

A MOTIVATION PROFILE OF WOUNDED, INJURED, AND ILL
MILITARY PERSONNEL WITH PTSD WHO
PARTICIPATE IN ADAPTED SPORT

A DISSERTATION
SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE OF DOCTOR OF PHILOSOPHY
IN THE GRADUATE SCHOOL OF THE
TEXAS WOMAN'S UNIVERSITY
DEPARTMENT OF KINESIOLOGY
COLLEGE OF HEALTH STUDIES

BY

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DENTON, TX

AUGUST 2015

DEDICATION

For my family and friends. I can never thank you enough for your eternal support, love, understanding, and patience throughout this process. I could not have done this without
you

ACKNOWLEDGEMENTS

I would like to gratefully and humbly acknowledge all of those who have contributed to this dissertation, to those who saw something in me even when I did not see it in myself; thank you. When I began this process I knew there would be years of hard work ahead of me, what I wasn't expecting were the years of joy, laughter, and love. What I never thought I would find during this process was family, but that is exactly what I have gained. I was extremely lucky to have the opportunity to work with such an incredible dissertation committee who supported me and my research. Dr. Keston Lindsay thank you for your patience, statistical brilliance, patience, guidance, patience, and patience. You made my fear of statistics bearable, and for that I am so beyond grateful.

Mom, I have to start with you. How do I thank the person who has given me everything and then some? You are the motivation behind all that I do. You have been there with me every step of the way and over every hurdle. Whenever this process seemed like more than I could handle you gave me the confidence and strength to keep pushing forward, or jumped on a plane to give me that extra push in person. You are the one that taught me that I can do whatever I set my mind to (my unyielding stubbornness helps too— thank you for that as well!). I consider this Ph.D. as much yours as it is mine. There is no way that I could ever express how much I owe to you and how thankful I am to call you Mom, I love you.

People are put into your life for a season, a reason, or a lifetime, Jonna you were put into my life for all of the above (that's right, the Belanger family is stuck with me). I don't think TWU knew what they were in for when they put us in an office together, gave us classes to co-teach, or encouraged us to work together. I'm honestly surprised Pioneer Hall and Dr. Davis are still standing. These past few years have been some of the most challenging, stressful, and frustrating but that is not what I will take away from this experience. Instead, what I walk away with are hours of laughter with my Texas twin, ridiculous accent translations, an office gremlin, serious two step moves, countless car rides and road trips, a text message guide to getting through graduate school, a nephew, the older brother I never had, and the best friend that I could have ever asked for. I am so perpetually grateful for your friendship as it has been my sanity throughout this process.

Dr. Davis hearing you call me Dr. Enos was by far the proudest moment of my life. Words cannot express how much it means to me to have been given that honor by you. To have somebody who you hold in such high regard, who you have so much respect for, who you owe so much to give you that honor means the world to me. It means that I have somehow lived up to your expectations, to your standards. I don't know how and I don't know why but you believed in me undoubtedly. You have given me more than I could have ever imagined as a mentor. You adopted me into your life and your family (poor Tim). Thank you does not even begin to express my gratitude and appreciation, but I will try to make those two words mean all that I need them to. For allowing me to study

under you and accepting me as one of your students, thank you. For entertaining and answering all of my random questions; thank you. For all of the come-to-Jesus-meetings; thank you. For the constant, and necessary, reminders to slow down; thank you. For your patience and understanding; thank you. For the chocolate covered coffee beans and coffee filled meetings; thank you. For allowing me to work so closely with you in Project INVEST; thank you. For letting me haul kayaks across the street to try kayak soccer in the pool; thank you. For allowing me, and making sure, I got to research something so close to my heart; thank you. For investing in me personally and professionally, and believing in me; thank you. For your unwavering faith in me and my ability, thank you. For constantly pushing me, questioning me, and never letting me settle; thank you. For the necessary tough love and Ph.D. Dad love; thank you, it means more to me than you will ever know.

To my better half, I did it! Over the past year you question why I was constantly thanking you, this is my chance to explain why. There have been days, weeks, months where I have been so focused on completing this dissertation that I was unable to see anything beyond just that. Not once did you complain or lack understanding and patience. You continued to support me and encourage me. I know you took the brunt of my stress and frustration, but not once did you ever let it affect you. You've been my strength, my support, my shoulder to lean on and cry on, my rock. You knew when to hug me and let me cry, when to push me, when to tell me how proud you were of me, when to take my computer away, and when to get me a glass of wine and chocolate. You did not sign up

for the rollercoaster of getting a Ph.D., but thank you for taking that ride with me. There's nobody I would rather have by my side for the highs, the lows, and everything in between. I love you Ryan and I can't wait to see what is in store for us next.

ABSTRACT

MICHELLE ELAINE ENOS

A MOTIVATION PROFILE OF WOUNDED, INJURED, AND ILL MILITARY PERSONNEL WITH PTSD WHO PARTICIPATE IN ADAPTED SPORT

AUGUST 2015

The purpose of this study was to determine the sport motivation profile of wounded, injured, and ill military personnel with and without PTSD, to determine the quality of life profile of military personnel with and without PTSD, to compare the motivation and quality of life profile of military personnel with and without PTSD, and investigate a relationship between motivation and quality of life. The military personnel who participated in this study represented the Army, Air Force, Marines, Navy and Special Operations and participated in adapted sport competitions, clinics, and camps. The data were collected at multiple sites including Warrior Games, and Project INVEST clinics. Participants completed the Sport Motivation Scale (SMS), the World Health Organization Quality of Life Scale (WHOQOL-BREF), and additional demographic information (i.e. age, military branch, injury, service). The SMS can be scored resulting in an overall number of motivation on a -18 to 18 scale. The SMS can also be scored to determine means and standard deviations for the seven levels of motivation (amotivation, external regulation, introjection, identified regulation, intrinsic motivation

to know, to accomplish, and experience stimulation). The WHOQOL-BREF is scored on a 0-100 scale for the four domains of quality of life (physical, psychological, social, and environment). Descriptive statistics were utilized to describe the motivation and quality of life profile, a t-test was applied to investigate the difference in the motivation profile between those with and without PTSD, a multivariate analysis of variance (MANOVA) was employed to investigate the difference in quality of life profile between those with and without PTSD, and Pearson correlation was utilized to investigate a relationship between motivation and quality of life.

The findings of the study were that participants with PTSD were intrinsically motivated, those with PTSD had similar motivation profiles of those without PTSD, those with PTSD had similar quality of life profiles as those without PTSD, there was no relationship between motivation and the four domains of quality of life, and there was a relationship between the physical, psychological, environment, and social domains of quality of life for military personnel with and without PTSD.

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CHAPTER I

INTRODUCTION

The Global War on Terror (GWT) has included Operation New Dawn (OND), Operation Iraqi Freedom (OIF), and Operation Enduring Freedom (OEF). Since the beginning of the GWT the United States military has stationed the parents of over two million children overseas (Sherman et al., 2012). Due to the threatening and challenging environment experienced in GWT, members of the armed forces have been sent into combat in large numbers, and in many cases, for multiple deployments. Of those military personnel who have served in GWT, there have been over 51,000 fatalities (Department of Defense, 2013). While there are a smaller number of fatalities associated with the GWT than in any war since World War II, there are larger numbers of wounded, injured, and ill military personnel returning from combat. Among those who have served in Afghanistan, it is estimated that 31% have experienced posttraumatic stress disorder (PTSD; Tanielan & Jaycox, 2008). Advances in treatment and care have led to improvements in treating the physical injuries of military personnel; but what about treatment and care for those with psychological injuries (e.g., invisible)? Have those military personnel with psychological injuries (i.e., PTSD) been provided the same continuum of care to address a continuum of healing as those with physical injuries? Have those with PTSD engaged in the treatment options or avoided these services due to

associated social stigmas? A closer look at PTSD was warranted given the magnitude of impact on returning injured combat veterans.

Posttraumatic Stress Disorder

Posttraumatic stress disorder (PTSD) is becoming known as the signature wound of the GWT (Mowatt & Bennett, 2011). However, with physical trauma and pain management being of utmost importance following injury, psychological trauma often goes unaddressed. Further compounding the problem, service members are unlikely to pursue assistance for psychological trauma due to the associated social stigma (Sherman et al., 2012; Smith et al., 2013). In a study of the 2013 Wounded Warrior Project (WWP) Alumni conducted by Cerully, Oguz, Krull, and Giglio (2014), 37 to 47% of those who screened positive for PTSD, depression, and alcohol abuse demonstrated avoidance behaviors by putting off accessing mental health care. The 5th edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-V, 2013), defines PTSD as a trauma/stressor related disorder with several key characteristics: (a) stressors, (b) intrusion symptoms, (c) avoidance, (d) negative thoughts, (e) arousal, (f) frequency, (g) duration, and (h) acquirement. According to the DSM-V, stressors indicate that an individual must have experienced the trauma/stressor first hand, and potentially experienced repeated exposure to the trauma/stressor. If a close friend or relative experienced the trauma/stressor it had to be accidental and/or violent in nature. The trauma/stressor could not be due to media exposure. Intrusion symptoms are manifested through nightmares, persistent thoughts and emotions that impact an individual's functional ability (DSM-V,

2013). The DSM-V defines avoidance as the overwhelming attempt to evade thoughts and/or emotions, objects, people, places, and activities directly related to the trauma/stressor. Negative thoughts or emotions are described as having a constant and persistent feeling of blame or responsibility related to the trauma/stressor, or having extremely negative beliefs about the world (DSM-V, 2013). Arousal is the persistent and re-occurring hyper vigilance, exaggerated startle reflex, and inability to sleep which has a negative effect on an individual's ability to function on a daily basis (DSM-V, 2013). Furthermore, the key characteristic of frequency means that the symptoms of intrusion, avoidance, negative thoughts, and arousal have been experienced for over a month. Acquirement is defined as experiencing the above characteristics which are not related to any medication or other disability (DSM-V, 2013). With the multiple effects of PTSD and the different manifestations of this disorder one can see how PTSD can have a direct impact on an individual's relationships, communication, functional ability, family, social life, career, and overall quality of life. The impact of PTSD on the lives of military personnel makes this injury a priority for care and treatment.

Impact of PTSD

In 2013, the company Westat (Franklin et al., 2014) completed an impact study for the Wounded Warrior Project (WWP). Westat is an employee owned research corporation that performs non-partisan studies (retrieved from <https://www.westat.com/about-us>). Baseline data regarding WWP alumni was collected

which identified three categories of concerns: (a) trends, (b) physical and mental well-being, and (c) economic empowerment. For the category of physical and mental well-being PTSD was the most common reported wound (75%); other associated conditions were anxiety (74%) and depression (69%). Orthopedic injuries were not as prevalent as 57% of personnel reported severe back, neck, or shoulder injuries. Of the population surveyed, 59% reported that emotional issues impacted social activities (i.e., events with family and friends). Additionally, 66% of the population surveyed indicated that they had military experience that was so traumatic that they were not able to escape memories or the effects these memories had on their lives. Further, 74% indicated that they thought about the experience in unexpected situations (i.e., driving to the mall; watching a movie). In 2014 sleep problems (76%) were added as an injury or health problem. While this condition was a standalone variable, experiencing problems sleeping is a symptom often associated with PTSD due to the arousal characteristic described in the DSM-V, (2013). From this data one can infer that the psychological effects of war are affecting the lives of our military personnel who are in need of physical and psychological rehabilitation as part of their continuum of healing.

Several forms of rehabilitation have been implemented to help military personnel address the effects of PTSD as part of their continuum of care (e.g., medication, individual counseling). Currently research is being conducted at the University of Texas at Dallas in the Center for BrainHealth and Brain Performance Institute that is combining cognitive processing therapy with repetitive transcranial magnetic stimulation as a way to

mitigate the symptoms of PTSD. The hypothesis behind this combination of therapy and stimulation is that the symptoms of intrusion will be decreased and reactions to everyday events will become more proportionate as opposed to the hyper vigilance that is often experienced (Retrieved from http://www.brainhealth.utdallas.edu/research/research_topic/military_service_members_and_the_brain). Another form of healing has been the introduction of rehabilitative conditioning through participation in sport, referred to as adapted sport.

Role of Sport in Rehabilitation

The military has recently begun using adapted sport to provide wounded, injured and ill military personnel the opportunity to participate in team and individual activities to promote cooperation, team building, and confidence. However, the use of sport and activity as a form of rehabilitation is not a new idea along the continuum of care. First introduced by Dr. Ludwig Guttman, a neurosurgeon at a rehabilitation hospital in Stoke Mandeville, England in 1945, Dr. Guttman, used sport as the mechanism to reintegrate British soldiers back into society.

This same nonconventional care (i.e., use of sport) for wounded, injured, and ill military personnel is now supported by the federal government. A federal mandate was set forth that required all branches of the military to utilize adapted sport as part of their care for wounded, injured, and ill military personnel (Public Law 111-84, Section 724, October 2011). According to the Office of Veteran's Affairs (VA) Handbook 0802, wounded, injured, and ill are general classifications referencing military personnel's

medical condition. Wounded is “any injury inflicted by an external force”, injured is “any skin, tissue, or organ damage inflicted by an external force”, and ill is “any disease process that changes an individual from health to not healthy, i.e., PTSD” (p 9, 2011).

Organization of Care Using Adapted Sport

Each branch of the military has developed their own platform for adapted sport; the Army Warrior Transition Command (WTC) uses Warrior Transition Units (WTU), the Marine Corps has the Wounded Warrior Regiment (WWR), the Navy has the Safe Harbor Program, the Air Force has the Air Force Warrior and Survivor Care Program, and Special Operations has the Coalition of Care (Legislative Mandate – Wounded Warrior Units & Programs (Public Law 111-84, Section 724, October 2011)). The platforms that each branch uses were put into place because of the potential benefit of participation in adapted sport for wounded, injured, and ill military personnel as a mechanism of support and care. The most widely recognized platform is the Army’s WTUs. As stated in Public Law 111-84, Section 724, the goal of a WTU is to successfully transition soldiers and their families back to the Army or civilian life through a comprehensive program of medical care to adaptive reconditioning (i.e. continuum of healing). The WTC describes adaptive reconditioning as activities and sports, which is synonymous with the principal investigator’s (PI) definition of adapted sport. Therefore, the term adapted sport will also include adaptive reconditioning.

A Triad of Care

Through a WTU wounded, injured, or ill military personnel receive care through participation in adapted sport with the support of a triad of care. This comprehensive program of medical care consists of occupational therapists, physical therapists, surgeons, nurses, case managers, and adapted sport and activity coordinators. According to the Warrior Transition Command there are currently 25 WTU, and 13 Community Care Units (CCU) in the United States (Warrior Transition Command, July 2014). A CCU is established for those individuals who can heal in their home communities with the support of their family and community instead of the day to day care provided in a WTU (Warrior Transition Command, 2014). Those individuals in a CCU still continue to receive a continuum of care from a cadre, triad of leadership, medical treatment facility and staff, as well as the WTU staff and installation resources. According to the Warrior Transition Command each CCU is a part of a WTU on a local Army installation to ensure that all wounded, injured, and ill military personnel have access to the best possible resources and promotes a continuum of healing.

Providing Care to Address Six Domains

According to a policy memo by the Warrior Transition Command (WTC), their purpose is to “provide guidance for incorporating activities from all six domains (physical, emotional, spiritual, social, family, and career) encouraging Soldiers to reach their maximum potential” (p 2). The physical domain consists of utilizing activity and sport to target and increase mental, emotional, and physical well being in addition to

building resiliency in order to facilitate the soldier returning to active productive lifestyles. While each soldier's profile and injury is different, WTC puts forth that each soldier will participate in a minimum of 150 min of moderate intensity physical activity along with a minimum of two adaptive reconditioning activities per week (Department of the Army, 2014). Adapted sport through a WTU or CCU consists of therapeutic events, therapeutic trips, participation in an intervention program, behavioral health or traumatic brain injury (TBI) clinics, leisure activities, and competitive events at the unit, regional, or national level (retrieved from http://www.wtc.army.mil/documents/factsheets/CCU_Factsheet.pdf). The overall intent, as described in the WTC memo, is "that Soldiers will adopt an activity that they will continue once they leave the Warrior Care and Transition Program" (pg 4) as "regular activity throughout the day can improve health by reducing stress, strengthening the heart and lungs, increasing energy levels and improving mood" (pg 4).

The utilization of adapted sport is supported by the federal government and the WTC highlights the benefits of adapted sport related to the physical, emotional, spiritual, social, family, and career domains. Despite the support and benefits of adapted sport wounded, injured, and ill military personnel, particularly those with PTSD, are experiencing barriers or are demonstrating avoidance behaviors (i.e., not attending) in utilizing this form of care.

Symptomology Associated with PTSD Related to Care and Social Stigmatization

One characteristic of the symptomology associated with PTSD is avoidance. As previously described, avoidance is an overwhelming attempt to avoid thoughts and/or emotions, objects, people, places, or activities, directly related to the trauma/stressor, and could be one of the reasons that individuals with PTSD do not access care (DSM-V, 2013). Hoge et al., (2004) reported that 38-45% of military personnel with mental disorders indicated an interest in receiving help but fewer (23-40%) reported having received professional help over a year's time. In other words, they were interested, but for some reason avoided care which may have impacted their continuum of healing.

Further, those who met the criteria of having a mental disorder were twice as likely to be concerned about being stigmatized (Hoge et al., 2004). The authors go on to discuss that of specific concern to military personnel is how they will be perceived by peers and leadership for accessing mental health care. Those who were most concerned about this stigma were those personnel who demonstrated the greatest need for care from mental health services (Hoge et al., 2004).

Barriers to Seeking Care

In separate studies, Vogt (2011) and Ouimette et al. (2011) reported three domains related to barriers for seeking health care among military personnel; individual background characteristics, institutional factors, and stigma-related beliefs about mental illness and treatment. The authors reported that the stigma related to the act of seeking

help and social consequences were the most prevalent reasons reported for individuals with PTSD to avoid treatment. Vogt (2011) elaborated on the impact of the negative beliefs about mental health treatment in military and veteran populations, suggesting that the “high value placed on emotional strength in the military” (p. 136) may make military personnel more likely to have negative beliefs regarding mental health treatment. In the military, commanding officers have access to the mental health records of military personnel. Those personnel who are deemed “unfit” for service based on mental health records could be removed, or discharged from duty. These potential actions compound the fear to access care and result in avoidance. Related to the current study, examples of avoidance with regard to adapted sport would be to simply not attend the activity sessions (e.g., basketball practice, field trips to recreation centers, water sports activities). Lack of attendance could negatively impact benefits such as improved social skills, fitness profiles, or communication amongst team members. Reasons for avoidance to adapted sport should be investigated in order to better design programs that address the needs of the personnel. One approach to reducing avoidance behavior would be to identify the individual’s level of motivation. Learning what level of motivation injured personnel are functioning at, could contribute to better program planning, resulting in improved activity engagement and a stronger continuum of healing.

Motivation

Self Determination Theory (SDT) includes a definition of motivation that consists of a potential progression moving from amotivation, through extrinsic motivation, to

intrinsic motivation (Deci & Ryan, 1985, 2000). This theory of motivation suggests that three basic psychological needs (i.e., competence, autonomy, and relatedness) will determine the level of an individual's motivation. Those individuals who operate at the intrinsic level would be considered highly motivated. Further, SDT suggests that motivation has the ability to direct behavior (Deci & Ryan, 1985, 2000). In the current study the more an individual experiences feelings of autonomy, competence, and relatedness, the more they will be intrinsically motivated to participate in adapted sport (Deci & Ryan, 2000).

Lingering Problems Associated with Mental Health for Military Personnel

Vogt (2011) suggested that mental health problems may follow military personnel after they have finished their service and could potentially impact careers beyond the military. Due to the impact of PTSD, and the prevalence towards avoidance of mental health care, investigating how to increase participation in mental health care is of great importance. Investigating how to increase participation in mental health care for wounded, injured, and ill military personnel with PTSD will mitigate the impact of the disorder on an individual's life and career, whether it is in the military or as a civilian. This is supported by findings of enhanced psychological adjustment, communication and interaction with others, engagement, and proactive efforts among injured military personnel who participated in sport and activity (Burke & Utley, 2013; Machida, Irwin, & Feltz, 2013; Mowatt & Bennett, 2011).

In the current study, and to address improvement in the continuum of care and continuum of healing, the sport motivation profile of wounded, injured, and ill military personnel with PTSD was assessed. While seeking to establish the motivational profile of those with PTSD, a comparison of those military personnel with and without PTSD was conducted. The results of this study, could serve as a means to improve the continuum of care and promote the continuum of healing for those military personnel with PTSD using the framework of Self Determination Theory.

Self Determination Theory

Deci and Ryan (1985) define motivation within SDT based on three needs; competence, autonomy, and relatedness. All three needs must be satisfied, focusing on anything less than all three will result in the individual experiencing negative consequences associated with reaching their optimal development. An individual whose needs of competence and autonomy are being met through participation in an adapted sport such as sit volleyball, but does not feel related to the experience (relatedness) may not become intrinsically motivated to participate. Self Determination Theory contributes pursuit and attainment of a goal, based on the degree to which the goal contributes to an individual's feelings of competence, autonomy, and relatedness. Therefore, the greater a goal meets need satisfaction the more likely a person will be to continue working towards attainment of that goal (Deci & Ryan, 1985). If an individual is not participating in a recondition program that includes adapted sport, and it is determined this individual is

amotivated, the WTU commanders need to increase that individual's needs of competence, autonomy, and relatedness in order to increase sport participation. Self Determination Theory can provide a link between motivation and behavior as "people will pursue goals, domains, and relationships that allow or support their need satisfaction" of competence, autonomy, and relatedness (Deci & Ryan, p. 230).

Innate Psychological Needs

According to Self Determination Theory (SDT) an individual's behavior, psychological growth, integrity, and well being are directly impacted by these same three innate psychological needs (i.e., competence, autonomy, and relatedness; Deci & Ryan, 2000). Deci and Ryan (1985) explain in great detail these innate psychological needs as "they refer to innate and life-span tendencies toward achieving effectiveness, connectedness and coherence" (p. 229).

Competence is identified as the ability and confidence to complete a task or skill in a manner that signifies contribution and success (i.e. ability to make a free throw in a wheelchair basketball game). The importance of an individual feeling, or recognizing, that their skills played a role in the successful completion of a task or skill is monumental in SDT (Deci & Ryan, 1985, 2000). Simply being on the court during a win does not translate to feelings of competence, unless the participants played a causal role in that win.

Autonomy is the ability to make self-initiated decisions regarding a task or skill (i.e. decision within game context to pass, dribble, or shoot). When an individual feels as

though they are in control and are acting of their own volition internally, instead of responding to rewards, threats, punishments externally, they experience feelings of autonomy (Deci & Ryan, 1985, 2000). Deci and Ryan (2000) discuss the importance of autonomy as it is necessary to reach the highest level of motivation according to Self Determination Theory; intrinsic motivation. Further, for intrinsic motivation to flourish, innate need of relatedness must be present.

Relatedness is when an individual feels relational support from an individual or individuals (i.e., when a player feels as though their coach is caring and invested in them). It is this sense of security that positively impacts an individual's motivation. If a person experiences autonomy, competence, and relatedness associated to a task or skill, that individual will be motivated to participate in said activity. With avoidance being such a strong characteristic of PTSD, related to mental health care, investigating the level of motivation this population exhibits is important to potentially combat that avoidance behavior. Using motivation as a medium to assist individuals with PTSD to access mental health care could lead to a lapse in their symptoms of PTSD, give them the tools to overcome the effects of PTSD on their lives and the lives of those around them, or provide them with a support network. Measuring motivation can be beneficial to participation as it can be the way to overcome avoidance, therefore increasing participation in a continuum of care and healing which includes sport. Determining the levels of motivation (i.e., amotivation, extrinsic, or intrinsic) will provide information

related to what will move an individual towards the highest level of motivation or being intrinsically motivated and minimizing avoidance behaviors.

Levels of Motivation

Deci and Ryan (2008) posited that the levels of motivation would be an effective means of forecasting psychological health and well-being, effective performance, creative problem solving, and deep or conceptual learning; all important traits for participation in a sporting event or activity. Deci and Ryan further define motivation as: (a) amotivation (b) extrinsic, and (c) intrinsic (2008).

Amotivation

Amotivation is when an individual has no intention, or motivation, to behave or act (will not attend practice sessions for sitting volleyball). At this stage an individual feels as if they have no control over a specific outcome (e.g., have minimal skills and feels they are likely not to play). When an individual feels that no amount of practice will positively impact their ability, they are amotivated.

Extrinsic Motivation

Extrinsic motivation is when an individual exhibits a behavior based on external reinforcers, which could be positive or negative. An individual who attends wheelchair basketball practice because they do not want to be reprimanded, or because they want to be praised by their commanding officer is exhibiting behaviors based on extrinsic motivation. Being reprimanded or praised by another individual is a negative or positive

reinforcer that comes from an outside source, which makes it an extrinsic reinforcer. An extrinsic reinforcer could also be a tangible item such as a medal or trophy.

Intrinsic Motivation

Intrinsic motivation differs from amotivation and extrinsic motivation because actions are not based on reinforcers. An individual is participating in an activity because the activity itself is rewarding and meets the psychological needs of competence, autonomy, and relatedness. The motivation for action originates from the satisfaction of the behavior itself. An individual who competes in the sport of sitting volleyball because they are confident in their skills, feels as though they are able to make the correct decisions in game play, and that their teammates care about them, would be intrinsically motivated helping to increase participation and minimize avoidance. Having a measure of this level of motivation will help direct changes in WTUs to promote growth among wounded, injured, and ill military personnel from amotivation to intrinsic motivation. Directors of such programs might consider encouraging participants and coaches to use more verbal praise and promote others' contribution to the activity, e.g., "great play, we could not have done it without you".

Self Determination Theory suggests that an individual's motivation can direct behavior, which in this case is participation in sport (Deci & Ryan, 1995, 2000). One of the tools for measuring motivation in a sport context is the Sport Motivation Scale (SMS) developed by Pelletier et al (1995).

Sport Motivation Scale

When Pelletier et al (1995) validated the SMS using a confirmatory factor analysis (CFA), which yielded normal distribution. A CFA model was also used to evaluate the adequacy of the factor structure. The 7 factors were assessed with a goodness of fit index (GFI), the adjusted goodness of fit index (AGFI), the root-mean-square residual (RMR), and the normed fit index (NFI). The results were .94 for GFI, .92 for AGFI, .48 for RMR, and .92 for NFI. The SMS was also used by Perreault and Vallerand (2007) to assess motivation in wheelchair basketball players with and without a disability. The authors found internal consistencies for the subscales ranging from .65 to .86 for those with and without a disability. The authors concluded that this was an acceptable level of internal consistency and that the SMS is a useful tool to investigate sport motivation of athletes with a disability.

Pelletier et al. (1995) emphasized that the SMS investigates perceived reasons for participating in sport and activity and can operationalize the “why” of participation. The SMS measures motivation on a 7-point Likert scale ranging from “1 = does not correspond at all” to “7 = corresponds exactly”. Specific questions on the SMS correspond to each level of motivation; amotivation, extrinsic motivation, and intrinsic motivation. The questions can be further broken down to give information regarding the three levels of extrinsic motivation and intrinsic motivation, which are discussed below.

Three Levels of Extrinsic and Intrinsic Motivation

The SMS breaks down extrinsic motivation (EM) into the three levels of: (a) external regulation, (b) introjection, and (c) identified regulation. External regulation is behavior that is directly controlled by external rewards or constraints (i.e., medals). Introjection is a form of motivation that has been internalized so there is no need for an external reward or constraint (e.g., member of winning wheelchair basketball team). Introjection consists of guilt and anxiety, such as participating in sport because the participant doesn't want to get yelled at by a commanding officer. Finally, identified regulation is considered to be extrinsic motivation that is internally regulated. When an individual is functioning at the identification level they value the behavior and choose to partake, but it is performed to achieve a goal (i.e., training to achieve a fitness level). Identified regulation is the highest form of self-determined EM, before moving into intrinsic motivation.

Intrinsic motivation (IM) is separated into the three levels of *to know*, *to accomplish*, and *to experience stimulation*. IM *to know* is the participation for enjoyment, IM *to accomplish* is participation for satisfaction and IM *to experience stimulation* is participating for excitement, fun, and peak experiences, i.e., competing at Warrior Games.

Motivation Related to Participation

The three levels of motivation (i.e., amotivation, extrinsic and intrinsic) can be utilized as predictors of performance in several domains, including sport (Deci & Ryan,

2008). The extrinsic and intrinsic levels of motivation energize and direct behavior; in the current study the behavior is participation in adapted sport (Deci & Ryan, 2008).

Therefore, using the SMS to determine levels of motivation and to establish a motivational profile for wounded, injured, and ill military personnel with PTSD can be beneficial for determining how to improve participation in adapted sport. Improving participation in adapted sport will help promote a continuum of healing which could potentially influencing quality of life.

Quality of Life

The World Health Organization (WHO) defines quality of life (QOL) as more than just quantity or one's life expectancy, but as physical, mental, and social well-being (1948). The WHO (1996) emphasized the notion that an individual's QOL is based on "the culture and value system in which they live and in relation to their goals, expectations, standards, and concerns" (p. 5). This definition gives greater meaning to the three components of QOL: (a) social-material conditions, (b) functioning, and (c) satisfaction. Social-material conditions include job loss, homelessness and divorce, while functioning incorporates social, interpersonal, or marital relationships. The last category encompasses overall life satisfaction, well-being, relationships, and parental accomplishments.

Quality of Life and PTSD

Schnurr, Lunney, Bovin, and Marx (2009) discussed the impact that the PTSD characteristics of intrusion symptoms, avoidance, negative thoughts, and arousal can have

on QOL. Schnurr et al., (2006) also discussed the importance of measuring QOL as those with PTSD typically experience lower measures of QOL. Schnurr et al. goes on to highlight how a change in PTSD symptoms could relate to change in QOL, further suggesting a relationship between PTSD and QOL, and the importance of investigating this possible relationship.

Quality of Life Assessment Tool

The World Health Organization's quality of life assessment, entitled WHOQOL-BREF, is an assessment that has been used with wounded, injured, and ill military personnel (Lundberg, Bennet, & Smith, 2011). This assessment contains 26 questions, on a 5-point Likert scale, that examine the domains of physical health, psychological health, social relationships, environment as well as two items on overall QOL and health. The WHOQOL-BREF is an abbreviated version of the WHOQOL-100 assessment. Instead of 100 questions, the WHOQOL-BREF assesses QOL in a manner that saves time, and minimizes burden on the participants (Skevington, Lotfy, & O'Connell, 2004).

Investigating QOL, and its potential predictability between Self Determination Theory (SDT) through the Sport Motivation Scale, is beneficial because characteristics of PTSD can negatively impact an individual's quality of life. If a relationship between the four domain scores from the World Health Organization Quality of Life (WHOQOL-BREF) and the Sport Motivation Scale exists, then there is an even greater benefit for mitigating avoidance behavior related to adapted sport among wounded, injured, and ill military personnel with PTSD.

Purpose of the Study

Therefore, the purpose of this study was threefold;

1. To identify the sport motivation and quality of life profile of those with and without PTSD.
2. To compare the differences in the sport motivation and quality of life profile between those with and without PTSD.
3. To investigate a relationship between motivation and quality of life for those with and without PTSD.

Definition of Terms

The following terms and definitions were essential to the purpose of this study. The definitions and terms are as follows:

Adapted Sport: Sport and physical activity for individuals with disabilities

Amotivation: No intention, or motivation, to behave or engage in a behavior

Autonomy: The ability to make self-initiated decisions regarding a task or skill; when an individual feels as though they are in control and are acting of their own volition internally, instead of responding to rewards, threats, punishments externally

Continuum of Care: Physical, emotional, spiritual, social, family, and career care and counseling that wounded, injured, and ill military personnel receive while in a transition unit.

Continuum of Healing: Rehabilitation and reintegration process for wounded, injured, and ill military personnel in the form activities and care available through a transition unit, such as adapted sport.

Competence: The ability and confidence to complete a task or skill in a manner that signifies contribution and success.

Extrinsic Motivation: When an individual exhibits a behavior based on external reinforcers such as praise or tangible rewards (i.e. medals, trophies).

Intrinsic Motivation: Participating in an activity because the activity itself is rewarding, behavior is not based on the acquirement of praise or tangible rewards.

Mindfulness (MBSR): “Paying attention in a particular way: on purpose, in the present moment, and nonjudgmentally” (Kabat-Zinn, 1994).

Motivation: The term motivation will be synonymous with “sport motivation” throughout the reading of this manuscript.

Non – PTSD: The participants in this study who were identified as non-PTSD had one or more wound, illness, or injury such as spinal cord injury, traumatic brain injury, anxiety, depression, gunshot wound, visual impairment hearing impairment, amputation, hip, or heart conditions.

Play Community: “An authentic social environment” (Johnson, Bolter, Stoll, p 24) for individuals to learn an activity or sport; fosters the needs of competence, autonomy, and relatedness as defined by Self Determination Theory.

Posttraumatic Stress Disorder (PTSD): Trauma/stressor related disorder with several key characteristics; (a) stressors, (b) intrusion symptoms, (c) avoidance, (d) negative thoughts, (e) arousal, (f) frequency, (g) duration, and (h) acquirement. (DSM-V) For the purposes of this study the participants were categorized as having PTSD when they identified PTSD on the demographic portion of the survey. In this study the participants with PTSD also reported having another wound, injury, or illness such as traumatic brain injury, spinal cord injury, gunshot wound, depression, visual impairment or hearing impairment.

Quality of Life: An individual’s physical, mental, and social well-being.

Relatedness: When an individual feels relational support from an individual or individuals

Self Determination Theory: Developed by Deci and Ryan (1985), a theory of motivation that can drive behavior based on the three psychological needs of competence, autonomy, and relatedness.

Separated: No longer with the military; separation could be due to a variety of reasons.

Sport Motivation Scale: Survey of sport motivation based on Self Determination Theory which gives measures of amotivation, extrinsic motivation, and intrinsic motivation based on a 7-point Likert scale. This tool was used as it has been utilized with individuals with disabilities.

Symptomology: Characteristic or symptom associated with a disease, disorder, disability.

Warrior Transition Unit (WTU): Each branch of the military utilizes their own platform to implement adapted sport as a form of rehabilitation and reintegration for wounded, injured, and ill military personnel, this paper will use Warrior Transition Units (WTU) to refer to all platforms.

Limitations

This study is subject to the following limitations:

1. Participants were not representative of a larger population due to the unique characteristics of PTSD.
2. There was not a larger sample size due to the protected nature of wounded, injured, and ill military personnel.
3. The participants' degree of effort when completing the survey.
4. The PI's inability to gain access to more adapted sport events.
5. Categories of disability were not clearly interpreted by the participants.
6. Utilization of the SMS-I as opposed to the SMS-II.
7. Use of the SDI instead of mean scores for three levels of motivation.

Delimitations

This study was subject to the following delimitations:

1. The diagnosis use of participants with PTSD.
2. The exclusive use of the category of wounded, injured, and ill military personnel with PTSD.
3. Time constraints due to competition, clinic, and camp schedules.
4. Change in coaching or command staff working with the wounded, injured, and ill military personnel.
5. Constructs were measures on a 7-point Likert Scale.
6. Scoring of the Self Determination Index.

CHAPTER II

REVIEW OF LITERATURE

While assigned to a WTU wounded, injured, and ill military personnel receive physical, emotional, spiritual, social, family, and career care and counseling (i.e., continuum of care). For military personnel to progress through the rehabilitation and reintegration process it is necessary for them to participate in the activities and care available to them through the WTU, such as adapted sport (e.g., continuum of healing). One of the barriers to participation in a WTU among military personnel with PTSD is avoidance to mental health care due to social stigmas. Avoidance has been reported as a prevalent characteristic among individuals with PTSD, specifically military personnel with PTSD (Hoge et al. 2004; Ouimette et al. 2011; Vogt, 2011). Avoidance is a contributing factor to those wounded, injured, and ill military personnel with PTSD not accessing conventional and unconventional mental health care, such as adapted sport. Further compounding the avoidance characteristic of those with PTSD is the associated stigma with accessing mental health care. It has been reported that military personnel often do not access mental health care for fear of how they will be perceived by peers and leadership, the possible social consequences, and the potential of being deemed “unfit” for service (Hoge et al., 2004; Ouimette et al., 2011; Vogt, 2011) which contributes to the

behavior of avoidance. In fact, the concern regarding this ongoing stigma received a great deal of attention by the House and Senate Appropriations Committees for the 2014 fiscal year (Gibbons et al. 2014). This committee provided \$512.5 billion in funding for health and quality of life programs for military personnel in the armed forces (retrieved from <http://.appropriations.house.gov/news/documentsingle.aspx?DocumentID=343918>).

Participation in Care

When it comes to the stigma associated with utilizing mental health services among military personnel, Quartana et al. (2014) attributed “the military culture of being physically and psychologically resilient” (p 1671) as a contributing factor to the social stigma. Only 40% of the soldiers with mental health problems access care, and 50% of that population actually seek intervention after a clinical referral. These percentages could be due to reports that soldiers perceived seeking mental health care as “likely to have a negative impact on career advancement and that doing so would be associated with lack of unit support” (Quartana et al. p. 1671). To further explore avoidance and stigma associated with mental health care among the military population Quartana et al investigated trends from 2002 to 2011 utilizing data from two independent sources, the Health-Related Behavior (HRB) Survey and Land Combat Study (LCS) Survey. These surveys were administered to active duty U.S. soldiers who were considered wounded, injured, or ill.

Results from the HRB indicated that there was a 75% increase in utilizing mental health services from 2002 to 2008, with approximately 28% of the soldiers seeking care in 2008. According to the LCS data there was a 94% increase in utilization with 14.8% of military personnel surveyed reporting that they utilized care in 2011, compared to the 8% in 2003. The data highlight an increase in the utilization of mental health services among wounded, injured, and ill military personnel.

The negativity associated with accessing mental health services decreased from 48% in 2002 to 35% in 2008 according to the Health-Related Behavior Survey, and from 51% in 2003 to 44% in 2011 according to the Land Combat Survey. This decrease in negativity may have minimized the career damaging stigma associated with mental health services. While there has been a decrease in the associated stigma of utilizing mental health care, and an increase in mental health care utilization, there are still a large percentage of military personnel not accessing this service. Mental health care continues to foster the negative stigma associated with utilizing mental health care for military personnel.

Perceived Barriers to Seeking Mental Health Services

A study conducted by Elbogen et al. (2013) investigated the perceived barriers to mental health services among separated Iraq and Afghanistan veterans and reported that 23-40% of veterans actually accessed care, and approximately 50% of those with PTSD or depression sought care. Elbogen et al. also investigated avoidance behaviors by using

the National Post-Deployment Adjustment Survey as a recruitment tool to study veterans separated from active duty or currently serving in the Reserves or National Guard.

The results revealed that 43% of participants screened positive for probable PTSD, major depression, or alcohol misuse. These results also indicated that “engaging veterans in treatment is a separate challenge” (Elbogen et al., p 25). The stigma associated to accessing mental health services identified by the participants were that individuals felt they needed to solve mental health problems on their own, that medications would not help, they did not want to talk about their war experience, they did not want to feel down on themselves, or that they would be seen as weak by their peers for accessing care. These identified barriers and the associated stigma of seeking care, further suggested that avoidance behaviors related to accessing mental health services are prevalent among the military culture.

Personal, Practical, and Social Barriers

There has been further research completed on the perceived stigma associated with accessing care for those with PTSD. Gibbons et al. (2014) identified personal, practical and social barriers that influenced a service member’s compliance to seeking professional help. The personal barriers among the military population related to accessing care are identified by Gibbons et al. as fear of stigmatization, wanting to solve their own problems, and a belief that the system is not trustworthy. These personal barriers are important to recognize as Iversen et al. (2011) reported that an individual’s beliefs about

how they will be perceived by others are strong determinants of the likelihood of seeking mental health care.

The practical barriers identified by Gibbons et al. (2014) were being granted the necessary time off from work, transportation, financial issues, and frequent moves and changes in where they are stationed. The social barriers identified by the authors related to avoidance of mental health care were not wanting to be viewed as weak or having a character flaw, concerns about command access to mental health records, concerns about being rated or seen as unfit for duty, fitness for duty, and security clearance policy. The culture of obedience, service, mission, never failing or quitting, and overall excellence is likely what shapes military personnel's feelings and behaviors of avoidance in regards to accessing care. This stigma, and symptoms of PTSD, are what appears to contribute to avoidance behavior when it comes to accessing mental health care.

The Avoidance Behavior of Not Attending

The above studies are related to avoidance behavior in regards to accessing mental health care. The avoidance behaviors targeted in the current study were not attending or participating in adapted sport. Adapted sport within a WTU can be an example of a continuum of care, and considered by some to be nontraditional. Reported avoidance behaviors and lack of participation in traditional mental health care is a struggle that is shared by both forms of care (traditional and nontraditional). Related to the first purpose of this study, a way to address these avoidance behaviors is through the identification of a sport motivation profile among wounded, injured, and ill military personnel with and

without PTSD who participate in sport. Identification of a motivation profile will give further insight into whether avoidance behaviors can be overcome through motivation.

Motivation Related to Behavior Change

Studies have investigated participation related to accessing mental health care among wounded, injured, and ill military personnel particularly those with PTSD. Sayer et al. (2009) reported that many individuals with PTSD wait months, or even years, before accessing and participating in, mental health care despite opportunities to access traditional and nontraditional forms of care. This avoidance to accessing care could be due to stigma or symptoms related to PTSD. There is paucity in the literature related to the motivation of wounded, injured and ill military personnel with PTSD regarding accessing mental health care. Measuring motivation, grounded in Self Determination Theory (SDT) has been used to investigate the relationship between motivation and behavioral outcomes or behavioral change in a variety of other populations.

This section will focus on SDT as this theory “provides empirically informed guidelines and principles for motivating people to explore experiences and events...to make adaptive changes in goals, behaviors, and relationships” (Ryan & Deci 2008, p 186). With much of the research and investigation based on SDT focusing on the use of rewards, directives, feedback, praise, positive regard, and other change-related factors, this theory provides information that is easily transferable and applicable to the military population; especially those seeking care through adapted sport. The following studies are used to

demonstrate how programs, based on SDT, can be implemented to promote change and improve behavior

The Use of SDT in a Walking Exercise Program

A qualitative, longitudinal study conducted by Kinnafick, Thogersen-Ntoumani, and Duda (2014) investigated changes in the motivational processes of participants in a lunchtime walking program. Self Determination Theory (SDT) was the guiding framework and was utilized to gain information on those participants who adhered to the program, those that lapsed but reengaged, and those that dropped out of the program

Kinnafick et al. (2014) used semi structured interviews with participants over a 10 month timeframe; 16 weeks of the walking intervention and a 6 month follow up period. The participants in the study were 15 women from a British university workplace lunchtime walking intervention that consisted of 10 weeks of group led walks and 6 weeks of independent walking. All of the participants were considered to be physically inactive at the start of the study based on the recommended levels of physical activity for 18 to 64 year olds released by the Department of Health in 2011. The authors conducted four interviews with each participant; prior to the intervention, during Week 8, Week 16, and a follow-up interview 6 months after the intervention was completed. Through thematic analysis and member checking of the data the authors identified three major profile groups of the participants: nonadherence, lapse and readoption, and adherence.

The themes that emerged from the nonadherence group were a lack of internalization throughout the program, basic psychological needs not being satisfied, not embracing the

support available, and inconvenience of the program to individual lifestyle; none of which align with feelings of competence, autonomy, and relatedness.

In the lapse and readoption group there were themes of satisfaction of relatedness and competence throughout the program, autonomy at the readoption of physical activity, guilt and obligation, reliance on support, and internalizing motivations at the readoption stage. These feelings of guilt and obligation aligned with introjected regulation, which is a form of extrinsic motivation.

The adherence group was found to have themes of satisfaction of basic psychological needs, perceived support external to the program, perceived support within the program, and enjoyment. The themes Kinnafick et al. (2014) reported in the adherence group (satisfaction of basic psychological needs, perceived support external to the program, perceived support within the program, and enjoyment) replicated the three needs of competence, autonomy, and relatedness that align with intrinsic motivation through SDT. These findings support the research being conducted in the present study, as those who participated, and continued to participate, in physical activity were those who reported levels of intrinsic motivation. If military personnel report levels of intrinsic motivation related to participation in adapted sport they will participate, and continue to participate, in adapted sport.

The findings of Kinnafick, et al. (2014) suggested that during the adoption phase of exercise there was a satisfaction of competence and relatedness. However, for participants to move to the adherence phase, autonomy was the most prevalent

psychological need. Feeling as though the participants had free will and that they were in charge of their decisions and behaviors is what gave them their autonomy and led to them adhering to their behavior change, which in this case was participation in a walking program. This research further suggests the connection between SDT and behavior change related to physical activity.

The Importance of Social Support

The importance of social support to physical activity was reported by George et al. (2013) who conducted a study investigating the relationship between motivation-related variables, perceptions of social support, and intentions to be physically active. George et al. found that social support was positively related to the satisfaction of psychological needs of competence, autonomy, and relatedness, as discussed in Chapter 1. These psychological needs were positively related to perceptions of self-determination and physical activity intentions, thus supporting the importance of social support seen in the study by Kinnafick et al. (2014). The importance of social support to motivation and physical activity is prevalent in adapted sport as participants are often on teams, or working within groups, to learn and play a sport. The social support that is engrained into sport and physical activity is another benefit to the use of this nontraditional mental health care for military personnel in the form adapted sport.

The Use of SDT with Participants in a Rehabilitation Setting

A longitudinal study regarding the motivation of young adults with physical disabilities towards physical activity was conducted by Saebu, Sorensen, and Halvari (2013). Grounded in SDT, this study investigated the motivation of the participants during a 3-week physical activity rehabilitation stay (e.g., outdoor recreational activities). The authors utilized SDT as their theoretical framework due to its application to motivation related to physical activity, the focus on psychological needs, and the fact that these basic needs apply to all people regardless of ability level. Based on this reasoning the authors utilized a SDT approach, in which perceived autonomy support “was hypothesized to positively predict psychological needs satisfaction at the end of the stay” (Saebu, Sorensen, & Halvari, p 614), and that needs satisfaction would be positively associated with physical activity.

The participants took part in physical activities which were adapted to their specific needs such as swimming, skiing, riding, aerobics, and kayaking 6 days a week for 3-5 hrs per day. These activities were conducted in groups to foster relatedness where feedback and exchanging of activity experiences were encouraged. The 44 participants between the ages of 18-35 completed questionnaires regarding autonomy, psychological needs, motivation, self efficacy, and physical activity three times; at their arrival, departure, and 12 weeks after departure. The findings of Saebu et al. (2013) indicated that autonomy support was significantly positively associated with needs satisfaction, positive levels of autonomous motivation and efficacy, which positively predicted physical activity 12

weeks after departure from their rehabilitation stay. These findings suggested that autonomy and efficacy can have a positive impact on participation in physical activity and that “autonomy support would predict needs satisfaction, which would enhance people’s self efficacy and autonomous motivation, which, in turn, would predict increases in total volume of physical activity” (p 619).

The positive impact of autonomy and efficacy to physical activity among individuals with disabilities supports the use of SDT with wounded, injured, and ill military personnel with PTSD. While those participants in the Saebu et al. (2013) study had physical disabilities the basic needs of autonomy, competence, and relatedness defined in SDT applies to all individuals including those with PTSD. The participants in the Saebu et al. study were in a recreational setting with similar goals of the continuum of care within a WTU for wounded, injured, and ill military personnel. The use of the Self Determination Theory in such a setting substantiates using this theory related to adapted sport as a form of rehabilitation and reintegration.

The Use of SDT Related to Exercise in the Military

A study by Wilson, Markey, and Markey (2012) further supported the use of Self Determination Theory (SDT) among military personnel as they researched the motives for exercise of men in the military. The purpose of the Wilson et al. study was to “examine exercise motives as predictors of participant’s health and fitness within a military sample” (p 372). Wilson et al. used SDT to investigate motivation related to exercise since physical activity for those in the military is often mandatory and imposed

by an external source (i.e., activity leader, commanding officer) compared to exercise that is self determined (i.e., performed on one's own volitions). The participants were 114 males between the ages of 19 and 56 years stationed at an Air Force Base in New Jersey who were all part of a specific squadron. The participants completed mandatory group exercise twice each week, and individual exercise once per week. Those participants with low fitness scores participated in exercises at least five times per week. The participants completed an assessment related to physical fitness and a survey regarding reasons for participating in exercise.

The findings of Wilson et al. (2012) specified that exercise was more strongly related to health motives than obligatory motives or motives that were considered obligatory, or necessary as part of their job. The data also indicated that participants who had higher levels of intrinsic health-related motivation exhibited stronger, positive relation between exercising and health and fitness than those who had moderate or low levels of intrinsic health-related motivation. These findings further substantiate the current study.

Motivation based on of SDT can influence participation and behavior change. The use of such programs has gained support and is being considered as a potential tool for physical education teachers. As our society's physical activity levels continue to be below the suggested amount, and a large percentage of our population is considered obese, physical education teachers are the potential catalyst for change. Johnson et al.

(2014) suggested that physical education teachers embrace, and utilize, Self Determination Theory in their curriculum.

The Use of SDT in Physical Education

Self Determination Theory (SDT) can serve as a beneficial tool for physical educators for a variety of reasons. A student's desire to increase learning and physical activity often lies in their motivation (Johnson et al., 2014). Through feelings of competence, autonomy, and relatedness in physical education class a student's motivation can be positively altered to increase learning and time spent being physically active. As an individual experiences competence, autonomy, and relatedness they will progress through the motivation continuum towards intrinsic motivation. When an individual is intrinsically motivated to engage or participate in a specific behavior they "are more likely to pursue active lifestyles now and in the future..." (Johnson et al., p 23). This positive influence on motivation towards physical activity is what the authors hope will keep students active throughout their lives, beyond physical education, and address the obesity epidemic.

The three psychological needs of competence, autonomy, and relatedness are the tenets of Self Determination Theory (SDT). Johnson et al. (2014) suggest that these three needs can be addressed in physical education class through students feeling as though they are good at a skill based on self-referenced criteria, being given the opportunity to share in the decision making processes, and feeling socially connected. A play community can be utilized in physical education to address those three psychological

needs. A play community is an “authentic social environment” (Johnson et al., p 24) where individuals come together to learn an activity or sport. While this article focused on SDT in physical education, a play community was also utilized in the military in the form of a WTUs. While in a WTU, wounded, injured, and ill military personnel learn activity and sport as a form of the continuum of healing with a group of peers. This military play community, much like a physical education class, is well suited for addressing the needs identified by SDT as competence, autonomy, and relatedness.

The research detailed above indicated there is opportunity for behavior change related to participation in physical activity through motivation grounded in Self Determination Theory (SDT). The literature supports the first and second purpose of the current study in identifying a sport motivation profile of military personnel with and without PTSD and comparing the differences in the sport motivation profile of those with and without PTSD. What has yet to be discussed is the development of a quality of life profile and the third purpose this study which was to determine if there was a relationship between the profiles of motivation and quality of life.

Quality of Life

Quality of life is defined by The World Health Organization (WHO) as more than just quantity or one’s life expectancy, but as physical, mental, and social well-being (1948), which is emphasized by an individual’s culture and value system (1996). It has been reported that individuals with PTSD typically experience lower measures of quality of life (QOL), likely due to avoidance behavior, intrusion symptoms, negative thoughts and

hyperarousal associated with the disorder (Schnurr, Lunney, Bovin, & Marx, 2009; Schnurr et al. 2006). As the military has a culture and value system of its own, this definition of quality of life is beneficial to the third purpose of this study.

Activity and Quality of Life

A study conducted by Kearney et al. (2012) investigated the effects of a mindfulness program on PTSD, depression, and quality of life in a veteran population. Mindfulness was defined as an enhanced awareness and attention to the present reality or a current experience (Kirk, B., & Richard, R., 2003). Due to the large number of military personnel with PTSD the Veterans Administration had recommended cognitive processing therapy, prolonged exposure, stress management skills training, and eye movement desensitization reprocessing as psychotherapeutic treatments for individuals with PTSD (Kearney et al., 2012). However, the dropout rates and limited ability to deliver these practices to a large amount of patients is why a mindfulness program was being investigated as a medium “suitable for broad implementation” (Kearney et al., p 102).

Two of the characteristics of PTSD were identified by the DSM-V as intrusion symptoms and negative thoughts. The skill of being able to pay attention to the present moment through mindfulness is advantageous to overcoming intrusion symptoms and negative thoughts. A clinical method of teaching mindfulness through a standardized class series, abbreviated as MBSR, was utilized in this study. The participants in the study conducted by Kearney et al. (2012) met once per week for 2.5 hrs over an 8 week time frame. During the 2.5 hr meetings the participants practiced mindfulness meditation

and yoga, received instructions from the teacher, and discussed homework assignments. The participants in this longitudinal follow-up study by Kearney et al. (2012) were 92 veterans with a high prevalence of PTSD. During this study the participants took part in MBSR, which was delivered in groups of 20-30 participants. MBSR was provided to the participants in addition to their usual care. The participants completed checklists, questionnaires, depression scales, health related quality of life surveys and a mindfulness questionnaire at baseline, and at 2 and 6 months post baseline. The findings of this study revealed that veterans who took part in the mindfulness program (MBSR) experienced significant improvement in quality of life related to mental and physical, as well as improvement in measures of PTSD, depression, experiential avoidance, and behavioral activation.

Mindfulness was defined as a certain way of paying attention, and as part of the mindfulness course (MBSR) individuals took part in yoga as a form of mindful movement. While this study focused on mindfulness, it also utilized a form of physical activity; yoga. This study by Kearney et al. (2012) does address the possibility that movement can enhance quality of life in individuals with PTSD, which further substantiates the study of the PI to investigate a relationship between motivation related to movement and sport to an individual's quality of life. Kearney et al. also suggested that MBSR was utilized in their study due to the fact that it can be disseminated to large groups. Much like MBSR, adapted sport is a medium that can be used with large groups

making it an advantageous form of nontraditional health care for wounded, injured, and ill military personnel, particularly those with PTSD.

A study conducted by Rosenthal, Grosswald, Ross, and Rosenthal (2011) investigated the potential impact of transcendental meditation (TM) in treating veterans of Operation Enduring Freedom (OEF) and Operation Iraqi Freedom (OIF) with PTSD to improve quality of life. The authors suggested that due to the stigma of mental illness, the potential to impact career advancement, a shortage of trained specialists, and limited access to care is why “additional effective treatments that are easily accessible and perceived as non-stigmatizing are needed” (Rosenthal et al., p 626). The participants in this study were OEF and OIF veterans between the ages of 18 to 65 with a history of moderately severe combat related PTSD. The participants practiced TM for 20 min twice a day over a 3 month timeframe. The participants completed surveys and questionnaires related to quality of life, PTSD, depression, and combat exposure at baseline and Weeks 1, 2, 4, 6, 8, and 12. Results indicated that those individuals who participated in TM experienced alleviated PTSD symptoms, and improved quality of life. At the 12 week check-up participants also indicated that they were feeling calmer, less stressed, and less anxious with some even reporting improvements in their sleep (Rosenthal et al., 2011). The authors investigated TM as an independent variable. Rosenthal et al utilized TM as it is an activity that is simple to learn and can be practiced at any time in almost any place without the stigma associated with seeking mental health care.

These studies have suggested that participation in activities, such as meditation and yoga among individuals with PTSD can have a positive impact on their quality of life. Further, these activities were chosen due to the fact that large groups of veterans can participate in them without the stigma associated with accessing mental health care. Much like the activities of meditation and yoga, large groups of veterans can participate in adapted sport without stigma.

Prescribed Activity and Quality of Life

A study was conducted by Sorensen et al. (2010) which investigated the relationship between changes in physical activity to health-related quality of life with a civilian population. The program consisted of training and motivational counseling sessions. During the first two months the participants took part in one hr of group training twice a week, and one hr once a week over the following two months. The training varied based on each participant's individual needs. The participants completed surveys regarding level of physical activity and quality of life at baseline, and then again at 4, 10, and 16 months. The results of this study indicated that the participants who participated in activity that was prescribed by their general practitioner saw improvements in quality of life. While the study by Sorensen et al. (2010) was conducted with civilians, they participated in physical activity that was "prescribed" by their general practitioners. This exercise was similar to the role of adapted sport in a Warrior Transition Unit (WTU). Participation in sport while in a WTU is part of a soldier's rehabilitation and reintegration through their continuum of care. In both cases sport and physical activity

was used as a form of care, and in the study by Sorensen et al. participation resulted in improved quality of life.

Levels of Physical Activity and Quality of Life

A study conducted by Anokye et al. (2012) investigated the relationship between subjective and objective measures of physical activity and health related quality of life. Participants completed surveys regarding their health related quality of life and levels of physical activity as part of the Health Survey of England (HSE). The HSE is a national survey, which allowed Anoyke et al. to gather a nationally representative sample in this study. The over 5,000 participants between the ages of 40-60 wore an actigraph (i.e. portable activity monitor for steps, heartrate, and duration of activity) for seven days and logged daily use. Results indicated that higher levels of physical activity were associated with better health related quality of life. Anokye et al. (2012) also reported that better health related quality of life was consistent regardless of what type of physical activity the participant engaged in. These findings are beneficial and relate to the current study investigating a relationship between sport motivation and quality of life due to the various forms of physical activity an individual can engage in while in a WTU. The findings of Anokye et al. suggest that regardless of whether an individual participates in traditional sports or recreation of adapted sport (e.g., wheelchair basketball), there is the opportunity to increase quality of life.

Self Determination Theory, Motivation, and Quality of Life

A study was conducted by Gillison, Standage, and Skevington (2006) which explored the relationship between exercise motivation grounded in Self Determination Theory (SDT), exercise behavior, and quality of life. The participants were 580 adolescent students from coeducation schools in England. The students completed surveys and measurements related to their BMI, weight, blood pressure, anxiety, goals, behavior, exercise, and quality of life. Results indicated that intrinsic goals positively predicted self-determined motivation, which positively predicted quality of life. According to Gillison et al. (2006) the results of their study suggested that extrinsic goals could have a negative impact on participation and quality of life. This finding is of interest because developing a motivation and quality of life profile could assist in developing program plans (ie. goals) to move individuals from extrinsic to intrinsic motivation to increase participation in adapted sport in a WTU. The study by Standage et al. (2006) supports the third purpose of this study

Research conducted by Standage, Gillison, Ntoumanis, and Treasure (2012) assessed a model of motivation, grounded in Self Determination Theory, on quality of life, physical self-concept, and activity. The participants in this study were 494 secondary school students from five state schools in England. During the data collection process students' motivation was assessed at baseline, one week, and two weeks later, with quality of life and physical self-concept also measured during the second week. The results of the study indicated that autonomy support had positive indirect effects of

autonomous motivation toward health related quality of life. Standage and colleagues also suggested that motivation can impact exercise and activity. Because of this indirect effect, motivation could have a relationship to quality of life.

Research conducted by Quaresma et al. (2014) investigated the effects of social support and behavioral regulation of exercise on physical activity and quality of life. In this group randomized designed study, schools were randomly assigned to the control or intervention group. The control group received general information regarding diet and physical activity. The intervention group received the same information as the control group as well as an additional 90 minute weekly session that consisted of an educational health and weight program, and physical activity which utilized an autonomy supportive style. Data were collected at pre and post-intervention regarding physical activity, quality of life, behavioral regulations, and perceived social support. Descriptive statistics, t tests, structural equation modelling, comparative and incremental fit index, and root mean square error of approximation was utilized. The findings of this study revealed that quality of life was positively affected indirectly through changes in parental or peer support. Further, quality of life was positively affected indirectly through change in support in conjunction with intrinsic motivation. Quaresma et al. (2014) posited that positive changes in quality of life “were influenced by the endorsement of more autonomous forms of motivation” (p 912). According to the results motivation has the potential to have a relationship to quality of life, thus supporting the third purpose of this study.

CHAPTER III

METHODS

Procedures

The military personnel who participated in this study represented the Army, Air Force, Marines, Navy and Special Operations branches of service and participated in adapted sport competitions, clinics, and camps. The data were collected at multiple sites including Warrior Games, and Project INVEST clinics, and required the principal investigator (PI) to travel to establish consistent data collection procedures at each site. The PI made contact with the coordinator for each event and obtained permission for recruitment and data collection. Once permission from the event coordinator was obtained, the PI secured a location where the participants completed the surveys (e.g., secure classroom, hotel meeting room). The PI also secured a location for recruitment at each event (i.e., competitor check-in, registration, practices). The interested participants were given information regarding the study and informed consent was obtained. Prior to participation the PI explained the purpose of the study, the risks of involvement (i.e., coercion, injury, confidentiality, loss of time, physical or emotional discomfort, loss of anonymity), the safe storage of the data and the referral list of mental health providers. The PI provided a reference list of mental health resources if a participant felt as if he/she needed such services. The PI also explained that participation was completely voluntary

and could be suspended at any time. Participants' questions could be asked in front of the group, or privately with the PI. After the recruitment consent process, those intending to participate were invited to complete the Sport Motivation Scale (SMS), the World Health Organization Quality of Life Scale (WHOQOL-BREF), and additional demographic information (i.e. age, military branch, injury, length of service). Accommodations for completing the survey were made on a case-by-case basis (i.e., proctoring for those individuals that needed the survey read to them). All procedures and consent forms were approved by the University's Institutional Review Board for Protection of Human Subjects.

To complete the surveys the individuals were allowed to sit in a specified location under the supervision of the PI. Once engaged in the study, the participants were instructed to work independently until completion. If someone felt they could not complete the study due to stress or lack of understanding they were escorted out of the room by the PI, and made sure there were no repercussions for not completing the study. The SMS survey contained 28 questions, and was printed on both sides of one sheet of paper. The WHOQOL-BREF contained 26 questions, and was printed back to back on one sheet of paper, and one side of an additional sheet of paper. When a participant completed the surveys, they raised their hand, and the PI walked to the person, secured the materials, and immediately placed them in an envelope. At the end of each session, completed surveys were stored in the envelope by the PI for transport. Since completion of data collection the PI relocated to another university. Original surveys and initialed

consent forms remain with the PI, and copies were forwarded to Texas Woman's University and locked in a cabinet drawer at Pioneer Hall office 119B.

Data Analysis

The Self Determination Index (SDI) is a composite score representing motivation based on the participant's responses on the Sport Motivation Scale (SMS). The SDI is computed based on the participant's average score for intrinsic motivation, identified regulation, extrinsic motivation, external regulation and introjected regulation, as well as amotivation. The higher the SDI the more self-determined an individual is considered to be. The SDI score can range from -18 to 18 with higher scores defining intrinsic levels of motivation and lower scores defining amotivation (Halbrook et al., 2012). The SDI scores were broken down by scores of -18 to -6 representing amotivation, -6 to 6 representing extrinsic motivation and 6 to 18 representing intrinsic motivation.

Descriptive statistics (e.g., means and standard deviations) were used to report the motivational and quality of life profiles of military personnel with PTSD and without PTSD. The means and standard deviations were based on the 7-point Likert scale of the SMS. The higher the average score more a person aligns with that specific level of motivation. There were specific questions that measured amotivation, the three levels of extrinsic motivation; external regulation, introjection, and identification, and the three levels of intrinsic motivation; *to know*, *to accomplish*, and *to experience stimulation*.

To address the second purpose of this study which was to determine the difference in sport motivation and quality of life profiles, two different statistical analysis were used; a

t-ttest and MANOVA. A t-test was used to determine if there were differences between participants with and without PTSD for the Self Determination Index (SDI) scores. As an individual feels competent, autonomous, and related to a sport or activity their motivation will progress through the self-determination continuum from being amotivated, to extrinsically motivated, to intrinsically motivated. The SDI is computed by the following equation:

$$SDI = (IM \times 2) + (Identified EM \times 1) + (External regulation and introjection \times -1) + (amotivation \times -2) \text{ (Sarrazin et al., 2002).}$$

To determine the differences in the quality of life profile between those with and without PTSD, multivariate analysis of variance (MANOVA) was utilized. The independent variable was disability (PTSD and non-PTSD), and the dependent variable was the four domains of quality of life; physical, psychological, social, and environment. The α was set at .025 since two analyses were run on the same independent variable (PTSD).

The third purpose of this study was to investigate if there was a relationship between motivation and quality of life. Pearson correlation was used to investigate if there were relationships among the four domains of quality of life and motivation using the SDI score.

The World Health Organization Quality of Life Scale (WHOQOL-BREF) consisted of 26 questions that were scored on a 5-point Likert Scale. There are 7 questions that measured the physical health domain, 6 questions that measured the psychological health

domain, 3 questions that measured social relationships, and 8 questions that measured environment. The WHOQOL-BREF also had one question that measured an individual's overall perception of quality of life and one question that measured an individual's overall perception of their health. The questions on overall perception were not a part of the four domains that were measured. The calculation for the perception of quality of life in the four domains; physical, psychological, social relationships, and environment is presented in Table 1.

Table 1
Equations for Computing Domain Scores on WHOQOL-BREF

Equations for computing domain scores	
Physical	$(6-Q3)+(6-Q4) + Q10 + Q15 + Q16 + Q17 + Q18$
Psychological	$Q5 + Q6 + Q7 + Q11 + Q19 + (6-Q26)$
Social	$Q20 + Q21 + Q22$
Environment	$Q8 + Q9 + Q12 + Q13 + Q14 + Q23 + Q24 + Q25$

The raw results for each domain were then transformed to a 0-100 scale as directed by the World Health Organization (WHO) (1996). The scores were scaled in a positive direction with higher scores representing higher perceptions of overall quality of life related to each domain. As recommended by the World Health Organization (1996), any assessment with more than 20% of the data missing was discarded. As one participant failed to meet that criterion their WHOQOL-BREF data were removed from the study.

CHAPTER IV

PRESENTATION OF FINDINGS

The findings from this study are presented under the following headings: (a) Participant Demographics (b) Sport Motivation and Quality of Life Profile of Military Personnel With and Without PTSD (c) Differences in Sport Motivation and Quality of Life for Those With and Without PTSD, and (d) Relationship Between Sport Motivation and Quality of Life for Those With and Without PTSD.

Participant Demographics

The participants in this study were men and women of the armed forces representing the Army, Navy, Air Force, Marines, Special Operations, and Reserved Forces. The 52 participants varied in age from 22 to 55 years and were placed into two categories related to disability; PTSD and non-PTSD. Of those who participated in this study 7% were female and 44% reported having PTSD. The 23 participants in the PTSD category identified themselves as having clinically diagnosed PTSD. All participants in the PTSD category also identified themselves as having comorbidity impairments such as depression, gunshot wound, hearing impairment, spinal cord injury, traumatic brain injury, or visual impairment. The 29 participants in the non-PTSD category also had comorbidity impairments identified as amputation, anxiety, depression, gunshot wound,

heart condition, hearing impairment, hip injury, spinal cord injury, traumatic brain injury, or visual impairment.

Sport Motivation and Quality of Life Profile of Military Personnel With and Without PTSD

Figure 1 provides a visual representation of the breakdown of the SDI score and the percentage of participants that fell into the three levels of motivation. This figure represents a motivation profile of those with and without PTSD based on amotivation, extrinsic motivation, and intrinsic motivation. As shown in Figure 1 none of the participants were amotivated. Table 2 does demonstrate that there was a higher percentage of participants with PTSD in the intrinsic motivation range.

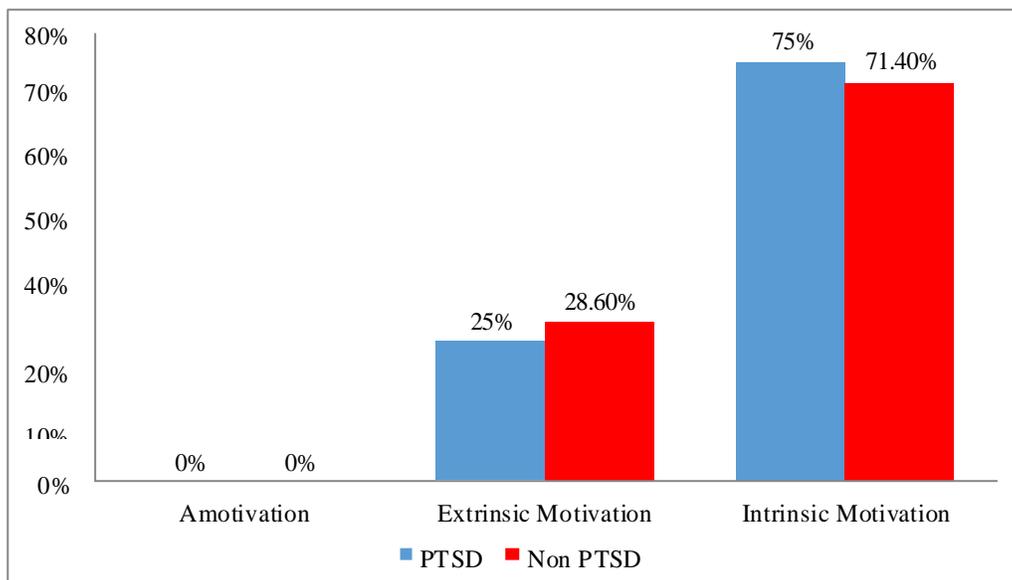


Figure 1. Percentage of participant's motivation levels based on SDI

Overall, 27% of the participants had a SDI score in the extrinsic range, and 73% had a SDI score in the intrinsic range. Of those participants with PTSD 25% had a SDI score in the extrinsic range and 75% had a score in the intrinsic range. Of those participants without PTSD 28.6% had a score in the extrinsic range and 71% had a score in the intrinsic range.

The mean SDI for all participants was 7.6 ± 3.3 . The means of the SDI of those participants with and without PTSD are reported in Table 2.

Table 2
Means and Standard Deviations of SDI Scores of Personnel With and Without PTSD

	<i>N</i>	Mean	<i>SD</i>
PTSD	22	9.2	3.7
Non-PTSD	29	8.4	3.4

Descriptive statistics were utilized to further investigate the motivation levels of the participants with and without PTSD. Motivation is reported as being seven levels: (1) amotivation; extrinsic motivation with three levels (2) external regulation, (3) introjection, and (4) identified regulation; and intrinsic motivation with three levels: (5) *to know*, (6) *to accomplish*, and (7) *to experience stimulation*.

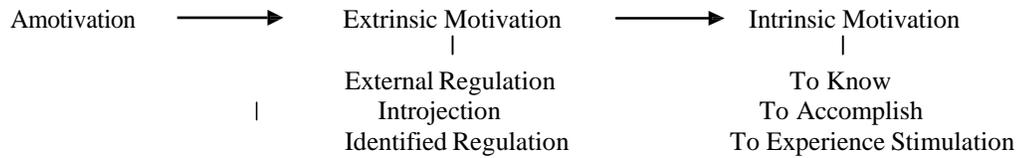


Figure 2. Levels of motivation

These motivation levels were investigated and reported in Table 3 using only the SDI number for overall motivation. The means and standard deviations for all seven levels of motivation (i.e., amotivation, external regulation, introjection, identification, *to know*, *to accomplish*, and *to experience*) were calculated based on the responses from the Sport Motivation Scale (SMS) which uses a 7-point Likert scale ranging from “1 = does not correspond at all” to “7 = corresponds exactly”.

Table 3
Means and Standard Deviations of 7 Levels of Sport Motivation of Wounded, Injured, and Ill Military Personnel With and Without PTSD Using SMS

Mean Statistic and Standard Deviation														
	Amotivation		Extrinsic Motivation						Intrinsic Motivation					
	Amotivation		External Regulation		Introjection		Identified Regulation		to know		to accomplish		to experience stimulation	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
PTSD	2.3	1.4	3.9	.93	4.3	1.2	5.1	.85	5.6	1.2	5.4	1.0	5.4	1.0
Non-PTSD	2.1	1.4	4.2	1.6	5.1	1.6	4.6	1.4	5.4	1.2	5.5	1.2	5.7	1.0

Cronbach's alpha was used to test the internal reliability of the seven levels of motivation. The results can be found in Table 4.

Table 4

Reliability Statistics of the 7 Levels of Motivation

Reliability Statistics							
		Extrinsic Motivation			Intrinsic Motivation		
	Amotivation	External Reg.	Introjection	Identified Reg.	to know	to accomplish	to experience stimulation
Cronbach's Alpha	.72	.72	.75	.69	.72	.72	.61

As reported in Table 3, wounded, injured, and ill military personnel with PTSD who participated in adapted sport had a mean score for amotivation of 2.3 ± 1.4 , while those without PTSD had a mean score of 2.1 ± 1.4 on the 7-point Likert Scale. The means and standard deviations for the external regulation, introjection, and identified regulation, the constructs for intrinsic motivation, *to know*, *to accomplish*, and *to experience stimulation* are also reported in Table 3.

To further investigate the motivation profile of the military personnel the means and standard deviation of those who were extrinsically and intrinsically motivated are reported in Table 5. Individuals were identified as being extrinsically or intrinsically motivated based on their SDI score. The means and standard deviations of the 7 levels of the SMS are presented in Table 5. All participants (i.e. with and without PTSD) are represented in Table 5.

Table 5

SMS Means and Standard Deviations Based on Extrinsic and Intrinsic Motivation for all Participants

	Amotivation		Extrinsic						Intrinsic					
			Ext. Regulation		Introjection		Id. Regulation		to know		to accomplish		ex. stimulation	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
EX	3.4	1.6	3.9	1.3	4.5	1.5	4.2	1.2	5.0	1.1	4.7	1.1	4.8	1.0
IN	1.6	.7	4.1	1.4	4.9	1.4	5.2	1.0	5.8	.9	5.8	.9	5.8	.9

To investigate the quality of life profile for those without and without PTSD the means and standard deviations for physical health, psychological health, social relationships, and environment were reported in Table 6. This information was used to describe the quality of life profiles.

Table 6

Means and Standard Deviations of Quality of Life of Wounded, Injured, and Ill Military Personnel With and Without PTSD

	PTSD	Mean	Std. Deviation	N
Physical Health	Non-PTSD	57.4	10.6	28
	PTSD	54.5	10.8	20
	Total	56.2	10.6	48
Psychological Health	Non-PTSD	69.1	16.0	28
	PTSD	61.7	13.5	20
	Total	66.0	15.3	48
Social Relationships	Non-PTSD	66.2	25.6	28
	PTSD	66.9	24.1	20
	Total	66.5	24.7	48
Environment	Non-PTSD	77.3	14.0	28
	PTSD	71.9	14.8	20
	Total	75.0	14.4	48

As discussed in Chapter 3 the scores for the four domains of quality of life (physical health, psychological health, social relationships, and environment) were equations from the World Health Organization (WHO, 1996). The scores are based on a 0-100 scale with higher numbers representing greater perceptions of quality of life. A visual representation of the means and standard deviations based on disability can be seen in Figure 3.

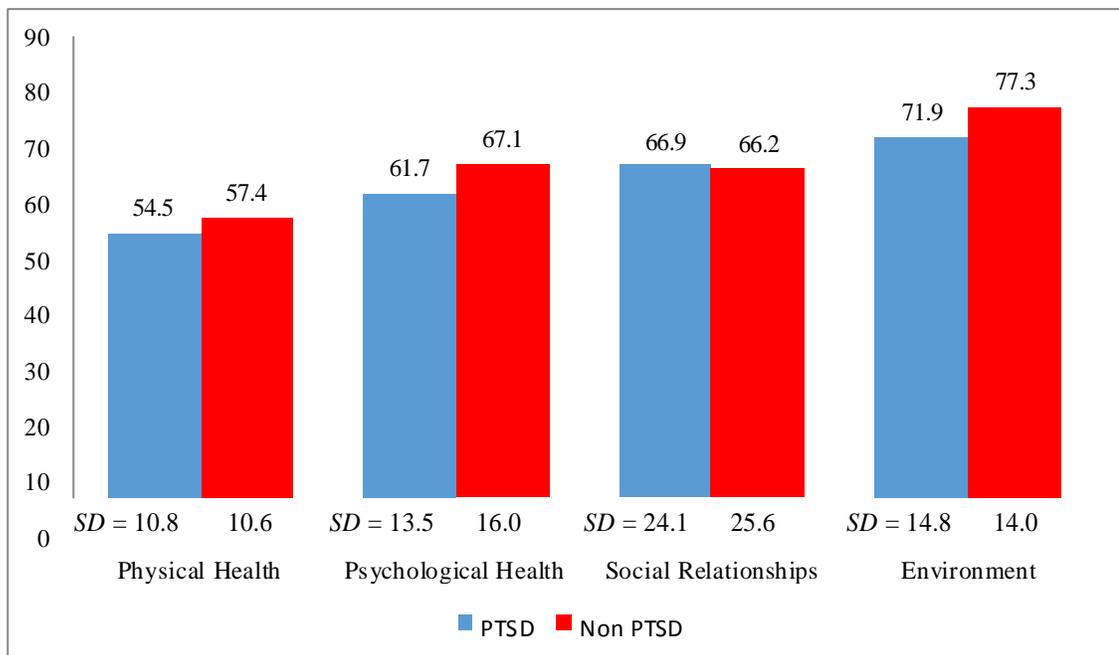


Figure 3. Means and standard deviations of the quality of life scores based on disability.

Differences in Motivation and Quality of Life for Those With and Without PTSD

A t-test was used to investigate whether there was a difference in motivation between those with PTSD and those without PTSD (independent variable of disability) and the SDI as the dependent variable. The data indicated that there was an outlier in the

PTSD group. A t-test was performed with and without the outlier, which yielded no difference in results. The results are reported without the outlier. The t-test results indicated that there is no difference in mean SDI between military personnel with and without PTSD, $t(49) = -.83, p > .05$.

To investigate the difference in the quality of life profile for those with and without PTSD a multivariate of analysis (MANOVA) was utilized. The independent variable was disability (PTSD and non-PTSD) and the dependent variables were quality of life which was measured in four domains; physical, psychological, social, and environment. As stated in Chapter 3 α was set at .025 since two analyses were run on the same independent variable (PTSD). Using Pillai's trace as a criterion [$V = .118, F(4, 43) = 1.434, p > .025$], the multivariate null hypothesis was retained; PTSD had no effect on quality of life for the four domains.

Relationship Between Motivation and Quality of Life for Those With and Without PTSD

The third purpose of this study was to investigate a relationship between motivation and quality of life. Pearson correlation revealed there was no relationship between quality of life and motivation as scored by the SDI among all participants in this study. The results of the correlation can be found in Table 7. Despite no relationship identified between QOL and Motivation (SDI), domains within the QOL assessment indicated substantial and significant relationship which will be discussed later.

Table 7
Pearson Correlation of Motivation and Quality of Life

	Physical	Psychological	Social Relationships	Environment	SDI
Physical		.477*	.449*	.678*	.178
Psychological		-	.560*	.512*	.208
Social Relationships			-	.585*	.123
Environment				-	.185
SDI					-

Note. * $p < .025$, $n = 48$

CHAPTER V
SUMMARY, DISCUSSION, FINDINGS, AND RECOMMENDATIONS
FOR FUTURE STUDIES

Summary

Clearly the Global War on Terror has taken a toll on our military personnel. The signature illness has been identified as that of posttraumatic stress disorder (PTSD), and has been the leading causality of veterans surviving combat. Those with PTSD have experienced significant barriers with the rehabilitation and reintegration process. All military branches have been affected by PTSD and all have implemented a mechanism to address rehabilitation; none more prominent than the Army's warrior transition units (WTU). WTUs have been established to bring a variety of coordinated rehabilitation services to military personnel. The intent of a WTU is to rehabilitate and help reintegrate those wounded, injured, and ill military personnel back into the military or transition to civilian life. A unique program within the WTU's is the Adaptive Reconditioning Sports (ARS) program designed to use sport and recreation as a means of assisting military personnel in the process of reintegrating. Military personnel with PTSD experience avoidance to rehabilitation as a symptom of the disorder, and therefore have an issue with attending many of the WTU programs designed as treatment.

Studies have found that service members with PTSD are unlikely to utilize assistance due to an associated social stigma (Smith et al., 2013; Sherman et al., 2012). Cerully, Oguz, Krull, and Giglio (2014) surveyed the 2013 Wounded Warrior Project Alumni and reported that 37 - 47% of participants who screened positive for PTSD, depression, and alcohol abuse have demonstrated avoidance behaviors by putting off accessing mental health care, which includes participation in adapted sport. With characteristics of avoidance, intrusion symptoms, negative thoughts, and arousal, those with PTSD should not avoid, but engage in care in the form of sports offered in a WTU. One way to counteract these avoidance behaviors is through the investigation of the motivation of those military personnel with PTSD who participate in adapted sport. Therefore there was a threefold purpose of this study (1) to identify the sport motivation and quality of life profile of those military personnel with and without PTSD, (2) to compare the differences in the sport motivation and quality of life profile between those with and without PTSD and (3) to investigate a relationship between motivation and quality of life for those with and without PTSD.

The Self Determination Theory (Deci & Ryan, 1995) was used as the theoretical framework. Military personnel were each given the Sport Motivation Scale (SMS; 1995) and the Quality of Life Inventory (1996) during military sport competitions, clinics, and camps. The SMS by Perrault and Vallerand, (2007) was administered to identify levels of motivation, and the World Health Organization's quality of life assessment (WHOQOL-BREF) was used to determine quality of life in four domains. Over 50 military personnel

self-reported their motivation or amotivation (no motivation) and quality of life responses. The results of the study indicated the sport motivation and quality of life profiles for those military with PTSD were the same as those without PTSD. In addition, quality of life assessments did not produce a strong relationship to motivational profiles for those with PTSD.

The findings within the limits of this study reported no relationship between motivation and quality of life. However, the positive result of those military personnel with and without PTSD having no difference in sport motivation should not go unnoticed. The similar motivation profile between these two populations indicates that participation in adapted sport is valuable for all participants.

Discussion

Through personal communication with command at two WTU's in Texas, a topic of concern was identified as the "rate of participation" or for the purpose of this study, the sequel of "avoidance behavior". As an example training camps for sport are available to wounded, injured, and ill military personnel. Communication with a Program Coordinator in the Air Force Adaptive Sports Warrior and Survivor Care Division has indicated that the Military Adaptive Sports Program, which is the official adapted sports program for the Department of Defense, has approximately 190,000 potential participants. Out of those potential participants, 550 attended camps (A. Moffett, personal communication, November 25, 2014). That means that less than 1% of potential participants take part in the adapted sport camps offered by the military. This drastic

number is skewed as the data collected by the Military Adaptive Sports Program is not exact. Each time an individual attends a camp they are counted as a potential participant, if an individual participates in three sports then they are counted three times. While this data from the Military Adaptive Sports Program is not exact there is further data from the contracted company Westat (Franklin, et al., 2013). According to their data approximately 54% of wounded, injured, and ill military personnel actually participate in adapted sport and adapted physical activity. This leaves a large percentage of this population who are not accessing the programs and possibly missing out on an important component in the continuum of healing such as adapted sport (i.e., amotivational). Investigating motivation that could be influencing sport participation is beneficial because competence, autonomy, and relatedness can be utilized as predictors of performance in several domains, including sport (Deci & Ryan, 2008). Further, intrinsic and extrinsic levels of motivation energize and direct behavior (Deci & Ryan), which can be used to influence behavior in adapted sport, i.e., attending sport camps or practices. The results of the present study indicate that those with and without PTSD have similar motivation profiles when they commit and participate in sport. The participation demonstrates an ability to overcome avoidance to this continuum of healing. Wilson et al. (2012) reported that intrinsic motivation was related to positive relationships between exercising and health and fitness. If wounded, injured, and ill military personnel exhibit intrinsic motivation, that same positive relationship between exercising, and health and fitness could be demonstrated. Sport programs that move wounded military personnel to

an intrinsic motivational profile could lead those with PTSD to overcome avoidance behaviors and increase their participation in adapted sport further their personal continuum of healing and care.

A comparison of those military personnel with and without PTSD was used as a secondary purpose of the current study. As reported in Chapter 4 results of a t-test yielded no difference in mean Self Determination Index (SDI) between these two groups. While there is no statistically significant difference in the composite score represented by the SDI, the means and standard deviations for the seven levels of motivation were further investigated. The additional levels of motivation included amotivation, external regulation, introjection, and identified regulation associated with extrinsic motivation (EM), and the three levels of intrinsic motivation (IM) identified as *to know*, *to accomplish*, and *to experience stimulation*.

Amotivation is described as when an individual has no intention, or motivation, to behave, i.e., when military personnel attend a practice based on orders from their superior with no intention to participate or practice on their own accord. There was no significant difference in the mean score for amotivation reported by those with and without PTSD (see Table 3). The participants in this study completed the surveys at sport competitions, camps, or clinics. The majority of the participants for this study were competing at Warrior Games which is a national competition in which athletes compete for selection to attend based on skill performance (i.e. qualifying times). By simply engaging in this event the participants were exhibiting some form of behavior (e.g. competition in track)

and demonstrating some level motivation. Therefore, the reported low levels of amotivation are an accurate representation of the population in this study.

Based on SDI score, 25% of those with PTSD and 29% of those without PTSD were extrinsically motivated. When an individual is operating at the extrinsic motivation level the behavior (i.e. participation in adapted sport), is exhibited due to external reinforcers. External reinforcement could come in the form of praise, a reprimand, or a tangible item (e.g., a coach giving a player a compliment after making a good play or receiving a medal for coming in first place). Awards, or external reinforcements, are a large part of adapted sport competition and could serve an important role in motivating those military personnel with and without PTSD. These awards could assist in creating an environment, or sub-culture of teamwork, that engages wounded, injured, and ill personnel in a positive manner. At Warrior Games each branch of the military competes against one another for a trophy named the Commander's Cup. The military branch that has the highest score at the end of Warrior Games is presented with the Commander's Cup, which is emblazoned with their branch. Within the context of Warrior Games, this trophy is an example of an extrinsic motivator. However, these extrinsic motivators could, at some point, keep an individual from progressing to intrinsic motivation. If the extrinsic motivator is not viewed as an appropriate measure of the participant's effort, they may be discouraged to participate or engage as opposed to being motivated to do so.

At the highest level of extrinsic motivation, identified regulation, behavior is internally regulated (e.g., training to achieve a personal best in their sport). Participants

operating at this level engaged in an activity or behavior to achieve a goal, but also value the activity or behavior. Those operating at this level may participate in adapted sport with the goal of being selected to play at the national level. For some athletes competing at Warrior Games offers the potential gateway to Paralympic competition. The possibility of representing your military branch, and potentially your country, in competition is what drives some of those participants.

The ability of those with PTSD to overcome the avoidance symptoms could very well be due to sport as reported by Machida and Irwin (2012). The authors reported similar findings when interviewing wheelchair basketball players regarding their process of overcoming injury. The wheelchair basketball athletes identified sport as playing a significant role in that process of recovery. Supported by Machida and Irwin, participation in adapted military sport could be the significant and meaningful rehabilitation process for military personnel to aid in the continuum of healing.

Deci and Ryan (2000) suggested that in order to transition individuals from extrinsic to intrinsic motivation, autonomy is necessary. Individuals need to feel as though they are in control of their actions and are not participating due to extrinsic reinforcers such as medals or verbal praise. With 75% of those with PTSD and 71% of those without PTSD falling into the intrinsically motivated category in this study, it was speculated their basic psychological need of autonomy was met. This is of importance as coaches, military personnel, and those working with these athletes need to provide opportunities for the athletes to experience autonomy. This can be achieved by giving athletes the opportunity

to make their own decisions, whether that is during a practice or game. In a study by Machida, Irwin, and Feltz (2013) athletes with spinal cord injuries reported that having independent experiences were of importance to them. Further, in a study conducted by Mowatt and Bennett (2011) veterans with PTSD reported the importance of personal choice and freedom in rehabilitation. Personal choice and freedom can be identified by behaviors such as being a part of establishing their care plan, thus supporting the significance of autonomy through sport or activities.

The three levels of intrinsic motivation were scored very high using the 7-point Likert scale of the Sport Motivation Scale (SMS) within this study. This is a positive finding as it demonstrates the ability of those participants with PTSD to overcome avoidance, negative thoughts, and hyper arousal symptoms and actually participate in sport. These findings are supported by the Wilson, Markey, and Markey (2012) study where they found that athletes who were intrinsically motivated experienced a positive relationship between exercise, health and fitness and have learned to practice better coping skills. Findings from the current study support this literature as 75% of participants with PTSD who participate in adapted sport are intrinsically motivated. Participation at this level is not due to orders from superiors or trophies (i.e., extrinsic) but from motivational factors from within themselves. Mowatt and Bennett (2011) suggest that recreation can even be a medium for military personnel to process their past events and be an active partner in their rehabilitation, emphasizing that the focus is on a healthy lifestyle and not on

disability. This adds support to the intrinsic motivation experienced through adapted sport and physical activity.

Those with PTSD are so motivated that their intrinsic motivation scores were the same as those without PTSD. Based on the results of this study those with PTSD were just as motivated as those who were not faced with the symptomology of avoidance, negative thoughts, and hyper arousal. This is paramount to overcoming the negative consequences from PTSD. It appears that sport can contribute to those with PTSD staying motivated to participate. These findings support the work by Tasiemski and Brewer (2011) who reported that increased sport participation could have a positive impact on the physical and psychological functioning of individuals after a spinal cord injury. Tasiemski and Brewer suggested that an increased psychological adjustment was due to stress reduction that was experienced through sport participation, another finding consistent with this study.

In Table 3 the participants with and without PTSD scored higher on the 7-point Likert scale in all levels of motivation than a study conducted with wheelchair basketball players with and without disabilities (Perreault & Vallerand, 2007). The participants were competing in one of two wheelchair basketball tournaments (i.e., *Le Defi Sportif* or the Women's Canadian Wheelchair Basketball Finals). While similar in characteristics, reasons for participation in wheelchair basketball were not reported. It is possible that the wheelchair basketball athletes began participating based on individual interest and their

own volition. Those participants in the present study participated as a result of rehabilitative programming in a WTU. The findings of the present study were not in agreement with those of Perreault and Vallerand. The military personnel were more motivated than the wheelchair basketball players which could be a result of participation in consistent and structured adapted sport as part of a continuum of healing.

Information regarding the sport motivation of military personnel is of importance to note as it can be of assistance for coaches, adaptive sports coordinators, and military personnel who assist with sport programming for wounded, injured, and ill military personnel. This motivation profile can assist with the development of practices, competition opportunities, and structure of adaptive sports programs. As Deci and Ryan (1985; 2000) suggest, an individual needs to experience the three basic psychological needs to progress from amotivation to extrinsic motivation, to intrinsic motivation. Motivation then can drive behavior. Therefore, when an individual with PTSD is intrinsically motivated to participate they will put forth more effort to continue to engage. In order to reach that level of motivation coaches, coordinators, and military personnel need to address the psychological needs of competence, autonomy, and relatedness by giving the athletes opportunities to contribute successfully, allowing them to make self-initiated decisions. Coaches, players and personnel need to be invested in the athletes and maintain contact with each outside the constructs of team practice. These opportunities can be what spurs individuals to be intrinsically motivated in all areas of life, not just sport.

While research has suggested that those with PTSD exhibit avoidance behaviors, often related to mental health care (Cerully et al., 2014; Hoge et al., 2004; Ouimette et al., 2011; Sherman et al., 2012; Smith et al., 2013; Vogt, 2011) the current study suggests that those avoidance behaviors can be overcome. A study conducted by Burke and Utley (2013) adds further support based on the responses of injured combat veterans climbing Mt. Kilimanjaro. Burke and Utley reported the participants experienced determination and inner strength “rather than withdrawing or disengaging from attempts at achieving a goal” (p 734). These findings from Burke and Utley further support the notion that avoidance behaviors can be overcome through physical activity. With there being no difference in motivation between those with and without PTSD who participate in adapted sport within this study, it would appear as though the utilization of adapted sport as a form of the continuum of healing and reintegration is beneficial. Those with PTSD who participated in the study overcame the avoidance behaviors associated with the disorder and 75% had an intrinsically motivated profile. The mechanism of sport appears to work for those with PTSD in a similar manner as those without PTSD.

A third purpose of this study was to determine if there was a relationship between motivation and quality of life. Pearson correlation was utilized to investigate this relationship. While there is limited research regarding a relationship between motivation and quality of life, the findings of the current study are not supported by the literature (Gillison, Standage, and Skevington, 2006). In all but one domain, social relationships,

those with PTSD reported higher mean scores than those without PTSD (see Table 6). It would be expected to see the PTSD group with lower quality of life scores as they typically experience lower measures due to the hyperarousal, negative thoughts, intrusion symptoms, and avoidance associated with PTSD (Schnurr et al. 2006; Schnurr, Lunney, Bovin, & Marx, 2009). In a competitive sport environment the symptomology associated with PTSD could potentially be counterproductive as it could interfere with an individual's ability to focus on the task at hand. It is also possible that due to the concentration and attention needed during competition these athletes with PTSD are able to counteract those symptoms. Perhaps, the heightened sense of arousal is beneficial in sporting competitions that include offensive and defensive strategy (i.e., wheelchair basketball, sit volleyball, wheelchair rugby, wheelchair handball). The heightened sense of arousal could potentially allow an athlete to be aware of the placement of athletes or team plays that are being run (i.e., pick and roll, screens, man-to-man defense).

The physical health domain of the WHOQOL-BREF measured areas such as pain, discomfort, sleep, dependence on medicinal substance, and work capacity (World Health Organization, 1996). As shown in Table 6 the scores reported for the physical health domain were the lowest of the four quality of life (QOL) domains. The scores for the physical health domain were 54.5 ± 10.8 and 57.4 ± 10.6 and for those with and without PTSD respectively. As all participants in this study self-reported having physical and psychological injuries it was expected that the domain of physical health would be most impacted as this domain deals directly with the impact of injury.

The psychological domain of the WHOQOL-BREF assessed bodily image and appearance, negative feelings, positive feelings, self-esteem, spirituality/religion/personal beliefs, thinking, learning, memory and concentration. The mean score in this domain for participants with PTSD was reported at 61.7 ± 13.5 and 69.1 ± 16.0 for participants without PTSD. While not statistically significant, those without PTSD had slightly higher mean scores than those with PTSD. The difference in scores in the psychological domain of QOL could be due to the impact of intrusion symptoms, arousal, and negative thoughts on the psychological health of those with PTSD. It is possible that participation in sport assists with thinking, learning, memory, and concentration for those with PTSD. Sport could potentially be the environment that pushes those with PTSD to overcome their hyper arousal, negative thoughts, and avoidance. When participating in sport, athletes need to be able to concentrate on the skill or play at hand and potentially block out those intrusive thoughts. Skills, drills, and plays from practice need to be remembered and utilized in game play regardless of hyperarousal.

The social relationships domain measured personal relationships, social support, and sexual activity. As shown in Table 6, this is the only domain where participants with PTSD reported slightly higher scores than those without PTSD. While this difference is not statistically significant the mean score of those with PTSD was 66.9 ± 24.1 and 66.2 ± 24.7 . These scores could be due to the support received in a Warrior Transition Unit (WTU) and from teammates through participation in adapted sport, from good coaching,

being part of a team, engaging in the environment of support, and camaraderie; in short the continuum of care and healing. These findings are supported by Machida, Irwin, and Feltz (2013) who suggested that the improved psychological adjustment of quadriplegic rugby players could be due to the social factors of playing a team sport.

The environment domain of quality of life measured financial resources, freedom, physical safety, security, health and social care, accessibility and quality, home environment, opportunities for acquiring new information and skills, participation in and opportunities for recreation/leisure activities, physical environment, and transport (WHO, 1996). The highest scores by the participants were reported in this domain. As presented in Table 6 averages from those participants with PTSD were 71.9 ± 14.8 and participants without PTSD at 77.3 ± 14.0 . Care is provided through conventional means such as visits with medical personnel, and nonconventional means such as adapted sport. The purpose of a WTU and Community Care Unit (CCU) directly align with the environment domain of quality of life as this area is measured through health and social care, accessibility and quality, opportunities for acquiring new information and skills, participation in and opportunities for recreation/leisure activities areas.

What is also of interest is the correlation between the four domains of quality of life. There were relationships between the physical and psychological domain, the physical and social domain, the physical and environment domain, the psychological and social domain, the psychological and environment domain, and the social and environment domain. While in a WTU or CCU the six domains of physical, emotional, spiritual,

social, family, and career health and wellbeing are addressed. This correlation could be due to the fact that the environment of a WTU is conducive to improving the physical, psychological, environment, and social domains of quality of life of these military personnel through the six domains addressed above. These correlations are supported by Machida, Irwin, and Feltz (2013) who reported that physical activity associated with sport participation could enhance psychological adjustment through stress reduction.

Based on the results in this study, the physical, psychological, environment, and social domains of quality of life meant something of importance to these participants with and without PTSD. There is the potential that as individuals saw an increase in their physical abilities, their strength, and their rehabilitation they were able to further utilize and access the environment around them. The environment of a WTU goes beyond the physical domain to include emotional, spiritual, social, family, and career. Perhaps an increase in the physical domain (pain, discomfort, sleep, dependence on medicinal substance, and work capacity) allowed these military personnel to benefit from all the domains and forms of care offered in the environment of a WTU (e.g., supporting the continuum of care). The adapted sport and physical activity setting has an impact on the function of the person involved, which is a positive finding related to the benefit of sport for wounded, injured, and ill military personnel. Adapted sport as a form of reconditioning has worked for these participants as the majority are intrinsically motivated to participate in adapted sport as a form of rehabilitation.

Findings

The first purpose of this study was to determine the sport motivation and quality of life profile of those with and without PTSD. The second purpose was to compare the differences in the sport motivation and quality of life profile of those with and without PTSD. The third purpose of this study was to investigate a relationship between motivation and the four domains of quality of life. The major findings of the study are reported below.

1. Those with PTSD were intrinsically motivated.
2. Those with PTSD have similar motivation profiles as those without PTSD.
3. Those with PTSD have similar quality of life profiles as those without PTSD.
4. There was no relationship between motivation and the four domains of quality of life.
5. There was a relationship between the physical, psychological, environment, and social domains of quality of life for military personnel with and without PTSD.

Recommendations for Future Studies

Based on this study the principal investigator would recommend several future studies including;

1. As stated by Kinnafick, Ntoumani, and Duda (2014) “fluctuating and insufficiently developed self-determined motivation mean that the participant remains at risk of dropout and/or lapse and relapses” (p 708). A longitudinal study of motivation would give greater information related to sustaining competence,

autonomy, and relatedness leading to intrinsic motivation and counteracting those relapses in avoidance behavior related to participation in adapted sport.

2. An investigation of the motivation profile of those wounded, injured, and ill military personnel particularly with PTSD who participate in adapted sport compared to those who do not participate in adapted sport.
3. A mixed method or qualitative design to investigate the motivation of those military personnel who do participate in adapted sport.
4. The role of participation in sport by injured, ill, wounded personnel on the family members of wounded, injured, and ill military personnel related to the social relationships domain of quality of life.
5. The impact of the severity of PTSD on sport motivation of wounded, injured, and ill military personnel who participate in adapted sport.
6. The impact of placement on continuum of healing on the sport motivation of wounded, injured, and ill military personnel who participate in adapted sport.

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http://www.wtc.army.mil/documents/factsheets/CCU_Factsheet.pdf

APPENDIX A

Participant Consent Form

TEXAS WOMAN'S UNIVERSITY
CONSENT TO PARTICIPATE IN RESEARCH

Title: A Sport Motivation Profile of Military Personnel with PTSD Who Participate in Adapted Sport and Activity

Investigator: Michelle Enosmenos@twu.edu 940-XXX-XXXX

Advisor: Ronald Davis, PhDrdavis4@twu.edu 940-898-2594

Explanation and Purpose of the Research

You are being asked to participate in a research study for Ms. Michelle Enos's study at Texas Woman's University. The purpose of this research is to assess motivation levels of those military service members with disabilities who participate in adaptive sport. You have been asked to participate in this study because you are participating in adaptive sport. ²⁴The study will consist of completing the Sport Motivation Scale (SMS) and the World Health Organization's Quality of Life Scale (WHOQOL-BREF). The SMS consists of 28 questions on a 7 point likert scale that will produce information regarding whether an individual is amotivated, extrinsically motivated, or intrinsically motivated and whether they feel competence, autonomy, and relatedness to their sport. The WHOQOL-BREF consists of 26 questions on a 5 points liker scale. Information will also be collected regarding your injury, what branch of the military you are in or retired from, and what sport(s) you participate in.

Description of Procedures

As a participant in this study you will be asked to spend approximately 25 minutes of your time completing a survey. While you are completing the survey you will be in a classroom setting with two desks between yourself and other participants.

Potential Risks

The following are the potential risks and steps to minimize each risk:

1. Loss of Confidentiality: All surveys completed will be anonymously. The survey does not include any questions that will lead to participants being identified. The survey information will be kept inside of Pioneer Hall in room 119 inside of the Faculty Research Advisor's Office (119B), which can be locked. Surveys will be kept inside of a locked cabinet in the Faculty Research Advisor's Office. ²⁸Confidentiality will be protected to the extent that is allowed by law.
2. Physical or Emotional Discomfort Due to the Nature of the Questions and Relation to the Acquirement of their Disability: ¹⁴The survey is being distributed after injury, rehabilitation and physical therapy have been completed. The participants have had time to understand and adjust to their disability. They may stop at any time, take breaks, and/or make use of a references list if they feel it necessary.
3. Loss of Time: Distribution of the survey will be done in an efficient manner to avoid greater loss of time. ¹⁶Participants can withdraw from the study at any time.
4. Coercion: Participation in the study is completely voluntary. No incentives or penalties will be included for participants and non-participants.
5. ²⁹Loss of Anonymity: Numbers will be used in place of names so that participants will remain anonymous. Because data will be collected in a group setting, anonymity as a participant cannot be guaranteed, but answers are confidential.

²⁷TWU Disclaimer

The researchers will try to prevent any problem that could happen because of this research. You should let the researchers know at once if there is a problem and they will help you.

However, TWU does not provide medical services or financial assistance for injuries that might happen because you are taking part in this research.

Participant Initials

Participation and Benefits

Your involvement in this study is completely voluntary and you may withdraw from the study at any time without penalty.

Questions Regarding the Study

You will be given a copy of this signed and dated consent form to keep. If you have any questions about the research study you should ask the researchers; their phone numbers are at the top of this form. If you have questions about your rights as a participant in this research or the way this study has been conducted, you may contact the Texas Woman's University Office of Research and Sponsored Programs at 940-898-3378 or via e-mail at IRB@twu.edu.

Participant Initials

APPENDIX B

Texas Woman's University IRB Approval Letter



Institutional Review Board

Office of Research and Sponsored Programs P.O. Box 425619,
Denton, TX 76204-5619 940-898-3378
email: IRB@twu.edu <http://www.twu.edu/irb.html>

May 30, 2014
Ms. Michelle Enos
Department of Kinesiology

Institutional Review Board - Denton

*Re: Approval for Wounded, Ill and Injured Soldiers and Disability Sport
Participation (Protocol #: 17342)*

The above referenced study has been reviewed and approved by the Denton Institutional Review Board (IRB) on 5/30/2014 using an expedited review procedure. This approval is valid for one year and expires on 5/30/2015. The IRB will send an email notification 45 days prior to the expiration date with instructions to extend or close the study. It is your responsibility to request an extension for the study if it is not yet complete, to close the protocol file when the study is complete, and to make certain that the study is not conducted beyond the expiration date.

If applicable, agency approval letters must be submitted to the IRB upon receipt prior to any data collection at that agency. A copy of the approved consent form with the IRB approval stamp is enclosed. Please use the consent form with the most recent approval date stamp when obtaining consent from your participants. A copy of the signed consent forms must be submitted with the request to close the study file at the completion of the study.

Any modifications to this study must be submitted for review to the IRB using the Modification Request Form. Additionally, the IRB must be notified immediately of any adverse events or unanticipated problems. All forms are located on the IRB website. If you have any questions, please contact the TWU IRB.

cc. Dr. Charlotte Sanborn,
Department of Kinesiology Dr.
Ron Davis, Department of
Kinesiology Graduate School

APPENDIX C
Sport Motivation Scale (SMS)