity.
The responsibility for finding community physical activities for children and youth who are blind or visually impaired has also been noted as a factor that influences participation. Ayvazoglu et al. (2006) pointed out that the parents in their study felt that it was their responsibility to find resources that could assist them in ensuring that their child was appropriately included in community physical activities. Yet research also has shown that these young children are often never told of the many possible physical activities that they can participate in (Longmuir & Bar-Or, 2000). In some places, community organizations have been instrumental in finding and informing students of sporting opportunities within their communities. Stuart et al. (2006) asked parents of children who were blind or visually impaired to provide some possible solutions for the challenges experienced in getting their child involved in physical activities. Interestingly enough, a noted solution was the need to have local disability-specific community organization to help with the process. In British Columbia, the BC Blind Sports and Recreation Association (BCBSRA), a not-for-profit association, helps provide access and opportunities for individuals who are blind or visually impaired to participate in sports, athletics and recreation at both the school and community levels (BCBSRA, 2009). Other local, national and international resources include The Canadian National Institute for the Blind, the Canadian Blind Sports Association and the International Blind Sports Federation.

Peer involvement has also been identified as a factor influencing involvement in community physical activity (Ayvazoglu et al., 2006), although much of the research on peer influences notes more barriers than facilitators. For instance, Winnick (1985) identified discouraging attitudes by peers as a barrier to participation in physical activity. Stuart et al. (2006) found that the visually impaired children in their study expressed that their peers often made fun of them during involvement in physical activity. No studies exist that look at the
influence of other blind or visually impaired peers. Interesting insights could be gained by looking at what type of peer, visually impaired or sighted, is more or less influential in helping to build health-related behaviours in these children.

It is likely that community organizations have positively influenced children and youth who are blind or visually impaired to take part in physical activity; however, there is currently very little research that explores the facilitators of successful experiences observed in this setting. Consequently, there is a need to take a closer look at the influencers within this environment.

**Theoretical Framework: The Socio-Ecological Model**

Although most people intend to lead more healthy lifestyles, for many, the leap between intentions to actual performance is a difficult undertaking. A prime example is seen with the healthy intentions pledged by millions of Canadians as New Year resolutions, goals that for many never really develop into lifelong habitual behaviors. This is because the factors that drive behavior are complex in nature and cannot be simply explained. Rather, behaviour is shaped through the intermingling of numerous factors that operate together in a multidimensional way. These factors work dynamically, pushing and pulling against one another, influencing the way we act, the values we hold, and the life choices we make. Social and ecological factors, such as family, peer and community values, physical environment and local, provincial and national policies encroach, often times unexpectedly, into our lives effecting behavior and affecting change. This is the framework for the socio-ecological systems theory.

The socio-ecological theory was initiated by Bronfenbrenner (1977) in the area of developmental psychology. Bronfenbrenner argued that behavior was influenced by factors within the different environmental spheres of an individual’s life. These spheres, which he called levels, spanned from the most intimate environment at an individual’s most private level, such as
the family, to some of the most distant and abstract levels, such as policies created by provincial
and national governments. Bronfenbrenner maintained that each level is contained within a
larger sphere and that all levels are affected by their neighboring stratum. From this perspective,
the socio-ecological theory can be defined as the study of the systems that work together to
influence behaviour, and more specifically for the purpose of this study, health-related
behaviours.

The socio-ecological theory has been used by health-care professionals and researchers
alike as a model to explain the complexities associated with health, wellness and quality of life
and to investigate the barriers faced by individuals, communities and cultures in attaining and
sustaining healthful behaviors. Stokols (1996), a leading researcher in the field of health
promotion, argued that health and wellness intervention methods that target only the individual
fail to recognize the power in the interconnectedness of larger systems. Interventions attempted
toward improving health and wellness are often hindered by structures that are larger than the
individual, such as “economic, social and cultural restraints” (Stokols, 1996, p. 284). Yet, merely
examining these larger systems for answers to health promotion fails to regard individual
diversity and personal motivation to modify old habits and take part in more healthful behaviors.
Stokols further argued that “the social-ecological approach goes beyond behavioral and
environmental change strategies by offering a theoretical framework for understanding the
dynamic interplay among persons, groups, and their sociophysical milieus” (p. 285). In essence,
the most effective interventions, then, are those that consider many factors from a variety of
different environments.

The socio-ecological framework has also been used to examine health promotion for
individuals with disabilities. Law et al. (2006) examined the participation levels of children and
youth with disabilities living in Canada and found that the individual child themselves, the child’s family and their immediate environment were the main factors influencing their level of involvement in physical activity. Other researchers have created models based on the socio-ecological framework to help families, teachers and community members determine the interconnected barriers influencing health-related habits of their children and youth with disabilities (King, Stokols, Talen, Brassington, Killingsworth, 2002). Such studies not only provide firsthand information about the lives of those living with a disability, but can also be catalysts for widening existing perspectives about how and why an individual can or cannot participate in a given activity.

Although research that takes a socio-ecological approach is slowly emerging in health-related research for individuals who are blind or visually impaired, many gaps still exist due largely to the limited number of available studies and few researchers focusing on this issue. One significant problem is that the existing literature tends to focus more commonly on barriers faced by children and youth who are blind or visually impaired; however, examining the positive lived experiences of children and youth who are blind or visually impaired is equally important in gaining an understanding of what works in order develop effective interventions. Moreover, while studies that focus on barriers may provide a glimpse into some of the challenges experienced by individuals who are blind or visually impaired, several of these studies merely examine factors within a single environment, most notably the school setting. From a socio-ecological perspective, there is value in looking at factors that arise from the many arenas of an individual’s life, such as the family, school and community environments. Such factors can influence not only the behaviours of individuals participating within them, but they can also
interact among each other, swaying, and sometimes even completely transforming the nature of the factors within their neighbouring environments.

Qualitative research that examines the lived experiences of individuals with disabilities can provide details from a personal perspective that would otherwise not be captured and the socio-ecological model is often used as a theoretical framework to help portray these details. O’Day, McLean, and Killeen (2002) stressed that qualitative research is a way of “capturing the complexities of disability experiences” and that such complexities, as seen from the perspective of the individuals themselves, “can tell a story from the participant’s point of view rather than as an expert [researcher] who knows more about the experience than those living it” (p. 10).

Consequently, qualitative research permits and even encourages the individuals themselves “to speak in their own voices, rather than conform to the words and categories chosen for them by others” (O’Day et al., 2002, p. 10). Research that takes this personal approach assumes that differences exist between individuals with disabilities, just as they do among all people. Looking at lived experiences through the lens of qualitative research, while respectful of individual differences, nonetheless provides opportunities to draw similarities between and parallel themes among individual experiences.

The purpose of this qualitative study, then, was to explore the factors that influenced the successful participation in physical activity of school-age children and youth who are blind or visually impaired living in British Columbia. Using young adults with impaired vision who have been known to participate successfully in physical activity during their childhood and adolescence, this study looked retrospectively at the lived experiences of four young, visually impaired adults as they spoke about their childhood experiences. A socio-ecological model was used to frame this research and factors that influenced successful participation in physical
activity was examined from three key environments in the individual’s life: the family, school and community environments. The information gained through this study may help develop a case for further research on facilitators of successful experiences.

**Research Questions**

The following general research question guided this study:

1. How and why do children and youth who are blind or visually impaired, with no identified additional disability, successfully participate in habitual physical activity?

The following specific questions guided the research process:

1. What factors were identified by competitive athletes in this study as having a positive influence on their participation in physical activity during their school-aged years?

2. What factors were identified by the active adults in this study as having a positive influence on their participation in physical activity during their school-aged years?

3. Is there meaningful interplay among factors across various environments that can be identified as having a positive influence on participation in physical activity?
Chapter 3: Research Method

Introduction

The purpose of this study was to explore the factors that influenced the successful participation in physical activity of children and youth who are blind or visually impaired. This study relied on exploratory case-study methods. Data were gathered from rating scales and personal narratives of four young adults with impaired vision who were known to participate in regular physical activity throughout their childhood and teenage years.

Rationale for Using Qualitative Research Methods

Yin (2009) defined case study as a practical research as a method which aims to “investigate a contemporary phenomenon, in depth and within its real-life context” (p. 18). The current study aimed to investigate such a phenomenon: the factors that facilitated the successful participation in physical activity of children and youth who are blind or visually impaired. Further, Cozby, Worden and Kee (1989) noted the importance and value of case studies in “informing us of conditions that are rare or unusual and thus are not easily studied in any other manner” (p. 119). Historically, research in the area of health promotion of individuals who are blind or visually impaired has focused mainly on the barriers that inhibit successful participation in physical activity, leaving a void in the literature as to what factors facilitate success. It is precisely because of this void in the literature that the researcher of the current study employed case-study methods.

Yin (2009) explained that there are three types of case study methods: exploratory, descriptive and explanatory. Of the three, exploratory case study techniques are typically used to gain insight into more untouched areas of social science research. Their purpose is mainly to
generate more questions in order to develop additional hypotheses for further study (p. 9). As
the current study investigates a topic from a less explored perspective, exploratory case study
methods have been applied to attempt to indentify common factors that have contributed to
successful experiences and ongoing participation in physical activity among four young adults
with visual impairments. It is hoped that the results will also offer useful questions for further
study.

Study Procedure

**Criteria for participation.** Four young adults with visual impairments, between the
ages of 19-26, who were known to participate in physical activity during their school years, were
asked to reflect on childhood experiences that had influenced their initial and continued
participation in physical activity. All participants were required to meet four specific criteria.

1. Visual acuity: All participants were required to meet the minimum visual acuity
criteria of 20/200, otherwise known as legal blindness, and had to have lived with at least this
level of visual acuity since birth.

2. Physical activity levels: Participants were required to identify themselves as either
active adults or competitive athletes. In this study, an *active adult* was defined as someone who
participates in physical activity at least three times a week for a minimum of 45 minutes per
session. An active adult may participate in community fitness classes, belong to a gym or
recreational club, participate in intramural activities, or may exercise in the home setting, such as
going for daily walks, working out on a personal home gym or practicing yoga in a personal
home space. A *competitive athlete* was defined as someone who has in the past competed or is
currently competing in individual or team sports. These participants may spend *more than* 45
minutes a session three times a week training for competition.
3. Evidence from a secondary participant: Since this study looked retrospectively at the successful participation in physical activity by school-aged students who are blind or visually impaired, all participants had to provide evidence that they had indeed participated in regular physical activity during their elementary or high school years. This evidence was gathered through researcher communication with parents, previous teachers or personnel from community sporting organizations, such as the BC Blind Sports and Recreation Association (BCBSRA). Secondary evidence from the competitive athletes was also gathered from archived documents, such as medals, awards or promotional write-ups in online magazines, newspaper articles and email correspondence.

4. Familiarity with technology: Information about the successful experiences of each primary participant was gathered through Internet text-chat (and in one case voice-chat) interviews. Consequently, each participant was required to have a minimal comfort level in using electronic chat programs that were https secure, such as Google Chat or Skype.

**Recruitment.** Study participants were sought through the BCBSRA. This not-for-profit association supports access and opportunities in “all aspects of physical activity for British Columbians, who are blind, visually impaired, deaf-blind, or who are blind/visually impaired and have additional disabilities” (BCBSRA, 2009, About BCBSRA section, para. 5). Specific to school-aged children and youth, the BCBSRA works with families, teachers, peers, community members, and the students themselves by providing training, assistance and access to different types of physical activities at the local, provincial, national and international levels. This association is often intimately involved in the lives of many school-aged children who are blind or visually impaired living in British Columbia. For ethical review, the BCBSRA provided a
signed letter in support of their involvement as participant recruiters and holders of archival information for this study (see Appendix B).

An online flyer (see Appendix C) describing the study and participant criteria was distributed (via e-mail), by the BCBSRA, to prospective participants. These individuals were asked to contact the researcher if they were interested in participating in the study. Initially, five individuals answered the “call for participants” advertisement by e-mail. Potential participants were then sent consent forms (Appendix D) in their choice of reading media: braille, electronic format, large print—hard copy and regular print—hard copy. All five potential participants requested electronic formats. Signed consent forms were returned from four of the five initially interested individuals. Two were sent back by post, while the other two were scanned and e-mailed to the researcher. The primary participants were also asked to identify a secondary participant, either family, teacher or community member, who could be contacted to verify information provided by the primary participant. Consent forms for these secondary participants (Appendix E) were then sent, by e-mail, to the identified individuals and were returned within a week.

Data Collection

**Demographic evaluations.** The demographic document (see Appendix F) was used to gather physical information about each person interested in taking part in this study. Potential study participants were asked to document their age, gender, level of visual acuity and year of high school graduation. This information was used to ensure that potential participants met basic study criteria.

**Rating scales.** Next, each participant completed prestudy rating-scales (see Appendix G). These scales required the participant to rate, on a 4-point scale, to what extent different
family, school or community characteristics played a part in their successful participation in physical activity during their school-aged years. The scale questions were initially drawn from research literature that examined barriers (e.g. negative attitudes by peers) and were reworded to focus on facilitators (e.g. to what extent did your peers have a positive attitude toward your participation in PE?). The scales were divided into two parts. Part one asked the participants to rate the extent to which each of the three settings, family, school and community, influenced their continued participation in physical activity during their school-aged years. The environmental rating scales included the following three questions:

1. To what extent did your family influence your successful participation in regular physical activity during your elementary school years? During your high school years?
2. To what extent did your school influence your successful participation in regular physical activity during your elementary school years? During your high school years?
3. To what extent did your community influence your successful participation in regular physical activity during your elementary school years? During your high school years?

The rating scale provided four choices: (1) extremely influential, (2) very influential, (3) not very influential and (4) not at all influential. The purpose of this rating was to scale the environments in order of influence. It was anticipated that important detailed information (factors) might arise from these environments during the later interview process.

The second part of the prestudy rating-scale process required the participants to rate, on a four-point scale, to what extent different family, school, or community characteristics were present during their school-aged years. For example, in the Family Rating Scale, the participants were asked to rate questions such as (a) To what extent did you participate in physical activity with your family?; (b) To what extent did your parents participate in physical activity, such as
going to the gym, going for a run, or attending a fitness class?; (c) To what extent did your family support your involvement in sport, athletic, and recreational activities? The rating scale provided four choices: (1) extremely (2) very (3) not very and (4) not at all. The information gathered from this scale was used to develop more specific questions to be asked during the interview process. The prestudy rating scale data gathered from both scales were matched with the answers generated from the participant interview narratives to help ensure reliability of participant responses.

**Descriptive interview data.** The current study used open-ended interview questions to collect descriptive data about the experiences of the participants (Appendix H and I). According to Yin (2009), the interview process is “one of the most important sources of case study information” (p. 106). It allows the researcher to gain factual information from the lived experiences and stories of different people with similar life situations. The case study interview provides a higher level of meaning, examining not only what has happened, but also analyzing why and how a phenomenon came to be, from the perspective of the participant themselves (Kvale, 1996). Case study interviews thus have the potential for revealing hidden meanings that would otherwise be impossible to detect using only surveys or rating scale methods. The interview allows the researcher to probe further into a participant’s answers to gain a deeper understanding of their experiences. The process leads to further studies by generating more questions from often unexpected results (O’Day et al., 2002).

**Rationale for using online interview methods.** The Internet, like the phone, has become a ubiquitous communication channel for many people around the world, including those who are blind or visually impaired. Clark (2000) stated that Internet research methods have allowed researcher and participant to connect by eliminating the barriers of geography, making it
a practical and cost-effective method of gathering data. Internet interviews can be conducted synchronously (in real-time via voice and text-chat) or asynchronously (in delayed time via email). Each type of online interview has its strengths and limitations, and strict study guidelines need to be followed to ensure participant confidentiality.

Among these, text-chat methods have increasingly been used in case-study research. Crichton and Kinash (2003) outlined the benefits of using online text-chat tools for conducting research. First, text-chats can be held from any location, making it possible to recruit participants who may live a long distance from the researcher. For instance, the researcher of the current study lives in a small rural community in Southeastern British Columbia, while the participants in the study were are all located in the lower mainland area of Vancouver, about 700 km away. Second, Crichton and Kinash (2003) make the point that online text-chat methods are time and cost effective because interview transcriptions are automatically generated during the interview process. This allows research to be less bound by time or money constraints. The costs and time needed to travel across British Columbia to complete fact-to-face interviews would have made the current study difficult to complete. Online text-chat was therefore selected as the most efficient method of gathering information for the study. It should be noted that each participant in this study used an assistive tool (*JAWS screen reader*) to access the online environment through auditory means.

Finally, the researcher used focused interviews to gather information about the participants’ experiences. Yin (2009) described a focused interview as one “in which a person is interviewed for a short period of time” (p. 107). In this study, the primary participant interviews lasted no more than three hours. The participant only met up to two times with the researcher, so
interview time needed to be spent wisely and could not be wasted on questions or conversations that may not have any impact to the outcome of the study.

Crichton and Kinash (2003) noted the ease of asking questions in an online text-chat environment. In this type of study setting, the researcher can delete questions or comments before sending them off to the participant, providing a type of buffer that is not available in face-to-face interviews. The online chat interview process thus gives the researcher time to create the most effective questions within the limited period of the focused interview.

Interview process. The four participants in this study were asked to meet with the researcher in a private online text-chat environment. To ensure enhanced online security through https (Hypertext Transfer Protocol Secure), the primary participants were limited to using one of two chat forums (Skype or Google Chat). Two participants chose to interview on Skype while the other two were comfortable using Google Chat. Finally, each participant met with the researcher for up to a three-hour text-chat interview. Prior to the start of the interview, each participant was reminded of his or her study rights and was required to indicate that they understood their rights and agreed to participate in the study. The online interview process consisted of 12 open-ended questions targeting the factors that influenced their participation in physical activity in their family, school, and community environments. All participants were asked the same questions; however, more specific queries arose from each unique interview process. While three of the participants completed the entire interview through the online text-chat method, one participant experienced some difficulty with using the JAWS screen reader technology to access the chat environment. Consequently, this one interview was completed through Skype online voice-chat methods. The interview was recorded using a digital voice recorder and print-copy transcripts were then created from the interview recording. All
secondary participant interviews were conducted over the telephone and were digitally recorded; hard-copy print transcripts were also created from these secondary interview recordings. Conversation data from the text-chat and voice-chat interviews were saved as a Microsoft Word document file on a non-networked, password-protected computer.

Participant interviews were closely reviewed through language analysis, for recurring themes. First, interviews and relevant comments were placed into one of three environmental categories; family, school, or community. In some cases, comments on topics spanned over two and sometime even three environments. In these cases, the same comment was placed in all relevant categories and additionally highlighted as possibly pointing to an “interconnected” factor. Next, individual comments in each individual environmental category were analyzed for additional individual factors and themes that recurred across the narratives of different participants. Here, the Microsoft Word find option was used to scan through semantically related words, such as “support”, “influence”, and “attitude” to see if they recurred in the transcripts. Comments indicating recurring themes were identified then placed into tables so that they could be examined across all participants. Finally, all transcripts were reviewed once again by hand for themes that were not found through the Microsoft Word find option. All narrative data was also cross-referenced with secondary participant and rating scale data to help ensure reliability of content.

**Validity and Reliability**

**Triangulation.** Yin (2009) stated that validity and reliability of case-study data could be achieved through a process whereby data are collected from multiple sources. This method, known as triangulation, proposes that multiple sources of data pointing to the same outcome can strengthen qualitative studies by increasing construct validity and reliability. The current study
triangulated the following evidence to support the participant narratives: (a) identification by the BCBSRA of all four participants as individuals known to have participated in physical activity during their elementary and high school years; (b) cross-reference of data gathered from the individual participant rating scale and online interview process; (c) verification of the main participants’ stories by secondary participant data; and (d) additional archival information provided by competitive athletes to show that they had been involved in competitive sports. Individual themed answers were sent back to the primary participants to ensure construct validity and reliability of study outcome.

**Summary**

Using exploratory case-study methods, particularly rating scale questionnaires and text and voice-chat online interviews, data were gathered to find recurring factors and themes, in and across the narratives of the four participants in this study, as they reflected on their successful participation in physical activity during their childhood and youth in three environments: family, school and community. The identified themes were used to answer the main study question: How and why do children and youth who are blind or visually impaired, with no identified additional disability, successfully participate in habitual physical activity?

The data were further analyzed to answer more specific questions:

1. What factors were identified by competitive athletes in this study as having a positive influence on their participation in physical activity during their school-aged years?

2. What factors were identified by the active adults in this study as having a positive influence on their participation in physical activity during their school-aged years?

3. Is there any meaningful interplay between the various environments that has positively influenced their participation in physical activity during their school-aged years?
Chapter 4: Results and Data Analysis

Analysis of the gathered data was completed according to the following sequence: (1) participant demographic data were compiled and compared; (2) rating scale data regarding the influence of the three environments (family, school, community) and the characteristics within each environment were examined and triangulated; (3) descriptive interview data were analyzed for content and recurring themes and cross-referenced with rating scale data and (4) all data were analyzed for interconnecting factors and themes that spanned across multiple environments. Results were compared against secondary participant interview data to ensure reliability. Emerging themes were sent to each primary participant for review and confirmation of accuracy to ensure content validity.

Demographic Data

Participants in this study were four young adults, two males (pseudonyms Darren and Andrew) and two females (pseudonyms Chantal and Alexandria), between ages 19 to 26, with a mean age of 22.25 years. Participants had graduated from high schools located in the lower mainland area of British Columbia, between 2001 and 2009. Demographic information of the participants is summarized in Table 1.

Additionally, all participants identified themselves as blind, with only one participant (Andrew) indicating that the severity of his visual impairment had changed from having some functional vision to having only light perception by the time he was in grade six. Three of the four participants (Chantal, Alexandria and Andrew) stated that they had some light perception, with one participant (Darren) describing his vision as having no light perception (NLP). Table 2 displays the level of visual impairment for each participant.
<table>
<thead>
<tr>
<th>Group</th>
<th>Gender</th>
<th>Age</th>
<th>Year of Graduation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chantal</td>
<td>F</td>
<td>20</td>
<td>2007</td>
</tr>
<tr>
<td>Darren</td>
<td>M</td>
<td>26</td>
<td>2001</td>
</tr>
<tr>
<td>Alexandria</td>
<td>F</td>
<td>19</td>
<td>2009</td>
</tr>
<tr>
<td>Andrew</td>
<td>M</td>
<td>24</td>
<td>2003</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Group</th>
<th>Classification</th>
<th>Descriptions</th>
<th>Changes in vision since birth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chantal</td>
<td>Blind</td>
<td>Light perception in right eye but none in left.</td>
<td>No change</td>
</tr>
<tr>
<td>Darren</td>
<td>Blind</td>
<td>No light perception</td>
<td>No change</td>
</tr>
<tr>
<td>Alexandria</td>
<td>Blind</td>
<td>Light perception</td>
<td>No change</td>
</tr>
<tr>
<td>Andrew</td>
<td>Blind</td>
<td>Light perception</td>
<td>Visual acuity gradually</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>decreased over time,</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>stabilizing with light</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>perception in grade 6/7.</td>
</tr>
</tbody>
</table>
"competitive athlete" was defined as someone who has in the past or is currently competing at a local, provincial, national or international level in individual or team sports. Table 3 provides details about the individual activity levels and personal classifications of each participant.

Table 3

<table>
<thead>
<tr>
<th>Group</th>
<th>Classification</th>
<th>Description of Main Activity</th>
<th>Amount of Time per Week Spent being Physically Active</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chantal</td>
<td>Active adult</td>
<td>Daily walking</td>
<td>45 min three times a week</td>
</tr>
<tr>
<td>Darren</td>
<td>Competitive athlete</td>
<td>Running (Track)</td>
<td>1 to 2 hours six times a week</td>
</tr>
<tr>
<td>Alexandria</td>
<td>Competitive athlete</td>
<td>Goalball</td>
<td>1 to 4 hours five times a week</td>
</tr>
<tr>
<td>Andrew</td>
<td>Competitive athlete</td>
<td>Karate</td>
<td>1.5 hours six times a week</td>
</tr>
</tbody>
</table>

The three participants who described themselves as “competitive athletes” (Darren, Andrew and Alexandria) were also required to provide additional information about their competitions and ratings. Table 4 provides a list of the data that supported these participants’ personal label of “competitive athlete.”
Table 4

Demographic Data: Competitive Athlete Past and Future Competitions and Awards

<table>
<thead>
<tr>
<th>Description of past competitions, medals and awards</th>
</tr>
</thead>
<tbody>
<tr>
<td>Darren (Running)</td>
</tr>
<tr>
<td>2008 – BC Athletics top male athlete with a disability</td>
</tr>
<tr>
<td>2009 – IBSA Pan-American games—400 metre run—1st place</td>
</tr>
<tr>
<td>2010 - Plans to compete in the IPC World Championships</td>
</tr>
<tr>
<td>2010 - Plans to compete in the London Paralympics</td>
</tr>
<tr>
<td>Alexandria (Goalball)</td>
</tr>
<tr>
<td>2007 - Canadian Junior National Championships: 3rd place</td>
</tr>
<tr>
<td>2008 - Western Regional Championships: 2nd place</td>
</tr>
<tr>
<td>2008 - Canadian Junior National Championships: 2nd place</td>
</tr>
<tr>
<td>2009 - Canadian National Championships: 3rd place</td>
</tr>
<tr>
<td>2009 - International World Junior Championships: 3rd place</td>
</tr>
<tr>
<td>2010 - Montreal Open Tournament: 3rd place</td>
</tr>
<tr>
<td>2010 - Western Regional Championships: 1st place</td>
</tr>
<tr>
<td>Andrew (Karate)</td>
</tr>
<tr>
<td>2009 – Men’s Kata Results: Bronze</td>
</tr>
<tr>
<td>2010 - Penticton Results: Team Kata 4th place.</td>
</tr>
<tr>
<td>2010 - Plans to complete in the Ryu Karate Soke Cup Tournament in Japan</td>
</tr>
</tbody>
</table>

Triangulation

In order to demonstrate validity and reliability, participant data were triangulated using multiple sources that pointed to the same outcome (Yin 2009). The primary participant interviews were assessed in the context of data drawn from the following sources: referral of the
participant as active adult or competitive athlete from the BCBSRA; corroboration of the primary participant histories by rating scales and a secondary participant interviews; and provision of additional archival information by competitive athletes. Table 5 displays the triangulation data for each participant.

Table 5

*Triangulation Data*

<table>
<thead>
<tr>
<th></th>
<th>Chantal</th>
<th>Darren</th>
<th>Alexandria</th>
<th>Andrew</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary participant data</td>
<td>Rating scales and online text-chat interview</td>
<td>Rating scales and online text-chat interview</td>
<td>Rating scales and online text-chat interview</td>
<td>Rating scales and online voice-chat interview</td>
</tr>
<tr>
<td>Referral from BC Blind Sports and Recreation Association</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Secondary participant</td>
<td>Teacher of the visually impaired</td>
<td>Mother</td>
<td>Father</td>
<td>Teacher of the visually impaired</td>
</tr>
<tr>
<td>Archival materials</td>
<td>No</td>
<td>Yes (see Appendix J)</td>
<td>Yes (see Appendix K)</td>
<td>Yes (see Appendix L)</td>
</tr>
</tbody>
</table>

**Environmental rating scales.** Participants rated, using their own judgment, the extent to which factors within a given environment influenced their overall successful participation in physical activity during their elementary and high school years. The results of the environmental rating scale are summarized in Table 6 (elementary school years) and Table 7 (high school years).
Table 6

*Rating Scale Results: Environments (Elementary School Years)*

<table>
<thead>
<tr>
<th></th>
<th>Chantal</th>
<th>Darren</th>
<th>Alexandria</th>
<th>Andrew</th>
</tr>
</thead>
<tbody>
<tr>
<td>To what extent did your family influence your successful participation in regular physical activity during your elementary years?</td>
<td>3*</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>To what extent did your school influence your successful participation in regular physical activity during your elementary years?</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>To what extent did your community influence your successful participation in regular physical activity during your elementary years?</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

Note. * = 1 (extremely influential), 2 (very influential), 3 (not very influential), 4 (not at all influential).

Table 7

*Rating Scale Results: Environments (High School Years)*

<table>
<thead>
<tr>
<th></th>
<th>Chantal</th>
<th>Darren</th>
<th>Alexandria</th>
<th>Andrew</th>
</tr>
</thead>
<tbody>
<tr>
<td>To what extent did your family influence your successful participation in regular physical activity during your high school years?</td>
<td>4*</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>To what extent did your school influence your successful participation in regular physical activity during your high school years?</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>To what extent did your community influence your successful participation in regular physical activity during your high school years?</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

Note. * = 1 (extremely influential), 2 (very influential), 3 (not very influential), 4 (not at all influential).
For triangulation purposes and ease of overall analysis, the high scores (1=extremely influential and 2=very influential) were extracted from the tables and placed into their own colour-coded chart. Table 8 summarizes the influential environments, as reported by the each participant.

Table 8

Environmental Rating Scales: Influential Environments

<table>
<thead>
<tr>
<th></th>
<th>Chantal</th>
<th>Darren</th>
<th>Alexandria</th>
<th>Andrew</th>
</tr>
</thead>
<tbody>
<tr>
<td>Most Influential Environments</td>
<td>School – 2 *</td>
<td>Family – 1</td>
<td>Family – 1</td>
<td>School – 2</td>
</tr>
<tr>
<td>elementary school years</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Most influential environments</td>
<td>School – 2</td>
<td>Family-1</td>
<td>Family-1</td>
<td>Community – 1</td>
</tr>
<tr>
<td>High school years</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. * =1 (extremely influential), 2 (very influential).

Two of the three competitive athletes, Darren and Alexandria, rated their family environment as “extremely influential” to their successful experiences throughout their school-aged years. This differed from the third competitive athlete, Andrew, who rated factors within his school environment (during his elementary school years) and the community environment (during his high school years) as being “extremely influential” to his successful participation in physical activity. The active adult in this study, Chantal, rated the factors within her school environment as “very influential” to her successes across her elementary and high school years.

Characteristic rating scales. Participants were asked to rate the extent to which characteristics within each environment occurred, using predetermined items on a 4-point rating scale. Scale responses were defined in the following way: (1) extremely (often, positive, influential); (2) very (often, positive, influential); (3) not very (often, positive, influential), and (4) not at all (often, positive, influential). Data gathered from the family, school and community
characteristic rating scales were then placed into tables. For triangulation purposes and ease of overall analysis, higher ratings ($1 = \text{extremely}$ and $2 = \text{very}$) were extracted and placed into their own colour-coded tables. This data was then cross-referenced with the previous environmental rating scale results. An example of this triangulation is seen in table 9 with family ratings.

**Table 9**

*Triangulation: High Ratings - Environmental and Characteristic Scales for Family*

|                                      | Chantal ERS ** – Family environment *not influential* | Darren ERS – family environment *extremely influential* | Alexandria ERS – family environment *extremely influential* | Andrew ERS = Family environment *very influential*
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Participation in Family recreation</td>
<td>1*</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Support</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Accessibility to activities</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Connect with school personnel</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Connect with community personnel</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note. * = 1(*extremely*), 2(*very*)

*Note. ** ERS = Environmental Rating Scale*

**Primary participant interview data.** Each participant was then interviewed for added details related to their environmental and characteristic rating scale results. For triangulation purposes, participant responses were then paired with the environmental and characteristic rating scale result tables. An example of this data analysis process is shown in Table 10.
Table 10

**Triangulation: High Ratings - Environmental, Characteristic Scales with Primary Participant Narratives**

<table>
<thead>
<tr>
<th>Colour coding:</th>
<th>Chantal ERS ** – Family environment <em>not influential</em></th>
<th>Darren ERS – family environment <em>extremely influential</em></th>
<th>Alexandria ERS – family environment <em>extremely influential</em></th>
<th>Andrew ERS = Family environment <em>very influential</em></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Black</strong> = influential in rating, but comment attached</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Purple</strong> = influential in rating and comment attached</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Participation in Family recreation</td>
<td>During my high school years, my dad took me tandem cycling on my tandem bike when we both had time. My parents and sisters also accompanied me to yoga classes at the local community centre so that they could show me the postures as the instructor was modeling them</td>
<td>1* I was always interested in track and field the sport I still compete in, so my Dad spent a lot of time as a guide runner when I was young. We were a pretty active family in skiing and swimming</td>
<td>2 We would do family outings and such things but it wasn't really anything organized by anybody...going for bike rides, going to the park, hiking, swimming, camping.</td>
<td>Also, it's in my family genes to play basketball. So when I was younger, I was born short-sighted...and my dad would be washing the car and I would be practicing and he would give me tips. And when my brother was born, before he could even walk, I was teaching him how to throw the ball into a laundry basket or a garbage bag that was hung from a doorknob.</td>
</tr>
</tbody>
</table>

Note. * = 1 (extremely), 2 (very)  
Note. ** ERS = Environmental Rating Scale
Triangulation of the environmental rating scale revealed that the family environment was particularly important in influencing Darren and Alexandria’s participation in physical activity during their school-aged years. Gathering additional detail from the characteristic rating scale, *participation in family recreation* was rated to be extremely important for Darren and very important for Alexandria. Their narratives are colour coded in pink to identify these family characteristics as obvious factors within Darren and Alexandria’s family environments. On the other hand, both Chantal and Andrew did not rate the characteristic *participation in family recreation* as being particularly important. Despite this, analysis of their personal narratives revealed that they did in fact take part in family recreation. Their narratives are colour coded in black to identify them as containing a hidden factor, one that would not have been revealed simply by examining their rating scale results.

It is such factors, both obvious and hidden, noted across participant narratives that become potential study themes. Hidden themes also arose, at times, completely from the interview process and were not included in the characteristic rating scales. For example, one characteristic *family positive attitude and encouragement* was not addressed in the rating scales. However, a deeper analysis of the participant narratives found that this was an important hidden factor found across participants, which also made it as a hidden theme.

**Primary and secondary interview data.** Finally, themes that were extracted through the triangulation of rating scales and primary participant narratives were further cross-referenced with secondary participant narratives. An example of this data analysis process is contained in Table 11 to support the theme *parental involvement in participants’ choice of physical activity*. In this example, the competitive athlete, Darren, provides details about his father’s support and involvement in the participant’s choice of activity. His narratives are further supported by his
mother’s interview comments. Displayed side-by-side, the two narratives provided added strength to the reliability of that study theme.

Table 11

**Triangulation: Primary and Secondary Narratives - Darren**

<table>
<thead>
<tr>
<th></th>
<th>Personal comments</th>
<th>Secondary participant comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Involvement in PA</strong></td>
<td>I was always interested in track and field the sport I still compete in, so my Dad spent a lot of time as a guide runner when I was young.</td>
<td><em>Mother:</em> He went to the BC Games for Athletes with Disabilities …and of course, he needed a guide so his dad went with him.</td>
</tr>
<tr>
<td></td>
<td>Involvement in Training and Competition: Well, at that time, my Dad was still the guide running for me so anytime we had to compete out of town, he would have to take time off work.</td>
<td>…he was just turning 13 … um I can't remember if he was 13 or 15 now…but he went to the Czech Republic with the junior athletes and with his dad, and he was quite successful there. He won a silver</td>
</tr>
<tr>
<td></td>
<td>[My Dad] gave a huge amount of his time and worked pretty hard to make sure I was able to continue. He was also very understanding when the time came for me to find someone else to run with as I got older</td>
<td></td>
</tr>
</tbody>
</table>

**Interconnections.** The corroboration of primary and secondary narratives was also used to determine the interconnections between the different environments. Narratives that touch on factors within different environments were placed in sequential order, as reported by each participant, to attain a holistic picture of the individual stories. Table 12 provides an example of this triangulation method used to cross-reference the interconnections in narratives told by Chantal and her TVI.
### Table 12

**Triangulation: Interconnections between Environments-Chantal and TVI Narratives**

<table>
<thead>
<tr>
<th></th>
<th>Personal comments</th>
<th>Secondary participant comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Chantal</strong></td>
<td>I think all of the people that you've mentioned had a positive attitude that encouraged me to continue participating in yoga classes. My family supported me and drove me to the classes, my vision teacher was always there to show me the postures, and that perfect teacher was very good about treating me like any other member of her class.</td>
<td><strong>TVI:</strong> I was thinking of things for her to do that she could take with her for the rest of her life. A skill, sport that she could do own her own independently without going away to far at her own time and place. And this I introduced it to her when she was in grade 6 or 7 in her high school years. Yoga she was comfortable with and enjoyed it and was more motivated to do it. And then, later on, when she started to go to Bikram's Yoga she had no problems understanding, although these poses were a bit different variation, she adjusted to it very well because she had the basics. Initially I went with her but then she started to go on her own so. Drive by the parents [to yoga centre]. It would be the Yoga instructors. They were fantastic at the community centre. Once they learned about her and she would be doing it independently, they would seat her and wait to make sure that she follows the poses...so it was basically the people at the community centre.</td>
</tr>
<tr>
<td><strong>NOTES:</strong></td>
<td><strong>Family drove her</strong> <strong>VI teacher</strong> <strong>accompanied</strong> <strong>YOGA instructor</strong> <strong>helped</strong></td>
<td></td>
</tr>
</tbody>
</table>
Together, the family, school and community environmental and characteristics rating scales along with the primary and secondary interview narratives that followed brought focus to the stories of each individual participant and were essential in identifying the factors and themes that contributed to individual and collective successes. The following section explains the analysis from the triangulation of the data in this study.

**Family**

**Family characteristics rating scale.** All participants were asked to respond to scale items related to the following family characteristics: the extent to which family participated in physical activity; the extent to which family supported physical activity by providing encouragement and accessibility of activity, and the extent to which the family maintained connections with neighbouring environments, such as the school and community settings. Table 13 provides the results of the family characteristic rating scale completed for each participant.

Table 13

*Rating Scale Results: Family Characteristics*

<table>
<thead>
<tr>
<th>Item</th>
<th>Chantal</th>
<th>Darren</th>
<th>Alexandria</th>
<th>Andrew</th>
</tr>
</thead>
<tbody>
<tr>
<td>To what extent did you participate in recreational activities with your family?</td>
<td>4*</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>To what extent did your parents participate in physical activity, such as going to the gym, going for a run or attending fitness class?</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>4</td>
</tr>
</tbody>
</table>

Continued on next page
To what extent did your family support your involvement in sport, athletics or recreational activities?

<table>
<thead>
<tr>
<th></th>
<th>Chantal</th>
<th>Darren</th>
<th>Alexandria</th>
<th>Andrew</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>4</td>
</tr>
</tbody>
</table>

To what extent did your family make physical activities accessible to you (i.e. practicing skills with you, providing ways for you to get to your activity site, purchasing equipment for you)?

<table>
<thead>
<tr>
<th></th>
<th>Chantal</th>
<th>Darren</th>
<th>Alexandria</th>
<th>Andrew</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

To what extent did your family connect with school personnel to help create successful physical activity experiences at school?

<table>
<thead>
<tr>
<th></th>
<th>Chantal</th>
<th>Darren</th>
<th>Alexandria</th>
<th>Andrew</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

To what extent did your family connect with community personnel, such as CNIB or BC Blind Sports or disabled ski association, to help create successful experiences for you?

<table>
<thead>
<tr>
<th></th>
<th>Chantal</th>
<th>Darren</th>
<th>Alexandria</th>
<th>Andrew</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>4</td>
</tr>
</tbody>
</table>

*Note. * = 1 (extremely), 2 (very), 3 (not very), 4 (not at all).

Not surprisingly, Darren and Alexandria, the two competitive athletes who rated the family environment as extremely influential to their successes, also reported that their families had participated in physical activity extremely often during both, their elementary and high school years. Darren, Alexandria and Chantal felt that family support and assistance in making physical activity accessible occurred extremely often while Andrew’s rating revealed that his family made physical activity accessible to him very often.

**Family themes.** Family environmental and characteristic rating scale results were analyzed with descriptive interview data to determine the important family factors that contributed to individual successful involvement in physical activity. The data were then evaluated for recurring themes and results were placed in two categories: factors common across
participants and factors common in competitive athletes. Results across participants included the following familial themes: (a) family attitude and encouragement, (b) parental involvement in child’s choice of physical activity, and (c) parental support. Only one theme was found in the factors common across the competitive athlete group: parental beliefs and expectations. There were no obvious recurring themes that emerged from the active adult data.

**Family themes across participants.**

**Family attitude and encouragement.** All participants felt that their parents had been influential to their involvement in physical activity by displaying positive attitudes and providing encouragement. This was particularly noted in the three competitive athletes who made comments such as “My family was extremely influential” and “My family was very influential” or “My family had a positive attitude.” Chantal, the active adult in this study who felt that the family environment was “not very” influential during her elementary school years and “not at all” influential during her high school years confirmed these ratings in the comment: “My family played a small role in influencing me to participate in physical activity.” However, positive family attitudes and encouragement were also reported in comments such as, “they encouraged me to exercise whenever I could during my spare time” and “tried to make equipment (such as the treadmill) as accessible to me as possible.”

**Parental involvement.** A recurring theme found across all participant data was the influence of parental involvement in the participants’ choice of physical activity. For example, even though Chantal, the active adult in this study, did not rate the family environment as being particularly important to her involvement in physical activity, she revealed that while she was in high school, “my parents and sisters accompanied me to yoga classes … so that they could show me postures as the instructor was modeling them.” Such family involvement partially
encouraged her to take part in a 30-day yoga challenge. Likewise, Darren noted his father’s support of his involvement in track by acting as his sighted guide runner and training partner. He recalled: “I was always interested in track and field, the sport I still compete in, so my dad spent a lot of time as a guide runner when I was young.” This parental involvement was also indicated by Darren’s mother, who commented, “He went to the BC Games for athletes with disabilities, and of course he needed a guide so his dad went with him.”

Similarly, Alexandria made comments related to her parents’ involvement in her choice of physical activity. She stressed how her parents “encouraged anything that would keep me active,” and noted her father’s direct involvement by “very patiently [teaching] me how to swim and skate.” This point was supported by Alexandria’s father in comments such as “this is the attitude that we have been having ... you know, some friends get some roller blades, she wants to roller blade. Okay, so let’s get some roller blades for her!”

Andrew also spoke about his father’s involvement in his choice of physical activity. He recalled how his father would give him tips to help him improve his basketball skills: “My dad would be washing the car and I would be practicing (shooting hoops) and he would give me tips.” He stressed the importance of this time spent with his father as being influential in allowing him to be able to teach the skills of this sport to his younger brother later on: “And when my brother was born, before he could even walk, I was teaching him how to throw the ball into a laundry basket or a garbage bag that was hung from a door.”

**Parental support.** The recurring theme of parental support was also noted in the rating scales and descriptive interview data of three of the four participants (Chantal, Darren and Alexandria). Chantal remarked that her family “fully supported me in all the activities that I was interested in.” In particular, she explained how her father “made an effort to free up some time
in his busy schedule to take me tandem biking,” an activity that she particularly enjoyed. She commented on how such parental support “naturally made me want to continue to participate in those activities.” Support was also seen in the ways in which Chantal’s family helped make physical activity accessible to her. She recalled: “they tried to make equipment (such as a treadmill) as accessible to me as possible.”

Darren also stressed the importance of his parents’ support of his choice of physical activities. He commented that “they never pushed me into anything I really didn’t want to do but always supported my interests...I guess the biggest thing they did was try to find ways of doing things instead of reasons why I couldn’t.” This support was indicated by Darren’s mother, who commented that “we were always behind him…but never forced him to do any of that.” Similarly, Alexandria reported that the family support that she received was evident in the ways in which her family exposed her to the activities that she was interesting in learning. She remarked, “they wanted to help me achieve the goals I had. For instance, if I wanted to learn something new, they would usually walk me through it the best they could.” This was reinforced by Alexandria’s father, who stressed that “we never stopped her from trying anything” and that “if she wants to do it, then let’s do it!”

An interesting result emerged from Andrew’s case study. While Andrew’s environmental rating scale revealed that his family was very influential to his successful participation in physical activity, his family characteristic rating scale indicated contradictorily that they did not at all support his involvement in physical activity. Interview data revealed that Andrew’s father supported his participation in particular activities, such as wrestling and rowing, by driving him to his practices and attending his competitions; however, they were not supportive of his involvement in other activities, particularly Army Cadets and rock climbing. Andrew indicated
that it was this lack of support that drove him to try even harder to accomplish goals that others felt he could not or should not try. He described this as follows:

There were some adults and community members who were very influential that discouraged me and doubted. Those people were influential enough to get me down at times, but their lack of faith and their telling me I couldn't do something because I was blind made me try that much harder. It wasn't all positive and support. Some instances were due to their concern for my safety while others were from lack of faith. My dad who was positive during my elementary school days was very discouraging about my army cadet career and rock climbing because he was afraid for my safety and didn't like anything that involved the military. I think this is important to the study since I don't think the number of people in the child's life will stop them from getting involved, or succeeding. I believe the amount of influence a person has on the child is what matters.

The three family themes, family attitude and encouragement, parental involvement in child’s choice of physical activity, and parental support, provide some insight into the ways in which the families of the participants in this study contributed to their successes experiences. Such family characteristics have also been reported by other researchers. For instance, Jacobs and Eccles (2000) found that that parents who participated in physical activity played an important role in helping to develop health-related behaviours in their children. Such studies provide grounds for further investigation on the role of parental positive attitudes, encouragement and involvement in physical activity in developing health-related behaviours in their visually impaired children and youth.
Family themes in competitive athletes.

Beliefs and expectations. Only the competitive athletes spoke further about their parents’ beliefs in their abilities to participate in physical activities. They described their parents’ attitudes as stemming from the idea that they could take part in the same life activities as a sighted child. For instance, Darren commented on his parents’ belief that he should be able to participate in the same activities as his older, sighted brother: “I have an older brother who is sighted so my mom and dad felt that I should be able to at least try doing what he did.” This philosophy was also evident in interview comments provided by Darren’s mother, such as “we just taught him to do what his brother did,” and “he just did everything a normal kid would do and we expected that of him as well as encouraged it.” Similarly, Alexandria pointed out that her parents’ belief in her abilities was evident in their support in exposing her to any activity she wanted, regardless of her impaired vision. She said: “They encouraged me” and “helped me try new things” because “they wanted me to achieve the goals I had.” Alexandria’s father also expressed that they “treated her like every other kid,” and “never stopped her from trying anything new.”

Andrew also discussed his father’s general beliefs about his ability to take part in the same life activities as a sighted child. He stressed that his father “never wanted me to be different” and urged him to “not just keep up with sighted people, but to find the strength I already had ...to get ahead.” However, Andrew also felt that his family took into account the reality of his visual impairment and the limits that being blind could impose on participating in some activities. He noted his family’s attitude toward these realistic limits: “The family’s attitude was I could do what everyone else could do with a limit. For example, I can’t become a fighter pilot or I can’t become a fireman.” Keeping this reality in mind, Andrew commented on
his family’s influence on his attitude toward life: “I could accomplish most things if I put my mind to it.”

Research has shown that family beliefs and expectations are important factors that can contribute to increased participation in physical activity by children and youth. Jacobs and Eccles (2000) reported that parents who believed that their children could successfully take part physical activities were more likely to have children who placed higher value on physical fitness. The competitive athletes in this study clearly indicated that family attitudes and expectations contributed to their individual successes.

School

**School characteristic rating scale.** All participants were asked to respond to scale items related to the following school characteristics: the extent of participation in school physical activities; the extent of positive attitudes displayed by teachers and peers; the extent of accessibility of physical activity in the school setting; the extent of involvement in physical education class; the extent of participation in other areas of expanded core curriculum during PE time and the extent to which the school connected the participant to physical activities in neighbouring environments, such as family and community settings. Table 14 contains the results of the school characteristic rating scales complete by each participant.
Table 14

*Rating Scale Results: Elementary and High School Characteristics*

<table>
<thead>
<tr>
<th></th>
<th>Chantal</th>
<th>Darren</th>
<th>Alexandria</th>
<th>Andrew</th>
</tr>
</thead>
<tbody>
<tr>
<td>To what extent did you</td>
<td>3*</td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>participate in sport, athletics or recreational activities during your elementary school years?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>During your high school years?</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>To what extent did your teachers display a positive attitude toward your participation in physical activity within your elementary school?</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Within your high school?</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>To what extent did your peers display a positive attitude toward your participation in sport, athletics and recreation within your school environment?</td>
<td>4</td>
<td>1</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>To what extent were you involved in physical education class within your elementary school?</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Within your high school?</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

*Continued on next page*
<table>
<thead>
<tr>
<th></th>
<th>Chantal</th>
<th>Darren</th>
<th>Alexandria</th>
<th>Andrew</th>
</tr>
</thead>
<tbody>
<tr>
<td>To what extent where physical activities, such as physical education, sports days, recreational field trips, such as skiing and hiking, made assessable to you during your elementary school years?</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>During your high school years?</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>To what extent did your participate in other areas of the expanded core curriculum, such as orientation and mobility, during your physical education time in your elementary school?</td>
<td>1</td>
<td>4</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>During your high school years?</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>To what extent did your school connect you to community sports, athletics and recreational opportunities outside of the school environment during your elementary school year?</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>During your high school years?</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

*Note. * =1 (extremely), 2 (very), 3 (not very), 4 (not at all).

The school characteristic rating scale results revealed that all participants were involved in physical education class during their elementary and high school years. The three competitive athletes (Darren, Alexandria and Andrew) felt that they had participated in elementary school physical education class extremely often while Chantal, the active adult felt that she had very often been involved in her elementary physical education activities. Interestingly enough, the
extent to which the competitive athletes were involved in their physical education classes during the high school years dropped to very often while Chantal’s rating stayed the same.

Not surprisingly, Andrew, who also rated his elementary school environment as being extremely influential to his successful involvement in physical activity, also rated many of the elementary school characteristics as occurring extremely often or very often. High school characteristic rating scale results were not as important. For example, Andrew rated the extent to which his teachers displayed a positive attitude toward his participation in physical activity as very often during his elementary school years, while this rating dropped to not often during his high school years.

Another interesting outcome emerged in the item relating to accessibility. Both Chantal and Darren felt that physical activities were made very accessible to them in their elementary and high school environments. However, Andrew felt that activities were made extremely accessible throughout his school life. Finally, only Chantal, the active adult, revealed that she participated in other areas of the expanded core curriculum (a disability-specific curriculum) extremely often during her elementary and high school years.

School themes. School rating scale results were analyzed with descriptive interview data to determine the important themed family factors that had contributed to participant successes. Analysis of the data found the following factors present across all participant data: elementary school learning physical skills, elementary school opportunities, and high school creative programming. Only one theme was found in the active adult group: influence of the Teacher of Students who are Blind or Visually Impaired (TVI). There were no recurring themes evident in the competitive athlete group.
School themes across participants.

*Elementary school learning physical skills.* All participants indicated that the opportunities they received to meaningfully participate in school physical activities were facilitated through direct instruction in learning the proper body mechanics to participate in such activities. General comments were offered by the three competitive athletes. Darren remarked that “I was at least shown the basic skills” during the elementary school physical education class. Alexandria also mentioned that “I was shown how to do the things that the rest of the kids learned.” Andrew described that “in elementary school there was a special SEA (special education assistant) who was their *(sic)* to teach me hands on by showing me the motions.”

The active adult in this study (Chantal) went into further detail, explaining the learning process of the direct instruction she received from her TVI, training that would allow her to join in common elementary physical activities with her peers. She described her love for the monkey bars after she was shown how to safely play on this outdoor equipment:

> I absolutely loved the monkey bars. It amused me (once I was shown how) that I could cling onto the bars and move along them at higher and higher levels. My vision teacher also accompanied me on every piece of equipment on the playground until I was so familiar with them that I could do them alone.

*Elementary school opportunities.* All participants felt that they were granted the opportunity to participate in physical activities within their elementary school environment. Rating scale results revealed that all participants were involved in their physical education classes during their elementary school years and interview data illustrated that they were also provided with opportunities to participate in other school-based activities, such as sports days and field trips. Further, participants believed that they were provided with the opportunity to
participate in extracurricular physical activities initiated through their elementary school environment. Chantal’s interview data revealed that her TVI “slowly got me involved...in yoga” and her TVI interview found that Chantal was first introduced to yoga when she was in “Grade 6 or 7.”

Darren revealed how his involvement in track was initiated by his participation in an extracurricular activity, the elementary school track team. He recalled:

I was very young, I think 9 years old and there was a meeting for kids that were interested in running track. I guess it seemed like something that I could do more than basketball or other sports like that. After a few years, my vision resource teacher got me in touch with BC blind sports which gave me more opportunities. I ran in competitions with my vision teacher the first year.

Alexandria also shared her memories of her involvement in gymnastics, an after-school opportunity that was initiated by her SEA at her elementary school. She explained, “It took place after school …I believe it was three times a week…and my aid would come and help me learn the necessary moves.” Likewise, Andrew also described how a classroom teacher influenced him to get involved with wrestling, an extracurricular after-school activity, during his Grade 6 and 7 years: “Well, I was always getting into trouble. I was always in the principal’s office for getting into school-yard fights. And then, my grade 6-7 teacher …she [got] me and my best buddy…into the wrestling team.”

**High school creative PE programming.** Students in British Columbia are required to take PE until grade 10. However, for the individuals in this study, participation in physical activity, particularly PE at the high school level, set a different tone. While all participants continued to take part in physical activity in some form, their participation seemed to change
from being fully inclusive physical activities, as seen at the elementary level, to taking part in more individual or one-on-one activities at the high school level. All participants commented on the challenges of participating in whole-class high school PE activities. Chantal remarked that she didn’t take part in many of the group PE activities in high school because “they were too chaotic,” opting instead “to participate in solo physical activities.” Her TVI also indicated that “high school was a totally different ballgame,” and that the competitive nature of high school physical education class meant that “there was many times when [Chantal] could not participate in what [the rest of the class] was doing.” During these times, Chantal would instead participate in solo activities, such as weight lifting or following a yoga tape.

Similarly, Darren noted that inclusive participation in physical activity at the high school level was more difficult to accomplish: “High school was a lot harder. I think mostly because I was becoming less competitive with my peers and the teachers weren't willing to put in the same time with me as I got in elementary school.” A comparable experience was described by Alexandria, who explained that although she was involved in high school PE classes, inclusive participation was a lot harder to achieve because “the sports were a lot more competitive and the teachers were more concerned about safety issues.” Alexandria also felt that sports at the high school level were “a lot harder to adapt” because they were played “at a faster pace.”

In the same way, Andrew also found sports, which were typical of high school PE units, were often difficult for him to meaningfully participate in. He went on to describe his frustration in participating in his high school badminton unit:

I did really horrible in badminton. The bird would hit me in the face. So I really became scared of badminton. And so I would just use my racket as a shield to block the bird.
And they kept on telling me, “How are you going to hit it if you use it as a shield for your face?” I said, “I don’t care!” So that didn’t work out.

Despite these challenges, a recurring theme was seen in how opportunities to meaningfully take part in physical education classes were established in different, and sometimes in more creative and effective ways. For instance, Chantal explained how her PE teacher prepared a customized program that she could follow during the times when she was not able to participate in a whole-class physical activity:

My PE teacher took the time to create a customized program that I could follow every PE class with the help of my educational assistant. The program included a daily schedule of activities such as walking for 15 minutes, then doing my activity of choice in the weight room for the rest of the time. When I became bored of the activities in the weight room, she gave me a very basic yoga tape to follow.

In addition, Chantal also noted the flexibility that the school granted her in incorporating her orientation and mobility practice towards her PE credits:

We used most of the PE class time for Orientation and Mobility near the end of high school in order to prepare me for university. It started in grade 10 and gradually increased…The [PE] teacher considered Orientation and Mobility as an exercise activity and I got credit for it.

Like Chantal, Alexandria was encouraged to participate in more solo activities, such as “practicing dribbling a basketball, skipping rope [or] kicking a soccer ball” during the times that she could not participate in the activity or game. She recalled:
they usually would let me try out something while the other students were getting ready.... A lot of the time, I would be given other things to do off to the side for example, practicing dribbling a basketball, skipping rope, kicking a soccer ball.

Darren, on the other hand, indicated that he took part in a more independent physical education course which was developed by his school district for those students who needed an individualized PE program. He explained:

My high school had a fitness Ed course that was mostly running and weight training which was going to relate more to what I was doing in track. So my school allowed me to take that course and get the PE credits I needed.

Andrew also noted how his high school allowed him to use the time he spent in wrestling practice toward his high school PE credits: “I got credit through the wrestling team because our practices were from 2:45 to 6:00 pm. And it was from Monday through Thursday. The coach was the head of the PE department and he needed his athletes.”

However, Andrew stressed that he was always provided with the opportunity to participate in new PE activities, even though he was not enrolled in any general education PE class. He described:

During high school, whenever there was a new unit that had never before been covered, I would take part to give it a try. I never got grades for P.E because participation wasn't needed since I was on the wrestling team. I'd use the block for Pe (sic) to do my hw (sic). I could basically come and go as I please. The funny thing that I just remembered is Tae Kwando and Karate were covered by a few special guest instructors once every year. They were advertising their schools and I had very little success adapting and learning in those particular classes, so I didn't participate in them after grade 9.
The elementary and high school themes that helped contribute to participant successes in this study are important to note. Previous studies have found that schools, particularly PE classes, can help children and youth who are blind or visually impaired to successfully participate in physical activity, improve fitness levels and encourage continued involvement in such pursuits (Craft, 1986; Ponchillia et al. 2002). The participants in this study were all involved in PE, and interview narratives revealed that PE programs were made accessible to them in creative ways, especially during their high school years.

**School themes in active adult.**

*Influence of TVI.* Although all participants reported having at TVI, only Chantal, the active adult in this study, provided specific details on the importance of her TVI, (otherwise known as her “vision teacher”) in contributing to her successful participation in physical activity during the elementary and high school years. It was this teacher that supported Chantal in developing a variety of physical skills in many settings. Chantal first commented on how her TVI helped adapt and modify new concepts learned in PE classes:

> My vision teacher tried her best to modify every concept that was being taught to the rest of the students. For example, when everyone else was learning how to play basketball, she would take me aside. We'd stand in a corner of the gym and she'd spend the class teaching me how to dribble a basketball. She was available whenever a new concept had to be introduced to me. Whenever she wasn't available, an educational assistant was assigned to help me hone the concept that she'd just taught me.

In addition, Chantal commented on the role this teacher played in helping her to develop the confidence she needed to take part in group physical activity successfully. She recalled how her teacher spent time showing her the body movements needed to “dribble a basketball,” or
“skip rope.” Chantal and her TVI would frequently practice movement skills ahead of time, pretraining these physical skills so that she could effectively employ them during group activities. She describes this pretraining technique facilitated by her teacher of the visually impaired in learning yoga poses.

My vision teacher would sit on the gym floor with me and she’d introduce me to the kind of movements that I’d be learning. I believe her point in doing this was to help me to prepare my body to get used to making those kinds of movements.

She'd [TVI] speak the poses and at the same time, show me how they were done for example: she'd say tuck your chin to your chest and then she'd first see how I interpreted that posture and then make any necessary adjustments.

Confidence was also developed through the gentle learning methods employed by her TVI. Chantal notes how her TVI encouraged her to practice yoga at home before introducing her to the community yoga class:

As soon as I was able to do all the poses separately, she went and bought a DVD of an instructor teaching a yoga class. She then taped the auditory instructions (they were very clear) onto an audio tape and then we'd follow the tape together after school. She'd let me do the poses first by listening to the audio instructions. Then she'd correct me if need be. At first I only did it with her then when I became familiar with the taped session, she let me invite my best friend to join in so that it'd be more fun. I wanted to learn the poses as fast as possible. so (sic) she copied the tape and let me keep a copy at home so I could practice.

There is currently very little, if no research that examines the influence of the TVI in supporting the development of physical skills in students who are blind. Research in this area
has commonly studied the effectiveness of general education PE teachers (Lieberman & Houston-Wilson, 1999; Lieberman et al., 2002), rather than a trained disability specialist, such as a TVI. Chantal’s story is important because it highlights this gap in research, indicating that the role of the TVI could potentially be a key component in influencing the lifelong experiences in physical activity for some students with impaired vision. Further research needs to be done as to how this role can be strengthened and supported.

**Community**

**Community characteristic rating scale.** Participants were asked to respond to scale items related to the following preidentified community characteristics: the extent of participation in community environment; the extent to which successful experiences were influenced by CNIB, BC Blind Sports, Community fitness centre and the extent to which family was involved in community activity; the extent to which adult community members and peers displayed positive attitudes, and the extent to which physical activities were made accessible in the community environment. Table 15 contains the results of the Community Characteristic Rating Scale. Table 15

**Rating Scale Results: Community Characteristics**

<table>
<thead>
<tr>
<th></th>
<th>Chantal</th>
<th>Darren</th>
<th>Alexandria</th>
<th>Andrew</th>
</tr>
</thead>
<tbody>
<tr>
<td>To what extent did you participate in sport, athletics or recreational activities within your community during your elementary school years?</td>
<td>4*</td>
<td>3</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>During your high school years?</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>To what extent were your successful experiences influenced by CNIB</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

Continued on next page
<table>
<thead>
<tr>
<th></th>
<th>Chantal</th>
<th>Darren</th>
<th>Alexandria</th>
<th>Andrew</th>
</tr>
</thead>
<tbody>
<tr>
<td>To what extent were your successful experiences influenced by BC Blind Sports and Recreation?</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>To what extent were your successful experiences influenced by recreational clubs, such as community fitness centres?</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>To what extent were your successful experiences influenced by your family’s involvement in community recreation?</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>To what extent did adult community members display a positive attitude toward your participation in sport athletics and recreation within the community environment?</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>To what extent did peers within your community display a positive attitude toward your participation in sport athletics and recreation within the community environment?</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>To what extent were community sport, athletics and recreational activities made accessible to you?</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>4</td>
</tr>
</tbody>
</table>

*Note* * = 1 (extremely), 2 (very), 3 (not very), 4 (not at all)

The rating scale results revealed that all participants were involved in community physical activity, and this involvement was predominant during their high school years. Three participants, Chantal, Darren and Alexandria reported being *very involved* in community physical activities during their high school years, while Andrew reported being *extremely involved* during this time. In addition, Chantal, Darren and Alexandria felt that attitudes
displayed by adult community members were very positive, while Andrew reported extremely positive attitudes. However, only Darren and Andrew found that peer attitudes were very positive during community physical activities, a result that was also noted with school peers.

Not surprisingly, Darren and Alexandria who also rated the family environment as being extremely influential to their successful participation in physical activity, also reported that their family was very involved in community physical activities. Chantal, Darren and Alexandria reported the BCBSRA as being very influential to their participation in community physical activities. As well, Chantal and Andrew rated their participation in community fitness and recreation centres as being very influential. Darren and Alexandria felt that community physical activities were made very and extremely accessible to them respectively.

**Community themes.** Community environmental and characteristic rating scales were analyzed with descriptive interview data to find the themed community factors that contributed to their successful involvement in physical activity. Rating scales revealed that all participants were involved in community physical activity, interview data found that these participants took part in the following specific physical activities: Chantal practiced yoga at her community centre; Darren was involved in a community track club for 2 years and then transferred to a more disability-centered track club during his senior year; Alexandria began playing goalball at a community centre when she was in Grade 10; Andrew participated in Army Cadets during his senior years in high school. The data found no community themes recurring across participants and between groups (active adult and competitive athlete). Consequently, the following results are discussed as individual factors rather than themes.

**Chantal.** Chantal noted three sources of influence that allowed her to continue to take part in community yoga practice: her parents, the TVI and her yoga instructor. She described the
importance of all three supports: “My family supported me and drove me to the classes, my
vision teacher was always there to show me the postures, and that perfect teacher was very good
about treating me like any other member of her class.” Notably, throughout the interview
Chantal repeatedly commented on the importance of her TVI in motivating her to take part in
community yoga practice. She described the dedication of this teacher:

She motivated me to keep attending yoga classes in the local community centre. My
vision teacher was super dedicated in this regard. She accompanied me to various yoga
classes at various community centres to help me find the one that was the most accessible
and once we settled on one, she'd come with me to class every week and stand beside me.
She'd then show me the postures as the instructor was modeling them. She continued to
do this until I eventually went to the classes alone and managed fine.

Chantal recounted the story of how her TVI helped her find the perfect yoga teacher within her
community.

While we were searching for the perfect teacher, [my TVI] would go to every class and
indirectly show the teachers how they could best assist me in learning the poses. That
one teacher whom we finally settled on was very observant; she tried to copy the
strategies used by my vision teacher.

They finally did find the perfect yoga instructor, one that used strategies that allowed Chantal
to feel fully included in the class. Chantal indicated that this yoga teacher also became an
important person who influenced her to continue to participate in community yoga practice:

We finally found one teacher who even went so far as to put my mat beside hers so
that she could adjust my body if need be while she was modeling the postures. It was
a great strategy; I felt like I could follow along with everyone else without any
difficulty and was reassured to know that she was there to correct me if I did any postures incorrectly.

In addition, Chantal recalled how her family supported her involvement in community yoga practice. She noted her sister as being an important connection between the family and community setting because she “accompanied me to complete a 30-day challenge that was being offered at a hot yoga studio.” With the help of her family, her TVI and her “perfect yoga instructor” Chantal eventually started to attend her community yoga classes independently.

**Darren.** Darren identified four factors that contributed to his involvement in the community track program: family, BC Blind Sports and Recreation Association (BCBSRA); other blind athletes and his sighted guides. Throughout his interview, Darren repeatedly commented on the support he received from his family. He recalled his father’s dedication to being his sighted guide through community competitions: “My dad was still guide running for me so anytime we had to compete out of town, he would have to take time off work.”

The BCBSRA also played a significant role in Darren’s successes. He noted that the “BC Blind Sports had its biggest impact” because “they let me know what kinds of opportunities were available to me and what I needed to do to be successful.” He recalled how this organization gave him the opportunity to compete at an international competition for the blind:

I had ran (sic) in what were the BC disabled games back then and when I was 13 BC blind sports recommended that I was sent to compete at the international blind sports assoc, IBSA world juniors the next year. So I joined an actual track club. I guess that was the start of it.
In addition, the BCBSRA introduced Darren to his current track coach, an individual who had experience working with blind athletes. It was here that Darren met other blind athletes who eventually influenced him to train at a more competitive level. Darren noted:

I was able to train with two athletes who had been to paralympic games and other international competitions, and they showed me so much about what it takes to get to and stay at that level. I think it's (sic) really important whenever possible to learn from the experience of others instead of reinventing the wheel.

However, Darren also noted the importance of training with sighted athletes and gaining the training support from a “sighted perspective.” He specifically made reference to his current guide who, in his time, “was a fantastic 400 metre runner” and accomplished athlete. Darren noted his appreciation for this guide runner in this comment: “He has taught me so much about the event and how to approach training.”

He stressed how such accomplished sighted athletes “are able to recognize the very specific unique challenges being blind presents and how to deal with [these challenges].”

**Alexandria.** Alexandria spoke about her parents and goalball teammates as being important to her continued participation in this sport. She stressed the role that her father played in supporting her passion for competing in this blind sport by driving her to her practices and eventually becoming the BC team coach:

They would take me to practices twice a week and they got really interested after I (sic) got picked to go to world junior championships in 2007 and after that, the coach at the
time needed some help and so she asked my parents if they would mind giving her a hand with things.

However, Alexandria also expressed her appreciation for her teammates. She recalled feeling “very accepted” and “welcome[ed]” onto the goalball team: “I felt very accepted even though I was not very experienced yet.” Team camaraderie was also reflected in comments such as “everyone works well as a team” and “we all get along very well and we always improve at each tournament.” This last comment draws attention to the importance of peer support in Alexandria’s continued involvement in this blind sport.

**Andrew.** Andrew discussed the importance of one individual who encouraged him to continue to take part in Army Cadets, his First Sergeant. It was this person who provided Andrew with opportunities to participate in activities that many others would consider unsafe. Andrew describes how his First Sergeant adapted a firing range activity so that he could participate with the rest of his crew:

One of them was my first sergeant who got me on the firing range. I had been begging and pleading, you know, I had handled a rifle before. But the officers were reluctant to let me go. So she snuck me on. And we practiced before we were shooting, because I had been shooting before. She set up a system of how to be a spotter. So she put me out there, and what could [the other people] do now? You know, he’s already out there. And I was hitting my targets so she was really influential with my shooting. And she was also influential with my marching band to music. Marching band is like music, but it is kind of a sport because you have to get into shape. So she was influential with that.

Although there were no obvious themes drawn from the community data in this study, the experiences of each of the participants are important to note. Individually, these
narratives provide some basic information on a topic that is almost nonexistent in current research. What is available commonly examines the barriers to participation in community activities (e.g., negative attitudes of others and lack of involvement of disability-specific community organizations). In contrast, many of the individual narratives on community factors in the current study have demonstrated the existence of positive attitudes and frequent support. This alone should be grounds for further investigation.

**Interconnections**

Finally, this study sought to answer the question: Is there a meaningful interplay between the various environments that helped facilitate positive participation in physical activity by individuals who are blind or visually impaired with no identified additional disability in this study? The resulting data on interconnected factors showed no common themes across participants and among the two groups. Consequently, the following section only outlines the ways in which factors within the different environments have connected, intermingled and influenced the health-related behaviours of individual participants.

**Chantal.** Chantal’s exposure to yoga was supported by overlapping factors seen in her family, school and community settings. A recurring theme noted across Chantal’s data was the support that she received from her TVI, bringing together all three environments. Throughout her interview, Chantal reiterated how this individual helped create opportunities by gradually bringing together and connecting factors within different life settings. A good example of the relationship that the TVI helped to build between the different environments of family, school and community is evident in Chantal’s description of how she started yoga practice:

I think it happened in kind of in a weird way. My family was doing the hot Yoga and I'd never been exposed to it...but coincidentally my vision teacher was doing the same
activity at the same studio so she slowly got me involved. And then, once I really got into it, my sister and I started going together and she (my vision teacher) stopped accompanying me.

Once the relationships between the different environments were made, Chantal felt that the unified support she received from these three environments contributed to her successful involvement in yoga. She explained:

I think all of the people that you've mentioned had a positive attitude that encouraged me to continue participating in yoga classes. My (sic) family supported me and drove me to the classes, my vision teacher was always there to show me the postures, and that perfect teacher was very good about treating me like any other member of her class.

**Darren.** Darren’s successful involvement in track was also supported by overlapping factors within his family, school and community environments. However, his results revealed that family support had the largest impact on his successful involvement in physical activity. He noted, “Well, it’s hard to do anything without the support of family, so I’d say they were most important.” Darren also recalled that “family [was] involved in both community and school aspects.” At the school level, he felt that his family supported his interests, such as his desire to participate in his PE classes as any other student. He revealed:

I seem to remember not really wanting my vision teacher in P.E. (sic) because I thought it made me different from the other kids. This is another area where my parents were helpful because they made sure my teachers were comfortable working with me before I was put in their class.

At the community level, Darren noted his family’s support in his track career. He particularly emphasized the importance of the time his father took to get him to his track
practices, competitions and training. He recalled, “he gave a huge amount of his time and worked pretty hard to make sure I was able to continue.”

Overlap was also seen between the school and community settings. Darren was initially introduced to track by factors within his school environment, the school track club. As he began to get serious about the sport, he was encouraged by his TVI to train with a community track club. He commented on the importance of gaining the physical skills needed to take part in track competitions, skills that he learned from being involved in school and community track practices from very early on:

The most important thing my coach did was physically showing me how to run properly. Putting my arms in the right positions so I could understand what to do without actually seeing it. I think anyone who coaches sports will tell you that this is the age where its (sic) best to learn the basic skills of a sport so it was very helpful for me

The fact that I was able to learn the skills of proper running at such a young age was critical to my later success. Even if I hadn't come this far specifically in track, being active at that young age is so important for learning general co-ordination, and its (sic) hard or almost impossible to learn those kind of things later in life so that was very impactful on me. I am sure that if I didn't have that experience at that time I wouldn't have come close to achieving what I have. Its (sic) such a critical stage of development that if anyone isn't active it will be a major problem for them later in life.

Another overlapping factor was demonstrated by his school’s knowledge of the BC Blind Sports and Recreation association. This organization was initially introduced to Darren by his teacher of the visually impaired. However, it was the BCBSRA organization that provided him with further opportunities to participate in events such as Disability Games and later on, the
International Blind Sports Association (IBSA) World Juniors in the Czech Republic. During his senior year in high school, the BCBSRA introduced Darren to his current coach, an individual who had experience training athletes who were blind. Through this track team, Darren met experienced blind athletes who helped him further develop his skills to run at the Paralympic Games.

**Alexandria.** Alexandria’s successful involvement in goalball was also influenced by interconnected factors within her family, school and community environments. Like other participants, Alexandria’s introduction to this sport was initiated by a factor within the school environment. It was her orientation and mobility instructor who initially informed her of a goalball demo that was going take place at a local community centre. Alexandria recalled that she attended the demo, liked what she saw and decided to join this community sport. She noted:

> There was a goalball demo that some of the visually impaired students were brought to and the coach at the time was inviting anyone who wanted to join to come out to practices so a couple of us decided to do it. I tried it out and really liked it. I *(sic)* just really enjoyed it.

Alexandria’s parents also supported her involvement in goalball. They were initially indirectly involved in this activity, transporting her to the training practices and competitions. However, they became directly involved in the sport after the coach encouraged Alexandria’s father to volunteer his time to help with the team. Alexandria remembered that “the coach at the time needed some help and so she asked my parents if they would mind giving her a hand with things.” After a few months, Alexandria’s father took on the responsibility of becoming the coach of the BC goalball team.
Andrew. Although there were interconnected factors that contributed to Andrew’s successful involvement in Army Cadets, the development of the relationships between the environments differed from the other three participants. Andrew reported that he was introduced to the community activity of Army Cadets by a peer, rather than an adult, in his high school setting. He recounted that “I heard about Army Cadets and there was a guy in my school who was telling me, “just come on out...you are pretty competent...you’ll make the rest of us look better.” This interconnection between school and community via peer involvement was also noted by Andrew in the following comment:

One of the officers I found out turned out to be, I found out, my old scrimmaging partner in wrestling who crushed my hand. So I couldn’t move my fingers properly. So, he was so surprised that I saw him there. And you know, you have to say ‘hi’ to him and say ‘sir’ and stuff...but there were other less respectable names that he earned when he was on the team. So we had a bit of a rapport there. There were a lot of people that I knew from school or I had seen before.

Another difference was noted in the Andrew’s parents’ disapproval of his participation in Army Cadets and rock climbing. Ironically, this lack of approval eventually became an important factor that contributed to Andrew’s participation in Army Cadets. He confessed: “My dad who was positive during my elementary school days was very discouraging about my army cadet career.” Interestingly enough, it was this familial disapproval that, in the end, “made [him] try harder” to participate in Army Cadets. Despite this disapproval, Andrew’s father was still involved in other ways, such as driving him to other sport practices, such as wrestling and rowing. For Andrew then, the bond created between the school and community environments,
via peer support, seemed to be the strongest, while bond involving the family environment were noted more for some activities.

Although there were no obvious themes drawn from the data that examined the interconnections between the different environments, the unique relationships created in each story are important to note. Individually, they demonstrate how success, for the participants in this study, could not be created by a cookie-cutter approach. This is because each participant highlighted different aspects that led to their individual successes. Collectively, however, these unique interconnections provide us with some evidence of the importance of building relationships within different environments in order to strengthen and even fast track the road to success. The development of this bond was clearly seen through the narratives of the participants in this study. Currently, there is very little research that has examined the outcome of such types of interconnected supports, leaving a large gap in the literature and a much-needed area of study to be further explored.
Chapter 5: Discussion

Daily physical activity is an important component of healthy living (Heart and Stroke Foundation of Canada, 2008; Strong et al., 2005) and children and youth who are blind or visually impaired, like anyone, can benefit on many levels (physical, psychological, social) from taking part in a regular exercise program (Ponchillia et al., 2002). The collection of studies examining health-related habits, including physical activity behaviours, of children and youth who are blind or visually impaired is slowly expanding in number; however, there remain gaps in the research that demand continued investigation. One possible reason is that much of the existing literature has tended to examine factors that limit, rather than facilitate successful participation in physical activity. While useful, these studies emphasize one side of the story, potentially creating a misconception that participation in such activities will always be challenging for individuals with impaired vision.

The current exploratory study therefore begins with another objective. Rather than examining the barriers that impede participation, the researcher of this study sought to identify factors that facilitate the successful involvement in physical activity of school-aged children who are blind or visually impaired, with no identified additional disabilities. This study qualitatively examined the personal narratives of four physically active young adults (one active adult and three competitive athletes) who are blind, as they reflected on key childhood and youth experiences that positively influenced their participation in physical activity. Guided by the socio-ecological framework, participant narratives were focused around finding influencing factors within the family, school and community environments. Through this process, the researcher sought to map out, in detail, the individual and interconnected factors (e.g. family, teacher, peer attitudes) that influenced success within and across different environments.
Recollections of childhood and youth experiences were prompted by questions on a rating scale and responses were then explored in deeper detail in individual online narratives. Gathered data were analyzed for common themes emerging from individual stories. Results were plotted to show which of the three identified environments, and which factors within each environment, were considered important in facilitating their participation in physical activity. Factors recurring in more than one environment were examined in an attempt to identify interconnections among two or three environments.

The results suggest common themes across participant narratives indicating identifiable success factors related to family and school environments. While individual themes emerged related to the community environment, they did not recur across the participant narratives. Interconnections among the three environments were similarly evident in individual participant narratives, but no recurring themes were found for this across participant narratives. Taken as a whole, the results present a perspective of the complex web of factors that have helped craft successful experiences and foster continued participation in physical activity for the individuals in this study. The following discussion will be laid out in order of the study results. First, a general review of the important environments will be outlined. Next, a more detailed discussion on the factors found across participants and within the two groups (active adult and competitive athlete) will be evaluated. Finally, the interconnections made among the different environments will be reviewed and assessed. Implications for all results will be discussed in further detail.

**The Environments**

While all participants were found to be positively influenced by factors within each of the three environments, the results showed individual differences in the degree of importance placed on each environment. Two of the three competitive athletes, Darren and Alexandria,
emphasized factors within their family environment as underlying their continued success, while the third competitive athlete, Andrew, stressed the importance of factors within his school environment (during his elementary school years) and community environment (during his high school years). The active adult in this study, Chantal, identified factors within her school environment, in particular her TVI, as being central to her continued participation in physical activity. The data thus revealed no solid trends across participant narratives regarding the most influential of these environments for success. It does, however, provides a useful snapshot of the diversity of participant experiences, in this way “capturing the complexities of disability experiences” in the individual stories as proposed by O’Day, McLean and Killeen (2002, p. 10) and also evident in Bronfrenbrenner’s (1977) socio-ecological model.

**Family**

Parental support of participants in their choice of activity was found to be an important factor common across the participant narratives. In all cases, parents drove participants to practices or activities (yoga, track club, goalball, wrestling). Parental involvement was also seen as being important. All participants noted that their parents made efforts to participate directly in these activities: Chantal’s father took her tandem biking; Darren’s father acted as his guide runner; Alexandria’s father became her goalball coach; Andrew’s father was instrumental in teaching him basketball and fighting skills. Such positive behaviours are also associated with parental attitude toward their child’s participation in these activities. A study by Brustad (1996) found that parental enjoyment and approval of participation in sport and athletics was directly tied to levels of participation in physical activity by the children in this study. Future studies should examine the effects of parental approval on the levels of positive and successful participation in physical activity by children with impaired vision.
An unexpected finding related to parental *attitude* was seen in the case of Andrew, one of the three competitive athletes in this study. While Andrew’s parents approved of his participation in many physical activities (basketball, wrestling, rowing), they disapproved of his involvement in Air Cadets and rock climbing due to safety concerns and personal beliefs about the military. In one way, this finding affirms studies regarding disapproving parental attitudes toward their visually impaired children’s participation in physical activity. Sacks, Wolffe and Tierney (1998) found that children who were blind or visually impaired in their study tended to be sheltered by their families due to their safety concerns. Stuart et al., (2006) noted that the parents in their study had fears that their child would be injured from taking part in physical activity. In the current study, however, this disapproval was not a barrier for Andrew, who used it instead to summon the self-determination he needed to prove them wrong. It is important that future studies examine such factors that facilitate self-determining behaviours in blind athletes.

Another interesting result was that only the competitive athletes in this study spoke further about their parents’ *beliefs* that they could participate in the same life activities as a sighted child. Research on parents of sighted children has found that parental beliefs and expectations are related to their child’s involvement in physical activities (Jacobs & Eccles, 2000). Importantly, however, a study by Stuart et al., (2006) found that beliefs and expectations exhibited by parents of children who were blind or visually impaired were generally related to their child’s level of visual impairment. *Expectations* reported for parents of those children who were blind were lower than those of parents who had children with some functional vision. The findings on the parental beliefs among the competitive athletes in this study, however, indicate that these parents placed emphasis on their child’s ability, rather than limiting expectations by emphasizing their disability.
School

Childhood is an important time to develop basic physical and motor proficiency skills needed to participate more meaningfully in complex physical activity later in life (Deacon, 2001). Learning physical skills from early on is even more important for children and youth who are blind or visually impaired. Researchers who have used the competitive deficit model have shown that these children are faced with delays in acquiring motor skills due specifically to their impaired vision (Adelson & Fraiber, 1974; Bouchard & Tétrault, 2000). Since participation in physical activity requires basic locomotive abilities, developing motor skills from an early age is particularly important for this population of children.

The results of this study revealed that all participants were provided with opportunities to be taught the biomechanical skills needed to take part in physical activities during their elementary school years. One of the competitive athletes, Andrew, was quite aware of the importance of gaining these physical skills from early on:

I think anyone who coaches sports will tell you that this is the age where its (sic) best to learn the basic skills of a sport so it was very helpful for me.

The fact that I was able to learn the skills of proper running at such a young age was critical to my later success. Even if I hadn't come this far specifically in track, being active at that young age is so important for learning general co-ordination, and its hard or almost impossible to learn those kind of things later in life so that was very impactful on me. I am sure that if I didn't have that experience at that time I wouldn't have come close to achieving what I have. Its (sic) such a critical stage of development that if anyone isn't active it will be a major problem for them later in life.
This is important data in light of previous research that has found that children who are blind or visually impaired are often not provided with opportunities to learn the basic physical skills needed to take part in physical activity (Lieberman et al., 2006) due to factors such as low teacher/instructor ability, inaccessibility to specialized equipment and reduced individualized instruction (Lieberman & Houston-Wilson, 1999; Lieberman & Lepore, 1998). Future research should look more closely at the physical skill training history and experiences of blind athletes to determine if there is a relationship between early intervention and physical ability later on in life.

In this study, participants reported that the elementary school setting was a place where opportunities to participate for physical activities clearly existed. All participants in the current study believed that they were provided with opportunities to take part in physical activities, such as PE classes and school-based extracurricular activities during this time. This contradicts previous research that found that children and youth who are blind or visually impaired are often not provided with opportunities to participate in school-based physical activity, especially during their inclusive PE classes (Lieberman & Houston-Wilson, 1999; Stuart et al., 2006; Winnick, 1985). Those studies found factors such as insufficient teacher training and inability to appropriately adapt activities acting as barriers for the students in their study.

Evidence shows that inclusive PE class, with appropriate adaptations, can be highly beneficial for school-aged students who are blind or visually impaired, helping to improve fitness levels and building skills needed for daily living (Craft, 1986; Ponchillia et al., 2002). Lieberman et al. (2006) noted that when appropriate adaptations were made, the children in their study found enjoyment in participating in PE activities. The importance of participating in an inclusive PE class is evident in the personal narrative of one of the competitive athlete in the current study, Darren:
I think its (sic) important to keep in mind from a school perspective that fitness and physical activity is just as important as the academic (sic) side of things and that even though there are challenges to incorporating a blind student in to a standard P.E. course it can be done and is necessary.

Participants also commented on the adaptations made to their PE programs during their high-school years. Analysis of the data revealed that meaningful inclusion in high-school PE classes was sometimes difficult to accomplish. Participants spoke about the problems of participating in faster-paced and more competitive games in the sometimes chaotic PE environment. Darren and Alexandria further noted their PE teachers’ concern for their safety during this class.

All participants in the current study reported, however, that they were provided with more creative ways to participate in physical exercise programs. Chantal described how her PE teacher created an individualized program that she followed when she could not take part in group PE activities; Alexandria was also provided with alternate activities which she practiced with her SEA; Darren took part in a fitness-education program; and Andrew was granted PE credits through his participation in the after-school wrestling training program. This suggests that full inclusion, particularly in high school PE classes, may not always be the best solution for the participants in this study. This result forces us to look outside the “inclusive participation” ideology and consider more individualized approaches. The need for individualized adaptation is reflected in Andrew's personal narrative:

With regards to blind people, everybody is different when they are normal. You have to find really creative ways and innovative and adaptive ways to deal with each person on an individual basis. It’s not just about their conditions, it’s also about their abilities and deal with the different disabilities and abilities that they have.
In addition, all participants noted an important member within their school environment who contributed to their successes. However, Chantal, the one active adult in this study, particularly emphasized the influence that her TVI had on her successful participation in physical activity throughout her school-aged years. She noted her TVI’s dedication in gently introducing her to the physical skills that she needed to take part meaningfully in group physical activities. Whereas previous research has examined the negative effects of untrained general-education PE teachers on the education of students who are blind or visually impaired (Winnick, 1985; Lieberman & Houston-Wilson, 1999; Stuart, Lieberman & Hand, 2006), Chantal’s experience in the current study highlights the potential positive effects of a skilled and qualified teacher of the visually impaired. This teacher went beyond the role of simply helping to provide adaptations to ensure equitable access to the school-based PE curriculum; rather, by interacting with Chantal’s family and community life she functioned as an interconnection, facilitating Chantal's successful participation in all three environments.

Community

No common themes related to the community environment emerged across the participant narratives. This could be because, unlike the physical activities that are independently housed within the individual family and school environments, children and youth who take part in community activities are more likely to be influenced by factors within their neighbouring environments. In general, parents may help by funding activities and assist by driving their children to community sporting activities. Schools may be instrumental in letting children know of opportunities within the community environment. For the participants in this study, both school and family generally seemed to be involved in supporting community
practice, suggesting that interconnectivity between environments was built into the community infrastructure.

Further, the personal narrative of Darren, one of the competitive athletes, demonstrated the importance of a community-based disability-specific organization (the BCBSRA) in supporting him throughout his track career by introducing him to different opportunities and informing him of what he needed to do to race on a more competitive level. In fact, all the participants knew about this community-based organization and commented on their experiences with this organization, even if these experiences were not judged as being particularly influential to their successes. Participants spoke about the BCBSRA’s involvement in school PE classes and even in the home setting. This is important to note because it demonstrates the interconnecting role played by such an organization in helping to meet the needs of each person in their different life settings. At this time, there is very little research that has examined the positive effects of disability-specific organizations on the successful participation in physical activity from the perspective of children and youth who are blind or visually impaired and particularly blind athletes. Future research should aim to answer questions relating to training, advocacy and funding provided by organizations such as the BCBSRA, and the interconnectivity that such an organization can prompt between different environments, in helping to foster positive experiences in physical activity by this population of children.

**Interconnections**

Understanding how and why health-related behaviours start, develop and become habitual over time is a difficult but an important undertaking. This is because what drives human behaviour cannot be narrowed to a mutually exclusive set of factors. Although individual factors are important and should to be noted, they need to be further examined for the effects of their
interconnectedness. The element of disability adds yet another level of factors into this already complex web, creating a more multifaceted network of factors that drive behaviour (O’Day, McLean & Killeen, 2002).

An examination of the interconnection of factors in this study found no obvious themes across participants. Each participant noted different factors that intermingled in different environments and in different ways at different points of their childhood and youth years. For Chantal, it was a factor within her school, her TVI, who was seen interacting in all environments. However, her family was also in the background, providing support when needed. Alternatively, Darren noted his family, and later the BCBSRA as being involved, in many different settings. But factors within the school setting also played a small role by mingling in other areas of Darren’s life. Alexandria also described her family’s involvement in community activities, but also noted that her participation in goalball was initially prompted by a factor in her school environment. Andrew found that factors within his school, particularly his peers, were seen in many different environments. However, his family also played a part by driving him to some of his practices within his community and attending his competitions.

What this shows is that each individual story is different and that factors that may have influenced one participant may not be important for another. The personal direct involvement in PE class by the TVI in Chantal’s story, for example, may not have been an appropriate intervention for Darren, who noted that he did not want the TVI in his PE class because it made him feel different from his peers. Individuals involved in the health promotion therefore need to consider many factors in an individual’s life in order to help build health-related behaviours. Stokols (1996) pointed out that a socio-ecological model could help frame the complex “dynamic interplay” (p. 284) between factors observed within and between different
environments. In the current study, this dynamic interplay was visible in the ways in which the participants’ schools and families worked together to ensure that information about opportunities and access to activities were made available. Stokols (1996) also noted the importance of the personal environment, where beliefs and reasons for continued participation are housed, in contributing to continued participation in physical activity. While the personal environment as a separate category was not included in the current study, one participant, Andrew, did make comments relating to his personal reasons for his continued participation in physical activity:

Well I never want to become like certain blind people that just sit there, they exist but they are not living. That is a fear of mine. I don’t want to be like that and I don’t want to be those people that are so inactive that they lose their body and lose what you have. So I don’t want to be like that either.

Such comments provide the researcher with further insight into some of the personal factors that drive behaviour.

**Limitations of the Study**

There are three limitations that arose from the current study. First, since this study only used four participants, the results are limited to the experiences described by the participants in this study and cannot be generalized past this point. Second, the current study examined the lived experiences of young adults who are blind as they spoke about their childhood and youth experiences. Young adults were used in an attempt to reduce recall bias. However, participants were nevertheless required to rely on their memory and therefore are still subject to problems related to the recall of their experiences. Third, since the current research is an exploratory case study, the results can only serve as a basis for generating further questions for future study, rather
than drawing conclusions or making recommendations. These three limitations should be taken into account when referring to the results of this study.

**Future Research**

One objective of any exploratory case study is to generate questions for further study. The results emerging from the current research raised questions that could be asked within the family, school and community environments.

**Family.** Results from the family environment generated an important question relating to parental fears: How do parents of visually impaired children who take part in high-risk activities such as rock climbing, mountaineering or downhill skiing deal with their fears relating to safety concerns?

**School.** Questions that emerged from the school environment related specifically to the role of the TVI: Can the specialized training and skills of the TVI be used to help build health-related behaviours in children and youth who are blind or visually impaired? What role does the TVI play in the lives of students who are already successfully involved in daily physical activity?

**Community/Interconnections.** Factors seen in the community environment surfaced questions related to the BCBSRA: To foster interconnections to and from the community environment, how do disability-specific organizations such as the BCBSRA facilitate successful participation through training of family members, teachers and community staff? How many such organizations exist?

**Physical environment.** To address one of the participant limitations of this study (all participants resided in metropolitan areas), what are the effects of rural versus urban lifestyles on the development of health-related behaviours in children with visual impairments? What
differences exist in the types of available supports, accessibility options, qualified staff and family attitudes toward physical activity between these two settings?

Conclusion

An important element, of this study rests in the alternative perspective taken by the researcher. Instead of examining barriers, this study explored facilitators. By taking this standpoint, the researcher aimed to remind the reader that there are, indeed, individuals who have been successful and that we can learn from studying how and why these individuals developed into competitive athletes or active adults. Further, this perspective adds another more positive side to a story that is currently dominated by research that focuses on the negative by looking at barriers.

According to the participants in this study, however, it seems like the key to successful involvement in physical activity could be found in the types of supports they got within and between the different environments. What this tells us is that the interconnected supports experienced by each participant were important in contributing to overall successes. This result suggests the importance of maximizing available resources (parents, the TVI, the BCBSRA) and encouraging interconnected supports in order to strengthen the bonds and build capacity among factors within the different environments. Taken as a whole, this study provides a useful snapshot of successful personal narratives of the four young adults in this study. The results of this exploratory case study should be seen as groundwork for future research or as a stepping stone for further investigation on the causes of successful participation by this population of children and youth.
References


Appendix A: BREB Certificate of Approval

The University of British Columbia
Office of Research Services
Behavioural Research Ethics Board
Suite 102, 6190 Agronomy Road,
Vancouver, B.C. V6T 1Z3

CERTIFICATE OF APPROVAL - MINIMAL RISK

<table>
<thead>
<tr>
<th>PRINCIPAL INVESTIGATOR:</th>
<th>INSTITUTION / DEPARTMENT:</th>
<th>UBC BREB NUMBER:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cay Holbrook</td>
<td>UBC/Education/Educational &amp; Counselling Psychology, and Special Education</td>
<td>H09-00774</td>
</tr>
</tbody>
</table>

INSTITUTION(S) WHERE RESEARCH WILL BE CARRIED OUT:

<table>
<thead>
<tr>
<th>Institution</th>
<th>Site</th>
</tr>
</thead>
<tbody>
<tr>
<td>UBC</td>
<td>Vancouver (excludes UBC Hospital)</td>
</tr>
</tbody>
</table>

Other locations where the research will be conducted:
As this case study research project will rely on internet text-chat methods for obtaining information and data, the researcher will be conducting this study from her own home. Subjects in this study can participate in this research from anywhere within the province of British Columbia, as long as they have access to on-line text-chat services.

CO-INVESTIGATOR(S):
Sofeya Devji

SPONSORING AGENCIES:
N/A

PROJECT TITLE:
Examining the Factors that Influence Participation in Physical Activity of Children and Youth who are Blind or Visually Impaired: A Retrospective Study

CERTIFICATE EXPIRY DATE: January 19, 2011

DOCUMENTS INCLUDED IN THIS APPROVAL:  

<table>
<thead>
<tr>
<th>Document Name</th>
<th>Version</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consent Forms:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Appendix C2: Secondary Participant Consent Form</td>
<td>1</td>
<td>November 22, 2009</td>
</tr>
<tr>
<td>Appendix C1: Primary Participant Consent Form</td>
<td>3</td>
<td>January 7, 2010</td>
</tr>
<tr>
<td>Advertisements:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Appendix B: Call for Participants</td>
<td>2</td>
<td>January 7, 2010</td>
</tr>
<tr>
<td>Appendix A: Initial Letter from BC Blind Sports and Recreation Association</td>
<td>1</td>
<td>November 22, 2009</td>
</tr>
<tr>
<td>Questionnaire, Questionnaire Cover Letter, Tests:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Appendix E: Primary Participant Questionnaire</td>
<td>1</td>
<td>November 22, 2009</td>
</tr>
<tr>
<td>Appendix F: Practice Chat</td>
<td>1</td>
<td>November 22, 2009</td>
</tr>
<tr>
<td>Appendix D: Demographic Form</td>
<td>1</td>
<td>November 22, 2009</td>
</tr>
</tbody>
</table>
The application for ethical review and the document(s) listed above have been reviewed and the procedures were found to be acceptable on ethical grounds for research involving human subjects.

Approval is issued on behalf of the Behavioural Research Ethics Board and signed electronically by one of the following:

- Dr. M. Judith Lynam, Chair
- Dr. Ken Craig, Chair
- Dr. Jim Rupert, Associate Chair
- Dr. Laurie Ford, Associate Chair
- Dr. Anita Ho, Associate Chair
Appendix B: BCBSRA Permission Letter

November 30, 2009

Dear Dr. Cay Holbrook and Ms. Sofeya Devji

We at BC Blind Sports and Recreation Association (BCBSRA), are happy to support you in your research project, "Examining the Factors that Influence Successful Participation in Habitual Physical Activity by Children and Youth who are Blind or Visually Impaired: a Retrospective Study".

We understand that our role in this project will be in the recruitment of applicants and BCBSRA agrees to distribute an on-line flyer to eligible participants in our directory.

As well, we will be pleased to provide you with any secondary information from our archives, such as newspaper articles, if the participant consents to have this information released to you for study purposes.

Please do not hesitate to contact us if you have any further questions.

We wish you all the success in your research project.

Sincerely,

Executive Director
BC Blind Sports and Recreation Association
Appendix C: Online Flyer

Dear BC Blind Sports and Recreation Association Member.

We are writing to inform you of an exciting study initiated by a current UBC graduate student, Sofeya Devji. The aim of this study is to investigate the factors that influenced the successful participation in regular physical activity during the school-aged years of young adults who are blind or visually impaired. Study participants will be asked to reflect back on their physical activity experiences as they progressed through elementary, middle and high school.

As supporters of this research project, BC Blind Sports and Recreation Association is currently involved in facilitating the study’s recruitment process. At this time, we are formerly contacting potential suitable applicants to take part in this study. We feel that your participation in this study would provide the valuable and much needed information in this small area of study.

While you have been personally contacted to participate in this research project, please understand that you are not in any way obliged to take part in this study. However, if you are interested in finding out more about the study purpose and process, we urge you to refer to the attached document. If you are interested in taking part in this study, please contact the researcher, Sofeya Devji at: xxx.physicalactivity@xxxxx.com

Thank you for your time,

Jane D Blaine
Executive Director
BC Blind Sports and Recreation Association
Appendix D: Primary Participant Consent Form

The University of British Columbia
Department of Educational Psychology and Special Education

Appendix D
Primary Participant Consent Form

Factors that Influence Participation in Habitual Physical Activity by Individuals who are Blind or Visually Impaired

Study Rationale and Consent Form

Title: Exploring the factors that influenced participation in sport, athletics and recreation by young active adults and elite athletes who are blind or visually impaired, during their school-age years: a retrospective case study

Principal Investigator: Dr. Cay Holbrook, Associate Professor
Educational and Counselling Psychology and Special Education, University of British Columbia (UBC), xxx-xxx-xxxx, xxxxxxxxxxx@xxx.ca.

Co-Investigator: Ms. Sofeya Devji, MA Student, Department of Educational Psychology and Special Education, UBC.

Dear Participant:
You have been selected to participate in a new study that explores the factors that influence successful participation in physical activity. Your personal experiences will help identify these factors and guide us to understand how and why these factors influenced your success. In addition, the information gained from your participation will guide future interventions in this small field of study.

This research project is part of the completion of a graduate degree from the department of educational psychology and special education at the University of British Columbia (UBC). Information gained through this study will be documented in a final Master’s thesis and will be made available as a semi-public document through UBC.

Purpose of Study:
Children and youth who are blind or visually impaired successfully participate in regular physical activities in many different ways. While some are effectively integrated into their school
physical education classes, others find success through participating in family recreation or community sports and athletics. Much of the current research in this area of study looks at barriers to participation rather than the factors that influenced successful participation in habitual physical activity. Understanding what factors influence success is just as important for developing interventions to foster participation in physical activity for children and youth who are blind or visually impaired.

The purpose of this study is to explore the factors that influenced successful participation in sport, athletics and recreation of young adults who are blind or visually impaired. The study will ask the participants to reflect back to identify successful experiences that occurred during their elementary and high school years. The aim of this project is to find common themes that influence success in order to guide current and future interventions.

**Study Procedure:**
You will be asked to participate in this study in the following ways.

*Phase 1-PreStudy:* You will be emailed and electronic copy of a demographic information form that will require you to answer some general questions about yourself, such as age, sex and activity level. The returned demographic forms will be reviewed by the researchers for diversity and four participants will be chosen to continue on in the study. Demographic information for those subjects that are not included in the study will be shredded and destroyed.

*Phase 2 – Questionnaire:* The chosen participants will be required to complete an on-line questionnaire.

*Phase 3-On-line Practice Chat:* This study will require subjects to participate in an interview using one of the following on-line chat services: Google or Skype. Before the interview, you will be asked to participate in an on-line practice chat session to work out any technology issues that may arise. The practice chat will be no longer than 20 minutes. Discussions during the practice chat will not relate to the study.

*Phase 4-Interview:* You will take part in an interview using the on-line chat service of your choice. The interviewer will ask 12 open-ended questions; however, additional, more specific, questions may arise from the on-line discussions. The interview may take up to 3 hours to complete. Upon your approval, you may be contacted for one more interview if the first is interrupted or extra clarification is needed from the previous interview.
**Phase 5-Content Validity Check:** Transcripts from the online chat will be saved in the researchers’ computer database and will not be distributed. The computer will be non-networked and password protected. The transcripts from the interview text-chat will be placed into different emerging themes that arise from the study. You will be asked to read your individual themed answers to ensure that it is correct.

**Phase 6-End of Research Contact:** You will be contacted at the end of the study and provided with a summary of the results.

**Time Allotment:**
You will be asked to provide at the most, 6 and half hours of your time to this study.

Up to 40 minutes - to read over and complete consent forms

Up to 30 minutes – completion of demographic form

Up to 30 minutes – completion of study questionnaire

Up to 30 minutes - practice text-chat session

Up to 180 minutes- study text-chat session

Up to 30 minutes - for additional chat time if more in-depth quires are needed

Up to 60 minutes - to look over themed answers

**Secondary Information:** For validity and reliability purposes, participation in this study will require you to identify a person in your life that would be able to verify your successful experiences during your school-aged years. This person may be a parent, a previous teacher, close family friend or other individual. Additional information, such as awards, medals, newspaper write-ups or any other secondary piece of information may be requested directly from you or from the document archives located at BC Blind Sports and Recreation Association.

**Confidentiality:** You will be interviewed using one of the following electronic text-chat methods: Google or Skype. All interviews will be conducted in a private on-line space with text conversations taking place only between the researcher and individual participant. To increase confidentiality, Skype and Google use advanced encryption safeguards and digital signatures to protect their users from unauthorized access by an unknown third party. While steps will be taken to try to ensure participant privacy, confidentiality cannot be assured due to the nature of on-line research. Despite the safeguards in place, it may still be possible for unauthorized persons to access and intercept the information generated through the on-line chat interview.

**Anonymity:** As this is a case study, the power of the results will be derived from your answers. This means that some of your transcriptions will be embedded, verbatim, within the text of the study report. While your name will not be used in the study report, anonymity cannot be assured.
with this type of study. As individuals who are blind or visually impaired make up a small portion of the population in BC, participant identification may be revealed to some readers of the final report, especially in cases where the participant is known in their local, provincial or national levels in their sporting area.

**Contact for Information about the study:**
If you have any questions about this study, you may contact the researchers directly either through email or phone.

*Primary Researcher:* Dr. Cay Holbrook at xxx-xxx-xxxx or xxx.xxxxxxxx@xxx.xx

Secondary Researcher: Ms. Sofeya Devji at xxx-xxx-xxxx or xxx.physicalactivity@xxxxx.com

**Contact for concerns about the rights of research subjects:**
If you have any concerns about your treatment or rights as a research subject, you may contact the Research Subject Information Line at the UBC Office of Research Services at 604-822-8598.

**Consent:**
Your participation in this study is entirely voluntary and you may refuse to participate or withdraw from the study at any time without any ramifications. If you wish to participate in this study, you will be required to sign this consent form and send it back to the Co-Researcher, Sofeya Devji within a week.

Sofeya Devji
xx, xxx
xxxxxx xxxx, BC
xxx xxx

Your signature below indicates that you have received a copy of this consent form for your own records. Your signature indicates that you understand the conditions of this research project and consent to participate in this study.

_________________________  ______________________
Subject Signature              Date

_________________________
Printed Name of the Subject
Appendix E: Secondary Participant Consent Form

The University of British Columbia
Department of Educational Psychology and Special Education

Factors that Influence Participation in Habitual Physical Activity by Individuals who are Blind or Visually Impaired

Title: Exploring the factors that influenced participation in sport, athletics and recreation by young active adults and elite athletes who are blind or visually impaired, during their school-age years: a retrospective case study

Principal Investigator: Dr. Cay Holbrook, Associate Professor
Educational and Counselling Psychology and Special Education, University of British Columbia (UBC), xxx-xxx-xxxx, xxx.xxxxxxxx@xxx.ca.

Co-Investigator: Ms. Sofeya Devji, MA Student, Department of Educational Psychology and Special Education, UBC.

Dear Participant:
You have been selected, as secondary participant, to take part in a new study that explores the factors that influence successful participation in physical activity by children and youth who are blind or visually impaired. Your participation in this study will allow the researcher to verify information gathered from the primary participant.

This research project is part of the completion of a graduate degree from the department of educational psychology and special education at the University of British Columbia (UBC). Information gained through this study will be documented in a final Master’s thesis and will be made available as a semi-public document through UBC.

Purpose of Study:
Children and youth who are blind or visually impaired successfully participate in regular physical activities in many different ways. While some are effectively integrated into their school physical education classes, others find success through participating in family recreation or community sports and athletics. Much of the current research in this area of study looks at barriers to participation rather than the factors that influenced successful participation in habitual physical activity. Understanding what factors influence success is just as important for
developing interventions to foster participation in physical activity for children and youth who are blind or visually impaired

The purpose of this study is to explore the factors that influenced successful participation in sport, athletics and recreation of young adults who are blind or visually impaired. The study will ask the participants to reflect back to identify successful experiences that occurred during their elementary and high school years. The aim of this project is to find common themes that influence success in order to guide current and future interventions.

**Study Procedure:**
You will be asked to participate in this study in the following ways.

1. You will be provided with a study questionnaire that relates specifically to what you remember about the physical activity characteristics of the primary study participant. This questionnaire will be delivered in your choice of information access: electronic copy through email or hard copy - Canada Post. You will be given one week to complete this short questionnaire and send it back to the researchers.

2. You will be required to participate in a short interview with the researcher. During this interview, you will be asked to answer specific questions about the identified factors that contributed to the successful participation in physical activity by the primary participant in this study. This interview will be completed in your choice of access: internet text-chat interview or phone interview.

**Time Allotment:**
You will be asked to provide at the most, 2-and-a-half hours of your time to this study.

- Up to 40 minutes - to read over and complete consent forms
- Up to 40 minutes – completion of study questionnaire
- Up to 60 minutes – completion of study interview

**Confidentiality:**
The study questionnaire and transcriptions from interviews will not be distributed. As this is a case study, the power of the results will be derived from your answers. This means that some of your transcriptions will be embedded, verbatim, within the text of the study report. Your name will not be documented in the final study write-up. Information will be saved in hard-copy format in a locked office drawer at the University of British Columbia.

**Contact for Information about the study:**
If you have any questions about this study, you may contact the researchers directly either through email or phone.
Primary Researcher: Dr. Cay Holbrook at xxx-xxx-xxxx or xxx.xxxxxxxx@xxx.ca.

Secondary Researcher: Ms. Sofeya Devji at xxx-xxx-xxxx or xxx.physicalactivity@xxxxx.xxx

Contact for concerns about the rights of research subjects:
If you have any concerns about your treatment or rights as a research subject, you may contact the Research Subject Information Line at the UBC Office of Research Services at 604-822-8598.

Consent:
Your participation in this study is entirely voluntary and you may refuse to participate or withdraw from the study at any time without any ramifications. If you wish to participate in this study, you will be required to sign this consent form and send it back to the Co-Researcher, Sofeya Devji within a week.

Sofeya Devji
xx, xxx
xxxxxx xxxx, BC
xxx xxx

Your signature below indicates that you have received a copy of this consent form for your own records.

Your signature indicates that you consent to participate in this study.

____________________________________________________
Subject Signature Date

____________________________________________________
Printed Name of the Subject
Appendix F: Demographic Data Sheet

UBC Department of Educational Psychology and Special Education

Name:
Email address:
Province:

Age:
Gender:

General Information:
1. Did you graduate from a high school in British Columbia? (Yes/No)

2. In what year did you graduate from high school?

3. Did you attend a school in a rural setting for at least five consecutive years of your school-aged years?

Information about Physical Activity Levels:
1. Do you consider yourself to be a physically active adult? If so, what types of physical activities do you currently participate in?

2. How many days a week do you currently participate in physical activity?

3. Approximately how many minutes per session do you spend participating in your physical activity (e.g. 30 minutes per session).

4. Do you or have you consider yourself to be an athlete (someone who competes in provincial, national and/or international sporting events)? If so, in what sport?
   a. Please provide information about the any provincial, national and international competitions that you have or currently are going to be participating in.
   b. Please provide information about any awards, medals, certificates, news paper clippings pertaining to your sporting event.
5. Do you know of a family member, teacher or community member that would be willing to be contacted to verify your successful participation in physical activity during your school-aged years? (Yes or No).
   a. What category would this person fall into:
      i. Family member, such as mother, father, siblings or extended family
      ii. School member, such as teacher or other school staff members
      iii. Community member, such as staff at community gyms or recreational clubs.

Information about your Visual Acuity:
1. What is your current level of visual acuity?
2. Has your visual acuity changed since you attended elementary school? If so, what was your approximate visual acuity level during your elementary school years?
3. Has your visual acuity changed since you attended high school? If so, what was your approximate visual acuity level during your high school years?

Information about your Comfort Level in using Technology:
1. What is your level of computer and internet comfort? (not comfortable, somewhat comfortable, extremely comfortable).
2. Do you currently or have you ever used on-line text chat services, such as MSN or Skype? If so, please provide the name of the chat service that you have used.
2. What is your level of comfort with using on-line text chat services? (not comfortable, somewhat comfortable, extremely comfortable).

Information about you preferred accessible format:
   If you are chosen for this study, you will be required to sign a consent form indicating that you clearly understand and accept the conditions of this study. This document will be made available in your preferred accessible format: electronic copy, large print hard copy or Braille. Please state your preference below.
Thank you for filling out this demographic questionnaire. Your time is much appreciated. In order to progress to the next part of the study, please be so kind as to email your completed demographic form to Sofeya Devji, Co-researcher at the University of British Columbia at xxx.physicalactivity@xxxx.xxx

Thank you for your time.
Appendix G: Rating Scale Primary Participant Questionnaire

The University of British Columbia
Department of Educational Psychology and Special Education

Dear Participant,

Thank you for taking your time to complete this short questionnaire.

The following questions are related to your personal experiences of the environments and factors within those environments that may have influenced your on-going participation in physical activity during your school-age years.

There are four parts to this rating scale questionnaire. Each part will ask you specific questions about your experiences within different environments: family, school and community. Part 1 will ask you to rate the extent to which each environment influenced you to participate in regular physical activity. Parts 2, 3 and 4 will ask you to rate different factors with your family, school and community environments that may have influenced your participation. Most questions will require you to rate your experiences using a 4-point numbered rating scale. However, you may add additional information that you feel may have been missed by the questionnaire.

You have one week, from the date that you received this document, to answer the questions. Completed questionnaires should be saved on your computer and emailed back to the Sofeya Devji at xxx.physicalactivity@xxxx.xxxx

Your participation in this study is much appreciated.

Part 1a: Influential Environments – Elementary School Experiences

To what extent did your family influence your successful participation in regular physical activity during your elementary years?
1 (extremely influential), 2 (very influential), 3 (not very influential), 4 (not at all influential).

To what extent did your school influence your successful participation in regular physical activity during your elementary years?
1 (extremely influential), 2 (very influential), 3 (not very influential), 4 (not at all influential).
To what extent did your community influence your successful participation in regular physical activity during your elementary year?
1 (extremely influential), 2 (very influential), 3 (not very influential), 4 (not at all influential).

**Part 1b: Influential Environment – High School Experiences**

To what extent did your family influence your successful participation in regular physical activity during your high school years?
1 (extremely influential), 2 (very influential), 3 (not very influential), 4 (not at all influential).

To what extent did your school influence your successful participation in regular physical activity during your high school years?
1 (extremely influential), 2 (very influential), 3 (not very influential), 4 (not at all influential).

To what extent did your community influence your successful participation in regular physical activity during your high school year?
1 (extremely influential), 2 (very influential), 3 (not very influential), 4 (not at all influential).

Are there any additional environments that may have influenced your successful participation in your on-going involvement in sport, athletics and recreation? If so, please describe.

**Part 2: Family Factors**

To what extent did you participate in recreational activities with your family? 1 (extremely often), 1 (very often), 3 (not very often), 4 (not often at all).

To what extent did your parents participate in physical activity, such as going to the gym, going for a run or attending fitness class?
1 (extremely often), 2 (very often), 3 (not very often), 4 (not at all).

To what extent did your family support your sport, athletics or recreational activities?
1 (extremely often), 2 (very often), 3 (not very often), 4 (not at all).
To what extent did your family make physical activities accessible to you (i.e. practicing skills with you, providing ways for you to get to your activity site, purchasing equipment for you).
1(extremely accessible), 2(often accessible), 3 (not very accessible), 4 (not at all accessible).

To what extent did your family connect with school personnel to help create successful experiences in your physical activity experiences at school?
1(extremely often), 2(very often), 3 (not very often), 5 (not at all).

To what extent did your family connect with community personnel, such as CNIB, BC Blind Sports or disabled ski, swimming or other sport, to help create successful experiences for you?
1(extremely often), 2(very often), 3 (not very often), 5 (not at all)

Are there any additional factors within your family environment that may have contributed to your successful on-going participation in sport, athletics and recreation? If so, please describe.

**Part 3: School Factors**

To what extent did you participate in sport, athletics or recreational activities:
   a. within your elementary school?
      1(extremely often), 2(very often), 3 (not very often), 4 (not at all )
   b. within you high school?
      1(extremely often), 2(very often), 3 (not very often), 4 (not at all )

To what extent did teachers display a positive attitude toward your participation in physical activity?
   a. within your elementary school?
      1(extremely positive), 2(very positive), 3 (not very positive), 4 (not positive at all)
   b. within your high school?
   c. 1(extremely positive), 2(very positive), 3 (not very positive), 4 (not positive at all)

To what extent did your peers display a positive attitude toward your participation in sport, athletics and recreation within your school environment?
To what extent were you involved in physical education class:
   a. Within your elementary school-aged years?
      1(extremely often), 2(very often), 3 (not very often), 4 (not at all )
   b. Within your high school?
      1(extremely often), 2(very often), 3 (not very often), 4 (not at all )

To what extent where physical activities, such as physical education, sports days, recreational field trips, such as skiing and hiking, accessible to you at school:
   a. within your elementary years?
      1(extremely often), 2(very often), 3 (not very often), 4 (not often at all)
   b. Within your high school?
      1 (extremely often), 2(very often), 3 (not very often), 4 (not often at all)

To what extent did you participate in other areas of the expanded core curriculum, such as orientation and mobility, during your physical education time:
   a. in elementary school?
      1 (extremely often), 2 (somewhat often), 3 (not at all often), 4 (not at all)
   b. in high school?
      1 (extremely often), 2 (somewhat often), 3 (not at all often), 4 (not at all)

To what extent did your school connect you to community sports, athletics and recreational opportunities outside the school environment:
   a. during elementary school?
      1(extremely often), 2(very often), 3 (not very often), 4 (not at all)
   b. during high school?
      1(extremely often), 2(very often), 3 (not very often), 4 (not at all)

Are there any other factors, not included in this questionnaire, that may have contributed to your successful participation in sport, athletics and recreation within your school environment? Please describe.

Part 4: Community Factors

To what extent did you participate in sport, athletics and recreation within your community during:
   a. your elementary school years?
b. your high school years?
1(extrremely often), 2(very often), 3 (not very often), 4 (not at all)

To what extent were your successful experiences influenced by CNIB?
1(extrremely influential), 2(very influential), 3 (not very influential), 4 (not influential at all )

To what extent were your successful experiences influenced by BC Blind Sports and Recreation?
1(extrremely influential), 2(very influential), 3 (not very influential), 4 (not influential at all )

To what extent were your successful experiences influenced by recreational clubs, such as community fitness centres?
1(extrremely influential), 2(very influential), 4 (not very influential), 4 (not influential at all).

To what extent were your successful experiences influenced by your family’s involvement in community recreation?
1(extrremely influential), 2(very influential), 3 (not very influential), 4 (not influential at all).

To what extent did adult community members display a positive attitude toward your participation in sport athletics and recreation within the community environment?
1(extrremely positive), 2(very positive), 3 (not very positive), 4 (not positive at all)

To what extent did peers within your community display a positive attitude toward your participation in sport athletics and recreation within the community environment?
1(extrremely positive), 2(very positive), 3 (not very positive), 4 (not positive at all)

To what extent were community sport, athletics and recreational activities made accessible to you?
1(extrremely often), 2(very often), 3 (not very often), 4 (not often at all).

Are there any additional factors that may have influenced your participation in on-going physical activity through sport, athletics and recreation within your community? Please Describe.
Thank you for completing this questionnaire. Please save this document and email it back to the Sofeya Devji at xxx.physicalactivity@xxxxx.xxx
Appendix H: Primary Participant Interview Questions

Interview Questions for Primary Participants

Freedom of consent protocol Script:
“Thank you for taking the time participate in this interview. Before we start, I want to remind you of your rights in this study.”

1. Your participation in this study is completely voluntary and you can stop or withdraw from the study at any point without any ramifications.
2. The transcripts from this text-chat interview will be copied and saved as a Microsoft Word Document on a non-networked password-protected computer.
3. Hard copy transcripts will be kept in a locked filing cabinet at UBC.
4. Your answers will be placed into themes and you will be required to review your themed answers.
5. The study results will be reported in a thesis document. Some of your transcripts will be copied, verbatim, into the document.

Please acknowledge that you agree to the study criteria by stating typing, “I consent to participate in this study.”

Interview Questions:

You will be asked to answer 12 open-ended questions relating to their successful participation in on-going physical activity through sport, athletics and recreation.

Family:

How influential was your family in helping you successfully participate in physical activity? Why?

Specific Questions:

a. Family Recreation: Did you ever participate in recreational activities, such as skiing or hiking, with your family? What did you do? How often did you participate in these family activities? How did these recreational activities influence you? Why did they influence you?

b.
b. **Attitudes:** How supportive was your family in helping you successfully participate in physical activity at the school and/or community environments? What were some of the attitudes displayed by your family toward your participation in physical activity? How did these attitudes influence you? Why did these attitudes influence you?

c. **Person:** Who in your family supported you to participate in sport, athletics or recreation in the school and/or community environments? Why do you think they support you? How did they support you? What did this support look like? Why do you think this person was influential to your successful participation in physical activity?

d. **Overlap:** Was your family involved in your participation in physical activity at the school or community level? Why do you think that they were involved? How were they involved? How did this involvement influence your successful participation?

**Elementary School:**

1. How influential was your elementary school environment in supporting your successful participation in regular physical activity through sport, athletics and recreation? Why?

**Specific Questions**

a. **Physical Education Class:** Did you participate in physical education class? If so, how did you participate? How were activities in your PE class made accessible to you? Did you participate in all activities? If not, why did you not participate? What did you do during the time you were supposed to be in physical education class? Did your school allow you to make up your PE credit by participating in recreational activities outside of school? If so, what activities did you participate in?

b. **Person:** Was there anyone in your elementary school environment who positively influenced you to take part in physical activity? Who were they? How did they influence you? Were they involved in your participation in other environments, such as the community?

c. **Additional School Activities:** Did you participate in additional physical activities at school, such as sports days or recreational field trips, such swimming lessons? How did you do this? Who was responsible for making sure that these activities were accessible for you?
d. **Attitudes:** What were some of the teacher or peer attitudes toward your participation in physical activity at school? How did these attitudes influence you?

2. Tell me about your successful experiences in high school.

   a. **Physical Education Class:** Did you participate in physical education class? If so, how did you participate? How were activities in your PE class made accessible to you? Did you participate in all activities? If not, why did you not participate? What did you do during the time you were supposed to be in physical education class? Did your school allow you to make up your PE credit by participating in recreational activities outside of school? If so, what activities did you participate in?

   b. **Person:** Was there anyone in your elementary school environment who positively influenced you to take part in physical activity? Who were they? How did they influence you? Were they involved in your participation in other environments, such as the community?

   c. **Additional School Activities:** Did you participate in additional physical activities at school, such as sports days or recreational field trips, such as swimming lessons? How did you do this? Who was responsible for making sure that these activities were accessible for you?

   d. **Attitudes:** What were some of the teacher or peer attitudes toward your participation in physical activity at school? How did these attitudes influence you?

**Community:**

1. How influential was your community environment in helping you successfully participate in regular physical activity through sport, athletics and recreation? Why?

   **Specific Questions**

   a. **Activities:** What are some community physical activities that you participated in?

   b. **Person:** Was there anyone in this environment that positively influenced you to take part in recreational activities? Who were they? How did they
influence you? Were they involved in your participation in other environments, such as the community or family? Who helped you decide which community recreational activity to participate in? Did anyone support you during community activities? Who were they? How did they support you?

c. **Accessibility: Transportation:** How did you get to your community recreational activity? Who helped you get there?

d. **Accessibility: Equipment:** Did you need specialized equipment to participate in your community recreational activity? What were they? How accessible was this equipment made to you? Who made sure that your equipment was made accessible to you?

e. **Attitudes:** What were some of the attitudes of persons (adults and peers) in your community toward your participation in physical activity at the community level?

f. **Organization:** Were there any community organizations, such as CNIB or BC Blind Sports, which helped support your involvement in on-going participation in physical activity within your community? Who were they? How did you connect with this organization? What did they do? Was there any person that was influenced you within this organization? Who were they? What did they do? Was this organization connected to other areas of your life, such as your family or school? How did this connection influence or support your participation in physical activity?
Appendix I: Secondary Participant Interview Questions

Interview Questions for Secondary Participants

Freedom of consent protocol Script:
“Thank you for taking the time participate in this interview. Before we start, I want to remind you of your rights in this study.”

6. Your participation in this study is completely voluntary and you can stop or withdraw from the study at any point without any ramifications.
7. The transcripts from this text-chat interview will be copied and saved as a Microsoft Word Document on a non-networked password-protected computer.
8. Hard copy transcripts will be kept in a locked filing cabinet at UBC.
9. Your answers will be placed into themes and you will be required to review your themed answers.
10. The study results will be reported in a thesis document. Some of your transcripts will be copied, verbatim, into the document.

Interview Questions:

You have been chosen, by the primary participant in this study, as someone who would be able to verify information about their past experiences, as it relates to their successful participation in physical activity within the family, school and community environments. As part of this interview, you will be asked to answer 3 open-ended questions relating to the factors that may have contributed to the successful participation in physical activity by the primary participant.

Family:

How influential was the family in helping the primary participant in successfully participating in physical activity? Tell me about:
   1. Family recreation
   2. Important family members.
   3. Attitudes of family members.

Elementary School:

How influential was the elementary school environment in supporting successful participation in regular physical activity for the primary participant in this study? Comment on:
1. Physical education class  
2. Important people at school  
3. Participation in additional school activities, such as sports days  
4. Attitudes of teachers and peers.

How influential was the high school environment in supporting successful participation in regular physical activity for the primary participant in this study? Comment on:

1. Physical education class  
2. Important people at school  
3. Participation in additional school activities, such as sports days  
4. Attitudes of teachers and peers.

**Community:**

How influential was the community environment in helping to the primary participant in successfully participating in regular physical activity? Comment on:

- a. Specific activities within the community  
- b. Important people  
- c. Accessibility/Transportation  
- d. Accessibility/Equipment  
- e. Outside Organizations  
- f. Attitudes of peers
Appendix J: Darren Secondary Source Data for Competitive Athlete

PERSONAL INFORMATION
Sex: Male
Language: English
Residence: Full-time athlete

PERSONAL BEST
Canadian Track and Field Championships, Windsor, ON - Canada (200m)
Langley Pacific Invitational, Langley, BC - Canada (400m)

PAST PERFORMANCES
2009
IBSA Pan American Games, Colorado Springs, CO - USA (400m)
2009 Canadian Track and Field Championships, Toronto, ON - Canada (200m)
2009 Canadian Track and Field Championships, Toronto, ON - Canada (400m)
1st CR 24.97
53.05

2008
Paralympic Games - Heat 1, Beijing - China (400m)
Canadian Track and Field Championships, Windsor, ON - Canada (200m)
Canadian Track and Field Championships, Windsor, ON - Canada (400m)
2008 US Paralympic Championships, Tempe, AZ - USA (400m)
1st 54.01

2007
Canadian Track and Field Championships, Windsor, ON - Canada (200m)
Canadian Track and Field Championships, Windsor, ON - Canada (400m)
1st CR 24.67
59.69

2006
Langley Pacific Invitational, Langley, BC - Canada (400m)

2004
Australian National Championships, Sydney - Australia (400m)
Canadian Paralympic Championships, Edmonton, AB - Canada (200m)
Canadian Paralympic Championships, Edmonton, AB - Canada (400m)
Paralympic Games, Athens - Greece (400m)
Paralympic Trials, Sherbrooke, QC - Canada (200m)
Paralympic Trials, Sherbrooke, QC - Canada (400m)

2003
IBSA World Blind Championships, QC - Canada (200m)
IBSA World Blind Championships, QC - Canada (400m)
11th 25.45
4th 55.66

BCBSRA
Appendix K: Alexandria Secondary Source Data for Competitive Athlete


2010-07-10

Jerkicho Hill Legacy Trust Scholarship Awards

Dec 2009

On July 27th PROVI was very pleased to host a reception to honour the recipients of the 2009 Jericho Hill Legacy Trust (JHLT) Scholarship Awards. The Scholarship Awards are presented annually to one or two BC students graduating from grade 12 who have demonstrated outstanding leadership and community service. We were very pleased to have John Warren representing the JHLT board of directors present the one thousand dollar scholarship and award to this year’s recipients, Ms. Brendan Daninski.

Brendan Daninski is a graduate from the Inter-A secondary school program offered by the Surrey School District. The goals for this program include a commitment to leadership, collaborative learning and community service. He has accomplished a great deal during his high school years and is known for being a meticulous planner and problem solver. He participated in IDEAS, a Surrey School District Leadership conference and co-hosted his high school’s 2009 Remembrance Day ceremony. Brendan has also organized a variety of cultural seminars, chaired important fundraising initiatives and was a key mover and shaker in SET-BC Virtual Voices activities. Brendan has a passion for multimedia and is very skilled in web site design and development. Brendan will be continuing his education at Simon Fraser University this fall.

Alexandria has demonstrated a commitment to leadership and community involvement over her high school years. She completed her high school program at Ecole Gabrielle-Roy, a Francophone High School in Surrey. She is an accomplished scholar and is literate not only in French and English but also in Mandarin. She is a winner of the “Yes I Can” Award and was first place in the BC Provincial Chinese Mandarin Speech Contest. She was selected as a BC representative for a national youth conference in Ottawa which promotes active, ongoing living strategies and goals for Canadian youth with disabilities. She is an accomplished athlete and one of her many goals is to represent Canada as a member of the 2012 Olympic Track Team at the upcoming London Summer Games.

PROVI and SET-BC extends congratulations and best wishes to these two outstanding scholarship recipients! They are remarkable young people and we wish them all the best in all their future endeavours!
Appendix L: Andrew Secondary Source Data for Competitive Athlete

----- Original Message-----
From: Chito Ryu Yuseikan
To: Dojo Members/Friends
Sent: Tuesday, April 21, 2009 23:13
Subject: Fw. Westbank Results

Congratulations to all the participants at the Westbank Friendship tournament! Everyone did very well especially with such high caliber competition. Gurinder compiled the following results (Thanks G!):

RESULTS:
Nikita, Suada, & Nevena: 1st Team Kata
Sempai Conan: 3rd Kumite
Sempai Neil: 2nd Kata
Greg: 4th Kata; 4th Kumite
Ben: 1st Kata 2nd Kumite
Gurinder: 3rd Kumite
Nevena: 1st Kata; 1st Kumite
Suada: 2nd Kata; 2nd Kumite
Nikita 1st Kata; 1st Kumite
Omer: 1st Kata 2nd Kumite
Zachary: 2nd Kata 1st Kumite
Melissa: 2nd Kata; 2nd Kumite
Andrew 3rd Kata
Nikola: 2nd Kata 1st Kumite

TOTAL: 9 Golds, 9 Silvers, 3 Bronze = 21 Medals