

2018

The Impact of Minnesota Warriors Hockey on Post-Military Service Reintegration: A Pilot Study

Andrew Qualy

University of St. Thomas, Minnesota, andrewqualy@gmail.com

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The Impact of Minnesota Warriors Hockey on Post-Military Service Reintegration: A Pilot Study

Andrew S. Qualy, B.S.W.

Committee Members:

Melissa Lundquist, Ph.D., MSW, LGSW (Chair)
LTC (Ret) Loretta Schlachta-Fairchild, Ph.D., RN
David Holewinski, LICSW, CBIS

The Clinical Research Project is a graduation requirement for MSW students at St. Catherine University - University of St. Thomas School of Social Work in St. Paul, Minnesota and is conducted within a nine-month time frame to demonstrate facility with basic social research methods. Students must independently conceptualize a research problem, formulate a research design that is approved by a research committee and the university Institutional Review Board, implement the project, and publicly present the findings of the study. This project is neither a Master's thesis nor a dissertation.

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Abstract

Introduction: The Minnesota Warriors Hockey Program is a 501c3 nonprofit organization that assists wounded, injured, or otherwise disabled veterans of the U.S. Military in their reintegration process by administering a recreational ice hockey program for its participants in the wake of significant issues facing transitioning veterans, such as high rates of PTSD, suicide, divorce, substance use, unemployment, and homelessness.

Methods: Data was collected from a survey that was sent out to all registered participants in the Minnesota Warriors Hockey Program (N = 65). Instruments used in the study include the M2C-Q, an empirically validated psychometric measuring tool which assesses post-deployment difficulty. The research hypothesis for the study is that a statistically significant relationship exists between frequency of participation in the Minnesota Warriors Hockey Program and an improved level of self-reported post-military service reintegration. Multiple Independent Samples T-Tests were conducted to test the research hypothesis as well as other statistically significant variables. Qualitative questions assessed the specific aspects of the program that were the most important to respondents and self-reported improvement in post-military service functioning.

Results: The study found no statistically significant relationship between frequency of participation in the Minnesota Warriors Hockey Program and improved level of self-reported post-military service reintegration. Additional Independent Samples T-Tests indicated a possible trend of length of time in the program as having meaningful impact on an improved level of self-reported post-military service reintegration. In addition, the results indicate that gaps in participation and age of the participant have a statistically significant relationship with increased M2C-Q scale scores, specifically to making and keeping friends, both with and without military experience. Qualitative results indicated strong comradery and improvement in relationship functioning and perceived meaning and purpose in life as the most important aspects of the program.

Discussion: The results of this study have shown that participants in the Minnesota Warriors Hockey Program experience a strong sense of comradery and community with individuals who have similar military experiences. These results show the significant potential of program models like the Minnesota Warriors Hockey Program to assist veterans in their reintegration functioning by increasing the social support systems of disabled veterans. Longitudinal research on the program is needed to show improvements in post-military service reintegration functioning over time.

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Acknowledgements

I would like to acknowledge Dr. Melissa Lundquist, who spent a great deal of extra time to work with me and guide this research into what it is, I am so grateful to have had the opportunity to work with you and proud to have you as my committee chair. David Holewinski of the Minneapolis VA Healthcare System, whose insight on the reintegration process of military veterans was invaluable. Finally, I wish to extend a special thanks to Dr. Loretta Schlachta-Fairchild, who has been a board member with the Minnesota Warriors Hockey Program since the beginning and whose expertise in quantitative data analysis was crucial to the outcome of this research. Without you, the program would not be what it is today, and I have been honored to have you on this research committee. I would also like to extend a special thanks to Dr. Kari Fletcher for her guidance in helping me to be accepted to present this research at the Military Social Work Conference at the University of Texas at Austin.

I also wish to acknowledge the countless others who have helped me along the way, including the outstanding faculty at the University of St Thomas/St Catherine University School of Social Work, as well as Minneapolis Community & Technical College. A special thanks to Joy Wise, Kent Smead, and Ursala Walsh with the Veterans Upward Bound Program at MCTC who helped me begin my academic career in 2009. To Chaplain John Morris, whose tireless and groundbreaking work in developing the Beyond the Yellow Ribbon model gave me meaning and purpose in life and set me on my life's course, I am eternally grateful. To those who counseled me through my hardest times; Jennifer, Chuck, Pastor Tom, Troy, and the late Kurt Retka, I am truly blessed to have had your guidance. Finally, to my friends and family who have supported me throughout my journey, from the bottom of my heart, thank you. To Uncle Pete and Grandma June, I follow in your footsteps and I only hope to make you proud as I begin my career.

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Introduction

The result of a combined 16 years of continuous war in Iraq and Afghanistan has been thousands of U.S. service men and women killed, tens of thousands more wounded, and over 2.5 million veterans in need of healthcare and benefits (Marvasti & Wank, 2013). The returning service members from the combat zones of Iraq and Afghanistan, as well as the veterans of those conflicts who have since separated from military service, have returned with a myriad of unique and persistent challenges that the nation has struggled to understand and meet the needs of. Reintegrating back into society after serving in combat has been a significant challenge for veterans of many conflicts. Examples of major challenges facing veterans today as they transition from military to civilian life includes (but is not limited to) unemployment, homelessness, Post Traumatic Stress Disorder (PTSD), divorce, and high rates of suicide (Landes et al., 2016).

PTSD has been a particularly challenging issue as returning service members grapple with the realities of war. The prevalence of PTSD in the military and veteran communities has been well documented, and as the current conflicts in Iraq and Afghanistan have gone on, the term PTSD has increasingly become an encompassing term to describe the many challenges that service members and veterans are facing upon return from the combat zones and separation from the military into civilian life (Danish & Antonides, 2013; Gradus, 2015). The high prevalence of PTSD among the veteran population can be most closely attributed to high rates of troop deployments (Marvasti & Wank, 2013). There is little to no data that can conclusively link rates of PTSD with many of the other issues currently facing veterans, including rates of suicide among the military and veteran population (Marvasti & Wank, 2013; Gradus, 2015).

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A study was conducted by Terhakopian, Ninet, Engle, Schnurr, and Hoge (2008) which measured the effectiveness of the PTSD Checklist (PCL), which is among the most widely used self-report instruments for assessing PTSD. To determine the PCL's effectiveness on a population level, the authors combined data from previously published studies that compared the PCL with other structured diagnostic assessment tools (Terhakopian et al., 2008). The study found the PCL to be significantly more accurate than other diagnostic assessment tools to which the PCL was compared (Terhakopian et al., 2008). This study was then used to estimate the prevalence of PTSD in both the general population and among combat veterans. The study estimated that combat veterans had a prevalence of PTSD of more than twice the rate (15%) of the general population (6.8%) (Terhakopian et al., 2008).

Likewise, in 2008, when rates of troop deployments to the combat zones of Iraq and Afghanistan were at their peak, the RAND Corporation Center for Military Health Policy Research conducted a population-based study that aimed to examine the prevalence of PTSD among recently returned service members from Iraq and Afghanistan. The study utilized the PCL to estimate prevalence of PTSD in a nationwide sample of service members who had recently returned from Iraq or Afghanistan and who had been voluntarily recruited to participate in the study. The result of the study found that the prevalence of PTSD among these service members at that time was 13.8% out of the 1,938 participants, which comes out to 267 participants (Gradus, 2015). The study has limitations related to the voluntary nature of participation, which include the possibility that participants knew they were suffering symptoms of PTSD and did not wish to disclose it for personal reasons, and second, some of the participants may have been suffering PTSD symptoms and lacked awareness of it (Gradus, 2015) which would potentially

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underestimate the prevalence estimation. Nevertheless, this research indicates that when troop deployments were at their highest, prevalence of PTSD was also at its highest.

Another significant issue facing the veteran community is high rates of suicide. The Department of Veterans Affairs (VA) Office of the Inspector General (2017) released a report evaluating the effectiveness of the Veterans Crisis Line which gives the latest suicide figures from the Department of Veterans Affairs. The report, based on 2012 data, estimated that the number of veteran suicides averaged 22 per day, and that a slight decrease in 2014 occurred when the average dropped to 20 veterans a day dying from suicide. Whether the number is 22 or 20 veteran suicides per day, these figures significantly exceed the national average. In perspective, the rate of suicide among U.S. civilian adults in 2014 was 15.2 per 100,000, while the rate of suicide among veterans was 35.3 per 100,000 (VA Office of the Inspector General, 2017).

There continue to be other challenges to successful reintegration such as divorce, addiction, and homelessness. War takes a heavy toll on not only the service member, but their families as well. Divorce affects female troops at a rate 3 times higher than that of their male counterparts (Donaldson, 2017). During post-deployment health screenings, 12% of returning troops report substance abuse problems, while only about 0.2% are referred for further evaluation and treatment (Sayer, Carlson, & Frazier, 2014). Untreated addiction, often co-occurring with various mental health disorders, contributes to the rate of homelessness among the veteran population. On any given night in America, about 154,000 veterans are homeless, and nearly half of that number have a mental health diagnosis and more than 70% struggle with substance abuse (Henry, Cortes, Shivji, & Buck, 2014). These are just a few of the myriad challenges faced by returning troops. Studies also reveal high rates of family problems,

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unemployment and incarceration (Danish & Antonides, 2013; Sayer et al., 2014; Orazem et al, 2017; Donaldson, 2017).

Although there has been an increase in the number, type, and quality of reintegration resources in the last decade, the persisting problems surrounding reintegration suggest that more research in innovative new intervention methods to help military servicemen and women, as well as veterans, successfully reintegrate into society is needed. In a recent narrative inquiry on the reintegration of a group of wounded veterans of the wars in Iraq and Afghanistan, Donaldson (2017) contends that the U.S. Department of Defense (DoD) or the VA fails to effectively support military service members or veterans in a consistent manner beyond the time that the veteran is discharged from active duty (Donaldson, 2017). Other literature within the last decade supports this view, indicating that resources designed to help service members are not abundant enough to meet the needs of a growing and increasingly diverse population who are transitioning out of the military (Sherman, Larsen, & Borden, 2015). In addition, many veterans experience a general lack of support and alienation by military and veteran agencies after separating from military service, such as feelings of their mental and physical health challenges not properly diagnosed by the VA and resulting in persistent feelings of alienation which contributes to a loss of meaning and purpose in life (Ahern et al., 2015).

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Background

History

The Warrior Hockey program model traces its beginnings to Walter Reed Army Medical Center. At the pinnacle of the conflicts in Iraq and Afghanistan, many military hospitals became over capacitated, as thousands of wounded and injured service members receiving care or awaiting medical review were housed in and around these facilities (Hawkins, Cory, & Crowe, 2011). In 2008, some patients at Walter Reed Army Medical Center began to skate at open ice sessions in the District of Columbia area, and were noticed by coaches of hockey programs serving youth with special needs (USA Warriors Ice Hockey, 2018). The coaches offered to help these patients form structured practices and exhibition games. The USA Warriors Ice Hockey Program, Incorporated was formally founded in late 2008 as an all-volunteer, non-profit organization whose purpose is to utilize ice hockey programs as part of the rehabilitation of military personnel “wounded in the defense of the United States” (USA Warriors Ice Hockey, 2018).

A Program Born Out of Need. Approximately two years later, the Minnesota Warriors Hockey Program was founded as a 501c3 nonprofit organization that has been organized for charitable and educational purposes, for wounded, injured, or otherwise disabled veterans of the United States Military in conjunction with the USA Disabled Hockey Program, to assist its participants with reintegration into civilian life (MN Warriors Ice Hockey, 2017). At the time of its founding, the Minnesota Warriors Hockey Program was closely aligned with the USA Warriors in terms of its mission, program model, and it also operated under the 501c3 nonprofit status of the USA Warriors Hockey Program until the Minnesota Warriors Hockey Program filed for and was awarded its own 501c3 nonprofit status. The program was designed as a

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“Destination Warrior Program,” which was intended to function as a part of a wide network of similar program models across the United States. The unifying goal is to support the reintegration of wounded, injured, or otherwise disabled veterans by expanding their network of peer support within their own community and by facilitating an adapted ice hockey program according to the needs of the participating members.

Expansion and the Need for Research. The USA Warriors Ice Hockey Program and the Minnesota Warriors Ice Hockey Program are the first two such Warrior Hockey program models in the United States, having been founded in 2008 and 2010, respectively. Since 2010, the Warrior Hockey program model has expanded, with demand for the program increasing steadily, as evidenced by the growth of the program model across the country. As of the date of this research, in addition to the USA Warriors and Minnesota Warriors, Warrior Hockey programs exist in Buffalo, NY, Michigan, Chicago, IL, Ohio, New England, Utah, Alaska, and expansion to Texas and Florida is imminent. In addition, the Minnesota Warriors Hockey Program has expanded steadily, becoming the largest Warrior Hockey program in the country, with nearly 188 past and present members of the organization. The Minnesota Warriors Hockey Program began with four members in November of 2010 and has since expanded to 145 past and present members in the Minneapolis and St. Paul area, with an additional 43 in the Duluth/Superior area, and projected growth to the St Cloud, MN and Moorhead, MN areas.

The steady increase in growth both within the Minnesota Warriors Hockey Program and of the Warrior Hockey program model nationwide has two implications, which are (1) that there is a need for the Warrior Hockey program model, and (2) that the Warrior Hockey program model has been effective in meeting that need. As such, the need for research around how the Warrior Hockey program model meets its stated goal of helping its members with their

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reintegration process is needed, particularly as it continues to expand across the nation. This paper discusses pilot research undertaken to study the effectiveness of the Minnesota Warriors Hockey Program in its mission to assist its members in their reintegration from the military to civilian life using the game of ice hockey to build a supportive environment. This quantitative data analysis measured whether participation in the program affects reintegration in the context of specific domains related to functioning and quality of life, and if so, how these domains are impacted. This paper begins with a review of literature on reintegration, along with empirical research that has been conducted on similar program models, and describes the conceptual framework that informs the Warrior Hockey program model.

Reintegration

In order to understand the impact that the Warrior Hockey model has on reintegration, it is critical to gain an understanding of what reintegration means. The term ‘reintegration’ is defined in the Merriam-Webster Dictionary as “The act of integrating into an entity; to restore to unity (Merriam-Webster, Inc, 2018).” Thus, reintegration is understood in the context of this research as the process of individuals who physically left their respective communities and support systems when they joined the military, and upon returning from their military duty, had to go through the process of reentering these communities and support systems. Next, it is important to understand the challenges surrounding reintegration are, and how these challenges impact the scope and prevalence of the issues that are facing veterans today. Finally, it is important to understand reintegration as it relates to every day functioning. This section will review all of these elements and will provide the operationalized definition of reintegration that was used for the purposes of this research.

Defining Reintegration

In a systematic literature review, Elnitsky, Fisher, and Blevins (2017) found that more research on the topic of reintegration of military service members and veterans has been published within the last 5 years (n = 373) than in the previous 10 years (n = 130) combined as knowledge and understanding around the topic of reintegration increases. There is an abundance of literature around reintegration challenges, yet overall, the literature does not provide an operationalized representation of reintegration among service members and veterans (Elnitsky et al., 2017; Sayer et al., 2010). In this empirical review of literature, Elnitsky et al. (2017) was not able to find any clear consensus as to the definition of reintegration. Terms which this literature reviewed across 503 different articles within the last 10 years that occurred most frequently were

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transition, readjustment, community integration, and reintegration (Elnitsky et al., 2017).

Transition refers to either the time period during which a service member moves from a military to a civilian setting; readjustment refers to the process of readapting to civilian life after deployment; community integration pertains to separation from the military or return from deployment and has often been used in the context of physical rehabilitation; and finally, reintegration refers to psychological, social, health-related, and community-related functioning with a veteran's immediate friends, family, and larger social systems (Elnitsky et al., 2017). It is here that the context on the concept of reintegration begins to form.

In an effort to conceptualize reintegration, Castro and Kintzle (2016) have recently introduced the concept of the Military Transition Theory, which is a new theoretical framework that identifies key points during the reintegration process when veterans are most likely to encounter challenges (Castro & Kintzle, 2016). More specifically, this theory proposes three interacting and overlapping phases that encompass individual, interpersonal, community, and military organizational factors that impact the reintegration process (Castro & Kintzle, 2016).

Table 1. *Military Transition Theory Phases*

Phase	Name	Characteristics of the Phase
Phase 1	Approaching the Military Transition	<ul style="list-style-type: none">- Personal, cultural, and transitional factors- Military cultural factors such as type of military discharge and combat history- Personal characteristics (physical and mental health)- Personal preparedness
Phase 2	Managing the Transition	<ul style="list-style-type: none">- Individual adjustment factors: coping styles, attitudes, and beliefs,- Military transition management: navigating the resources (i.e. veteran's affairs benefits,

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		education benefits, and career planning).
Phase 3	Assessing the Transition	Outcomes associated with transition, measured by the wellness categories of: <ul style="list-style-type: none"> - Re-acclimation to family life and adjustment to new family roles - Physical and psychological health, adaption of new social networks and - Engagement in the community.

Thus, Military Transition Theory has shown that a successful transition back to civilian life is predicated on several interrelated factors, including stable employment, physical and mental health, family support systems, stable housing, and sense of identity (Kintzle, Wilcox, Hassan, & Ell, 2013).

Other literature supports the idea that reintegration encompasses functioning across several different contexts. Sherman et al. (2015) conducted a review of empirical literature with the goal of predicting post-deployment reintegration outcomes among veterans of the wars in Iraq and Afghanistan. The review identified post-deployment impairment in six specific functional domains. These include mental health, social and role functioning, relationship functioning and family life, spirituality, physical health, and financial well-being (Sherman et al., 2015). Elnitsky, Blevins, Fisher, and Magruder (2017) arrived at a similar conclusion in another empirical study, indicating that factors which significantly influence service member and veteran reintegration include individual level factors, psychological and physical health, culture, demographics, interpersonal relationships (including family and spouse), community systems, and societal level considerations such as VA and DoD (Elnitsky et al., 2017).

Elnitsky et al. (2017) further proposes an ecological model of service member and veteran reintegration which represents key dimensions of reintegration at four different system

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levels (see Figure 1). Each system level includes interrelating factors within and across levels which directly influence reintegration. This ecological model illustrates the many interrelated biopsychosocial-cultural factors at various system levels which influence reintegration and indicates that reintegration is significantly influenced by the functioning of the larger system (Elnitsky et al., 2017).

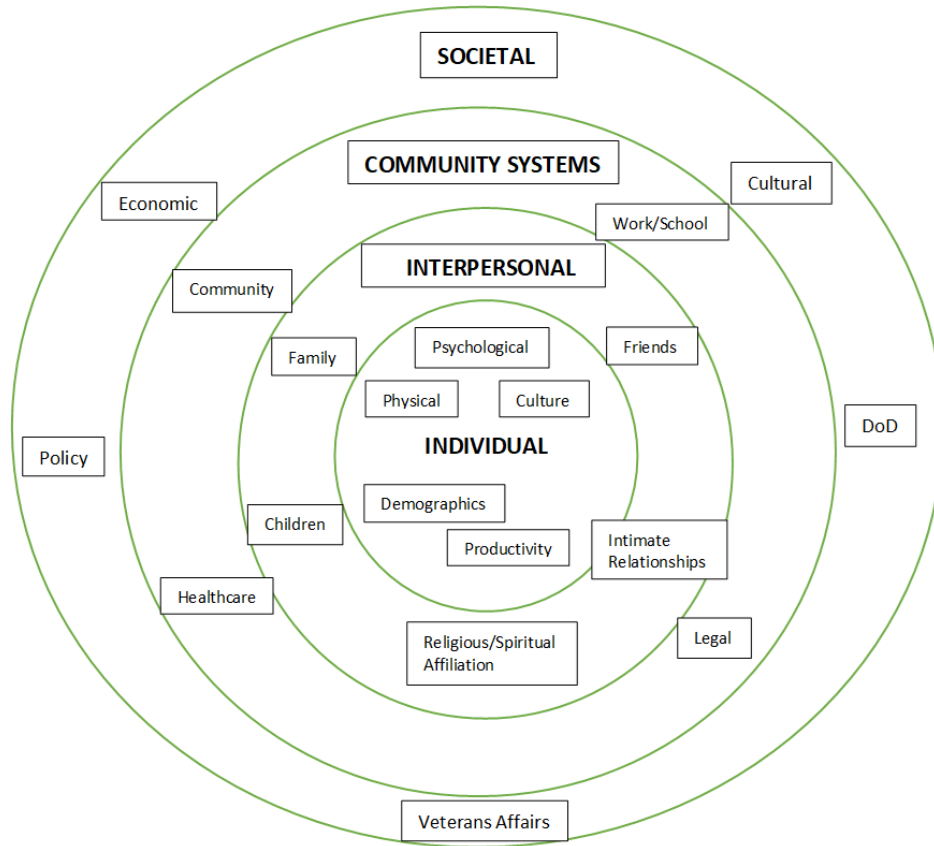


Figure 1. *Ecological Model of Service Member & Veteran Reintegration*

Nearly all of the aforementioned literature on reintegration had cited and drawn upon empirical research conducted by Sayer et al. (2010) titled “Military to Civilian Questionnaire: A Measure of Post-Deployment Community Reintegration Difficulty Among Veterans Using Department of Veterans Affairs Medical Care.” This study was conducted to describe the

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development, reliability, and construct validity of scores on the Military to Civilian Questionnaire (M2C-Q), a 16-item self-report inventory measure of post-deployment community reintegration difficulty (Sayer et al., 2017). The researchers indicate that a stratified sample of 1,226 Iraq and Afghanistan veterans who were enrolled in VA health care was used to administer the M2C-Q (Sayer et al., 2010). 745 completed the M2C-Q and validated mental health screening tools, with internal consistency of the M2C-Q being .95 in this sample (Sayer et al., 2010). The findings of this study lend a great deal of support for the reliability and statistical validity of the construct of the M2C-Q.

There are several additional points of significance to the M2C-Q and subsequent research. While it is certainly not the first study to be done on the topic of reintegration at that point, the development of the M2C-Q is one of the first empirical studies to offer an operationalized definition of reintegration, as well as the identification of specific domains of functioning that are empirically shown to have direct impact on acute psychiatric problems. The six functional domains that Sayer et al. (2010) outline as the conceptual framework for the M2C-Q are Relationships with Family, Friends, and Peers, Productivity at Home, Work, or School, Community Participation, Self-Care, Use of Leisure, and Perceived Meaning in Life. This research and the development of the M2C-Q measurement tool have significantly impacted much of the other empirical research that informed this research. Another point of significance is the high degree of validity to the construct of the M2C-Q, which therefore gives it high reliability. All of these factors were considered as this pilot study on the Minnesota Warriors Hockey Program was developed, and the operational definition of reintegration, its six domains, and the M2C-Q measurement tool all were used to directly inform the conceptual framework and data collection of this study.

Reintegration Challenges

The challenges around mental health issues, unemployment, homelessness, and rates of suicide have been well documented, and as noted earlier are representative of difficulties that reintegrating service members face both as a result of their military service, and as a result of the process of transitioning out of the military environment and back into the community and their respective support systems. With this in mind, reintegration challenges must be understood in a different context; Danish & Antonides (2013) offer insight into this context, stating that there are many incongruencies between the documented mental health issues and many of the other challenges faced by the veterans' community. They contend that the majority of distress service members experience occurs following deployment, as opposed to during their military service, and is a consequence of the difficulties encountered during their attempts to successfully reintegrate into their respective communities and families (Danish & Antonides, 2013). It is here that the challenges surrounding reintegration, as well as how it must be studied, begin to take shape.

A great deal of research around reintegration challenges has emerged which supports the contention made by Danish & Antonides (2013). Sherman et al. (2015) reviewed empirical literature related to reintegration challenges being experienced by transitioning service members with the goal of identifying clinical implications for work with this population. They identified many of the same aforementioned challenges, including PTSD, depression/grief, sleep problems, substance use, and suicide as being significantly prevalent problems in the veterans' community (Sherman et al., 2015). However, they state that while these symptoms are predictors of an increased risk of challenges to the reintegration process, these aspects can be symptomatic of

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deficiencies or failures in the reintegration process itself (Sherman et al., 2015). This study proposes that to understand challenges around reintegration, conceptualizations of post-deployment functioning needs to be expanded from focusing solely on symptom reduction to including strong support systems and positive community involvement (Sherman et al., 2015).

There is much literature that supports the notion that mental health challenges do not consistently have direct causality in relation to reintegration problems, and that these challenges are instead systemic in nature (Elnitsky et al., 2017). Functional challenges that have been identified include relationship functioning in family life, spiritual functioning, physical health, and financial well-being (Sherman et al., 2015). Additional challenges stem from a sudden and drastic shift in support system. Many veterans experienced the military environment as their “family.” A support system that took care of them and provided structure, and upon separation, this support system disappears (Ahern et al., 2015). This “new normal” is often an alien experience, characterized by feelings of disconnection from people at home, lack of support from institutions such as Department of Veterans Affairs or Department of Defense, lack of structure, and loss of purpose upon return to civilian life (Ahern et al., 2015; Donaldson, 2017; Orazem et al., 2017).

Recent research conducted in the Minneapolis VA Healthcare System has characterized loss of purpose upon return to civilian life as an identity adjustment difficulty (Orazem et al., 2017). This research indicates that identity adjustment difficulty is characterized by feelings of not belonging in civilian society, missing the military’s culture and structured lifestyle, holding negative views of civilian society, feeling left behind compared to civilian counterparts due to military service, and having difficulty finding meaning in the civilian world (Orazem et al., 2017). Individuals with a history of active duty service are particularly more likely to experience

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feelings of not belonging in civilian society and not acquiring needed skills, whereas those deployed from the reserves or National Guard experience difficulty in reestablishing former civilian identities (Orazem et al., 2017). The study concludes that identity adjustment is a critical yet understudied aspect of veteran reintegration into community life following combat deployment and active duty service (Orazem et al., 2017). This is important because this research may point to a more significant cause of a large amount of functional difficulty around reintegration than mental health problems (Danish & Antonides, 2013; Ahern et al., 2015; Sherman et al., 2015; Elnitsky et al., 2017; Donaldson, 2017; Orazem et al., 2017).

Interventions

Overview

There are a variety of interventions that have been developed to support returning service members and veterans. The studies reviewed below of literature date back to 2010 and include the examination of the effectiveness of the following intervention models on veteran mental health, group therapy, recreational therapy, recreational sport and exercise therapy models. These are interventions that share concepts and components which align closely with those incorporated in the Minnesota Warriors Hockey program model. As such, the literature reviewed is focused on the areas of the effectiveness of group work with veterans, effectiveness of activity-based therapy models with veterans, and sport and exercise therapy models for veterans.

Group Work Therapy with Veterans. Katz (2016) conducted a program evaluation of an outpatient therapy group for survivors of Military Sexual Trauma (MST) at unidentified Department of Veterans Affairs medical center called the Warrior Renew treatment protocol. The group therapy was delivered via a manualized protocol with 12 weekly topics and included coping skills for emotion regulation (e.g., triggers and anxiety) and addressed unique aspects of MST including anger/resentments regarding injustice and lack of closure, betrayal, and self-blame (Katz, 2016). The study began with 43 participants, and 34 completed treatment (21% dropout rate) (Katz, 2016). Findings of the study indicated significant decreases in symptoms of anxiety, depression, and posttraumatic stress disorder (PTSD) (Katz, 2016). In addition, 75% of the participants had a reliable clinical change at the 95% confidence interval (Katz, 2016). These results indicate that this group therapy format is highly effective in reducing mental health symptoms which may represent barriers to successful reintegration.

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Studies with similar formats seem to support the findings of Katz (2016). Falkenstein, C'de Baca, Belon, and Castillo (2017) examined predictors of PTSD using a group protocol with cognitive, exposure, and skills modules. Assessments included self-report and interview (CAPS, SCID-I/II) measures at baseline, post, and six months following treatment (Falkenstein et al., 2017). The program was a 16-week, three-member group for 32 OEF/OIF veterans. A regression analysis indicated that major depressive disorder and no baseline psychiatric medication predicted PTSD improvement, as well as fewer outpatient follow-up visits (Falkenstein et al., 2017). These results seem to support past research and also seem to challenge other findings, specifically pertaining to sexual assault in which the study indicated that this seems to predict less improvement (Falkenstein et al., 2017).

Activity Based Therapy Models. In a randomized controlled trial study of yoga for military veterans and active duty personnel with PTSD, Reinhardt, Noggle-Taylor, Johnston, Zameer, and Cheema (2017) sought to evaluate the effectiveness of a 10-week yoga intervention on PTSD. 51 participants were randomized into yoga or no-treatment assessment-only control groups (Reinhardt et al., 2017). Measures for the study included questionnaires and the Clinician Administered PTSD Scale (Reinhardt et al., 2017). According to the study, both the yoga group and the control group showed significant decreases in PTSD symptoms, with no significant between-group differences (Reinhardt et al., 2017). Consistent with recent literature pertaining to high rates of PTSD treatment dropout among veterans (Donaldson, 2017), this study reported challenges retaining participants (Reinhardt et al., 2017). The results of this study are consistent with recent literature indicating that yoga has potential as a PTSD therapy in the veteran or military population. However, it appears that additional studies with larger sample sizes are needed to confirm this conclusion.

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Taking into consideration the effectiveness the potential for yoga-based therapy with veterans, other types of activity-based therapy studies were sought out. Campbell, Decker, Kruk, and Deaver (2016) conducted a randomized controlled trial with the goal of determining if art therapy delivered in conjunction with Cognitive Processing Therapy (CPT) was more effective in reducing symptoms of PTSD than CPT alone. 11 veterans were randomly selected to receive either individual CPT, or individual CPT in addition to individual art therapy. The study showed improvement of PTSD Checklist–Military Version and Beck Depression Inventory–II scores with no significant difference in improvement between the experimental and control groups (Campbell et al., 2016). The study concluded that art therapy in conjunction with CPT was found to improve trauma processing, and that veterans considered it to be an important part of their treatment (Campbell et al., 2016), citing healthy distancing, enhanced trauma recall, and increased access to emotions as benefits to art therapy (Campbell et al., 2016).

Effectiveness of Sport and Exercise Therapy Models for Veterans. The literature has thus far shown the effectiveness of group therapy intervention models in reducing mental health symptoms with veterans, and it has also shown the potential of activity-based therapies, including adventure-based activity (Donaldson, 2017) yoga (Reinhardt et al., 2017), and art therapy (Campbell et al., 2016) in helping to reduce mental health symptoms in veteran populations. Keeping in mind the goal of the Minnesota Warriors Hockey Program, which is to assist its participants in their reintegration back to civilian life from military life, this section of the literature review is designed to synthesize the findings of the effectiveness of the group work and group therapy model with the potential of existing activity-based therapy models and to now examine the effectiveness of existing sport and exercise therapy models for veterans.

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Laferrier, Teodorski, and Cooper (2015) conducted a study with the aim to investigate the possible effects that participation in sports, exercise, and recreation may have on self-esteem and quality of life in disabled veterans and service members with disabilities. Two-hundred and twenty disabled service members and veterans, who were participants in one of three annual adaptive sporting events, including the National Veterans Winter Sports Clinic (NVWSC), the United States Olympic Committee Warrior Games (WG), and the National Veterans Wheelchair Games (NVWG) were recruited for the study between the years 2010 and 2011 (Laferrier et al., 2015). The variables of interest for the study included number of years of sport, exercise, and recreation participation since the onset of disability as well as the type of activity they engaged in (Laferrier et al., 2015). The specific measures of the study were self-esteem and quality of life.

Laferrier et al., (2015) found that there was a positive relationship between participant quality of life and the number of years spent participating in sports, exercise, and recreation since the onset of their disability. In addition, the study found a significant difference between pre-event and post-event self-esteem scores among participants (Laferrier et al., 2015). Finally, there were significant differences found on self-esteem scores between the levels of type of activity averaged across years of participation (Laferrier et al., 2015), that is, that the type and amount of activity, coupled with the number of years engaged with the activity, seemed to influence self-esteem. The study concludes that participation in sports, exercise, and recreation has a positive influence on self-esteem and quality of life in individuals with disabilities (Laferrier et al., 2015).

Laferrier, Teodorski, Sprunger, Cooper, and Schmeler (2017) also conducted a longitudinal study in order to examine differences in Sports, Exercise, Recreation (SER) participation vs. non-participation. The researchers utilized a convenience sample of 163 veterans (91 sports-participants and 72 non-participants) from databases of registered athletes at

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the National Veterans Winter Sports Clinic (NVWSC), the United States Olympic Committee Warrior Games (WG), and the National Veterans Wheelchair Games (NVWG) (Laferrier et al., 2017). The study operationalized the variable of interest as years of SER participation since the onset of disability (less than 1 year, 1 to 5 years, 5 to 10 years, and more than 10 years), type of activity engaged in, and time (pre-event, immediately post-event, 1-month post-event, and 3 months post-event) (Laferrier et al., 2017). Measures used in data analysis included the Rosenberg Self-Esteem Scale (RSES), Center for Epidemiologic Studies Depression Scale (CES-D), and Posttraumatic Growth Inventory (PTGI) (Laferrier et al, 2017) with pre and post measures.

Laferrier et al. (2017) found that SER participants had significantly higher self-esteem, posttraumatic growth and quality of life, and significantly lower depression scores than non-participants over time (Laferrier et al., 2017). The study also significant differences between the independent variables of time, the number of years participating in SER since the onset of disability, and the type of activity the participant engaged in (Laferrier et al., 2017). A particular outcome of interest was found in the type of activity the participant was engaged in; participants engaged in team activities indicated more significant positive changes over time than participants in individual activities (Laferrier et al., 2017).

Lundberg, Bennett, and Smith (2011) conducted a study that arrived at a similar conclusion as the one previously discussed. This study was intended to examine changes in quality of life, mood states, and sports related competence for veterans of Operation Iraqi Freedom and Operation Enduring Freedom who participated in a therapeutic adaptive sports and recreation program (Lundberg et al., 2011). The hypothesis for the study was that participation would lead to increases in physical, psychological, social, and environmental quality of life,

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increases in sports related competence, and reductions in mood disturbances such as depression and anger (Lundberg et al., 2011). Eighteen veterans participated in one of the therapeutic and adaptive sports programs in Sun Valley Idaho for a three-week period of time. Some of the programs cited in the study included alpine skiing, snowboarding, Nordic skiing, whitewater rafting, kayaking, rock climbing, hiking, biking, running, martial arts, and skeet shooting, fly-fishing, yoga, theater, swimming, and hot springs (Lundberg et al., 2011).

Participants in the study responded on a pretest and posttest questionnaire. Multiple paired sample t-tests with Bonferoni adjustments were used to examine the changes between the pretest and posttest scores (Lundberg et al., 2011). The results showed significant pre and post differences in psychological health, overall quality of life, and moods, including tension, depression, and anger (Lundberg et al., 2011). These results support the findings of previously discussed literature and highlight the positive impact that sport therapy programs potentially have for combat veterans in the areas of quality of life, reduction of mood disturbances, and sports related competence.

Bennett, Lundberg, Zabriskie, and Eggett (2014) continued to study the adaptive sports programs in Sun Valley, Idaho, conducting a study aimed at evaluating the effectiveness of an adaptive sport and recreation program designed for couples called Higher Ground (Bennett et al., 2014). The program was created with the goal of reducing symptoms of PTSD, facilitating posttraumatic growth, and enhancing marital satisfaction for veterans with PTSD and their significant others (Bennett et al., 2014). The sample consisted of two experimental groups; Group A had five couples, Group B had six couples, and a control group consisting of six couples was also added (Bennett et al., 2014). An Analysis of Covariance (ANCOVA) showed significant decreases in PTSD symptoms and increases in marital satisfaction among the

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experimental groups following participation in the recreation program (Bennett et al., 2014). The findings in this study support findings in aforementioned literature that indicate that the use of recreation programs to help veterans with PTSD, and in the case of this particular study, their significant others, is effective.

Mulhollon & Casey (2016) discuss the importance of adaptive sports in the recovery of clients in their work at the Milwaukee VA Medical Center. Mulhollon & Casey (2016) state that: "Recreation is important to improve the overall quality of life for those who have disabilities. Adaptive sports are a part of recreation therapy, which allows each individual to experience recreation the way that best fits their lifestyle." (p. 20) Recreation Therapists at the Milwaukee VA Medical Center work directly with veterans with spinal cord injuries to enhance this part of the rehabilitation process. The purpose of the article is to discuss the importance of the connection between the Milwaukee VA and community partnerships in adaptive sports (Mulhollon & Casey, 2016). Community partnerships provides a necessary bridge, helping veterans transition from the VA and find regular participation in community-based adaptive sports programs (Mulhollon & Casey, 2016). The article discusses the fact that programs for a lifestyle of healthy living and pursuing adapted sports on a regular basis beyond the initial introduction on adapted sports on the spinal cord injury veterans at the Milwaukee VA is considered a critical element of care and vital to successful reintegration (Mulhollon & Casey, 2016).

Hawkins, Cory & Crowe (2011) conducted a phenomenological, qualitative research design which consisted of interviews with injured service members who were currently or had in the past participated in recreation, sport, and physical activity during and after a U.S. Paralympic Military Sport Camp (Hawkins et al., 2011). The interviews were recorded via audio device and

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transcribed into electronic text files. Three researchers used peer review and examination to read the transcripts and audio files and compiled themes that were agreed upon by the researchers (Hawkins et al., 2011). 10 volunteers were interviewed out of a sample size of 50 participants in the U.S. Paralympic Military Sport Camp (Hawkins et al., 2011). Findings of the study endorsed the facilitation of positive change regarding disabilities, increased motivation toward self-care, and an increased sense of self-determination as a result of participation in recreation, sport, and physical activity (Hawkins et al., 2011).

Conceptual Framework

In order to understand what the Minnesota Warriors Hockey Program is, and how the veterans participating in the program benefit from it, it is useful to first briefly outline what the program is not. Much of the literature discussed has been in reference to the program models that are either the most similar to the Minnesota Warriors Hockey program model or have been in reference to the benefits and outcomes that are the most congruent to the Minnesota Warriors Hockey program model. Yet, it is very important to highlight the fact that, pertinent to many of the group therapy and activity-based recreation therapy models previously discussed, the Minnesota Warriors Hockey Program does not directly fall into any one of the specific categories. The program is, essentially, its own conceptual framework, drawing on elements from several different modalities and frameworks in its program delivery. Thus, in order to fully understand what the Minnesota Warriors Hockey Program is as well as how it helps its participants, it is examined through the lenses of group work, peer support, recreation therapy, and reintegration.

Group Work

As previously discussed in the literature review, Group Therapy models are empirically shown to be effective as treatment modalities. While the Minnesota Warriors is not a group treatment group, the Group Work lens helps to create a basis for understanding how participants in the program are improving their mental health or their overall quality of life. According to Toseland and Rivas (2012), Group Work can be defined as goal-directed activity with small treatment and task groups aimed at meeting socioemotional needs and accompanying tasks. This activity is directed to individual members of a group and to the group as a whole within a system of service delivery. This definition of group work describes goal-directed activity, which may

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include supporting, educating, socializing, personal growth, or treatment (Toseland & Rivas, 2012). There are many advantages to group treatment, as demonstrated in the table below:

Table 2. *The Benefits of Group Work*

Empathy from Multiple Sources	Vicarious identification with and understanding of members' situation by peers
Feedback	Multiple points of view shared by group members
Helper-therapy	Providing help and mutual support to other group members is therapeutic for the member who shares experiences and knowledge
Hope	Installation of hope by other group members who have coped effectively with similar situations
Mutual Aid	Members give and receive help
Normalization	Removal of stigma from problems seen as socially unacceptable by the larger society
Practice of New Behaviors	Other members provide opportunities to try out new behaviors in the safe environment of the group
Reality Testing	Sharing ways of being and getting feedback about whether they are realistic and socially acceptable
Recapitulation	Working through previously unsatisfactory relationships with family, peers, and friends with the help of the group members
Recreation of the Family of Origin	Group members serve as surrogate family and symbolically represent family members
Resources	A wide pool of knowledge about concerns and the resources and services to help with these concerns
Role Models	Members and the leader serve as models
Solidarity	Connectedness with other members of the group
Socialization	Opportunities to overcome isolation and learn social skills from others
Social Support	Support from other members of the group
Transcendence	Members sharing how they adapted to and compensated for disabilities

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Validation	Group members confirming similar experiences, problems, and concerns
Vicarious Learning	Learning by hearing about other members' coping responses

Information obtained and adapted from Toseland and Rivas (2012)

With this in mind, the Minnesota Warriors Hockey Program may address many of the issues listed above, although not intentionally, at least within a clinical framework. The basic concept of the program is to provide and administer the program by providing ice time, equipment, leadership, communication, and participation opportunities to its members, while allowing the many benefits of group work to occur organically. Although there is a considerable amount of empirically accepted evidence that sport and exercise therapy models have a positive impact on mental health symptoms along with improved overall functioning, nothing in the literature confirms sport and exercise therapy as an accepted group work therapy model. For this reason, Group Work does not form the only basis for the Minnesota Warriors Hockey program model, and further conceptual lenses must be used to examine the benefits of the program.

Peer Support

Peer support is a concept that refers to people with similar problems helping each other by using their own “lived experience” to help others to recover from or overcome challenges that they themselves have faced (Jain, McLean, Adler, & Rosen, 2015). This concept focuses on a key aspect of the Minnesota Warriors Hockey Program that its participants may experience as a result of participation. The use of peer support in a professional capacity as part of the mental health care team is a more recent development as research on its effectiveness has emerged (Williams, Bambara, & Turner, 2012).

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Williams et al. (2012) conducted a scoping review to identify and describe one-to-one peer mentorship¹ (PM) interventions and to identify elements associated with positive outcome of peer mentorship. 196 pertinent articles which summarize key practices and concepts in the one-to-one PM literature between 1980 and 2012 were identified. 33 were retained for further examination, and 18 met full-study criteria and were retained for analysis (Williams et al., 2012). The study indicates that peer mentorship programs are congruent with recovery and that they support and encourage advocacy, self-management, community-based efforts, and positive identity with a group (Williams et al., 2012). The study reviewed literature across many populations, and specifically cited peer mentorship's high potential to supplement care with combat veterans, who may not be adequately served by more traditional approaches to their symptoms (Williams et al., 2012).

Peer support has, in fact, been shown to be effective with veteran populations in inpatient psychiatric programs within the VA. Jain et al. (2015) conducted an observational study with the goal of determining the characteristics of peer support that change attitudes toward recovery and PTSD symptom severity. The study sample consisted of 55 VA residential patients at a residential rehabilitation program for PTSD and were recipients of peer support (Jain et al., 2015). The study found that veterans experienced greater support from other veterans (mean = 4.04 on 1–5 scale, SD = 0.78) than from any other source (Jain et al., 2015). The study indicated that positive feelings pertaining to lived experience and sense of comradery were themes that occurred most often among respondents (Jain et al., 2015). Results from this study suggest that positive perceptions of peer support influence favorable attitudes toward recovery among

¹ Williams, Bambara, and Turner (2012) used the term "peer mentorship" in their study; for the purposes of the conceptual framework described under "peer support" it can be assumed that the two terms are the same.

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veterans who are recipients of peer support (Jain et al., 2015). Thus, peer support models, with their emphasis on rapport building and normalizing through shared lived experiences has been demonstrated to be effective and has been incorporated into the conceptual framework of the pilot study on the Minnesota Warriors Hockey Program as a potentially significant outcome of participation in the program.

Recreation Therapy

Recreation therapy is an evidenced-based health care discipline designed to provide specialized application of therapeutic activities or interventions to assist in maintaining or improving the health status, functional capabilities, promoting recovery treatment, and ultimately quality of life for Veterans with injuries, chronic illness, and disabling conditions (U.S. Department of Veterans Affairs, 2018). The VA has operationalized Recreation Therapy and offers this service to enhance treatment and to promote and reinforce healthy lifestyle behaviors and use of leisure that will maintain or improve well-being or functioning (U.S. Department of Veterans Affairs, 2018).

VA specifically acknowledges that successful reintegration and community functioning builds confidence in the veteran's ability to transition back into their community and to function as independently as possible. VA also lists several other residual benefits of participation in Recreation Therapy, including behavior management, anger management, pain management, reality orientation, coping and adjustment, stress management and relaxation, and substance abuse (U.S. Department of Veterans Affairs, 2018). The veterans, employees, and volunteers who support these programs all share a strong sense of purpose, commitment, integrity, and comradery (U.S. Department of Veterans Affairs, 2018). VA has conceptualized Recreation Therapy as a critical component of veteran-centered care in the rehabilitation process:

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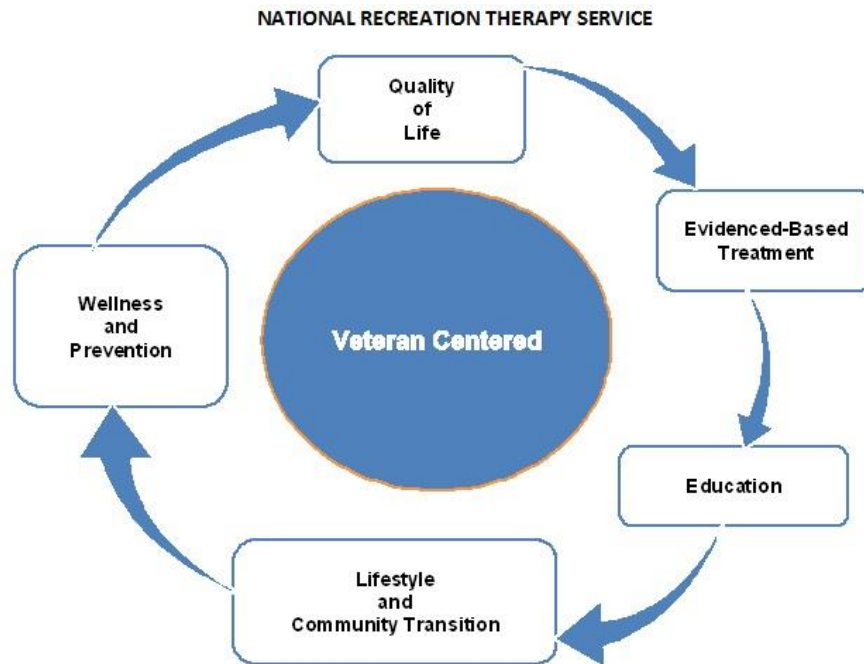


Figure 2. *Veteran Centered Recreation Therapy Model (U.S. Department of Veterans Affairs, 2018)*

The Warrior Hockey program model finds its beginnings within the framework of Recreation Therapy, having originated at Walter Reed Army Medical Center as a Recreation Therapy model for the injured service members at the hospital. As previously stated, the Minnesota Warriors Hockey Program was the second Warrior Hockey program to emerge. However, the Minnesota Warriors Hockey Program set itself on a course which differed from the original USA Warrior program model based around Recreation Therapy when it altered its inclusion criteria in order to help more able-bodied veterans facing challenges related to mental health rather than physical health. Therefore, the Minnesota Warriors Hockey Program cannot be examined exclusively through the lens of Recreation Therapy, although it remains an important part of the conceptual framework due to the many social benefits outlined in the Recreation Therapy model.

Minnesota Warriors Hockey Program Model

The unique nature of the Minnesota Warriors Hockey Program and how it impacts its participants has given way to an entirely new conceptual framework. The program combines key elements from the frameworks of group work, peer support, and recreation therapy into its mission statement of assisting its participants in their reintegration journey. Thus, the most operationalized definition of the Minnesota Warriors Hockey Program combines all three of the previous lenses and can be stated as “A recreational peer support group that uses the sport of ice hockey to assist veterans with reintegration.”

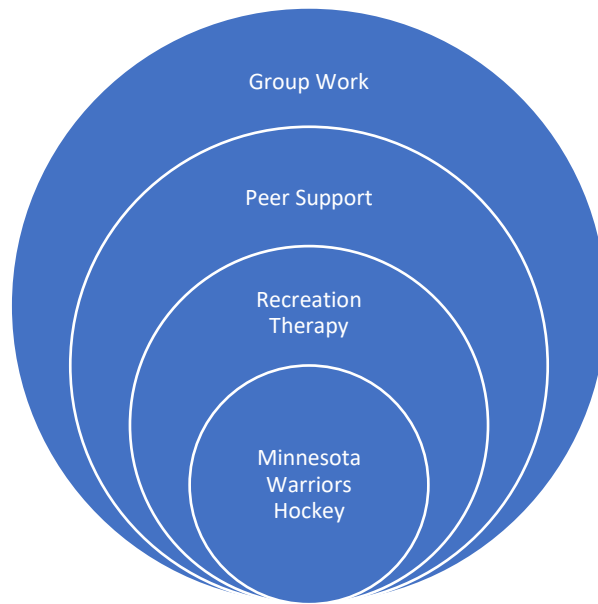


Figure 3. *Minnesota Warriors Hockey Program Conceptual Framework*

Methods

Research Purpose & Design

The purpose of this study is to examine what effect participation in the Minnesota Warriors Hockey Program has on the self-reported post-military service reintegration functioning of the participants in the program. Two queries were formulated in order to determine the research question as well as the variables that could be measured. The first query that was formulated was “What is the distribution of frequency of participation in the Minnesota Warriors Hockey Program who completed the survey?” The second query that was formulated is “What percentage of respondents believe that they have experienced an improved level of self-reported post-military service reintegration functioning as a result of their participation in the Minnesota Warriors Hockey Program?” The research question for this quantitative and qualitative data analysis is “Does a relationship exist between participation in the Minnesota Warriors Hockey Program and an improved level of self-reported post-military service reintegration functioning?”

The research hypothesis for this study is that a relationship does exist between frequency of participation in the Minnesota Warriors Hockey Program and an improved level of self-reported post-military service reintegration functioning of its participants. The null hypothesis for this study is that no relationship exists between frequency of participation in the Minnesota Warriors Hockey Program and an improved level of self-reported post-military service reintegration functioning of its participants. The dependent variable in this study is a ratio level variable measuring the respondents’ perceptions of beliefs on whether their reintegration domain functioning has improved since being in the program. This variable is operationalized as a percentage of respondents who indicated an improvement since joining Minnesota Warriors Hockey. The independent variable in this study is an ordinal level variable measuring

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respondents' frequency of participation in the Minnesota Warriors Hockey Program. This variable is operationalized by frequency of participation (weekly, monthly, yearly). Frequency of participation was separated into 4 groups: (1) Participate > 4 times per month; (2) Participate 2-4 times per month; (3) Participate 1 time per month; (4) Participate < 1 time per month. The research design that was used for this study was a survey containing both quantitative and qualitative questions. The survey and administration process was approved by an IRB at the University of St Thomas. The survey was administered in an online format using Qualtrics.

Sample

The sample for this study consisted of all registered Minnesota Warriors Ice Hockey players whose contact information is on file with the organization. Board members who are not registered participants, along with volunteers who are not registered participants were excluded from the sample. All registered participants of the Minnesota Warrior Hockey Program were given the opportunity to be a part of the study.

Risks and Ethical Concerns

The researcher's position as a board member in the program had the potential to result in undue influence in participation in the study. There was also a small possibility for participants to experience emotional distress while answering the questions contained in the M2C-Q survey questions. Because this study asked participants to quantitatively describe their experiences with various mental health symptoms associated with military service, it had the possibility of causing emotional distress for the participant. There was also a slight risk of respondents recalling traumatic or distressing events. The M2C-Q asked respondents for descriptions of experiences

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with various mental health symptoms associated with military service, which had the potential for respondents to recall traumatic or distressing events linked to those symptoms.

Protection of Human Subjects

Permission to conduct this study was obtained from an IRB at the University of St Thomas. As previously mentioned, the recruitment process consisted of all registered players of the Minnesota Warriors Hockey Program. Extensive care was taken to ensure respondent confidentiality. The researcher did not have any direct contact with respondents regarding the study. All contacts, including survey dissemination, was done through the Minnesota Warriors Hockey Program's recruiting director, who manages the official registration database for the entire program. Respondents electronically submitted their surveys, which are electronically stored on a password protected computer. Care was taken to ensure that each participant in this study remains anonymous; names were not given by the respondents; only demographic information was collected. All participants were required to read and electronically sign a Letter of Informed Consent before they were allowed to answer any of the survey questions. Researcher contact information was available to answer any questions the participants might have about the survey. Participants had the option to skip questions or choose not to take the survey at all. Lastly, the survey contained links to mental health crisis resources at the end of the survey.

Data Collection

The researcher developed a mixed-methods survey using Qualtrics to collect data related to participation in the Minnesota Warriors Hockey Program and level of self-reported difficulty with post-military service reintegration. Descriptive statistics were collected related to age, gender, branch of service, current military status, level of ice hockey skill, previous experience

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with ice hockey, length of time in the program, any lengthy gaps in participation while in the program, frequency of participation in the program, and self-reported improvement in reintegration functioning. This study also collected quantitative data using an empirically validated psychometric measurement which assesses reintegration functioning in six different domains, developed by Sayer et al. (2010) at the Minneapolis VA Medical Center. Qualitative questions were open-ended questions in the survey related to the most important aspect of the program to them, as well as the specific functional areas that respondents experienced improvement. Quantitative data from the surveys was collected and organized into data sets according to each participant's response, and qualitative data was categorized according to each area of interest, enabling comparison of multiple variables in a variety of contexts. The data was collated in the SPSS system, the software that was used to analyze the data.

Table 3. *M2C-Q Assessment of Reintegration Domains*

Relationships with Family, Friends, Peers	Productivity in Work, School, Home	Community Participation	Self-Care	Leisure	Perceived Meaning in Life
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Data Analysis

The Independent Samples T-Test determines whether there is a statistically significant difference between groups within the sample. This determination is made by using the p-value (Kuechler, Garrett, Toft, & Ferguson, 2014). The Levene's Test for Equality of Variances indicates whether two groups have approximately equal variance on the dependent variable. If the test is not significant ($p > .05$), then the two variances are approximately equal, and the top number under "Sig. (2-tailed)" is used to determine the p-value (Kuechler et al., 2014, p. 59). If the Levene's Test is significant ($p < .05$), then the two variables are significantly different, and

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the bottom number under “Sig. (2-tailed)” is used to determine the p-value for the T-test (Kuechler et al., 2014, p. 59).

In the case of this pilot study, the independent variable, frequency of participation, was divided into two groups; group one consisted of all respondents with a participation frequency of 1-4 times per month (Groups 1-3), and group two consisted of all respondents whose participation frequency is < one time per month (Group 4). The second set of descriptive statistics is the dependent variable, which is the percentage of respondents who believe their level of self-reported post-military service reintegration functioning has improved as a result of participation in the Minnesota Warriors Hockey Program. An Independent Samples T-Test was conducted in order to analyze the operationalized variables of this study. This process was duplicated across several other independent variables, including length of time in the program, lengthy gaps in participation with the program, and age of respondents. Independent samples T-Tests were also conducted between each independent variable and M2C-Q domain scores, which are composite totals of all questions in the M2C-Q which correlate with each reintegration domain (Questions 1-7 = Relationships with Family, Friends, Peers, Questions 8-10 = Productivity at Work, School, Home, Question 11 = Self Care, Question 12 = Leisure, Question 13 = Community Participation, Questions 14-16 = Perceived Meaning and Purpose in Life). Finally, Independent Samples T-Tests were conducted between each independent variable and each M2C-Q question in three different formats which included M2C-Q raw data scores (scale 1-5), recoded groups (group one = little to no difficulty, group two = moderate to extreme difficulty), and adjusted scale scores (scale 0-4).

Qualitative data was also collected in the survey in the form of open ended questions related to the most important aspects of the programs to respondents, as well as areas of

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functioning that respondents felt that they had improved in. This data was collected and categorized according to the responses given. Themes according to what the most important aspects of the program to respondents were counted, and areas that respondents indicated improvement in their functioning since joining the program were categorized according to their response.

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Results

The survey was sent out to 188 respondents, and had 65 total responses, of which 62 were valid recorded responses, for total response rate of 34.5%. Descriptive statistics found that respondent age had a range of 26 to 57 years of age. Totals for respondent gender were 93.55% (N = 58) males, and 6.45% (N = 4) females. The survey had 62 valid responses to branch of service, which indicated that 59.68% of respondents had served in the Army, followed by 14.52% Air Force, and an equal number of respondents had served in the Navy and in the Marines, with both indicating 12.90% respectively. The survey found that 57 respondents currently hold veteran status, with five respondents indicating that they are still currently serving in the military. Related to ice hockey experience, 91.94% (N = 57) indicated that they had previous experience with playing hockey, while 8.06% (N = 5) indicated that they had no previous experience. Current playing level of participants shows that 21 respondents reported being an advanced player (varsity high school or above), 16 respondents reported being a skilled player (experience through youth bantam level or JV high school), 21 respondents reported being an intermediate player (able to skate, experience playing youth or outdoor hockey), and four respondents indicated that they were beginners with no previous experience. The length of time with the program ranged from two months to seven years, with 44.25% of respondents indicating that they had a lengthy gap in participation at some point in their membership with the program.

Tests on internal reliability indicated that nearly half (46.2%) of all respondents (N=30) completed all questions in the survey. The majority (81.5%) of respondents completed descriptive statistics questions in the survey, and 53.8% completed all questions in the M2C-Q. Cronbach's Alpha test for total reliability of the measure was .357, and .917 for internal

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reliability of the M2C-Q, indicating a low to moderate overall reliability of the survey in its entirety, and a high internal reliability of the M2C-Q.

M2C-Q Domain Scores

Each of the operationalized independent variables were compared to the M2C-Q Domain Scores as well as the raw data by conducting Levene's Test of Equality of Variances, and Independent Samples T-Test of each independent variable with each domain score (see Table 4) and each score from all 16 questions in the M2C-Q. Higher domain scores indicate increased functional difficulty. Statistically significant results of these tests are discussed in the subsequent sections.

Table 4. *M2C-Q Domain Scores Range & Descriptive Statistics*

	N Statistic	Minimum Statistic	Maximum Statistic	Mean Statistic	Std. Deviation Statistic	Skewness Statistic
Relationships with Family, Friends, Peers	60	.00	19.00	6.5667	5.57952	.429
Productivity at Work, School, Home	61	.00	9.00	2.1967	2.37921	1.163
Community Participation	60	.00	4.00	1.3000	1.23919	.671
Self-Care	61	.00	3.00	1.2787	1.06663	.264
Leisure	61	.00	4.00	1.3115	1.05737	.473
Perceived Meaning in Life	61	.00	12.00	3.9672	3.18312	.544
Valid N (listwise)	59					

Frequency of Participation

An Independent Samples T-Test was conducted to analyze the variables of this study. The independent variable, frequency of participation, which appeared in the survey as Q13, operationalized by active participation (once per month or more) and inactive participation (less than once per month). The descriptive statistics that were found include first, frequency of

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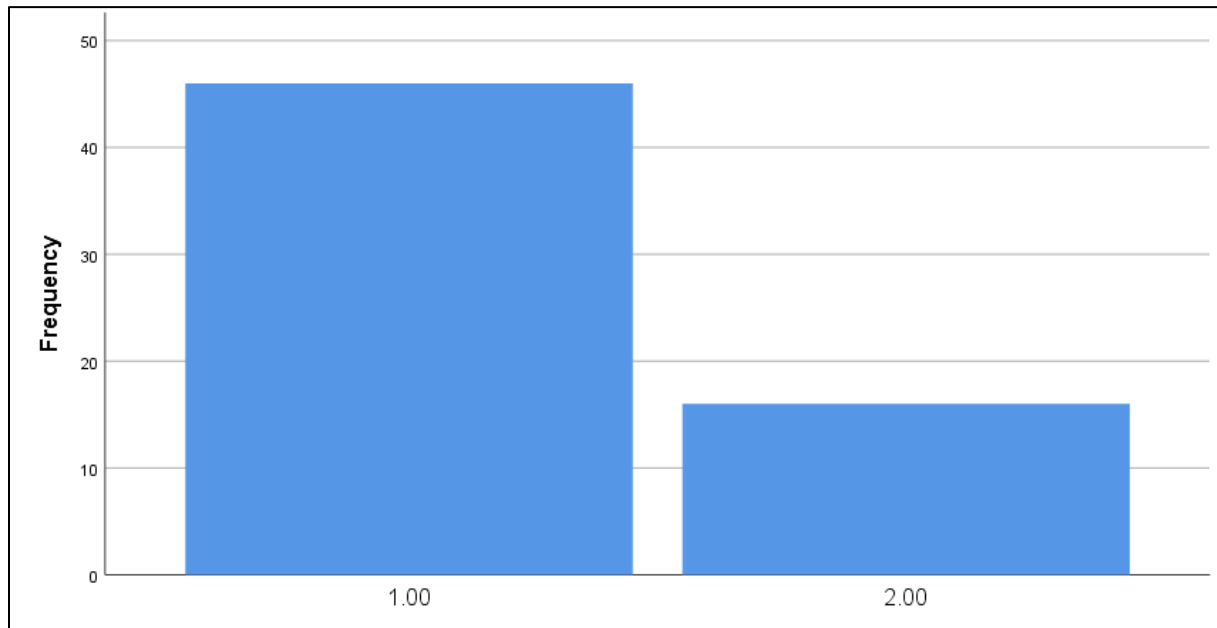
participation. The data indicated that there were 62 valid responses to the question from the survey, and three who did not respond. Answers ranged from 1 to 4, and the mode, which was answer 1 (4 or more times per month) with a frequency of 26 (see Table 5). Answers 2 (2-4 times per month) and 4 (Less than one time per month) were both equal with a frequency of 16, and answer three was third with a frequency of 4. Frequency of participation was divided into two groups; group one consisted of all respondents who indicated active participation in the program of once per month or more (answers 1-3 on the survey), and group two consisted of all respondents who indicated that they are not actively participating with the program at least once a month currently (answer 4 on the survey). Additionally, the survey found that a cumulative 74.2% of all respondents fell into Group 1 of frequency of participation (see Table 5).

Table 5. *Frequency of Participation*

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	26	40.0	41.9	41.9
	2.00	16	24.6	25.8	67.7
	3.00	4	6.2	6.5	74.2
	4.00	16	24.6	25.8	100.0
	Total	62	95.4	100.0	
Missing	System	3	4.6		
Total		65	100.0		

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Table 6. *Frequency of Participation by Group*



The second set of descriptive statistics is the percentage of respondents of the survey who reported an improvement in level of self-reported post-military service reintegration functioning on the M2C-Q. There were 62 valid responses to the question from the survey, which appeared as Q15 (see Table 4) as a yes (1) or no (2) option. Out of 62 responses, the study found that 82.26% indicated an improvement (1), with the remaining 17.74% responded that they had not experienced improvement (2).

The research hypothesis for this study is that a relationship does exist between frequency of participation in the Minnesota Warriors Hockey Program and improved level of self-reported post-military service reintegration functioning of its participants. The null hypothesis for this study is that no relationship exists between amount of participation in the Minnesota Warriors Hockey Program and an improved level of self-reported post-military service reintegration functioning of its participants. Table 7 shows the group statistics which compared the mean responses between respondents who reported improvement in their post-military service reintegration functioning and respondents who reported no improvement of their post-military

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service reintegration functioning between the recoded groups of Amount of Participation. Group 1 consisted of answers 1-3 on Q13, and had 46 respondents, and Group 2 consisted of answer 4 and had 16 respondents. The average answer for Group 1 was 1.1522, and the average answer for Group 2 was 1.2500. This represents a difference of 0.0978, or about 9.78%. This data shows that respondents in Group 1 reported a slightly higher percentage of improvement in their post-military service reintegration functioning than respondents in Group 2.

Table 7. *Group Statistics of Improvement & Frequency of Participation*

	Amount Of Participation	N	Mean	Std. Deviation	Std. Error Mean
Improvement in Mental Health	1.00	46	1.1522	.36316	.05354
	2.00	16	1.2500	.44721	.11180

In the case of the inferential statistics in this study, the Levene's Test of Equality of Variance for the independent samples T-Test is .106. Being as .106 is greater than .05, the Levene's Test of the data in this study is not significant (see Table 8). The p-value for this T-Test is .386, which is greater than .05, and therefore indicates that the results of this data are not statistically significant. Thus, the study has failed to reject the null hypothesis that no relationship exists between amount of participation in the Minnesota Warriors Hockey Program and an improved level of self-reported post-military service reintegration functioning of its participants. This means that amount of current participation in the program had no significant effect on an improved level of self-reported post-military service reintegration functioning of its participants among respondents to the survey.

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Table 8. *Results of Independent Samples T-Test of Effect of Frequency of Participation on Improvement in Post-Military Service Reintegration*

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
Improvement in Mental Health	Equal variances assumed	2.690	.106	-.873	60	.386	-.09783	.11200	-.32186	.12621
	Equal variances not assumed			-.789	22.279	.438	-.09783	.12396	-.35472	.15907

Additional testing was conducted of Amount of Participation as an independent variable compared with the cumulative scale score of each respondent in the M2C-Q reintegration domains, along with all M2C-Q individual scores from each question. Operationalization of the independent variable remained the same as the previous tests. All tests involving amount of participation as the independent variable on M2C-Q domain and individual questions did not yield any statistically significant results, thus confirming the null hypothesis of the study.

Time in Program

An Independent Samples T-Test was conducted to analyze additional variables of this study. Time in program, which appeared in the survey as Q10 and was an open response question, was operationalized by length of time in the program in months. The descriptive statistics that were found include first, time in program, operationalized in months. The data indicated that there were 59 valid responses to the question from the survey, and 6 who did not respond. Answers ranged from 2 to 84 months, and the mode was 24 months with a frequency of 10 (see Table 9). was divided into two groups; group one consisted of all respondents who indicated that the length of time they have been involved in the Minnesota Warriors Hockey Program was from 1-24 months, and group two consisted of all respondents who indicated that they have been involved in Minnesota Warriors Hockey Program for 25 months or more

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Table 9. *Frequency of Time in Program (in months)*

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	2	3.1	3.4	3.4
	3	3	4.6	5.1	8.5
	4	2	3.1	3.4	11.9
	5	1	1.5	1.7	13.6
	6	1	1.5	1.7	15.3
	12	6	9.2	10.2	25.4
	13	1	1.5	1.7	27.1
	18	1	1.5	1.7	28.8
	24	10	15.4	16.9	45.8
	30	2	3.1	3.4	49.2
	36	7	10.8	11.9	61.0
	48	7	10.8	11.9	72.9
	60	5	7.7	8.5	81.4
	72	6	9.2	10.2	91.5
	84	5	7.7	8.5	100.0
	Total	59	90.8	100.0	
Missing	System	6	9.2		
	Total	65	100.0		

The second set of descriptive statistics is the percentage of respondents of the survey who reported an improvement in level of self-reported post-military service reintegration functioning on the M2C-Q. There were 62 valid responses to the question from the survey, which appeared as Q15 (see Table 4) as a yes (1) or no (2) option. Out of 62 responses, the study found that 82.26% indicated an improvement (1), with the remaining 17.74% responded that they had not experienced improvement (2).

This independent samples T-test was conducted in order to determine whether a statistically significant relationship between the length of time respondents have been in the program and respondents who reported improvement in their post-military service reintegration functioning. Table 10 shows the group statistics which compared the mean responses between respondents who reported improvement in their post-military service reintegration and respondents who reported no improvement of their post-military service reintegration between

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the recoded groups of time in program. Group one consisted of respondents who have been in the program from 1-24 months, and group two consisted of all respondents who have been in the program for 25 months or more. The average answer for group one was 1.2593, and the average answer for group two was 1.0938. This represents a difference of 0.1655, or about 16.5%. This data shows that respondents in group one reported a higher percentage of improvement in their post-military service reintegration than respondents in group two.

Table 10. *Group Statistics of Improvement and Time in Program*

	Time In Program Recoded	N	Mean	Std. Deviation	Std. Error Mean
Improvement in Mental Health	1.00	27	1.2593	.44658	.08594
	2.00	32	1.0938	.29614	.05235

In the case of the inferential statistics in this test, the Levene's Test of Equality of Variance for the independent samples T-Test is .001. Being as .001 is less than .05, the Levene's Test of the data in this study indicates that equality of variance cannot be assumed, suggesting a statistical significance in the data (see Table 11). However, the p-value for this T-Test is .107, which is greater than .05, and therefore indicates that the results of this data are not statistically significant. This test ultimately indicates that no relationship exists between length of time as a member of the Minnesota Warriors Hockey Program and an improved level of self-reported difficulty with post-military service reintegration of its participants.

Table 11. *Results of Independent Samples T-Test of Effect of Time in Program on Improvement in Post-Military Service Reintegration*

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Improvement in Mental Health	Equal variances assumed	12.775	.001	1.701	57	.094	.16551	.09731	-.02935	.36037
	Equal variances not assumed			1.645	43.815	.107	.16551	.10063	-.03733	.36835

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The initial T-test findings on length of time in the program and improvement in post-military service reintegration indicated that equal variance could not be assumed. Further testing was conducted of length of time in the program as an independent variable compared with the cumulative scale score of each respondent in the M2C-Q reintegration domains, along with all M2C-Q individual scores from each question. Operationalization of the independent variable remained the same as the previous tests. These tests indicated similar results, yielding statistical significance in the Levene's Test of Equality, and failing to fully establish statistical significance in the T-test both in the M2C-Q reintegration domains, and in recoded M2C-Q individual scores from each question. This trend suggests that there may be a statistical significance within the data that isn't able to be verified due to the data set not having enough points to establish the statistically significant difference.

Gap in Participation

An additional finding to emerge from the testing conducted between length of time in the program and improvement in post-military service reintegration was that individuals in group one (1-24 months in the program) appeared to report consistently lower scores in all six reintegration domain categories than individuals in group two (25+ months in the program) (see Table 12). This prompted the researcher to examine this further by testing several different independent variables with length of time in the program as the dependent variable. Gap in participation emerged as a statistically significant independent variable of interest. Gap in participation appeared in the survey as Q11, which asked participants whether there had been a lengthy gap of time in their participation since joining the program, with response options to the question being Yes (1) or No (2). 44.26% (N = 27) of respondents indicated a lengthy gap in

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their participation with the program, with 55.74% (N = 34) reporting that there was no gap in their participation.

Table 12. *Time in Program Group Statistics on M2C-Q Reintegration Domain Scores*

	Time In Program Recoded	N	Mean	Std. Deviation	Std. Error Mean
Relationships with Family, Friends, Peers	1.00	27	5.8889	5.38040	1.03546
	2.00	30	7.0333	5.75646	1.05098
Productivity at Work, School, Home	1.00	27	1.8148	2.00071	.38504
	2.00	31	2.4839	2.64413	.47490
Community Participation	1.00	26	1.0000	.89443	.17541
	2.00	31	1.4194	1.31083	.23543
Self-Care	1.00	27	1.2222	1.05003	.20208
	2.00	31	1.2903	1.07062	.19229
Leisure	1.00	27	1.0370	.80773	.15545
	2.00	31	1.5484	1.17866	.21169
Perceived Meaning in Life	1.00	27	3.7037	3.09857	.59632
	2.00	31	4.1290	3.23256	.58059

An Independent Samples T-Test was conducted to analyze the relationship between gap in participation and length of time in the program. The independent variable of this test, gap in participation, was operationalized according to whether respondents indicated a gap in participation. The data indicated that there were 61 valid responses to the question from the survey (see Table 14), and 4 who did not respond. This variable was divided into two groups; group one consisted of all respondents who indicated that they had taken time away from the program (1-Yes), and group two consisted of all respondents who indicated that they have not taken time away from the program (2-No). The dependent variable in this T-Test was length of time in program, operationalized in months. The data indicated that there were 59 valid

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responses to the question from the survey, and 6 who did not respond. Answers ranged from 2 to 84 months, and the mode was 24 months with a frequency of 10 (see Table 9).

Table 13. *Group Statistics for Gap in Participation and Time in Program*

	Gap In Participation	N	Mean	Std. Deviation	Std. Error Mean
Time In Program	1.00	26	45.50	26.171	5.132
	2.00	33	30.06	23.625	4.113

Table 13 shows the group statistics which compared the mean responses between respondents who indicated that they had taken time away from the program (1-Yes) and respondents who indicated that they have not taken time away from the program (2-No). The average answer for group one was 45.50 months spent in the program, and the average answer for group two was 30.06 months spent in the program. This represents a difference of 15.44 months between groups, indicating that respondents who had reported yes to having a gap in participation had been in the program an average of 45.50 months, and respondents who reported no to having a gap in their participation had been in the program an average of 30.06 months.

In the case of the inferential statistics in this test, the Levene's Test of Equality of Variance for the independent samples T-Test is .327 which is greater than .05. Therefore, Levene's Test of the data in this study indicates that equality of variance is assumed (see Table 14). The p-value for this T-Test is .021, which is less than .05, and therefore indicates that the results of this data are statistically significant. This test ultimately indicates that a relationship between lengthy gaps in participation and length of time as a member of the Minnesota Warriors Hockey Program exists.

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Table 14. *Results of Independent Samples T-Test of Gap in Participation and Time in Program*

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
Time In Program	Equal variances assumed	.978	.327	2.377	57	.021	15.439	6.496	2.431	28.448
	Equal variances not assumed			2.348	50.987	.023	15.439	6.577	2.236	28.643

Age

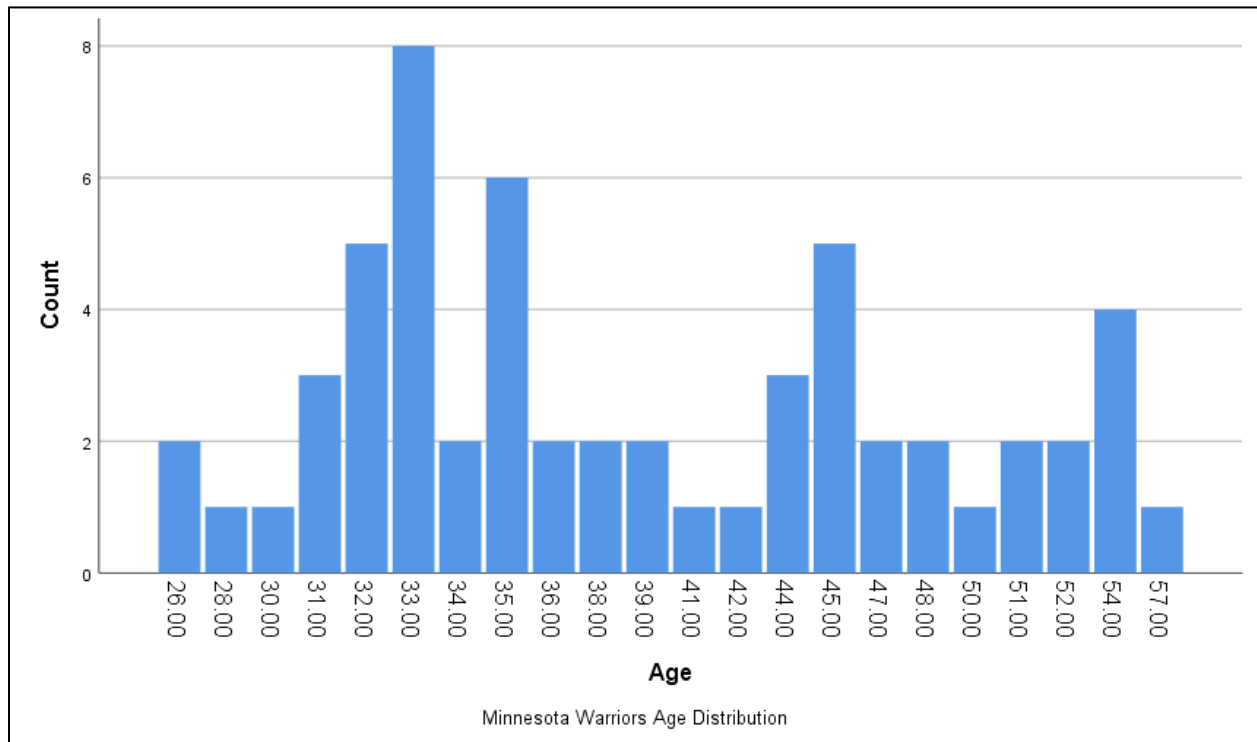
Given the findings of a statistically significant relationship between gap in participation, the last variable that the researcher conducted tests on was age of respondents, which was tested as an independent variable across all sets of descriptive statistics as well as the M2C-Q reintegration domains, and all M2C-Q individual scores from each question. No statistically significant results between age or any other sets of descriptive statistics in the survey were found, with the exception of an improved level of self-reported post-military service reintegration functioning of its participants. Independent Samples T-Tests that were conducted between age as the independent variable, and improvement in level of self-reported post-military service reintegration functioning of respondents as the dependent variable. These tests were replicated to M2C-Q reintegration domains and all M2C-Q individual scores from each question as dependent variables as well. These tests produced statistically significant results.

An Independent Samples T-Test was conducted to analyze the variables of age and improvement in level of self-reported post-military service reintegration functioning. The independent variable, age, which appeared in the survey as Q3, was an open response question in which respondents were asked to indicate their age. The descriptive statistics indicated that there were 58 valid responses to the question from the survey, and 7 who did not respond. Age ranged from 26 to 57, with the mean falling at approximately 39.5, median 36, and the mode was 33.

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was divided into two groups; group one consisted of all respondents who indicated that their age falls between 1 and the mean age of 39, and group two consisted of all respondents who indicated that their age falls between 40-99. Additionally, the survey found that a cumulative 58.6% of all respondents fell into group one, while the remaining 41.4% fell into group two (see Table 15).

Table 15. *Distribution of Age of Respondents*



The second set of descriptive statistics for this test is the percentage of respondents of the survey who reported an improvement in level of self-reported post-military service reintegration functioning on the M2C-Q. There were 62 valid responses to the question from the survey, which appeared as Q15 (see Table 4) as a yes (1) or no (2) option. Out of 62 responses, the study found that 82.26% indicated an improvement (1), with the remaining 17.74% responded that they had not experienced improvement (2).

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Table 16 shows the group statistics which compared the mean responses between respondents who reported improvement in their post-military service reintegration functioning and respondents who reported no improvement of their post-military service reintegration functioning between the recoded groups of age. Group one consisted of all respondents age 1-39, and group two consisted of all respondents age 40-99. The average answer for group one was 1.2353, and the average answer for group two was 1.1250. This represents a difference of 0.1103, or about 11%. This data shows that respondents in group two reported a slightly higher percentage of improvement in their post-military service reintegration than respondents in group two.

Table 16. *Group Statistics for Age and Improvement in Post-Military Service Reintegration*

	Age Recoded	N	Mean	Std. Deviation	Std. Error Mean
Improvement in Mental Health	1.00	34	1.2353	.43056	.07384
	2.00	24	1.1250	.33783	.06896

In the case of the inferential statistics in this test, the Levene's Test of Equality of Variance for the independent samples T-Test is .031. Being as .031 is less than .05, the Levene's Test of the data in this study indicates that equality of variance cannot be assumed, suggesting a statistical significance in the data (see Table 17). However, the p-value for this T-Test is .280, which is greater than .05, and therefore indicates that the results of this data are not statistically significant. This test ultimately indicates that no relationship exists between respondent age and an improved level of self-reported difficulty with post-military service reintegration of participants.

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Table 17. Results of Independent Samples T-Test of Age and Improvement in Post-Deployment Military Service Reintegration

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
Improvement in Mental Health	Equal variances assumed	4.916	.031	1.047	56	.300	.11029	.10534	-.10073	.32132
	Equal variances not assumed			1.092	55.305	.280	.11029	.10103	-.09216	.31275

The initial T-test findings on length of time in the program and improvement in post-military service reintegration indicated that equal variance could not be assumed. Further testing was conducted on age as an independent variable compared with the cumulative scale score of each respondent in the M2C-Q reintegration domains, along with all M2C-Q individual scores from each question. Operationalization of the independent variable remained the same as the previous tests. Tests conducted between age and M2C-Q reintegration domain scores indicated similar results, failing to establish statistical significance. Group statistics between age and M2C-Q reintegration domain scores indicated a considerable difference in mean response between group one and group two (see Table 18) in domain one (Relationships with Family, Friends, Peers). T-Tests that were conducted between age and M2C-Q individual scores from each question revealed statistically significant results and trends (see Table 22).

Table 18. Group Statistics of Age and M2C-Q Reintegration Domain 1

Group Statistics					
	Age Recoded	N	Mean	Std. Deviation	Std. Error Mean
Relationships with Family, Friends, Peers	1.00	33	7.3939	6.09784	1.06150
	2.00	23	4.9130	4.79501	.99983

Statistically significant trends were consistently found between age and Q14_2, Q14_3, and Q14_4, with Q14_4 (Keeping up friendships with people with military experience) indicating statistically significant findings with 95% confidence interval. Testing was conducted

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on M2C-Q raw data, M2C-Q recoded data, and M2C-Q scale scores which confirm these findings, which indicate that age has a statistically significant relationship with respondents who reported greater levels of difficulty with keeping up friendships with people who had military experience. Additionally, these findings indicate a possible trend toward age having a relationship with respondents' ability to make and keep friends.

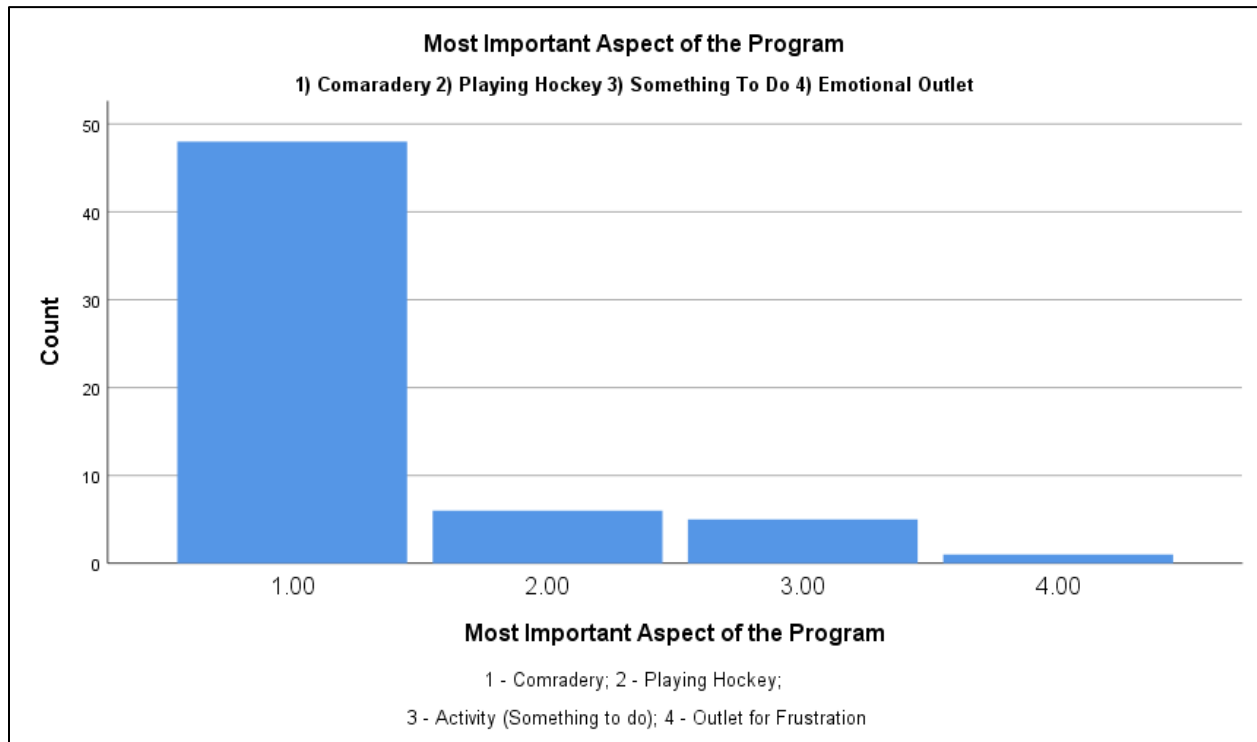
Qualitative Findings

Qualitative questions that appeared in the survey included Q9, which asked respondents to state what the most important aspect of the program was to them, and Q16, which asked respondents if they had indicated Yes (1) in response to Q15 (Since joining the Minnesota Warriors Hockey Program, have you experienced improvement in any of the areas listed in the previous set of questions) to state which areas they feel they experienced the improvement.

Q9, which asked respondents what the most important aspect of the program is to them, was reviewed by the researcher and categorized according to themes which appeared in each answer. 60 valid responses to the question were recorded in the survey, and out of the review and coding process, four themes emerged. These themes include (1) Comradery, (2) Playing Hockey, (3) Something to Do, and (4) Outlet for Frustration (see Table 19). The most commonly occurring theme was comradery, in which the phrase occurred in the responses on 48 separate occasions. Six respondents indicated that playing hockey was the most important aspect of the program, five respondents indicated that the program was an activity for them to do, and one respondent stated that the program is an outlet for frustration.

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Table 19. *Respondent Themes of Most Important Aspect of the Program*



Many respondents indicated that the program represents a sense of unity, family, comradery, and therapy for them. Significant quotes were obtained in the survey which reflect these sentiments, such as

“I like the friendship and the fact that these guys know exactly what life was like while in the military no matter the branch. Everyone is a great source of information on how to navigate the VA health system or how to transition back into civilian life.”

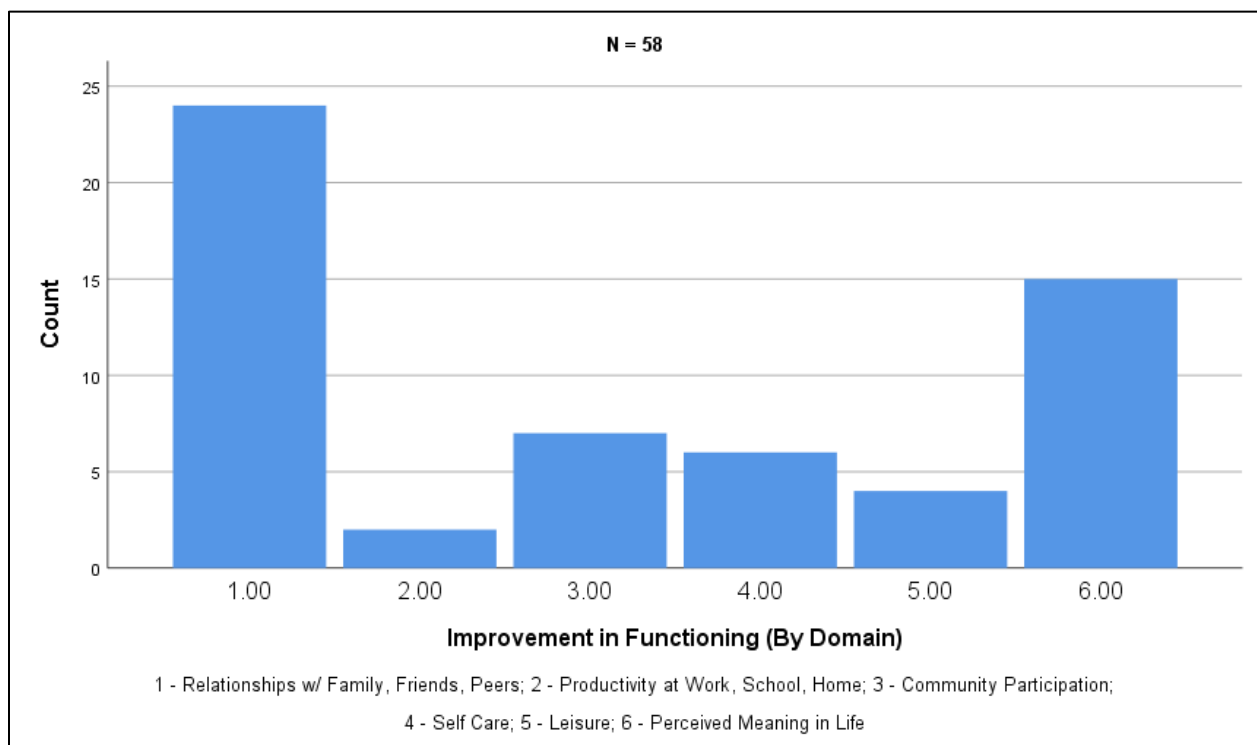
Another respondent spoke to the feelings of normalization that comes from being a part of the program, stating

“Being around other veterans, and being connected with other people that have an understanding about some of the things I have experienced and another added layer of support in my life. The fact that it exists within the scope of hockey is even better.”

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Q16, which asked respondents which areas of the M2C-Q they had experienced improvement in, was reviewed by the researcher and coded according to which of the six reintegration domains occurred in each answer. Q16 received 47 valid responses with 58 total data points recorded due to some of the answers having multiple themes in them. Respondents reported the greatest amount of improvement in Relationships with Family, Friends, Peers (24), followed by Perceived Meaning and Purpose in Life (15), Community Participation (7), Self-Care (6), Leisure (4), and Productivity at Work, School, Home (2) (see Table 20).

Table 20. *Self-Reported Improvement in Reintegration Domains*



Many respondents spoke to the improvement they have experienced since joining the program. This is reflected in quotes given by respondents such as:

“When I first joined the program, it took me out of a really dark place in my life, coming from active duty and jumping right back into day to day life as a civilian was a jolt to my

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system. When I was introduced to the MN Warriors hockey program I was reluctant at first but as soon as I met the guys I felt as if I found a place that I could be myself, I felt a sense of belonging that I had been searching for since the end of my time in service. Once I joined the program I began to expand my “social circles” going out and joining other groups and interacting with civilians who I never really felt a connection with and from there I have been able to rebuild new and stronger bonds with not only other service members but with people in general.”

Other respondents spoke to observable changes over time, stating

“Knowing that there are other people in our community that share the same experiences is helpful. Also hearing that others are struggling with conforming to civilian life makes me feel like I’m not the only one. People close to me noticed changes after I joined the team.”

It is important to note that not all respondents indicated improvement as a result of being a participant in the program. A few respondents stated that they had not improved in their reintegration functioning, and one female respondent indicated that the program recreates traumatic experiences from military service, stating

“I have improved in all areas except the ones marked N/A, although I wouldn’t say it’s all due to participating with the Warriors. I have been in many other programs and therapies as well. Sometimes being on the warriors with men just recreates the traumatic environment I had in the military. I’ve struggled a lot with that. I’ve stayed with the warriors because it’s helped me improve my skills so I can enjoy being on women’s teams outside the warrior program along with the friendships I’ve built there.”

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Although this individual, along with other respondents who indicated that they have not experienced improvement from the program, are a significant minority, it is worthwhile to note ways in which the program may not be helping some participants. This may warrant additional research in this area in the future.

Discussion

This pilot study has been conducted to investigate how participation in the Minnesota Warriors Hockey Program impacts an improvement in level of self-reported post-military service reintegration functioning. The data in the study was collected from a survey that was sent out to all past and present registered players in the Minnesota Warriors Hockey Program. Data collected in the survey includes descriptive statistics as well as data from the M2C-Q, an empirically validated psychometric tool which measures functioning across six different reintegration domains. The research hypothesis for the study was that a relationship does exist between frequency of participation in the Minnesota Warriors Hockey Program and improved level of self-reported difficulty with post-military service reintegration functioning of its participants. The null hypothesis for this study is that no relationship exists between frequency of participation in the Minnesota Warriors Hockey Program and an improved level of self-reported difficulty with post-military service reintegration functioning of its participants.

Additional testing of descriptive statistics as independent variables were tested for statistically significant relationships with improved level of self-reported post-military service reintegration functioning of its participants, along with reintegration domain scores and data from the M2C-Q. Themes which emerged from these tests include the results of the quantitative research question, amount of participation in the program, as well as time in program, gap in participation, and age. Qualitative results were also collected that contained information on what the most important program was to respondents, along with what areas of reintegration functioning respondents had experienced improvement in.

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Frequency of Participation

This pilot study has failed to reject the null hypothesis that no relationship exists between frequency of participation in the Minnesota Warriors Hockey Program and an improved level of self-reported difficulty with post-military service reintegration functioning of its participants. This means that frequency of current participation in the program had no significant effect on an improved level of self-reported difficulty with post-military service reintegration functioning among respondents to the survey. These findings are consistent across all tests that were conducted with frequency of participation as an independent variable, including answers on the M2C-Q. The study found no statistically significant relationship between frequency of participation in the program and any of the reintegration domains in the M2C-Q. This suggests that respondents who reported that they were not actively participating with the program at least once a month are just as likely to report an improvement in level of self-reported post-military service reintegration functioning as respondents who reported that they participate with the program once a month or more. Based on these results, the researcher concluded that, although participants may benefit from being a part of the program, the frequency of current participation at any given time is not what has the greatest impact on improvement in post-military service reintegration functioning.

Time in Program

This pilot study confirmed the null hypothesis that there is no statistically significant relationship between frequency of participation and improved level of self-reported difficulty with post-military service reintegration among respondents to the survey, this prompted the researcher to conduct further Independent Samples T-Tests to determine if the amount of time that a respondent had been with the program had any relationship with improved level of self-

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reported difficulty with post-military service reintegration functioning among respondents. While these tests ultimately failed to establish statistical significance in this area, a trend of statistical significance on Levene's Test of Equality of Variances emerged, both on the initial test between time in the program and improved level of difficulty with post-military service reintegration functioning, and between time in program and results from the M2C-Q. Specifically, this trend occurred between time in program and Community Participation and Leisure. This was supported in subsequent testing between time in program and M2C-Q individual questions. Q14_12, which read 'enjoying or making use of free time,' and Q14_13, which read 'taking part in community events celebrations (for example, festivals, PTA meetings, religious, or other activities)' consistently indicated that variances could not be assumed in the Levene's Tests.

The researcher concluded that variances between the answers cannot be assumed to be equal, and that this points to a potentially statistically significant trend which cannot be confirmed in the two-tailed T-Tests, for several different possible reasons. After consultation with the Mathematics Department at the University of St Thomas, the most likely reason for the inconsistency in these findings is that there is not enough interval data to confirm a statistically significant relationship between the two variables. Thus, the tests on time in program as an independent variable are inconclusive but may indicate that a trend pointing toward the amount of time a respondent has been with the program has a greater impact on improvement in post-military service reintegration functioning than frequency of participation on a weekly or monthly basis.

A significant finding by the researcher was that there was a consistently higher reintegration domain score between Group 1 and Group 2 of the independent variable, time in program. Respondents in Group 2 reported consistently higher scores in all M2C-Q reintegration

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domains than respondents in Group 1. This indicates that respondents who had been in the program for 25 months or more reported greater difficulty in their reintegration functioning than those who had been in the program from 1 to 24 months. This prompted the researcher to look for answers in the data by running numerous Independent Samples T-Tests in order to see if any other sets of descriptive statistics had a statistically significant relationship with time in program as a dependent variable. Independent variables to time in program as a dependent variable included age, gender, branch of service, amount of participation, improvement in reintegration functioning, and gap in participation.

Gap in Participation

None of the aforementioned independent variables were found to have any statistically significant correlation to how long respondents had been a part of the program, with the exception of gap in participation. Gap in participation appeared in the survey as Q11, which asked participants whether there had been a lengthy gap of time in their participation since joining the program, with response options to the question being Yes (1) or No (2). The statistically significant findings between gap in participation and amount of time in the program suggest that the longer the respondent is in the program, the more likely it is that they will have a lengthy gap of time in their participation in the program. Respondents who reported that they didn't have a lengthy gap in their participation with the program had been in the program an average of 30 months, whereas respondents who reported a lengthy gap in their participation had been in the program an average of 45 months. Thus, a possible explanation for the consistently higher reintegration domain scores among respondents who had been with the program for 24 months or longer may be related to a drop in amount of participation sometime after respondents had been in the program for 30 months.

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Age

The research committee for this pilot study was interested to see how, or if, age had a statistically significant correlation with any of the other variables in the study, as well as how age may be affecting the reintegration experience. The researcher ran T-Tests with age as an independent variable against other sets of quantified descriptive statistics and did not find any statistically significant relationships. However, when age was tested as an independent variable against improvement in post-military service reintegration functioning, a statistically significant trend emerged in the Levene's Test of Equality of Variances. Further testing on M2C-Q domain scores also indicated a statistical trend between age and domain scores in Domain 1 (Relationships with Family, Friends, Peers). Independent Samples T-Tests that were conducted on M2C-Q individual questions and scale scores yielded consistently statistically significant results on Q14_2, Q14_3, and Q14_4, which indicate that age has a statistically significant relationship with respondents who reported greater levels of difficulty with keeping up friendships with people who had military experience. Additionally, these findings indicate a possible trend toward age having a relationship with respondents' ability to make and keep friends.

These findings directly correlate with trends that were indicated in some of the empirical literature reviewed for this pilot study. Castro and Kintzle (2016) have proposed the Military Transition Theory, which identifies three interacting and overlapping phases that encompass individual, interpersonal, community, and military organizational factors that impact the reintegration process (Castro & Kintzle, 2016). Among the factors that they found as a predictor of a service member's reintegration is age (Castro & Kintzle, 2016). This is supported in other literature as well, which indicates that younger veterans may have a more difficult time

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readjusting to civilian life due to less stable or nonexistent support systems upon leaving the military, feelings of being left behind by peers whom they knew prior to their military service, and a lack of education and/or vocational training that makes them competitive in the civilian sector employment market (Danish & Antonides, 2013; Ahern et al., 2017; Donaldson, 2017; Orazem et al., 2017). The findings of the statistically significant relationship between age and M2C-Q scale scores in this pilot study indicate that respondents at or below the mean age of 39 are currently reporting significantly more difficulty with making friends and maintaining friendships both with individuals they had served with in the military, as well as making and keeping friends with people with no military experience.

Qualitative Findings

The qualitative findings in this pilot study indicate that the most important aspect of participation in the Minnesota Warriors Hockey Program is comradery, by a significantly wide margin. The word ‘comradery’ or ‘camaraderie’ appears in the qualitative answers given by respondents on 48 occasions, indicating that what the majority of respondents are drawn the most to about the program is the social aspect of being a part of it. Many of the qualitative responses point to the program as an important means of building connections and friendships with others who have had similar experiences. This also correlates with quantitative findings related to age which indicate that many respondents, particularly those at or below the mean age of 39 years old, report difficulty with making new friends and maintaining friendships both with individuals who had served in the military, and individuals who had not served in the military. In addition, respondents qualitatively indicated that they had experienced the greatest improvement in the reintegration domains of relationships with family, friends, and peers, and in perceived meaning and purpose in life.

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The qualitative findings suggest that for a significant number of respondents, the Minnesota Warriors Hockey Program has become an important part of their lives, providing social interaction and fellowship with individuals with a similar set of experiences, as well as helping to forge a new sense of identity and meaning post-military service. This directly correlates with empirical research which indicates that identity adjustment is a critical yet understudied aspect of veteran reintegration into community life following combat deployment and active duty service (Orazem et al., 2017) as well as the effectiveness of being in a group of people with similar problems helping each other by using their own “lived experience” to help others to recover from or overcome challenges that they themselves have faced (Jain et al., 2015). The qualitative responses also suggest similar results as the previous studies on other program models for veterans that use sport and activity that informed the framework of this pilot study. These studies indicate improved outcomes in areas related to self-esteem (Laferrier et al., 2015), quality of life (Lundberg et al., 2011; Laferrier et al., 2015; Donaldson, 2017), relationships (Bennett et al., 2014), and reduction in mental health symptoms (Bennett et al., 2014; Campbell et al., 2016).

Strengths of this Study

Strengths of this study include (1) the recruiting strategy, (2) the response rate, and (3) the data collection method. First, the recruiting strategy is a strength of this study. Random, voluntary sampling was used. All registered members of the Minnesota Warriors Hockey Program were included in the sample and thus had equal odds of being participants in the study, and all respondents volunteered to be participants in the study. This makes the sample used in the study an accurate representative of the program. Second, the study had a high rate of response, much higher than was initially expected, which gives both the quantitative and qualitative

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responses a great deal of validity to the findings and adds reliability to the descriptive statistics about the program that was collected in the survey.

The data collection method is also a strength in that it does not collect only descriptive statistics about the program, it utilizes an empirically validated psychometric measuring tool in order to assess the impact of different groups of descriptive statistics about the program, and its stated mission of helping reintegration. The M2C-Q is a psychometric measuring tool that is shown to have a consistently high level of quantitative reliability. The high rate of response on the survey along with the high rate of reliability on the M2C-Q give validity and credibility to the findings of this pilot study. Lastly, the qualitative questions included in the survey give an added voice to the respondents who participated in the study, and give a voice to the respondents and help to further describe the impact of the program.

Limitations to the Study

Limitations to this study include (1) data that cannot be generalized to other Warrior program models nationwide, (2) operationalization of Q15 in the survey, and (3) method of data analysis. The data collected in this pilot study has a high degree of reliability, however, the majority of the descriptive statistics would not be able to be generalized to the other Warrior programs. Statistics of age, gender, branch of service, current status in the military, or length of time in the program are representative of the disabled veteran population in Minnesota and may not be applicable to Warrior programs in other states, such as Alaska, Chicago, Michigan, Washington DC, or New York. In addition, the level of ice hockey experience may also vary greatly in other programs nationwide.

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A second limitation to this study is the way that Q15 was operationalized. The question read ‘Since joining the Minnesota Warriors Hockey Program, have you experienced improvement in any of the areas in the previous set of questions?’ The M2C-Q is a measure of post-deployment reintegration functioning within a 30-day window, whereas Q15 asks respondents if they have experienced improvement in any of the areas in the M2C-Q since they have joined the program. This may take away from the reliability of quantitative tests done with Q15 as a dependent variable, although findings with Q15 as a dependent variable were consistent throughout the study.

Lastly, the method of quantitative data analysis utilized multiple Independent Samples T-tests to determine statistical significance across several sets of descriptive statistics as well data collected using the M2C-Q. This method of data analysis is effective for establishing statistical significance and trends currently, however, it does not have long-term validity and therefore cannot be used to draw conclusions about the program over time. In addition, results from this pilot study cannot be generalized to veterans who have no affiliation with the Minnesota Warriors Hockey Program, as this pilot study did not utilize control or intervention groups to compare results from respondents in the program to respondents who had no affiliation with the program.

Implications for Social Work Practice

The findings from this study have two key implications for social work practice with the veteran population. (1) For social workers to consider reintegration functioning from the lens of person-in-environment and the importance and role of strong support systems in the community in helping service members and veterans make a successful transition from the military to civilian world. (2) To consider the ways in which programs such as the Minnesota Warriors

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Hockey Program help to improve reintegration functioning, and as a potential supplement to traditional mental health care.

In addition to conventional mental health assessments and psychiatric considerations related to military service, social workers should assess functioning with veterans as it relates to the reintegration domains outlined by Sayer et al. (2010) and used to operationalize reintegration functioning in this pilot study. This is critical because deficiencies in functioning such as poor relationships with family, friends, or peers, a lack of perceived meaning and purpose in life, poor self-care, isolation, and lack of meaningful use of leisure time can lead to acute mental health problems, as well as to exacerbate pre-existing mental health problems (Sherman, Larsen, & Borden, 2015). Social workers should consider elements in the veteran's environment and how they are affecting current functioning post-military service.

Social workers with veteran clients who lack consistent social interaction, community participation, or who experience persistent feelings of worthlessness or lack of purpose or meaning in life, or who lack a sense of belonging in society post-military service would do well to seek out programs such as the Minnesota Warriors Hockey Program to supplement existing services. This pilot study has shown that participants in the Minnesota Warriors Hockey Program experience a strong sense of comradery, which has had a positive impact on reintegration functioning, and specifically, with building and maintaining friendships, as well as a high degree in respondent reporting of improvement in overall relationships with family, friends, and peers.

Implications for Research

This pilot study has explored the history of the Minnesota Warriors Hockey Program, the conceptual framework that informs how the program impacts its mission of helping its

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participants in their reintegration journey and has quantitatively and qualitatively investigated the participant response to the program. This pilot study gives a current state of the impact of the program and has demonstrated the need for further research that is much more in-depth and across much larger periods of time. Much of the data collected in this study relies on inferred relationships between sets of statistically significant data to draw conclusions about the current state of the Minnesota Warriors Hockey Program and its effectiveness in its stated mission of assisting its participants in their reintegration journey, as well as qualitative data which gives a voice to respondents in the program.

More research is needed to examine the statistical significance between the length of time a respondent has been a part of the program and improvement in post-military service reintegration functioning. Second, more information about respondents who have reported taking a lengthy break from participation in the program is needed, including how long the gap in participation was, how long the participant had been in the program before they had the gap in participation, and what the reason for the gap in participation was. Longitudinal research designs with pre and post measures, as well as control groups are needed to show how the Minnesota Warriors Hockey Program impacts the reintegration process over time. Lastly, additional research around ways in which the program may not be benefitting participants, or even hindering the reintegration experience of participants is needed in order to further understand how the program can improve the quality of experience of participants.

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Conclusion

The Minnesota Warriors Hockey Program is a 501c3 nonprofit organization that assists wounded, injured, or otherwise disabled veterans of the U.S. Military in their reintegration process by administering a recreational ice hockey program for its participants. The Minnesota Warriors Hockey Program was founded in 2010 and was created based on a similar program model at Walter Reed Army Medical Center in Washington DC called the USA Warriors Ice Hockey Program, which was formed in 2008 as a recreation therapy program for wounded and injured service members receiving care. The Minnesota Warriors Hockey Program was created to meet the needs of transitioning service members out of the military and into civilian life in the wake of significant issues facing transitioning veterans, such as high rates of PTSD, suicide, divorce, substance use, unemployment, and homelessness, among other issues.

Research on the challenges of reintegration has led to increased awareness of deficiencies in functional domains related to reintegration as an important factor when considering the challenges of successful transition. Research on program models utilizing sport and activity with disabled veteran populations have been shown to have improved outcomes in areas related to self-esteem, quality of life, relationships, and reduction in mental health symptoms. There is no previous published research on the Warrior Hockey program model.

This study was a pilot study that utilized quantitative and qualitative methods to investigate the research hypothesis which stated that a statistically significant relationship exists between frequency of participation in the Minnesota Warriors Hockey Program and an improved level of self-reported post-military service reintegration. Multiple Independent Samples T-Tests were conducted which failed to reject the null hypothesis that there is no statistically significant relationship between frequency of participation in the Minnesota Warriors Hockey Program and

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an improved level of self-reported post-military service reintegration. Additional Independent Samples T-Tests indicated a possible trend of length of time in the program as having a greater impact on an improved level of self-reported post-military service reintegration than frequency of participation in the program.

Other statistically significant relationships found include lengthy gaps in participation with the program having a statistically significant relationship with length of time in the program, which suggests that the longer a participant is in the program, the more likely it is that their frequency of participation decreases. Lastly, age was found to have a statistically significant relationship with increased M2C-Q scale scores in relation to making and keeping friends, both with military experience, and without military experience. These findings suggest that respondents in the program at or below the average age of 39 years old are having significantly more difficulty with establishing and maintaining friendships following their military service than respondents age 39 or above.

The findings of this study have implications in the field of social work with military veteran populations, future research on the program, and for the Warrior Hockey program model. Social workers should consider elements in the veteran's environment and how they are affecting current functioning post-military service and seek out programs such as the Minnesota Warriors Hockey Program to supplement existing mental health care. Longitudinal research designs with pre and post measures and control groups to compare are needed to show how the Minnesota Warriors Hockey Program impacts the reintegration process over time. Lastly, additional research around ways in which the program may not be benefitting participants, or even hindering the reintegration experience of participants is needed to further understand how the program can improve the quality of experience of participants.

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APPENDIX A

Minnesota Warriors Ice Hockey Program Pilot Study Survey Questions

Q1: Informed Consent

- 1-Agree
- 2-Disagree

Q3: Age (Open response)

Q4: Gender

- 1- Male
- 2- Female

Q5: Branch of Service

- 1-Army
- 2- Navy
- 3- Air Force
- 4- Marines
- 5- Coast Guard

Q6: Current Status

- 1-Veteran
- 2-Currently Serving (Active Duty, Guard/Reserve, IRR)

Q7: Level of Ice Hockey Skill

- 1- Beginner (Little or no experience skating and/or playing hockey)
- 2- Intermediate (Able to skate, played youth hockey or outdoor hockey)
- 3- Skilled (Played hockey through Bantam or JV High School)
- 4- Advanced (Varsity High School, Junior, College, or Professional)

Q8: Did you have previous experience playing hockey when you joined the program?

- 1- Yes
- 2- No

Q9: What is the most important aspect of the program to you? (Open Response)

Q10: Length of Time as a member of the program? (Open Response)

Q11: Since joining the program, has there been a lengthy gap in your participation?

- 1-Yes
- 2-No

Q12: If there has been a lengthy gap in your participation, please indicate how long the gap in participation was. (If there has not been a lengthy gap in your participation, please indicate N/A) (Open Response)

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Q13: How often do you currently participate in the program? (This include on-ice activities, meetings, volunteer events, road trips, etc)

- 1- More than 4 times per month
- 2- 2-4 times per month
- 3- Once per month
- 4- Less than once per month

Q14:

1. Dealing with people you do not know well (such as acquaintances or strangers)?
2. Making new friends?
3. Keeping up friendships with people who have no military experience?
4. Keeping up friendships with people who have military experiences (including friends who are active duty veterans)?
5. Getting along with relatives (such as siblings, parents, grandparents, in-laws, and children not living at home)?
6. Getting along with your spouse or partner (such as communicating, doing things together, enjoying his or her company)?
7. Getting along with your child or children (such as communicating, doing things together, enjoying his or her company)?
8. Finding or keeping a job (paid or nonpaid or self-employment)?
9. Doing what you need to do for work or school?
10. Taking care of your chores at home (such as housework, yard work, cooking, cleaning, shopping, errands)?
11. Taking care of your health (such as exercising, sleeping, bathing, eating well, taking medications as needed)?
12. Enjoying or making good use of free time?
13. Taking part in community events celebrations (for example, festivals, PTA meetings, religious, or other activities)?
14. Feeling like you “belong” in civilian society?
15. Confiding or sharing personal thoughts and feelings?
16. Finding meaning or purpose in life?

Q15: Since joining the Minnesota Warriors Hockey Program, have you experienced improvement in any of the areas listed in the previous set of questions?

- 1-Yes
- 2-No

Q16: If you have experienced improvement in any of the areas listed in the previous set of questions, please indicate which areas you have experienced improvement in. (Open Response)