QUALITY PHYSICAL ACTIVITY PARTICIPATION FOR MILITARY VETERANS WITH A PHYSICAL DISABILITY

by

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Abstract

Minimal research has explored what comprises a quality physical activity (PA) participation experience, particularly among military Veterans with a physical disability for whom evidence of the benefits of PA is growing. To address this research gap, this dissertation examines quality PA participation among military Veterans with a physical disability.

Manuscript 1 (chapter 3) explores the views of Veterans with a physical disability regarding what elements constitute a quality PA experience, and how these elements may be fostered. Eighteen Veterans with various physical disabilities and PA experiences participated in interviews. Four quality elements were identified via thematic analysis: group cohesion, challenge, having a role, and independence and choice. A further three factors (the physical and social environments, and program structure) were identified as precursors for a quality experience.

Manuscript 2 (chapter 4) explores how PA programs for Veterans with a physical disability are delivered, and how these delivery strategies link conceptually to quality participation. Interviews were conducted with program staff from three PA programs for Veterans, and program documentation collected, to develop an understanding of program delivery strategies. Four strategies with potential links to quality participation were identified through thematic analysis: foster social connections, challenge participants, tailor programs and outcomes to match participant needs, and include knowledgeable coaches and instructors.

Manuscript 3 (chapter 5) evaluates the participation of Veterans with functional impairments in PA events, and examines the relationships among quality precursors, quality elements, and participation outcomes. Results indicate that program participation did not promote long-term increases in PA indicators. However, an indicator of the quality element
belongingness mediated the relationship at particular time-points between coach interpersonal skills and three participation outcomes: family integration, PA intentions, and PA planning. These findings suggest that a quality participation experience created by coaches may positively impact the transition to civilian life, and promote efforts to engage in ongoing PA.

Overall, this dissertation contributes towards a greater depth in understanding of the experiences of Veterans with a physical disability in PA programs. The findings begin to provide a foundation for researchers and practitioners aiming to create, deliver, and promote quality PA interventions and programming for Veterans with a physical disability.
Co-Authorship

The manuscripts presented in this dissertation are the work of Celina Shirazipour. For all manuscripts, Ms. Shirazipour was responsible for: developing the research questions and the study design; developing research tools including interview guides and questionnaires; transcribing, entering, and analyzing data; and writing the manuscripts. The co-authors of the manuscripts are Dr. Alice Aiken (Chapters 3-5), Dr. Amy Latimer-Cheung (Chapters 3-5), Dr. Nick Caddick (Chapter 3), Dr. Blair Evans (Chapter 3), Dr. Kathleen Martin-Ginis (Chapter 3), and Dr. Brett Smith (Chapter 3).

Chapter 3: Understanding a quality physical activity experience: Exploring perspectives of Veterans with a physical disability. This manuscript has been published in Psychology of Sport and Exercise. Dr. Evans provided input regarding development of the interview guide, and editorial feedback on the manuscript. Dr. Caddick provided editorial feedback on the manuscript. Dr. Smith provided thorough input regarding development of the interview guide, training regarding use of the interview guide, guidance in data analysis, and provided editorial feedback on the manuscript. Dr. Aiken provided input regarding the research question and design, offered recommendations for recruitment, provided guidance in interpretation of study results, and provided editorial feedback on the manuscript. Dr. Martin Ginis provided input regarding the interview guide and interpretation of the results, and provided editorial feedback on the manuscript. Dr. Latimer-Cheung provided input regarding the research question, study design, interview guide, and interpretation of results, and provided editorial feedback on the manuscript.
Chapter 4: Exploring strategies used to deliver physical activity experiences to Veterans with a physical disability. This manuscript is currently under review at Rehabilitation Psychology. Dr. Alice Aiken provided input regarding development of the research question and study design, and will provide editorial feedback prior to journal submission. Dr. Latimer-Cheung provided input regarding the research question, study design, interview guide, interpretation of results, and provided editorial feedback on the manuscript.

Chapter 5: The role of quality participation in promoting physical activity and a successful transition to civilian life among Veterans with a physical disability. This manuscript is currently in preparation to be submitted to Archives of Physical Medicine and Rehabilitation. Dr. Alice Aiken provided input regarding development of the research question and study design. Dr. Aiken will also review the manuscript prior to journal submission. Dr. Latimer-Cheung provided input regarding the research question, study design, questionnaires, data analysis, and provided editorial feedback on the manuscript.
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List of Abbreviations

CAF: Canadian Armed Forces
ICF: International Classification of Functioning, Disability and Health
PA: Physical activity
PTSD: Post-traumatic stress disorder
SDT: Self-Determination Theory
TBI: Traumatic brain injury
UK: United Kingdom
USA: United States of America
WHO: World Health Organization
Chapter 1

Introduction

1.1 Overview and Background Information

While the number of casualties experienced by military personnel has decreased in recent conflicts, the potential for experiencing critical injuries resulting in physical disability has grown (Batts & Andrews, 2011; Brittain & Green, 2012; Munroe, 2014). One of the methods used to promote the recovery of service members and Veterans following acquisition of a physical disability is physical activity (e.g. sport and exercise; Caddick & Smith, 2014; Lundberg, Bennett, & Smith, 2011). Physical activity is promoted due to its connection to military life and identity (Green, 2013). It is also encouraged so that injured personnel may benefit from the three critical outcomes that emerge from physical activity participation post-injury: (1) physical benefits (e.g. improved physical health and functioning; Chockalingam et al., 2012; Godsell, Besemann, Heber, & Hazeldine, 2013); (2) psychological benefits (e.g. post-injury identity development; Goldberg et al., 2009); and (3) social benefits (e.g. social bonding and reintegration (Munroe, 2014; Rogers et al., in press; Sporner et al., 2009).

Knowledge of the benefits of physical activity for military personnel post-injury has led to a call for evidence-based physical activity programming for this population (Laferrier, Teodorski, & Cooper, 2015). However, to best understand how to develop physical activity programs, and promote and maintain physical activity involvement post-
injury, research within the field of military health and rehabilitation must move beyond a focus on the outcomes of physical activity. Specifically, researchers must begin to examine the concept of participation itself, and the processes that promote optimal physical activity participation experiences.

A number of concepts must be explored in order to determine optimal ways of improving and promoting positive physical activity experiences. Among the concepts that have yet be investigated when considering physical activity participation for Veterans with a physical disability, and the general adult population of individuals with a physical disability more broadly, is the concept of full participation. Individuals with a physical disability have a right to “full and effective participation” in society (United Nations Department of Public Information, 2006). Full and effective participation can be considered at two different dimensions: quantity and quality participation (Imms & Granlund, 2004).

Quantity participation focuses on the amount of activity to which individuals with a physical disability have the opportunity to access and engage in, including the frequency of participation and the total time spent involved in the activity (Imms & Granlund, 2004). Current research focusing on this dimension of participation suggests that individuals with a disability do not have equal access to the same quantity of participation opportunities, particularly within physical activity (Canadian Heritage, 2013; HRSDC, 2009; SSCHR, 2012). While quantity of participation has been easily defined and can be
calculated, knowledge of how to define or understand the concept of quality participation in the context of physical activity is lacking and leaves room for debate.

Initially, quality participation was broadly described as whether individuals with a disability are optimally and positively engaged when present during an activity (Imms & Granlund, 2014). With the aim of providing a better understanding of what constitutes quality participation, researchers have conducted investigations with the aim of developing participation frameworks that detail the meaning and elements of quality or optimal experiential experiences for individuals with a disability (Hammel et al., 2008; Heinemann et al., 2013; Moll et al., 2014). Martin Ginis and colleagues (2016) conducted a literature review aimed at identifying key experiential components of participation from these frameworks. Six elements were presented as part of the conceptualization of experiential participation (Martin Ginis et al., 2016): autonomy (i.e. independence and choice); belongingness (i.e. a sense of belonging, acceptance); challenge (i.e. the appropriate level of challenge); engagement (i.e. motivation); mastery (i.e. competence, achievement); and meaning (i.e. obtaining meaningful goals, being responsible towards others).

Martin Ginis and colleagues’ (2016) conceptualization unified many critical ideas expressed within the participation literature, including the importance of subjective perceptions of quality. However, there are gaps in knowledge which must be explored in determining the general applicability of this definition. Specifically, all literature included in the Martin Ginis and colleagues review was from the field of occupational therapy.
where the concept of quality participation has been previously examined. As a result, no research has explored the concept of quality participation for individuals with a physical disability within other contexts, including physical activity. Furthermore, the relevance of different quality elements has not been examined among different populations, including military personnel with a physical disability. A thorough understanding of the concept of quality participation necessitates further investigations within the context of physical activity for Veterans with a physical disability.

1.2 Objective of the Dissertation

The purpose of this dissertation is to begin to build an understanding of quality physical activity participation for military Veterans with a physical disability. This aim is achieved through three studies. The studies seek to understand what elements constitute a quality physical activity experience, explore how programs deliver physical activity to Veterans with a physical disability, and examine the processes through which quality elements may influence participation outcomes. The findings present a number of theoretical and practical implications for developing and delivering quality physical activity programs to military Veterans with a physical disability.

1.3 Overview of the Dissertation

This dissertation consists of a literature review, three studies, and a general discussion. The literature review provides a comprehensive and critical description of current literature in the fields of physical activity participation for military personnel with disabilities, and participation for individuals with a physical disability. Following the
literature review, three studies are presented in manuscript format. The first manuscript explores the views of Veterans with a physical disability regarding what elements constitute a quality physical activity experience, and how these elements may be fostered. The second manuscript explores existent strategies to deliver physical activity programs for Veterans with a physical disability that link conceptually to elements of quality participation and may be a means of promoting quality. The third manuscript evaluates the participation of Veterans with a physical disability in physical activity programs, and examines the relationships between quality precursors, quality elements of participation, and program outcomes. The final section of this dissertation consists of a general discussion, which presents key findings of the manuscripts and dissertation, explores strengths and limitations of the research presented, and highlights critical implications and future directions for researchers and practitioners.

1.4 References


Brittain, I., & Green, S. (2012). Disability sport is going back to its roots: Rehabilitation of military personnel receiving sudden traumatic disabilities in the twenty-first century. *Qualitative Research in Sport, Exercise, and Health, 4*(2), 244-264.


Chapter 2

Literature Review

2.1 Introduction

This chapter presents a comprehensive exploration of literature regarding physical activity participation for service members and Veterans with physical disabilities, as well as quality participation for individuals with disabilities. The chapter is divided into five sections. The first section (2.2) presents current knowledge regarding injury and disability among military service members and Veterans. Within this section, the unique challenges of disability and recovery are given a preliminary presentation, establishing why there is a need for physical activity research among this population. The second section (2.3) discusses and defines key terms and frameworks for understanding Veterans and disability, presenting the scope of the research in this dissertation. The following section (2.4) presents research conducted relating to physical activity participation for service members and Veterans with a physical disability. Particular elements discussed include current approaches to physical activity, the value of physical activity participation, and different types of physical activity participation opportunities. Section 2.5 presents the current state of research regarding participation for individuals with a physical disability. The need to understand quality participation is presented, as are current participation frameworks. Following the presentation of this information, the context narrows to focus on physical activity, particularly research conducted regarding
the topic of physical activity and quality participation. The chapter concludes with a summary (Section 2.6).

2.2 Service Members and Veterans with a Physical Disability

Improvements in general medical knowledge, early military medical responses, and military equipment have led to a decline in the number of casualties endured by military personnel in recent conflicts (Brittain & Green, 2012). Nevertheless, critical injuries are still being experienced, which may be more complex than those resulting from previous conflicts (Batts & Andrews, 2011; Munroe, 2014). The risk of disability, including multiple or co-occurring disabilities and medical conditions, from these combat injuries has grown exponentially, with risks in 2005 seven times higher than in 1980 (Bell, Schwartz, Harford, Hollander, Amoroso, 2008; Munroe, 2014). Beyond the important psychosocial and physical impact of these injuries and experiences on the individual and his or her families (Cozza et al., 2010; Koren, Norman, Cohen, Berman, & Klein, 2005; Tanielian & Jaycox, 2008; Walker, 2010), these injuries present potentially taxing health and economic burdens on the military and nation in the short- and long-term due to associated comorbidities (Songer & LaPorte, 2000). Therefore, of special interest to governments and Veteran organizations are methods of best supporting service members whose injuries have resulted in a physical disability (Brittain & Green, 2012; Douglas & Carless, 2015). This support would ideally be present during recovery, as well as while transitioning to life post-injury, and from the military into civilian life (Douglas & Carless, 2015).
While all individuals with an acquired physical disability face challenges, service members and Veterans potentially experience more complicated recovery processes compared to their non-military counterparts due to having to face the challenge of the injury while transitioning to life after deployment, and potentially transitioning to civilian life (Resnik & Allen, 2007). More specifically, the impact of a disability on physical and psychosocial behaviours and well-being (e.g. bitterness, substance abuse, isolation) may be compounded by the difficulties of these multiple life transitions (Resnik & Allen, 2007; Shay, 2002). They may also be further exacerbated by psychological and emotional conditions co-occurring alongside the physical disability, such as post-traumatic stress (Koren et al., 2005; Lundberg, Bennett, & Smith, 2011; Walker, 2010). Physical activity programs are presented as a potential way of addressing these difficulties and promoting positive well-being (Caddick & Smith, 2014; Lundberg, Bennett, & Smith, 2011). As such, there has been a call for research evidence supporting physical activity participation for service members and Veterans post-injury (Laferrier, Teodorski, & Cooper, 2015).

2.3 Definitions and Frameworks
Prior to further exploration of the literature, it is first important to define and explore the terms and frameworks that set the scope and highlight the approach to Veterans and disability taken in this dissertation.

Defining the term “Veteran”. A service member can be defined as an individual currently serving in the Armed Forces. However, a great number of ambiguities exist when aiming to understand the term “Veteran” based on country served (Dandeker,
Wessely, Iversen, & Ross, 2006). For example, the United Kingdom (UK) defines a Veteran as an individual who has undertaken paid military service for at least a day (Burdett et al., 2012), while Canada defines a Veteran as “any former member of the Canadian Armed Forces who successfully underwent basic training and is honourably released (Veteran Affairs Canada, 2015).” In other countries, the definition may be modified as the result of service in a conflict (Burdett et al., 2012), such that an individual may be labeled a ‘combat Veteran’ while still a serving member of their Armed Forces (Caddick & Smith, 2014). These differing definitions, and the way in which individuals identify themselves, may have implications for policy, and program access (Dandeker et al., 2006). This dissertation employs an inclusive definition inspired by the UK and Canadian perspectives, and previously recognized within the physical activity literature (Caddick & Smith, 2014): a Veteran is recognized as an individual who formerly served in the Armed Forces and has been discharged.

Models of disability. Multiple approaches towards disability exist, as is made evident with the presence of different models for understanding disability. The model chosen impacts the assumptions made regarding sport participation for Veterans with a physical disability, as well as the approach and tools used to explore physical activity participation (DePauw, 2000). For example, the use of different models impacts whether individuals believe that participation is a construct that can be analyzed using objective or subjective measures (Hammel et al., 2008). The most prominent models include: the
medical model, the social model, the social relational model, and the biopsychosocial model.

*The medical model.* The medical model is considered to be a disease-centered approach, and is often linked to the field of health care (Marks, 1997). According to this model, an illness or impairment is a deficit in functioning existing at the level of the individual, which requires either prevention or a cure instituted by a professional (Marks, 1997). When the problem in the body is “fixed” through symptom reduction, stabilization, or medical intervention, so is the disability (Marks, 1997). As such, the medical model presents a deficit-based approach where the individual is overlooked and is characterized in terms of his or her illness and potential limitations (Swarbrick, 2006). Furthermore, the individual with the disability is not necessarily expected to participate in care. The wellness literature suggests that this approach, which limits the involvement and voice of the individual, may be damaging to an individual’s mental health and worsen the crisis that an individual may experience upon facing health-related challenges and impairments (Swarbrick, 2006).

Some researchers suggest that an example of the medical model is the approach that the military takes to understanding and providing care to service members and Veterans with a physical disability (Green, 2013). More specifically, initial attempts at care and rehabilitation are focused on returning a service member to a pre-injured state so that he or she may return to active duty. When this aim is met, rehabilitation is considered successful; however, if the aim is not met, it may mean the end of a military career and
the view of an individual as having a ‘deficit’ or being unable to function properly within a military context (Green, 2013). This medical model approach may have negative psychosocial implications due to the way in which patients may reject or define themselves and their disability (Green, 2013).

**The social model.** The social model of disability suggests that disability exists at a societal level (i.e. it results from the interaction between an individual and the social environment; Lutz & Bowers, 2005). This model proposes that the structure of the social environment creates disadvantages and discrimination for individuals with impairments (Turner, 2001). Thus, individuals may have functional impairments but societal barriers (e.g. a lack of opportunity to participate or be equal to others due to accessibility) are responsible for turning impairment into disability (Lutz & Bowers, 2005; Marks, 1997). Proponents of this model criticize practitioners of the medical model for aiming to ‘normalize’ an individual and creating a sense of passivity and helplessness in relation to a health care professional, thus ignoring the individual and his or her needs and concerns (Marks, 1997). However, others challenge the social model by suggesting that disability cannot be solely the result of societal structures, and that it denies the physiological impact of the impairment and an individual’s psychological response to the impairment (Thomas, 1999). For example, some researchers suggest that regardless of societal actions and responses, the impairment or psychological response to impairment may cause restrictions (Thomas, 1999).
The social relational model. The social relational model was developed in response to the limitations of the medical and social models. It does not deny that participation restrictions may exist as a result of an impairment (i.e. impairment effects). However, it suggests that actual “disability” is a result of social disadvantages or restrictions on activity as well as social undermining of individuals’ psycho-emotional well-being (Thomas, 1999). Thus, the social relational model is suggested to improve upon the social model of disability by accepting the biological or physiological impact of an impairment, and recognizing psycho-emotional dimensions of well-being and disability, in addition to an awareness of structural barriers (Reeve, 2004). Psycho-emotional dimensions of well-being include (Reeve, 2004; Thomas, 1999): (a) responses to exclusion resulting from structural barriers (e.g. how an individual feels when accessible options are not present or accommodations are done in a seemingly begrudging manner that emotionally impacts an individual with an impairment); (b) social interactions (e.g. the looks or questions that might be directed towards an individual with a disability); and (c) internalized oppression (e.g. when an individual begins to accept and incorporate social perspective of disability, resulting in a sense of disempowerment). The addition of these dimensions are appreciated due to their inclusion of the identity and subjective experience of the individual with an impairment, and have resulted in the use of the social relational model being encouraged for researchers in the fields of sport and exercise (Smith & Perrier, 2013; Martin, 2013).
The biopsychosocial model. The biopsychosocial model is an approach that suggests that biological (e.g. genetic), psychological (e.g. personality), and social factors (e.g. culture, socioeconomic status) interact to create the experience of having a disability (Engel, 1977; WHO, 2001). This model differs from the medical model by acknowledging psychological and social impacts on disability, and contrasts from social perspectives of disability which place social relationships and processes at the center of understanding disability. One representation of this model is the approach to disability adopted by the World Health Organization (WHO, 2002). The World Health Organization recognizes disability as “the umbrella term for impairments, activity limitations and participant restrictions. (WHO, 2002, p. 2)” Corresponding with this view, the ICF (International Classification of Functioning, Disability and Health; WHO, 2001) defines functioning and disability as an interaction between body functions and structures (i.e. the functioning or impairment of physiological systems and anatomy of the body), activities (i.e. execution of a task by an individual) and participation (i.e. involvement in a life situation), environmental factors (i.e. the physical, social, and attitudinal climate that either obstruct or facilitate and individual’s ability to conduct his or her life), and personal factors, which are not classified in the ICF. This definition is represented in a figure developed by the ICF, illustrating the interaction between these components (see Figure 1; WHO, 2001).
Figure 1. ICF Framework (WHO, 2001)

Despite being recognized as an advancement in patient care, the biopsychosocial model, and the ICF framework which exemplifies it, are not without their critics. While the model includes an understanding that the social and physical environment may impact participation, an important limitation is the view of these factors (i.e. environmental factors) as distinct from the individual (i.e. personal factors) (Hammel et al., 2008; Heinemann et al., 2013). Further critiques include how the models may result in the use of objective or performance-based measures rather than subjective understandings of participation (Hammel et al., 2008; Heinemann et al., 2013).

Given the limitations of this model, as well as the medical and social models, and the merits of the social relational model which improve upon identified gaps, this dissertation places its understanding of disability within the social relational model. As such, disability is acknowledged as consisting of potential biological restrictions which may impede physical activity participation, social restrictions (e.g. structural or
attitudinal barriers that impact access to participation or legislation), and the impact of social processes on psycho-emotional well-being (e.g. the way in which an individual may feel isolated and disempowered by social restrictions or attitudes towards his or her participation).

2.4 Physical Activity Participation for Service Members and Veterans with a Physical Disability

Prior to injury, service members are largely young and physically fit when compared to civilians who incur a disabling injury (Benetato, 2011). Many service members demonstrate a desire to maintain active lifestyles and return to active service (Chivers, 2009; Reiber et al., 2010). As such, physical activity has been identified as an important element for recovery and long-term well-being (Chockalingam, Thomas, & Duval, 2012). Emphasis is placed on physical activity due to its links to the military identity held by service members and Veterans with injuries (Green, 2013), in which fitness and a high level of physical activity are viewed as separating military personnel from their civilian counterparts (Brittain & Green, 2012). For those individuals who wish to return to service, physical activity provides a way of meeting operational standards to return to duty. For those who do not wish to return or are not permitted to return to duty, physical activity provides an opportunity to discover new possibilities and develop a new identity post-injury (Goldberg et al., 2009).

The modern usage of physical activity for military personnel post-injury has its genesis in World War II and the work of Dr. Ludwig Guttmann (Brittain & Green, 2012).
Prior to this time period, individuals with spinal cord injuries were not expected to survive beyond a few years post-injury (Brittain & Green, 2012). Dr. Guttmann recognized the need for better rehabilitation for service members injured in combat during World War II, and the ability for sport to have physiological and psychological value post-injury (Guttmann, 1976). The aim of his program was to provide hope and self-worth to patients post-injury, as well as demonstrate to society that individuals with disabilities could contribute to their society and could also achieve more than many individuals without disabilities (Anderson, 2003). The success of Dr. Guttmann’s program led to the continued use of sport in the rehabilitation of injured service members, as well as the founding of the Paralympics (Brittain & Green, 2012). The inclusion of physical activity, and particularly organized sport, as an element of recovery has continued due to a need to support service members with physical disabilities returning from current conflict (Brittain & Green, 2012).

In the United States, this approach has been recognized as successful in promoting physical activity to service members with injuries. The United States Olympic Committee (USOC) Paralympic Military and Veteran Programs reported an increase in sport participation rates of Veterans with a physical disability from 31% to 54% from 2009 to 2011 (Chockalingam et al., 2012). The Paralympic Military Program currently serves over 2000 Veteran athletes. It also aims to assist over 12000 other Veterans and service members with disabilities every year through partnerships with organizations such as Veterans Affairs and Paralyzed Veterans of America (USOC, 2013, 2016).
Partnership programs see the USOC providing grants to cover athlete development, and activities including camps, clinics and competitions throughout different regions of the country (USOC, 2013).

In Canada, the use of sport in the recovery and rehabilitation of service members and Veterans can be exemplified by the Soldier On program, as well as the Canadian Armed Forces (CAF) Physical Rehabilitation Program (Godsell, Besemann, & Sinitski, in press; see Figure 2). Soldier On, developed in 2006, is a program integrated with the Canadian Armed Forces, aiming to serve service members and Veterans with physical or mental health injuries or illnesses by creating and supporting physical activity opportunities (Soldier On, 2015). Through Soldier On, over 1300 service members and Veterans have received support and assistance either through grants to fund training and the purchase of equipment or through physical activity events such as skiing, paddling, or multisport camps (Soldier On, 2015).
Another Canadian program developed specifically for service members and Veterans with physical disabilities is the CAF Physical Rehabilitation Program, which is guided by the WHO and ICF in using a biopsychosocial approach to health and disability. Program organizers have recently presented their High-Performance Framework used to support the rehabilitation of service members with amputations (Godsell et al., in press). This framework demonstrates the program’s approach to disability and how sport is integrated with other important elements of rehabilitation (Godsell et al., in press). The framework suggests that optimal clinical outcomes are achieved through the four pillars of the CAF rehabilitation program. The first pillar, “delivery of quality, comprehensive, client-focused medical care and services,” emphasizes the provision of quality
standardized programming (e.g. proper prosthesis fitting and training) for Veterans to reach their potential. The second pillar represents “access to state-of-the-art medical equipment and technology to meet medical needs.” Here, access to advanced equipment that best meets the individual needs of military personnel is an important focus. The third pillar highlights “participation-based recreational and motivational activities accessed through Soldier On and other external partners.” This pillar acknowledges the importance of sport and recreation for reaching rehabilitative goals through mastery and developing independence. The final pillar, “collaboration with internal and external partners and stakeholders,” notes the importance of communication between different military and civilian groups in order to promote innovation and foster opportunities. An interdisciplinary team works together to implement this framework and promote recovery (Godsell et al., in press). The goal is for this team to consist of both CAF personnel and civilians so that those receiving treatment have access to civilian resources but within an environment where a military presence is maintained; thus, promoting recovery and fulfilling the desires of the military personnel receiving treatment (Godsell et al., in press).

The strengths of this framework lie in its multidisciplinary evidence-based approach towards best supporting military personnel, and the person-centered focus in which individuals are empowered to reach their goals and optimal potential. Furthermore, it presents a way in which sport can be integrated into a rehabilitation plan so as to support military personnel with amputations in achieving full and meaningful
participation following their injury. Limitations do exist, however, when considering the sport pillar. More specifically, sport is seen as a way to re-integrate individuals into meaningful participation. However, the sport participation in itself must be meaningful and of high quality to promote re-integration. Furthermore, the perspective or evidence for what constitutes meaningful sport must be based not only in the perceptions of professionals observing participation but in the subjective views and experiences of participants.

2.4.1 Benefits to Physical Activity Participation

There are three main overarching benefits to sport for service members and Veterans with injuries resulting in physical disabilities originally identified by Guttmann (1976). The first benefit is a return to physical health and the redevelopment of physical functioning. The second benefit relates to the ability of sport to improve psychological health through motivation, enjoyment, and the rediscovery of passion for physical pursuits. The third benefit was to provide individuals with physical disabilities with a platform through which they could re-integrate themselves within society. Current research supporting Dr. Guttmann’s view of the importance of sport participation for injured service members and Veterans is described next.

**Physical Benefits.** Physical benefits are consistently supported within research on rehabilitation and disability sport (Brittain & Green, 2012). For injured service members, there are demonstrated improvements to physical health by taking part in high-performance activities such as sport (Godsell, Besemann, Heber, & Hazeldine, 2013).
These improvements include decreases in the experience of chronic pain and complications, as well as improved fitness, physical functioning, and strength (Brittain & Green, 2012; Chockalingam et al., 2012). These benefits are crucial given the negative health outcomes that may result from being physically inactive. Furthermore, while not yet explored among current Veterans with a physical disability, research in the civilian population suggests that physical activity may aid in combatting secondary complications (e.g. cardiovascular disease, diabetes) that emerge as a result of a potential decrease in or avoidance of physical activity following acquisition of a disability (Martin Ginis et al., 2010).

**Psychological Benefits.** Current literature on injured service members’ sport participation with research demonstrates an increase in general well-being, beyond physical benefits such as health and fitness (Hawkins, Cory, & Crowe, 2011). More specifically, benefits are noted in terms of overall quality of life, positive affect, and psychological health among Veterans taking part in therapeutic adaptive sports and recreation programs (Lundberg et al., 2011; Sporner et al., 2009). Particularly compelling psychological benefits include results which indicate that through sport, service members and Veterans develop positive thinking skills, attitudes, and strategies, as well as a sense of direction and achievement, meaning, enjoyment, determination and inner strength (Brittain & Green, 2012; Burke & Utley, 2013; Caddick & Smith, 2014; Carless, Peacock, McKenna, & Cooke, 2013; Sporner et al., 2009). These benefits are suggested to promote self-actualization, and a positive direction for life post-injury (Brittain &
Green, 2012). Psychological benefits also may include gaining exposure to other athletes and, thus, increased inspiration and aid in building confidence for life post-injury (Green, 2013; Sporner et al., 2009). These psychological benefits are important given the many struggles that service members and Veterans may face upon recovering from an injury. These struggles may include facing an abrupt transition into civilian life or adapting to their injury, and may often result in a negative psychological state (Munroe, 2014; Resnik & Allen, 2007). Thus, sport plays a potentially important role as a coping mechanism and avenue for promoting psychological well-being.

**Social Benefits.** The social benefits that result from physical pursuits are also viewed as important elements of sport involvement, particularly given the nature of life in the military which promotes social cohesion and a strong sense of belongingness (MacCoun, 1993; MacCoun, Kier, & Belkin, 2005). For many injured service members and Veterans, the ability to reconnect with others, develop a social network, and be among other members of the armed forces are essential benefits to sport involvement (Brittain & Green, 2012; Burke & Utley, 2013; Caddick & Smith, 2014). The strong social bonds that develop during physical activity participation are suggested to be a result of shared interests and needs among participants in a military-specific physical activity program (Rogers, Loy, & Brown-Bochicchio, in press; Sporner et al., 2009). These similarities may be particularly salient when considering service members and Veterans who have experienced shared trauma and may be undergoing similar difficulties transitioning to life post-injury (Munroe, 2014; Resnik & Allen, 2007). Beyond the social
aspect of bonding amongst peers, recent research also suggests that social benefits to participation include improved relationships and reintegration with family (Munroe, 2014; Rogers et al., in press).

These social benefits are particularly crucial given the difficulties that service members and Veterans may face upon reintegrating into the community post-injury, and transitioning into civilian life (Munroe, 2014; Resnik & Allen, 2007). During this transition from service member to Veteran, challenges experienced include difficulty with interpersonal interactions and social participation, such as communication (Resnik & Allen, 2007). As a result, many service members and Veterans with injuries may chose to isolate themselves and withdraw from social activities (Resnik & Allen, 2007). These negative behavioural outcomes may impact other elements of an individual’s life including their psychological state (Munroe, 2014). Thus, the evidence that social benefits can arise from sport participation suggests that it may be an important tool in helping service members and Veterans overcome the socialization difficulties that may arise post-injury, and promoting positive experiences and emotions (Kleiber, Hutchinson, & Williams, 2002).

The mechanisms through which psychological and social benefits are achieved are beginning to be explored through both qualitative and quantitative research (Burke & Utley, 2013; Hawkins et al., 2011; Munroe, 2014). However, it is important to note when considering these findings, that researchers have not yet determined what constitutes
optimal sport participation experiences, in addition to the type of engagement, and methods of delivery, which best promote and enhance these benefits.

2.4.2 Types of Physical Activity Participation

Many of the physical exertion-based activities presented to service members and Veterans with a physical disability are labeled as “sport.” However, it is important to note that they would be better labeled as “physical activity” due to the many types of different activities that they encapsulate. In a systematic review exploring sport participation and well-being for combat Veterans with illnesses and injuries both physical and mental, Caddick and Smith (2014) identified a wide range of activities from mountain-climbing to exercise programs and leisure activities. Typically, physical activity participation options for service members and Veterans with a physical disability fall into three categories (Caddick & Smith, 2014): (1) elite and/or competitive sport; (2) therapeutic physical activity and recreation; and (3) physical challenges. Participation options are also potentially divided based on environmental context, particularly indoor and outdoor or nature-based activities (Caddick & Smith, 2014).

**Elite and/or competitive sport.** The use of competitive sport, and the promotion of high-performance or elite competition possibilities, began with the implementation of sport methods of recovery by Dr. Guttmann (Andersen, 2003; Guttmann, 1976). As the usage of sport continued, service members and Veterans with injuries were often considered as recovering athletes who must demonstrate the qualities of high-performance athletes (e.g. determination, discipline, focus, etc.) to return to high levels of
physical activity (Batts & Andrews, 2011). As such, service members and Veterans with illnesses and injuries who undertake these activities have been labeled ‘tactical athletes’ (Batts & Andrews, 2011). For those individuals who cannot return to active duty, elite or competitive sport is viewed as an opportunity to continue living a high-performance lifestyle. Many of the sport involvement opportunities at this level are tied to Paralympic programming (Brittain & Green, 2012).

Paralympic organizations are often eager to develop programs for service members and Veterans with disabilities as a method of facilitating recruitment and building Paralympic teams (Brittain & Green, 2012; Chivers, 2009). In these scenarios, service members and Veterans are viewed as promising potential Paralympians due to their experience with receiving direction, working well in group settings, and long periods of difficult training to achieve physical fitness (Brittain & Green, 2012). It is suggested that competitive sport is the type of participation most common amongst service members and Veterans with injuries and illnesses (Caddick & Smith, 2014). While a beneficial method of participation for many Veterans, caution must be employed when promoting elite or competitive sport participation to Veterans with a physical disability. For example, the focus may easily change from rehabilitation to competitive success (Shirazipour, Meehan, & Latimer-Cheung, under review). In these scenarios, Veterans at earlier stages of their recovery or those less concerned with winning, may be made to feel that their recovery has been less successful if they do not achieve competitive success. Furthermore, evidence is lacking as to the impact of sustained elite
competition on the long-term physical health and functioning of Veterans with a physical disability.

**Therapeutic physical activities and recreation.** Therapeutic recreation physical activity programs include a broad range of activities from exercise programs through to week-long sport or adventure training courses (the latter often conducted in nature with an element of risk) which aim to enhance rehabilitation, and promote recovery and skill development rather than competition (Carless et al., 2013). Recreational activities are amongst the most rapidly growing program types due to a desire to help meet the needs of service members and Veterans from recent conflicts (Lundberg et al., 2011), and the potential to include family members in recovery and healing. Researchers suggest that these activities result in many benefits including motivation, improved self-acceptance and value of life post-injury, social connection, competence, autonomy, and a return to valued pursuits or attraction new activities (Carless, 2014; Hawkins et al., 2011). Benefits to this type of physical activity include opportunities to connect with family members and other Veterans post-injury. However, limitations may exist. As with all physical activity opportunities, program staff must recognize that it may not be beneficial for all Veterans, in that some may benefit from other forms of rehabilitation or a range of different activities, as opposed to a complete focus on physical activity (Caddick & Smith, 2014; Douglas & Carless, 2015).

**Physical challenges.** Among the most publicized physical challenge activities have been those conducted by Walking with the Wounded (2016). These activities have
seen Veterans with a physical disability undertake expeditions to the North and South Poles, as well as attempt to summit Everest. Other publicized challenges have been the Row2Recovery challenges in which injured Veterans take part in the Talisker Whisky Atlantic Challenge to row 3000 miles in less than 55 days. During this latter challenge, Veterans compete against able-bodied teams to be the first to reach their destination across the Atlantic (Row2Recovery, 2016). Within the literature regarding physical activity participation for service members and Veterans with injuries, one study stands out as an example of research focused on a physical challenge (Burke & Utley, 2013). Burke and Utley (2013) explored the psychosocial responses of four male combat Veterans undertaking a 9-day climb of Mt. Kilimanjaro. The Veterans’ injuries included limb-loss, ankle and pelvis injuries, and muscle damage. The results of Burke and Utley’s qualitative research indicated that psychosocial responses to the physical challenge included self-determination (particularly seeking opportunities for mastery), the development of active coping in response to difficulties, and a reliance on social support in order to achieve their goals and be successful. Burke and Utley (2013) noted that, for participants, recovery was a result of rigorous physical activity and being able to gain knowledge of their capabilities post-injury.

Their research provided support to growing evidence of the benefits of nature-based activities and challenges. Indeed, physical challenges thus provide many benefits; however, by their nature there may be some limitations to this type of activity. For example, as a result of the difficulty of the goal and the need to work together, there may
not be opportunities to foster autonomy, considered an important element for motivating physical activity participation (Burke & Utley, 2013; Ryan, Patrick, Deci, & Williams, 2008). Furthermore, the cost of undertaking the event (both in terms of finances, as well as time training and time spent away from family) may make physical challenges inaccessible to many Veterans (Caddick & Smith, 2014). Finally, many of these activities may be considered exclusive in nature such that individuals with severe disabilities (e.g. high level spinal cord injury) may be unable to take part.

2.5 Participation

The United Nations have noted that individuals with a physical disability have a basic right to “full and effective participation and inclusion in society” (UNDPI, 2006), and full and meaningful participation remains a critical outcome of rehabilitation (Dijkers, 2010; Godsell et al., in press). However, it cannot be determined whether individuals with a disability are enjoying this basic right without knowledge of what constitutes full and effective participation. Imms and Granlund (2004) suggest that full and effective participation can be considered at two levels: quantity and quality participation.

2.5.1 Quantity of participation

Quantity of participation takes into account an individual’s amount of participation (e.g., frequency or total time spent participating in an activity; Imms & Granlund, 2014). There are currently gaps in knowledge regarding the quantity of physical participation among Veterans with a physical disability. However, it is likely
that quantity may differ during and after rehabilitation, particularly if the rehabilitation program includes physical activity. With a lack of knowledge of Veterans’ physical activity participation, researchers and practitioners can turn to the civilian population for a general understanding of rates of participation.

Research in the civilian population suggests that individuals with a disability do not enjoy access to or have the opportunities to engage in the same quantity of participation as individuals without a disability (HRSDC, 2009; SSCHR, 2012). This perspective is bolstered by evidence indicating that only 3% of Canadians with a disability participate in leisure-time physical activity compared to 52% of Canadians without a disability aged 12 and older (Canadian Heritage, 2013; Statistics Canada, 2002). Research from the United Kingdom exploring the physical activity participation of adults (defined as ages 16-59) suggests that participation rates may change depending on the type of disability (Sport England, 2002). Those with physical disabilities were least likely to have participated in at least one activity over the period of a year compared to individuals with sensory or cognitive impairments (Sport England, 2002). The quantity of participation in which individuals with a disability engage potentially also may be impacted by the perceived quality of their participation.

2.5.2 Quality participation

Whereas what constitutes quantity of participation is well understood, the definition of quality participation remains the subject of debate. A general point of agreement, however, is that quality participation can be considered as whether
individuals are optimally and positively engaged in an activity or experience, not just whether they are showing up (Imms & Granlund, 2014). Researchers are endeavouing to refine this definition by developing knowledge of how individuals with a disability view optimal participation, and using this evidence to build participation frameworks.

2.5.3 Participation frameworks

A number of participation frameworks have been presented for individuals with a physical disability, all focusing on a general understanding of participation rather than a specific context. Three prominent frameworks and conceptualizations are discussed in this section: a conceptualization for participation based on subjective experiences of individuals with disabilities (Hammel et al., 2008), the “Do-Live-Well” framework (Moll et al., 2014), and a literature review aimed at identifying key experiential components of participation (Martin Ginis, Evans, Mortenson, & Noreau, 2016).

Hammel and colleagues (2008) developed a conceptualization for participation across multiple contexts based on focus groups with individuals with disabilities. As a result, a key benefit is that their understanding is based fully in the subjective experiences of participants. Many understandings of participation emerged from the focus groups, indicating the importance of an individual being allowed to define participation for himself or herself according to context or personal values. However, despite these different understandings, a number of key values emerged across the groups (Hammel et al., 2008). These values included: (1) the importance of active and meaningful engagement (i.e. to have the freedom to be a part of an activity, context or group with no
limitations); (2) control and choice (i.e. a sense of power and agency, promoted by an autonomy-supported activity or environment; (3) access and opportunity/enfranchisement (i.e. the desire to be able to contribute, and the resulting social inclusion that results in access to resources that permit contribution, and recognition); (4) personal and societal responsibilities (i.e. individuals have a responsibility to themselves as well as a responsibility to contribute to society, while society also has an equal responsibility to support participation); (5) having an impact and supporting others (i.e. a desire to be productive and contribute at different levels of society in order to have an impact); and (6) social connection, social inclusion and membership (i.e. full participation requires full interaction with the community; Hammel et al., 2008). All of these values are founded on the need for respect and dignity so that an individual feels valued within society.

A strength of this framework is the recognition that participation results from the interaction of factors at all levels of an environment from the individual to his or her family to social relationships and the community through to policy and government. Furthermore, it begins to demonstrate how barriers and facilitators to participation impact not only access to an experience but the fulfillment of valuable engagement. Of further value is the frameworks’ general perspective based on contexts from employment to spirituality through to intimacy. However, limitations of the framework include the lack of contextual differences among individuals (e.g. culture), and diversity of rehabilitation and participation experiences among the participants. Furthermore, its applicability within a physical activity context is unknown.
Another participation framework which is beneficial to explore is the “Do-Live-Well” framework. This latter framework was developed to focus on links between the fields of occupation, health, and well-being (Moll et al., 2014). Following critical review and appraisal of the literature in these three fields, eight dimensions of an experience were highlighted. These dimensions focus on health and well-being experiences related to participation in different types of occupations. Furthermore, while the dimensions are presented and conceptualized individually, the authors note that they are related. The dimensions consist of (Moll et al., 2014): (1) activating your body, mind, and senses (i.e. regular, stimulating activity); (2) connecting with others (i.e. the importance of social integration); (3) contributing to community and society (i.e. the opportunity for prosocial engagement and to provide support); (4) taking care of yourself (i.e. maintaining healthy habits and engaging in self-care); (5) building security/prosperity (i.e. opportunities for economic and social security through engagement in meaningful activities); (6) developing and expressing identity (i.e. cultural and/or community activities that permit the development of a specific identity); (7) developing capabilities and potential (i.e. opportunities for programming and education); and (8) experiencing pleasures and joy (i.e. opportunities to enjoy engagement).

The model further highlights the relationship of the dimensions with activity patterns (i.e. what individuals do and how people engage in activities over time and space, for example, engagement, meaning, balance, control/choice, and routine) and outcomes of participation, as well as the impact of personal and social forces on the
experience. Thus, as with Hammel and colleagues’ (2008) view of participation, the range of factors that can influence the experience are highlighted. Further similarities include the activity pattern elements which mirror important aspects of participation addressed in other research including choice and control, and meaning (Hammel et al., 2008; Martin Ginis et al., 2016). A limitation, however, is the focus on occupation. Thus, even if it did apply to a physical activity context, dimensions such as “building security and prosperity” would require modification.

Martin Ginis and colleagues (2016) conducted a review of definitions of participation, including Hammel and colleagues (2008) and Moll and colleagues (2014), with the aim of identifying key experiential components of participation applicable across different contexts. Six themes resulted from this investigation and were suggested as a method of conceptualizing the subjective aspects of participation: (1) autonomy (i.e. independence, choice); (2) belongingness (i.e. having a sense of belonging, acceptance, and respect); (3) challenge (i.e. the right level of challenge); (4) engagement (i.e. feeling motivated and involved); (5) mastery (i.e. feeling competent); and (6) meaning (i.e. obtaining a goal, feeling responsible towards others). This view of quality incorporates key findings of quality that were common across various fields of research and populations (Hammel et al., 2008; Heinemann et al., 2013; Hoogsteen & Woodgate, 2010; & Moll et al., 2015). It further supports the position of other researchers exploring participation for individuals with disability, in maintaining that participation is multidimensional, includes both personal and societal considerations, and that
perceptions may differ based on the individual (Hammel et al., 2008; Heinemann et al., 2013). However, Martin Ginis and colleagues’ conceptualization differs from other understandings of participation in its focus on the experiential aspects of participation. Thus, while it acknowledges the impact of factors such as access and opportunity, it does not include these factors as elements of a quality participation experience. The main limitation to the conceptualization is that while literature was sought for inclusion across multiple fields of research, the only explorations of participation which were found were situated within the field of occupational therapy. Thus, while the aim was to develop a general conceptualization of participation, the definition, understanding, importance, or relevance of each element may differ when examined across other contexts.

The current conceptualizations of quality participation, and the elements they recognize as constituting participation present a starting point to understanding quality, and a foundation for this dissertation’s exploration of quality, but further research is necessary. For example, the relevancy of quality participation elements must be explored in different, more specific contexts, such as physical activity. Furthermore, these conceptualizations must be examined within an experimental context to determine their utility for understanding quality participation for individuals with physical disabilities, and particularly differing populations with disabilities.

2.5.4 Research on quality physical activity participation

Within physical activity contexts, researchers have aimed to understand what elements promote successful and long-term physical activity engagement and programs
among individuals without a physical disability. These attempts to understand what constitutes positive or quality experiences have been particularly present in the literature on youth sport (Fraser-Thomas, Côté, & Deakin, 2005; Turnnidge, Vierimaa, Côté, 2012). A focus on promoting positive youth development through physical activity participation has resulted in a field of research exploring methods for developing valuable and meaningful experiences, with outcomes that reach beyond physical activity to general positive development (Fraser-Thomas et al., 2005). Factors that have been identified as contributing towards the quality of youth sport experiences include (Fraser-Thomas et al., 2005): the program design, and social influences (e.g. parents, coaches).

This perspective was reinforced and further developed through extensive research and resulted in the creation of the Personal Assets Framework (Côté, Turnnidge, & Evans, 2014). The Personal Assets Framework suggests that three dynamic elements create the sport experience: “Who” or the quality of the interpersonal relationships in sport (e.g. relationships with coaches, family members, and peers); “What” or the level of personal engagement in the activity (e.g. whether experiences are diverse or specialized, and what type of participation is prioritized at different stages of development); and “Where” or the appropriate setting (e.g. an understanding of how environmental factors influence the types of activities in which an individual engages and relationships formed). Over time, these dynamic elements, moderated by the characteristics of the individual, may lead to the development of important personal assets in the field of positive youth development: competence, confidence, connection, and character. The congruency
between the dynamic elements and personal elements are then considered to impact the nature of accumulated outcomes such as continued participation, sport performance, and personal development. Within this framework, the dynamic elements and personal assets would be representative of elements that constitute quality (e.g. relationships as indicative of belongingness) and promote meaningful participation and long-term engagement.

While these prior examples were founded within research on youth without a disability, investigations have also been conducted exploring the experiences of youth with disabilities (Turnnidge et al., 2012). Among the most applicable studies is an investigation into the sport experiences of eight youth athletes with a physical disability participating in a model swim program (Turnnidge et al., 2012). Through this research, Turnnidge and colleagues developed a conceptual framework for athlete experiences, which highlighted three environmental processes which interacted and could lead to desired athletes outcomes. These three processes included: (1) the team environment (e.g. inclusivity, creating a sense of family, and parental involvement); (2) peer interactions (e.g. emotional support, facilitation of interpersonal skills, opportunities to act as a role model); and (3) coach-athlete relationships (e.g. coach has belief in athlete abilities, promotes athlete development, and guides goal setting). These three processes can also be linked to elements of quality participation, particularly belongingness which is present in the explanation of the team environment, and meaning through opportunities to be a role model in peer interactions.
While these frameworks result from the study of youth athlete experiences, they still provide key contributions when aiming to understand quality sport participation among adults with physical disabilities. Among these contributions are clearer understandings of what elements of a sport program contribute to positive sport experiences. For example, tenants of the Personal Assets Framework and Turnnidge and colleagues’ framework could directly relate to adults with a disability, with elements such as who is involved, the relationships with those involved, and the environment impacting participation. Meanwhile, other elements such as the level of personal engagement suggest caution as to when and how sport participation is introduced and maintained following acquisition of a disability. Therefore, these frameworks provide direction for determining broad areas to highlight when aiming to understand what constitutes quality sport experiences for individuals with physical disabilities.

2.5.5 Research on quality physical activity participation for Veterans with a physical disability

Within a military context, research for Veterans with a physical disability has often considered participation within the context of outcomes of participation rather than the factors that promote a quality experience. However, some researchers have aimed to explore what factors may contribute towards positive outcomes (Burke & Utley, 2013; Caddick & Smith, 2014; Jackson, 2013). These factors may potentially provide insight into what constitutes a quality experience. In their systematic review exploring the impact of physical activity on the subjective and psychological well-being of combat Veterans,
Caddick and Smith (2014) highlight the importance of factors such as active coping, and mastery and competence building experiences. Furthermore, different types of physical activity experiences were linked to outcomes, with nature-based activities being considered particularly therapeutic (Caddick & Smith, 2014). However, the specific focus on well-being and quality of life outcomes, as well as the inclusion of articles exploring Veterans with physical disabilities and/or mental health conditions (e.g. post-traumatic stress disorder; PTSD), potentially limits the generalizability of the findings to quality experiences among Veterans with a physical disability. A further limiting factor is the focus specifically on combat Veterans. Injuries experienced in combat present potentially unique implications (Resnik & Allen, 2007; Tanielian & Jaycox, 2008). As a result, the decision to focus on combat-injured Veterans means that while the results may be applied to injured Veterans, they may not be applicable to those injured outside of combat scenarios.

Looking more specifically at the articles included in the review that focus on Veterans with a physical disability, Burke and Utley’s (2013) exploration of combat veterans’ experiences climbing Mt. Kilimanjaro (also explored in section 2.4.2) highlights factors that provide further information regarding what shapes a physical activity experience for individuals with a physical disability. Through their aim to understand the psychosocial responses of Veterans completing a physical challenge, Burke and Utley (2013) highlight the relevance of the constructs of Self-Determination Theory (SDT) in understanding participant experiences (Deci & Ryan, 1985). Two of the three constructs
of SDT, competence (i.e. a need to feel a sense of achievement or mastery) and relatedness (i.e. a need to feel connected and engaged socially), were particularly salient to the physical challenge and Veteran context. Competence and relatedness were fulfilled through the presence of a challenge, and the need to work together in order to be successful in achieving the challenge. However, the extreme context of the physical activity may have impacted the needs of participants, such that the need to work together according to a strict plan to be successful limited opportunities for autonomy (the third construct of SDT). While beneficial information, the question must be raised as to the applicability of the highlighted elements within physical activity contexts such as recreational or therapeutic sport participation, as opposed to physical challenges. Furthermore, the small sample size of four participants limits the ability to generalize the findings as reflective of other Veterans’ needs and views of participation.

The final exploration within the Veteran and physical activity literature, which may provide insight into what constitutes a quality experience is a practitioner’s description of the development and delivery of a sport and adventure-based program (Jackson, 2013). Jackson’s (2013) description of a sport and adventure-based program for service members with injuries captures elements that he believes to be important based upon development and delivery of the program. His description focuses on challenges (both at the individual and team levels) to build self-efficacy and cohesion, and experiential learning for mastery experiences and future coping. These are all implemented within a context of developing meaningful experiences that allowed the
transfer of learning from the sport and adventurous training activities to daily living (Jackson, 2013). However, Jackson’s understanding of optimal experiences within sport for Veterans are limited in that they are not based in participants’ subjective understanding of what constitutes participation but rather a practitioner’s observations. It is the individual with a disability engaging in the activity who would best be able to identify what constitutes full and meaningful participation (Hammel et al., 2008).

These studies provide an indication of what elements may be important for conceptualizing quality participation for Veterans with a physical disability. However, their limitations highlight the need for further research aiming to explore and understand quality physical activity participation for this population.

2.6 Research Objectives

Physical activity participation is a method used to support the physical and psychosocial development of military Veterans with a physical disability, as well as the transition to civilian life. Research has often focused on the outcomes of Veterans’ physical activity participation following disability, highlighting the important physical, psychological and social benefits that may result. However, if physical activity programs are to be developed and maintained, and participation encouraged, participation itself must be examined. More specifically, whether Veterans are having valuable and meaningful participation experiences (i.e. quality experiences) must be considered, not just whether individuals are participating. Unfortunately, the information as to what constitutes a quality physical activity participation experience, how these experiences
may be fostered, and the impact of a quality experience is lacking. The overarching objective of this dissertation is to begin to build an understanding of quality physical activity participation for military Veterans with a physical disability by filling these key knowledge gaps. To reach this objective the dissertation has three specific aims: (1) determine what elements constitute a quality physical activity experience for Veterans with a physical disability, and how these quality elements may be fostered; (2) explore existing strategies used to deliver physical activity programs for Veterans with a disability, and how these strategies may link conceptually to elements of quality participation; and (3) evaluate the impact of a physical activity event on the physical activity participation of Veterans with a physical disability, and examine the relationships between quality precursors, quality participation elements, and program outcomes.

2.7 References

Brittain, I., & Green, S. (2012). Disability sport is going back to its roots: Rehabilitation of military personnel receiving sudden traumatic disabilities in the twenty-first century. Qualitative Research in Sport, Exercise, and Health, 4(2), 244-264.


Chapter 3

Understanding a Quality Physical Activity Experience: Exploring Perspectives of Veterans with a Physical Disability


Funding Acknowledgment: This study was supported by the Canadian Institute for Military and Veteran Health Research and Wounded Warriors Canada Doctoral Scholarship, as well as a Social Sciences and Humanities Research Council Doctoral Scholarship.
3.1 The Fit of Manuscript 1 within the Dissertation

Manuscript 1 contributes to the purpose of the dissertation by determining what elements constitute a quality physical activity experience for Veterans with a physical disability, and how these quality elements may be fostered from a Veteran’s perspective. This knowledge provides a foundation for the further exploration of quality in the second and third manuscripts.
3.2 Abstract

An important consideration for physical activity participation for individuals with a physical disability, including Veterans, is that opportunities exist for full participation in society, including physical activity. Full participation can be understood as both the quantity and quality of participation. While quantity is defined as the amount of participation, knowledge is lacking as to how individuals with a physical disability understand quality in physical activity. The objective of this study is to explore what constitutes a quality physical activity experience, particularly for military Veterans with a physical disability. A qualitative approach was undertaken to explore participants’ physical activity experiences, as well as their understandings of quality participation. Eighteen Veterans (15 men, 3 women) with a physical disability were recruited using maximum variation sampling to take part in two interviews. The interviews explored their physical activity experiences, with a focus on understanding indicators of quality. Data were analyzed using thematic analysis. Four overarching themes were identified as representing elements of a quality physical activity experience: group cohesion, challenge, having a role, and independent and choice. A further three factors (the physical and social environments, and program structure) were identified as precursors for accessing the quality experience. The findings, discussed within the context of existing participation frameworks, both support and extend previous conceptualizations of quality. They provide insight into context-specific understandings of quality for physical activity and the military. More broadly, the study contributes towards the literature on physical
activity participation, and provides a framework for practitioners aiming to foster quality physical activity experiences.
3.3 Introduction

Physical activity participation is becoming a widely used strategy to support the rehabilitation of the growing number of military Veterans with injuries resulting in disability (Brittain & Green, 2012). For many Veterans with a physical disability, participating in physical activity post-injury has physical, psychological, and social benefits (Brittain & Green, 2012; Caddick & Smith, 2014). These benefits are particularly salient given the physical, psychological, and social impact of acquiring a physical disability, compounded with the challenges of having to transition to civilian life post-injury (Resnik & Allen, 2007). Indeed, providing Veterans with the opportunity to fully participate in physical activity can be a beneficial component of rehabilitation and adjusting to life post-injury. Full physical activity participation entails having access to programs and opportunities, as well as having quality experiences within these programs (Martin Ginis, Evans, Mortenson, & Noreau, 2016). The contrast between access to physical activity (i.e., quantity) and the quality of experiences within physical activity is an important distinction. Notably, whereas access to physical activity and physical activity is often examined, there has been little systematic effort to determine what constitutes a full or quality physical activity experience among people with a physical disability, let alone among Veterans with a disability. Exploring this experiential aspect of participation will provide a framework for developing physical activity programs that aim to achieve quality participation and foster long-term engagement.
The extant research that describes and/or evaluates physical activity programs for injured Veterans points to some elements that may contribute to a quality physical activity experience. For example, in Jackson’s (2013) description of a physical activity program developed for injured service personnel (i.e. Battle Back), he highlights his goal of creating quality programs that allow participants to explore their abilities, build confidence and self-awareness, and promote enjoyment. It is nevertheless vital to recognize that Jackson’s descriptive report is the result of observations from the perspective of a program provider. Therefore, the results do not present the findings of a critical research process or centrally place the perspective of the athletes the programs are designed to serve. Research would benefit from using the subjective experiences of participants to understand quality participation rather than observations or calculations of quantity of participation (Martin Ginis et al., 2016). Caddick and Smith’s (2014) systematic review of outcomes associated with physical activity participation among Veterans with physical and/or psychological injury describes some experiential outcomes such as a renewed sense of self and feelings of confidence, enjoyment and relaxation. However, quality participation was neither the objective of Caddick and Smith’s review nor of the studies included in the review, and the focus was specific to outcomes of participation. As a result, the findings cannot aid in building a complete understanding of quality participation experiences. Moreover, the review was not exclusively focused on Veterans with a physical disability. A comprehensive exploration of the elements that
constitute a quality physical activity experience for Veterans with a physical disability is needed.

The purpose of this study is to explore views of a quality physical activity experience among Veterans with a physical disability. We aim to address the question: What constitutes a quality physical activity experience? Developing an understanding of Veterans’ perceptions of full participation moves research forward in conceptualizing full participation in physical activity. Furthermore, it provides practitioners with direction for creating programs that Veterans can access and in which they may have positive experiences, thus promoting long-term physical activity engagement.

3.4 Method

Philosophical Assumptions. The perspective of the researchers in the current study is that multiple context-dependent realities exist, and that knowledge is constructed based upon participants’ understanding of their reality. As such, this study is based ontologically in relativism, and epistemologically in constructionism. Applied to this research, we sought rich depictions of each participant’s experience, and worked to generate an understanding of quality experiences that also provided room for variations and for each participant to explore quality within his or her own terms. Although we link our results to frameworks of participation, we were nevertheless cautious to ensure that individual stories retained their context dependence.

Participants. Following receipt of ethics approval, Veteran organizations were contacted to disseminate recruitment information to their members. Participants were
included if they were military Veterans (defined as former members of the military who were no longer serving) with a physical impairment (i.e. impairment that limits physical functioning). Participants were excluded if they had sensory impairments (e.g. visual impairments), or were diagnosed with a psychological injury (e.g. post-traumatic stress disorder), as these conditions might alter program needs beyond what would be necessary to accommodate Veterans with physical functioning impairments.

Participants were recruited using maximum variation sampling to achieve a sample that could provide information to generate a comprehensive understanding of the physical activity experience post-injury. Key variations sought were: (a) country served; (b) type of injury; and (c) physical activity experience. To reach these aims, three main recruitment strategies were used. First, to include Veterans from different countries, participants were recruited from organizations in Canada, the United States of America (USA), and the United Kingdom (UK). Second, while most of the current research focuses on Veterans solely with combat injuries (e.g. Caddick & Smith, 2014; Douglas & Carless, 2015), the decision was made to include Veterans with both combat and non-combat injuries. This choice aids in increasing the long-term applicability of the results beyond periods of conflict. Furthermore, including Veterans with both combat and non-combat injuries widens the relevancy of the findings to a larger group of Veterans who access physical activity programs. Regardless of how a Veteran is injured he or she will still require support and may benefit from quality participation. Finally, to recruit participants with different types of physical activity experiences, effort was made to
recruit from organizations that provided different types of programming including recreational physical activity, competitive physical activity, and physical challenges (e.g. mountain climbing; Caddick & Smith, 2014). Recruitment was guided by data saturation (i.e. the point where no new information emerges from subsequent interviews; Sparkes & Smith, 2014). The final participant sample consisted of 18 Veterans with a physical disability (15 men, 3 women), representing the UK (n=9), USA (n=6), and Canada (n=3). Cause of participant injury included combat injuries (e.g. blast injury; n=9) and non-combat injuries (e.g. training injury, fall, sports injury; n=9). (See Table 1 for demographic information.)
<table>
<thead>
<tr>
<th>Name</th>
<th>Gender</th>
<th>Age</th>
<th>Years since injury</th>
<th>Status during Injury</th>
<th>Injury</th>
<th>Type of physical activity</th>
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<tr>
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<td>Competitive &amp; Physical challenge</td>
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<td>Active duty</td>
<td>SCI; Knee Injury; PTSD</td>
<td>Recreational</td>
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</table>

*Note.* All names are pseudonyms assigned to participants. PTSD: Post-traumatic Stress Disorder; SCI: Spinal Cord Injury; TBI: Traumatic Brain Injury. Competitive participants included experience at local, regional, national, and international levels of competition. aParticipant experienced blast injury as a Veteran, as he had volunteered to return to a conflict zone through a civilian employment opportunity.
**Procedure.** Participants took part in two interviews. During the first interview, a timeline was developed of the participant’s physical activity experiences from childhood to the present day using a structured interview format (Adriansen, 2012). This interview lasted approximately 30 minutes. Using the responses, the interviewer built a timeline of the participant’s physical activity participation, which was sent to the participant for review. Beyond establishing congruency between the participant and the interviewer, this process permitted participants to develop a deeper investment in the study through co-creation of the final timeline. The second interview ranged in duration from 50 minutes to 80 minutes, and was scheduled for one week after the first interview. This schedule was followed for all but three participants, for whom there was a delay of two weeks to one month in order to accommodate physical activity schedules. One participant requested a follow-up interview. A third 40-minute interview was conducted with this participant during which additional physical activity experiences were explored.

Due to the geographic dispersion of participants, all interviews took place via telephone ($n = 13$) or Skype ($n = 5$) according to participant preferences. While face-to-face interviews are commonly preferred for building rapport and attending to non-verbal cues (Shuy, 2002), research comparing the use of telephone and Skype interview methods with face-to-face interviews has demonstrated no differences in the resulting data (Hanna, 2012; Sturges & Hanrahan, 2004; Trier-Bieniek, 2012). Indeed, remote communication can have added benefits such as increased participant comfort and anonymity, and decreased social pressure (Sturges & Hanrahan, 2004). An interviewer can still build
rapport by communicating with the participant prior to the interview, and by dedicating
time during the interview to interact with the participant beyond the interview guide (e.g.
answer questions; Scott, 2004). Finally, the interviewer can still attend to non-verbal cues
as participant faces are visible on Skype, and cues such as pauses and changes in
intonation are present when speaking on the phone.

**The Interview Guide.** The aim of the first interview was to (a) invite participants
to begin thinking about the details of their physical activity experiences; and (b) provide
the interviewer with knowledge of the types of physical activity the participant had
experienced. Participants were asked to identify their different physical activity
experiences from childhood to the present day, as well as which physical activity
experiences post-injury were the most positive or negative to help provide a focus for
discussion in the second interview. The aim of the second interview was to explore
participants’ understandings of quality using a semi-structured approach. The interview
guide was structured around three topics suggested by the study co-authors who have
expertise in the field of disability and/or physical activity. The three section topics were:
(1) the environment (e.g., “Tell me a story describing an ideal physical activity
environment.”); (2) relationships (e.g., “How would you describe an ideal relationship in
physical activity with a coach?”); and (3) engagement (e.g., “Tell me about a time when
you considered yourself ideally involved in a physical activity activity?”).

**Data Analysis.** In the current study, responses from the first interviews were
solely used to prompt participants to discuss specific physical activity experiences in the
second interview (e.g. comparing and contrasting different environments, and
highlighting programs representing ideal or challenging experiences). The timeline
interview content was not analyzed for this report. The results of the first interview are
presented elsewhere (Shirazipour & Latimer-Cheung, 2016).

We used an inductive thematic analysis approach to identify, analyze, and
interpret patterns in the responses from the second interviews. Our approach consisted of
fluid cycling through the six phases of thematic analysis suggested by Clarke, Braun, and
Hayfield (2015). First, the lead author immersed herself in the data through continuous
re-reading of the transcripts, and making note of preliminary thoughts and patterns. She
generated initial codes from the transcripts using NVivo qualitative analysis software,
and then grouped codes into potential themes. Specifically, open codes were first created
within each interview by identifying individual meaning units representative of each
participant’s experiences. These open codes were then connected and organized into
overarching themes and sub-themes. The lead author then met and discussed the themes
with a research assistant who also had reviewed and independently coded the transcripts.
This research assistant acted as a critical friend, questioning the lead author’s themes and
assumptions to promote reflection (Sparkes & Smith, 2014). Through this discussion and
the lead author’s ongoing consultation with the full dataset to ensure that the themes
presented were meaningful representations of the data, key themes were further
developed, refined, and subsequently named. These themes were then presented to co-
authors resulting in modifications to the theme labels and organization. The analytic
process continued throughout the drafting of written reports. The reports were read by several of the co-authors who served as additional critical friends by encouraging reflection and alternate interpretations of the data.

Stemming from this feedback process, frameworks conceptualizing participation (e.g. Hammel et al., 2008; Martin Ginis et al., 2016; Moll et al., 2015) were adopted and used as interpretive devices to understand the key themes and situate them in the context of extant literature. In these reviews, the elements of participation are conceptualized for participation in general, and are not specific to physical activity. The frameworks did not affect themes but rather provided depth to each theme’s interpretation.

Quality of analysis. Aligning with our relativist approach, validity could not be supported by a set of specific quality criteria (Sparkes & Smith, 2014). Thus, criteria were chosen based upon an evolving list of quality indicators (Tracy, 2010), particularly: the worthiness of the topic; rich rigor (e.g. appropriate data collection and analysis); credibility (e.g. thick description); and meaningful coherence (e.g. compatibility between the study purpose, methods, results, and interpretation). Other steps taken to enhance quality included involving multiple critical friends throughout the research process to promote further reflection.

3.5 Results and Discussion

Elements constituting a quality physical activity experience. Four overarching themes emerged from the analysis in relation to the first research question: group cohesion, challenge, having a role, and independence and choice.
**Group Cohesion.** Participants identified positive social environments as essential for quality experiences and continued participation (“Before I was injured, I did a physical activity, I enjoyed it, but people – they were there but didn’t really mean that much to me. Whereas now I’ve got people in my environment who mean a great deal to me.” Judy). Participants most commonly described these positive environments and ideal relationships in physical activity as “cohesive.” Within the physical activity psychology literature, cohesion is defined as “a dynamic process that is reflected in the tendency for a group to stick together and remain united in the pursuit of its instrumental objectives and/or for the satisfaction of member affective needs (Carron, Brawley, & Widmeyer, 1998, p. 3).” Participants’ descriptions align with this definition:

“It gives you freedom to express yourself on the team and on the court. It makes the whole team play better because the whole team knows that they’re not going to get judged and we’re there for each other and if something goes wrong we deal with it together, and then we build from there and go again.” (Louis)

The emphasis participants placed on cohesion is reflective of the strong social bonds that Veterans experience during their time in the military and often miss following injury (Griffith & Vaitkus, 1999). Challenges exist during their transition from service member to Veteran, particularly regarding difficulties with social interactions and participation, which may lead to isolation and social withdrawal (Resnik & Allen, 2007). Thus, participants’ draw to the strong social connection within physical activity can be understood as a means of overcoming isolation, and pursuing positive social interactions.
Participants highlighted elements necessary for achieving cohesion, which are reflected in four sub-themes: camaraderie, communication, acceptance, and a shared focus.

*Camaraderie.* Camaraderie was characterized by a shared sense of humour and understanding, and being there for each other even when challenged by the activity or psychological or physical boundaries.

“I enjoyed, prior to my injury, getting involved with other teams especially within the military ‘cause you have that camaraderie of the team work ethic, (...) you’re looking out for each other really all the time. Now that I’ve been injured it’s one thing I’ve strived to do – instead of just laying in a hospital bed and wondering where it all gone wrong, just getting out there, and being part of a team, and getting on with people, and helping them do things while they help you do things physically, a better way to progress forward.” (Hugh)

Thus, the sub-theme of camaraderie was seen not just as a way to achieve cohesion but linked to a way of challenging oneself to progress post-injury. The social ties developed during an optimal physical activity experience were linked to attempts to be more engaged both inside and outside of physical activity.

Camaraderie was also an enjoyable aspect that had served to define participants’ experiences in the military. As a result, a desire was often expressed for this same sense of connection within physical activity. When discussing program environments where camaraderie was easily achieved, exclusively military environments, as opposed to program environments that integrated civilians and military personnel, were often
preferred. Within a military environment, participants felt united by a shared background, a shared understanding of life experiences, a shared work ethic, and trust:

“The Invictus Games\(^1\) team was amazing! It was the fact that everyone was military or ex-military, and everyone was injured, and everyone was in the same boat, and everyone sort of spoke the same language. That was amazing! To be back in a military physical activity team again that is the ideal environment because I’ve since played matches with civilians and it’s not the same. There isn’t the same discipline, there isn’t that same willingness to give everything, to put everything on the line for your teammates.” (Louis)

There are, however, concerns over difficulties transitioning to life post-military if Veterans avoid participation opportunities with civilians. The military preference may be representative of Veterans’ desire to maintain their identity as military personnel, but may preclude participants from developing a full identity for life after the military. Furthermore, Veterans who do not experience civilian environments may miss opportunities to learn new skills and strategies for living with a disability from others who have developed different coping strategies as a result of different disability contexts (e.g. a congenital condition). Thus, it may be important that a balance be struck between military only and integrated military/civilian environments.

Some participants provided suggestions for creating integrated settings that are enjoyable and come close to achieving the cohesion enjoyed in a military setting.

Participants indicated that civilians have to be serious about their involvement,

\(^1\) The Invictus Games are an international physical activity competition, inaugurated in 2014, specifically for military service members and Veterans with illnesses and injuries (Invictus Games, 2014)
demonstrate a strong work ethic, and have a similar mindset to military personnel (e.g. goal-oriented). Under these circumstances, a small number of participants enjoyed integrated environments, as they felt that civilians were more recognizing of achievement and hard work, creating a more appreciative environment: “They’re more receptive to the challenge and see it as a greater achievement compared to someone in the military. A lot of us tend to play our circumstances down and be a little humble about what we do and achieve!” (Matthew)

*Communication.* Two-way open and honest communication was desired between athletes and coaches, as well as amongst teammates, to help build stronger bonds and improve physical activity skills:

“It is really about opening up and not holding anything back, which sometimes is humiliating to me to have to admit some things. But if we want to have the ideal relationship, I need to make clear of the humiliation and just tell him what is going on, like seriously going on with me, for him to be able to coach me better and for me to be able to perform better.” (Celeste)

While communication was important for the quality of one’s experience, participants did highlight that it was considered difficult to achieve, as it required an underlying element of trust which many found challenging. For some participants, a lack of trust may have been the result of a lack of comfort or safety in the environment. For others, physical activity experiences may be limited in duration (e.g. a physical activity trial day, or a one week physical activity camp). As such, there may not be time to foster the relationships necessary to engage in trusting and honest communication.
Acceptance. Acceptance emerged as a sub-theme for all participants but held different meanings. The most common meaning related to the development of non-judgmental relationships (“You’re not going to be criticized (…) You’re not beat up with it. Everybody works with everybody to improve the quality of their skill.” Reggie). In order to achieve this level of acceptance, participants felt that there had to be understanding for one’s capabilities, as well as a demonstration of skill, and recognition for that skill. Participants linked feeling accepted to wanting to do more and be more involved in the program (“It gave me a bit of a morale boost and a bit more motivation to keep going.” Henry). When non-judgmental relationships were present, participants described wanting to perform better for the coaches and teammates who made them feel accepted. This reaction aligns with the definition of cohesion wherein the unity of the group is related to goal pursuit and the satisfaction of team needs.

Some participants identified a hierarchy of injuries such that individuals with a less visible physical disability, or an injury judged less traumatic or debilitating, were often excluded in physical activity programs. One participant with impairments that were only identifiable when participating in physical activity discussed difficulties with acceptance:

“I didn’t feel accepted by my colleagues who were there because there was no physical injury to see. So they were like “What’s wrong with you? Why are you here?” And then I would say, “I’ve got an injured shoulder, and I’ve got MS [multiple sclerosis]”. They would sort of ignore you after that because you hadn’t had your legs blown off or stuff like that.” (Judy)
This lack of acceptance may be a result of the way through which individuals define themselves and define their identity post-injury. More specifically, according to social identity research, the identity that a Veteran chooses to identify with may impact acceptance of other group members (Bruner, Dunlop, & Beauchamp, 2014). For example, Veterans who value an identity based on their type of injury more than their military identity, may be less likely to accept Veterans with different injuries. In these circumstances, those with different injuries may be perceived as less worthy of group membership despite their status as Veterans. While the decision to choose an identity based on a particular categorization or group membership is natural (Bruner et al., 2014), when other participants are marginalized due to the type or method of their injury, the psychosocial benefits of Veteran physical activity programs are undermined. Program providers must set clear expectation for program participants regarding appropriate types of injury-related conversation and behaviours to promote non-judgmental interactions.

**Shared focus.** Cohesion was also fostered by a shared focus, which consisted of having shared goals and a shared approach to physical activity participation. Having a similar focus was important amongst program participants but also amongst program participants and program staff. The shared approach to the activities and the purpose of participation were key in determining whether to return to a program. Program staff had to focus on participant goals, and have the needs of Veterans at heart (“Not out there to exploit your injury for profit. They’re there for you.” Bradley) rather than focus on other
motives. When lacking, participants avoided the program and were hesitant to trust other opportunities.

The merit of establishing a shared focus within a physical activity program is reinforced by research suggesting that placing emphasis on a task may result in better team functioning (Kleinert et al., 2012). Indeed, Carron, Widmeyer, and Brawley (1985) suggested a conceptual model for understanding cohesion that includes two orientations: a task orientation and a social orientation. Accordingly, the shared focus sub-theme reflects the task aspect of cohesion (i.e. when an individual is motivated to achieve the objective of the group), whereas the other group cohesion subthemes relate to the social dimension of cohesion (i.e. a motivation to build social relationships and take part in activities with the group).

Considering the overarching theme of cohesion and its subthemes within the context of the extant literature, the theoretical contribution of the results becomes apparent. In their conceptualization of quality participation among people with a physical disability, conducted across multiple contexts, Martin Ginis and colleagues (2016) identified belongingness as an important experiential component of participation. Consistent with our conceptualization of cohesion, belongingness was identified as a feeling that one belongs to a group, and is accepted and respected by others (Martin Ginis et al., 2016). Through the theme of cohesion, participant responses suggest that belongingness emerges through a combined group experience with peers rather than simple positive relationships with a few individuals. The current study further extends the
conceptualization of belongingness by providing insight into additional and perhaps context specific experiential aspects important for creating cohesion or belongingness within physical activity and, in particular, physical activity for Veterans. For example, the role of communication, camaraderie, and shared focus are not addressed in Martin Ginis’ conceptualization of belongingness but emerged as important in the current study. This gap is also present in other conceptualizations of the social aspect of participation (e.g. Hammel and colleagues (2008) description of “social connection, societal inclusion, and membership”). These limitations potentially arise due to context. Belonging or connection within physical activity presents a set of tasks and relationships that are different from other participatory contexts such as social intimacy and spirituality, which are included in general lifestyle perspectives of participation (Hammel et al., 2008).

Understanding cohesion in the context of physical activity for individuals with disabilities, particularly how it is defined and fostered is an emerging area of research (Falcao, Bloom, & Loughead, 2015). The sub-themes that emerged from the current investigation suggest similarities to previous definitions of cohesion in physical activity for individuals without a disability (Carron et al., 1998). Participants discussed dynamic interactions (e.g. communication and acceptance), and a focus on unity and a common bond (e.g. camaraderie), with the goal of meeting personal and group goals (e.g. a shared focus). However, there are potential challenges to creating cohesion unique to injured military Veterans and the nature of physical activity activities typically offered (e.g. difficulties with trust, interacting within individuals outside of those with whom a
previous bond is shared, and acceptance of different injury types). Further knowledge of how to meet participant needs while dealing with some of these challenges is necessary.

Cohesion as a component of a quality physical activity experience highlights the primacy with which program staff and organizers must consider the social nature of their activities. To foster cohesion, organizers should consider whether features of the program encourage camaraderie, communication, acceptance, and shared goals. At a broader group level, they should consider who is involved in the activities. For the most part, peer relationships were at the foundation of participants’ description of positive social environments. Indeed, peers are a valued source of physical activity information and support for many individuals with a physical disability (Letts et al., 2011; Wu & Williams, 2001), and for Veterans with post-traumatic stress (Caddick, Phoenix, & Smith, 2015). Thus, when appropriate, program providers should consider organizing programs based on peer groups when striving to develop a quality physical activity experience. However, consideration must be given to the identity of these peers as either Veterans or civilians, and the nature of their injuries.

**Challenge.** Participants identified a preference for experiences that tested them mentally and physically, once again aiming to link the physical activity experience to elements of their military career which were missed post-injury. A challenging task was characterized by opportunities for risk and competition (“What makes it a peak experience was I was in some real danger and I won. After I got over being tired it felt really good because what it did was it gave me a new level of self-confidence and
willingness to risk.” Reggie). Challenge was portrayed as providing meaning, reward, and a sense of accomplishment, as well as an outlet for negative moods. This sub-theme was also linked to a desire for tougher activities and challenges that result in feeling tired after involvement:

“I enjoy alpine skiing so much! You ski on one leg and you look up and you think “Oh! I’ve just come down that!” So that’s nice psychologically. (...) It gets rid of a lot of pent up – not aggression but pent-up physical – it gets me tired. I get back in the house and I reflect on what I’ve done in that day and then I look at my diary and I think a year ago I was doing red slopes and now I’m doing triple blacks. That gives me a sense of wanting to do it again. Every time I go out, I want to do it again but I want to do something slightly harder.” (Alan)

The concept of challenge as a critical part of a quality physical activity experience also relates to other conceptualizations of participation (Martin Ginis et al., 2016; Moll et al., 2015). Their findings also highlight the importance of feeling an appropriate level of challenge. The conceptualization of challenge within the current study further extends Martin Ginis and colleagues’ framework by suggesting potential relationships or interactions amongst the different aspects of quality participation. Participants linked challenge and being successful at a challenge as critical for feeling a sense of mastery and meaning, two other elements of quality participation identified by Martin Ginis and colleagues. This finding also relates closely to Moll and colleagues’ (2015) dimension of experience entitled “developing capabilities and potential.” Moll and colleagues view mastery experiences as involving challenge in order to achieve meaningful goals, and
build skills. These differing views underscore the complexities of accurately conceptualizing and effectively fostering quality participation.

Within the literature on physical activity participation for Veterans with disabilities, the concept of challenge has often been present, both in terms of the types of physical activity experiences in which Veterans can take part (i.e. access to physical challenges) and program goals (Jackson, 2013). Challenge changes service members’ conceptualization of physical activity. They move from engaging in physical activity to achieve health benefits to using it as an opportunity to demonstrate to themselves and to others that they have achieved growth and resilience, and overcome the trials of their injuries (Munroe, 2014). Challenge was something to be enjoyed and seen as a necessary element for reaching one’s potential and being able to realize with optimism the new possibilities that were present in life post-injury (Munroe, 2014).

In terms of program implementation, challenge is often considered in terms of the type of activity or the program structure. Challenge due to the type of activity, relates to creating programs that focus on achieving a difficult or extreme physical challenge (e.g. climbing mountains; Burke & Utley, 2013). Jackson’s (2013) description of the development of a program for Veterans with illnesses and injuries provides direction for structuring programs to promote challenge. Jackson notes the importance of implementing both individual and team challenges, that would aid in building mastery and the previously identified theme of cohesion. During challenges, participants would be expected to stretch themselves beyond their comfort levels, within a controlled
environment, in order to build new skills (e.g., Jackson, 2013). When implementing challenge individually rather than as a team, program staff must also consider that challenge is an individual benchmark, and that different levels of challenge or different activities may be required to fulfill individual participants’ challenge needs.

**Having a role.** Participants identified the desire to have a social position, or role, in the program such as valued participant, ambassador (“I try and see myself as much as an ambassador as possible. The charities I support are often disability or adapted physical activity, and the people that I support are usually involved in physical activity in one way, shape or form.” Henry), instructor (“I actually do want to teach disabled people to swim (...) I think it’s the joy they get when they actually realize that they can swim and they can do things. It gives me such pleasure because they have such pleasure from it.” Judy), peer mentor (“I can offer deep insight.” Bradley), and supportive individual for teammates (“I get a lot of reward psychologically from seeing others achieve around me or helping others achieve.” Matthew). The desire for each role changed based upon an individual’s length of involvement in a program. Having a role was identified as an important element of inclusion, and feeling a sense of worth. When participants felt that they were lacking a role, they described feeling distant, and questioned continued involvement.

This theme relates directly to elements expressed in different conceptualizations of participation (Hammel et al., 2008; Martin Ginis et al., 2016; Moll et al., 2015). In these conceptualizations, having a role can be linked to dimensions of a participation
experience including personal and societal responsibility, having an impact and supporting others, meaning, and contributing to community and society (Hammel et al., 2008; Martin Ginis et al., 2016; Moll et al., 2015). All identify the way in which this element makes the individual feel that he or she is being empowered, making an impact, being useful, and contributing towards the attainment of meaningful personal and societal goals (Hammel et al., 2008; Martin Ginis et al., 2016). Within the current study, having a role is seen as a way of contributing to the community that helped foster one’s growth post-injury, and in this way may also feed into the sense of belonging that a Veteran feels towards his or her community.

The importance of having a role in a program, and developing a sense of responsibility and meaning, can be understood in the context of Veteran and identity research. A Veteran’s identity and social status is challenged following injury (Brittain & Green, 2012; Green, 2013). Veterans may feel that others view them differently as a result of injuries, and may also lose a sense of purpose and belonging (Green, 2013). Thus, if physical activity provides an opportunity to have a new role and purpose within a valued community, the positive impact on a Veteran’s identity and physical activity experience could be unique and vital to well-being. Conversely, if individuals are not satisfied in their roles (e.g. feel rejected, burdensome, lack confidence, or lack information) their enjoyment, performance, and engagement with the program, or group may be negatively impacted (Beauchamp, Bray, Eys, & Carron, 2005; Embuldeniya et al., 2013).
Independence and choice. Participants wanted independence and choice. Independence was described as scenarios where participants were given some freedom within the structure of the program: “when they let you go and they’re close by in case something goes wrong, but they’re not holding your hand. They’re a couple of feet behind or a couple of yards behind you. You’re basically on your own.” (Bradley). Participants also expressed a desire for independence when receiving assistance from program staff:

“Soon as they try to help me up the hill to push me I’m like, “Don’t touch my wheelchair, I’ll do it!” (…) I don’t like being thought of as being in a – I know I’m in a wheelchair but I don’t need help. I’ll need help when I’m 65 or 70!” (Tom)

Choice related to having options when participating in a program. Ideal program experiences were described as those that offer multiple types of physical activity with opportunities to play at many levels (e.g. recreational or competitive). These quality experiences allowed participants to make decisions regarding how they wanted to be involved in physical activity, within a structured program.

Independence and choice as elements of a quality physical activity experience relate to broader conceptualizations of participation identified in different contexts. For example, Heinemann and colleagues (2013) suggest that control over participation is an important measure of enfranchisement or part of the set of values that makes participation meaningful.
Hammel and colleagues (2008) identify the importance of a participant feeling personally powerful within a participation context, naming their theme “control and choice.” As in the current study, the importance of being able to choose and independently make a decision regarding the method and time of participation was recognized as an important element through which individuals with a disability, such as Veterans, can develop agency and learn to self-advocate (Hammel et al., 2008). This theme is also present within Martin Ginis and colleagues’ (2016) conceptualization, which includes independence, choice, and control within “autonomy.”

From a programming perspective, it may not always be possible to provide autonomy (Burke & Utley, 2013). Extreme physical challenges, such as a climb of Mount Kilimanjaro in which participants have to work together according to a strict plan to be successful, provided minimal opportunities for this element to be expressed (Burke & Utley, 2013). Although these scenarios may limit opportunities for independence and control, participants may nevertheless still feel autonomous if able choose whether to participate in the program, or if able to provide insight during planning and preparation. In other, less extreme contexts, the stories relayed by participants regarding the importance of being involved in decision making, having choice, and feeling independent, provide indications of how to create quality program experiences.

**Elements supporting access to a quality experience.** In their discussion of quality physical activity experiences, participants made clear that to enable full participation, programs must not only include elements that create a quality experience
but should also have structures in place that permit access to the experience. Whereas
some models of participation include access and opportunities as an element of
participation on par with other quality elements (Hammel et al., 2008), we position these
structures as pre-cursors to quality participation. This conceptualization is similar to
Moll et al. (2015) who identify factors that can impact participation.

Three overarching themes representing factors that foster access to a quality
experience emerged: (1) the physical environment; (2) the social environment; and (3)
program structure. As these factors have been identified in previous literature (c.f.,
Martin Ginis, Ma, Latimer-Cheung, & Rimmer, in press), we provide only a brief
overview as a basis for enabling access to quality physical activity programs tailored to
injured military Veterans. In an effort to advance understanding of full participation in
physical activity, the majority of our focus is on interpreting these findings in the context
of a quality physical activity experience. (Supporting quotes for access themes are
included in Table 2.)
Table 2. *Quotes representing themes related to access to a quality experience*

<table>
<thead>
<tr>
<th>Themes</th>
<th>First-level sub-themes</th>
<th>Second-level sub-themes</th>
<th>Supporting quote</th>
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<tbody>
<tr>
<td>Physical environment</td>
<td>Accessibility</td>
<td>The built environment</td>
<td>“I think I’m thinking more along the lines of a disabled person now rather than an able person, where if you turn up at a venue where you’re going to be playing the sport you instantly look for access needs. Are there going to be disabled toilets? Disabled showers? (…) Sometimes you’re more concentrating on those factors rather than the game that you’ve got coming up or who you’re playing against and whether you can beat them. Whereas you’re thinking more about: Where can I leave my chair? Where can I leave my stud? What do I do if I need the bathroom half way through?” (Hugh)</td>
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<td></td>
<td></td>
<td>Practicality of the environment</td>
<td>“They build a facility and they’ll build one cubicle for disabled and six for able-bodied because the population ration would suggest you only need one disabled toilet. (…) The long-term view of these people is wrong because if you’ve got two wheelchair basketball teams competing you’ve got 24 disabled people there in wheelchairs, and you’ve got one disabled toilet and shower so that’s not ideal. That, to a lot of disabled people, isn’t good because it makes them not want to – they’ll say “Oh, I’m not going to bother having a shower. I’ll wait and I’ll drive three hours and get home and have a shower.” That’s not right.” (Alan)</td>
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<tr>
<td>Geography</td>
<td>Central location</td>
<td></td>
<td>“I’m two and a half hours away. (…) There’s nobody out here who can develop a plan for a cyclist or someone who is on a recumbent bike.” (William)</td>
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<td>The outdoors</td>
<td></td>
<td></td>
<td>“There’s the risk. You’re not in charge. You need to be calculated but you’re not in charge because a tree can fall in your way at any given time and that’s you! So you need to be calculated and careful. It’s precision on the edge of serious pain.” (Paul)</td>
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<tr>
<td>Themes</td>
<td>First-level sub-themes</td>
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<tr>
<td>Social environment</td>
<td>Role of family and friends</td>
<td>n/a</td>
<td>“A lot of marriages or relationships will break down when somebody gets severely injured. (...) It can fracture those relationships. So by acknowledging the existence of the rest of the family as part of the team, I think that really helps keep those numbers a little bit on the better side.” (Arnold)</td>
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<tr>
<td>Program structure</td>
<td>Requirements for coaches or instructors to promote participation and safety</td>
<td>Coaching knowledge</td>
<td>“There’s no sympathy there. (...) When I go swimming, for instance, the looks you get are unbelievable. (...) You hop down the side of the pool, you jump into the pool, and they think “Oooh, that guy hasn’t got a leg!” (Alan)</td>
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<td></td>
<td></td>
<td>n/a</td>
<td>“You have to have people that have a clue. If you just hire teenagers or college students that have not been around wounded warriors, the atmosphere and relationships are going to be very poor because they don’t know anything about you. They don’t know anything about IEDs. They’re not familiar with blast injuries. They’re going to just irritate you and ask really really insensitive questions. They’re not going to be able to even assist you with the adaptive sports because they don’t have a clue what’s wrong with you. (...) The ideal is training. (...) I’ve had people that just stand there, like a deer in the headlights when you’re struggling, and they don’t know what to do.” (Bradley)</td>
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<td>Tough</td>
<td>“I don’t need somebody to hold my hand. Just direct me in what I’m supposed to do and I’ll do it. That’s the military thing too is just it comes from the top. The sergeant tells you, your boss tells you to do something and it’s ok. Give me the guidelines and let’s do it.” (Tom)</td>
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<tr>
<td>Themes</td>
<td>First-level sub-themes</td>
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<td></td>
<td>Not limiting participant based on disability</td>
<td>“She’s very knowledgeable. She’s a recognized rower, trainer, coach. However, she’s dealing with a disabled guy and so she takes a step back instead of having that sharp tongue that she should have like “Come on! Dig deep! Pull harder! Ten more!” That doesn’t exist.” (Paul)</td>
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<td></td>
<td>Understanding</td>
<td>“Someone that knows me and knows what I need to take me to the next level and the next level, and to pick me up when things haven’t gone well.” (Hugh)</td>
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<td></td>
<td>General programmatic barriers</td>
<td>Climate</td>
<td>“I suffer with the cold – my extremities because of nerve damage I’ve not got a great deal of temperature control. Hot sunny environments make me feel a lot better. (…) I’m a lot more relaxed and enjoy the time there which allowed me to train harder.” (Matthew)</td>
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<td>Safety</td>
<td>“The experience was positive because safety was at the forefront of everything. They don’t want anyone to get injured or killed and no one was injured or killed so that’s as good as it gets.” (Bradley)</td>
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<td></td>
<td>Program and participant resources (e.g. finances, equipment, accommodation)</td>
<td>“The way a lot work is the first time they pay for it - it’s kind of set up for introduction I guess and so after that they won’t pay for it. So it kind of takes it out a bit. I can’t do it anymore. So a lot of them come and go. They do it for free the first time and then I got to let it go cause I can’t pay for it.” (Danny)</td>
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**Physical environment.** Participants described accessibility, which included the design of the physical environment (i.e., built environment) and feeling comfortable within the built environment (i.e., practicality of the environment), as crucial for determining whether or not they took part in a program or chose to return. Geography also emerged as important. Programs taking place in easy-access central locations, as opposed to programs that continuously change location or which require travelling long distances, were considered preferable (i.e., central location). Many participants also appreciated nature-based physical activity (i.e., the outdoors).

The experiences discussed highlight a number of concerns relating to accessing a quality experience. For example, participants voiced a disconnect between environments being labeled accessible but lacking in comfort or accessible components. In these scenarios, participants could not engage in the program to the desired level. Indeed, some participants had to focus on accessibility concerns to such an extent that physical activity performance suffered, and others had to travel long distances for more accessible facilities when in training. Thus, engagement, a further element of quality participation identified by Martin Ginis and colleagues (2016) was impacted when the physical environment was lacking in necessary accommodations. Furthermore, independence was limited by poor accessibility as participation required reliance on program staff for basic access and travel needs (e.g. carrying participants up stairs). These less than optimal contexts, which promote a feeling of being “disabled” by society, and particularly the physical activity program, decreased the quality experience.
A second finding was the value placed on outdoor physical activity. The outdoors has begun to emerge as a preferred location for physical activity and recreation for Veterans due to the positive outcomes that result from nature-based participation (Caddick, Smith, & Phoenix, 2015; Duvall & Kaplan, 2014; Ewert, 2013; Vella, Milligan, & Bennett, 2013). Within the current study, the outdoors related to the quality elements of challenge, discussed in this paper, as well as mastery, included in the review by Martin Ginis and colleagues (2016). Participants identified the unknown aspects of the outdoors as providing continuously novel challenges, and opportunities for risk, which resulted in a sense of mastery or a desired feeling of competence.

**Social environment.** When considering social elements that can support or impede access to a quality experience two sub-themes emerge: (a) the role that family and friends play in fostering a quality physical activity experience either through their participation or by being a supportive presence; and (b) the general public’s positive or negative response to the participants’ injury.

The further emergence of social elements when aiming to understand access to a quality experience underscores the importance of programs considering the social aspects of participation. The two sub-themes highlight the ways in which individuals in an environment can promote or hinder participation and experiences of disability (Thomas, 1999). Previous research has demonstrated that when family and friends promote physical activity (i.e. physical activity and exercise) to individuals with a physical disability physical activity motivation and involvement can increase (Littman et al.,
Extending this notion, participants in the current study suggested that the support of family and friends, and in some cases their actual involvement in the physical activity, has the potential to promote quality physical activity experiences. Their support enabled the quality element of engagement (Martin Ginis et al., 2016), such that Veterans who received support could be more engaged in physical activity. Participants also indicated that engaging in physical activity with family and friends helps to create a sense of belongingness, and increase enjoyment.

The second sub-theme focusing on the general public links the social environment to a different quality element: acceptance. Here, participants demonstrate how the perceived negative actions of others (e.g. staring) and a lack of acceptance may adversely impact the program experience. The potential harmful impact of this social interaction suggests the importance of program organizers strongly considering who might be present in the physical activity environment, and the resulting implications.

**Program Structure.** Participants identified a need for well-structured programs (i.e. programs with structured daily plans, different streams for different levels of ability, and run according to a military structure). They described two aspects of programs that enable access to a quality physical activity experience: (a) requirements for coaches or instructors to promote participation and safety; and (b) general programmatic barriers

The first sub-theme relates to a continued area of research within physical activity for individuals with a disability: coaches’ training and background (Falcao et al., 2015; McMaster, Culver, & Werthner, 2012). Interest in this topic stems from issues that also
arose in participant interviews, specifically coaches’ lack of training and knowledge within physical activity (McMaster et al., 2012), which may result in participant safety fears and limit full participation and autonomy. Within this study, participants described requirements that were thought to result in a coach who could teach physical activity skills, support independence, and help them feel safe. Participants wanted coaches that would be tough and not overprotective. They often felt let down if someone was scared to push them because of their disability. However, participants also wanted a coach or instructor to be understanding, know their abilities and limits, and provide encouragement both on and off the field. Participants also requested that coaches be understanding of their military background and experiences. The feedback provided by participants may aid programs in creating appropriate coaching training, and supporting the development of coaches.

Participants’ extensive discussion of general programmatic barriers including safety (e.g. some participants wanted on-on-one instruction to alleviate concerns), injury (e.g. warmer environments were described as better for nerve damage), resources (e.g. program resources and participants’ financial position for physical activity participation), and physical activity opportunities (e.g. physical activity classification barriers that limit physical activity options), demonstrates the prominence of barriers preventing access to quality physical activity experiences. The obvious solution is developing programs that address these barriers, as well as providing skilled instruction and coaching. However, it is important to consider the feasibility of addressing all programmatic barriers and
coaching/instruction needs. For example, it may be difficult for programs with limited funding to provide all the necessary resources to fully support Veteran’s participation or to continuously involve all interested participants. However, attempts can be made to improve access to government funding either for the program or the participant, and to provide equipment. Programs also may not have the resources to develop their own military-specific training for instructors. An option is to rely on physical activity certification from other organizations supplemented with an introduction to the unique needs of Veterans.

3.6 General Discussion and Implications

Ensuring a quality participation experience is fundamental to full participation (Imms & Granlund, 2014). However, little is known about what quality participation in physical activity entails among injured Veterans. This study aimed to explore views of a quality physical activity experience among Veterans with a physical disability. Group cohesion, challenge, having a role, a shared focus, and independence and choice emerged as important elements that constitute a quality physical activity experience. The physical environment, the social environment, and the program structure emerged as factors impacting access to quality physical activity experience. The findings support and extend previous conceptualizations of participation (Hammel et al., 2008; Martin Ginis et al., 2016; Moll et al., 2015), by providing insight into physical activity- and military-specific elements of quality participation. For example, elements such as independence and choice, challenge, and having a role are similar to previous frameworks (Hammel et al.,
2008; Martin Ginis et al., 2016). However, definitions and the priorities placed on certain elements suggest differences specific to the physical activity context and the population. This difference is most noticeable with the theme of group cohesion. The current study emphasizes the interaction between social and task dimensions of participation, whereas others (Hammel et al., 2008) have mostly focused on the social aspects of participation.

In addition to considering the current findings within the context of participation frameworks, it is also interesting to examine the findings in the context of the social relational model (Thomas, 1999). The social relational model highlights that individuals can experience disability at the public level through structural elements (e.g. elements of the physical environment) and social interactions with others (e.g. the relationships one has with peers, program staff, or family members), as well as at a personal level through the way that individuals may internalize societal views and responses to disability (e.g. feeling independent or able to contribute through meaningful roles; Thomas, 1999; Reeve, 2004). The findings of the current study correspond to the different levels of this model (e.g. having a role as internalizing societal views, or cohesion as an example of social interactions). Thus, if the elements are implemented to create a quality physical activity experience, and access factors are considered, programs may lessen feelings of disablism, and increase participants’ sense of empowerment.

Considering our results within the context of the social relational model also suggests important cautions for program administrators to consider. For example, the sub-theme of acceptance provides an example of when negative social interactions may
be present. If internalized, the resulting feelings of vulnerability and exclusion may impact self-perception and limit future participation. Also, as the concept of quality participation gains momentum, ideally quality elements will be integrated into program mandates. However, if organizations feel obligated to integrate quality elements into programs or disrupted by the changes required, and make these feelings known, individuals with physical disabilities may feel that they are being a burden (Reeve, 2004). The ramifications could be detrimental to well-being (Reeve, 2004), particularly for Veterans who may still be in the process of developing their identity post-injury and finding their place in civilian life. A collaborative participatory approach to integrating quality participation into organizations may help to address this issue, and avoid negative outcomes. Thus, by exploring the findings and their implications within the context of the social relational model, it is apparent that physical activity participation does not exist in a vacuum but interacts with multiple structural and psychosocial factors, which must also be considered so as to not marginalize the participant.

The current study has a number of strengths. The diversity of the participant sample is one in particular. Veterans with a range of disabilities, mechanisms of injury, levels of physical activity participation, and country served were interviewed. Participants’ diverse perspectives and experiences provided a comprehensive view of how quality physical activity programs for Veterans with a physical disability should be developed and delivered. As the current study aimed to provide an initial, comprehensive exploration of factors that may constitute quality across a range of experiences, we
considered participants’ perspectives collectively. However, considering quality participation in light of individual differences is worthy of further exploration. For example, the current exploration did not consider any potential cultural differences in participant views. This should be examined further as access to care, support, and physical activity experiences may vary according to country. We also did not consider how experiences vary as a result of injury characteristics and presence of comorbidities (e.g., post-traumatic stress disorder).

While it is important to consider individual difference from an empirical perspective, it also is important to consider individual preferences from a practical perspective. Personal preferences may impact what elements of quality participation shape perceptions of a quality experience. For example, one Veteran may place greater value on independence and choice than having a role whereas another may value acceptance. Program providers must leave space for individuals to express what they need from a program to fulfill their own program goals and to create their own positive experience.

The findings provide the first research-based conceptualization of quality physical activity experiences for Veterans with a physical disability. Future research can evaluate the elements identified, as well as determine the generalizability of its components to other populations with disabilities, or Veterans with psychological or sensory injuries. The results of this study represent a significant contribution to the literature on physical activity participation, as well as Veterans’ rehabilitation and transition to life post-injury.
3.7 References


Chapter 4

Exploring Strategies used to Deliver Physical Activity Experiences to Veterans with a Physical Disability

Citation: Shirazipour, C. H., Aiken, A. B., & Latimer-Cheung, A. E. (Under Review). Exploring strategies used to deliver physical activity experiences to Veterans with a physical disability. Rehabilitation Psychology.

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4.1 The Fit of Manuscript 2 within the Dissertation

Manuscript 2 furthers knowledge of how to foster quality participation experiences in programs for Veterans with a physical disability. This aim is achieved by exploring program strategies used to deliver programming and considering the conceptual links between these program strategies and elements of quality participation. Strategies may encompass efforts to target different program aspects including precursors to quality participation. Ultimately, this manuscript contributes to the dissertation by exploring how physical activity programs may foster quality elements.
4.2 Abstract

Physical activity programs are utilized to promote physical and psychosocial benefits among Veterans with a physical disability. However, minimal research has explored physical activity program implementation strategies, particularly how these strategies may foster positive outcomes, and quality participation experiences among Veterans post-injury. The purpose of the current study is to document strategies used to deliver physical activity programs to Veterans with a physical disability, and interpret these findings using conceptualizations of quality participation. Interviews were conducted with program staff from three Veteran physical activity programs, and program documentation was collected. Data were analyzed using a thematic analysis. Four themes were identified representing strategies used for delivering physical activity programming: (1) foster social connections, (2) challenge participants; (3) tailor programs and outcomes to match participant needs; and (4) include knowledgeable coaches/instructors. These strategies can be linked conceptually to elements and precursors of quality participation, suggesting their potential utility as strategies for fostering quality physical activity participation. This study presents a first exploration of the delivery of physical activity programming for Veterans with a physical disability with a quality participation lens. The findings provide preliminary insight regarding the potential relationships between physical activity programming and elements of quality participation. The study also provides practitioners with evidence of strategies used and
challenges faced when delivering physical activity programming for Veterans post-injury, thus assisting with future program development and evaluation.
4.3 Introduction

As the benefits of physical activity for Veterans with a physical disability become more evident and more widely understood, the number of physical activity programs for Veterans post-injury has increased (Brittain & Green, 2012; Caddick & Smith, 2014). Indeed, physical activity has been identified as a promising method for fostering physical (e.g. improved functioning and health), psychological (e.g. identity development, increased confidence), and social benefits (e.g. foster social connections) post-injury (Brittain & Green, 2012; Caddick & Smith, 2014). However, as the number of programs has proliferated, and the support for these programs improved, there has been little systematic effort to determine what strategies should be employed to foster these benefits and promote positive physical activity experiences. Without this knowledge, program development and participant experiences may not be optimized.

In an aim to begin filling this gap, the concept of “full participation” for individuals with a physical disability has been identified as a way to better understand and foster optimal participation (Imms & Granlund, 2014). Full participation can be defined according to two dimensions: the quantity and quality of participation (Imms & Granlund, 2014). Specifically, to achieve full participation, individuals with a physical disability, including Veterans, must have access to the same quantity (e.g. amount) and quality (e.g. value) of physical activity experiences as individuals without a disability. Improved understanding of what constitutes a quality experience, and particularly how it
may be fostered, can provide an avenue for developing physical activity programs optimally structured for Veterans with a physical disability.

Martin Ginis and colleagues (2016) suggest six experiential elements of participation which may be associated with a quality physical activity experience, particularly: autonomy (i.e. having independence and choice), belongingness (i.e. inclusion, a sense of belonging), challenge (i.e. an appropriate level of challenge), engagement (i.e. feeling motivated and focused), mastery (i.e. experiencing a sense of achievement and competence), and meaning (i.e. feeling a sense of responsibility to others). The majority of these elements emerged as important in a study conducted by Shirazipour and colleagues (under review) exploring Veterans’ descriptions of quality physical activity experiences. The only element not identified in the Veteran-specific conceptualization of quality was “engagement” which was viewed by participants as an outcome of a quality experience rather than an element fostering quality. Furthermore, Shirazipour and colleagues extended our understanding of quality by identifying potential precursors to quality participation. These include: the physical environment (e.g. accessibility and location); the social environment (e.g. the role of family and friends, and the public’s response to the injury); and program structure (e.g. requirements for coaches/instructors, and barriers to participation). Veterans with a physical disability in the study suggested that these precursors were necessary for quality elements to be present and/or conducive for fostering quality participation (Shirazipour et al., under review).
While these discussions provide an understanding of what constitutes quality and an initial understanding of how quality elements may be fostered, a recent systematic review of physical activity interventions for people with a disability highlights a gap in our understanding of how to create quality participation experiences (Shirazipour et al., in progress). The studies in the review that included quantitative evaluations of physical activity interventions revealed a sole focus on the quality element of mastery. The strategies used to foster mastery included implementing group-based programs, and having instructors or coaches lead programs. Results of the studies using qualitative evaluation identified contexts that could be linked to methods of fostering belongingness, mastery, and autonomy. These contexts included the importance of a peer-based group environment (supporting the quality elements of belongingness and mastery), and a need for knowledgeable instructors (supporting mastery and autonomy).

Research specific to the Veteran community has suggested that quality programs are fostered by promoting enjoyment, and building confidence and self-awareness through challenge (Caddick & Smith, 2014; Jackson, 2013). Some researchers have identified contexts such as group processes and specific environments (e.g. the outdoors) through which these may achieved (Burke & Utley, 2013; Caddick & Smith, 2014). However, consideration of these strategies has not been a focus of these investigations. Furthermore, researchers and practitioners have yet to comprehensively explore how strategies aimed at fostering a quality experience can be implemented within a program. This information is paramount as the strategies related to program delivery can
potentially impact participant experiences, as well as the outcomes of participation (Carless, Peacock, McKenna, & Cooke, 2013).

These knowledge gaps result in a lack of understanding amongst researchers and practitioners of what programs do to foster optimal or quality physical activity experiences. The aim of this study is to document real-world strategies used to deliver physical activity experiences to Veterans with a physical disability and their potential alignment with concepts of quality participation. This aim is achieved by exploring the strategies employed by three different physical activity programs and considering how these initiatives may be linked to creating a quality experience. These program strategies, interpreted in relation to the fostering of quality experiences, will improve the knowledge of researchers and practitioners by providing a foundation for further research aiming to explore optimal strategies and program contexts, as well as develop and evaluate quality programs.

4.4 Method

**Philosophical Assumptions.** This study is grounded ontologically in relativism, and epistemologically in constructionism. We acknowledge that multiple realities exist depending on an individual’s context, and that individuals construct knowledge based on their understanding of reality. Our aim was to interpret participant views and experiences while maintaining the context of our interpretations within a participant’s reality and the context of the program with which he or she is affiliated. We included multiple
individuals associated with the same program to develop a richer understanding of multiple contexts and participant realities within the same program environment.

Programs. For a program to be included in the study it had to (a) have a focus on physical activity, (b) have Veterans with a physical disability as a target audience, and (c) have program staff willing to participate in interviews regarding their approach towards the delivery of quality programming. Following receipt of ethics approval, 43 directors of organizations that delivered physical activity programs to Veterans in the United States of America (USA), United Kingdom (UK), Australia, and Canada were contacted to request their, and their colleagues’, involvement in the study. Programs were recruited from multiple countries in order to increase the potential number of programs that could be included, but to also ideally have representation in the study of different approaches to physical activity and types of programming. Programs were identified on the basis of online searches, discussion with rehabilitation professionals in the field of Veteran health, and discussion with Veterans with a physical disability participating in physical activity programs. Three program directors consented to the involvement of their programs in the study.

Each of the three programs represented a different country, with programs from the UK, USA, and Canada included. Each program also represented a different approach to physical activity programming, such that the findings represent three archetypes of physical activity programs for Veterans with a physical disability (i.e. charitable organizations, government programs, and physical activity organizations).
Participants. The program directors aided in coordinating interviews with their colleagues. The goal was to interview multiple individuals involved in physical activity programming from different levels of an organization (e.g. program director, program assistants, coach). This approach supports the purpose of developing in-depth multifaceted knowledge of the organization’s strategies for delivering quality physical activity programs to Veterans with a physical disability. The number of staff involved in the physical activity programs guided participant recruitment. Overall 13 program staff \((n=7 \text{ men, } n=6 \text{ women})\) participated in the study \((n=3 \text{ Program A;} \ n=5 \text{ Program B;} \ n=5 \text{ Program C})\). Participants had an average age of 40.27 years (10.52). Only one of the participants had a physical disability, presenting with a spinal cord injury, and four participants identified as service members or Veterans. Table 1 provides further information about the participants.
## Table 1. Participant information

<table>
<thead>
<tr>
<th>Participant Pseudonym</th>
<th>Gender</th>
<th>Role(s)</th>
<th>Total number of years with the program</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Program A</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pierce</td>
<td>M</td>
<td>• Program manager</td>
<td>3</td>
</tr>
<tr>
<td>Jamie</td>
<td>M</td>
<td>• Instructor</td>
<td>3</td>
</tr>
<tr>
<td>Charlotte</td>
<td>F</td>
<td>• Program assistant</td>
<td>1.5</td>
</tr>
<tr>
<td><strong>Program B</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jane</td>
<td>F</td>
<td>• Operations manager for yearly regional competitive PA event</td>
<td>8</td>
</tr>
<tr>
<td>Peggy</td>
<td>F</td>
<td>• Therapeutic recreation specialist</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Leader of local adaptive sports program for Veterans</td>
<td></td>
</tr>
<tr>
<td>Margaret</td>
<td>F</td>
<td>• Recreational therapist</td>
<td>15.5</td>
</tr>
<tr>
<td>Benjamin</td>
<td>M</td>
<td>• Program director</td>
<td>24</td>
</tr>
<tr>
<td>Kelly</td>
<td>F</td>
<td>• Event organizer</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Rehabilitation specialist</td>
<td></td>
</tr>
<tr>
<td><strong>Program C</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sidney</td>
<td>M</td>
<td>• Instructor</td>
<td>7</td>
</tr>
<tr>
<td>Erin</td>
<td>F</td>
<td>• Member of organizing committee</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Instructor</td>
<td></td>
</tr>
<tr>
<td>Frank</td>
<td>M</td>
<td>• Instructor</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Program chair</td>
<td></td>
</tr>
<tr>
<td>Maxwell</td>
<td>M</td>
<td>• Member of organizing committee</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Instructor</td>
<td></td>
</tr>
<tr>
<td>Walter</td>
<td>M</td>
<td>• Instructor</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Program chair</td>
<td></td>
</tr>
</tbody>
</table>

*Note.* M: male; F: female; PA: physical activity;
**Procedure.** Participants took part in one interview, ranging in duration from 45 to 75 minutes. Due to the geographic dispersion of participants, interviews took place via phone. Following the interview, participants were asked demographic questions, including their position within the organization, previous experience with Veterans with a physical disability, and previous military and/or adapted physical activity experience. Participants were also asked to share additional information on their programs and program delivery (e.g. program guides, participant and volunteer forms, calendars, testimonials).

Following interviews and receipt of additional program information from participants, data were also collected from organization websites. The pages of each website were explored, along with links and documents provided on webpages, for information regarding the mission of the organization, the place of physical activity within the organization, the goals of physical activity programming, and physical activity offerings. In addition, if a search box was present, the terms “sport” and “physical activity” were used to search the websites to determine if any pages had been missed. The information collected from websites included detailed program information, organization magazines distributed to organization members and the public, videos, annual reports, and testimonials. This documentation was used to supplement the interview data, and develop a comprehensive understanding of program strategies, particularly regarding program organization, and the implementation of physical activity events. Furthermore,
the additional data source provided further contextual information for interpreting the interview data.

**The Interview Guide.** The interview guide was developed with the aim of gaining details of participant experiences and program practices. The guide was organized into six sections. Section one focused on getting to know the participant and his or her role in the organization, as well as gaining rich detail about participant experiences with physical activity programs for Veterans with a physical disability. Sections two through five focused on topics chosen to provide insight regarding the views and delivery strategies for the program environment, relationships, participant engagement, and desired outcomes of participation (Côté, Turnnidge, & Evans, 2014). The topics and questions utilized have also previously demonstrated utility for highlighting participant views regarding quality elements of a physical activity experience (Shirazipour et al., under review). In the last section, a series of closing questions were used to review key interview points, and determine if any topics were missed which the participant felt should be discussed. See Table 2 for sample questions for each section.
Table 2. Sample questions from interview guide

Sections and Sample Questions

**Section 1: Getting to know the participant and his or her experiences**
- May you please tell me about your experience with physical activity programs and events for Veterans with a physical disability?

**Section 2: Program environment**
- Tell me about the environment of the program/events that you offer.
  - Probe questions:
    - What would the physical environment look like?
    - What about the social environment?
  - How do you create this environment?

**Section 3: Relationships**
- Can you please describe the relationships built through your program/events….
  - Between coaches/instructors and participants?
  - Between participants?
  - How do you build these relationships?

**Section 4: Participant engagement**
- May you please describe what a participant’s ideal involvement would look like in your program/during your event?
  - How do you develop this level of involvement?
  - What challenges do you face in developing this level of involvement?

**Section 5: Desired outcomes of participation**
- Thinking about your program/event, what are the short-term/long-term outcomes?
  - How do you achieve these outcomes?
  - What challenges do you face in achieving these outcomes?

**Section 6: Closing questions**
- Are there elements of delivering programs/events that have not been covered in our discussion?

*Note.* Individuals involved in overall program organization were asked questions that included the word “program”, while participants involved in specific events rather than global physical activity programming (e.g. instructor for a particular activity) were asked questions using the word “event” to probe the particular event which they were involved in delivering.
Data Analysis. Interviews were transcribed verbatim. Webpages, program documentation, interviews, and all other files were then imported into NVivo qualitative data software for the analysis process. An inductive thematic analysis was conducted for each program across all available data (i.e. interviews and program documentation). The goal of this analysis was to identify strategies utilized to deliver physical activity programs, and to interpret them in the context of a quality participation framework. When identifying strategies, conflicts in perspectives among participants within an organization or between participant responses and organization documentation provided opportunities for further reflection regarding strategies utilized, and optimal methods of delivering quality physical activity experiences within a program. Throughout the analyses, the researchers were guided by the different phases of thematic analysis including (Braun, Clarke, & Weate, 2015): familiarization with the data (e.g. continual re-reading of interview transcripts and program documents along with note-taking); generating, and identifying codes (e.g. extracting meaningful units of text from data); theme development and refinement (e.g. identifying meaningful patterns of responses then examining the themes in comparison to the data); labeling of themes (e.g. determining appropriate and representative names for themes).

After this initial analysis within each program, a subsequent thematic analysis, repeating the analysis phases recommended by Braun and colleagues (2015), was conducted to explore and identify common strategies implemented across the programs. All strategies were then interpreted as to how they may link conceptually to, and may in
turn foster, quality participation experiences (Martin Ginis et al., 2016; Shirazipour et al., under review). Ongoing discussions occurred throughout the analysis amongst the lead author and co-authors, acting in the role of critical friends, promoting further reflection of themes, and particularly their potential linkages to quality elements (Sparkes & Smith, 2014).

**Research quality.** The quality of this research was not assessed on the basis of a set list of criteria but rather through an evolving list of characterizing traits based on our relativist approach (Sparkes & Smith, 2014). The list of traits included (Tracy, 2010): the worthiness of the topic (e.g. this study represents a significant contribution to the literature about physical activity for Veterans, and fills key gaps), rich rigour (e.g. the methods are appropriate for our approach), credibility (e.g. the inclusion of varied participant opinions, and different programs), and meaningful coherence (e.g. a connection between the study design, methods, and purpose).

4.5 Results

In this section, information is first provided contextualizing the physical activity program within the organization, to aid in understanding program approaches to strategies. Program strategies are then presented and interpreted in relation to their potential for promoting quality participation. Supporting quotes are provided in Table 3.
Table 3. *Supporting quotes for themes*

<table>
<thead>
<tr>
<th>Themes and Corresponding Quotes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Strategies to foster social connections</strong></td>
</tr>
<tr>
<td><strong>Program A</strong></td>
</tr>
<tr>
<td><strong>Program B</strong></td>
</tr>
</tbody>
</table>
Themes and Corresponding Quotes

Program C  “The goals when they're when they're off the hill and in the environment outside is primarily an all-inclusive. So we all get together for evening meals and they are we have times away when doing our instructor meetings and assessments and build on what we have. The meals they have themselves and they very quickly work out in their own little groups around meal tables. So they'll come and socialize, and they may then we put on movie nights if they want to sit and watch a movie, we have a physical therapist that comes in that works with disabled people so we have a so they have a capability of doing a massage piece, we may we may bring in a swim coach for those who want to go in the pool um who works with disabilities who can do pool work with them. Ok. We give it it's all to try and show them an all-inclusive atmosphere” (Frank)

Strategies to challenge participants

Program A  “A lot of thought goes into the activities – what would be the achievement at the end of it. I mean a good example we actually have an activities week and every day of the week they do different activities and that’s quite a good one in terms of showing achievement because every day they face new challenges that we ask them to do…then at the end of the week you’ve got this member looking back over a week of different activities saying, “Well, actually I was able to achieve if not all of them but the majority of the tasks they put in front of me.” So I think my manager puts a lot of thought into how the event is going to challenge the individual but, you know, not in a harsh way…in a way that’s suitable for them.” (Charlotte)

Program B  “We’re able to focus on the experience and not for the medal. We try to play the medal aspect down. It’s still a competition and they want that. You get good feedback. But it wouldn’t be fair to put someone competing against someone who’s brand new who’s newly injured and hasn’t any experience against a Paralympian who has all the experience in the world. That would set them up to fail and we try to avoid that at all cost. (…) At the same time, we learn when we struggle and we learn when we fail, and so we try to reinforce that that’s part of the experience. Not everybody likes it, not everybody can get the medal. But we try to teach the folks to use the experience to realize that they’re still moving ahead. When we fail to do that then people really struggle.” (Charles)

Program C  “So luckily with our sport where it's mainly focused on skiing snowboarding, um the hill itself is broken up with the the beginner are and then some green runs, and then as things progress we can bring them to more difficult areas, so our our goal is to get them from either a never ever skied or snowboarded before or to or someone who used to do it but because of their circumstances, injuries, everything else try to re-integrate them to that. So if we break things down into small steps I'll re-introduce them or introduce them to the the basics, the bunny hill, that sort of area and then progress on the way up ideally up to the top of the mountain near to the end of the program if there's if they feel capable. Um just that building block approach I feel is a the best way for us to get them to accept that challenge, baby steps.” (Walter)
**Program A**

“The most important part for me I feel is just to make sure that we have the member’s best interest that everything that we do. To me that’s the most important thing. It’s not in my head – I don’t have so much of an ideal of what a member will achieve. For me, every individual and every member is different and to know that at the end they’ve gained something positive out of it, and, you know, hopefully it will encourage them to do more with us.” (Charlotte)

**Program B**

“We have a wellness program that we offer our outpatient Veterans, they might of went through rehab within the last year or it might have been that they went through rehab like ten years ago. We meet as a treatment team and we have an ongoing list of possible candidates for our wellness program. Some of the components of this wellness program is really detailed individualized discharge planning the way it should be done. I feel we really look at like where that Veteran lives, what he or she wants to pursue, what is in their backyard that they might not have ever thought of or looked in to. And one of the things is that like let's say they want to pursue swimming and they only think, oh I have to go to the Y or whatever, but maybe they never realized that the high school which is six blocks from their house offers like an open swim time for $12 a month or something like that. We just really kind of get into a lot of stuff like that that would be readily available, affordable, and close to where they live.” (Margaret)

**Program C**

“We're very cognizant and we tell them on day one that although the schedule is laid out as group activities there is no requirement for them to attend. So if they feel at any stage they just want their own time, they just have their own time. If when you're speaking with your participant, you go and see them at breakfast and if they say I'm feeling tired, then that's fine “you take another hour or two see what you feel like”, I'm gonna be, “When you feel like it come over to the ski lodge we'll deal with whatever's left of the day at that time, if you want the whole day off so be it.” So although everything is arranged and scheduled as a group activity to get them and the instructors to communicate, speak, and sort of socialize together, there’s no pressure to do so. (…) If they're not turning up then we may go and check to make sure they're not being isolated and feeling overcome by too much. So on occasions we may just suggest to somebody if they're feeling overcome by the volume of people around them that we'll just take them to the side and the instructor will keep an eye on them and then we may just take them away one-on-one into a side room and sit and have a have a chat or a coffee and see what they wanna do and how they're feeling and how they're doing. What we're still very keen on is not for somebody to come there go into their room and become isolated, because we're trying to get them into that open environment where they can still partake in everything they can.” (Frank)
**Strategies to include knowledgeable coaches/instructors**

**Program A**
“...They need to be compassionate. When I started doing this I felt that our instructors weren’t particularly compassionate. They were military and they were treating our boys like they were still in the military, and although on the surface that seemed like a good thing, it doesn’t help with the transition from military to civilian life. We’ve got to dial it down a few notches, be nicer to them, kinder to them, more respectful to them. At the same time, we’re not nursing them - I don’t think the guys would respond to that particularly well. (...)I kind of call it cruelty but they [the instructors] don’t mean it. What they’ll do is they’ll say “I’m not gonna help so and so because they’ve got to learn to do it themselves.” But my point is on that particular day if that person wasn’t disabled and was able-bodied they would still be tired, exhausted, fed-up, anxious, and scared. So it should cost nothing to just help them through. There’s sort of the phrase, you know, “They’ve got to learn to do it themselves.” Yes, but it doesn’t have to be brutal. We can help them do that, we don’t have to stand and watch them suffer. Several may be in a wheelchair because they haven’t got any legs at all. There will be something on the ground but there will be bags all over the floor so you can’t wheel the wheelchair over there, so they can put both their legs on and waddle across the room over the obstacles and then do the reverse back to get to the chair – or someone can pick the object up and hand it to them.” (Jamie)

**Program B**
“One of the things that I’ve done is make sure we promote coaching expectations through the staff. (...) We’re working towards developing that community where it’s not only through our monthly meetings that we talk with folds but we’re creating a community where coaches talk with each other setting the expectations through Program B leadership where our leadership kind of promotes the expectations as well.” (Charles)

**Program C**
So we typically have a person identified as our participant co-ordinator and generally this is someone with a lot of experience who can look at the issue the person might identify so if they identified lower leg issues or if they've identified back issues, or requirements for like a sit ski or a specialized apparatus. They can find those people very quickly with someone who knows that equipment based on their involvement with the (names national organization), cause most of our instructors are from the (names national organization). Then from there we can look at okay for beginners for uh they can look at which person has like an instructor certification that sort of thing, so people with more of the stress injury we try to put with someone that's just a regular ski instructor or snowboard instructor depending on where things go. So we ask our instructors to provide list of certifications and we've been doing this long enough now that we know most of the instructors and what their teaching style is like, and we can try to put them more or less with people we think they'd fit well with just based on background and everything else.” (Walter)
**Program A.** The goal of the organization is to promote well-being among members (Veterans with a physical impairment) and their families. A holistic approach is taken to programming in that physical activity events are grouped with other activities and endeavours, including artistic pursuits, so that Veterans may choose the programs and events to which they are best suited and have the most need. Multiple physical activity events are available for program participants. Physical activity opportunities are most commonly provided at a recreational level, with opportunities facilitated by program organizers for competitive sport and physical challenge experiences as desired by participants.

**Program B.** The goal of the organization is to support the health of those individuals who have served the country in the military (both with and without illnesses and injuries). Physical activity programming is provided through opportunities for nationwide and regional competition. Rehabilitation specialists within the organization also aim to facilitate opportunities for recreational physical activity at a regional level or within the Veteran’s local community.

**Program C.** The goal of the organization is to promote the participation of individuals with a physical disability in a specific physical activity. Program C is a recreational rehabilitation-focused event for service members and Veterans with physical and psychological illnesses and injuries, aimed at promoting participation in the specific activity. The organization provides opportunities for participants to join civilians in weekly recreational sport practice after completion of the event.
**Implementation strategies.** Considering the programs collectively, four themes were indicative of strategies utilized for delivering physical activity programming. Interestingly, all strategies can be linked, at least conceptually, with elements of quality participation. These strategies include: (1) foster social connections; (2) challenge participants; (3) tailor programs and outcomes to match participant needs; and (4) include knowledgeable coaches/instructors. For each theme, the following aspects are explored: (1) identifying examples of how strategies are implemented among the different programs; and (2) the potential links between the strategies and quality elements.

**Strategy #1: Foster social connections.** Programs tried to orient program structure and implementation around the development of social connections. Program A provides an example of implementation of this type of strategy through its aim of developing a peer-based structure. This structure aims to see Veterans with a physical disability helping other Veterans with a physical disability either through mentorship or by returning to events as an instructor or leader. It is the hope of organizers that through this structure, a social connection can be forged. As a result of this connection, participants ideally identify with the instructor and their shared experiences, and see what they can achieve through participation. Seeing leaders and other program members with whom one has built a connection engage in the activity may also normalize the activity for those that may be more reluctant to participate or to acknowledge adapted physical activity as a legitimate form of physical activity. Through this process, leaders may also benefit by feeling valued, and by gaining confidence through the realization that they can
show others how to perform a skill. Programs B and C have less formalized versions of this structure in which former participants are encouraged to return and provide leadership and/or instruction.

A second example, implemented in all programs, sees social bonding and connection among members prioritized during physical activity events. Program organizers are aware of the benefits of being amongst peers with similar experiences and injuries. They hope that by fostering a group environment, participants might feel a sense of camaraderie and increased engagement, as well as have opportunities to learn from each other. A number of strategies are employed in order to promote social engagement and discourage any social withdrawal or isolation. Relationships are fostered prior to the event, through pre-event online introductions facilitated by program staff, and a social dinner meeting the night before the event so participants can get to know each other prior to engaging in the main activity. During the introductions, the focus is on getting to know the participant. Leaders in Program A note how they aim to avoid dwelling on the specifics of the injury beyond how it is relevant to the event, which also helps to avoid participants building a hierarchy amongst themselves based on the type and method of injury. Previous methods had focused on including discussion about how a participant had been injured and his or her post-injury experiences, which one program leader identified as a poor approach which may put participants in a negative frame of mind by focusing on their worst experiences. During the event, social engagement is further fostered through social events and excursions, as well as promoting group meal times.
Program C allows participants to spend time alone but tries to encourage continued involvement by noting that it’s “not a holiday, it’s a sport clinic” and participation is important. Instructors visit participants spending too much time on their own (e.g. staying in their room rather than participating in social events) to discuss any challenges that they may be experiencing. Following events, organizers from Program A have noticed that participants often keep in touch and have gatherings to engage in the activity together. The program tries to facilitate these post-event interactions by creating formal social media groups.

A third example of this strategy sees organizers aiming to develop events that enable to opportunities learn to be active alongside one’s family. This strategy is employed due to the perceived benefits to the family unit. However, including family also allows program staff to combat the challenge of cliques within events. Participants discussed how families interact with each other, promoting positive interactions and breaking down any group divisions. However, depending on the group dynamics, families may be overprotective and stunt opportunities to foster autonomy among participants. Program C aims to combat this challenge by providing separate instruction to participants and spouses of participants, with opportunities to mingle during meals and social events.

When developing strategies for fostering social connections during physical activity events, participants also discussed needing to consider alcohol consumption or how participants socialized when not engaged in the physical activity tasks. When
socializing, program organizers discussed how may participants may want to drink. However, this desire presented potential risks related to (a) overconsumption of alcohol, and (b) previous difficulties other event participants may have faced with alcohol as a negative coping mechanism for their impairment or illness. Program instructors aim to combat this difficulty by setting boundaries and expectations either verbally or through signed codes of conduct, or by refusing to cover the cost of alcohol. Despite these measures, alcohol can still present impediments to positive social engagement, either as participants reject the setting of boundaries or when others feel pressure to consume alcohol. As a result, some events are promoted as “dry events” where alcohol usage is banned.

*Links to fostering quality participation.* Many of the strategies developed for fostering social connections, such as the inclusion of peers and creating social engagement opportunities, have been identified as methods for fostering the quality element of belongingness amongst Veterans by fulfilling needs for camaraderie, acceptance, and communication (Shirazipour et al., under review). Providing members with mentorship and leadership opportunities also fosters the quality elements of having a role or meaning (Martin Ginis et al., 2016; Shirazipour et al., under review). The challenges programs face in implementing these strategies could also potentially impact the quality of their members’ participation. For example, the development of cliques may obstruct efforts to build a sense of belongingness or even feelings of acceptance and inclusion, thus impacting the quality element of participant engagement (Martin Ginis et
Meanwhile, depending on family relationships, the strategies programs use to include families when building social connections may either promote or restrict participant autonomy (Martin Ginis et al., 2016; Shirazipour et al., under review).

**Strategy #2: Challenge participants.** Incorporating strategies to challenge program participants during events was an essential element of all programs. Two main strategies are employed by the programs to develop optimal challenges. The first strategy, discussed by participants from Programs A and B, is finding the right mix of physical and mental challenges. While extreme and popular physical challenges are celebrated in program communications to members and the public (e.g. physical challenge expeditions, and competitive parasport success), the program is “about more than the adrenaline” and aims to reach out to as many members as possible through their events. Most events aim to be inclusive, catering to multiple skill levels and different types of impairments. As such, while events have physical aspects, they are more strongly based in providing mental challenges for participants, which can make each event more inclusive. The mental challenge is often expressed through the second strategy: taking participants outside of their comfort zones.

Participants may be removed from their comfort zones either through the program location (e.g. international travel based events) or the tasks which they must accomplish (e.g. competitions or tasks that push abilities and personally-implemented limits). For participants who are newly injured and may not have travelled previously, having to cope with travel and new surroundings presents a way to face obstacles and be successful. As a
result, the hope is that they may be more willing to move forward in facing further challenges in their personal lives. If the task is inherently challenging, organizers hope that participants feel an inherent sense of achievement or a growth in confidence, which would carry over to their lives outside of the event.

When implementing strategies that physically and mentally challenge participants, one struggle that all three programs faced was participant dropout either prior to or during the program. To avoid this issue, additional strategies were implemented. For example, prior to the event, program organizers aimed to communicate with participants in order to alleviate any concerns. During the program, organizers hoped to rely on the strong bonds developed between instructors and participants, or amongst participants, to result in relationships where participants could discuss their fears about the challenges they were facing. Instructors and organizers also hoped that by seeing peers participate in the events, any fears regarding the challenge would be further alleviated.

*Links to fostering quality participation.* The theme “challenge”, and the strategies employed, relate directly to the element of challenge presented in conceptualizations of quality participation and the views of Veterans with a physical disability regarding optimal participation (Martin Ginis et al., 2016; Shirazipour et al., under review). While challenge is an integral part of the programs, it is implemented for a specific purpose: building participants’ sense of accomplishment and connection with others. Thus, while an element of quality in itself, the results suggest that challenge may also be a tool for
fostering other important elements, particularly mastery and belongingness. Specifically, as participants face and overcome mental and physical challenges, a sense of competency may develop, as well as an appreciation for one’s achievements, all important aspects in promoting mastery (Martin Ginis et al., 2016; Shirazipour et al., under review). Furthermore, if group challenges are implemented, or individual challenges are faced which are achieved through the social support of fellow participants, a sense of cohesion or belongingness may develop as a result of the communication and teamwork required (Shirazipour et al., under review).

**Strategy #3: Tailor programs and outcomes to match participant needs.** While there are a number of key outcomes that programs aim for participants to achieve (e.g. skill development, well-being, self-belief), all expressed an understanding that every participant must achieve them in his or her own way. As such, a key strategy utilized by all three programs is allowing individuals to set their own goals for event participation. One program formalized the process of individual goal setting through goal contracts, signed at the beginning of the program, which aimed to highlight the importance of a participant’s commitment to goal achievement.

All programs built their physical activity programming with the goal of best serving participant needs. They also aimed to provide opportunities that permitted each participant to take the physical activity skills learned during an event to their community so that tailored physical activity engagement may continue at home or in the community. Of particular note, Program B built its physical activity programming with this goal in
mind due to its rehabilitative focus on community re-integration post-injury. Many members had ongoing assigned rehabilitation specialists that promoted their involvement in adapted community physical activity organizations, and aimed to continuously build connections with a Veteran’s local physical activity community. Over time, the rehabilitation specialist aimed to build a personalized physical activity plan which involved finding a local program which would best meet the needs of the Veteran and promote long-term community engagement. Meanwhile, Program C, as a result of its sponsorship with a national parasport organization, provided opportunities for participants to return weekly to the event location in order to engage in the national organization’s dedicated practice time. The goal was to provide a sport, which permitted continued participation, engagement with the community, a sense of normalcy, and an equal level of engagement as others in the community.

As a further example of strategies promoting tailored programming, Program A provided programming for different levels of participation (e.g. beginner, advanced) and types of impairments, so each individual may follow his or her own path and go through his or her own process towards achieving the benefits of physical activity. To promote interest and involvement, and provide knowledge of activity choices, Programs A and B also held an introductory activities week consisting of varied recreational or competitive physical activity in which individuals may try different types of physical activities to see which may suit them best and which they would like to further pursue.
Tailoring programming for different impairments also required developing strategies to deal with any potential environmental and program barriers. Program A and C helped participants overcome barriers inherent in different activities by covering all costs involved in participating in the event, and conducting venue visits prior to the event to ensure that the venue and any travel or accommodation choices met participant needs. Meanwhile, Program B considered these potential challenges when building the individualized physical activity plans with participants.

In a further bid to meet and tailor member needs, Program A also employs support officers. Support officers are local program volunteers (either former military personnel or civilians) who visit members in rehabilitation or at home, thus building an initial connection and relationship between the member and the organization as early as possible (e.g. upon injury or the return home, prior to surgeries resulting in physical impairments). This officer welcomes the individual to the organization and shares the different opportunities that are available post-injury, including the opportunity to engage in physical activity. The officer also assists Veterans in accessing resources provided by the organization that aid in overcoming challenges that emerge post-injury (e.g. financial assistance, prosthetic information, counseling). At the discretion of a physical activity instructor, support officers may also observe physical activity events to determine whether member needs are being met or the event could be improved.

*Links to fostering quality participation.* Through individual goal setting, participants have the opportunity to create personally relevant goals, which are
considered essential components for imbuing an experience with meaning (Martin Ginis et al., 2016). Meaning is also potentially fostered as individuals may develop a sense of personal responsibility as a result of a formalized individual goal setting process (Hammel et al., 2008). The strategy of promoting independence and choice through decisions such as developing one’s own goal or choosing a program highlight the opportunity to foster a quality experience through a further element of quality participation: autonomy (Martin Ginis et al., 2016). Specifically, a sense of personal power and agency are created through an opportunity to have control and choice (Hammel et al., 2008; Shirazipour et al., under review).

**Strategy #4: Include knowledgeable coaches/instructors.** All programs gave substantial thought to the training and leadership abilities of the coaches and instructors who were present during event delivery. Program B had many different strategies due to the vast number and type of events, and the size of the organization. One strategy aimed at unifying instructors and coaches across the organization involved monthly meetings among coaches during which opportunities for coach and participant training and advancement were shared, and expectations set.

Program A, through their member-supporting-member approach aimed, as previously noted, for the instructor to be a former participant who had achieved qualification standards. However, in interviews it was discussed how newer programs or programs in which able-bodied instructors were required (e.g. where additional support on behalf of instructors was necessary for a safe environment) would benefit from further
training or orientation for instructors. Good instructors, as one participant detailed, found a balance between military structure and compassion, understanding how to be compassionate, when to provide help, and when to give participants their independence. The need for further instruction represented the main area of discord amongst study participants, as some participants highlighting the thorough training that instructors received and others identified key gaps in instructor knowledge and a need for more formalized training. The latter participants aimed to implement more formal training that would build an understanding of what was required not just for those lacking knowledge of adapted physical activity but for those with no previous military experience.

Program C had the most structured instructor process. There was a ratio of one instructor and, if necessary, one support staff to a participant. Instructors were chosen based on their qualifications and knowledge of the sport, and would ideally have a military background. Instructor-participant pairings were made by matching participant biographies and physical and psychosocial needs with the skills and qualities of each instructor. The same pairing is maintained throughout the event so that a rapport can be built between the two individuals. Instructors meet daily during the event to discuss any challenges or experiences they are having and to plan for the following day. Social activities in the evening are often adapted activities in which the instructor will be at a disadvantage and have to learn skills from the participant. This decision is made to promote further trust and equality within the pairings.
Links to fostering quality participation. Knowledgeable instructors have emerged as an important precursor to a quality physical activity experience for Veterans (Shirazipour et al., under review). Veterans with a physical disability are resistant to instructors that lack an understanding of their military and injury experiences, and lack of adapted physical activity instruction experience, which create fears regarding participant safety (Shirazipour et al., under review). Quality instructors, in contrast, would by understanding of participant fears and experiences, fostering the quality elements of mastery and autonomy. Veterans also highlight the same need identified by program instructors to balance military structure and toughness (e.g. a need to build autonomy, foster mastery, and implement challenge) with compassion (e.g. foster meaning, and belongingness; Shirazipour et al., under review).

### 4.6 Discussion

A lack of knowledge exists regarding strategies that physical activity programs employ to deliver quality physical activity experiences, particularly within programs targeting Veterans with a physical disability. As a step towards addressing this knowledge gap, the current study aimed to identify themes indicative of strategies used to deliver physical activity programming to Veterans with a physical disability. Identification of these strategies provides a foundation for discussion of quality participation and research regarding program development. Four themes were identified encompassing program strategies: foster social connections; challenge participants; tailor programs and outcomes to match participant needs; and include knowledgeable
coaches/instructors. These themes link conceptually to elements and precursors of quality participation, including: a sense of belongingness or cohesion, challenge, autonomy or independence and choice, and program structure, respectively (Hammel et al., 2008; Martin Ginis et al., 2016; Shirazipour et al., under review).

The strategies identified and their conceptual links to element of quality participation are supported by extant literature within sport and exercise psychology, and physical activity promotion for Veterans and civilians (e.g., Côté et al., 2014; Hoption, Phelan, & Barling, 2007; Jackson, 2013; Stenling & Tafvelin, 2014). For example, a focus on promoting strong social connections is a method of building group cohesion - an important aspect of group dynamics in sport (Burke, Davies, & Carron, 2014). In qualitative work by Shirazipour and colleagues (under review), Veterans with a physical disability identified group cohesion as an important element of their quality sport experiences. The concept of group cohesion links to the quality element of belongingness (Martin Ginis et al., 2016; Shirazipour et al., under review). In fostering social connections through peer mentors and peer leadership, opportunities for vicarious experience are created (Bandura, 1977). Vicarious experience describes a scenario when individuals (e.g. Veterans with a physical disability) observe similar others (e.g. other individuals with similar impairments) complete a task (Martin Ginis, Nigg, & Smith, 2013). Vicarious experience is often considered an important aspect for motivating physical activity (Martin Ginis et al., 2013), and achieving competence or mastery (Bandura, 1977) – an element of quality participation (Martin Ginis et al., 2016).
Vicarious experience has also been identified as a potentially important element in promoting physical activity engagement amongst Veterans with a physical disability (Shirazipour & Latimer-Cheung, 2016). By seeing similar individuals participating in an activity, participants may be more motivated and inspired to participate, a desire that places them in an initial phase of a long-term sport trajectory (Shirazipour & Latimer-Cheung, 2016). Thus, by fostering social connections, not only are programs implementing strategies that potentially promote quality experiences through belongingness and mastery, but may also be fostering further participation which would allow participants to reap the long-term physical and psychosocial benefits of physical activity.

The existing literature on coaching in physical activity also offers support for some of the relationships suggested by the current study. The current study’s findings indicate how coaches may promote quality participation by building participants’ competence (i.e. foster the quality element of mastery) and independence in a physical activity environment (i.e. foster the quality element of autonomy), all relationships previously suggested in the coaching literature (Banack, Sabiston, & Bloom, 2011; Hollembeak & Amorose, 2005). However, the strategies discussed within the current study present detailed and concrete understandings of how programs choose instructors and participant-instructor pairings. For example, whereas other studies identify the presence of individualized behaviours towards participants (Cregan, Bloom, & Reid, 2007; Turnnidge, Côté, Hollenstein, & Deakin, 2014), the current study extends
understanding of how individual consideration is provided in an attempt to find the right instructor-participant pairings. This finding furthers knowledge of how to successfully tailor programs and experiences through the instructor. The benefit of these strategies is that they move beyond the current state of the adapted physical activity coaching literature, focusing largely on instructor training (c.f. Cregan et al., 2007; Taylor, Werthner, & Culber, 2014), to explore the interaction and fit between the coach/instructor and participant. Implementing strategies to create an optimal fit for the participant has potential to provide participants with the highest quality experience.

The study findings make important theoretical contributions to our emerging understanding of quality physical activity participation experiences. Particularly, the results provide a greater understanding of the potential relationships amongst elements of quality participation, as well as precursors to participation and quality elements. The study findings make it apparent that a particular program strategy may leverage one quality element to elicit change in others. For example, the strategy of challenge identified in the current study directly relates to fostering the quality element of “challenge;” however, the method through which challenge is implemented impacts other quality elements. If programs choose to implement group challenges, then the quality element of belongingness or cohesion is also impacted, while individual challenges impact autonomy or independence and choice (Martin Ginis et al., 2016; Shirazipour et al., under review). Furthermore, all challenges will likely impact the quality element of mastery, such that a challenge successfully accomplished impacts one’s sense of
competence and sense of achievement (Martin Ginis et al., 2016). These findings provide direction for future research, in particular whether the quality elements should be considered together or in isolation, and whether programs need to target all quality elements to create a quality experience.

The findings also present a number of practical implications, particularly strategies for program development. For example, when considering the strategy of fostering social connections, programs decided to include family within physical activity events to build family relationships, and discourage the development of cliques among Veterans. Research suggests that including family members, who are also impacted by a Veteran’s impairment, in programming may improve family functioning and relationships, increase recreational leisure activity involvement (Bennett, 2013; Poff, Zabriskie, & Townsend, 2010). It is important to consider how programs can implement family involvement given that positive family roles in physical activity is suggested as a precursor to the quality experiences of Veterans if family relationships are positive and supportive (Shirazipour et al., under review). However, if programs are finding that families are hindering efforts to promote autonomy but are useful in creating beneficial social interactions, they may want to consider the approach of Program C which finds ways for the participants to be independent when participating in physical activity but have the support of family during mealtimes and breaks. The inclusion, and impact, of family within physical activity programs presents an interesting area for further research.
An additional practical implication is consideration of the programs as a whole, how strategies are framed, and how program staff view physical activity. These considerations are important as the way in which program strategies are implemented and framed may impact participant empowerment, and thus potentially the quality of the experience. For example, Program B’s status as a health and rehabilitation focused organization, often resulted in a medical model of disability being expressed by interview participants, in contrast to the social-relational model of disability displayed study participants from Programs A and C. Specifically, participants from Program B viewed physical activity as a way to improve symptoms or overcome impairment (Marks, 1997). While they may be implementing the same strategies as Programs A and C, this approach or framing of disability by Program B could potentially lead to different outcomes than implementation by the other two programs. Research suggests that use of the medical model may result in negative psychosocial implications for participants, resulting in a sense of disempowerment and impacting the quality of the physical activity experience (Green, 2013; Swarbrick, 2006). Thus, while the strategies presented should be considered when developing physical activity research and intervention, researchers and practitioners must be cognizant of the framing of physical activity and disability taken during delivery, and the ways in which the approach of program staff would impact the quality of the experience and program outcomes.

Limitations are present within the current study. For example, not all programs can be captured. Different programs, while still represented in this study through the
program type, may have differing strategies. Thus, further research is required to ensure that strategies are representative of all programs. Participants were also biased such that they had an interest in framing their programs as optimal examples of physical activity interventions, and there is no knowledge whether these strategies are successful in creating quality participation experiences. Further research could build upon this study by conducting program evaluations at different levels of the organization, and also evaluating whether these strategies do indeed result in quality experiences. These could include investigations that also include the views of program participants regarding the strategies used, a perspective lacking in this investigation. Finally, the current study focused specifically on programs developed for Veterans with a physical disability and not psychological illnesses (e.g. post-traumatic stress disorder), a major current health concern for Veterans. Similar strategies to those identified in this study may also be employed among the latter population as Veterans with a physical disability may also have psychological illnesses, and thus program staff often consider the possibility of participants having both conditions. However, further research should explore any similarities or differences in approaches to program delivery.

The current study provides a perspective missing in the fields of quality participation for individuals with a physical disability and physical activity for Veterans with a physical disability. Of value to researchers, the findings highlights strategies implemented by three program archetypes present within the Veteran community, exploring how these strategies may potentially support quality experiences. Researchers
and practitioners may also benefit from evidence of strategies utilized by organizations to deliver physical activity programming, thus accumulating knowledge and providing a resource for future program development and evaluation.

4.7 References


Brittain, I., & Green, S. (2012). Disability sport is going back to its roots: Rehabilitation of military personnel receiving sudden traumatic disabilities in the twenty-first century. *Qualitative Research in Sport, Exercise, and Health, 4*(2), 244-264.


Chapter 5

The Role of Quality Elements of Participation in Promoting Physical Activity and a Successful Transition to Civilian Life among Veterans with a Physical Disability


Funding Acknowledgment: This study was supported by the Canadian Institute for Military and Veteran Health Research and Wounded Warriors Canada Doctoral Scholarship, as well as a Social Sciences and Humanities Research Council Doctoral Scholarship.
5.1 The Fit of Manuscript 3 within the Dissertation

Manuscript 3 builds upon the findings of the first two manuscripts by evaluating the participation of Veterans with a physical disability in a physical activity event, and examining the relationships between quality precursors, quality elements, and program outcomes. The manuscript also expands the understanding of quality from the previous two manuscripts to include non-physical activity participation outcomes, specifically family integration and the transition to civilian life. Thus, the manuscript compliments the overall theme of the dissertation by exploring what role quality elements and precursors may play in promoting important program outcomes, and providing evidence supporting why quality experiences are important for programs and participants. Within this manuscript, the definition of physical disability is broadened to include individuals with a traumatic brain injury, due to improved understanding of the definition of physical disability within the military population and Veteran physical activity programs.
5.2 Abstract

Physical activity programs for Veterans with a physical disability are developed to promote physical activity participation and facilitate the transition to civilian life. Minimal research has evaluated these outcomes, particularly in regards to the role of experiential elements of quality participation in facilitating these processes. The current study aims to evaluate the participation of Veterans with a physical disability in physical activity events. Two main hypotheses were suggested based on study objectives: (1) there will be an increase in indicators of physical activity following participation in a physical activity event; (2) quality elements will mediate the relationship between precursors of quality and participation outcomes. Forty-nine (n=32 men, n=16 women, n=1 unspecified) Veterans with a physical disability averaging 43.61 (8.81) years of age completed questionnaires prior to and following participation in the event, as well as at a three-month follow-up time-point. Questionnaires assessed precursors, elements, and outcomes of quality participation. Results demonstrated no increase in physical activity indicators over time. However, a quality indicator of belongingness, linkages to the community, mediated the indirect relationship of coach interpersonal skills on physical activity determinants of planning and intentions following event participation. Linkages to the community also mediated the relationship between coach interpersonal skills and family integration following event participation, and at the three-month follow-up. These findings provide the first evidence linking quality physical activity precursors and elements to determinants of physical activity and the transition to civilian life. This study
also contributes to knowledge regarding the crucial role of quality elements in supporting desired program outcomes for Veterans post-injury.
5.3 Introduction

Military personnel often experience complicated post-injury recovery processes compared to their civilian counterparts (Resnik & Allen, 2007). The challenges Veterans face may result from their unique pre-injury experiences, and the trials of coping with their injury while transitioning to life after deployment (Hachey et al., 2016; Resnik & Allen, 2007). Furthermore, those Veterans deemed unable to return to active duty or who choose not to must also transition to civilian life (Hachey et al., 2016; Resnik & Allen, 2007). Thus, the psychosocial impact of an injury may be exacerbated by the difficulties of facing multiple other unexpected life transitions (Resnik & Allen, 2007; Shay, 2002).

In a bid to support Veterans with a physical disability aiming to cope with these challenges, military and civilian organizations across multiple countries have implemented physical activity (e.g. sport and exercise) programs. While the specific aims of each program vary, all share the common goals of developing events that promote physical activity, and aid military personnel as they cope with their lives post-injury (Brittain & Green, 2012; Caddick & Smith, 2014; Shirazipour, Aiken, & Latimer-Cheung, in preparation). A handful of studies have evaluated the outcomes of physical activity programs and events for military personnel with a physical disability suggesting favourable results including improvements in self-concept, leisure satisfaction, affect, functioning, and self-esteem (Cordova et al., 1998; Duvall & Kaplan, 2014; Flores, 2014; Lundberg, Bennett, & Smith, 2011; Norbeck, 2009). Given the focus on well-being outcomes, no study has actually examined the impact of these programs on physical
activity behaviour and key determinants such as planning and intentions. Whether these programs are successful at fostering ongoing physical activity participation may be important for understanding their long-term, sustained impact. Thus, the first objective of this study is to examine changes in physical activity behaviour, physical activity planning, and intentions. It is hypothesized that there will be an increase in these indicators and determinants of physical activity behaviour following participation in a physical activity event.

Furthermore, little attention has been given to identifying strategies for optimizing program structure to ensure positive participation experiences and achievement of well-being outcomes. The concept of quality participation provides a potential framework for examining such strategies. In a recent review, Martin Ginis and colleagues (2016) identified six key elements of a quality participation experience. These elements include (Martin Ginis et al., 2016): (1) mastery (i.e. self-efficacy, competence); (2) belongingness (i.e. acceptance and respect); (3) challenge (i.e. an appropriate level of challenge); (4) autonomy (i.e. independence and choice); (5) meaning (i.e. participation contributes towards a meaningful personal or social goal); and (6) engagement (i.e. motivation). The first five of these elements have been identified as relevant to sport experiences for Veterans with a physical disability (Shirazipour et al., under review). While Veterans’ descriptions of quality physical activity experiences did not include engagement as an element of a quality experience, they did discuss it as an outcome of their quality experiences.
Research has also begun to identify factors that may enable access to and foster quality experiences (Shirazipour et al., under review). The physical environment (e.g. accessibility, location), the social environment (e.g. relationships and interactions with family members and the general public), and the program structure (e.g. coach behaviour and training requirements, and barriers to participation) maybe be conducive to the emergence of quality elements to emerge in a physical activity experience (Shirazipour et al., under review). To date, this research identifying strategies for fostering quality participation has been qualitative and the strategies have only been linked conceptually to quality participation and participation outcomes. Research is needed to explore the relationship between precursors to quality participation, quality participation elements, and participation outcomes. The second objective of this study is to examine these relationships.

Given the preliminary nature of this research we have opted to explore a specific set of precursor, quality participation elements, and participation outcomes. With regards to precursors, our investigation focused on support from spouses and coaching behaviour, as these precursors could be implemented by and accessible to all events and participants regardless of activity, funding, or event location. In turn, we focus on the quality participation elements of mastery, belongingness, challenge, and meaning as all four elements have been recognized as important for continued physical activity participation among Veterans with a physical disability (Shirazipour & Latimer-Cheung, 2016). Furthermore, mastery and belongingness have been identified as protective factors that
promote successful life transitions among civilians and Veterans with a physical
disability (Gadalla, 2010; Hachey et al., 2016; Hourani et al., 2012; MacLean et al., 2014;
Updegraff & Taylor, 2000). Our evaluation of participation outcomes includes outcomes
related to physical activity behaviour (i.e. moderate to vigorous physical activity,
planning, and intentions) and life transitions (i.e. family integration). These outcomes
were chosen to match the potential desired outcomes of physical activity programs for
Veterans with a physical disability to promote physical activity participation and support
the transition to life post-injury (Brittain & Green, 2012; Caddick & Smith, 2014). The
physical activity outcomes were also chosen due to the identified gap in knowledge
regarding the impact of participation on physical activity and physical activity
determinants for Veterans with a physical disability. Meanwhile, family integration was
chosen to represent life transitions post-injury based on the role it plays as an indicator of
successful Veteran and family adjustment (Peebles-Kleiger & Kleiger, 1994; Resnik &
Allen, 2007; Sayers, 2011), and the importance of family support and relationships within
quality physical activity experiences for Veterans with a physical disability (Shirazipour
et al., under review). We hypothesize that the quality elements assessed will mediate the
relationship between precursors of quality and participation outcomes (i.e. physical
activity behaviour, physical activity determinants, and family integration).

5.4 Method

Participants. Veterans with a physical disability participating in physical activity
events with fixed start and end dates were recruited for this study. Veterans were defined
as individuals who had previously served in the military but had been discharged.
Physical disability was defined as an impairment that impacts physical functioning (e.g. spinal cord injury, traumatic brain injury). Once university ethics approval had been granted, 28 Veteran and parasport organizations were contacted to determine whether they would be willing to participate in the study. Organizations were contacted if they were located in the United States, United Kingdom, Canada, and Australia, and had indicated in previous communication or online that they delivered physical activity programming for Veterans with a physical disability. Two programs were willing to participate. Figure 1 details the process of program recruitment.
Figure 1. Flowchart of program and participant recruitment.

Programs in the USA, UK, Canada, & Australia contacted with study information (n = 28)

Phone or Skype meetings held with program directors (n = 10)

Programs included in study
- USA n = 2 (representing a total of five events)
- Canada n = 2 (representing a total of four events)

Programs excluded or decline to participate (n = 6)
Reasons include
- Lack of programming
- A focus on Veterans with psychological as opposed to physical injuries and illnesses
- Already affiliated with a university research group
- Do not permit research on participants
- Questionnaires too long

Programs included in analysis (USA n = 2; representing a total of five events)

Program participants that complete questionnaires (n = 55)

Participants excluded due to lack of functional impairment (n = 6)

Final number of participants (n = 49)

Note. USA: United States of America; UK: United Kingdom.
The first program (Program A) held three events. The second program (Program B) held two events as part of their physical activity programming, one competitive event and one introductory event. See Table 1 for further information regarding each organization’s programming and their events. Fifty-five potential participants from the five events were recruited to participate in the study. However, six participants were excluded from data analysis as they did not have a physical disability, resulting in a total of 49 participants.
Table 1. *Program information*

<table>
<thead>
<tr>
<th>Physical activity</th>
<th>Event 1</th>
<th>Event 2</th>
<th>Event 3</th>
<th>Program A</th>
<th>Event 1</th>
<th>Event 2</th>
<th>Program B</th>
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</thead>
<tbody>
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<td>Cycling</td>
<td>Cycling</td>
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<td>Sailing</td>
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<td>Type of physical</td>
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<td>Location</td>
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<tr>
<td>Event purpose</td>
<td>• Educate • Persuade • Train • Model • Enable • Other: • Create bonds</td>
<td>• Educate • Persuade • Train • Model • Enable • Other: • Create unit style bonds, establishing the lost family connection from military departure</td>
<td>• Educate • Persuade • Train • Model • Enable • Other: • Save lives by providing hope and purpose</td>
<td>• Educate • Persuade • Train • Model • Enable • Other: • Team building</td>
<td>Choosing participants for competitive team + National competition</td>
<td></td>
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</tr>
<tr>
<td>Program length</td>
<td>12 days</td>
<td>7 days</td>
<td>7 days</td>
<td>3 days</td>
<td>4 days</td>
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<td>Inclusion criteria</td>
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<td>Program B</td>
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<td><strong>Event 1</strong></td>
<td><strong>Event 2</strong></td>
<td><strong>Event 3</strong></td>
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<tr>
<td>Wounded, ill, or injured service member or Veteran</td>
<td>Veteran or first responder with or without a physical and/or psychological illness or injury</td>
<td>Wounded, ill, or injured service member or Veteran</td>
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<tr>
<td>Civilians with and without a physical disability (e.g. sponsor guests)</td>
<td>Received invitation from program (to ensure participant is qualified to complete challenge both physically and psychologically)</td>
<td>Family members</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Civilians with and without a physical disability (e.g. sponsor guests)</td>
<td>Family members and friends of service members and Veterans</td>
<td>Medical clearance to participate in adaptive sports</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Civilians with and without a physical disability (e.g. sponsor guests)</td>
<td>Civilians with and without a physical disability (e.g. sponsor guests)</td>
<td>Able to communicate</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Civilians with and without a physical disability (e.g. sponsor guests)</td>
<td>Service members and Veterans with and without a physical or psychological illness and/or injury</td>
<td>Able to follow instructions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Civilians with and without a physical disability (e.g. sponsor guests)</td>
<td></td>
<td>Able to transfer independent-ly or using a transfer board on an unstable surface</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Civilians with and without a physical disability (e.g. sponsor guests)</td>
<td></td>
<td>Must be a graduate of a basic skills training camp with the program</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Civilians with and without a physical disability (e.g. sponsor guests)</td>
<td></td>
<td>Must pay for own travel to and from event</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Program A

<table>
<thead>
<tr>
<th>Participants</th>
<th>Event capacity</th>
<th>Event 1</th>
<th>Event 2</th>
<th>Event 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$n = 100$</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of participants</td>
<td>$n = 101$</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>$n = 71$</td>
<td></td>
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<td>Unknown</td>
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<tr>
<td></td>
<td>$n = 7$</td>
<td></td>
<td>$n = 20$</td>
<td>$n = 8$</td>
</tr>
</tbody>
</table>

### Program B

<table>
<thead>
<tr>
<th></th>
<th>Event 1</th>
<th>Event 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Event capacity</td>
<td>$n = 21$</td>
<td>$n = 21$</td>
</tr>
<tr>
<td>Number of participants</td>
<td>$n = 21$</td>
<td>$n = 18$</td>
</tr>
<tr>
<td>Number of participants who were Veterans with a physical disability</td>
<td>Unknown</td>
<td>Unknown</td>
</tr>
<tr>
<td></td>
<td>$n = 10$</td>
<td>$n = 9$</td>
</tr>
</tbody>
</table>

**Note.** Description of event purpose options: Educate (e.g. increase knowledge or understanding about the activity); Persuade (e.g. motivate increase in activity); Train (e.g. teach skills); Model (e.g. provide an example for people to aspire to or imitate); Enable (e.g. increase means or reduce barriers to increase activity or the opportunity to be active) (Michie, Atkins, West, 2014).
**Procedure.** Veterans participating in the events were sent the first questionnaire in the week prior to their participation. Individuals that completed the first questionnaire were sent the second questionnaire in the week following the event, and the third questionnaire three months following completion of the event. Following the completion of each event, staff were asked to provide information on event characteristics. All questionnaires were completed online and sent to participants via e-mail.

**Measures.** Measures were used to assess demographic information, precursors to quality participation, elements of quality participation, and outcomes of participation. The concept of quality participation in physical activity is emerging, and currently no specific measures exist. Consequently, measures were selected that best represented the conceptualization of quality relevant to the physical activity participation of Veterans with a physical disability (Shirazipour et al., under review).

Due to the nature of participant impairments, which included injuries that impact concentration (e.g. traumatic brain injury), multi-item measures could not be included to assess each element. As such, the highest loading items from questionnaires or most relevant subscales, which corresponded to the conceptualization of each element, were chosen. This decision was made in order to permit evaluation of relevant constructs, while maintaining the brevity of the questionnaire. Wording of some items was also modified to improve the applicability of the measures to the programs (e.g., “team” was changed to “program,” “sport” to “physical activity,”) Despite these modifications, all subscales maintained acceptable to excellent internal reliability, except for linkages to the
community which was acceptable or low depending on the time-point (Field, 2009). However, this latter subscale was not removed due to research suggesting caution in interpreting internal reliabilities (Field, 2009). Specifically, a subscale may be reliable but the reliability value may be impacted by a low number of items (Cortina, 1993; Field, 2009). The linkages to the community subscale, as described below, contained only two items. Furthermore, the acceptability of the subscale varied between two time-points.

**Demographic information.** Participants provided demographic information including gender, date of birth, marital status, and ethnicity, their disability (years since injury, type of disability, primary mode of mobility), and physical activity or event participation (e.g. participation frequency).

**Event context.** Program staff were asked to provide information on the event context, including location, duration, participant eligibility criteria, and event focus.

**Precursors to a quality experience.** Both precursors were measured in the week following event participation, while spouse support was also measured at the three-month follow-up.

**Coaching.** Items from two subscales of the Coaching Behaviour for Sport Scale (CBS-S; Côté, Yardley, Hay, Sedgwick, & Baker, 1999) were used to assess coaching at time-point two (i.e. week following event). Two items from the technical skills subscale examined the coaches’ provision of advice and feedback. Five items from the head coach subscale examined the coaches’ interpersonal skills including understanding for the participant as a person, whether the coach was a good listener, approachability about
personal problems, demonstration of concern for the participants’ whole self, and trustworthiness with personal problems. All items for both subscales were measured on a 7-point Likert scale: 1 (never) to 7 (always). Mean scale scores were created for each subscale.

Spouse support. One item was developed based on interviews with Veterans with a physical disability, and their views of quality experiences, to evaluate whether participants felt that their spouses or partners supported their program participation (Shirazipour et al., under review). It was rated on a 7-point Likert scale: 1 (strongly disagree) to 7 (strongly agree), with a not applicable option for participants with no partners or spouses. Item development was guided by measures of family and friend social support for exercise and health habits (Sallis, Grossman, Pinski, Patterson, & Nader, 1987), as well as items evaluating adult networks and social capital (Hansen & Larson, 2005). This precursor was assessed the week following participation in the event, and at the three-month follow-up time-point.

Quality elements of physical activity participation. All quality elements were assessed in the week following participation, as well as at the three-month follow-up time-point. The only quality element not measured at the three-month follow-up time-point was challenge, which is considered an acute quality element as it relates to the physical training and conditioning plan delivered specifically during the program.

Mastery. Mastery was assessed using two items which measured task self-efficacy (i.e. belief that an individual can perform elements of a behaviour; Rodgers, Wilson, Hall,
Fraser, & Murray, 2008). These items were adapted from previous task self-efficacy measures which had strong reliability and validity in populations with and without disabilities (Foulon, Martin Ginis, Benedict, & Latimer, 2010; Perrier, Sweet, Strachan, & Latimer-Cheung, 2012; Rodgers et al., 2008). Participants were asked how confident they were in their ability to (a) complete the physical activities that they will take part in/took part in during the event using proper technique; and (b) perform all the movements and skills required. Both items were measured on a confidence scale: 0% (not at all confident) to 100% (completely confident) (Rodgers et al., 2008).

**Challenge.** Challenge had previously been defined as both physical and mental challenge within a structured event (Shirazipour et al., under review). As a result, challenge was measured using five corresponding items from the “physical training and conditioning” subscale of the CBS-S (Côté et al. 1999). The item stem from the physical training and conditioning subscale read “the coach(es) or instructor(s) most responsible for my physical training and conditioning…”. Items assessed whether participants were provided with a detailed program, whether the coach ensured that facilities and equipment were organized, whether sessions were structured, and whether the event was physically challenging. An additional item, adapted from the physical challenge item and based on Veterans’ definition of challenge, assessed whether the event was mentally challenging. All items were measured on a 7-point scale: 1 (never) to 7 (always). A mean scale score was calculated.
Belongingness. The first measure of belongingness was the Perceived Belonging in Sport Scale-Modified Version (Allen, 2006) from which three items were extracted (feeling like part of a team, being liked the way they were, and being respected by other participants). These items were measured on a 5-point scale: 1 (not at all true for me) to 5 (completely true for me). A mean score was calculated.

Belongingness with the greater Veteran community was assessed through a tailored version of the “linkages to the community” subscale of the Youth Experience Survey 2.0 (YES 2.0; Hansen & Larson, 2005). The modified subscale measures whether participants “got to know people in the Veteran community” and “came to feel more supported by the Veteran community.” It was measured on a 4-point scale: 1 (yes, definitely) to 4 (not at all). For the analysis, the items were reverse scored so that a higher scored indicated agreement with the statement. A mean score was calculated.

Meaning. Meaning was assessed with two subscales of the YES 2.0 (Hansen & Larson, 2005): identity reflection, and leadership and responsibility. Identity reflection was measured using three items, which focused on whether participants started thinking more about their future through their participation, whether participation resulted in them thinking more about who they were, and whether the activity was a positive turning point in their lives. A mean score was calculated.

Meaning was also explored with one item from the leadership and responsibility subscale that explored whether others in the activity counted on the participants. All items for both subscales were measured on a 4-point scale: 1 (yes, definitely) to 4 (not at all).
all). For the analysis, the item was reverse scored. Higher scores indicated agreement with the statement or the potential for more meaningful participation.

**Participation outcomes.** Physical activity participation indicators (i.e. participation, planning, and intentions) were measured at all time-points, while family integration was measured following event participation and at the three-month follow-up.

**Physical activity participation.** Moderate to vigorous physical activity was calculated using the participant responses from the Leisure-Time Physical Activity Questionnaire for People with Spinal Cord Injury (LTPAQ-SCI; Martin Ginis, Latimer, Hicks, & Craven, 2005; Martin Ginis, Phang, Latimer, Arbour-Nicitopulos, 2012). The LTPAQ-SCI assesses frequency (i.e. how many days) and duration (i.e. how many minutes) of physical activity were completed at different intensities over the past 7 days. A total score was created for both moderate and vigorous physical activity intensities by multiplying the number of days that the participant completed physical activity at each intensity (e.g. number of days completing mild intensity physical activity) by the duration of physical activity for that day. A moderate to vigorous intensity value was created by calculating the sum of total moderate physical activity and total vigorous physical activity. This measure has demonstrated test-retest reliability and criterion validity within a population with physical disabilities (Martin Ginis et al., 2012; Martin Ginis et al., 2005).

**Intentions.** One item assessed participants’ intentions to seek information about program opportunities over the next three months. The item was rated on a 7-point Likert
scale: 1 (strongly disagree) to 7 (strongly agree). This item was adapted from previous measures used to evaluate physical activity intentions among individuals with physical disabilities (Latimer & Martin Ginis, 2005).

Planning. Three items assessed participants’ planning for physical activity participation, particularly whether they had plans as to when, where, and how, they would participate in physical activity. Items were rated on a 7-point Likert scale: 1 (strongly disagree) to 7 (strongly agree). This measure of physical activity planning has demonstrated strong reliability and validity in previous studies (Sniehotta, Scholz, & Schwarzer, 2005). A mean score was calculated.

Family integration. One item from the “integration with family” subscale of the YES 2.0 was used to assess family integration (Hansen & Larson, 2005). It was modified from a focus on parents/guardians to read “I had good conversations with my family because of my participation in this physical activity event.” It was measured on a 4-point scale: 1 (yes, definitely) and 4 (not at all). For the analysis, the item was reverse scored so that a higher scored indicated agreement with the statement.

Analysis. Data were screened for missing values, outliers, and normality (Field, 2009). Missing value analysis indicated that 87.80% of the data from the post-program questionnaire (time-point 2) and 65.30% of data from the three-month follow-up questionnaire (time-point 3) were available. All data were missing at random. Based on these factors (i.e. the high percent of missing data at time-point 2, and the fact that data were missing at random), multiple imputation was used to treat missing data. The number
of imputations was guided by recommendations by Rubin (1987), such that 10 imputed data sets were created. All subsequent analyses were conducted on each of the 10 data sets, with pooled results reported in this manuscript. Following the multiple imputation, descriptive statistics (i.e. means and standard deviations) were calculated for each measure and subscale, as well as correlations and Cronbach’s alphas to determine reliability of measures and subscales (see Table 2).
Table 2. Measure information and repeated-measures ANOVA results for physical activity indicators

<table>
<thead>
<tr>
<th>Measure</th>
<th>Time-point 1 (Week prior to event)</th>
<th>Time-point 2 (Week following event)</th>
<th>Time point 3 (Three months following event)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean (SD)</td>
<td>Internal consistency (α) or correlation (r)</td>
<td>Mean (SD)</td>
</tr>
<tr>
<td>Precursors to quality participation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coaching</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Technical skills</td>
<td>-</td>
<td>-</td>
<td>5.42 (1.62)</td>
</tr>
<tr>
<td>Interpersonal skills</td>
<td>-</td>
<td>-</td>
<td>5.57 (1.52)</td>
</tr>
<tr>
<td>Spouse support</td>
<td>-</td>
<td>-</td>
<td>5.94 (1.88)</td>
</tr>
<tr>
<td>Quality elements</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mastery</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-efficacy</td>
<td>-</td>
<td>-</td>
<td>87.65 (16.78)</td>
</tr>
<tr>
<td>Challenge</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical training and conditioning</td>
<td>-</td>
<td>-</td>
<td>5.60 (1.16)</td>
</tr>
<tr>
<td>Measure</td>
<td>Time-point 1 (Week prior to event)</td>
<td>Time-point 2 (Week following event)</td>
<td>Time point 3 (Three months following event)</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-----------------------------------</td>
<td>-----------------------------------</td>
<td>-------------------------------------------</td>
</tr>
<tr>
<td></td>
<td>Mean (SD)</td>
<td>Mean (SD)</td>
<td>Mean (SD)</td>
</tr>
<tr>
<td></td>
<td>Internal consistency (α)</td>
<td>Internal consistency (α or correlation (r))</td>
<td>Internal consistency (α or correlation (r))</td>
</tr>
<tr>
<td>Belongingness</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Perceived belonging           | -                                 | 4.16 (0.88)                       | 4.31 (0.76) 
| Linkages to the community     | -                                 | 3.52 (0.65)                       | 3.30 (0.71) |
| Meaning                       |                                   |                                   |                                           |
| Identity reflection           | -                                 | 3.30 (0.61)                       | 3.22 (0.61) 
| Leadership and responsibility | -                                 | 3.16 (0.89)                       | 3.12 (0.95) |
| Outcomes of participation     |                                   |                                   |                                           |
| PA Indicators                 |                                   |                                   |                                           |
| PA participation              | 452.26a (339.12)                  | 768.30b (695.73)                  | 232.72c (235.70) |
| Intentions                    | 6.35a (1.01)                      | 5.97ab (1.59)                     | 5.65b (1.55) 
| Planning                      | 6.35a (1.04) α=0.96               | 5.93a (1.64) α=0.96               | 5.89a (1.30) α=0.86 |
| Family integration            | -                                 | 2.99 (0.97)                       | 2.93 (0.95) |

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Note. $n = 49$ except for “spouse support” where $n = 36$ as 13 participants did not have spouses or partners; PA: Physical activity; All values represent pooled values across the 10 imputed datasets. For repeated measures ANOVA results of PA indicators, similar subscripts across rows indicate no difference between time-points, different subscripts indicate significant differences across time-points. PA participation represents moderate to vigorous physical activity participation in minutes. Challenge and both subscales of coaching were measured on a 7-point scale: 1 (never) to 7 (always). Spouse support, intentions, and planning were measured on a 7-point Likert scale: 1 (strongly disagree) to 7 (strongly agree). Self-efficacy was measured on a scale of 0% to 100%. Perceived belonging was measured on a 5-point scale: 1 (not at all true) to 5 (completely true). Linkages to the community, identity reflection, leadership and responsibility, and family integration were measured on a 4-point scale: 1 (yes, definitely) to 4 (not at all).
Analyses for the first objective consisted of within-subjects repeated measures analysis of variance (ANOVA) to determine any changes in physical activity indicators over the three time-points. A Bonferroni correction was used to correct for multiple comparisons, resulting in a significance value of \( p \leq .017 \). Analyses for the second objective consisted of correlations to determine associations between precursors and quality elements, precursors and participation outcomes, as well as quality elements and participation outcomes. Mediational analyses (assessing both prospective relationships and relationships assessing variables at the same time-point) were conducted to determine whether quality elements mediated the relationship between precursors and participation outcomes, amongst all precursors, quality elements, and outcomes. All mediations were conducted using the Hayes PROCESS macro for SPSS, and were tested using a bootstrap estimation approach with 1000 samples, with indirect, direct, and total effects computed using a 95% confidence interval (Hayes, 2013). (See Appendix K for supplemental tables with results of all mediational relationships tested.)

5.5 Results

Forty-nine participants (32 men, 16 women, 1 unspecified) took part in the study. Participants averaged 43.61 (8.81) years of age. The most common physical disabilities included traumatic brain injury (\( n = 24; 48.98\% \)) and spinal cord injury (\( n = 13; 26.53\% \)). Other conditions included back, leg, hip, and shoulder injuries, as well as nerve damage, amputations, and neck fractures. The majority of participants (\( n = 36; 73.5\% \)) were taking part in the event for the first time. Full demographic information is presented in Table 3.
Table 3. **Participant demographic information**

<table>
<thead>
<tr>
<th>Demographic Characteristics</th>
<th>N (%) / Mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Personal information</strong></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>( n = 32 ) (65.30 %)</td>
</tr>
<tr>
<td>Female</td>
<td>( n = 16 ) (32.70 %)</td>
</tr>
<tr>
<td>Do not wish to specify</td>
<td>( n = 1 ) (2.0 %)</td>
</tr>
<tr>
<td>Age</td>
<td>43.61 years (8.81)</td>
</tr>
<tr>
<td>Marital Status</td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>( n = 12 ) (24.50 %)</td>
</tr>
<tr>
<td>Married</td>
<td>( n = 28 ) (57.10 %)</td>
</tr>
<tr>
<td>Divorced</td>
<td>( n = 5 ) (10.20 %)</td>
</tr>
<tr>
<td>Do not wish to specify</td>
<td>( n = 4 ) (8.20 %)</td>
</tr>
<tr>
<td>Highest level of education completed</td>
<td></td>
</tr>
<tr>
<td>High school or equivalent</td>
<td>( n = 4 ) (8.20 %)</td>
</tr>
<tr>
<td>Some college</td>
<td>( n = 15 ) (30.60 %)</td>
</tr>
<tr>
<td>College degree</td>
<td>( n = 4 ) (8.20 %)</td>
</tr>
<tr>
<td>Some university</td>
<td>( n = 2 ) (4.00 %)</td>
</tr>
<tr>
<td>University Bachelor-level degree</td>
<td>( n = 7 ) (14.30 %)</td>
</tr>
<tr>
<td>University Master-level degree</td>
<td>( n = 16 ) (32.70 %)</td>
</tr>
<tr>
<td>University- Professional Post-Graduate</td>
<td>( n = 1 ) (2.00 %)</td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
</tr>
<tr>
<td>Caucasian</td>
<td>( n = 22 ) (44.90 %)</td>
</tr>
<tr>
<td>Hispanic</td>
<td>( n = 13 ) (26.50 %)</td>
</tr>
<tr>
<td>Black (e.g. African American, Canadian, Caribbean, etc.)</td>
<td>( n = 7 ) (14.30 %)</td>
</tr>
<tr>
<td>Aboriginal</td>
<td>( n = 3 ) (6.10 %)</td>
</tr>
<tr>
<td>Filipino</td>
<td>( n = 1 ) (2.10 %)</td>
</tr>
<tr>
<td>Person of mixed origin</td>
<td>( n = 1 ) (2.10 %)</td>
</tr>
<tr>
<td>Do not wish to specify</td>
<td>( n = 2 ) (4.00 %)</td>
</tr>
<tr>
<td><strong>Military information</strong></td>
<td></td>
</tr>
<tr>
<td>Years in military</td>
<td>13.63 years (8.69)</td>
</tr>
<tr>
<td>Years since left military/discharge</td>
<td>8.26 years (9.43)</td>
</tr>
</tbody>
</table>
### Demographic Characteristics

<table>
<thead>
<tr>
<th>Displacement</th>
<th>N (%) / Mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Years since acquisition of injury/disability</td>
<td>10.58 years (9.61)</td>
</tr>
</tbody>
</table>

#### Disability information

**Type of impairment**

- Traumatic brain injury (TBI) \( n = 24 \) (48.98 %)
- Spinal cord injury (SCI) \( n = 13 \) (26.53 %)
- Back injury \( n = 10 \) (20.41 %)
- Leg injury (includes knee and foot) \( n = 10 \) (20.41 %)
- Nerve damage \( n = 5 \) (10.20 %)
- Shoulder injury \( n = 4 \) (8.16 %)
- Amputation (Single leg above knee) \( n = 4 \) (8.16 %)
- Hip injury \( n = 3 \) (6.12 %)
- Vertebral fracture \( n = 2 \) (4.08 %)

**Primary mode of mobility**

- Walk independently \( n = 33 \) (67.34 %)
- Manual wheelchair \( n = 4 \) (8.16 %)
- Braces \( n = 3 \) (6.12 %)
- Walk with use of prosthesis \( n = 3 \) (6.12 %)
- Cane \( n = 1 \) (2.04 %)
- Do not wish to specify \( n = 5 \) (10.20 %)

**Program/organization participation information**

Number of times taken part in program prior to current participation

- 0 times \( n = 36 \) (73.5 %)
- 1 time \( n = 5 \) (10.20 %)
- 2 times \( n = 3 \) (6.10 %)
- 3 times \( n = 4 \) (4.10 %)
- 4 times \( n = 1 \) (2.00 %)
- 5 times \( n = 0 \) (0.00 %)
- More than 5 times \( n = 2 \) (2.10 %)

*Note.* Total number of participants = 49. \(^a^\)*Participants presented with multiple conditions, thus \( n \) is more than 49 for this measure, and percentage adds up to more than 100%. \(^b^\) Traumatic brain injury (TBI) may impact participants’ memory (Ghajar, 2000), and thus potentially the reliability of follow-up results. Analyses were conducted comparing participant results between those with and without a TBI. There was no significant difference, and, thus, participants with a TBI were included in the analyses.
Objective 1: Explore the impact of event participation on physical activity indicators (see Table 2). Within-subjects repeated measures ANOVA indicated that there were significant differences in moderate to vigorous physical activity across the three time-points \( [F(2,47) = 21.35, p < .001, \eta^2_{p} = 0.48] \). More specifically, there was an increase in physical activity participation from time-point 1 to 2 \( (p = 0.016) \), demonstrating that participants were involved in more physical activity during participation in the event. However, physical activity participation was lower at time-point 3 compared to both time-point 1 \( (p = 0.002) \) and time point 2 \( (p < .001) \). There were also significant differences in intentions \( [F(2,47) = 4.77, p = 0.02, \eta^2_{p} = 0.17] \), with a decrease in intentions from time-point 1 to time-point 3 \( (p = 0.013) \). No significant differences were present between the three time-points for physical activity planning \( [F(2,47) = 2.31, p = 0.16, \eta^2_{p} = 0.09] \).

Objective 2: Explore the relationships between quality precursors, quality elements, and participation outcomes

Associations between precursors of a quality experience and quality elements of participation (see Table 4). Significant positive associations were present between coach interpersonal skills and all measures of belongingness at time-points 2 and 3 \( (ps < .05) \), as well as between both measures of coaching behaviour and challenge at time-point 2 \( (ps < .05) \).
Table 4. Correlations between precursors to a quality experience and elements and outcomes of participation

<table>
<thead>
<tr>
<th>Precursor</th>
<th>Coaching behaviours (T2)</th>
<th>Support from spouse</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coaches’ interpersonal</td>
<td></td>
</tr>
<tr>
<td></td>
<td>skills</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Coaches’ provision of</td>
<td></td>
</tr>
<tr>
<td></td>
<td>advice and feedback</td>
<td></td>
</tr>
<tr>
<td></td>
<td>T2</td>
<td>T3</td>
</tr>
<tr>
<td>Quality elements of</td>
<td></td>
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</tr>
<tr>
<td>participation</td>
<td></td>
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</tr>
<tr>
<td>Mastery</td>
<td></td>
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<td></td>
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<td></td>
<td>- 0.029</td>
<td>0.234</td>
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<td>Linkages to community</td>
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<tr>
<td>T2</td>
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<td>0.221</td>
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<tr>
<td>T3</td>
<td>0.465*</td>
<td>0.226</td>
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<tr>
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<td>T3</td>
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### Precursor

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<th>Support from spouse</th>
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<td>Coaches’ provision of advice and feedback</td>
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<td>T3</td>
<td>0.142</td>
<td>0.153</td>
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### Outcomes of participation

#### PA Indicators

**Moderate to vigorous PA**

<table>
<thead>
<tr>
<th></th>
<th>T2</th>
<th>T3</th>
<th>T2</th>
<th>T3</th>
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<tbody>
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<td>0.033</td>
<td>0.012</td>
<td>0.243</td>
<td>0.147</td>
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<td>T3</td>
<td>0.043</td>
<td>0.040</td>
<td>0.233</td>
<td>0.162</td>
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#### Intentions

<table>
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<th>T2</th>
<th>T3</th>
<th>T2</th>
<th>T3</th>
</tr>
</thead>
<tbody>
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<td>0.042</td>
<td>0.017</td>
<td>0.194</td>
<td>0.160</td>
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<tr>
<td>T3</td>
<td>0.223</td>
<td>0.133</td>
<td>0.341*</td>
<td>0.063</td>
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#### Planning

<table>
<thead>
<tr>
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<th>T2</th>
<th>T3</th>
<th>T2</th>
<th>T3</th>
</tr>
</thead>
<tbody>
<tr>
<td>T2</td>
<td>-0.109</td>
<td>-0.193</td>
<td>0.138</td>
<td>0.148</td>
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<tr>
<td>T3</td>
<td>0.070</td>
<td>-0.059</td>
<td>0.140</td>
<td>0.783**</td>
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#### Family integration

<table>
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<tr>
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<th>T3</th>
<th>T2</th>
<th>T3</th>
</tr>
</thead>
<tbody>
<tr>
<td>T2</td>
<td>0.478**</td>
<td>0.004</td>
<td>0.341*</td>
<td>0.063</td>
</tr>
<tr>
<td>T3</td>
<td>0.396*</td>
<td>0.175</td>
<td>0.032</td>
<td>0.227</td>
</tr>
</tbody>
</table>

*Note. n = 49 except for “support from spouse” where n = 36 as 13 participants did not have spouses or partners; T1: time point 1 (week prior to event); T2: time point 2 (week following event); T3: time point 3 (3 months following event); PA: physical activity; Coaching behaviours only measured at time point 2; *p < .05; **p < .001.*
Associations between precursors of a quality experience and participation outcomes (see Table 4). Spousal support at time point 2 was significantly correlated with family integration at time-point 2 and intentions to seek program opportunities at time-point 3 ($p<.05$). Meanwhile spousal support at time-point 3 was significantly associated with physical activity planning at time-point 3 ($p<.001$). Further significant positive associations were present between coaches’ interpersonal skills and family integration at time-points 2 and 3 ($p<.01$).

Associations between quality elements and participation outcomes (see Table 5). Mastery at time-point 1 was significantly associated with planning at time point 1 and moderate to vigorous physical activity and planning at time-point 2 ($p<.05$). Mastery at time-point 2 was significantly associated with planning at time-point 2, and family integration at time-point 2 ($p<.05$). Mastery at time-point 3 was significantly correlated with family integration at time-points 2 and 3 ($p<.05$).

Both subscales of meaning (identity reflection, and leadership and responsibility) at time-point 2 were significantly associated with family integration at time-point 2 ($p<.05$). Identity reflection at time-points 2 and 3 were significantly associated with moderate to vigorous physical activity at time-points 2 and 3, respectively ($p<.05$). Leadership and responsibility at time-point 2 was significantly associated with intentions to seek opportunities at time-point 2 ($p<.05$). Leadership and responsibility at time-point 3 was also significantly associated with family integration at time-point 3 ($p=.005$).
Table 5. Correlations between quality elements and outcomes of participation

<table>
<thead>
<tr>
<th>Quality elements</th>
<th>Mastery</th>
<th>Meaning</th>
<th>Belongingness</th>
<th>Challenge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outcomes of participation</td>
<td>Self-efficacy</td>
<td>Identity reflection</td>
<td>Leadership and responsibility</td>
<td>Linkages to the community</td>
</tr>
<tr>
<td>PA Indicators</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PA</td>
<td>T2</td>
<td>T3</td>
<td>T2</td>
<td>T3</td>
</tr>
<tr>
<td>Moderate to vigorous PA</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T1</td>
<td>-.035</td>
<td>.080</td>
<td>-.061</td>
<td>-.004</td>
</tr>
<tr>
<td>T2</td>
<td>.059</td>
<td>.126</td>
<td>.100</td>
<td>.038</td>
</tr>
<tr>
<td>T3</td>
<td>.154</td>
<td>.076</td>
<td>.352*</td>
<td>.441**</td>
</tr>
<tr>
<td>Intentions</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T1</td>
<td>-.009</td>
<td>-.022</td>
<td>.031</td>
<td>-.105</td>
</tr>
<tr>
<td>T2</td>
<td>.129</td>
<td>.098</td>
<td>.264</td>
<td>.165</td>
</tr>
<tr>
<td>T3</td>
<td>-.042</td>
<td>.042</td>
<td>-.071</td>
<td>.022</td>
</tr>
<tr>
<td>Planning</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T1</td>
<td>.067</td>
<td>.045</td>
<td>.142</td>
<td>-.045</td>
</tr>
<tr>
<td>T2</td>
<td>.333*</td>
<td>.246</td>
<td>.051</td>
<td>-.010</td>
</tr>
<tr>
<td>T3</td>
<td>.020</td>
<td>-.006</td>
<td>.075</td>
<td>.106</td>
</tr>
</tbody>
</table>

Family integration

| T2 | .391* | .357* | .347* | .037 | .395* | .191 | .519** | .362* | .363* | .312* | .204 |
| T3 | .158 | .346* | .152 | .247 | .305 | .432** | .310 | .528* | .200 | .401* | .277 |

Note. n = 49; T1: Time-point 1 (week prior to event); T2: Time-point 2 (week following event); T3: Time-point 3 (3 months following event); PA: Physical activity; * p < .05; ** p ≤ 0.001
Both subscales of belongingness (i.e. belonging, and linkages to the community) at time-point 2 were significantly correlated with family integration at time-point 2 ($p$s<.05), while both subscales at time-point 3 were significantly correlated with family integration at time-points 2 and 3 ($p$s<.05). Linkages to the community at time-point 2 was significantly associated with intentions to seek opportunities at time-point 2 ($p$s<.05).

**Quality elements as mediators of the relationship between quality precursors and participation outcomes** (see Figure 2; Appendix K). Quality elements were examined as mediators of the relationship between precursors to quality participation and physical activity indicators. There was a significant indirect effect of coach interpersonal skills on planning at time-point 2 mediated by linkages to the community at time-point 2 (standardized indirect effect=0.16, SE=0.10, 95%CI=0.02-0.41). The mediator had a small effect on the relationship ($k^2=0.16(0.09)$, 95%CI=0.03-0.37; Preacher & Kelly, 2011) Linkages to the community at time-point 2 also mediated the significant indirect effect of coach interpersonal skills on intentions at time-point 2 (standardized indirect effect=0.20, SE=0.10, 95%CI=0.05-0.49), with a small effect ($k^2=0.20(0.09)$, 95%CI=0.05-0.43).

Quality elements also were examined as mediators of the relationship between precursors to quality participation and family integration. There was a significant indirect effect of coach interpersonal skills on family integration at time-point 2 mediated by linkages to the community at time-point 2 (standardized indirect effect=.18, SE=.11, CI=0.02-0.42). The mediator had a small effect on the relationship ($k^2=0.17(0.09)$, 95%CI=0.09-0.40).
95% CI = 0.03-0.40). Further analysis indicated a similar relationship whereby linkages to the community at time-point 3 was a mediator of the relationship between coach interpersonal skills and family integration at time-point 3 (standardized indirect effect = 0.20, SE = 0.10; CI = 0.04-0.48), again with a small effect ($k^2 = 0.19(0.09)$, 95% CI = 0.05-0.41).
Figure 2. Significant mediational relationships.

(a) Linkages to the community at time-point 2 mediates the relationship between coach interpersonal skills and family integration.

(b) Linkages to the community at time-point 3 mediates the relationship between coach interpersonal skills and family integration at time-point 3.
(c) Linkages to the community at time-point 2 mediates the relationship between coach interpersonal skills and planning at time-point 2

\[ a-path \beta = 0.41(0.13)^* \]
\[ b-path \beta = 0.39(0.15)^* \]
\[ c-path \beta = -0.27(0.15) \]
\[ c'-path \beta = -0.11(0.14) \]

(d) Linkages to the community at time-point 2 mediates the relationship between coach interpersonal skills and intentions at time-point 2

\[ a-path \beta = 0.05(0.01)^{**} \]
\[ b-path \beta = 0.50(0.14)^{**} \]
\[ c-path \beta = -0.16(0.14) \]
\[ c'-path \beta = -0.04(0.15) \]

*Note. Coach interpersonal skills only measured at time-point 2 (week following event participation). *p<.05; **p≤.001; c' represents the direct effect of the independent variable on the outcome variable while c represents the total effect.*
5.6 Discussion

The current study aimed to address key gaps in the literature regarding the physical activity participation of Veterans with a physical disability through two research objectives. The first objective of the study was to examine changes in physical activity and its associated determinants as a result of physical activity event participation. It was hypothesized that there would be an increase in indicators of physical activity following participation in an event. This hypothesis, however, was not supported. While physical activity participation increased during the event, three months following the event physical activity participation decreased beyond levels reported prior to or following event participation. A further physical activity indicator, intentions to seek further program opportunities, also decreased. Intentions were higher prior to event participation compared to the three-month follow-up. Finally, there were no changes in physical activity planning.

Considering the program aims, and the current adapted physical activity literature, provides a potential explanation of these findings. Specifically, while events aimed to promote physical activity participation, this goal was not the sole focus and, thus, may not have been continuously or fully emphasized by all staff members in comparison to other desired outcomes. However, the most likely explanation for the decrease in physical activity and intentions is found within current literature exploring the effectiveness of event-based interventions in promoting physical activity participation among individuals with a physical disability (Foulon, Martin Ginis, Benedict, & Latimer, 2010; Gainforth,
Latimer-Cheung, Athanasopoulos, & Martin Ginis, 2013; Gainforth, Latimer-Cheung, Athanasopoulos, & Martin Ginis, 2015). These findings suggest that single event-based interventions aimed at raising awareness and promoting physical activity participation are not successful in achieving long-term physical activity participation (Foulon et al., 2010; Gainforth et al., 2013). The lack of effectiveness of single interventions may be explained by a lack of follow-up or guidance to aid participants when facing physical activity barriers in the real-world (Gainforth et al., 2013). The decision to include events with fixed start and end dates was made to permit definite pre- and post- data collection time-points. However, researchers should consider evaluating the outcomes of ongoing physical activity events, which include repeated follow-up events, and may be more effective in promoting participation due to maintained program presence, continued event and physical activity opportunities, and potentially higher participant commitment to the program and physical activity tasks. Finally, there is no knowledge as to how ongoing physical activity participation was promoted during the event. Future research should include observational investigations to determine whether and how physical activity is being promoted and if the strategies employed are the most effective.

The second objective of this study was to explore the relationships between precursors to quality participation, quality participation elements, and participation outcomes in the context of a physical activity event. It was hypothesized that quality elements delivered during an event would mediate the relationship between precursors to a quality experience and event participation outcomes (i.e. physical activity indicators
and family integration). These hypotheses were supported with regard to the quality element of belongingness, specifically linkages to the community, which assessed whether participants got to know people in the Veteran community and came to feel more supported by the Veteran community through their participation. At time-point 2, linkages to the community influenced the relationships between coach interpersonal skills and planning, and intentions. Linkages to the community also influenced the relationship between a coach’s interpersonal skills and family integration immediately after the event (time-point 2) and at the three-month follow-up (time-point 3). Of note, no prospective models demonstrated significance, with mediation only present for precursors, quality elements, and outcomes measured at the same time-point.

These findings, including the importance of coach interpersonal skills, and its relationship with the quality element of belongingness (i.e. linkages to the community) and participation outcomes, are supported within existing physical activity literature (Allen & Hodge, 2006; Pensgaard & Roberts, 2002). The physical activity coaching literature suggests that coaches are an important influence on the quality of an athlete’s sport experience (Pensgaard & Roberts, 2002), and that quality coaches can foster participants’ sense of relatedness (i.e. a basic need akin to belongingness; Allen & Hodge, 2006). Coaching has been identified as a potential precursor to a quality participation experience for Veterans with a physical disability (Shirazipour et al., under review). The importance of knowledgeable coaches has also been identified as an important contextual feature for fostering quality elements within a systematic review of
qualitative research exploring community-based physical activity programs for individuals with a disability (Shirazipour et al., in progress). These elements, along with the coaching behaviours that foster them, have been associated with physical activity behaviour and physical activity determinants (Vallerand, 2007). The findings present the first quantitative evidence linking coaching behaviours to quality experiences among Veterans with a physical disability. A finding which has previously been demonstrated in the youth athlete literature (Erickson, Côté, Hollenstein, & Deakin, 2011).

The items included within the coach interpersonal skills subscale (i.e. coaches’ understanding for the participant as a person, listening skills, concern for the participants’ whole self, and approachability and trustworthiness with personal problems) can be considered to be indicative of autonomy-supportive coaching behaviours (Black & Deci, 2000; Deci & Ryan, 1985). These behaviours are encouraged within sport as they promote physical activity determinants, including physical activity intentions (Chatzisarantis, Hagger, & Smith, 2007). Furthermore, autonomy-supportive behaviours have been demonstrated to positively influence the basic psychological needs of athletes with and without a physical disability, including relatedness (Amorose & Horn, 2000, 2001; Banack, Sabiston, & Bloom, 2011; Martin Ginis et al., 2016).

The relationship between belongingness and participation outcomes, also identified in the results, is potentially explained by literature within the fields of physical activity and the transition to civilian life. Research on belongingness within physical activity have demonstrated that different aspects of belongingness, including social
integration and social support, are important predictors or associates of physical activity among individuals with a physical disability (Arbour-Nicitopoulos, & Martin Ginis, 2009; Martin Ginis et al., 2012). Within the literature on the transition to civilian life, a sense of community belongingness has been identified as an important element for promoting well-being and easing the adjustment to civilian life (Hachey et al., 2016; Hourani et al., 2012; MacLean et al., 2014; Ross, 2002). Specifically, the literature suggests that a sense of community belongingness acted as a protective factor for physical and mental health during a Veteran’s transition, alongside mastery and social support (Hachey et al., 2016). The current findings thus extend the literature on the transition process by providing evidence for the development of belongingness within quality physical activity experiences, and the potential importance of coaches in supporting Veteran transitions.

Within this study there are limitations which must be addressed. The first two limitations relate to the measures utilized in the current study. The current lack of measures dedicated specifically to assessing quality physical activity experiences, resulted in a need to utilize other measures which matched the conceptualization of the elements. While these measures achieved their purpose, they had not been validated within the population or for usage in assessing quality. With the development of a measure of quality participation, further research should be conducted to confirm and support the current findings.
A second limitation relating to the measures is the decision to use single item measures or key items from subscales rather than an entire questionnaire. This decision was necessary to accommodate program concerns regarding questionnaire length and participant limitations resulting from their impairments, and can be justified as a result of these ethical concerns (Hoeppner, Kelly, Urbanoski, & Slaymaker, 2011). However, research suggests that this approach to items and measures may not be as limiting and impactful on an investigation and findings as sometimes proposed (Bergkvist & Rossiter, 2007; Gardner, Cummings, Dunham, & Pierce, 1998; Hoeppner et al., 2011; Latimer-Cheung et al., 2013). Research within the field of health promotion has identified that in certain cases single-item measures may be as effective as multi-item measures, if the concept is clear and easily understood by participants (Bergkvist & Rossiter, 2007; Gardner et al., 1998; Latimer-Cheung et al., 2013). Further research has also suggested that single-item measures may improve the effectiveness of the investigation by minimizing monotony and time commitment on behalf of participants, and that the approach promotes ecological validity by taking an approach that highlights clinical value and utility (Hoeppner et al. 2011). The concept of the inclusion of single-item measures or lower-item measures compared to a full subscale does, however, require consideration as it may impact the reliability value of subscales (Cortina, 1993; Field, 2009).

A third limitation is that although prospective relationships were examined (i.e. quality elements at time-point 2 and outcomes at time-point 3), mediational relationships
did not emerge. The lack of evidence for these prospective models may be the result of the extended timespan between the follow-up time-points. This lack of significance impacts our ability to determine causation. An additional limitation relates to the multiple mediational analyses run, and thus the possibility of a Type II error (i.e. failure to reject the null hypothesis). A final limitation includes the low response rate among Veterans participating in the events, which impacts the generalizability of study findings. Impacted by this low response rate is statistical power. Ideally, more participants would have been involved in the study, which would have allowed approaches such as multi-level modeling that would permit differentiation in the results between the different events and programs. As a result of the low number of study participants from certain events, the decision was to evaluate outcomes such as physical activity indicators by combining participants from all events. While recruitment is a common problem when aiming to conduct research within a limited sub-population such as Veterans with a physical disability (Martin Ginis & Hicks, 2005), future researchers could aim to recruit on site to identify more participants or investigate programs with more participants that meet the study inclusion criteria.

The current study provided the first investigation of the impact of physical activity event participation on physical activity indicators among Veterans with a physical disability. The findings also fill important gaps in the research on quality physical activity participation experiences for Veterans by furthering our knowledge of the relationships between precursors to quality, quality elements, and outcomes,
providing the first quantitative evidence of associations between the three domains of quality. As a result, researchers and practitioners may benefit from the foundation provided by this investigation. The study provides direction for further investigation into how effective physical activity programs are in reaching their goals to promote physical activity and successful transitions to civilian life, the role of quality elements in achieving desired program outcomes, which quality precursors and elements should potentially be fostered for programs to attain these goals, and how they may be fostered within different program contexts so as to achieve optimal outcomes.

5.7 References


Hourani, L., Bender, R. H., Weimer, B., Peeler, R., Bradshaw, M., Lane, M., & Larson, G. (2012). Longitudinal study of resilience and mental health in Marines leaving
military service. *Journal of Affective Disorders, 139*(2), 154-165. doi: 10.1016/j.jad.2012.01.008


Chapter 6

General Discussion

The objective of this dissertation was to begin to build an understanding of quality physical activity participation for military Veterans with a physical disability. In particular, the aims were to understand what elements constitute a quality physical activity experience, explore how programs deliver physical activity to Veterans with a physical disability, and examine the processes through which quality elements may influence participation outcomes. The investigations contribute to an emerging understanding about how to implement and promote quality physical activity experiences among Veterans with a physical disability. In this final section, I summarize key findings, and discuss the strengths and limitations of this dissertation. In addition, implications of the findings are explored, and pathways for future research are presented.

6.1 Summary of Findings

The first dissertation study provides an understanding of quality physical activity participation for military Veterans with a physical disability. This study represents the first investigation with the specific objective to explore quality participation experiences within (a) physical activity and (b) a military population. Within this study, elements and precursors of a quality experience are identified. The study also provides insight into how the elements may be fostered within a physical activity program. All themes are situated and discussed in relation to previous conceptualizations of quality. The results extend and
strengthen our knowledge of quality in two important ways, having both theoretical and practical implications.

First, in relation to the study’s theoretical implications, the themes that emerge (group cohesion, challenge, having a role, and independence and choice) provide support for the conceptualization of key experiential elements of participation based upon a review of previous literature (Martin Ginis, Evans, Mortenson, & Noreau, 2016). Thus, Study 1 lends support to the face validity of this conceptual framework within a physical activity context. Interestingly, engagement, a quality participation element identified by Martin Ginis and colleagues (2016) did not emerge as a theme. It tended to be discussed more as an outcome of quality participation. This finding underscored the need to understand how quality participation elements interrelate. The study results also provide insight into nuances of the concept of quality participation to specific contexts and audiences. Specifically, the findings highlight differences in how quality experiences are expressed within physical activity for Veterans post-injury compared to the conceptualization provided by Martin Ginis and colleagues (2016) developed for more general contexts. For example, the theme “group cohesion” emerges rather than “belongingness” (Martin Ginis et al., 2016), reinforcing that the group aspect of a quality experience is fostered by both the task and social dimensions of a group (Carron, Widmeyer, & Brawley, 1985). Furthermore, the study findings begin to provide an indication of how each quality element may be fostered, an aspect of quality participation yet to be formally explored.
The second important finding, which relates to the practical implications of the first study, is the identification of precursors to quality experiences. Participants described aspects of the physical and social environments, and program structure, which should be present in order for a quality experience to be possible. This result indicates that quality elements cannot be considered or fostered in a vacuum but exist alongside other factors: precursors. When developing a quality physical activity experience thought must thus be given to all aspects of a program or experience from quality elements to contextual features.

The second dissertation study explored how adapted physical activity programs are delivered, and considered how delivery strategies link to conceptualizations of quality participation for Veterans with a physical disability. Staff interviews and program documentation from three different types of physical activity programs were analyzed using thematic analysis, and also interpreted using conceptualizations of quality participation to determine whether the strategies may create a quality experience. Four themes were identified as strategies for delivering physical activity experiences that link to conceptualizations of quality participation: (1) foster social connections; (2) challenge participants; (3) tailor programs and outcomes to match participant needs; and (4) include knowledgeable coaches/instructors. All themes relate to previous discussions of quality elements and precursors identified by Veterans in the first dissertation study, and explored within the larger quality participation literature (Hammel et al., 2008; Martin
Ginis et al., 2016). This finding is beneficial in suggesting a potential congruency in the understanding of quality participation between program staff and participants.

The findings of the second study fill important gaps for researchers and practitioners, resulting in both theoretical and practical implications. Results of a systematic review have indicated a lack of knowledge regarding contexts and strategies used by community-based programs to promote quality physical activity experiences (Shirazipour et al., in progress). This second study thus provides a theoretical contribution to the literature on quality experiences by building evidence of practical strategies and contexts for programs and interventions that link conceptually to or may foster quality participation. This contribution is achieved by identifying real-world strategies utilized by program staff in the aim of delivering optimal and valuable physical activity experiences, findings which will also benefit practitioners aiming to develop or improve physical activity programming.

The findings also provide further direction for potential interrelationship between quality participation elements, an important theoretical implication. Program providers discussed using a strategy founded upon one quality participation element to foster another, such as using the element of challenge to build belongingness. Thus, it may be that strategies should be considered as a whole in regards to how they may impact the entire physical activity experience, rather than in relation to a particular quality participation element. While these interrelationships help build our theoretical understanding of quality, they also have important practical implications by contributing
towards knowledge of how to create and develop programs and interventions that promote quality experiences.

The final dissertation study evaluates the impact of a physical activity event on the physical activity participation of Veterans with a physical disability, and examines the relationships between quality precursors, quality elements of participation, and participation outcomes. Participation did not positively impact physical activity outcomes over the long-term. However, findings supported the importance of the quality element of belongingness in mediating the relationship between the precursor of coach interpersonal skills and indicators of physical activity and the transition to civilian life.

The findings extended the results of the previous two dissertation studies, and have both theoretical and practical implications. From a theoretical perspective, the study advances research within the field of adapted physical activity, by providing evidence of the importance of knowledgeable well-trained coaches and instructors as precursors to a quality experience. Within the literature on physical activity for individuals with a disability, a systematic review exploring contextual features of community-based physical activity programs that are associated with quality participation experiences identified instructor-led programs and specifically, the presence of knowledgeable coaches and instructors as an important contextual feature in fostering quality elements (Shirazipour et al., in progress). The potential importance of coaches as a precursor to a quality experience for Veterans with a physical disability was also highlighted in the first manuscript. However, these results provide quantitative evidence of the importance of
quality elements and quality precursors to physical activity event participation and outcomes. Through this evidence, the face validity and utility of the conceptualization of experiential aspects of participation presented by Martin Ginis and colleagues (2016) and the different elements of a quality physical activity experience identified in the first dissertation study are strengthened. This latter study also contributes towards the literature within the field of military and Veteran health by suggesting that a quality physical activity experience will influence outcomes related to the transition to civilian life. These findings establish the importance of exploring and evaluating quality elements within investigations of physical activity participation experiences so as to facilitate the achievement of varied program and participant goals.

From a practical perspective, the study findings can potentially guide program staff in developing quality physical activity experiences or in achieving participation outcomes. For example, the results suggest the importance of coach interpersonal skills, perhaps akin to autonomy-supportive coaching behaviours in promoting quality elements and participation (Deci & Ryan, 1985). In a further example, the results also highlight the importance of fostering participants’ sense of connection within the Veteran community, highlighting belongingness as an important quality element for achieving desired program outcomes for Veterans with a physical disability.

6.2 Strengths

There are three fundamental strengths to this dissertation and the studies presented herein. The first strength relates to the understandings of quality that guide the
methods and interpretation of results. Specifically, the dissertation is framed within participation frameworks. For example, the first manuscript considered several different participation frameworks in interpreting quality experiences for Veterans with a physical disability. Within the second and third manuscripts, rather than be guided solely by the quality elements identified from the first study, the approach to and interpretation of the second and third studies were further grounded in Martin Ginis and colleagues’ (2016) conceptualization. The decision to adopt an interpretive focus based in Martin Ginis and colleagues’ conceptualization was made as the experiential elements identified by Martin Ginis and colleagues resulted from a comprehensive review of all research exploring quality participation. Thus, it included common perspectives and critical points of participation identified in other frameworks, permitting a more evidence-based and generalizable perspective of quality compared to other frameworks. It was for this reason that the terminology of the third study followed Martin Ginis and colleagues’ conceptualization and definitions alongside those of the first manuscript.

The second strength relates to the variety of views and perspectives sought in all three dissertation studies. For example, in the first dissertation study, due to participant sampling, participants had different types of injury and mechanisms of injury, while also representing different nations and different types of sport experiences. Furthermore, both male and female Veterans are represented within the first and third studies. Recruiting women is a common challenge within Veteran health research (Yano et al., 2010). Finally, the topic of quality participation was explored from multiple perspectives,
including physical activity participants, and program providers (e.g. administrators, coaches). As a result of this variety, a rich, comprehensive, and generalizable understanding of quality is developed.

The third and final key strength relates to the methodological approach of this dissertation. Through the use of both qualitative and quantitative methods to understand quality physical activity participation experiences, a more comprehensive knowledge is built compared to if only one research method been utilized. Furthermore, the use of qualitative methods within the first study helped to provide a rich, multi-faceted perspective towards understanding the concept of quality physical activity for Veterans with a physical disability, imbued with the meanings and views of those involved in the physical activity contexts (Patton, 2002; Sparkes & Smith, 2014). This knowledge improved measure and item selection in the final dissertation study, as the researchers could determine whether operationalization of the items matched Veterans’ understanding of the quality precursors and elements, along with the conceptualization of Martin Ginis and colleagues (2016).

6.3 Limitations

While this dissertation has a number of important strengths, there are key limitations that require discussion. The first limitation relates to bias and the participants in the second dissertation study. As program staff involved in the development of physical activity events, these participants had a vested interest in the positive portrayal and discussion of their program, despite program and participant anonymity. As a result,
potential conflicts or differences of opinion among staff or departments of an
organization may not have been discussed.

The second limitation is specific to the third dissertation study. For this study,
many difficulties in program recruitment were experienced from programs unwilling to
distribute questionnaires to participants, to program staff voicing concerns regarding
questionnaire length despite the use of subscales and single-item measurements as
opposed to full measures. As a result, the number of participants and programs were
limited, impacting the type and the power of the analysis.

The third limitation considers individual preferences regarding quality
participation. The purpose of this dissertation was to develop a comprehensive
understanding of quality generalizable to Veterans with differing impairments and sport
experiences. However, it is important to consider that personal preferences may impact
individual participants’ experience of quality. As such, future research must consider the
individual perspectives regarding quality, how they may be incorporated into program
delivery, and what factors may impact individual views of quality experiences.

A final important consideration is recognition of my own perspective and position
as a researcher, which may influence analysis and interpretation of findings (Sparkes &
Smith, 2014). My position as a doctoral candidate in health promotion often results in
positive views of physical activity, which may contrast with potential participant
perspectives of negative experiences. As a result, extra effort had to be made during
interviews and interpretation of participant experiences to ensure that differing
perspectives were not overlooked. To aid in limiting the impact of personal perspectives, critical friends were included within the qualitative analyses to promote consideration of diverse interpretations (Sparkes & Smith, 2014). An additional personal limitation which must be identified, is my perspective as a civilian without a physical disability. To minimize this limitation, I aimed to build knowledge of Veteran experiences and physical activity for Veterans with a physical disability through intensive and critical reading of both academic and non-academic literature and media covering military, injury, and physical activity experiences, as well as discussion with military personnel and Veterans with a disability from the countries included in the study. To further mitigate this limitation, Dr. Alice Aiken, a military Veteran and academic with extensive research experience in the field of military and Veteran health was involved in the research process, and as a co-author on all three manuscripts.

6.4 Implications

The overarching findings of the manuscripts presented in this dissertation have critical theoretical and practical implications.

6.4.1 Theoretical implications

The main theoretical implication of this dissertation relates to efforts to understand and determine what constitutes quality participation, and as a result, how to achieve full participation for Veterans with a physical disability. Individuals with a physical disability, including Veterans, have a basic right to “full and effective participation” in all activities and endeavours, including physical activity (United Nations
Department of Public Information, 2006). Attempts to determine whether individuals with a disability are enjoying this right were hampered by a lack of knowledge of what constituted full participation. The gap lay in the lack of definition for a key element of full participation: quality participation (Imms & Granlund, 2004). The findings from this dissertation fill that gap in regards to quality participation for physical activity among Veterans with a physical disability. For example, two theoretical implications result from the findings of the first manuscript. Specifically, the results identify two aspect of quality participation that had not yet been explored or identified: (1) the presence of precursors which may influence quality experiences; and (2) identification of how quality elements may be fostered. Furthermore, the results of the first and second manuscripts provide an indication of the potential relationships that may exist amongst quality elements, an important theoretical consideration for researchers aiming to evaluate or model quality participation. The findings thus provide researchers with direction for exploring and evaluating whether Veterans with a physical disability have quality experiences, and have opportunities for full participation.

While this dissertation is specific to Veterans with a physical disability, the findings related to quality participation and program delivery may still have theoretical implications generalizable to the broader population of civilians with a physical disability. As one of the first investigations into the applicability of Martin Ginis and colleagues’ (2016) conceptualization of experiential elements of participation within physical activity, the findings provide insight into what quality elements are relevant
within a physical activity context and how they may be fostered within physical activity programs and events. While the importance of different elements may vary depending on the population, common features of a physical activity environment such as coaches, peers, athlete roles, challenge, and cohesion, remain. The information generated within this dissertation can thus help guide understanding of quality within the broader context of adapted physical activity, and serve as a foundation for framework and/or theory development related to quality participation and/or full participation in physical activity.

The findings relating to quality participation can also have theoretical implications if examined in relation to existing frameworks aiming to understand the experiences of other populations in sport (e.g. the youth athlete population with the Personal Assets Framework; Côté, Turnnidge, & Evans, 2014) or aiming to understand motivation (e.g. Self-Determination Theory; SDT; Deci & Ryan, 1985). As with the Personal Assets Framework, the understanding of quality developed within this dissertation highlights the importance of interpersonal relationships, the setting, and how the environment may influence activity participation and relationships.

Within other frameworks, such as SDT, which has previously been used to explore Veterans’ participation in a physical challenge (Burke & Utley, 2013), further parallels exist. For example, SDT highlights three constructs as basic needs for all experiences: competence (i.e. a need to feel a sense of achievement or mastery); relatedness (i.e. a need to feel connected and engaged with others); and autonomy (i.e. having choice or options). Within this dissertation, all three basic needs are incorporated
into an understanding of quality physical activity participation experiences for Veterans with a physical disability. Parallels include the importance of relatedness, which can be connected to belongingness or group cohesion and emerged as crucial in all three manuscripts. In addition, autonomy can be related to the quality element of independence and choice described in Manuscript 1. Finally, competence can be connected to quality elements in this dissertation including the importance of challenge, which was considered important in fostering a sense of achievement. These parallels between existing theories and frameworks and the conceptualization of quality within this dissertation suggests a congruence in how optimal experiences can be understood, and how the current findings may also be positioned within previous literature.

Finally, the findings of this dissertation may also potentially have theoretical implications for the military and Veteran literature, specifically through the underlying importance of social relationships that emerged in all manuscripts. Military trust research would suggest that fostering person-based trust through such factors in interactions as communication, shared values and goals, and similarity between the trustor and the trustee, all highlighted within the quality element of group cohesion in Manuscript 1, would be essential in fostering quality social interactions (Adams & Webb, 2002). Therefore, a similarity exists between trust models and the findings on groups and social relationships in quality physical activity experiences for Veterans with a physical disability. The potential similarities may be a result of the participant or trustor’s military history and the similarity between small military teams and physical activity groups.
which may often require interdependence, a key antecedent of trust (Adams & Webb, 2002). The group cohesion element and coach interpersonal skills pre-cursor that emerge in Manuscripts 1-3 suggest that the importance of trust, a key factor of military life (Adams & Webb, 2002), remain and are essential components for quality experiences among Veterans in life post-injury. Therefore, the field of literature exploring interdependence and trust, and how these elements may be fostered, should be further considered in the Veteran health literature and when aiming to understand the transition to civilian life and life post-injury.

6.4.2 Practical implications

Key practical implications relate to efforts to develop and deliver quality programs. The findings of the three studies provide a framework for practitioners aiming to develop physical activity programming that fosters quality physical activity experiences. Organizers are encouraged to consider the physical and social environments, in addition to elements of program structure, when determining what their program will be, as well as when, where, and how their programs or interventions will be implemented. They could also determine how to best target and incorporate quality elements within their programs so as best to achieve the desired outcomes. The strategies identified in the second manuscript provide program organizers with knowledge of techniques that may influence quality elements. The findings of the third manuscript provide evidence for the potential importance of finding or training knowledgeable coaches and instructors to promote program outcomes.
From a policy perspective, initiatives that consider quality elements and precursors when implementing and delivering their programs, and are demonstrated to provide quality experiences, should be provided with the support necessary to implement quality elements and maintain long-term program delivery.

6.5 Future Directions

The findings of this dissertation present multiple pathways for future research aimed at understanding quality within physical activity contexts, and physical activity for military Veterans with a physical disability. Most pressing is garnering perspectives of quality participation from people with diverse physical activity experiences. Within this dissertation, all participants were involved in physical activity programs, either in development and delivery or as participants. As a result, the experiences of those individuals who participated in physical activity but who chose to discontinue their participation, as well as those Veterans with a physical disability who chose never to engage in physical activity are not reflected. These individuals may have different, potentially negative, physical activity perceptions and experiences that influence their views of quality. Further research should seek and consider the perspectives of non-active Veterans with a physical disability.

Researchers should develop and further evaluate physical activity interventions that aim to create quality experiences to offer empirical support for the conceptual relationships described in this dissertation. Research aims for these interventions may include exploring the utility of the strategies identified in the first and second dissertation
study, as well as how to foster the key elements of linkages to the community and coach interpersonal skills identified as crucial in the third dissertation study. These investigations would benefit from the usage of measures developed specifically to evaluate the presence of quality elements within a physical activity experience. Thus, measure development is critical for further research in the field of quality participation. Finally, with the aim of promoting full participation, researchers should aim to determine the linkages between quantity and quality of participation experiences. Potential research questions could include what outcomes result from quality participation experiences, and determining the amount of quality experiences necessary to achieve both short- and long-term participation outcomes.

Future directions on the topic of full participation could also be related to policy initiatives. With knowledge of how to define and operationalize quality participation, policy initiatives could include supporting proposals that promote further equity regarding the quantity and quality of physical activity opportunities available to Veterans with a physical disability when compared to individuals without a disability.

6.6 Conclusion

This dissertation has provided an in-depth exploration of the elements of a quality physical activity experience for Veterans with a physical disability, and how physical activity programs are delivered to Veterans. The dissertation also examined the processes through which quality elements may influence participation outcomes. Findings provide some insight regarding the importance of precursors for achieving quality experiences,
and the role of quality elements in achieving program outcomes. It is anticipated that the findings of the dissertation studies will aid researchers and practitioners in understanding, developing, and evaluating quality experiences for Veterans with a physical disability. Ideally, through improved knowledge and evidence of quality participation, considerations of quality experiences will be included as an essential part of the mission of physical activity programs. By delivering a quality physical activity experience to participants, physical activity programs for Veterans with a physical disability would both promote full participation and achieve outcomes integral to the well-being of Veterans post-injury.

6.7 References


APPENDIX A

Ethics Approval
December 06, 2014

Miss Celine Shinaizipou
Ph.D. Candidate
School of Kinesiology and Health Studies
Queen’s University
28 Division Street
Kingston, ON, K7L 3N6

GREB Ref #: GFHE-181-14; Romeo #: 6014509
Title: “GFHE-181-14 Exploring Sport Participation among Individuals with Physical Disabilities”

Dear Miss Shinaizipou:

The General Research Ethics Board (GREB), by means of a delegated board reviewer, has cleared your proposal entitled "GFHE-181-14 Exploring Sport Participation among Individuals with Physical Disabilities" for ethical compliance with the Tri-Council Guidelines (TCFS) and Queen’s ethics policies. In accordance with the Tri-Council Guidelines (article D.1.6) and Senate Terms of Reference (article G), your project has been cleared for one year. At the end of each year, the GREB will ask if your project has been completed and if not, what changes have occurred or will occur in the next year.

You are reminded of your obligation to advise the GREB, with a copy to your unit REB, of any adverse event(s) that occur during this one year period (access this form at https://services.queensu.ca/romeo_researcher/ and click Events - GREB Adverse Event Report). An adverse event includes, but is not limited to, a complaint, a change or unexpected event that alters the level of risk for the researcher or participants or situation that requires a substantial change in approach to a participant(s). You are also advised that all adverse events must be reported to the GREB within 48 hours.

You are also reminded that all changes that might affect human participants must be cleared by the GREB. For example, you must report changes to the level of risk, participant characteristics, and implementation of new procedures. To make an amendment, access the application at https://services.queensu.ca/romeo_researcher/ and click Events - GREB Amendment to Approved Study Form. These changes will automatically be sent to the Ethics Coordinator, Gill Irving, at the Office of Research Services or grirvin@queensu.ca for further review and clearance by the GREB or GREB Chair.

On behalf of the General Research Ethics Board, I wish you continued success in your research.

Yours sincerely,

Joan Stevenson, Ph.D.
Chair
General Research Ethics Board

c: Dr. Amy Latham-Chen, Faculty Supervisor
Dr. Brendan Gurd, Chair, Unit REB
January 29, 2015

Miss Celina Shirazipour
Ph.D. Candidate
School of Kinesiology and Health Studies
Queen's University
78 Division Street
Kingston, ON, K7L 3N6

Dear Miss Shirazipour:

RE: Amendment for your study entitled: GPHE-181-14 Exploring Sport Participation among Individuals with Physical Disabilities; ROMEOs 6014309

Thank you for submitting your amendment requesting the following changes:

1) To change the role of Miss Celina Shirazipour from Principal Investigator of the project to Co-investigator;
2) To change the role of Dr. Amy Latimer-Chung from Co-investigator to Principal Investigator;
3) To add Dr. Jean Côté to the project as Co-investigator;
4) To add Dr. Blair Evans to the project as Co-investigator;
5) To add Ms. Veronica Allan to the project as Co-investigator;
6) To revise the purpose of the study to focus solely on understanding quality sport participation;
7) To recruit and conduct interviews with 20 veterans with physical disabilities involved in sport;
8) To revise the interview guide to remove a number of questions and modify the remaining question;
9) To provide participants with a $30 gift certificate to their choice of Starbucks or Amazon;

By this letter you have ethics clearance for these changes, and the Romeo file has been updated accordingly.

Good luck with your research.

[Signature]

Joan Stevenson, Ph.D.
Chair
General Research Ethics Board

c: Dr. Amy Latimer-Chung, Supervisor
   Dr. Jean Côté, Dr. Blair Evans, Ms. Veronica Allan, Co-investigators
February 23, 2015

Dr. Amy E. Latimer-Chung
Associate Professor
School of Kinesiology and Health Studies
Queen's University
Kingston, ON, K7L 2N6

GREB Ref #: GHE-188-15; Rome # 6014849
Title: "CFHE 188-15 Sport programs for individuals with physical disabilities"

Dear Dr. Latimer-Chung,

The General Research Ethics Board (GREB), by means of a delegated board reviewer, has cleared your proposal entitled "CFHE 188-15 Sport programs for individuals with physical disabilities" for ethical compliance with the Tri-Council Guidelines (TCPS) and Queen's ethics policies. In accordance with the Tri-Council Guidelines (article D.1.6) and Senate Terms of Reference (article G), your project has been cleared for one year. At the end of each year, the GREB will ask if your project has been completed and if not, what changes have occurred or will occur in the next year.

You are reminded of your obligation to advise the GREB, with a copy to your unit REB, of any adverse event(s) that occur during this one year period (access this form at https://services.queensu.ca/romeo_researcher and click Events - GREB Adverse Event Report). An adverse event includes, but is not limited to, a complaint, a change or unexpected event that alters the level of risk for the researcher or participant or situation that requires a substantial change in approach to a participant(s). You are also advised that all adverse events must be reported to the GREB within 48 hours.

You are also reminded that all changes that might affect human participants must be cleared by the GREB. For example you must report changes to the level of risk, participant characteristics, and implementation of new procedures. To make an amendment, access the application at https://services.queensu.ca/romeo_researcher and click Events - GREB Amendment to Approved Study Form. These changes will automatically be sent to the Ethics Coordinator, Gill Irving, at the Office of Research Services or romeo@queensu.ca for further review and clearance by the GREB or GREB Chair.

On behalf of the General Research Ethics Board, I wish you continued success in your research.

Yours sincerely,

[Signature]

Joan Stenmen, Ph.D.
Chair
General Research Ethics Board

c: Miss Cehna Shabanpour, Co-investigator
Dr. Alice Aiken, Co-investigator
Dr. Brendan Gurt, Chair, Unit REB
Ms. Vossi Barchull, Dept. Admin.
August 14, 2015

Dr. Amy Latimer-Cheung  
Associate Professor  
School of Kinesiology and Health Studies  
Queen’s University  
KHS Building  
28 Division Street  
Kingston, ON, K7L 3N6

Dear Dr. Latimer-Cheung:

RE: Amendment for your study entitled: GPHE-181-14 Exploring Sport Participation among Individuals with Physical Disabilities; ROMEO# 6014389

Thank you for submitting your amendment requesting the following changes:

1) To change the purpose of the study from developing knowledge of veterans’ views of quality sport participation to understanding the views of program staff who deliver sport programs to veterans with a physical disability;

2) To change participants from 20 veterans with a physical disability involved in sport to 20 staff members from veteran sport organizations;

3) To change the method from two interviews to one one-hour long semi-structured interview;

4) Revised Letter of Information / Consent Form (v. 2015/08/13);

5) Demographics Questionnaire (v. 2015/08/13);

6) Interview Guide (v. 2015/08/13).

By this letter you have ethics clearance for these changes.

Good luck with your research.

Sincerely,


Joan Stevenson, Ph.D.  
Chair  
General Research Ethics Board

c.: Ms. Celina Shahrzadpour, Dr. Jean Côte, Dr. Blair Evans, and Ms. Veronica Allan, Co-investigators  
Ms. Elizabeth, Research Assistant
APPENDIX B

Manuscript 1 Letter of Information
PARTICIPANT LETTER OF INFORMATION AND CONSENT FORM

Title of the study: Exploring sport participation among individuals with physical disabilities

You are being asked to participate in a research study conducted by Dr. Amy Latimer-Cheung, and Celina Shirazipour from the School of Kinesiology and Health Studies at Queen’s University. Results obtained from this research study will contribute to the completion of a doctoral degree. This study has been granted clearance according to the recommended principles of Canadian ethics guidelines and Queen’s University policies.

Purpose of the Study
The purpose of this study is to explore views of sport participation among military Veterans with physical disabilities. The findings will provide an initial exploration of the views of Veterans regarding their participation needs.

Procedures
If you volunteer to participate in this study, you will be asked to take part in two private interviews with one of the researchers, Celina Shirazipour. During this interview, you will be asked questions regarding your views on sport participation. The first interview will be approximately 30 minutes and the second interview approximately 1 hour. Interview will be recorded using a digital audio recording device. After the research team has completed an analysis of the interviews from all the participants, you will have the opportunity to comment on the results.

Potential Risks
There is the possibility that discussing your experiences may be emotionally distressing. If this is the case, you will be referred to the following services:

In Canada: the Veterans Affair Canada Assistance Service phone line (phone number: 1-800-567-5803). A second option is to find a local clinic or phone line through the Canadian Mental Health Association at the following link: http://www.cmha.ca/get-involved/find-your-cmha/

In the United States: The Veterans Crisis Line (by phone: 1-800-273-8255 and Press 1; to chat online: http://www.VeteransCrisisLine.net; or text 838255)

In the United Kingdom: The 24-hour Veterans Mental Health helpline (by phone: 0800 138 1619; by text (standard charges apply) 07527 404 719; or by e-mail
A second option is the Big White Wall (http://www.bigwhitewall.com).

**Potential Benefits**
As a participant, you will be making important contributions to research knowledge of sport participation for military Veterans with physical disabilities, and to our understanding of the needs of Veterans. We cannot guarantee that you will receive any direct benefits from the study.

**Eligibility**
To be eligible for this study, you must be a military Veteran with a physical disability.

**Compensation**
Each participant will receive a $30 (or £30 if you are located in the United Kingdom) gift certificate to either Starbucks or Amazon.

**Confidentiality**
While the results from this study will be published and presented at conferences, any information that can lead to your identification will remain confidential to everyone except the research team. Direct quotations from the interviews will be used during the presentation of results; however, each interview participant will be given a pseudonym to conceal his or her identity. The letters of information and consent will be secured in a locked office, which can only be accessed by the above mentioned researchers. The audio recordings of interviews will be stored on a password-protected computer in Dr. Amy Latimer-Cheung’s lab.

**Right to Withdraw**
Participation is voluntary. You can choose to withdraw until publication of the results without any consequences by contacting Celina Shirazipour. You may also refuse to answer any questions without penalty.

**Subsequent Use of Data**
This data may be used in the future to promote sport participation among Veterans with physical disabilities.

**Questions**
If you have any questions or wish to receive any additional information regarding this research, please contact Celina Shirazipour at celina.shirazipour@queensu.ca.

Any ethical concerns regarding this study may be directed to the Chair of the General Research Ethics Board at chair.GREB@queensu.ca or 613-533-6000 ext. 74025
Consent to Participate
I have read the information provided above for the study entitled “Exploring sport participation among individuals with physical disabilities” and understand the terms of my participation. I have had the opportunity to ask questions, which have been answered to my satisfaction. I consent to participate in the study described above, recognizing that I may withdraw my consent and withdraw from the study at any time. I understand that a copy of this form will be sent to me for my records via my preferred method of communication (indicated below).

_________________________  _____________________
Signature of Participant     Date

I agree to allow my interview to be audiorecorded (please circle on):  YES   NO

I have carefully explained the nature of this research study to the participant; and certify that, to the best of my knowledge, the participant clearly understands the nature of the study, the requirements of participating, benefits, and any risks involved in his or her participation.

_________________________  _____________________
Signature of Researcher     Date
Participant Contact Information

Note: To assure confidentiality, your contact information will be stored separately from all other materials.

Name: _________________________________________________

Phone Number:__________________________________________

Email Address:___________________________________________

Home Address:___________________________________________

Preferred Method of Communication (Please Circle One):

E-mail               Mail

I am willing to participate in this study beyond the interviews, by reviewing and commenting upon the themes identified by researchers in the data analysis, and comparing them to my own experiences.

_______________________________                     ___________________________
Signature of participant                                                Date

Yes               No
APPENDIX C

Manuscript 1 Interview Guide and Demographic Questionnaire
Interview Guide

Session One

During this session, we will construct a timeline of your sport experiences pre and post injury. Throughout this process, I will ask you related questions that are relevant to the information you provide me. You may add in any information that you think is pertinent at any point in time.

After this session, I will send you a copy of the timeline we create. Please feel free to make any additions or edits. We will then use this timeline in our second interview.

Timeline

- To start, I would like to know about the different sport activities you took part in before your injury.
  - Probes:
    - Before joining military
    - During military involvement
- What sport activities did you take part in after your injury?
  - Probes:
    - During rehabilitation
    - Since rehabilitation

Interviewer will begin structuring timeline by placing key landmark points on to timeline. Key time-points include injury, key sport-related experiences, as well as other important transition dates identified by participants. The timeline will begin with their first sport experience and end at the current day.

In addition to these sport activities, were you involved in any other activities such as artistic endeavours?

For each sport activity, the interviewer will ask the following questions:

- Can you tell me about this activity?
  - How often did you take part in this activity?
- How many hours per week did you take part per session?
- At what level were you involved? (e.g. regional or competitive/regional or national)

Considering the sport activities we have discussed:

- What activities mean the most to you?
  - For each activity:
    - What aspects made it meaningful?
    - Can you describe them?
- What activities mean the least to you?
  - For each activity:
    - What aspects made it meaningful?
    - Can you describe them?

After this interview, the interviewer will construct a final version of the timeline and send it to the participant for editing. The interviewer will also analyze the responses to the questions to determine which sport activities were positive and which were negative. This analysis will permit the interviewer to identify key sport activities to ask questions about in the second session.
Session Two

- Could you describe your motivations for taking part in sport post-injury?

Environment
- Tell me a story describing an ideal sport environment.
  - Probes:
    - Can you tell me more about what the physical environment would look like?
    - Can you tell me more about the social environment?
    - How would you describe the environment of (activity name)?
      - How did this environment compare to an ideal environment?
        - What was ideal about it?
        - What was missing from this environment to make it ideal?
        - Can you tell me a story about the impact this environment had on your sport participation?
    - What challenges did you face in this environment?
      - Probe:
        - Can you describe any barriers in this environment?
          - Can you tell me a story about these barriers and the impact these had on your sport participation?
        - If you were put in charge of this activity, what changes would you make?
    - How do these actual environments differ from sport environments before your injury?

Relationships
- With whom is your most significant relationship in sport?
  - Why?
  - Can you describe this relationship?
  - Can you tell me a story about the impact this relationship had on your sport participation?
- With whom is your least significant relationship in sport?
  - Why?
  - Can you describe this relationship?
  - Can you tell me a story about the impact this relationship had on your sport participation?
- How would you describe an ideal relationship in sport?
- Can you please describe the relationships that impacted on your sport participation?
- Tell me a story about a relationship that stands out to you as having a positive impact on your sport participation.
  - What was positive about this relationship?
- On the flip side, may you tell me a story about a relationship that stands out to you as having a negative impact on your sport participation?
  - What was negative about this relationship?
- What were the main challenges you faced to your relationships during your participation?
- How did these relationships differ from the ones you had in your sport participation pre-injury?

Engagement
- Describe ideal involvement in a sport activity?
- How would you describe your involvement in (name activity)?
  Potential types of involvements: (i.e. fringe, watching and waiting, doing something different, fully involved doing the same thing as others)
  - How does this involvement compare to your ideal involvement?
    - Why?
- How did your involvement change …..
  - …from the beginning of the season to the end of the season
  - …from the beginning of your training to the end of your training
  - …from the beginning of your career to the end of your career
- Can you tell me a story about a time when you considered yourself ideally involved in a sport activity?
  - What stands out about that activity?
  - How did it feel?
    - Probe:
      - Physically?
      - Psychologically?
  - How would you describe your role in the activity?
  - If you were put in charge of this activity, what would you change?
- Can you tell me a story about a time when you did not consider yourself ideally involved in a sport activity?
o What stands out about that activity?
o How did it feel?
  • *Probe:*
    • Physically?
    • Psychologically?
o How would you describe your role in the activity?
o If you were put in charge of this activity, what would you change?
- Looking at the activities on your timeline, is there one that stands out to you where you think “THAT was a peak experience for me”?
o Why do you consider it a peak experience?
o How did you feel during this experience?
  • *Probe: Physically, psychologically*
o How could the experience have been improved?
- How would you describe acceptance in a sport activity?
o Can you describe a time when you considered yourself accepted in a sport activity?
  • Why?
  • By Whom?
  • How did this impact your participation?
o Can you describe a time when you did not consider yourself accepted in a sport activity?
  • Why?
  • By whom?
  • How did this impact your participation?

**Outcomes**

*Let's consider the short-term outcomes of your participation. Therefore, considering the outcomes you experienced after a game or practice.*

- If you were to write an article about the ideal short-term outcomes of sport participation post-injury, what would you write?
- Thinking about your positive sport experiences, what were the short-term outcomes?
  o How do these outcomes compare to your ideal outcomes?
  o *Probes:*
    • How did you feel psychologically?
    • How did you feel physically?
    • Were there any gains?
- Thinking about any negative sport experiences, what were the short-term outcomes?
  o How do these outcomes compare to your ideal outcomes?
Probes:
- How did you feel psychologically?
- How did you feel physically?
- Were there any particular losses?
  - How could these be minimized?

Let’s consider the long-term outcomes of your participation. Therefore, considering the outcomes you experienced over an entire season or year.

- If we were to consider the long-term outcomes of participation, what would you consider to be ideal outcomes?
- How do these compare to the outcomes experienced during positive sport experiences?
  - Probes:
    - How did you feel psychologically?
    - How did you feel physically?
    - Were there any particular gains?
- How do these compare to the outcomes experienced during negative sport experiences?
  - Probes:
    - How did you feel psychologically?
    - How did you feel physically?
    - Were there any particular losses?
    - How could these be minimized?
- If you were to fast-forward to the end of your sport career. What ideal outcomes would you like to have experienced?
  - Probes:
    - Psychologically?
    - Physically?
  - Why?

Closing Questions
- How would you define an ideal sport participation experience?
- Let’s imagine you are given the opportunity to build an ideal adaptive sport program with no limitations on what you could do. Can you describe it to me?
- Are there any elements of your sport experience that have not been covered in our interviews?
- Is there anything touched upon that you would like to further discuss?
- Thank you for your time and patience today. Do you have anything you would like to add or any questions that I can address?
Once participant has concluded any comments: As a reminder, you have the right to withdraw until publication of the findings.

Demographic Questionnaire

1. Gender: ___________________ OR Do not wish to specify: ______

2. Age: ______________________ OR Do not wish to specify: _____

3. Marital Status (circle one):
   Single    Common Law    Married    Divorced    Widowed    Do not wish to specify

4. Ethnicity (circle one):
   White    Native Canadian    Black    Asian    Other: _______ Do not wish to specify

5. Highest Level of Education Completed (circle one):
   High School or Less    College    University    Postgraduate Degree    Other: ______
   Do not wish to specify

6. Rank: __________________ _ OR Do not wish to specify: ______

7. Number of years in the military: _______________ _ OR Do not wish to specify: ______

8. Number of years since injury: ______________ _ OR Do not wish to specify: ______

9. Questions on your physical disability:

Below, there are a few standard questions about the nature of your disability, specifically the type of disability and severity. You can skip any questions that you do not feel comfortable responding to. Do you mind if I move forward in asking you these questions?

For Spinal Cord Injury (SCI)
Level of SCI: ________________________________

Cause: _______________________________________

Do you know your ASIA classification?   YES   NO
If yes, what is your ASIA classification? ______________

If not, which of the following best describes you?
_____ No feeling or movement below the level of injury
_____ Feeling all the way down to your rectum/bum no use of muscles
_____ Limited movement or muscle contractions below level of the injury but these serve no useful function
_____ Functional, but not necessarily full use of at least half of the muscle groups below the level of the injury
_____ Feeling and movement is normal below level of injury

Is the injury: Complete Incomplete

For Amputees (check all that apply)
Cause of amputation: ____________________________________________________________

Upper limb
   Above the elbow _____
   Below the elbow _____
   Left _____
   Right _____
   Bilateral _____

Lower limb
   Above the knee _____
   Below the knee _____
   Left _____
   Right _____
   Bilateral _____

Other injury
Type: _______________________

Cause: _______________________

Areas of the body affected: ________________________
APPENDIX D

Manuscript 1 Publication
Quality participation experiences in the physical activity domain: Perspectives of veterans with a physical disability

Celina H. Shirazipour, M. Blair Evans, Nick Caddick, Brett Smith, Alice B. Aiken, Kathleen A. Martin Ginis, Amy E. Latimer-Cheung

Objective: An important consideration for physical activity (PA) participation for individuals with a physical disability, including veterans, is that opportunities exist for full participation. Full participation can be understood as both the quantity and quality of participation. The objective of this study is to explore perceptions of a quality PA experience for military veterans with a physical disability.

Design: Qualitative semi-structured interviews were conducted to explore perspectives of a quality PA experience.

Method: Eighteen veterans (15 men, 3 women) with a physical disability were recruited using maximum variation sampling to take part in interviews. The interviews explored their PA experiences, with a focus on exploring participants' perspective of a quality PA experience. Data were analyzed using thematic analysis.

Results: Two overarching themes, elements of a quality experience and conditions enabling access to a quality experience, were identified. Within the overarching theme of elements of a quality experience, four key themes were identified: group cohesion, challenge, having a role, and independence and choice. A further three key themes (the physical and social environments, and program structure) were identified within the overarching theme of conditions for accessing the quality experience.

Conclusion: The findings both support and extend previous conceptualizations of quality participation. They provide insight into context-specific understandings of quality for PA and veterans. Moreover, the study contributes towards the literature on adapted PA participation, and provides a framework for practitioners aiming to foster quality PA experiences.

The risk of disability for military personnel as a result of critical injuries has grown exponentially with recent conflicts (Bell, Schwarz, Harford, Holland, & Amoroso, 2008). Veterans with a physical disability are unique compared to civilians with a physical disability due to the circumstances surmounting their injuries. For example, if injured in combat or while still a serving member of the military, they must deal with additional factors beyond their physical condition, including the transition to life following deployment, potential retraining for future deployment, or the transition to civilian life (Resnik & Allen, 2007). These transitions potentially present additional psychosocial difficulties not present in a civilian population (Resnik & Allen, 2007). Furthermore, injured service members and veterans are often young and physically fit (Benetato, 2011). As a result, many ill and injured service members and veterans demonstrate a desire to maintain active lifestyles (Chiw, 2009; Keiber et al., 2010). Physical activity (PA) participation (i.e., bodily movement requiring energy expenditure, which includes sport and exercise; Caspens, Powell, & Christenson, 1985) is thus becoming a widely used strategy to support the rehabilitation of the growing number of military veterans with injuries resulting in disability (Brittsin & Green, 2012).
For veterans with a physical disability, participating in PA post-injury is often demonstrated to have physical, psychological, and social benefits (Riordan & Green, 2012; Caddick & South, 2014). These benefits are particularly salient given the physical, psychological, and social impact of acquiring a physical disability and the life transitions that may often follow (Remik & Allen, 2007). Indeed, providing veterans with the opportunity to fully participate in PA can be a beneficial component of rehabilitation and adjusting to life post-injury.

Full PA participation entails having access to programs and opportunities, as well as having quality experiences within these programs (Martin, Evans, Mortenson, & Nosenzau, 2016). The contrast between access or amount of PA (i.e., quantity) and the quality of experiences within PA is an important distinction. Notably, whereas quantity is often examined, there has been minimal systematic effort to determine what constitutes a quality PA experience among people with a physical disability, let alone among veterans with a disability. The concept of quality participation experiences is one which, to this point, has solely been examined within the literature in occupational therapy (Martin, Evans, Mortenson, et al., 2016). Several participation frameworks have been developed within this field, the most prominent of which include Hammel et al. (2008) conceptualization for participation of individuals with disabilities, and the “Do-While-We” framework (Moll et al., 2013).

Hammel and colleagues’ conceptualization identifies six key values to consider for experiential participation, all of which are focused on the need for respect and dignity: (1) active and meaningful engagement (i.e., freedom to be part of an activity, context or group); (2) control and choice (i.e., power and agency); (3) access and opportunity/engagement (i.e., desire to contribute, and the resulting social inclusion); (4) personal and social responsibilities (i.e., individuals’ responsibility to themselves and society, and society’s responsibility to support participation); (5) having an impact and supporting others (i.e., be productive and contribute at different levels of society in order to be impactful); and (6) social connection, inclusion, and membership (i.e., full integration with the community). Moll et al. (2015) also highlight key aspects of participation experiences, labeled dimensions, within their participation framework. These dimensions include: (1) activating a body, mind, and senses (i.e., regular, stimulating activity); (2) connecting with others (i.e., social integration); (3) contributing to community and society (i.e., prosocial engagement); (4) taking care of oneself (i.e., healthy habits and self-care); (5) building security/prosperity (i.e., economic and social security through engagement in meaningful activities); (6) developing and expressing identity (i.e., cultural and/or community activities that allow an individual to develop a specific identity); (7) developing capabilities and potential (i.e., programming and educational opportunities); and (8) experiencing pleasures and joy (i.e., enjoying engagement).

These different conceptualizations are useful in understanding subjective views of participation, and the multidimensionality of participation. However, both models contain elements or definitions specific to occupation contexts. As a result, Martin, Evans, Mortenson, et al. (2016) conducted a review of these and other definitions of participation with the aim of developing a conceptualization generalizable to differing participation contexts (e.g., PA). Six themes resulted from this review: (1) autonomy (i.e., independence, choice); (2) belongingness (i.e., a sense of belonging, acceptance, respect); (3) challenge (i.e., appropriate level of challenge); (4) engagement (i.e., feeling motivated and involved); (5) mastery (i.e., feeling competent); and (6) meaning (i.e., goal attainment, feeling responsible to others). The conceptualization encapsulates the multidimensionality and subjective nature of participation expressed in other conceptualizations, with general definitions that may be useful when examining participation within different fields. However, further research is necessary in the refinement, importance, and definition of different experiential elements within different contexts, such as PA. Further knowledge is also required as to how these different dimensions of quality can be fostered within a program context and what conditions enable access to quality PA experiences. Additionally, exploring the concept of quality participation may potentially aid in building an understanding of why some veterans’ PA experiences are less positive than others. Indeed, while research often highlights the positive outcomes of PA for veterans post-injury, some PA interventions may not meet participant needs due to their level of readiness or the nature in which PA is presented, and result in psychosocial struggles (Douglas & Carless, 2015).

The extant research that describes and/or evaluates PA programs for injured veterans points to some elements that may contribute to a quality PA experience. For example, elements highlighted include the importance of engaging one’s abilities, building confidence and self-awareness, and enjoyment (Jackson, 2013). However, these elements are the result of observations from the perspective of a program provider. Therefore, the results do not present the findings of a critical research process, or certainty place the perspective of the athletes the programs are designed to serve. Research would benefit from using the subjective experiences of participants to understand quality participation, so that the elements reflect the views of the individual engaging in the experience (Hammel et al., 2018; Martin, Evans, et al., 2016). Caddick and Smith’s (2014) systematic review of outcomes associated with PA among veterans with physical and/or psychological injury describes experiential outcomes such as a renewed sense of self and feelings of confidence, enjoyment, and relaxation. However, exploring quality participation was not the objective of the review nor of the studies included in the review, and the focus was specific to participation outcomes. As a result, the findings cannot build an understanding of quality participation experiences. Moreover, the review was not exclusively focused on veterans with a physical disability. A comprehensive exploration of the elements that constitute and support a quality PA experience for veterans with a physical disability is needed. Thus, the purpose of this study is to explore perceptions of a quality PA experience among military veterans with a physical disability. Understanding veterans’ perceptions of quality PA participation moves research forward in conceptualizing full participation in PA, and may provide practitioners with direction for creating PA programs that promote quality experiences.

1. Method

1.1. Philosophical assumptions

The perspective of the researchers in the current study is that multiple context-dependent realities exist, and that knowledge is constructed based upon participants’ understanding of their reality. As such, this study is based ontologically in relativism, and epistemologically in constructionism. Applied to this research, we sought rich depictions of each participant’s experience, and worked to generate an understanding of quality experiences that also provided room for variation and for each participant to explore quality within his or her own terms. Although we allowed for perspectives beyond frameworks of participation, we were nonetheless cautious to ensure that individual stories retained their context dependence.

1.2. Participants

Following receipt of ethics approval, veteran organizations were
contacted to disseminate recruitment information to their members. Participants were included if they were military veterans (defined as former members of the military who were no longer serving) with a physical impairment (i.e., impairment that limits physical functioning), who participate in organized PA programs. Participants were excluded if they had sensory impairments (e.g., visual impairments), or were diagnosed with a psychological injury (e.g., post-traumatic stress disorder) but without any physical functioning limitation, as these conditions might alter program needs beyond what would be necessary to accommodate veterans with physical functioning impairments.

Participants were recruited using maximum variation sampling. This method was chosen as it involves purposeful sampling of diverse participants from various contexts, which better permits identification of essential elements of the phenomenon studied (Patton, 2002). Key variations sought in participants were: (a) country served; (b) type of injury; and (c) PA experience. To reach these aims, three main recruitment strategies were used. First, to include veterans from different countries, (thereby incorporating a range of recovery experiences based on differing national frameworks and systems of rehabilitation), participants were recruited from organizations in Canada, the United States of America (USA), and the United Kingdom (UK). Second, while most of the current research focuses on veterans solely with combat injuries (e.g., Caddick & Smith, 2014; Douglas & Crichton, 2018), the decision was made to include veterans with both combat and non-combat injuries. This choice aids in increasing the long-term applicability of the results beyond periods of conflict, and widens the relevancy of the findings to a larger group of veterans who access PA programs. Regardless of how a veteran is injured or how they may benefit from quality participation. Finally, to recruit participants with different types of PA experiences, efforts were made to recruit from organizations that provided different types of programming including recreational and competitive PA (e.g., weekly activity events or competitive training), and physical challenges (e.g., mountain climbing; Caddick & Smith, 2014). Recruitment continued until the authors determined that data saturation had been reached, specifically when no new information or patterns emerged during subsequent interviews or during analysis (Sparkes & Smith, 2014). The final participant sample consisted of 18 veterans with a physical disability (15 men, 3 women), representing the UK (n = 9), USA (n = 6), and Canada (n = 3). Cause of participant injury including combat injuries (e.g., blast injury; n = 9) and non-combat injuries (e.g., training injury, fall, sports injury; n = 9). (See Table 1 for demographic information).

1.3. Procedure

Participants took part in two interviews. One-on-one interviews were chosen over other qualitative methods (e.g., focus groups) given the potentially sensitive nature of the information that may have been shared (e.g., injury experiences), and to enable the participants to share detailed, multi-layered stories about their PA experiences. During the first interview, a timeline was developed of the participant’s PA experiences using a structured interview format (Adriansen, 2012). This interview lasted an average of 27 min, and permitted the interviewer to build rapport with the participant and gain an understanding of the participant’s PA history (c.f. Shriazipour & Laiomer-Chung, 2016). The second interview averaged 63 min, and was scheduled for one week after the first interview. This schedule was followed for all but three participants, for whom there was a delay of two weeks to one month in order to accommodate PA competition and training schedules. One participant requested a follow-up interview. A third 40-minute interview was conducted with this participant during which additional PA experiences were explored.

The same interviewer (primary author) conducted all interviews. Due to the geographic dispersion of participants, all interviews took place via telephone (n = 13) or Skype (n = 5) according to participant preferences. While face-to-face interviews are commonly preferred for building rapport and attending to non-verbal cues (Shri, 2002), research comparing the use of telephone and Skype interview methods with face-to-face interviews has demonstrated no differences in the resulting data (Hanna, 2012; Sturgess & Hanrahan, 2004; Trier-Biener, 2012). Indeed, remote communication can have added benefits such as increased participant comfort and anonymity, and decreased social pressure (Sturgess & Hanrahan, 2004). The interviewer was still able to build rapport by communicating with the participant prior to the interview, and by dedicating time during the interview to interact with the participant beyond the interview guide (e.g., answer questions; follow up on life events that the participant had discussed in emails or in the first interview such as upcoming competitions or training; Scott, 2004). Finally, the interviewer remained attentive to non-verbal cues as participant faces are visible on Skype, and cues such as pauses and changes in intonation are present when speaking on the phone.

1.4. The interview guide

During the first interview, participants were asked to identify their different PA experiences, as well as which PA experiences post-injury were the most positive or negative to help provide a focus for discussion in the second interview. The aim of the second interview was to explore participants’ perspectives of quality using a semi-structured approach. The interview guide was structured around three topics: (1) the environment (e.g., “Tell me a story describing an ideal PA environment.”); (2) relationships (e.g., “How would you describe an ideal relationship in PA with a coach?”); and (3) engagement (e.g., “Tell me about a time when you considered yourself truly involved in PA.”). The interview guide also included a closing section to gain general perspectives on ideal PA experiences (e.g., “If you had the opportunity to develop an ideal program, what would it look like?”), as well as determine whether any aspects of their PA experiences had been overlooked. The interview guide was used flexibly such that participant responses guided the order in which questions were introduced, and topics covered.

1.5. Data analysis

Responses from the first interview were used to prompt discussion of specific PA experiences in the second interview (e.g., comparisons of different environments, and highlighting ideal or challenging experiences). These responses were not included in the thematic analysis described below.

We used an inductive thematic analysis approach to identify, analyze, and interpret patterns in the responses from the second interviews. A thematic analysis was chosen as the method allowed us to develop themes reflective of the commonalities in all participant views and experiences (Braun, Clarke, & Weate, 2015). Our approach consisted of fluid cycling through the six phases of thematic analysis suggested by Braun et al. (2015). First, the lead author immersed herself in the data through continuous re-reading of the transcripts, and making note of preliminary thoughts and patterns. She generated initial codes from the transcripts using NVivo qualitative analysis software, and then grouped codes into potential themes. Specifically, open codes were first created within each interview by identifying individual meaning units representative of each participant’s experiences. These codes were then organized into two overarching themes - elements of a quality
experience and conditions enabling access to quality experience. Within each overarching theme, the data were further organized into key themes (i.e., the four elements of quality experience and the three conditions enabling quality experience). Where applicable and necessary to provide detail and clarification of participant perspectives, sub-themes were also identified (e.g., four sub-themes were identified for the quality element of group cohesion).

The lead author then met and discussed the content and structure of all themes with a research assistant who also had reviewed and independently coded the transcripts. This research assistant acted as a critical friend, questioning the lead author's themes and assumptions to promote reflection (Sparks & Smith, 2014). Through this discussion and the lead author's ongoing consultation with the full dataset to ensure that the themes presented were meaningful representations of the data, key themes were further developed, refined, and subsequently named. Emerging themes were reviewed against the individual transcripts and the entire dataset. The analytic process continued throughout the drafting of written reports. The reports were read by several of the co-authors who served as additional critical friends by encouraging further reflection and alternate interpretations of the data. These discussions, reflections, and alternate interpretations were used to enrich the results and general discussion through the inclusion of additional contextual themes, as well as provide connections and interpretations of the findings within the literature. Previous conceptualizations of participation (e.g., Hammel et al., 2008; Martin Etzioni, Evans, et al., 2016; Moll et al., 2015) were adopted and used as interpretive devices to understand the key themes and situate them in the context of extant literature. The frameworks did not impact themes but rather provided depth to each theme’s interpretation.

Quality of analysis. Aligning with our relativist approach, validity could not be supported by a pre-determined set of quality criteria (Sparks & Smith, 2014). Thus, criteria were chosen based upon an evolving list of quality indicators (Trace, 2010), particularly: the worthiness of the topic; rigour (e.g., appropriate data collection and analysis); credibility (e.g., thick description); and meaningful coherence (e.g., compatibility between the study purpose, methods, results, and interpretation). Other steps taken to enhance quality included involving multiple critical friends throughout the research process to promote further reflection.

2. Results

In broadly exploring veteran perspectives of quality participation, two overarching themes emerged: elements constituting quality PA experiences, and conditions enabling access to quality PA experiences. Within the first overarching theme, four key themes emerged each representing an element of a quality PA experience. The content of each of these themes helps to conceptualize the quality experience element in a veteran PA context and provides insight into how to foster the element in a practical setting. One of the key themes, group cohesion, was discussed extensively; and was further divided into sub-themes. These sub-themes provide rich description of how to foster group cohesion.

The second overarching theme represents conditions enabling access to quality. According to participants, these conditions represent the foundation of a quality PA experience, and must be present in order for the quality element to be fostered. Three key themes emerged as important conditions, each with a set of sub-themes. The key themes and their sub-themes largely have already been identified within the PA and disability literature. In an effort to extend this literature, our results focus on situating the conditions within the context of a quality participation experience. Supporting quotes for these latter themes are provided in Table 2.

21. Elements constituting a quality PA experience

Four key themes describing elements of a quality PA experience emerged: group cohesion, challenge, having a role, and independence and choice. Four additional sub-themes were identified for the theme of group cohesion.

Group Cohesion. Participants identified positive social environments as essential for quality PA experiences, and continued participation. Within the PA psychology literature, cohesion is defined as “a dynamic process that is reflected in the tendency for a group to stick together and remain united in the pursuit of its instrumental objectives and for the satisfaction of member

<table>
<thead>
<tr>
<th>Name</th>
<th>Gender</th>
<th>Age</th>
<th>Years since injury</th>
<th>Status during injury</th>
<th>Injury</th>
<th>Type of PA Participation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Matthew</td>
<td>Male</td>
<td>31</td>
<td>3</td>
<td>Active duty</td>
<td>SCI; Mild TBI</td>
<td>Competitive</td>
</tr>
<tr>
<td>Paul</td>
<td>Male</td>
<td>33</td>
<td>8</td>
<td>Active duty</td>
<td>Single leg amputation; shoulder nerve damage</td>
<td>Physical challenge</td>
</tr>
<tr>
<td>Hugh</td>
<td>Male</td>
<td>33</td>
<td>9</td>
<td>Active duty</td>
<td>Double leg amputation; shoulder nerve damage</td>
<td>Competitive</td>
</tr>
<tr>
<td>Lucas</td>
<td>Male</td>
<td>33</td>
<td>15</td>
<td>Active duty</td>
<td>Double ankle injury</td>
<td>Recreational &amp; competitive</td>
</tr>
<tr>
<td>Alan</td>
<td>Male</td>
<td>54</td>
<td>21</td>
<td>Active duty</td>
<td>Single leg amputation</td>
<td>Competitive</td>
</tr>
<tr>
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<td>Female</td>
<td>50</td>
<td>15</td>
<td>Active duty</td>
<td>Shoulder injury; SCI</td>
<td>Competitive</td>
</tr>
<tr>
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<td>Male</td>
<td>31</td>
<td>7</td>
<td>Active duty</td>
<td>Single leg amputation; Hand injury</td>
<td>Competitive &amp; physical challenge</td>
</tr>
<tr>
<td>Patricia</td>
<td>Female</td>
<td>65</td>
<td>35</td>
<td>Active duty</td>
<td>Single leg amputation</td>
<td>Recreational &amp; competitive</td>
</tr>
<tr>
<td>Henry</td>
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<td>30</td>
<td>9</td>
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<td>Single leg amputation</td>
<td>Competitive</td>
</tr>
<tr>
<td>Reggie</td>
<td>Male</td>
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<td>49</td>
<td>Active duty</td>
<td>Single leg amputation</td>
<td>Recreational</td>
</tr>
<tr>
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<td>4</td>
<td>Active duty</td>
<td>Double leg amputation; Burns</td>
<td>Recreational</td>
</tr>
<tr>
<td>Danny</td>
<td>Male</td>
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<td>Veteran</td>
<td>SCI</td>
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<td>Lynn</td>
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<td>Competitive</td>
</tr>
<tr>
<td>John</td>
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<td>SCI</td>
<td>Competitive</td>
</tr>
<tr>
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<td>45</td>
<td>26</td>
<td>Active duty</td>
<td>SCI</td>
<td>Competitive</td>
</tr>
</tbody>
</table>

Note: All names are pseudonyms assigned to participants. PA: Physical Activity; MS: Multiple Sclerosis; PTSD: Post-traumatic Stress Disorder; SCI: Spinal Cord Injury; TBI: Traumatic Brain Injury. Participants whose participation is labeled as "recreational" are those who participate in organized PA programs. The frequency of participation of recreational participants varied based on location and availability of programming, and could include weekly participation or participation in programs several times a year. Competitive participants included experience at local, regional, national, and international levels of competition. If labeled as competitive, participants were involved in PA competitions or training several times a week or every week during their season or all year. Participants labeled as participating in physical challenges took part in one to three physical challenges a year, with additional training that varied in frequency throughout the year. Participation frequency could vary based on injury and/or complications related to the physical disability.
affective needs (Caron, Brawley, & Widmeyer, 1994, p. 3).” Participants’ descriptions of the optimal social environment align with this definition highlighting four elements necessary for fostering cohesion, which are reflected in four sub-themes: camaraderie, communication, acceptance, and a shared focus.

Camaraderie. Camaraderie was characterized by a shared sense of humour and understanding, and being there for each other even when challenged by the activity or psychological or physical boundaries. Moreover, the sub-theme of camaraderie is also seen as a way of challenging oneself to progress post-injury.

(…) A strong element of friendship. There’s mutual respect and appreciation for what each other does. I try and help him wherever I can in terms of the same way that he’s supported me through a psychological, and to an extent, physical element in the early stages of my recovery and continued to encourage me and push me mentally, well and physically, even now. The confidence that’s developed mutually and the respect that comes from that builds a very strong bond. (Matthew)

Camaraderie was considered easiest to foster in exclusively military environments, which were often preferred when compared to program environments that integrated both civilians and military personnel. Within a military environment, participants felt united by a shared background, a shared understanding of life experiences, a shared work ethic, and trust:

The Invictus Games’ team was amazing! It was the fact that everyone was military or ex-military, and everyone was injured, and everyone was in the same boat, and everyone sort of spoke the same language. That was amazing! To be back in a military team again that is the ideal environment because I’ve since played matches with civilians and it’s not the same. There isn’t the same discipline, there isn’t that same willingness to give everything, to put everything on the line for your teammates. (Louis)

Some participants provided suggestions for creating integrated settings that are enjoyable and come close to fostering the cohesion enjoyed in a military setting. Participants indicated that civilians have to be serious about their involvement, demonstrate a strong work ethic, and have a similar mindset to military personnel (e.g., goal-oriented). Under these circumstances, a small number of participants enjoyed integrated environments, as they felt that civilians were more recognizing of achievement and hard work, creating a more appreciative environment: "They’re more receptive to the challenge and see it as a greater achievement compared to someone in the military. A lot of us tend to play our circumstances down and be a little humble about what we do and achieve!" (Matthew).

Communication. Two-way open and honest communication was desired between athletes and coaches, as well as amongst teammates, to help build cohesive bonds and improve PA skills:

It [an ideal relationship] is really about opening up and not holding anything back, which sometimes is humilitating to me to have to admit some things. But if we want to have the ideal relationship I need to make clear of the humiliation and just tell him what is going on, like seriously going on with me, for him to be able to coach me better and for me to be able to perform better. (Celeste)

While communication was important for the quality of one’s experience, participants did highlight that it was considered difficult to achieve, as it required an underlying element of trust which many found challenging. For some participants, a lack of trust may have been the result of a lack of comfort or safety in the environment, for others, PA experiences may be limited in duration (e.g., a try-out day, or a one-week activities camp), limiting opportunities to build the necessary trust for open communication.

Acceptance. Acceptance emerged as a sub-theme for all participants but held different meanings. The most common meaning related to the development of non-judgmental relationships: "You’re not going to be criticized, (…) you’re not being up with it (a bad performer). Everybody works with everybody to improve the quality of their skill." (Reggie). In order to achieve this level of acceptance, participants felt that there had to be an understanding for one’s capabilities, as well as a demonstration of skill, and recognition for that skill. Participants linked feeling accepted to wanting to do more and be more involved in the program: "[Being acknowledged and accepted by others] gave me a bit of a morale boost and a bit more motivation to keep going." (Henry). When non-judgmental relationships were present, participants described wanting to perform better for the coaches and teammates who made them feel accepted. This reaction aligns with the definition of cohesion where the unity of the group is related to goal pursuit and the satisfaction of team needs.

Fostering acceptance may, in some cases, be difficult. Participants identified a hierarchy of injuries such that individuals with a less visible physical disability, or an injury judged less traumatic or debilitating, were often excluded in PA programs. One participant with impairments that were only identifiable when participating in PA highlighted these potential challenges:

I didn’t feel accepted by my colleagues who were there because there was no physical injury to see. So they were like, ‘What’s wrong with you? Why are you here?’ And then I would say, ‘I’ve got an injured shoulder, and I’ve got MS [multiple sclerosis].’ They would sort of ignore you after that because you hadn’t had your legs blown off or stuff like that. (Judy)

Shared focus. Cohesion was also fostered by a shared focus, which consisted of having shared goals for recovery, competition, or PA event, and a shared approach to PA participation, which could potentially differ based on the individual or team: "(you’re going to a training camp or something like that) people are coming there to come together collectively for a purpose or for a reason." (William); "Being with other people who have got that same mentality, which is probably the best outcome because you all strive for the same thing, you all want to achieve the same goal, and essentially you can all then achieve that goal." (Hugh).

Having a similar focus in order to foster cohesion was important amongst program participants but also between program participants and program staff. A shared approach to participation was key in determining whether to return to a program. Program staff had to focus on participant goals, and have the needs of veterans at heart: "Not out there to exploit your injury for profit. They’re there for you." (Badley) rather than focus on other motives. When lacking, participants avoided the program and were hesitant to trust other opportunities.

Challenge. Participants identified a preference for experiences that tested them mentally and physically. A challenging task was characterized by opportunities for friendly or high-level

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1 The Invictus Games are an international PA competition, inaugurated in 2014, specifically for military service members and veterans with illnesses and injuries (Invictus Games, 2014).
competition and risk often described by participants in contexts such as mountain climbing expeditions, PA training, and competitions. One participant highlighted the importance of competition to challenge as follows: "To be able to compete to still compete even though you’re disabled. To be able to do things, to be able to physically do things still and test yourself. To try to push your mind, physically and mentally. (Alan)."

Mental and physical challenge could also emerge from recreational physical activities that require an individual to leave his or her comfort zone. One participant, Meg, highlights challenge and his experience with risk and "real danger" when facing dangerous and unexpected currents on an organized recreational kayaking trip with a veteran program. This challenging experience built his sense of competence and desire to stretch physical and mental boundaries: "What makes it a peak experience was I was in some real danger and I won. After I got over being tired it felt really good because what it did was it gave me a new level of self-confidence and willingness to risk." Challenge was portrayed as providing meaning, reward, and a sense of accomplishment, as well as an outlet for negative moods. This sub-theme was also linked to a desire for tougher PA options and mental and physical challenges that result in feeling tired after involvement:

I enjoy alpine skiing so much! You sit on one leg and you look up and you think "Oh I've just come down that! So that's nice psychologically. (...) It gets rid of a lot of pent-up – not aggression but pent-up physical – it gets me tired. I get back in the house and I reflect on what I've done in that day and then I look at my diary and I think a year ago I was doing red slopes and now I'm doing triple blacks. That gives me a sense of wanting to do it again. Every time I go out, I want to do it again but I want to do something slightly harder. (Alan)

Having a role. Participants identified the desire to have a social position or role, in the program as part of an ideal participation experience. Roles could vary based upon an individual's length of involvement in a program (experienced or novice), program type (recreational or competitive), and long-term goals for their sport participation (sport as a potential profession or sport as a means of maintaining activity and desired levels of fitness). Potential roles desired within programs included valued participant, ambassador ("I try and see myself as much as an ambassador as possible. The injuries I support are often disability or adapted PA, and the people that I support are usually involved in PA in one way, shape or form" Henry), instructor ("I actually do want to teach disabled people to swim (...) i think it’s the joy they get when they actually realize that they can swim and they can do things. It gives me such pleasure because they have such pleasure from it.” Judy), peer mentor ("I can offer deep insight." Bradley), and supportive individual for teammates ("I get a lot of reward psychologically from seeing others achieve or helping others achieve.” Matthew).

As a role within a PA group or program was identified as an element of a quality experience as it helped participants feel more included, and purposeful, and want to continue their participation:

That slightly selfish side of me that wants to have a purpose to something and gain some personal achievement and challenge. But I get a lot of reward psychologically from seeing others achieve or helping others achieve. (Matthew)

Other participants connected the importance of having a role and feeling a sense of worth with regaining the meaning and purpose they had enjoyed about their military lives. One participant, Louis, highlighted this aspect of having a role when discussing his new position as an advocate for his fellow injured veterans:

When you join the military you’re important, you’re told that you’re part of something bigger, you’re part of a very large machine that defends people and looks after the country and the world. Then, when you’re injured, you’re a broken part of that machine that gets taken out and replaced, and that sort of impact on you mentally quite a great deal. (...) I'm seeing this now, my sort of transformation is I'm going into battle for them (fellow injured veterans) and for me it's sort of I've been empowered now and I feel sort of like I did like I was in the military. (...)

Independence and choice. Participants wanted independence and choice within the structure of a PA program. Independence was described as scenarios where participants were given some freedom within the structure of the program, particularly in relation to their impairment: "When they let you go and they're close by in case something goes wrong, but they're not holding your hand. They're a couple of feet behind or a couple of yards behind you. You're basically on your own." (Bradley). Participants also expressed a desire for independence when receiving assistance from program staff:

Soon as they try to help me up the hill they push me I'm like, "Don't touch my wheelchair! I'll do it!" (...) I don't like being thought of as being in a – I know I'm in a wheelchair but I don't need help. I'll need help when I'm 65 or 70! (Tom)

Independence could be fostered through these actions demonstrated by program staff, and as such required a level of knowledge on behalf of staff as to when or where to intervene or assist.

The concept of choice related to having options when participating in a program. Ideal program experiences were described as those that offer multiple activities with opportunities to play at many levels (e.g. recreational or competitive). Providing different sport options so that participants could choose one that matched their needs could also foster choice ("I went to about six different sports which fired my switch inside me.” Alan). These quality experiences allowed participants to make decisions regarding how they wanted to be involved in PA.

2.2. Conditions supporting access to a quality experience

In their discussion of quality, participants made clear that to enable full participation, programs must not only include elements that create a quality experience but should also have conditions in place that permit access to the experience. Whereas some models of participation include access and opportunities as an element of participation on par with other quality elements (Hammel et al., 2008), we position these structures as prerequisites or necessary conditions, which must be in place for quality elements to be fostered and for quality participation experiences to occur. This perspective is similar to Moll et al. (2015) who identify factors that can impact participation.

There are key themes representing factors that foster access to a quality experience emerged: (1) the physical environment; (2) the social environment; and (3) program structure. As these factors have been identified in previous literature (c.f. Martin, Ma, Latimer-Cheung, & Rimmer, 2016), we provide only a brief overview as a basis for enabling access to quality PA tailored to injured veterans. In an effort to advance understanding of full participation...
in PA, our focus is on interpreting these findings in the context of a quality PA experience. (Supporting quotes for access themes are included in Table 2.)

**Physical environment.** Participants described accessibility, including the design of the physical environment (i.e., built environment) and feeling comfortable within the built environment (i.e., practicality of the environment), as crucial for whether or not they took part in a program or chose to return. Geography also

<table>
<thead>
<tr>
<th>Theme</th>
<th>First-level sub-themes</th>
<th>Second-level sub-themes</th>
<th>Supporting quote</th>
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<tbody>
<tr>
<td>Physical environment</td>
<td>Accessibility</td>
<td>The built environment</td>
<td>&quot;I think I'm thinking more along the lines of a disabled person now rather than an able person, where you're going to be playing the sports you instantly look for access needs. Are there going to be disabled toilets? Disabled showers? (…) Sometimes you're more concentrating on those factors rather than the game that you've got coming up or where you're playing and whether you can handle them. Whereas you're thinking more about: Where can I leave my chair? Where can I leave my stuff? Where do I go if I need the bathroom halfway through?&quot; (Hugh)</td>
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<td></td>
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<td>Practicality of the environment</td>
<td>&quot;They build a facility and they build it quite big for disabled and for able-bodied because the population ratio would suggest you only need one disabled toilet. (...) The long-term view of these people is wrong because if you've got two wheelchair basketball teams competing you've got 24 disabled people there in wheelchairs, and you've got one disabled toilet and shower that's not ideal. That, to a lot of disabled people, isn't good because it makes them not want to. ‘Oh, I'm not going to bother having a shower. I'll wait and I'll have three hours and get home and have a shower.’ That's not right.&quot; (Alan)</td>
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<td></td>
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<td>&quot;I'm two and a half hours away. (...) There's nobody out here who can develop a plan for a cyclist or someone who is on a recumbent bike.&quot; (William)</td>
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<tr>
<td>Geography</td>
<td>Central location</td>
<td></td>
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<tr>
<td>Social environment</td>
<td>Role of family and friends</td>
<td>n/a</td>
<td>&quot;A lot of individuals or relationships will break down when somebody gets severely injured. (...) It can fracture those relationships. So by acknowledging the existence of the rest of the family part of the team, I think that really helps keep some numbers a little bit on the better side.&quot; (Arnold)</td>
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<td>The general public's response to injury</td>
<td>&quot;There's no sympathy there. (...) When I go swimming, for instance, the looks you get are unbelievable. (...) You go into the pool, and they think: 'Knee, that guy hasn't got a leg.' (Niall)</td>
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<tr>
<td>Program structure</td>
<td>Requirements for coaches or instructors to promote participation and safety</td>
<td>Coaching knowledge</td>
<td>&quot;You have to have people that have a clue. If you just hire teenagers or college students that have not been around wounded warriors, the atmosphere and relationships are going to be very poor because they don't know anything about you. They don't know anything about IEDs. They're not familiar with blast injuries. They're going to just entrust them and ask really more questions. They're not going to be able to even assist you with the adaptive sports because they don't have a clue what's wrong with you. (...) The idea is training. (...) I've had people that just stand there, like a deer in headlights when you're struggling, and they don't know what to do.&quot; (Bradley)</td>
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<tr>
<td>Toughest</td>
<td></td>
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<td>&quot;I don't need somebody to hold my hand. Just direct me in what I'm supposed to do and I'll do it. That's the military thing too. It's just comes from the top. The sergeant tells you, your boss tells you, you do something and it's ok. Give me the guidelines and let's do it.&quot; (Tom)</td>
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<tr>
<td>Not limiting participant based on disability</td>
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<td>&quot;She's well knowledgeable. She's a recognized trainer, coach. However, she dealing with a disabled guy and she takes a step back instead of having that sharp tongue that she should have like 'Come on! Dig deep! Pull harder! Ten more!' That doesn't exist.&quot; (Paul)</td>
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<tr>
<td>Understanding</td>
<td></td>
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<td>&quot;Someone that knows me and knows what I need to take me to the next level and the next level, and to pick me up when things haven't gone well.&quot; (Hugh)</td>
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<tr>
<td>General programmatic barriers</td>
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<td>&quot;I suffer with the cold - my extremities because of nerve damage I've not got a great deal of temperature control. Hot sunny environments make me feel a lot better. (...) I'm a lot more relaxed and enjoy the time there which allowed me to train harder.&quot; (Matthew)</td>
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<tr>
<td>Climate</td>
<td></td>
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<td>&quot;The experience was positive because safety was at the forefront of everything. They don't want anyone to get injured or killed and no one was injured or killed so that's as good as it gets.&quot; (Bradley)</td>
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<td>Safety</td>
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<td>&quot;This is the first time they pay for it - it's kinda hard up for introduction I guess and so after that they won't pay for it. So it kind of takes a hit, I can't do it anymore. So a lot of them come and go. They do it for free the first time and then I get to let go cause I can't pay for it.&quot; (Danny)</td>
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emerged as important. Programs taking place in easy-access central locations, as opposed to programs that continuously change location or which require travel, were considered preferable (i.e., central location). Many participants also appreciated nature-based PA (i.e., the outdoors).

The experiences discussed highlight a number of concerns relating to accessing a quality experience. For example, participants voiced a disconnect between environments being labeled accessible but lacking in comfort or accessible components. In these scenarios, participants could not engage in the program to the desired level or had to focus on accessibility concerns to such an extent that PA performance suffered, while others had to travel long distances for more accessible training facilities. Thus, engagement, a further element of quality participation identified by Martin Gins, Evans, et al. (2016) was impacted when the physical environment was lacking in necessary accommodation. Poor accessibility also limited independence as participation required reliance on program staff for basic access and travel needs (e.g., carrying participants up stairs). These less than optimal contexts, which promote a feeling of being “disabled” by the PA program, decreased the quality of the experience.

A second finding was the value placed on outdoor PA, a context that has begun to emerge as a preferred location for PA for veterans (Cadick, Smith, & Phoenix, 2015). Within the current study, the outdoors related to the quality elements of challenge, discussed in this paper, as well as mastery, included in the review by Martin Gins, Evans, et al. (2016). Participants identified the unknown aspects of the outdoors as providing continuously novel challenges and opportunities for risk, resulting in a sense of mastery.

Social environment. When considering social aspects of the environment that can support or impede a quality experience two sub-themes emerge: (a) the role of family and friends in fostering a quality experience either through their participation or by being a supportive presence; and (b) the general public’s positive or negative response to the participants’ injury.

The further emergence of social elements as a condition for quality participation underscores the importance of programs considering social aspects of participation. The two sub-themes highlight the ways in which individuals in an environment can promote or hinder participation and experiences of disability (Thomas, 1999). When family and friends promote PA to individuals with a physical disability PA, motivation and involvement can increase (Ullman et al., 2014). Extending this notion, participants suggested that the support of family and friends, and in some cases their actual involvement, has the potential to promote quality experiences. For example, participants indicated that engaging in PA with family and friends helps to create a sense of belongingness. Participation of family and friends also increased enjoyment, thus increasing the quality element of engagement (Martin Gins, Evans, et al., 2016).

The second sub-theme focusing on the general public links the social environment to a further aspect of quality acceptance. Participants discussed how the perceived negative actions of others (e.g., staring) and a lack of acceptance adversely impact the program experience. The potentially harmful impact of this social interaction highlights the need for program organizers to consider who might be present in the PA environment, and the resulting implications.

Program Structure. Participants identified a need for well-structured programs (i.e., programs with structured daily plans, different streams for different levels of ability, and run according to a military structure). They also described two further aspects of programs that enable access to a quality PA experience: (a) requirements for coaches or instructors to promote participation and safety, and (b) general programmatic barriers.

The first sub-theme relates to a continued area of research within PA for individuals with a disability: coaches’ training and background (Faldo, Bloom, & Lougheed, 2015; McMaster, Culver, & Wethington, 2012). Interest in this topic stems from issues that also arose in participant interviews, specifically coaches’ lack of training and knowledge (McMaster et al., 2012), which may result in safety fears and limit full participation. Within this study, participants described requirements that were thought to result in injuries, who could teach PA skills, support independence, and help them feel safe. Participants wanted coaches that would be tough and not overprotective. They often felt let down if someone was scared to push them because of their disability. However, participants also wanted a coach or instructor to be understanding, know their ability and limits, and provide encouragement both on and off the field. Participants also requested that coaches be understanding of their military background and experiences (e.g., knowledgeable about the military, and the circumstances and implications of their injury and recovery process such as the challenges of transitioning to civilian life). The feedback provided by participants may aid in creating appropriate coaching training, and supporting the development of coaches.

Participants’ extensive discussion of general programmatic barriers including safety (e.g., some participants wanted on-on-one instruction to alleviate concerns), injury (e.g., warmer environments were described as better for nerve damage), resources (e.g., program costs and participants’ financial position), and PA opportunities (e.g., PA classification barriers that limit PA options), demonstrates the prominance of barriers preventing access to quality PA experiences. The obvious solution is developing programs that address these barriers, as well as providing skilled instruction and coaching. However, it is important to consider the feasibility of addressing all programmatic barriers and coaching/instruction needs. For example, it may be difficult for programs with limited funding to provide all the necessary resources to fully support veterans’ participation or to continuously involve all interested participants. However, attempts can be made to improve access to government funding either for the program or the participant, and to provide equipment. Programs also may not have the resources to develop their own military-specific training for instructors. An option is to rely on PA certification from other organizations supplemented with an introduction to the unique needs of veterans.

3. Discussion

To achieve full participation, both the quantity and quality of an experience must be considered (Inns & Granlund, 2014). However, while quantity can be understood or measured as the amount of involvement, little is known about quality participation in PA, as well as how it may be fostered, particularly among veterans with a physical disability. This study aimed to explore views of a quality PA experience among veterans with a physical disability. The findings provide insight into PA- and military-specific elements of quality participation and conditions for accessing quality participation experiences. The contributions of the study findings for extending theory and practice are considered below.

3.1. Group cohesion

Considering the key theme of cohesion, and its subthemes, within the context of the extant literature, the theoretical contribution of the results becomes apparent. In their conceptualization of quality participation among people with a physical disability, Martin Gins, Evans, et al. (2016) identified belongingness as an important experiential component of participation. Through our theme of cohesion, however, participant responses suggest that belongingness emerges through a combined and multidiimensional
group experience with peers rather than simple positive relationships with a few individuals.

The current study further extends the conceptualization of belongingness by providing insight into additional and perhaps context-specific experiential aspects important for fostering cohesion or belongingness within PA, for example, the role of communication, camaraderie, and shared focus are not addressed in Martin Ginis, Evans, et al. (2016) conceptualization of belongingness but emerge as important in the current study. Furthermore, the current study emphasizes the interaction between social and task dimensions of participation, whereas others have mostly focused on the social aspects of participation (e.g. Hammel et al., 2008). These differences potentially arise due to context. Belonging or connection within PA presents a set of tasks and relationships that are different from other participatory contexts such as social intimacy and spirituality, which are included in other perspectives of participation (Hammel et al., 2008). Thus, the current study's conceptualization extends the understanding of how social aspects of quality should be understood and defined. The findings also suggest that other conceptualizations may require modification if implemented within a PA setting.

In addition to considering the current findings within the context of participation frameworks, it is also interesting to examine the findings in the context of the literature in sport and exercise psychology. Cohesion in PA for individuals with disabilities, particularly how it is defined and fostered, is an emerging area of research (Fakobo et al., 2015). The sub-themes from the current investigation suggest similarities to previous definitions of cohesion in PA for individuals without a disability (Carroll et al., 1998). Participants discussed dynamic interactions (e.g. communication and acceptance), and a focus on unity and a common bond (e.g. camaraderie), with the goal of meeting personal and group goals (e.g. a shared focus). However, there are potential challenges to creating cohesion which may be unique to veterans (e.g. trust as important for communication, acceptance of different injury types). Further knowledge of how to meet participant needs while dealing with some of these challenges is necessary.

3.2 Challenge

Challenges are a critical part of a quality PA experience and relate to other conceptualizations of participation (Martin Ginis, Evans, et al., 2016; Moll et al., 2015). The conceptualization of challenge within the current study further extends Martin Ginis, Evans, et al. (2016) framework by highlighting the importance of both physical and mental challenges, and suggesting potential relationships or interactions amongst different elements of quality. Participants linked challenge and being successful at a challenge as critical for feeling a sense of mastery and meaning. Two other elements of quality participation identified by Martin Ginis, Evans, and colleagues. This finding also relates closely to Moll et al. (2015) dimension of experience entitled "developing capabilities and potential." Moll and colleagues view mastery experiences as involving challenge in order to achieve meaningful goals, and build skills. These differing views underscore the complexities of accurately conceptualizing and effectively fostering quality participation, highlighting again potentially context-specific aspects of quality.

Within the literature on veterans' PA, challenge has often been discussed in terms of the types of PA experiences and program goals (Jackson, 2013). Challenge changes service members' conceptualization of PA. They move from engaging in PA to achieve health benefits to using it as an opportunity to demonstrate to themselves and others that they have achieved growth and resilience, and overcome the trials of their injuries (Munn, 2014). Challenge is described as something to be enjoyed and seen as necessary for reaching one's potential and being able to realize the new possibilities that were present in life post-injury (Munn, 2014).

3.3. Having a role

This theme relates directly to elements expressed in different conceptualizations of participation (Hammel et al., 2008; Martin Ginis, Evans, et al., 2016; Moll et al., 2015). In these conceptualizations, having a role can be linked to dimensions of a participation experience including personal and societal responsibility, having an impact and supporting others, meaning, and contributing to community and society (Hammel et al., 2008; Martin Ginis, Evans, et al., 2016; Moll et al., 2015). All identify the way in which this element makes the individual feel that he or she is being empowered, making an impact, being useful, and contributing towards the attainment of meaningful personal and societal goals (Hammel et al., 2008; Martin Ginis, Evans, et al., 2016). Within the current study, having a role is seen as a way of contributing to the community that helps foster one's growth post-injury, and in this way may also feed into the sense of belonging that a veteran feels towards his or her community. This study extends upon previous conceptualizations by highlighting specific roles that may be beneficial in fostering a quality PA experience within a PA program or event. This specificity will aid PA program organizers in determining how to foster quality experiences.

The importance of having a role in a program and developing a sense of responsibility and meaning can potentially be optimally understood in the context of veteran and identity research. A veteran's identity and social status is challenged following injury (Brittain & Green, 2012; Green, 2013). Veterans may feel that others view them differently as a result of injuries, and may also lose a sense of purpose and belonging (Green, 2013). Thus, if PA provides an opportunity to have a new role and purpose within a valued community, the positive impact on a veteran's identity and PA experience could be unique and vital to well-being. Conversely, if individuals are not satisfied in their roles (e.g. feel rejected, burdensome, lack confidence, or lack information) their enjoyment, performance, and engagement with the program, or group may be negatively impacted (Beauchamp, Bray, Eys, & Canon, 2005; Embolden, et al., 2013).

3.4. Independence and choice

Independence and choice as elements of a quality PA experience relate to conceptualizations of participation identified in different contexts. For example, Hammel et al. (2008) identify the importance of a participant feeling personally powerful within a participation context (i.e. control and choice). As in the current study, the importance of being able to choose and independently make a decision regarding the method and time of participation was recognized as an important element through which individuals with a disability, such as veterans, can develop agency and learn to self-advocate (Hammel et al., 2008). This theme is also present within Martin Ginis, Evans, et al. (2016) conceptualization, which includes independence, choice, and control within autonomy. The current study thus demonstrates the applicability of this element within PA, while extending previous research to highlight methods participants identify for fostering independence and choice within a structured PA program.

Within this theme, there is also an additional opportunity for interpretation based on the veteran PA literature. Burke and Heky (2013) highlight that it may not always be possible to provide autonomy based on the nature of the challenge. However, while extreme physical challenges may limit opportunities for
independence and control, participants may nevertheless still feel autonomous if able choose whether to participate in the program, or if able to provide insight during planning and preparation. In other, less extreme contexts, the stories relayed by participants regarding the importance of being involved in decision-making, having choice, and feeling independent, provide indications of how practitioners could create quality experiences.

3.5. General considerations

The results can also be considered within the context of the social relational model of disability (Thomas, 1998). The social relational model highlights that individuals can experience disability at the public level through structural elements (e.g., elements of the physical environment) and social interactions with others (e.g., the relationships one has with peers, program staff, or family members), as well as at a personal level through the way that individuals may internalize societal views and responses to disability (e.g., feeling independent or able to contribute through meaningful roles; Thomas, 1999; Reeve, 2004). The findings of the current study correspond to the different levels of this model (e.g., a social relational perspective, societal views, or cohesion as an example of social interactions). Thus, if the elements are implemented to create a quality PA experience, and access factors are considered, programs may lessen feelings of disabilism, and increase participants’ sense of empowerment.

Considering our results within the context of the social relational model also suggests important cautions for program administrators. For example, the sub-theme of acceptance provides an example of when negative social interactions may be present. Internalized, the resulting feelings of vulnerability and isolation may impact self-perception and limit participation. Also, as the concept of quality participation gains momentum, ideally quality elements will be integrated into program mandates. However, if organizations feel obligated to integrate quality elements into programs or disrupted by the changes required, and make these feelings known, individuals with physical disabilities may feel that they are being a burden (Reeve, 2004). The ramifications could be detrimental to well-being (Reeve, 2004), particularly for veterans who may still be in the process of developing their identity post-injury and finding their place in civilian life. A collaborative participatory approach to integrating quality participation into organizations may help to address this potential issue. Thus, by exploring the findings and their implications within the context of the social relational model, it is apparent that PA participation does not exist in a vacuum but interacts with multiple structural and psychosocial factors, which must also be considered so as to not marginalize the participant.

The current study builds upon the previous conceptualization by highlighting methods through which the four quality elements could be fostered, providing a more complete understanding of a quality PA experience. As a result, the findings from the current study can also be considered from the perspective of practitioners who wish to develop quality PA programs. For example, cohesion as a component of a quality PA experience highlights the importance in which program staff and organizers must consider the social nature of their activities. To foster cohesion, organizers should consider whether the program’s goals and purposes match the available social networks of participants, and ensure that there is enough shared goal and commonality of interest. At a broader group level, they should consider who is involved in the activities. Peers are a valued source of PA information and support within the current study, and indeed within the literature on military and civilians with physical and psychological disabilities for many individuals with a physical disability (Caddick, Phoenix, & Smith, 2015; Letts et al., 2011; Wu & Williams, 2001). Thus, when appropriate, organizers should consider organizing programs based on peer groups when striving to develop a quality PA experience. However, consideration must be given to the identity of these peers as either veterans or civilians, and the nature of their injuries.

The authors do, however, caution that from a practical perspective it is also important to consider individual preferences. Personal preferences may impact what elements of quality participation shape perceptions of a quality PA experience. For example, some veterans may place greater value on independence and choice than having a role. Program providers should leave space for individuals to express what they need from a program to fulfill their own program goals and to create their own quality experience. As a further example, in terms of program implementation, cohesion is often considered in terms of the type of activity (e.g., difficult or extreme physical challenges such as mountain climbing expeditions; Burke & Ulery, 2003) or the program structure (e.g., implementing team and individual challenges to stretch individuals beyond comfort zones to build mastery within a controlled and safe environment; Jackson, 2013). When implementing challenge individually rather than as a team, program staff should still consider that challenge is an individual benchmark, and that different levels of challenge or different activities may be required to fulfill individual participants’ challenge needs.

3.6. Limitations

A first limitation is that the current exploration did not consider any potential cultural differences in participant views. This should be examined further as access to care, support, and PA experiences may vary according to country. We also did not consider how experiences vary as a result of injury characteristics and presence of comorbidities (e.g., post-traumatic stress disorder) due to sample size. Specifically, our sample did not include a sufficient number of participants demonstrating each characteristic to make these distinctions. A further limitation of this study is that male veterans are under-represented in this sample; a common concern within military health research (Vayo et al., 2010). Potential gender differences may exist in how veterans perceive and experience quality, as well as what elements may be most important in meeting quality needs within a PA context. Thus, future studies could consider the gendered dynamics of participation and how they might influence perceptions of quality. Finally, the study did not include the perspective of non-physically active individuals. As individuals engaging in PA, the participants likely have more positive views of their PA experiences. Future research could benefit from those who tried PA and dropped out or never engaged in PA to understand their perspective on their experiences, and their views of quality.

4. Conclusion

The findings provide the first research-based conceptualization of quality PA experiences for veterans with a physical disability. Future research can evaluate the elements identified, as well as determine the generalizability of its components to other populations with disabilities, or veterans with psychological or sensory injuries. The results of this study represent a significant contribution to the literature on PA participation, as well as veterans’ rehabilitation and transition to life post-injury.

Funding

This work is supported by a Social Sciences and Humanities Research Council of Canada Doctoral Scholarship, and a Wounded Warriors Canada and Canadian Institute for Military and Veteran Health Research Doctoral Scholarship (CHS). This research is part of
the Canadian Disability Participation Project. Research from the Canadian Disability Participation Project was supported by the Social Sciences and Humanities Research Council of Canada (Grant #895-2013-1021). The funding agencies and organizations had no involvement in developing and conducting the research or preparation of the manuscript.

References:


APPENDIX E

Manuscript 2 Letter of Information
PARTICIPANT LETTER OF INFORMATION AND CONSENT FORM

Title of the study: Exploring sport participation among individuals with physical disabilities

You are being asked to participate in a research study conducted by Dr. Amy Latimer-Cheung, and Celina Shirazipour from the School of Kinesiology and Health Studies at Queen’s University. Results obtained from this research study will contribute to the completion of a doctoral degree. This study has been granted clearance according to the recommended principles of Canadian ethics guidelines and Queen’s University policies.

Purpose of the Study
The purpose of this study is to explore views of sport participation among individuals delivering sport programs to military Veterans with a physical disability.

Procedures
If you volunteer to participate in this study, you will be asked to take part in one private interview with one of the researchers, Celina Shirazipour. During this interview, you will be asked questions regarding your views on sport for Veterans with a physical disability, as well as the programs you help deliver. The interview will be approximately 1 hour. Interviews will be recorded using a digital audio recording device. After the research team has completed an analysis of the interviews from all the participants, you will have the opportunity to comment on the results.

Potential Risks
There are no known or anticipated risks or discomforts associated with participation in this study.

Potential Benefits
As a participant, you will be making important contributions to research knowledge of sport participation for military Veterans with physical disabilities. We cannot guarantee that you will receive any direct benefits from the study.

Eligibility
To be eligible for this study, you must be involved in delivering sport programs to Veterans with a physical disability.

Compensation
Each participant will receive a $30 (or £30 if you are located in the United Kingdom) e-gift certificate to either Starbucks or Amazon online.
Confidentiality
While the results from this study will be published and presented at conferences, any information that can lead to your identification will remain confidential to everyone except the research team. Direct quotations from the interviews will be used during the presentation of results; however, each interview participant will be given a pseudonym to conceal his or her identity. The letters of information and consent will be secured in a locked office, which can only be accessed by the above mentioned researchers. The audio recordings of interviews will be stored on a password-protected computer in Dr. Amy Latimer-Cheung’s lab.

Right to Withdraw
Participation is voluntary. You can choose to withdraw until publication of the results without any consequences by contacting Celina Shirazipour. You may also refuse to answer any questions without penalty.

Subsequent Use of Data
This data may be used in the future to promote sport participation among Veterans with physical disabilities.

Questions
If you have any questions or wish to receive any additional information regarding this research, please contact Celina Shirazipour at celina.shirazipour@queensu.ca.

Any ethical concerns regarding this study may be directed to the Chair of the General Research Ethics Board at chair.GREB@queensu.ca or 613-533-6000 ext. 74025

Dr. Amy Latimer-Cheung at 613-533-6000 ext. 78773 or amy.latimer@queensu.ca
Associate Professor
Queen’s University
School of Kinesiology and Health Studies

Celina Shirazipour at 613-533-6000 ext. 78841 or celina.shirazipour@queensu.ca
PhD Candidate
Queen’s University
School of Kinesiology and Health Studies
APPENDIX F

Manuscript 2 Interview Guide and Demographic Questionnaire
Interview Guide

- To start with, may you please tell me about your experience with physical activity programs for Veterans with a physical disability?

Environment
- Tell me a story describing an ideal physical activity environment.
  - **Probes:**
    - What does the physical environment would look like?
    - What about the social environment?
    - Tell me about the environment of the programs that you offer.
      - How do you create this environment?
      - What challenges do you face in creating this environment?
        - **Probe:**
          - Can you describe any barriers to creating this environment?
        - How does the environment compare to an ideal environment?
          - What is ideal about it?
          - What is missing to make it ideal?
    - In an ideal world, what changes would you make to improve the environment for Veterans with a physical disability?

Relationships
- How would you describe an ideal relationship in physical activity for Veterans with a physical disability?
  - **Probes:**
    - … with a coach/instructor
    - … with other athletes
    - … with family
    - … with friends
- Can you please describe the relationships built during your programs?
  - Between coaches/instructors and participants?
  - Between participants?
  - How do you build these relationships?
  - How do they compare to the ideal?
- Tell me a story about a positive relationship that stands out to you from your programs.
  - What was positive about this relationship?
- On the flip side, may you tell me a story about a negative relationship that stands out to you from your programs.
  - What was negative about this relationship?
- What were the main challenges you face to building relationships during your program?
- In an ideal world, what changes would you make to improve relationships?

Engagement
- May you please describe ideal involvement in a physical activity for Veterans with a physical disability?
  
  Potential types of involvements: (i.e. fringe, watching and waiting, doing something different, fully involved doing the same thing as others)
- Can you tell me about the level of involvement of Veterans in your programs?
  o How do you develop this level of involvement?
  o How does it compare to the ideal?
    ▪ What challenges do you face in creating an ideal level of involvement?
    ▪ In an ideal world, what changes would you make to improve involvement?
- How does Veterans’ involvement change …..
  ▪ …from the beginning of a program to the end of a program
  ▪ …over their continued involvement with your organization
- Can you tell me a story about a time when you did not consider a Veteran ideally involved in a sport activity?
  o What stands out about that activity?
  o If you were put in charge of this activity, what would you change?
- Can you tell me a story about a time when you did not consider yourself ideally involved in a sport activity?
  o What stands out about that activity?
  o If you were put in charge of this activity, what would you change?
- How would you describe acceptance for Veterans during a physical activity program?
  o Can you describe a time when you thought participants were accepted in an activity?
    ▪ Why?
    ▪ By Whom?
    ▪ How did this impact your future decisions with the program?
  o Can you describe a time when you thought participants were not accepted in an activity?
    ▪ Why?
    ▪ By whom?
    ▪ How did this impact your future decisions with the program?
Outcomes

Let’s consider the short-term outcomes of participation. Therefore, considering the outcomes experienced immediately during or after an event.
- If you were to write an article about the ideal short-term outcomes of participation, what would you write?
- Thinking about your programs, what are the short-term outcomes?
  - How do you achieve these outcomes?
  - How do these outcomes compare to your ideal outcomes?
  - What challenges do you face in achieving these outcomes?
  - In an ideal world, what changes would you make to improve upon these outcomes?

Let’s consider the long-term outcomes of participation. Therefore, considering outcomes experienced over a year or over the length of one’s involvement with an organization.
- If you were to write an article about ideal long-term outcomes of participation, what would you write?
- Thinking of your programs, what are the long-term outcomes of participation?
  - How do you achieve these outcomes?
  - How do these outcomes compare to your ideal outcomes?
  - What challenges do you face in achieving these outcomes?
  - In an ideal world, what changes would you make to improve upon these outcomes?

Closing Questions
- How would you define an ideal physical activity experience?
- Let’s imagine you are given the opportunity to build an ideal adaptive physical activity program with no limitations on what you could do. Can you describe it to me?
- Are there any elements of delivering programs that have not been covered in our interviews?
- Is there anything touched upon that you would like to further discuss?
- Thank you for your time and patience today. Do you have anything you would like to add or any questions that I can address?

Once participant has concluded any comments: As a reminder, you have the right to withdraw until publication of the findings.
Demographic Questions

1) Your name:
2) Your Age:
3) Do you have a disability? YES NO
   a. If yes:
      i. What type of disability do you have?
      ii. What are the resulting impairment(s)?
4) Do you have military experience? YES NO
   a. If yes:
      i. What is/was your rank?
      ii. For how long have you/did you serve in the military?
      iii. What is your current military status?
5) Name of the organization you work for/with:
6) Your role at this organization:
7) How long have you been working with this organization?
8) How long have you been involved in delivering physical activity programs to Veterans with a disability?
9) If there are specific programs that you are involved in with this organization, please list them:
APPENDIX G

Manuscript 3 Time-point 1 Questionnaire

(Completed in the week prior to event participation)
PARTICIPANT LETTER OF INFORMATION AND CONSENT FORM

Title of the study: Physical activity programs for individuals with a physical disability

You are being asked to participate in a research study conducted by Dr. Amy Latimer-Cheung, and Celina Shirazipour from the School of Kinesiology and Health Studies at Queen’s University. Results obtained from this research study will contribute to the completion of a doctoral degree. This study has been granted clearance according to the recommended principles of Canadian ethics guidelines and Queen’s University policies.

Purpose of the Study
The purpose of this study is to evaluate physical activity programs to determine whether military veterans are having quality experiences.

Procedures
If you volunteer to participate in this study, you will be asked to complete questionnaires at three different occasions. You will be asked to complete questionnaires immediately before and after your participation in your program. You will also be asked to complete a final online questionnaire three months after your participation.

Potential Risks
There are no known physical, psychological, economic, or social risks associated with this study.

Potential Benefits
As a participant, you will be making important contributions to research knowledge of what constitutes quality physical activity participation for military veterans, and to our understanding of the needs of veterans. This information will help organizations determine how to build improved programs. We cannot guarantee that you will receive any direct benefits from the study.

Eligibility
To be eligible for this study, you must be a military veteran (i.e. no longer serving in the military) with a physical disability.

Compensation
Each participant will receive a $10 gift certificate (£10 if you are located in the UK) to your choice of either Starbucks or Amazon after completion of each questionnaire. As a result, if all three questionnaires are completed, participants will receive a total of $30 (or £30) in gift certificates.

Confidentiality
The letters of information and consent, along with any personal information provided, will be secured in a locked office, which can only be accessed by the above-mentioned researchers. Your responses to the questionnaires will be stored on a password-protected computer accessed only by the above-mentioned researchers. Any personal information will be stored separately from your responses.

Right to Withdraw
Participation is voluntary. You can choose to withdraw until publication of the results without any consequences by contacting Celina Shirazipour (contact information below). You may also refuse to answer any questions without penalty.

Subsequent Use of Data
This data may be used in the future to promote or improve physical activity participation among military veterans with physical disabilities.

Questions
If you have any questions or wish to receive any additional information regarding this research, please contact Celina Shirazipour at

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Any ethical concerns regarding this study may be directed to the Chair of the General Research Ethics Board at chair.GREB@queensu.ca or 613-533-6000 ext. 74025

Dr. Amy Latimer-Cheung at 613-533-6000 ext. 78773 or

amy.latimer@queensu.ca

Associate Professor

Queen’s University

School of Kinesiology and Health Studies

Celina Shirazipour at 613-533-6000 ext. 78841 or

celina.shirazipour@queensu.ca

PhD Candidate

Queen’s University

School of Kinesiology and Health Studies

* 1. Consent to Participate

I have read the information provided above for the study entitled “Physical activity programs for individuals with a physical disability” and understand the terms of my participation. I have had the opportunity to ask questions, which have been answered to my satisfaction. I consent to participate in the study described above, recognizing that I may withdraw my consent and withdraw from the study until publication of the results. Please print a copy of this page for your records. Alternately, you can e-mail Celina Shirazipour at celina.shirazipour@queensu.ca for a copy of the form.

☐ Yes, I consent to participate in this study.

☐ No, I do not consent to participate in this study.
2. Are you currently serving in the military?
   - Yes
   - No

3. Do you have a physical disability?
   - Yes
   - No
Please provide the following information regarding the physical activity program in which you are about to take part.

When responding to the questions, please consider the following example:
If you are participating in the "Veteran Bike Ride" with an organization called "Sport for Veterans". The name of the program is "Veteran Bike Ride" and the organization is "Sport for Veterans." The physical activity that you are taking part in is bike riding.

4. What organization is running the program?

5. What is the name of the program?

6. How many times have you taken part in this program before?

7. Where is the program taking place? (please provide the name of the city and country)

8. On what date does the program start?

9. On what date does the program end?

The following questions ask about your confidence with different elements of your physical activity program. Physical activity is bodily movement that results in energy expenditure. It can encompass recreational activities such as scuba diving or competitive sport such as participation in a triathlon. Please choose the answer that appears most appropriate.
10. How confident are you that you can complete the physical activities in the program using proper technique.

<table>
<thead>
<tr>
<th>Not at all confident</th>
<th>Somewhat confident</th>
<th>Completely confident</th>
</tr>
</thead>
<tbody>
<tr>
<td>0%</td>
<td>50%</td>
<td>100%</td>
</tr>
</tbody>
</table>

11. How confident are you that you can perform all the movements and skills required for the physical activities in this program.

<table>
<thead>
<tr>
<th>Not at all confident</th>
<th>Somewhat confident</th>
<th>Completely confident</th>
</tr>
</thead>
<tbody>
<tr>
<td>0%</td>
<td>10% 20% 30% 40% 50% 60% 70% 80% 90% 100%</td>
<td></td>
</tr>
</tbody>
</table>
The following questions ask about your intentions to participate in physical activity. Please choose the answer that appears most appropriate.

12. I intend to participate in at least 30 minutes of physical activity twice a week over the next 3 months.

<table>
<thead>
<tr>
<th>Strongly Disagree (1)</th>
<th>Neither Agree Nor Disagree (3)</th>
<th>Strongly Agree (7)</th>
</tr>
</thead>
</table>

| (2) | (4) | (5) | (6) |

13. Over the next 3 months, I intend to seek out additional information about physical activity program opportunities (e.g. what programs are taking place, where, or when).

<table>
<thead>
<tr>
<th>Strongly Disagree (1)</th>
<th>Neither Agree Nor Disagree (3)</th>
<th>Strongly Agree (7)</th>
</tr>
</thead>
</table>

| (2) | (4) | (5) | (6) |

14. I have a plan as to WHEN I will take part in at least 30 minutes of physical activity twice a week over the next 3 months.

<table>
<thead>
<tr>
<th>Strongly Disagree (1)</th>
<th>Neither Agree Nor Disagree (3)</th>
<th>Strongly Agree (7)</th>
</tr>
</thead>
</table>

| (2) | (4) | (5) | (6) |

15. I have a plan as to WHERE I will take part in at least 30 minutes of physical activity at least twice a week over the next 3 months.

<table>
<thead>
<tr>
<th>Strongly Disagree (1)</th>
<th>Neither Agree Nor Disagree (3)</th>
<th>Strongly Agree (7)</th>
</tr>
</thead>
</table>

| (2) | (4) | (5) | (6) |

16. I have a plan as to HOW I will take part in at least 30 minutes of physical activity twice a week over the next 3 months.

<table>
<thead>
<tr>
<th>Strongly Disagree (1)</th>
<th>Neither Agree Nor Disagree (3)</th>
<th>Strongly Agree (7)</th>
</tr>
</thead>
</table>

| (2) | (4) | (5) | (6) |
Leisure-Time Physical Activity Participation

The following series of questions will focus on your participation in leisure-time physical activity. As a reminder, physical activity is bodily movement that results in energy expenditure. It can encompass recreational activities such as scuba diving or competitive sport such as participation in a triathlon. The following definitions may be helpful.

**Nothing at all:** Includes activities that even when you are doing them, you do not feel like you are working at all.

**Mild:** Includes physical activities that require you to do very light work. You should feel like you are working a little bit but overall you shouldn’t find yourself working too hard.

**Moderate:** Includes physical activities that require some physical effort. You should feel like you are working somewhat hard but you should feel like you can keep going for a long time.

**Heavy:** Includes physical activities that require a lot of physical effort. You should feel like you are working really hard (almost at your maximum) and can only do the activity for a short time before getting tired. These activities can be exhausting.

Questions:

Keeping in mind that **mild intensity physical activity** requires very light physical effort. You feel like you are working a little bit, but you can keep doing them for a long time without getting tired.

17. During the last 7 days, on **how many days** did you do mild intensity physical activity?

18. On those days, **how many minutes** did you usually spend doing mild intensity physical activity?

Recall that **moderate intensity physical activity** requires some physical effort. Moderate intensity activities make you feel like you are working somewhat hard, but you can keep doing them for awhile without getting tired.

19. During the last 7 days, on **how many days** did you do moderate intensity physical activity?
20. On those days, how many minutes did you usually spend doing moderate intensity physical activity?

Recall that heavy intensity physical activity requires a lot of physical effort. Heavy intensity activities make you feel like you are working really hard, almost at your maximum. You cannot do these activities for very long without getting tired. These activities may be exhausting.

21. During the last 7 days, on how many days did you do heavy intensity physical activity?

22. On those days, how many minutes did you usually spend doing heavy intensity physical activity?
The following questions will be separated from your previous responses in order to support confidentiality.

Please provide the following information about yourself.

* 23. Are you
  ○ Male
  ○ Female
  ○ Transgender
  ○ Do not wish to specify

24. What is your date of birth?

Date [ ] / [ ] / [ ]

25. What is your marital status?

○ Single
○ Common Law
○ Married
○ Divorced
○ Widowed
○ Do not wish to specify
26. What is the highest level of education that you have completed?
- Less than high school
- High school (or equivalent)
- Some college (no degree)
- College degree
- Some university
- University - Bachelor-level degree (BA, BSc, etc.)
- University - Master-level Degree (MSc, MA, etc.)
- University - Doctorate-level Degree (PhD)
- University - Professional Post-Graduate (MD, etc.)
- Other (please specify)

27. What is your employment status?
- Employed Full-Time (35 hours a week or more)
- Employed Part-Time (20-34 hours a week)
- Student
- Retired
- Not currently employed
- Do not wish to specify
28. What is your ethnicity?
- Caucasian
- Black (e.g. African American, Canadian, Caribbean)
- Aboriginal
- Indigenous person from outside North America
- Chinese
- Filipino
- Japanese
- Korean
- South Asian/East Asian (e.g. Bangladeshi, Pakistani, Indian from India, East Indian from Guyana, Trinidadian, Sri Lankan, East African)
- South East Asian (e.g. Burmese, Cambodian, Kampuchean, Laotian, Malaysian, Thai, Vietnamese, Indonesian)
- Non-white West Asian (e.g. Iranian, Lebanese)
- Non-white North African (e.g. Egyptian, Libyan)
- Arab
- Non-White Latin American
- Person of mixed origin (with one parent in one of the groups listed above other than Caucasian)
- Do not wish to specify
- Other (please specify)

29. What is your military rank?

30. How many years were you in the military?

31. How many years has it been since you left the military?

32. How many years has it been since your injury?
33. What is your primary mode of mobility?
- Manual wheelchair
- Power wheelchair
- Walker
- Braces
- Cane
- Walk independently
- Walk with the use of prosthesis
- Do not wish to specify
- Other (please specify)

34. What type of disability do you have?
- [] Amputation
- [] Spinal Cord Injury
- [] Other (please specify)
If you have an amputation

35. Please check all that apply

<table>
<thead>
<tr>
<th></th>
<th>Left</th>
<th>Right</th>
<th>Bilateral</th>
<th>Above the elbow</th>
<th>Below the elbow</th>
<th>Above the knee</th>
<th>Below the knee</th>
</tr>
</thead>
<tbody>
<tr>
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<tr>
<td>Lower limb</td>
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</tbody>
</table>
If you have a spinal cord injury

36. What is the level of your injury?

37. Is the injury
   ○ Complete
   ○ Incomplete

38. Do you know your ASIA classification?
   ○ Yes
   ○ No

39. If yes, what is your ASIA classification?

40. If you do not know your ASIA classification, which of the following best describes you?
   ○ No feeling or movement below the level of injury
   ○ Feeling all the way down to your rectum/bum, no use of muscles
   ○ Limited movement or muscle contractions below level of the injury but these serve no useful function
   ○ Functional, but not necessarily full use of at least half of the muscle groups below the level of the injury
   ○ Feeling and movement is normal below level of injury
If you have another type of injury/illness leading to a physical disability

41. What type of injury or illness do you have?

42. What area(s) of your body are affected?

43. What are the resulting impairment(s)?
We kindly request that you provide the following information so that you can retain your anonymity while allowing us keeping track of your responses throughout your participation in this study.

* 44. Please enter your postal code/zip code:

* 45. Please enter your year of birth
Contact information

Thank you very much for participating in this first questionnaire. Please enter the information below in order to receive your gift card and the next questionnaire.

* 46. Please enter your e-mail address.
(This will be separated from your responses but is necessary to send you the next questionnaire and your gift card.)

47. What type of gift card would you like?
  ○ Amazon
  ○ Starbucks

48. Where do you live (so that we know what currency your gift card should be in)?
  ○ Canada
  ○ USA
  ○ UK
  ○ Other (please specify)
    

APPENDIX H

Manuscript 3 Time-point 2 Questionnaire

(Completed in the week following event participation)
So that we can link the information in this questionnaire to your previous responses while retaining your anonymity, please answer the following questions.

* 1. Please enter your postal code/zip code.

* 2. Please enter your year of birth.
Please provide the following information regarding the physical activity program in which you took part.

When responding to the questions, please consider the following example:
If you are participating in a physical activity program entitled "Veteran Bike Ride" with "Sport for Veterans", the name of the program is "Veteran Bike Ride" and the organization running the program is "Sport for Veterans." The physical activity is bike riding.

3. What organization ran the program in which you took part?

* 4. What is the name of the program in which you took part?

5. How many times have you taken part in this physical activity program before?

The following questions ask about your physical activity. Physical activity is bodily movement that results in energy expenditure. It can encompass recreational activities such as scuba diving or competitive sport such as participation in a triathlon.

6. What physical activities did you take part in during this program? (Please enter as many as apply).

<table>
<thead>
<tr>
<th>Physical Activity 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Activity 2</td>
</tr>
<tr>
<td>Physical Activity 3</td>
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<tr>
<td>Physical Activity 4</td>
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<td>Physical Activity 5</td>
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<td>Physical Activity 6</td>
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<td>Physical Activity 7</td>
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<td>Physical Activity 8</td>
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<tr>
<td>Physical Activity 9</td>
</tr>
<tr>
<td>Physical Activity 10</td>
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</table>

Other Physical Activities

Considering the physical activities you entered above in question 4, please answer the following questions.
7. Did you take part in these physical activities before your injury?

<table>
<thead>
<tr>
<th>I didn't take part in any.</th>
<th>I took part in a few.</th>
<th>I took part in half.</th>
<th>I took part in most.</th>
<th>I took part in all.</th>
</tr>
</thead>
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</tbody>
</table>

8. Not including the program you just took part in, had you taken part in these physical activities since your injury?

<table>
<thead>
<tr>
<th>I didn't take part in any.</th>
<th>I took part in a few.</th>
<th>I took part in half.</th>
<th>I took part in most.</th>
<th>I took part in all.</th>
</tr>
</thead>
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</table>

9. If you have taken part in these physical activities since your injury, how often have you taken part in at least one of them?

<table>
<thead>
<tr>
<th>I take part in at least one on a weekly basis</th>
<th>I take part in at least one on a monthly basis</th>
<th>I take part in at least one a couple times a year</th>
<th>I take part in at least one once a year</th>
<th>I've only tried at least one once since my injury</th>
</tr>
</thead>
<tbody>
<tr>
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</tbody>
</table>

10. How confident are you that you can complete the physical activities you took part in during the program using proper technique.

<table>
<thead>
<tr>
<th>Not at all confident</th>
<th>0%</th>
<th>10%</th>
<th>20%</th>
<th>30%</th>
<th>40%</th>
<th>Somewhat confident</th>
<th>50%</th>
<th>60%</th>
<th>70%</th>
<th>80%</th>
<th>90%</th>
<th>Completely confident</th>
<th>100%</th>
</tr>
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</tbody>
</table>

11. How confident are you that you can perform all the movements and skills required for the physical activities you took part in during the program.

<table>
<thead>
<tr>
<th>Not at all confident</th>
<th>0%</th>
<th>10%</th>
<th>20%</th>
<th>30%</th>
<th>40%</th>
<th>Somewhat confident</th>
<th>50%</th>
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</table>
The following questions pertain to your recent experience participating in the physical activity program.

Based on your recent involvement please rate whether you have had the following experiences during your participation in your physical activity program.

12. I tried doing new things

<table>
<thead>
<tr>
<th>Yes, Definitely (1)</th>
<th>Quite a Bit (2)</th>
<th>A Little (3)</th>
<th>Not At All (4)</th>
</tr>
</thead>
<tbody>
<tr>
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</table>

13. I started thinking more about my future because of my participation in this physical activity program

<table>
<thead>
<tr>
<th>Yes, Definitely (1)</th>
<th>Quite a Bit (2)</th>
<th>A Little (3)</th>
<th>Not At All (4)</th>
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</table>

14. This physical activity program got me thinking about who I am

<table>
<thead>
<tr>
<th>Yes, Definitely (1)</th>
<th>Quite a Bit (2)</th>
<th>A Little (3)</th>
<th>Not At All (4)</th>
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15. My participation in this physical activity program has been a positive turning point in my life

<table>
<thead>
<tr>
<th>Yes, Definitely (1)</th>
<th>Quite a Bit (2)</th>
<th>A Little (3)</th>
<th>Not At All (4)</th>
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16. Others in this physical activity program counted on me

<table>
<thead>
<tr>
<th>Yes, Definitely (1)</th>
<th>Quite a Bit (2)</th>
<th>A Little (3)</th>
<th>Not At All (4)</th>
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</table>
17. I had good conversations with my family because of my participation in this physical activity program

<table>
<thead>
<tr>
<th></th>
<th>Yes, Definitely</th>
<th>Quite a Bit</th>
<th>A Little</th>
<th>Not At All</th>
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18. I got to know people in the veteran community through my participation in this physical activity program

<table>
<thead>
<tr>
<th></th>
<th>Yes, Definitely</th>
<th>Quite a Bit</th>
<th>A Little</th>
<th>Not At All</th>
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19. I came to feel more supported by the veteran community through my participation in this physical activity program

<table>
<thead>
<tr>
<th></th>
<th>Yes, Definitely</th>
<th>Quite a Bit</th>
<th>A Little</th>
<th>Not At All</th>
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20. This physical activity program introduced job or career opportunities for me

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<th></th>
<th>Yes, Definitely</th>
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21. I felt like I didn’t belong in this physical activity program

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<tr>
<th></th>
<th>Yes, Definitely</th>
<th>Quite a Bit</th>
<th>A Little</th>
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</table>

22. I felt left out during my participation in this physical activity program

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<thead>
<tr>
<th></th>
<th>Yes, Definitely</th>
<th>Quite a Bit</th>
<th>A Little</th>
<th>Not At All</th>
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23. There were cliques in this physical activity program

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<thead>
<tr>
<th></th>
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<th>Quite a Bit</th>
<th>A Little</th>
<th>Not At All</th>
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</table>

24. I felt a sense of accomplishment through my participation in this physical activity program

<table>
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<th></th>
<th>Yes, Definitely</th>
<th>Quite a Bit</th>
<th>A Little</th>
<th>Not At All</th>
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</tbody>
</table>
We encourage you to think broadly about your involvement in the physical activity program that you recently took part in, and all the people involved in it including other veterans and participants, coaches, etc.

Please respond to following questions while considering how you felt about being in the program.

25. I felt like a part of the program.

<table>
<thead>
<tr>
<th>Not at all true for me</th>
<th>Completely true for me</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>(5)</td>
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</tbody>
</table>

26. Other participants in the program liked me the way I am.

<table>
<thead>
<tr>
<th>Not at all true for me</th>
<th>Completely true for me</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
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</table>

27. Other participants of the physical activity program respected me.

<table>
<thead>
<tr>
<th>Not at all true for me</th>
<th>Completely true for me</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
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</tbody>
</table>

The next question asks about your experience during the program. Please choose the answer that appears most appropriate.

28. My spouse/partner supported my participation.

<table>
<thead>
<tr>
<th>Strongly Disagree (1)</th>
<th>Neither Agree Nor Disagree (4)</th>
<th>Strongly Agree (7)</th>
</tr>
</thead>
</table>
| (2)                   | (5)                            | (6)               | (N/A)
How frequently did you experience the following coaching/instructor behaviours during your participation in the physical activity program?

Some participants had a single coach/instructor and others worked with a coaching/instructor team. If you had more than one coach/instructor, think of the coach/instructor, or coaches/instructors, most responsible for that area.

The coach(es)/instructor(s) most responsible for my training and conditioning:

29. Provided me with a program in which I am confident

<table>
<thead>
<tr>
<th>Never (1)</th>
<th>Rarely (2)</th>
<th>Sometimes (3)</th>
<th>Fairly Often (4)</th>
<th>Often (5)</th>
<th>Very Often (6)</th>
<th>Always (7)</th>
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30. Provided me with a physically challenging program.

<table>
<thead>
<tr>
<th>Never (1)</th>
<th>Rarely (2)</th>
<th>Sometimes (3)</th>
<th>Fairly Often (4)</th>
<th>Often (5)</th>
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31. Provided me with a mentally challenging program.

<table>
<thead>
<tr>
<th>Never (1)</th>
<th>Rarely (2)</th>
<th>Sometimes (3)</th>
<th>Fairly Often (4)</th>
<th>Often (5)</th>
<th>Very Often (6)</th>
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</table>

32. Ensured that I was provided with appropriate training facilities and equipment.

<table>
<thead>
<tr>
<th>Never (1)</th>
<th>Rarely (2)</th>
<th>Sometimes (3)</th>
<th>Fairly Often (4)</th>
<th>Often (5)</th>
<th>Very Often (6)</th>
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33. Provided me with structured sessions.

<table>
<thead>
<tr>
<th>Never (1)</th>
<th>Rarely (2)</th>
<th>Sometimes (3)</th>
<th>Fairly Often (4)</th>
<th>Often (5)</th>
<th>Very Often (6)</th>
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The coach(es)/instructor(s) most responsible for my technical skills:

<table>
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<tr>
<th>Never (1)</th>
<th>Rarely (2)</th>
<th>Sometimes (3)</th>
<th>Fairly Often (4)</th>
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</table>
34. Provided me with advice when I was performing a skill.

<table>
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<th></th>
<th>Never</th>
<th>Rarely</th>
<th>Sometimes</th>
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35. Gave me specific feedback for correcting technical errors.

<table>
<thead>
<tr>
<th></th>
<th>Never</th>
<th>Rarely</th>
<th>Sometimes</th>
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</table>

My main coach(es)/instructor(s)... 

36. Showed understanding for me as a person.

<table>
<thead>
<tr>
<th></th>
<th>Never</th>
<th>Rarely</th>
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</table>

37. Was a good listener.

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<th></th>
<th>Never</th>
<th>Rarely</th>
<th>Sometimes</th>
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38. Was easily approachable about personal problems I might have.

<table>
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<th></th>
<th>Never</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>Fairly Often</th>
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39. Demonstrated concern for my whole self (i.e. other parts of my life)

<table>
<thead>
<tr>
<th></th>
<th>Never</th>
<th>Rarely</th>
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40. Was trustworthy with my personal problems.

<table>
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<tr>
<th></th>
<th>Never</th>
<th>Rarely</th>
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</table>
The following questions ask about your intentions to participate in physical activity. Physical activity is bodily movement that results in energy expenditure. It can encompass recreational activities such as scuba diving or competitive sport such as participation in a triathlon. Please choose the answer that appears most appropriate.

42. I intend to participate in at least 30 minutes of physical activity twice a week over the next 3 months.

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Neither Agree Nor Disagree</th>
<th>Strongly Agree</th>
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<tr>
<td>(1)</td>
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43. Over the next 3 months, I intend to seek out additional information about physical activity program opportunities (e.g. what programs are taking place, where, or when)

<table>
<thead>
<tr>
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<th>Strongly Disagree</th>
<th>Neither Agree Nor Disagree</th>
<th>Strongly Agree</th>
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44. I have a plan as to WHEN I will take part in at least 30 minutes of physical activity twice a week over the next 3 months.

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Neither Agree Nor Disagree</th>
<th>Strongly Agree</th>
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45. I have a plan as to WHERE I will take part in at least 30 minutes of physical activity at least twice a week over the next 3 months.

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Neither Agree Nor Disagree</th>
<th>Strongly Agree</th>
</tr>
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<tbody>
<tr>
<td>(1)</td>
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<tr>
<td>(7)</td>
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</tbody>
</table>
46. I have a plan as to **HOW** I will take part in at least 30 minutes of physical activity twice a week over the next 3 months.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Neither Agree Nor Disagree</th>
<th>Strongly Agree</th>
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<tbody>
<tr>
<td>(1)</td>
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<td>(4)</td>
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<td>(6)</td>
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<tr>
<td>(7)</td>
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</tbody>
</table>
Leisure-Time Physical Activity Participation

The following series of questions will focus on your participation in leisure time physical activity. As a reminder, physical activity is bodily movement that results in energy expenditure. It can encompass recreational activities such as scuba diving or competitive sport such as participation in a triathlon. The following definitions may be helpful.

Nothing at all: Includes activities that even when you are doing them, you do not feel like you are working at all.

Mild: Includes physical activities that require you to do very light work. You should feel like you are working a little bit but overall you shouldn’t find yourself working too hard.

Moderate: Includes physical activities that require some physical effort. You should feel like you are working somewhat hard but you should feel like you can keep going for a long time.

Heavy: Includes physical activities that require a lot of physical effort. You should feel like you are working really hard (almost at your maximum) and can only do the activity for a short time before getting tired. These activities can be exhausting.

Questions:

Keeping in mind that mild intensity physical activity requires very light physical effort. You feel like you are working a little bit, but you can keep doing them for a long time without getting tired.

47. During the last 7 days, on how many days did you do mild intensity physical activity?

48. On those days, how many minutes did you usually spend doing mild intensity physical activity?

Recall that moderate intensity physical activity requires some physical effort. Moderate intensity activities make you feel like you are working somewhat hard, but you can keep doing them for awhile without getting tired.

49. During the last 7 days, on how many days did you do moderate intensity physical activity?

272
50. On those days, how many minutes did you usually spend doing moderate intensity physical activity?

Recall that heavy intensity physical activity requires a lot of physical effort. Heavy intensity activities make you feel like you are working really hard, almost at your maximum. You cannot do these activities for very long without getting tired. These activities may be exhausting.

51. During the last 7 days, on how many days did you do heavy intensity physical activity?

52. On those days, how many minutes did you usually spend doing heavy intensity physical activity?
Thank you for your participation. Please enter the following information in order to receive your gift card and the final questionnaire.

* 53. Please enter your e-mail address. 
(This will be separated from your responses in order to support confidentiality.)

54. What type of gift card would you like?
   - Amazon
   - Starbucks

55. Where do you live (so we know what currency your gift card should be in)?
   - Canada
   - USA
   - UK
   - Other (please specify)

   [Enter your response here]
APPENDIX I

Manuscript 3 Time-point 3 Questionnaire

(Completed three months following event participation)
Please enter the following information so that you can retain your anonymity while allowing us to link your responses to your previous questionnaires.

* 1. Please enter your postal code/zip code.

* 2. Please enter your year of birth.
Thinking about your involvement in (Collins will customize question to event), please rate whether you had the following experiences during your participation.

3. I tried doing new things

<table>
<thead>
<tr>
<th></th>
<th>Yes, Definitely (1)</th>
<th>Quite a Bit (2)</th>
<th>A Little (3)</th>
<th>Not At All (4)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>

4. I started thinking more about my future because of my participation in this physical activity program.

<table>
<thead>
<tr>
<th></th>
<th>Yes, Definitely (1)</th>
<th>Quite a Bit (2)</th>
<th>A Little (3)</th>
<th>Not At All (4)</th>
</tr>
</thead>
<tbody>
<tr>
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</tbody>
</table>

5. This physical activity program got me thinking about who I am.

<table>
<thead>
<tr>
<th></th>
<th>Yes, Definitely (1)</th>
<th>Quite a Bit (2)</th>
<th>A Little (3)</th>
<th>Not At All (4)</th>
</tr>
</thead>
<tbody>
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<td></td>
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</tbody>
</table>

6. My participation in this physical activity program has been a positive turning point in my life.

<table>
<thead>
<tr>
<th></th>
<th>Yes, Definitely (1)</th>
<th>Quite a Bit (2)</th>
<th>A Little (3)</th>
<th>Not At All (4)</th>
</tr>
</thead>
<tbody>
<tr>
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</tbody>
</table>

7. Others in this physical activity program counted on me.

<table>
<thead>
<tr>
<th></th>
<th>Yes, Definitely (1)</th>
<th>Quite a Bit (2)</th>
<th>A Little (3)</th>
<th>Not At All (4)</th>
</tr>
</thead>
<tbody>
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</tbody>
</table>

8. I had good conversations with my family because of my participation in this physical activity program.

<table>
<thead>
<tr>
<th></th>
<th>Yes, Definitely (1)</th>
<th>Quite a Bit (2)</th>
<th>A Little (3)</th>
<th>Not At All (4)</th>
</tr>
</thead>
<tbody>
<tr>
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</tbody>
</table>
9. I got to know people in the veteran community through my participation in this physical activity program.

<table>
<thead>
<tr>
<th>Yes, Definitely</th>
<th>Quite a Bit</th>
<th>A Little</th>
<th>Not At All</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
</tr>
</tbody>
</table>

10. I came to feel more supported by the veteran community through my participation in this physical activity program.

<table>
<thead>
<tr>
<th>Yes, Definitely</th>
<th>Quite a Bit</th>
<th>A Little</th>
<th>Not At All</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
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</tbody>
</table>

11. This physical activity program introduced job or career opportunities for me.

<table>
<thead>
<tr>
<th>Yes, Definitely</th>
<th>Quite a Bit</th>
<th>A Little</th>
<th>Not At All</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
</tr>
</tbody>
</table>

12. I felt like I didn’t belong in this physical activity program.

<table>
<thead>
<tr>
<th>Yes, Definitely</th>
<th>Quite a Bit</th>
<th>A Little</th>
<th>Not At All</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
</tr>
</tbody>
</table>

13. I felt left out during my participation in this physical activity program.

<table>
<thead>
<tr>
<th>Yes, Definitely</th>
<th>Quite a Bit</th>
<th>A Little</th>
<th>Not At All</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
</tr>
</tbody>
</table>

14. There were cliques in this physical activity program.

<table>
<thead>
<tr>
<th>Yes, Definitely</th>
<th>Quite a Bit</th>
<th>A Little</th>
<th>Not At All</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
</tr>
</tbody>
</table>

15. I felt a sense of accomplishment through my participation in this physical activity program.

<table>
<thead>
<tr>
<th>Yes, Definitely</th>
<th>Quite a Bit</th>
<th>A Little</th>
<th>Not At All</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
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<td>(4)</td>
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</table>

16. My spouse/partner supported my participation

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Neither Agree Nor Disagree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
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<td>(3)</td>
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</table>

N/A
Physical activity is bodily movement that results in energy expenditure and is related to physical fitness. It can encompass recreational activities such as scuba diving or competitive sport such as participation in a triathlon. Thinking about the physical activity in which you took part during the program:

17. How confident are you that you can complete the physical activities you took part in during the program using proper technique.

<table>
<thead>
<tr>
<th>Not at all confident</th>
<th>0%</th>
<th>10%</th>
<th>20%</th>
<th>30%</th>
<th>40%</th>
<th>50%</th>
<th>60%</th>
<th>70%</th>
<th>80%</th>
<th>90%</th>
<th>100%</th>
</tr>
</thead>
</table>

18. How confident are you that you can perform all the movements and skills required for the physical activities you took part in during this program.

<table>
<thead>
<tr>
<th>Not at all confident</th>
<th>0%</th>
<th>10%</th>
<th>20%</th>
<th>30%</th>
<th>40%</th>
<th>50%</th>
<th>60%</th>
<th>70%</th>
<th>80%</th>
<th>90%</th>
<th>100%</th>
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</thead>
</table>
The following questions ask about your intentions to participate in physical activity. Please choose the answer that appears most appropriate.

19. Over the last 3 months, I participated in at least 30 minutes of physical activity twice a week.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Neither Agree Nor Disagree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>(2)</td>
<td>(7)</td>
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</tbody>
</table>

20. Over the last 3 months, I sought out additional information about physical activity program opportunities (e.g. what programs were taking place, where, or when).

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Neither Agree Nor Disagree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>(2)</td>
<td>(7)</td>
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</table>

21. I intend to participate in at least 30 minutes of physical activity twice a week over the next 3 months.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Neither Agree Nor Disagree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>(2)</td>
<td>(7)</td>
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</tbody>
</table>

22. Over the next 3 months, I intend to seek out additional information about physical activity program opportunities (e.g. what programs are taking place, where, or when)

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Neither Agree Nor Disagree</th>
<th>Strongly Agree</th>
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<tbody>
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</table>

23. I have a plan as to WHEN I will take part in at least 30 minutes of physical activity twice a week over the next 3 months.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Neither Agree Nor Disagree</th>
<th>Strongly Agree</th>
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</thead>
<tbody>
<tr>
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</table>
24. I have a plan as to **WHERE** I will take part in at least 30 minutes of physical activity twice a week over the next 3 months.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Neither Agree Nor Disagree</th>
<th>Strongly Agree</th>
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<tbody>
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</table>

25. I have a plan as to **HOW** I will take part in at least 30 minutes of physical activity twice a week over the next 3 months.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Neither Agree Nor Disagree</th>
<th>Strongly Agree</th>
</tr>
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</table>
Leisure-Time Physical Activity Participation

The following series of questions will focus on your participation in leisure time physical activity. As a reminder, physical activity is bodily movement that results in energy expenditure. It can encompass recreational activities such as scuba diving or competitive sport such as participation in a triathlon. The following definitions may be helpful.

**Nothing at all:** Includes activities that even when you are doing them, you do not feel like you are working at all.

**Mild:** Includes physical activities that require you to do very light work. You should feel like you are working a little bit but overall you shouldn't find yourself working too hard.

**Moderate:** Includes physical activities that require some physical effort. You should feel like you are working somewhat hard but you should feel like you can keep going for a long time.

**Heavy:** Includes physical activities that require a lot of physical effort. You should feel like you are working really hard (almost at your maximum) and can only do the activity for a short time before getting tired. These activities can be exhausting.

**Questions:**

Keeping in mind that mild intensity physical activity requires very light physical effort. You feel like you are working a little bit, but you can keep doing them for a long time without getting tired.

26. During the last 7 days, on how many days did you do mild intensity physical activity?

27. On those days, how many minutes did you usually spend doing mild intensity physical activity?

Recall that moderate intensity physical activity requires some physical effort. Moderate intensity activities make you feel like you are working somewhat hard, but you can keep doing them for awhile without getting tired.

28. During the last 7 days, on how many days did you do moderate intensity physical activity?
29. On those days, how many minutes did you usually spend doing moderate intensity physical activity?

Recall that heavy intensity physical activity requires a lot of physical effort. Heavy intensity activities make you feel like you are working really hard, almost at your maximum. You cannot do these activities for very long without getting tired. These activities may be exhausting.

30. During the last 7 days, on how many days did you do heavy intensity physical activity?

31. On those days, how many minutes did you usually spend doing heavy intensity physical activity?
Thank you for your participation in this study.

* 32. Please provide an e-mail to which we can send you your gift card.

33. What type of gift card would you like?
   - [ ] Amazon
   - [ ] Starbucks

34. Where do you live (so that your gift card is in the appropriate currency)?
   - [ ] Canada
   - [ ] USA
   - [ ] UK
   - [ ] Other (please specify):

35. Would you be interested in taking part in future studies?
   - [ ] Yes
   - [ ] No
APPENDIX J

Manuscript 3 Program Leader Questionnaire
The following questions are being asked in order to help us understand how your program was delivered. These responses will be used alongside the responses from program participants.

1. So that we can match your responses to the appropriate program, please answer the following questions:

   What is the name of the program that you led?______________________________________________________________

   What organization ran the program?_____________________________________________________________________

   What was your role in the program?_______________________________________________________________________

When answering the following questions, please consider the following definition of physical activity: Physical activity is bodily movement that results in energy expenditure. It can encompass recreational activities such as scuba diving or competitive sport such as participation in a triathlon.

2. Prior to leading this program, what was your previous experience coaching or leading adapted physical activities?

<table>
<thead>
<tr>
<th>I never coached</th>
<th>I rarely coached</th>
<th>I sometimes coached</th>
<th>I frequently coached</th>
<th>I always coached</th>
</tr>
</thead>
<tbody>
<tr>
<td>adapted activity</td>
<td>adapted activity</td>
<td>adapted activity</td>
<td>adapted activity</td>
<td>adapted activity</td>
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<tr>
<td>(1)</td>
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<td>(4)</td>
<td>(5)</td>
</tr>
</tbody>
</table>

   [Circle the appropriate response]

3. What was your previous experience with being a participant in the physical activities in this program?

<table>
<thead>
<tr>
<th>I never participate in these activities</th>
<th>I rarely participate in these activities</th>
<th>I sometimes participate in these activities</th>
<th>I frequently participate in these activities</th>
<th>I always participate in these activities</th>
</tr>
</thead>
<tbody>
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<td>(3)</td>
<td>(4)</td>
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</tr>
</tbody>
</table>

   [Circle the appropriate response]

4. How many times has this program previously taken place?

   [ ]

5. Please answer the following questions on the duration of the program:

   How many days was the program?_________________________________________________________________________

   How many hours was each day?__________________________________________________________________________
6. Where did the program take place?
(please check as many boxes as apply)
☐ Outdoors
☐ Indoors

7. Considering the country (or countries) where the program took place, was it:
(please check as many boxes as apply)
☐ A domestic program (took place in the home country of participants)
☐ International (participants travelled to a different country)

8. What was the program capacity (i.e. how many people could have taken part)?

9. How many individuals actually took part in the program?

10. How many individuals that took part were veterans?

11. How many of the veterans who took part had a physical disability?

12. What were the eligibility criteria for participating in the program?
13. Who participated in the program?
(Please check all that apply.)

- Individuals currently serving in the military WITH a physical disability
- Individuals currently serving in the military WITHOUT a physical disability
- Individuals currently serving in the military WITH a psychological injury (e.g. PTSD)
- Individuals currently serving in the military WITHOUT a psychological injury (e.g. PTSD)
- Veterans (i.e. individuals no longer serving in the military) WITH a physical disability
- Veterans (i.e. individuals no longer serving in the military) WITHOUT a physical disability
- Veterans (i.e. individuals no longer serving in the military) WITH a psychological injury (e.g. PTSD)
- Veterans (i.e. individuals no longer serving in the military) WITHOUT a psychological injury (e.g. PTSD)
- Participants' family members
- Participants' friends
- Other (please specify)

14. Did the program provide all necessary adapted equipment?

<table>
<thead>
<tr>
<th>We did not provide any (i.e. participants had to bring their own)</th>
<th>We provided a little bit (i.e. participants had to bring the rest)</th>
<th>We provided half (i.e. participants had to bring the other half)</th>
<th>We provided the majority (i.e. participants barely had to bring any)</th>
<th>We provided all the equipment (i.e. participants didn't have to bring any)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
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<td>(4)</td>
<td>(5)</td>
</tr>
</tbody>
</table>

15. How much of the program did participants have to pay for?

<table>
<thead>
<tr>
<th>The program was fully funded (i.e. participants didn't pay for travel, food, hotel, etc.)</th>
<th>Participants only had to cover half of their fees (e.g. food, hotel, travel, activities)</th>
<th>Participants had to pay for everything (e.g. food, hotel, travel, activities)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0%</td>
<td>10%</td>
<td>20%</td>
</tr>
</tbody>
</table>

16. What types of physical activities did the participants take part in?

- Team
- Individual
- Both individual and team activities
17. What was the level of participation?

- Recreational (i.e. no competition at all)
- Friendly competition amongst participants or groups or participants
- Local competition (e.g. participants competed against other individuals in the town or city)
- Regional competition (e.g. participants competed against other individuals in their region, state, or province)
- National competition (e.g. participants competed against other individuals across the country)
- International competition (e.g. participants competed against individuals from other countries)
- Other (please specify)

18. How much focus was on competition?

<table>
<thead>
<tr>
<th>The program was entirely recreational.</th>
<th>The program was an equal mix of recreational and competitive activities.</th>
<th>The entire focus of the program was competition.</th>
</tr>
</thead>
<tbody>
<tr>
<td>0%</td>
<td>10%</td>
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<tr>
<td>80%</td>
<td>90%</td>
<td>100%</td>
</tr>
</tbody>
</table>

19. How much of a participant's time during the program was spent participating in physical activity?

<table>
<thead>
<tr>
<th>No time.</th>
<th>All of the time.</th>
</tr>
</thead>
<tbody>
<tr>
<td>0%</td>
<td>10%</td>
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<tr>
<td>10%</td>
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<td>90%</td>
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<tr>
<td>90%</td>
<td>100%</td>
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</tbody>
</table>

20. Objective accessibility is defined as the environment being built so that access is easy and safe (e.g. ramps instead of stairs so that participants don't have to be carried into a bus or building). To what extent was the program objectively accessible?

<table>
<thead>
<tr>
<th>No part was objectively accessible.</th>
<th>Everything was objectively accessible.</th>
</tr>
</thead>
<tbody>
<tr>
<td>0%</td>
<td>10%</td>
</tr>
<tr>
<td>10%</td>
<td>20%</td>
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<tr>
<td>20%</td>
<td>30%</td>
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<tr>
<td>30%</td>
<td>40%</td>
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<tr>
<td>40%</td>
<td>50%</td>
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<tr>
<td>50%</td>
<td>60%</td>
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<tr>
<td>60%</td>
<td>70%</td>
</tr>
<tr>
<td>70%</td>
<td>80%</td>
</tr>
<tr>
<td>80%</td>
<td>90%</td>
</tr>
<tr>
<td>90%</td>
<td>100%</td>
</tr>
</tbody>
</table>
21. Subjective accessibility is defined as people with a disability feeling confident, comfortable, and in control within the built environment. Examples of subjective accessibility are environmental concerns beyond access which may include smooth and evenly paved sidewalks, awnings to protect prosthetics from rain, enough room in locker rooms for different wheelchairs or prosthetics, or enough adapted showers or washrooms to accommodate more than one person with a disability. To what extent was the program subjectively accessible?

<table>
<thead>
<tr>
<th>No part was subjective accessible.</th>
<th>0%</th>
<th>10%</th>
<th>20%</th>
<th>30%</th>
<th>40%</th>
<th>50%</th>
<th>60%</th>
<th>70%</th>
<th>80%</th>
<th>90%</th>
<th>100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Everything was subjectively accessible.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

22. Cohesion can be defined as a dynamic process reflected in the tendency for a group to stick together and remain united in the pursuit of objectives and/or the satisfaction of a member's needs. How much focus was placed on building a cohesive group of participants?

<table>
<thead>
<tr>
<th>No time or effort was placed on building cohesion amongst participants.</th>
<th>0%</th>
<th>10%</th>
<th>20%</th>
<th>30%</th>
<th>40%</th>
<th>50%</th>
<th>60%</th>
<th>70%</th>
<th>80%</th>
<th>90%</th>
<th>100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>All of our time and effort was placed on building cohesion amongst participants.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

23. How much focus was placed on open two-way communication between coaches and participants?

<table>
<thead>
<tr>
<th>No time or effort was placed on open two-way communication.</th>
<th>0%</th>
<th>10%</th>
<th>20%</th>
<th>30%</th>
<th>40%</th>
<th>50%</th>
<th>60%</th>
<th>70%</th>
<th>80%</th>
<th>90%</th>
<th>100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Half of our time and effort was placed on open two-way communication.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

24. How much focus was placed on open two-way communication between participants?

<table>
<thead>
<tr>
<th>No time or effort was placed on open two-way communication.</th>
<th>0%</th>
<th>10%</th>
<th>20%</th>
<th>30%</th>
<th>40%</th>
<th>50%</th>
<th>60%</th>
<th>70%</th>
<th>80%</th>
<th>90%</th>
<th>100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Half of our time and effort was placed on open two-way communication.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

290
25. The atmosphere in the program was non-judgmental.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Neither Agree nor Disagree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>(2)</td>
<td>(7)</td>
</tr>
<tr>
<td>(3)</td>
<td>(4)</td>
<td>(6)</td>
</tr>
<tr>
<td>(5)</td>
<td>(5)</td>
<td>(5)</td>
</tr>
</tbody>
</table>

26. Participants were accepted by everyone in the group.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Neither Agree nor Disagree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>(2)</td>
<td>(7)</td>
</tr>
<tr>
<td>(3)</td>
<td>(4)</td>
<td>(6)</td>
</tr>
<tr>
<td>(5)</td>
<td>(5)</td>
<td>(5)</td>
</tr>
</tbody>
</table>

27. Participants with less visible injuries had difficulties being accepted by the group.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Neither Agree nor Disagree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>(2)</td>
<td>(7)</td>
</tr>
<tr>
<td>(3)</td>
<td>(4)</td>
<td>(6)</td>
</tr>
<tr>
<td>(5)</td>
<td>(5)</td>
<td>(5)</td>
</tr>
</tbody>
</table>

28. All participants had a role in the group.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Neither Agree nor Disagree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>(2)</td>
<td>(7)</td>
</tr>
<tr>
<td>(3)</td>
<td>(4)</td>
<td>(6)</td>
</tr>
<tr>
<td>(5)</td>
<td>(5)</td>
<td>(5)</td>
</tr>
</tbody>
</table>

29. Independence can be defined as program staff being nearby in case participants need help but allowing participants to do things on their own (e.g. staff are not overprotective). How much was participant independence supported?

<table>
<thead>
<tr>
<th>Participants were never independent.</th>
<th>Participants were independent half the time.</th>
<th>Participants were entirely independent at all times.</th>
</tr>
</thead>
<tbody>
<tr>
<td>0%</td>
<td>10%</td>
<td>20%</td>
</tr>
<tr>
<td>20%</td>
<td>30%</td>
<td>40%</td>
</tr>
<tr>
<td>30%</td>
<td>40%</td>
<td>50%</td>
</tr>
<tr>
<td>40%</td>
<td>50%</td>
<td>60%</td>
</tr>
<tr>
<td>50%</td>
<td>60%</td>
<td>70%</td>
</tr>
<tr>
<td>60%</td>
<td>70%</td>
<td>80%</td>
</tr>
<tr>
<td>70%</td>
<td>80%</td>
<td>90%</td>
</tr>
<tr>
<td>80%</td>
<td>90%</td>
<td>100%</td>
</tr>
</tbody>
</table>

30. Once they signed up for the program, participants had choice in terms of the types of activities they participated in.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Neither Agree nor Disagree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>(2)</td>
<td>(7)</td>
</tr>
<tr>
<td>(3)</td>
<td>(4)</td>
<td>(6)</td>
</tr>
<tr>
<td>(5)</td>
<td>(5)</td>
<td>(5)</td>
</tr>
</tbody>
</table>
31. Once they signed up for the program, participants had choice in their amount of involvement in the program (e.g. participants could be fully involved or have a low level of involvement).

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Neither Agree nor Disagree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>(2)</td>
<td>(7)</td>
</tr>
</tbody>
</table>

32. What was the purpose of this program?
(Choose as many as apply.)

- [ ] Educate (e.g. increasing knowledge or understanding about an activity)
- [ ] Persuade (e.g. use communication to motivate increases in activity)
- [ ] Incentivize (e.g. use prizes to motivate continued activity)
- [ ] Train (e.g. teach skills)
- [ ] Modelling (e.g. provide an example for people to aspire to or imitate)
- [ ] Enable (e.g. increase means or reduce barriers to increase activity or the opportunity to be active)
- [ ] Other (please specify)
Please provide the following information about yourself.

33. Are you
   - Male
   - Female
   - Transgender
   - Do not wish to specify

34. What is your date of birth?
   Date: __/__/____

35. Do you have a disability?
   - Yes
   - No
36. Please respond to the following questions regarding your disability:

   What is your type of disability?

   What is the cause of your disability?

   How does the disability affect you?

37. Are you currently serving or have you previously served in the military?

   ☐ Yes
   ☐ No
38. What is your military rank?

39. What is your current status in the military?
   ○ Currently serving in the military
   ○ No longer serving in the military

40. How many years has it been since you stopped serving in the military?
APPENDIX K

Manuscript 3 Supplemental Tables
Table 6. *Mediation models for coach interpersonal skills and family integration*

<table>
<thead>
<tr>
<th>Mediator</th>
<th>Mediator (T2) – Family integration (T3)</th>
<th>Mediator (T2) – Family Integration (T2)</th>
<th>Mediator (T3) – Family Integration (T3)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Indirect effect</td>
<td>Effect size</td>
<td>Indirect effect</td>
</tr>
<tr>
<td>β (SE)</td>
<td>K² (95%CI)</td>
<td>β (SE)</td>
<td>K² (95%CI)</td>
</tr>
<tr>
<td>Linkages to the community</td>
<td>0.07 (0.09)</td>
<td>0.07 (0.07)</td>
<td>0.18* (0.11)</td>
</tr>
<tr>
<td>[95%CI] [-0.04-0.33]</td>
<td>[0-0.25]</td>
<td>[0.02-0.42]</td>
<td>[0.03-0.40]</td>
</tr>
<tr>
<td>Perceived belonging</td>
<td>0.03 (0.07)</td>
<td>0.03 (0.06)</td>
<td>0.07 (0.09)</td>
</tr>
<tr>
<td>[95%CI] [-0.05-0.25]</td>
<td>[0-0.17]</td>
<td>[-0-0.33]</td>
<td>[0-0.31]</td>
</tr>
<tr>
<td>Self-efficacy</td>
<td>0.02 (0.04)</td>
<td>0.02 (0.04)</td>
<td>0.06 (0.06)</td>
</tr>
<tr>
<td>[95%CI] [-0.03-0.16]</td>
<td>[0-0.11]</td>
<td>[-0.04-0.22]</td>
<td>[0-0.22]</td>
</tr>
<tr>
<td>Challenge</td>
<td>0.04 (0.10)</td>
<td>0.06 (0.06)</td>
<td>-0.08 (0.09)</td>
</tr>
<tr>
<td>[95%CI] [-0.18-0.24]</td>
<td>[0-0.17]</td>
<td>[-0.29-0.09]</td>
<td>[0-0.22]</td>
</tr>
<tr>
<td>Identity reflection</td>
<td>0.01 (0.04)</td>
<td>0.02 (0.04)</td>
<td>0.04 (0.06)</td>
</tr>
<tr>
<td>[95%CI] [-0.05-0.15]</td>
<td>[0-0.11]</td>
<td>[-0.04-0.22]</td>
<td>[0-0.18]</td>
</tr>
<tr>
<td>Leadership and responsibility</td>
<td>0.05 (0.06)</td>
<td>0.06 (0.06)</td>
<td>0.07 (0.06)</td>
</tr>
<tr>
<td>[95%CI] [-0.02-0.23]</td>
<td>[0-0.21]</td>
<td>[-0.01-0.27]</td>
<td>[0-0.26]</td>
</tr>
</tbody>
</table>

*Note. n=49; *significant mediation (i.e. confidence interval does not include zero); T2: Time-point 2 (week following event participation); T3: Time-point 3 (three months following event participation); CI: Confidence interval; Coach interpersonal skills only measured at time-point 2. Challenge only measured at time-point 2.*
<table>
<thead>
<tr>
<th>Mediator</th>
<th>Mediator (T2) – Planning (T3)</th>
<th>Mediator (T2) – Planning (T2)</th>
<th>Mediator (T3) – Planning (T3)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Indirect effect</td>
<td>Effect size</td>
<td>Indirect effect</td>
</tr>
<tr>
<td></td>
<td>β (SE)</td>
<td>K^2 (SE)</td>
<td>β (SE)</td>
</tr>
<tr>
<td></td>
<td>[95%CI]</td>
<td>[95%CI]</td>
<td>[95%CI]</td>
</tr>
<tr>
<td>Linkages to the community</td>
<td>-0.03 (0.11)</td>
<td>0.03 (0.07)</td>
<td>0.16* (0.10)</td>
</tr>
<tr>
<td></td>
<td>[-0.28-0.16]</td>
<td>[0-0.11]</td>
<td>[0.02-0.41]</td>
</tr>
<tr>
<td>Perceived belonging</td>
<td>-0.03 (0.06)</td>
<td>0.03 (0.04)</td>
<td>0.02 (0.07)</td>
</tr>
<tr>
<td></td>
<td>[-0.20-0.04]</td>
<td>[0-0.15]</td>
<td>[-0.04-0.23]</td>
</tr>
<tr>
<td></td>
<td>&lt;0.01 (0.05)</td>
<td>&lt;0.01 (0.03)</td>
<td>0.08 (0.08)</td>
</tr>
<tr>
<td>Self-efficacy</td>
<td>-0.07 (0.05)</td>
<td>0.06 (0.03)</td>
<td>0.04 (0.08)</td>
</tr>
<tr>
<td>Challenge</td>
<td>-0.07 (0.10)</td>
<td>0.06 (0.06)</td>
<td>0.04 (0.10)</td>
</tr>
<tr>
<td></td>
<td>[-0.35-0.07]</td>
<td>[0-0.21]</td>
<td>[-0.14-0.26]</td>
</tr>
<tr>
<td>Identity reflection</td>
<td>0.01 (0.03)</td>
<td>0.01 (0.03)</td>
<td>0.01 (0.04)</td>
</tr>
<tr>
<td></td>
<td>[-0.02-0.14]</td>
<td>[0-0.06]</td>
<td>[-0.03-0.16]</td>
</tr>
<tr>
<td>Leadership and responsibility</td>
<td>0.01 (0.04)</td>
<td>0.01 (0.03)</td>
<td>0.08 (0.06)</td>
</tr>
<tr>
<td></td>
<td>[-0.04-0.13]</td>
<td>[0-0.08]</td>
<td>[-0.01-0.30]</td>
</tr>
</tbody>
</table>

Note. n=49; *significant mediation (i.e. confidence interval does not include zero); T2: Time-point 2 (week following event participation); T3: Time-point 3 (three months following event participation); CI: Confidence interval; Coach interpersonal skills only measured at time-point 2. Challenge only measured at time-point 2.
Table 8. Mediation models for coach interpersonal skills and intentions

<table>
<thead>
<tr>
<th>Mediator</th>
<th>Mediator (T2) – Intentions (T3)</th>
<th>Mediator (T2) – Intentions (T2)</th>
<th>Mediator (T3) – Intentions (T3)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Indirect effect</td>
<td>Effect size</td>
<td>Indirect effect</td>
</tr>
<tr>
<td></td>
<td>( \beta )</td>
<td>(SE)</td>
<td>( K^2 )</td>
</tr>
<tr>
<td></td>
<td>[95%CI]</td>
<td></td>
<td>[95%CI]</td>
</tr>
<tr>
<td>Linkages to the community</td>
<td>-0.01</td>
<td>0.02</td>
<td>0.21*</td>
</tr>
<tr>
<td></td>
<td>[0.07]</td>
<td>[0.05]</td>
<td>0.1</td>
</tr>
<tr>
<td></td>
<td>[-0.19-0.11]</td>
<td>[0-0.08]</td>
<td>[0.05-0.49]</td>
</tr>
<tr>
<td>Perceived belonging</td>
<td>-0.07</td>
<td>0.08</td>
<td>0.03</td>
</tr>
<tr>
<td></td>
<td>[-0.31-0.01]</td>
<td>[0-0.27]</td>
<td>[-0.04-0.27]</td>
</tr>
<tr>
<td></td>
<td>[0.06]</td>
<td>[0.05]</td>
<td>0.06</td>
</tr>
<tr>
<td></td>
<td>[0-0.14]</td>
<td>[0.04-0.26]</td>
<td>[0-0.15]</td>
</tr>
<tr>
<td>Self-efficacy</td>
<td>0.03</td>
<td>0.03</td>
<td>0.04</td>
</tr>
<tr>
<td></td>
<td>[0.19]</td>
<td>[0.06]</td>
<td>0.11</td>
</tr>
<tr>
<td></td>
<td>[-0.14-0.29]</td>
<td>[0-0.12]</td>
<td>[-0.12-0.30]</td>
</tr>
<tr>
<td>Challenge</td>
<td>-0.02</td>
<td>0.02</td>
<td>0.04</td>
</tr>
<tr>
<td></td>
<td>[-0.17-0.04]</td>
<td>[0-0.12]</td>
<td>[-0.03-0.22]</td>
</tr>
<tr>
<td>Identity reflection</td>
<td>0.04</td>
<td>0.04</td>
<td>0.05</td>
</tr>
<tr>
<td>Leadership and responsibility</td>
<td>(&lt;-0.01)</td>
<td>0.01</td>
<td>0.08</td>
</tr>
<tr>
<td></td>
<td>[0.04]</td>
<td>[0.03]</td>
<td>0.07</td>
</tr>
<tr>
<td></td>
<td>[-0.11-0.09]</td>
<td>[0-0.08]</td>
<td>[0-0.30]</td>
</tr>
</tbody>
</table>

*Note. n=49; *significant mediation (i.e. confidence interval does not include zero); T2: Time-point 2 (week following event participation); T3: Time-point 3 (three months following event participation); CI: Confidence interval; Coach interpersonal skills only measured at time-point 2. Challenge only measured at time-point.
Table 9. Mediation models for coach interpersonal skills and physical activity

<table>
<thead>
<tr>
<th>Mediator</th>
<th>Mediator (T2) – Physical activity (T3)</th>
<th>Mediator (T2) – Physical activity (T2)</th>
<th>Mediator (T3) – Physical activity (T3)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Indirect effect</td>
<td>Effect size</td>
<td>Indirect effect</td>
</tr>
<tr>
<td></td>
<td>β</td>
<td>K²</td>
<td>β</td>
</tr>
<tr>
<td></td>
<td>(SE)</td>
<td>(SE)</td>
<td>(SE)</td>
</tr>
<tr>
<td>Linkages to the community</td>
<td>0.10</td>
<td>0.09</td>
<td>0.03</td>
</tr>
<tr>
<td></td>
<td>(0.08)</td>
<td>(0.07)</td>
<td>(0.06)</td>
</tr>
<tr>
<td></td>
<td>[0.01-0.33]</td>
<td>[0.01-0.28]</td>
<td>[-0.07-0.19]</td>
</tr>
<tr>
<td>Perceived belonging</td>
<td>0.04</td>
<td>0.04</td>
<td>0.04</td>
</tr>
<tr>
<td></td>
<td>(0.06)</td>
<td>(0.04)</td>
<td>(0.06)</td>
</tr>
<tr>
<td></td>
<td>[-0.03-0.20]</td>
<td>[0.0-0.15]</td>
<td>[-0.02-0.23]</td>
</tr>
<tr>
<td>Self-efficacy</td>
<td>0.03</td>
<td>0.03</td>
<td>0.01</td>
</tr>
<tr>
<td></td>
<td>(0.05)</td>
<td>(0.04)</td>
<td>(0.05)</td>
</tr>
<tr>
<td></td>
<td>[-0.03-0.19]</td>
<td>[0.0-0.15]</td>
<td>[-0.05-0.15]</td>
</tr>
<tr>
<td>Challenge</td>
<td>-0.04</td>
<td>0.03</td>
<td>&lt; -0.01</td>
</tr>
<tr>
<td></td>
<td>(0.10)</td>
<td>(0.05)</td>
<td>(0.12)</td>
</tr>
<tr>
<td></td>
<td>[-0.29-0.13]</td>
<td>[0.0-0.11]</td>
<td>[-0.31-0.16]</td>
</tr>
<tr>
<td>Identity reflection</td>
<td>0.06</td>
<td>0.06</td>
<td>0.02</td>
</tr>
<tr>
<td></td>
<td>(0.07)</td>
<td>(0.06)</td>
<td>(0.06)</td>
</tr>
<tr>
<td></td>
<td>[-0.06-0.23]</td>
<td>[0.0-0.21]</td>
<td>[-0.05-0.23]</td>
</tr>
<tr>
<td>Leadership and responsibility</td>
<td>0.04</td>
<td>0.04</td>
<td>-0.02</td>
</tr>
<tr>
<td></td>
<td>(0.05)</td>
<td>(0.04)</td>
<td>(0.05)</td>
</tr>
<tr>
<td></td>
<td>[-0.02-0.18]</td>
<td>[0.0-0.15]</td>
<td>[-0.16-0.01]</td>
</tr>
</tbody>
</table>

Note. n=49; T2: Time-point 2 (week following event participation); T3: Time-point 3 (three months following event participation); PA: Physical activity; CI: Confidence interval; Coach interpersonal skills only measured at time-point 2. Challenge only measured at time-point 2.
### Table 10. Mediation models for coaches’ provision of advice and feedback and family integration

<table>
<thead>
<tr>
<th>Mediator</th>
<th>Mediator (T2) – Family integration (T3)</th>
<th>Mediator (T2) – Family integration (T2)</th>
<th>Mediator (T3) – Family integration (T3)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Indirect effect</td>
<td>Effect size</td>
<td>Indirect effect</td>
</tr>
<tr>
<td></td>
<td>β (SE)</td>
<td>K² (SE)</td>
<td>[95%CI]</td>
</tr>
<tr>
<td>Linkages to the community</td>
<td>0.06</td>
<td>0.06</td>
<td>[0.06-0.26]</td>
</tr>
<tr>
<td>Perceived belonging</td>
<td>-0.02</td>
<td>0.02</td>
<td>[-0.06-0.02]</td>
</tr>
<tr>
<td>Self-efficacy</td>
<td>-0.16</td>
<td>0.03</td>
<td>[-0.10-0.10]</td>
</tr>
<tr>
<td>Challenge</td>
<td>0.26</td>
<td>0.18</td>
<td>[-0.03-0.03]</td>
</tr>
<tr>
<td>Identity reflection</td>
<td>0.02</td>
<td>0.02</td>
<td>[-0.05-0.17]</td>
</tr>
<tr>
<td>Leadership and responsibility</td>
<td>-0.02</td>
<td>0.05</td>
<td>[-0.02-0.01]</td>
</tr>
</tbody>
</table>

Note. n=49T2: Time-point 2 (week following event participation); T3: Time-point 3 (three months following event participation); CI: Confidence interval; Coaches’ provision of advice and feedback only measured at time-point 2. Challenge only measured at time-point 2.
Table 11. Meditational models for coaches’ provision of advice and feedback and planning

<table>
<thead>
<tr>
<th>Mediator</th>
<th>Mediator (T2) – Planning (T3)</th>
<th>Mediator (T2) – Planning (T2)</th>
<th>Mediator (T3) – Planning (T3)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Indirect effect</td>
<td>Effect size</td>
<td>Indirect effect</td>
</tr>
<tr>
<td></td>
<td>β (SE)</td>
<td>K² (SE) [95%CI]</td>
<td>β (SE)</td>
</tr>
<tr>
<td>Linkages to the community</td>
<td>&lt; -0.01 (0.05)</td>
<td>0.01 [0-0.05]</td>
<td>0.07 (0.08)</td>
</tr>
<tr>
<td>Perceived belonging</td>
<td>&lt; -0.01 (0.03)</td>
<td>&lt; 0.01 [0-0.01]</td>
<td>0.01 (0.03)</td>
</tr>
<tr>
<td>Self-efficacy</td>
<td>&lt; -0.01 (0.03)</td>
<td>&lt; 0.01 [0-0.02]</td>
<td>-0.03 (0.06)</td>
</tr>
<tr>
<td>Challenge</td>
<td>0.02 (0.03)</td>
<td>0.02 [0.02]</td>
<td>0.11 (0.06)</td>
</tr>
<tr>
<td>Identity reflection</td>
<td>0.01 (0.03)</td>
<td>0.01 [0.01]</td>
<td>0.01 (0.04)</td>
</tr>
<tr>
<td>Leadership and responsibility</td>
<td>0.01 (0.03)</td>
<td>0.01 [0.09]</td>
<td>0.04 (0.04)</td>
</tr>
</tbody>
</table>
| Note. n=49; T2: Time-point 2 (week following event participation); T3: Time-point 3 (three months following event participation); CI: Confidence interval; Coaches’ provision of advice and feedback only measured at time-point 2. Challenge only measured at time-point 2.
Table 12. Mediation models for coaches’ provision of advice and feedback and intentions

<table>
<thead>
<tr>
<th>Mediator</th>
<th>Mediator (T2) – Intentions (T3)</th>
<th>Mediator (T2) – Intentions (T2)</th>
<th>Mediator (T3) – Intentions (T3)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Indirect effect</td>
<td>Effect size</td>
<td>Indirect effect</td>
</tr>
<tr>
<td></td>
<td>β (SE) [95%CI]</td>
<td>K^2 (SE) [95%CI]</td>
<td>β (SE) [95%CI]</td>
</tr>
<tr>
<td>Linkages to the community</td>
<td>-0.15 (0.18) [-0.52-0.21]</td>
<td>0.10 (0.08) [0-0.28]</td>
<td>0.10 (0.09) [-0.03-0.35]</td>
</tr>
<tr>
<td>Perceived belonging</td>
<td>&lt; -0.01 (0.04) [-0.08-0.06]</td>
<td>&lt; 0.01 (0.03) [0-0.01]</td>
<td>&lt; 0.01 (0.03) [-0.61-0.07]</td>
</tr>
<tr>
<td>Self-efficacy</td>
<td>0.01 (0.04) [-0.06-0.09]</td>
<td>0.07 (0.03) [0-0.02]</td>
<td>0.04 (0.04) [-0.19-0.04]</td>
</tr>
<tr>
<td>Challenge</td>
<td>0.11 (0.17) [-0.16-0.51]</td>
<td>0.07 (0.08) [-0.22]</td>
<td>0.11 (0.18) [-0.21-0.54]</td>
</tr>
<tr>
<td>Identity reflection</td>
<td>-0.01 (0.05) [-0.21-0.05]</td>
<td>-0.02 (0.04) [-0.10]</td>
<td>0.01 (0.04) [-0.03-0.18]</td>
</tr>
<tr>
<td>Leadership and responsibility</td>
<td>&lt; 0.01 (0.04) [-0.08-0.09]</td>
<td>0.01 (0.03) [-0.02-0.25]</td>
<td>0.05 (0.03) [-0.02-0.25]</td>
</tr>
</tbody>
</table>

Note. n=49; T2: Time-point 2 (week following event participation); T3: Time-point 3 (three months following event participation); CI: Confidence interval; Coaches’ provision of advice and feedback only measured at time-point 2. Challenge only measured at time-point 2.
Table 13. Mediation models for coaches’ provision of advice and feedback and physical activity

<table>
<thead>
<tr>
<th>Mediator</th>
<th>Mediator (T2) – Physical activity (T3)</th>
<th>Mediator (T2) – Physical activity (T2)</th>
<th>Mediator (T3) – Physical activity (T3)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Indirect effect</td>
<td>Effect size</td>
<td>Indirect effect</td>
</tr>
<tr>
<td></td>
<td>β (SE) [95%CI]</td>
<td>K² (SE) [95%CI]</td>
<td>β (SE) [95%CI]</td>
</tr>
<tr>
<td>Linkages to the community</td>
<td>0.04 (0.05) [-0.01-0.19]</td>
<td>0.04 (0.04) [0-0.16]</td>
<td>0.01 (0.04) [-0.04-0.17]</td>
</tr>
<tr>
<td>Perceived belonging</td>
<td>&lt;0.01</td>
<td>&lt;0.01</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Self-efficacy</td>
<td>-0.02 (0.04) [-0.14-0.04]</td>
<td>0.02 (0.03) [0-0.09]</td>
<td>-0.01 (0.03) [-0.09-0.03]</td>
</tr>
<tr>
<td>Challenge</td>
<td>0.17 (0.19) [-0.58-0.21]</td>
<td>0.11 (0.09) [0-0.30]</td>
<td>-0.05 (0.17) [-0.53-0.19]</td>
</tr>
<tr>
<td>Identity</td>
<td>0.05 (0.08) [-0.08-0.23]</td>
<td>0.05 (0.06) [-0.10-0.06]</td>
<td>0.02 (0.06) [-0.05-0.27]</td>
</tr>
<tr>
<td>Reflection</td>
<td>0.02 (1.49) [-0.02-0.15]</td>
<td>0.02 (0.03) [-0.12-0.03]</td>
<td>-0.01 (0.03) [-0.12-0.03]</td>
</tr>
<tr>
<td>Leadership and responsibility</td>
<td>0.02 (1.49) [-0.02-0.15]</td>
<td>0.02 (0.03) [-0.12-0.03]</td>
<td>-0.01 (0.03) [-0.12-0.03]</td>
</tr>
</tbody>
</table>

Note. n=49; *significant mediation (i.e. confidence interval does not include zero); T2: Time-point 2 (week following event participation); T3: Time-point 3 (three months following event participation); PA: Physical activity; CI: Confidence interval; Coaches’ provision of advice and feedback only measured at time-point 2. Challenge only measured at time-point 2.
Table 14. Mediation models for spouse support at time-point 2 and family integration

<table>
<thead>
<tr>
<th>Mediator</th>
<th>Mediator (T2) – Family integration (T3)</th>
<th>Mediator (T2) – Family integration (T2)</th>
<th>Mediator (T2) – Family integration (T3)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Indirect effect</td>
<td>Effect size</td>
<td>Indirect effect</td>
</tr>
<tr>
<td></td>
<td>β</td>
<td>K²</td>
<td>β</td>
</tr>
<tr>
<td></td>
<td>(SE)</td>
<td>[95%CI]</td>
<td>(SE)</td>
</tr>
<tr>
<td>Linkages to the community</td>
<td>0.01</td>
<td>0.01</td>
<td>0.04</td>
</tr>
<tr>
<td></td>
<td>(0.04)</td>
<td>[0.05-0.17]</td>
<td>(0.04)</td>
</tr>
<tr>
<td>Perceived belonging</td>
<td>0.01</td>
<td>0.01</td>
<td>0.04</td>
</tr>
<tr>
<td></td>
<td>(0.08)</td>
<td>[0.07-0.14]</td>
<td>(0.09)</td>
</tr>
<tr>
<td>Self-efficacy</td>
<td>-0.09</td>
<td>0.09</td>
<td>-0.01</td>
</tr>
<tr>
<td></td>
<td>(0.10)</td>
<td>[0.09-0.14]</td>
<td>(0.05)</td>
</tr>
<tr>
<td>Challenge</td>
<td>-0.04</td>
<td>0.05</td>
<td>-0.04</td>
</tr>
<tr>
<td></td>
<td>(0.05)</td>
<td>[0.04-0.14]</td>
<td>(0.04)</td>
</tr>
<tr>
<td>Identity reflection</td>
<td>0.02</td>
<td>0.02</td>
<td>0.10</td>
</tr>
<tr>
<td></td>
<td>(0.05)</td>
<td>[0.03-0.16]</td>
<td>(0.08)</td>
</tr>
<tr>
<td>Leadership and responsibility</td>
<td>0.05</td>
<td>0.05</td>
<td>0.10</td>
</tr>
<tr>
<td></td>
<td>(0.07)</td>
<td>[0.04-0.14]</td>
<td>(0.08)</td>
</tr>
<tr>
<td></td>
<td>[-0.02-0.30]</td>
<td>[0.02-0.27]</td>
<td>[-0.05-0.33]</td>
</tr>
</tbody>
</table>

Note. n=36; T2: Time-point 2 (week following event participation); T3: Time-point 3 (three months following event participation); CI: Confidence interval; Challenge only measured at time-point 2.
Table 15. Meditational models for spouse support at time-point 2 and planning

<table>
<thead>
<tr>
<th>Mediator</th>
<th>Mediator (T2) – Planning (T3)</th>
<th>Mediator (T2) – Planning (T2)</th>
<th>Mediator (T3) – Planning (T3)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Indirect effect</td>
<td>Effect size</td>
<td>Indirect effect</td>
</tr>
<tr>
<td></td>
<td>β (SE)</td>
<td>K² [95%CI]</td>
<td>β (SE)</td>
</tr>
<tr>
<td>Linkages to the community</td>
<td>&lt; -0.01 (0.05)</td>
<td>[-0.11-0.10] [0-0.01]</td>
<td>0.02 (0.06)</td>
</tr>
<tr>
<td>Perceived belonging</td>
<td>&lt;0.01 (0.04)</td>
<td>[0-0.01]</td>
<td>&lt;0.01 (0.05)</td>
</tr>
<tr>
<td>Self-efficacy</td>
<td>0.03 (0.06)</td>
<td>[0.02-0.06]</td>
<td>0.03 (0.05)</td>
</tr>
<tr>
<td>Challenge</td>
<td>&lt; 0.01 (0.03)</td>
<td>[0-0.01]</td>
<td>&lt; 0.01 (0.02)</td>
</tr>
<tr>
<td>Identity reflection</td>
<td>0.02 (0.04)</td>
<td>[0-0.02]</td>
<td>&lt; 0.01 (0.05)</td>
</tr>
<tr>
<td>Leadership and responsibility</td>
<td>0.05 (0.07)</td>
<td>[0-0.05]</td>
<td>0.05 (0.06)</td>
</tr>
</tbody>
</table>

Note. n=36; *significant mediation (i.e. confidence interval does not include zero); T2: Time-point 2 (week following event participation); T3: Time-point 3 (three months following event participation); CI: Confidence interval; Coach interpersonal skills only measured at time-point 2. Challenge only measured at time-point 2.
Table 16. Mediation models for spouse support at time-point 2 and intentions

<table>
<thead>
<tr>
<th>Mediator</th>
<th>Mediator (T2) – Intentions (T3)</th>
<th>Mediator (T2) – Intentions (T2)</th>
<th>Mediator (T3) – Intentions (T3)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Indirect effect</td>
<td>Effect size</td>
<td>Indirect effect</td>
</tr>
<tr>
<td></td>
<td>β (SE)</td>
<td>K² (SE)</td>
<td>[95%CI]</td>
</tr>
<tr>
<td>Linkages to the community</td>
<td>0.02 (0.06)</td>
<td>0.02 (0.05)</td>
<td>[-0.06-0.22]</td>
</tr>
<tr>
<td>Perceived belonging</td>
<td>-0.02 (0.05)</td>
<td>0.02 (0.03)</td>
<td>[-0.25-0.03]</td>
</tr>
<tr>
<td>Self-efficacy</td>
<td>&lt; 0.01 (0.07)</td>
<td>0.01 (0.05)</td>
<td>[-0.16-0.14]</td>
</tr>
<tr>
<td>Challenge</td>
<td>-0.03 (0.04)</td>
<td>0.03 (0.04)</td>
<td>[-0.14-0.01]</td>
</tr>
<tr>
<td>Identity reflection</td>
<td>-0.03 (0.05)</td>
<td>0.03 (0.04)</td>
<td>[-0.19-0.03]</td>
</tr>
<tr>
<td>Leadership and responsibility</td>
<td>0.03 (0.05)</td>
<td>0.03 (0.04)</td>
<td>[-0.04-0.19]</td>
</tr>
</tbody>
</table>

Note. n=36; T2: Time-point 2 (week following event participation); T3: Time-point 3 (three months following event participation); CI: Confidence interval; Coach interpersonal skills only measured at time-point 2. Challenge only measured at time-point 2.
### Table 17. Mediation models for spouse support at time-point 2 and physical activity

<table>
<thead>
<tr>
<th>Mediator</th>
<th>Mediator (T2) – Physical activity (T3)</th>
<th>Mediator (T2) – Physical activity (T2)</th>
<th>Mediator (T3) – Physical activity (T3)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>β (SE) &amp; K² (95%CI)</td>
<td>β (SE) &amp; K² (95%CI)</td>
<td>β (SE) &amp; K² (95%CI)</td>
</tr>
<tr>
<td>Linkages to the community</td>
<td>0.01 (0.03) [-0.03-0.09]</td>
<td>&lt; 0.01 (0.02) [-0.04-0.09]</td>
<td>0.01 (0.06) [-0.08-0.17]</td>
</tr>
<tr>
<td>Perceived belonging</td>
<td>0.01 (0.05) [0-0.04]</td>
<td>-0.03 (0.09) [-0.34-0.02]</td>
<td>0.03 (0.08) [0-0.28]</td>
</tr>
<tr>
<td>Self-efficacy</td>
<td>0.06 (0.04) [0.06]</td>
<td>-0.02 (0.09) [-0.33-0.09]</td>
<td>0.01 (0.06) [-0.08-0.04]</td>
</tr>
<tr>
<td>Challenge</td>
<td>&lt; 0.01 (0.03) [-0.06-0.06]</td>
<td>-0.01 (0.02) [-0.13-0.07]</td>
<td>0.01 (0.03) [-0.03]</td>
</tr>
<tr>
<td>Identity reflection</td>
<td>-0.03 (0.05) [0-0.01]</td>
<td>0.05 (0.04) [0-0.06]</td>
<td>0.06 (0.06) [0-0.06]</td>
</tr>
<tr>
<td>Leadership and responsibility</td>
<td>-0.02 (0.04) [-0.19-0.03]</td>
<td>&lt; 0.01 (0.03) [-0.02-0.22]</td>
<td>0.01 (0.03) [0-0.02]</td>
</tr>
</tbody>
</table>

Note. n=36; T2: Time-point 2 (week following event participation); T3: Time-point 3 (three months following event participation); CI: Confidence interval; Challenge only measured at time-point 2.
Table 18. *Mediational models for spouse support at time-point 3 and family integration*

<table>
<thead>
<tr>
<th>Mediator</th>
<th>Mediator (T3) – Family integration (T3)</th>
<th>Indirect effect</th>
<th>Effect size</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>β (SE)</td>
<td>K² (SE)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[95%CI]</td>
<td>[95%CI]</td>
</tr>
<tr>
<td>Linkages to the community</td>
<td>-0.09 (0.11)</td>
<td>[-0.09-0.30]</td>
<td>0.10 (0.09)</td>
</tr>
<tr>
<td>Perceived belonging</td>
<td>0.09 (0.11)</td>
<td>[0.01-0.40]</td>
<td>0.09 (0.09)</td>
</tr>
<tr>
<td>Self-efficacy</td>
<td>0.02 (0.03)</td>
<td>[0.01-0.09]</td>
<td>0.02 (0.03)</td>
</tr>
<tr>
<td>Identity reflection</td>
<td>0.16 (0.15)</td>
<td>[-0.13-0.06]</td>
<td>0.18 (0.13)</td>
</tr>
<tr>
<td>Leadership and responsibility</td>
<td>0.13 (0.16)</td>
<td>[-0.14-0.50]</td>
<td>0.15 (0.12)</td>
</tr>
</tbody>
</table>

*Note. n=25; T3: Time-point 3 (three months following event participation); CI: Confidence interval; Challenge only measured at time-point 2, and thus not included in the current table.*
Table 19. *Mediational models for spouse support at time-point 3 and planning*

<table>
<thead>
<tr>
<th>Mediator</th>
<th>Mediator (T3) – Planning (T3)</th>
<th>Indirect effect</th>
<th>Effect size</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>$\beta$ (SE)</td>
<td>$K^2$ (SE)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[95%CI]</td>
<td>[95%CI]</td>
</tr>
<tr>
<td>Linkages to the community</td>
<td>-0.02 (0.05)</td>
<td>[-0.17-0.01]</td>
<td>0.05 (0.07)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[0-0.32]</td>
<td></td>
</tr>
<tr>
<td>Perceived belonging</td>
<td>0.01 (0.06)</td>
<td>[-0.06-0.26]</td>
<td>0.03 (0.09)</td>
</tr>
<tr>
<td></td>
<td>-0.03 (0.04)</td>
<td>[0-0.15]</td>
<td>0.08</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[-0.15-0.01]</td>
<td></td>
</tr>
<tr>
<td>Self-efficacy</td>
<td></td>
<td>-0.03 (0.08)</td>
<td>0.08</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[0-0.45]</td>
<td></td>
</tr>
<tr>
<td>Identity reflection</td>
<td></td>
<td>[-0.29-0.03]</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>[0-0.31]</td>
<td></td>
</tr>
<tr>
<td>Leadership and responsibility</td>
<td>-0.07 (0.11)</td>
<td>[-0.36-0.05]</td>
<td>0.24 (0.17)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[0.01-0.66]</td>
<td></td>
</tr>
</tbody>
</table>

*Note. n=25; T3: Time-point 3 (three months following event participation); CI: Confidence interval; Challenge only measured at time-point 2, and thus not included in the current table.*
Table 20. Mediation models for spouse support at time-point 3 and intentions

<table>
<thead>
<tr>
<th>Mediator</th>
<th>Mediator (T3) – Intentions (T3)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Indirect effect</td>
</tr>
<tr>
<td></td>
<td>β (SE)</td>
</tr>
<tr>
<td></td>
<td>[95%CI]</td>
</tr>
<tr>
<td>Linkages to the community</td>
<td>0.02 (0.08)</td>
</tr>
<tr>
<td></td>
<td>[-0.06-0.25]</td>
</tr>
<tr>
<td>Perceived belonging</td>
<td>-0.04 (0.09)</td>
</tr>
<tr>
<td></td>
<td>[-0.31-0.03]</td>
</tr>
<tr>
<td>Self-efficacy</td>
<td>0.01 (0.04)</td>
</tr>
<tr>
<td></td>
<td>[-0.14-0.02]</td>
</tr>
<tr>
<td>Identity reflection</td>
<td>0.01 (0.15)</td>
</tr>
<tr>
<td></td>
<td>[-0.15-0.38]</td>
</tr>
<tr>
<td>Leadership and responsibility</td>
<td>-0.04 (0.11)</td>
</tr>
<tr>
<td></td>
<td>[-0.45-0.05]</td>
</tr>
</tbody>
</table>

Note. n=25; T3: Time-point 3 (three months following event participation); CI: Confidence interval; Challenge only measured at time-point 2, and thus not included in the current table.
Table 21. *Mediational models for spouse support at time-point 3 and physical activity*

<table>
<thead>
<tr>
<th>Mediator</th>
<th>Mediator (T3) – Physical activity (T3)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Indirect effect</td>
</tr>
<tr>
<td></td>
<td>β (SE)</td>
</tr>
<tr>
<td></td>
<td>[95%CI]</td>
</tr>
<tr>
<td>Linkages to the community</td>
<td>-0.01 (0.06)</td>
</tr>
<tr>
<td></td>
<td>[-0.22-0.07]</td>
</tr>
<tr>
<td>Perceived belonging</td>
<td>0.01 (0.05)</td>
</tr>
<tr>
<td></td>
<td>[-0.05-0.16]</td>
</tr>
<tr>
<td>Self-efficacy</td>
<td>-0.02 (0.04)</td>
</tr>
<tr>
<td></td>
<td>[-0.14-0.02]</td>
</tr>
<tr>
<td>Identity reflection</td>
<td>0.12 (0.15)</td>
</tr>
<tr>
<td></td>
<td>[-0.12-0.49]</td>
</tr>
<tr>
<td>Leadership and responsibility</td>
<td>-0.07 (0.13)</td>
</tr>
<tr>
<td></td>
<td>[-0.40-0.12]</td>
</tr>
</tbody>
</table>

*Note.* n=25; T3: Time-point 3 (three months following event participation); CI: Confidence interval; PA: Physical activity; Challenge only measured at time-point 2, and thus not included in the current table.