

The Influence of Participation Attributes  
on Veterans' Sense of Community in Adaptive Sport & Recreation Programs

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ABSTRACT

Many veterans experience traumatic events throughout their service that can lead to injuries, disabilities, and problems transitioning back to civilian life (Ahern et al., 2015). United States veterans are a unique and complex population that can experience many injuries, problems, and obstacles in life after military service (Olenick et al., 2015). One such issue is often community reintegration, where an individual struggles to live independently and participate in social and societal norms, roles, and responsibilities (Dijkere, 1998). One aspect to community reintegration is fostering a sense of community between individuals and their community of support. Adaptive sports and recreation (ASR) have long been used as a rehabilitation tool and researchers have demonstrated the increasing benefits of participation for individuals with disabilities in domains such as community reintegration, quality of life, and sense of community (Iverson et al., 2021). In this quasi-experimental study, the influence of ASR

attributes (intensity, frequency, duration, and social structure) on sense of community in veterans was examined. Results found that there were no significant ( $p>.05$ ) relationships between ASR attributes and sense of community in veterans. A discussion is provided on the importance of the inherent social nature of adaptive sports and recreation regardless of activity structure.

Implications of this study provide insight into how an ASR program fosters a sense of community in veterans and a greater understanding of the role of ASR in promoting community reintegration in veterans.



The Influence of Participation Attributes  
on Veterans' Sense of Community in Adaptive Sport & Recreation Programs

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## **SECTION I: MANUSCRIPT**

### **Introduction**

For many veterans with disabilities, reintegrating back into their communities and returning to their life as a civilian is a critical goal of rehabilitation (Resnick & Allen, 2007). Adaptive sports and recreation (ASR) can play an important role in the rehabilitation process of veterans with various disabilities (Lee & Uihlein, 2019). Research has shown that participation in ASR can lead to increased quality of life (Lundberg et al., 2011) that allows participants to find a safe place without stigmas and stereotypes to connect with others, build social networks within the community (Lee & Uihlein, 2019), and help acquire feelings of freedom, normalcy, and success (Greer et al., 2019). Within human services fields, there are many such terms that represent the ability of veterans to re-connect with their community.

“Community reintegration” has been an umbrella term used to represent being engaged in mainstream community and family life through active roles and responsibilities in one’s society and social groups (Dijkere, 1998). The concept of community reintegration has been particularly important to veterans who attempt to re-connect with their communities after one’s military service (Resnick & Allen, 2007). With the advancements in military technologies and weapons, more veterans are returning with a widely distributed spectrum of disabilities and injuries making post-duty reintegration into communities and social roles more challenging (Smith & Bellamy, 2005). Veterans are also at risk for various physical disabilities, psychological, cognitive impairments, and lower quality of life because of these negative by-products of military duty (Bennet et al., 2014; Hale-Gallardo et al., 2016). While health care professionals may never know exactly what veterans see and experience during their deployments, they can help support and assist them with recovery by creating the most effective

treatment plans that address outcome goals that emphasize reintegrating back into their community and social lives.

Sport and recreation activities have often been used as a rehabilitation tool to connect those with disabling conditions into communities after military service (Chockalingam et al., 2012). Adaptive sports and recreation (ASR) researchers have demonstrated the increasing benefits of participation for individuals with disabilities in domains such as community reintegration, quality of life, and sense of community (Iverson et al., 2021). Lee and Uihlein (2019) suggested that ASR can target various outcomes for individuals in three main domains including physical, psychological, and social by decreasing symptoms, promoting social networks, encouraging employment, rebuilding self-efficacy, and increasing physical aspects like balance, flexibility, and activities of daily living. While there are many positive outcomes that can result from participation in ASR (Greer et al., 2019), there is less focus placed on the benefits that different attributes of adaptive sports and recreation play in re-connecting veterans back into their communities as a civilian.

## Literature Review

### Veterans and Community Reintegration

Many veterans deployed during service often experience traumatic events throughout their service that can lead to injuries, disabilities, and long-term problems transitioning back to civilian life (Ahern et al., 2015). In a qualitative study, Ahern and colleagues (2015) examined the problems that Afghanistan and Iraq veterans faced during their military to civilian life transition and suggested three main themes for veterans: military as family, normal is alien, and searching for a new normal. The *military as family* theme indicated that veterans share a familial bond with those they served with as these individuals have “*been there and done that.*” *Normal is Alien* addressed the alienation that veterans felt when returning to their civilian life and the disconnection from the community, loss of purpose, and lack of support from institutions. Finally, *Searching for a New Normal* encompassed all efforts, resources, support, and tools used to help integrate back into the community. However, most veterans spoke about the idea that the reality of what used to feel “normal” felt “alien” due to changes that occur within the veteran and their life at home (Ahern et al., 2015). Unfortunately, many veterans found more challenges with finding support due to others not fully being able to understand and relate to having those same experiences in military services.

Veterans are a complex and unique population that can experience many injuries, problems, and obstacles in life post service especially for those who’ve experienced deployment and combat (Olenick et al., 2015). Olenick and colleagues (2015) attempted to gain more insight into veteran health issues, including reintegration needs, and better educate healthcare professionals working with veterans. First, veterans are at a higher risk of mental illnesses including substance abuse disorders, depression, anxiety, manic-depressive disorders and more.

Many male veterans (36%) experience post-traumatic stress disorder (PTSD) more often than those without military experience (8%) (Olenick et al., 2015). The researchers also discovered that PTSD is commonly linked to traumatic brain injuries (TBI), pain, psychiatric disorders, sleep problems and more. Furthermore, veterans have a 14% diagnosis rate for depression, an 82% rate of reporting chronic pain, and a substantial number (1,573 since 2010) have major limb amputations (Olenick et al., 2015). Amputations also can cause problems with mental health, mobility, body image, social interactions and experiences, and employment. Olenick and colleagues further stated that successful reintegration is vital for holistic and effective care that is often achieved through veteran-specific content highlighting the importance of obstacles that help address complex mental, physical, and behavioral disorders. Veteran research also has indicated that community reintegration is a recurring problem facing veterans in their transition from military to civilian life (Resnik & Allen, 2007).

Resnik and Allen (2007) performed a pilot study to examine how the International Classification of Functioning, Disability and Health (ICF) can be used to understand various community reintegration problems for veterans. Veterans reported challenges in many aspects of community reintegration including community life (ICF d910), recreation and leisure (ICF d920), political life and citizenship (ICF d950), tolerance in relationships (ICF d7102), regulating behaviors in interactions (ICF d7202), informal social relationships (ICF d750), general domestic life (ICF d600), and more. While most veterans face adversity, results of this research found that those with more severe polytraumatic injuries had more challenges reintegrating compared to non-polytraumatic disabilities. Clinician interviews revealed that common traits among veterans are social isolation, withdrawal, and apathy due to this feeling of disconnect within communities. Interviews also indicated that many veterans experience a strain

or break in their intimate relationships, difficulties starting new social relationships, and emotional distance from those around them. Furthermore, numerous veterans reported not being able to attend community events due to an inability to tolerate large crowds or loud noises, feeling unsafe going out after dark, and physical limitations that create general disconnection from others around them. Community reintegration for the veteran population remains a challenge that requires an examination of the pathways that promote a successful transition into community life after one's military duty. One such pathway in transitioning to community life may reside in the ability of veterans to re-connect within their social networks through a personal sense of community established at the ASR program level.

### *Sense of Community Theory*

One aspect to community reintegration is fostering a sense of community between individuals and their community of support. In this study, a sense of community is defined as attributes within the community or environment that foster an individual's sense of belonging and support (Sarason, 1974). Macmillan and Chavis (1986) broke down sense of community into four main elements. The first element is *membership* which is known as the perception of sharing personal relatedness and belonging with others. The second element is *influence*, which comes from the perception of making a difference to a group, sense of mattering, and a group mattering to its' members. The third element refers to the integration and fulfillment of one's needs through membership in a group known as *reinforcement*. The final element is *shared emotional connection* which refers to members having common ground by having similar experiences, places, and history. Sense of community is typically developed by individuals interacting within one's "community." Gusfield (1975) suggested that one's "community" refers to both

geographic territories (e.g., neighborhoods, towns, cities) and relational (e.g., those associations developed around similar interests and skills).

Furthermore, Baumeister and Leary (1995) suggested that for individuals to have increased well-being there are certain needs that need to be met. Individuals inherently have a drive to create and maintain significant, positive and long-lasting interpersonal relationships (Baumeister & Leary, 1995) that can fill one's fundamental need to belong (Pillow et al., 2016). Bryan and Heron (2015) also conducted a cross-sectional study that examined if this sense of belonging influenced post deployment depression in military personnel. Findings supported that a stronger sense of belonging served as a buffer to depressive symptoms before and after military deployment. Secondary findings also indicated that belonging to a cohesive group/team served as a shield from negative cognitions and emotions. Through participation in group social activities, such as sport and recreation, permitted community members an opportunity to focus on the greater group/team task at hand that often-emphasized unit cohesion and social support strength.

#### *Sense of Community in Sport and Recreation*

A sense of community within the sports world plays a major role in the possible benefits that increase quality of life for members (Warner & Dixon, 2011). Warner and Dixon (2011) developed the Sense of Community in Sport Theory through a study that examined athletes' perspective on sense of community within the context of sport. The researchers identified the key factors that fostered sense of community within a sport context including leadership opportunities, social spaces, administrative consideration, competition, equity in administrative decisions, leadership opportunities, and voluntary action (Warner & Dixon, 2011). Warner et al. (2013) further outlined factors as: a) *administrative consideration* refers to the vocalization of concern, care, and intentionality of program administrators; b) *common interest* is the group

dynamic that fosters social networks and friendships of individuals brought together through common interest; c) *equity of administrative decisions* refers to the commitment that all decisions are fair and show all members are equal; d) *leadership opportunities* can be informal or formal chances for members to guide and direct others within the community; and e) *social spaces* are those common areas that foster interaction between members and athletes. Figure 1 provides an overview of these five key factors of sense of community developed in sport.



**Figure 1**

*The Sport and Sense of Community Theory (Warner & Dixon, 2012)*

Sport and sense of community have become a more popular element of community reintegration in recent years. However, limited research has examined sport and sense of community among military populations. Pollock (2018) conducted a master's thesis that examined if sport and recreation could foster a sense of community in the Canadian military. Results indicated that voluntary action, defined as “self-fulfilling and self-determining activities resulting from little to no external pressure or incentive” (p. 41), was the only factor that had a

significant relationship ( $p < .05$ ) with sense of community. The results also found that various attributes (e.g., the number of recreational activities, the number of combined activities, and total duration of participation) were significantly related ( $p < .05$ ) to three factors of sense of community (*administrative consideration, common interest, and voluntary action*). This study provided evidence that the nature of sport and recreation activities fosters various factors of sense of community in military veterans. Sport and recreation have also been found to be a critical factor in fostering a sense of community in non-military populations (Warner & Dixon, 2011; Warner et al., 2012; Warner et al., 2013). Ahern et al. (2015) suggested the transition for military life can be promoted by creating an increased sense of community through common associations. Sport and recreation can often serve as common association of individuals with a shared interest. There remains a crucial need to further explore the impact of sport and recreation on sense of community in military populations.

### **Adaptive Sport and Recreation as an Intervention for Sense of Community in Veterans**

Throughout the literature, there is evidence that ASR has positive impacts on sense of community. For example, Arthur-Banning and colleagues (2020) examined the effectiveness of a community-based adaptive sport model in reintegrating veterans back into their community. In doing so, they examined the perceptions, feelings, and insight into veteran's experiences at a therapeutic sports camp. Many veterans stated that having sport as a buffer helped enhance and ease the transition of integrating and creating social networks within their community. This study provided evidence that structured community-based adaptive sports programs does have a positive impact in aiding and enhancing reintegration for veterans. Rogers and colleagues (2016) further examined the role of ASR in the community reintegration of veterans when they examined veterans' insight and attitudes towards outdoor recreation during a four-day overnight

event involving fishing, archery, and skeet shooting. Researchers gathered data through individual interviews, observations, and various informal interactions. One main theme that appeared from results demonstrated the development of a *social community* with veterans who understand what they've experienced, sometimes without even having to say it. Participants in this study started as complete strangers but through the ASR event were able to form and create this community they referred to as a "band of brothers."

Similarly, Brittain and Green (2012) used a qualitative study to examine the use of sports as a rehabilitation tool for personnel with sudden traumatic injuries received during military service. The first major theme found was the *Rehabilitative Power of Sport* and the enjoyment individuals received through participation. The next major theme was directions that included *Discovering and Acknowledging Individual Limitations*, improving the veteran's quality of life through community reintegration and life skills. The third major theme was *Self-Actualization* including encouraging positive thinking/attitudes and gaining new coping strategies and behaviors that aided in their transition to their former life. The last major theme found was achievement including increased determination, focus, and increased ability to set goals. This study highlighted the important visible, and sometimes invisible, outcomes that ASR provided to help individuals reconnect back into their communities.

Likewise, a master's thesis conducted by Pearsall (2019) examined how frequency and duration of ASR participation influenced sense of community and community reintegration. Results suggested that there were no significant positive relationships ( $p > .05$ ) between frequency and duration of ASR participation and sense of community. However, results indicated a positive relationship ( $p = .01$ ) between sense of community and community reintegration. A secondary finding of the study revealed that type of ASR activity had a high level of influence over a

participant's sense of community compared to frequency and duration of participation. The findings highlights the importance of fostering and maintaining sense of community levels has on community reintegration for participants. This study provided some insight into athlete perspectives on what factors were important for creating a sense of community within an activity.

### **Promoting Sense of Community through the Attributes of ASR**

ASR has long been a mechanism for rehabilitation in populations with disabilities (Brittain & Green, 2012). While there has been less examination of *how* ASR facilitates the process of community reintegration through a sense of community, there do appear to be some scientific explanations of how the attributes within ASP contribute to positive outcomes for those with disabilities. For example, Loy et al. (2003) examined how physical intensity, social connections, and social identities developed with ASR influenced the ability of a person to assimilate within functional limitations and become fully engaged in his or her environment. Loy et al. (2003) also discovered support from the inherent social nature of most ASR activities had an indirect influence on one's adjustment to disability. For an individual to be fully adjusted to their current situation in life, they must go through the process of reintegrating into their previous community life or develop new community connections based on their current life situation, functional limitations, and disability (Livneh & Antonak, 1997).

Similarly, Hutchinson and colleagues (2003) suggested that the social support found within ASR networks often provides new coping skills and strategies. Results provided two main roles of ASR in promoting coping including: a) ASR as a "buffer" and b) ASR as motivation to sustain coping strategies for daily challenges. This study highlighted how sport and recreation often provided mental distractions from challenges faced in daily life due to current situations

and an escape from the individual's disability or illness. Participants confirmed through qualitative interviews that involvement in recreation and sport activities increased their sense of belonging, decreased stigmas often associated with disability, and broadened their social connections.

While the social structure of sports and recreation is not typically studied in individuals with disabilities, a study performed by Pedersen and colleagues (2017) examined the effects of team sports on physical functioning, quality of life and motivation in untrained older adults. The researchers indicated that those involved in team sports had a significant improvement ( $p < .05$ ) in quality of life, psychological well-being and general health. Participants in the team group specified their main motivation to participate was enjoying the team atmosphere. The team atmosphere also allowed participants to forget about their physical and mental limitations of what they could not do before (Pedersen et al., 2017).

Chan and colleagues (2019) further examined the contribution of certain ASR attributes when they performed a systematic review of the therapeutic benefits of physical activity. Some therapeutic benefits noted that those who frequently exercised had increased positive mood state, increased resilience to stress, and were less likely to have anxiety or depression when compared to inactive individuals. Specifically, the researchers examined the physical intensity of exercise as it related to mood improvements or other related benefits. While there are certainly well-established physiological reasons higher intensity exercises promote enhanced moods through the release of certain biochemicals (Mandolesi et al., 2018; Sveaas et al., 2020), the review by Chan and colleagues suggested various outcomes of mood enhancement for those activities with higher or lower physical intensities. Similarly, Loy and colleagues (2003) included frequency of sports and recreation participation as a latent variable in the examination of individuals'

adjustment with different spinal cord injuries. Results indicated that frequency of ASR was significantly linked to increased perceived health ( $p < .01$ ) and subjective well-being ( $p < .05$ ) of individuals with SCI. While frequency and intensity of ASR participation has limited research, Baird et al. (2018) provided a research protocol to promote and increase the evaluation of the frequency and vigorous intensities of a structured physical activity programs on the community reintegration of returning veterans. Further examination of the influence of ASR frequency and physical intensity is needed to better understand those attributes that lead to veterans having a better connection to their communities following military service. While research on the effects of frequency and physical intensity have been more generalized to those without disabilities, the current study looks to further examine if specific attributes of ASR activities influence a greater sense of community in veterans.

In summary, veterans often encounter obstacles as they transition from military to civilian life (Ahern et al., 2015). Current research has found adaptive sports and recreation to be an effective form of treatment for veterans. However, examining different ASR attributes including the frequency, duration, physical demands, and social aspects can provide further depth to this potential therapeutic pathway and specific contributions of ASR to the sense of community of veterans.

### **Purpose and Research Questions**

This study examined and compared different ASR attributes and their effect on sense of community in veterans. Addressing this gap can help us better understand the benefits of ASR and specific contribution of participation variables like frequency, duration, physical demands, and the social aspects can help personnel, such as recreational therapists, provide a more

effective and targeted treatment plan to promote sense of community in the veteran population.

Therefore, the research questions for this study include:

1. What is the relationship of adaptive sports and recreation participation and the sense of community in veterans?
2. Do participation attributes in adaptive sports and recreation such as frequency, duration, social structure, physical intensity predict the level of sense of community in veterans?

## Methods

### Participants

The target sample of participants for this study was determined by specific selection criteria to include veterans that : a) were discharged from service and transitioning from military to civilian life, b) completed a minimum of 4 years of military service and deployed or in combat, c) participated in some form of ASR over the last year (competitive or recreational activities, team or individual activities), d) self-identified as having a mental or physical disability or illness, e) English speaking and literate, and f) a valid email address. Participants were not excluded for type of disability diagnosis, age, mobility level, military rank, branch of military service, or deployment location. Participants were excluded if they did not meet selection criteria.

### Measurement and Description of Variables

*Sense of community.* As mentioned, community reintegration is a multidimensional outcome with no consensus on a conceptual definition. Therefore, it is often difficult to define community reintegration due to the many factors and aspects that encompass it. Because this study was interested in the connections between ASR and veterans, the study focused on sense of community in sport. For an individual trying to reintegrate back into their community, sense of community, belonging, and support are important to reconnecting to one's community (Demers, 2011). Because this study was particularly interested in the context of sport and recreation, *The Sense of Community in Sport Scale* (SCS, Warner et al., 2013) was used to measure a veteran's sense of community in adaptive sport and recreation through an individual's sense of community within the sport of recreation activity. While there are many instruments that attempt to measure *aspects* of community reintegration, this instrument does so through the connections created

within the sport and recreation activity (Warner et al., 2013). Sense of community is an important aspect due to its connection to enhancing individuals' quality of life through numerous benefits (Warner et al., 2013) and is defined as community or environmental attributes that foster an individual's sense of support and belonging (Sarason, 1974). The SCS scale (see Appendix B) has been used in past research to examine the impact of sports on the sense of community in various populations (Warner et al., 2013; Kerwin et al., 2015). The SCS used in the survey used all seven domains from the Sport and Sense of Community Theory (Warner & Dixon, 2012). Due to recent findings in research voluntary action and competition were dropped from data analysis (Warner et al., 2013). Final data analysis included the 20-item SCS scale that utilized the five factors of sense of community with each factor comprised of four corresponding items (Warner et al., 2013). The five factors include: a) Administrative Consideration, b) Common Interest, c) Equity in Administrative Decisions, e) Leadership Opportunities, f) Social Spaces (Warner et al., 2013). Each item is rated on a 4-point Likert scale ranging from (1) *“Not At All True”*, (2) *“Somewhat True”*, (3) *“Mostly True”*, and (4) *“Completely True”* (Warner et al., 2013). Warner and colleagues demonstrated content validity (factor loadings ranged from 0.69-0.88), construct reliability ( $p < 0.001$ ), and high internal consistency ( $p < 0.001$ ) in the SCS. Results from testing found the various versions of SCS to have equivalence reliability with no difference between participant populations ( $p = .79$ ) and methods used for data collection ( $p = .65$ ) (Warner et al., 2013). The SCS is scored numerically based on an individual's responses to each item. Higher scores in the SCS indicate that the individual is experiencing a higher sense of community in their identified sport or recreation activity (Warner et al., 2013). Specifically, the SCS protocol permits modifying items to include the context of a specific or general sport to contextualize the “community” for responders. For this research, items included the general

context of “adaptive sports and recreation activities” was inserted to allow an examination of ASR in respondents. The term “sense of community” is used thereafter to represent the positive social connections one makes that lead to a sense of belonging.

*Adaptive sport and recreation participation.* To further examine ASR participation a survey was administered to examine how the many attributes of the respondent’s participation in adaptive sports and recreation created a sense of community. *Frequent and most meaningful activities* were measured as separate ASR participation factors because activities most frequently participated in are not always the most favorite or meaningful for an individual due to money, time, accessibility, geographical location, or seasonal influences (Simon & Dowse, 2013). The “most meaningful activities” were defined as those activities that provided the most meaning, purpose and significance to an individual. In addition, this approach was also chosen because it is impractical to capture one’s entire sport and recreation over an annual period. Then, respondents were asked to indicate the frequency and duration on a scale (frequency ranged from 3-50 times per year; and duration ranged from 37.5-150 minutes per session) to better indicate the nature of their participation in their most frequent and most meaningful ASR activities. A list of possible ASR activities was provided to each participant to guide potential ASR activities (see Appendix A). The options also included an “other” blank if respondent’s ASR activity was not listed.

*Physical intensities of ASR.* Similar to Loy and colleagues (2003), physical intensities of ASR were calculated via the Compendium of Physical Activities (CPA) (Ainsworth et al., 2011) which assigns a physical intensity to physical activities as expressed in metabolic equivalent (MET) intensity levels for 605 specific activities. The CPA is a listing of the MET values range from .9 (sleeping) to 18 METS (running at 10.9 mph) and include physical intensities including

“light” (< 3 METs), “moderate” (3-6 METs), and “vigorous” (> 6 METs) (Ainsworth et al., 2011). Seventy different activity codes were included in the study and those activities not selected by participants were assigned a MET value from the 2011 CPA to capture the estimated physical nature of one’s ASR. The 2011 CPA is the latest and revised version of the 1993 original and major revisions included changes to previous codes that reflected new evidence, new codes for technology-based activities, emergent sports, conditioning, and specifically measured activities (Ainsworth et al., 2011). The MET value of the respondent’s activities was averaged to represent the total physical intensity of the respondents two “most frequent” and two “most meaningful” ASR activities (see appendix C). Then, the CPA for each activity was multiplied by the frequency and duration to obtain a more accurate total physical intensity for the veteran’s ASR experience. For example, an individual who plays kickball (MET value of 7.0) for 2 hours a week for a 6-month period has a physical intensity indicator of 84 (e.g., CPA score x frequency x duration = total physical intensity indicator). Because it may not be possible to capture all the ASR engagements in veterans, this procedure estimated the intensity of the veteran’s most popular/meaningful and frequent ASR activities. One limitation of the CPA (2011) is that it was designed to measure the MET values of only ambulatory populations in activities. Therefore, the Compendium of Wheelchair-related Physical Activities (CWPA) developed by Conger and Bassett (2011) was used to indicate the physical intensities (MET values) of ASR for manual wheelchair users (see appendix D). The CWPA included MET values for 63 wheelchair ASR activities ranging from 0.8 to 12.5 (Conger & Bassett Jr., 2011). While the use of the CWPA helped to reduce some limitations of measuring ASR physical intensities for wheelchair users in this study, not every possible wheelchair ASR activity was provided so ambulatory MET values were still used for those ASR activities not listed in the CWPA (2011).

*Social structure.* Social structure within ASR activities differed based on the social nature of activities. *Individual sports* were defined as those ASR activities where the structural emphasis in the activity included limited social requirements to participate with others and the participating individual was primarily dependent on himself or herself for their performance or experience (Fresno Pacific University Staff, 2021). Consequently, *team sports* are comprised of multiple people, each with different strengths and abilities, and often co-dependent on one another to work towards a common team goal (Fresno Pacific University Staff, 2021). The researcher classified each activity within the pool of those listed ASR activities in the survey as either “individual” or “team” structures to reflect the typical amount of social interdependence within the ASR activity. While some ASR activities could be viewed as individual or team oriented, ratings were made as the most traditional format for ASR activity engagement. The researcher’s ASR social structure ratings were reviewed by an ASR expert in the field to confirm proper social classification of each activity based on the definitions used in the study. Due to the nature of the survey and the level of information present, the expert agreed with all researchers’ classifications except one. Specifically, tennis was originally classified as a team sport, but after panel feedback, it was changed to an individual sport.

*Demographics.* Finally, a smaller questionnaire was embedded in the battery of items to determine the demographic attributes of the survey sample. This demographic information included severity of disability, time spent in military service, time since military service, military rank, family and marital status, employment status, age, gender, and race.

## Research Design and Survey Methodology

The study design of this research was a quasi-experimental design. A quasi-experimental design is used when attempting to identify a relationship between different independent and dependent variables (Maciejewski, 2018). This study was a single-group post-test only design that examined different independent variables to determine their potential effect on the dependent variable. The independent variables being examined were ASR attributes (e.g., physical demands and social aspects) and the dependent variable for this study was sense of community. This arrangement allowed examination of the individual influences of ASR attributes on sense of community in veterans. Mean scores of all participation attributes within “most frequent” and “most meaningful” ASR activities were created. Finally, a “combined” variable was also created with the same methods to reflect participation variables across both (i.e., most frequent *and* most meaningful).

The sample population was divided into clusters and as many participants as possible were collected from each cluster (Bhattacharjee, 2012). Multiple agencies in the southeastern United States who provide recreational therapy services to veterans assisted in surveying military veterans who met inclusion criteria. Thirty agencies providing adaptive sport and recreation services to veterans were contacted for data collection. Out of those 30 agencies, six agreed to take part and distribute the survey to their contact list. A Qualtrics survey link was then sent to Certified Therapeutic Recreation Specialists (CTRS) (i.e., agency program leader) who in turn distributed the survey to any veteran client in their program that fit the inclusion criteria and were willing to participate. It was anticipated that using the CTRS at each agency would increase the response rates due to the pre-established rapport with veteran respondents. While an alternative printout version was also provided via email to the program CTRS to provide to

participants who preferred to complete it by hand rather than electronically, however no veterans requested or completed paper versions. While Wu and colleagues (2022) suggested that 20-25% response rates are often difficult to obtain, certain survey techniques can often be used to enhance return probabilities.

Providing advance notification of the purpose of the study, mode of data collection, and importance of the study to the agency CTRS, and follow up notifications to non-respondents was provided to increase the responses (Bhattacharjee, 2012). Bhattacharjee (2012) also suggested that providing incentives for participation is often the most effective way to increase survey response rates. Therefore, to increase the anticipated response rate, participants who completed a full survey were provided a \$20 Amazon gift card from funds obtained through a student grant. To protect the identity of respondents and survey responses, participants who wished to be compensated completed the link provided at the end of the survey to provide information to receive the response incentive. Incentive gift cards were emailed electronically to participants that completed the separate link. Study procedures were approved by the ECU Institutional Review Board (IRB) prior to data collection (see appendix E). A social media flyer with a QR code was created and distributed to program leaders and other social media outlets to help increase response rates (see appendix F). Informed consent was embedded in the survey and obtained from every participant agreeing to be a part of the study. To access the survey, participants clicked “agree” to giving consent to participate. Once consent was provided, participants were automatically directed to the beginning of the survey. If consent was denied, participants were automatically redirected to an end of survey message. While the program response rate was 30% (6/20), the total survey response rate was unable to be calculated as the

total number of veterans receiving the emailed link was not available from the recreational therapists assisting in survey distribution.

## Results

The final sample had a total size of 35 usable surveys. While the program response rate was 30% (6/20), the total survey response rate was unable to be calculated as the total number of veterans receiving the emailed link was not available from the recreational therapists assisting in survey distribution. A multiple tiered analysis approach was performed to examine each research question. First, descriptive and frequencies of demographics were examined to determine the composition of the sample. Next, correlations were examined to determine relationships between demographics, independent variables, and dependent variables to provide a rationale for potential direct relationships and the need to control for confounding influences unrelated to the research questions. Finally, a linear multiple regression was planned to determine if participation attributes in adaptive sports and recreation such as frequency, duration, social aspects, physical intensity predicted the sense of community levels in veterans.

### *Data Preparation*

After data collection, data were entered into SPSS for data preparation and analysis. Data cleaning was conducted to determine missing data and data entry errors. A boxplot of data distribution was also examined to determine potential outliers, but none were found. With the missing data that occurred, the researcher examined the scope of missing data to determine if data imputation methods or elimination of the response was needed (Bennett, 2001). Of the 35 usable responses, four respondents did not indicate their birth year, but those cases were kept in the sample since age was only a demographic variable and not a variable of influence. There were two missing data entry values for the SCS scale across all respondents (0.29% of all data responses). To determine if the missing data were random, the researcher ran an expectation–maximization (*EM*) and missing completely at random (*MCAR*) test and determined that results

were non-significant ( $p < .05$ ) concluding that missing data were random. Therefore, because missing data were random and a small proportion of the data set, the researcher made the decision to impute the mean of each SCS column that had a missing value (Younhee & Jung, 2016). After accounting for unfinished or missing data, 35 surveys were determined to be usable and appropriate for analysis.

Tests for multicollinearity found that no two predictors were too closely related, and when testing for normality; the SCS scale found that the kurtosis (-.62) and skewness (-1.19) indicated that data were normal (Pett, 2015). Further normality tests included using the Shapiro-Wilk test, whereas if the p-value of the test is significant ( $p < .05$ ) the data was not normal. SCS scale factors are broken into 5 larger domains: administrative consideration, common interests, equity of administrative decisions, leadership opportunities, and social spaces. For each of these domains when tested separately, and the total participation variable ( $p = .025$ ) the Shapiro-Wilk tests were significant ( $p < .05$ ), indicating that the data set was not normal. For total sense of community variable, the p-value was not significant ( $p = .252$ ) indicating that the data was normal. Once data was prepared and preliminary analysis was conducted to account for all assumptions, data analysis was then conducted to examine the established research questions.

### *Demographics*

The final sample indicated the majority of respondents were Caucasian (74.3%), male (80%), ambulatory (91.4%), and served as enlisted soldiers in the military (57.1%). It should be noted that a sizable portion ( $n = 5$ ) of unusable survey respondents were African American and had to be deleted due to incomplete or missing responses thus creating a racial demographics in the sample slightly different from the population in the southeastern region of the United States. While the representation of gender and military rank was expected, it was unexpected that the

sample was disproportionately ambulatory with few participants utilizing a wheelchair to participate in ASR activities. Due to the nature of the survey, diagnosis and disabilities of the population are unclear. Refer to table 1 for further demographic and military service details of veteran respondents.

Table 1

*Demographics of Participants*

	<i>n</i>	<i>%</i>	<i>M</i>	<i>Range</i>
<b>Gender</b>				
Men	28	80		
Women	7	20		
Age	35		39.03	23-69
<b>Race</b>				
Caucasian	26	74.3		
African American	5	14.3		
Asian/Pacific Islander	3	8.6		
Mixed Ethnicity	1	2.9		
<b>Employment Status</b>				
Employed	24	68.6		
Unemployed	11	31.4		
<b>Marital Status</b>				
Married/cohabitating	20	57.1		
Single/divorced/widowed	14	40		
Other	1	2.9		
<b>Military Rank</b>				
Enlisted	20	57.1		
Non-commissioned Officer	8	22.9		
Warrant Officer	3	8.6		
Officer	4	11.4		
Years of Military Service	35		9.97	2-29
Years Since Military Discharge	35		9.34	2-24
<b>Wheelchair User</b>				
Yes	3	8.6		
No	32	91.4		

*Note. N= 35*

### *Frequency of ASR Participation*

In the survey, respondents were asked to rank their two most frequent and meaningful activities among 38 different adaptive sports and recreation activities. There were 30 activities chosen across both categories. When combining the most frequently participated activities were fishing ( $n=7$ , 18.9%), fitness ( $n=10$ , 27.3%), dance ( $n=3$ , 9.7%), basketball ( $n=3$ , 9.7%), gardening/landscape ( $n=7$ , 20.8%), weightlifting ( $n=4$ , 11.1%), and golf ( $n=3$ , 8.3%). Furthermore, the combined most meaningful activities were meditation/yoga ( $n=5$ , 13.9%), fishing ( $n=7$ , 19.7%), basketball ( $n=3$ , 8.3%), gardening/landscaping ( $n=7$ , 19.7%) mountain climbing/hiking ( $n=3$ , 8.3%), bicycling/handcycling ( $n=3$ , 8.6%), and archery ( $n=3$ , 8.6%).

### *Sense of Community in Sport Scores*

Sense of community in sport (SCS) scores were examined through the combined total and the 5 subscales individually (see table 2). Mean scores were calculated by combining SCS scale scores across all participants within their perspective activities. When examining the combined total score of SCS in participants ASR activities the mean ( $\bar{x} = 2.13$ ) was found to be lower than most subscales. The highest mean scores came from the subscales administrative consideration ( $\bar{x} = 2.28$ ) and social spaces ( $\bar{x} = 2.26$ ). The next highest subscale mean score ( $\bar{x} = 2.2$ ) came from the common interest subscales. This was followed (in order) by the two lowest subscale scores of leadership opportunities ( $\bar{x} = 2.07$ ) and equity in administrative decisions ( $\bar{x} = 1.85$ ).

Table 2

*Sense of Community in Sport Mean Scores*

	Min.	Max.	Mean	Std. Deviation
Mean of SCS Administrative scores	.25	3.00	2.27	.67
Mean of SCS Common Interest scores	1.00	3.00	2.20	.64
Mean of SCS Equity in Admin Decisions scores	.75	3.00	1.85	.48
Mean of SCS Leadership Opportunities scores	1.00	3.00	2.07	.58

*Relationship of Veteran Demographics and Sense of Community*

Before examining research questions, a correlational analysis between ASR participation and participant demographics was conducted to determine if there was a need to control for potential confounding variables. Correlations were conducted between the demographic variables and each of the 5 SCS subscales (administrative consideration, equity in administrative decisions, leadership opportunities, and common spaces). Analysis indicated that there was only one significant relationship ( $p < .05$ ) between demographic variables and sense of community subscales (see table 3). Specifically, the correlation between years of military service and social spaces was statistically significant ( $r = .374, p < .05$ ). Because there was not a theoretical connection between the two and strength of this correlation was moderate, the relationship was not controlled in further analysis. Furthermore, relationships between other demographic variables and sense of community domains were non-significant ( $p > .05$ ), as correlations ranged from  $-0.306$  to  $0.374$ . and were also uncontrolled in further analysis.

Table 3

*Years of Military Service and SCS Social Spaces*

	Social Spaces	Years of Military Service
Social Spaces	Pearson Correlation	1
	Sig. (2-tailed)	.374*
	N	35
Years of Military Service	Pearson Correlation	.374*
	Sig. (2-tailed)	.027
	N	35

\* Correlation is significant at the 0.05 level (2-tailed).

*The Relationship of Adaptive Sports and Recreation Attributes and Sense of Community in Sport*

To examine this research question, the researcher conducted a correlational analysis between sense of community and ASR participation attributes. Because research question two was concerned with the predictive value of ASR participation attributes through a multiple regression analysis, it was important to examine the relationship between dependent (i.e., COS) and independent (i.e., ASR participation attributes) variables. While not a pre-requisite, Nathans and colleagues (2012) suggested that correlations of variables ( $r$ ) indicate the strength and direction of linear relationships in multiple regression. A correlation analysis between the five subscales of SCS and ASR participation attributes for both frequent and meaningful activities were tested. All relationships between the 5 subscales of SCS and participation attributes of most frequent activities were found to be non-significant ( $p > .05$ ) and correlations ranged from  $-.309$  to  $.205$ . Additionally, the majority of relationships between SCS subscale scores and most meaningful attributes were found to be non-significant ( $p > .05$ ) and correlations ranged from  $-.429$  to  $.316$ . Three significant relationships were found between social structure most meaningful and SCS administration consideration ( $r = -.363$ ,  $p = .032$ ), SCS equity in

administrative decisions ( $r = -.413, p = .014$ ), and SCS social spaces ( $r = -.429, p = .010$ ) (see table 4).

Table 4

*Meaningful Activity Social Structure and Sense of Community in Sport Domains*

		Social Structure	Equity in Admin. Decisions	Admin. Scores	Social Spaces
Social Structure	Pearson Correlation	1	-.413*	-.363*	-.429*
	Sig. (2-tailed)		.014	.032	.010
	N	35	35	35	35
Equity in Admin. Decisions	Pearson Correlation	-.413*	1	.744**	.610**
	Sig. (2-tailed)	.014		<.001	<.001
	N	35	35	35	35
Admin. Scores	Pearson Correlation	-.363*	.744**	1	.688**
	Sig. (2-tailed)	.032	<.001		<.001
	N	35	35	35	35
Social Spaces	Pearson Correlation	-.429*	.610**	.688**	1
	Sig. (2-tailed)	.010	<.001	<.001	
	N	35	35	35	35

\*. Correlation is significant at the 0.05 level (2-tailed).

\*\*. Correlation is significant at the 0.01 level (2-tailed).

*The Influence of Adaptive Sport and Recreation Attributes on Sense of Community in Veterans*

The second research question asked, “Do participation attributes in ASR such as frequency, duration, social aspects, and physical intensity predict the level of sense of community in veterans?” For this research question, the researcher planned to run a hierarchical regression to examine if each ASR participation variable predicted sense of community. Due to a lack of relationships between demographic and sense of community variables, there was no need to control demographics in the hierarchical regression analysis. It was also noted that the

directionality of social structure was contrary to the assumptions by the researcher and previous findings. Specifically, individually structured ASR activities were correlated with social domains within the SCS. More significantly, the researcher did not conduct the subsequent multiple regression because of the lack of significant correlational relationships between the experimental variables (i.e., ASR participation attributes and sense of community in sport) and a rationale inconsistent with theoretical foundations of the study to conduct the subsequent multiple regression. Due to an inability to find significant relationships to effectively study both research questions, the researcher examined some secondary issues to better understand how participation influences sense of community in veterans.

## Discussion

This study examined the influence of adaptive sport and recreation (ASR) activity attributes on sense of community in veterans. Analysis of data found that both research questions were non-significant due to a lack of a correlational relationship between the independent (ASR participation attributes) and dependent variables (sense of community). Therefore, this section will detail the numerous methodological and organizational issues that may have influenced results. While some research questions were found to be contrary to previous literature and researcher assumptions, there remains some important issues for future research and practitioner services for veterans.

### Limitations

A few limitations were presented throughout this study that created some methodological challenges. Limitations are broken into various subsections including: *Study Design Issues*, *Sampling Issues*, *Measurement of ASR Activities*, and *Measurement of Social Structure*. Many of these issues may have limited results and consistency with previous literature. However, there is still much to learn concerning from these methodological limitations as it relates to this and future research studies.

#### *Study Design Issues*

Only using a single group post-test only design is the weakest form of quasi-experimental design (Price et al., 2019). In this study design, a more rigorous analysis was prohibited due to practical data restraints and the nature of the population being examined so it was therefore impractical to include a comparison group of veterans not participating in ASR. Another limitation in this study design was potential issues with recall and memory decay (Tourangeau,

2000). In this study, the researcher asked veterans to recall ASR patterns over the past year. As with all retrospective physical activity surveys, there may have also been issues related to incorrect memory recall (Baranowski, 1988). Related, the anonymous nature of the survey made it impossible to follow up with respondents if there were missing data or inconsistencies eventually resulting in lost data.

### *Sampling Issues*

Another limitation was the composition of the sample. The demographics of the study sample tended to be nearly 10 years removed from their active service. Initially, the researcher preferred to have a younger veteran population that was discharged from service more recently and theoretically having more time sensitive issues with re-connecting with their civilian community. Those who have been discharged for recently tend to face more obstacles while reintegrating than those who have been discharged for a longer period (Hawkins et al., 2015). This may have created a “ceiling effect” for the sample and made determining the influence of adaptive sports and recreation (ASR) in community reintegration (and sense of community) more difficult.

Finally, another limitation in this study may have been the number of survey usable responses. While many efforts were made to increase survey responses, reminder emails, there were 45 total survey responses and only 35 were usable for data analysis. Future methods should be used to ensure mandatory information was completed to reduce missing data. The reluctance of veterans to share health related information in fear that it will result in loss or adjustment of benefits or compensation received (True et al., 2015) This is a limitation because this reluctance often leads to increased difficulty when researching this population (Rogers et al., 2016).

### *Measurement of ASR Intensities*

As mentioned earlier, another potential limitation was the use of the 2011 CPA to measure the physical intensity of ASR participation. The 2011 CPA provides evidence-based MET values of energy levels used *primarily* for ambulatory activities. ASR offers a wide range of adaptations, versions, and modifications for ambulatory and wheelchair populations that may differ significantly from the ambulatory participation. While a few MET values for wheelchair users were used from *Compendium of Wheelchair-related Physical Activities (CWPA, Conger & Bassett, 2011)*, the CWPA hasn't been updated since 2011 and does not include all possible wheelchair activities and their MET values. Furthermore, it should be noted that the use of CPA and CWPA MET values in this study were *estimates* for veterans and not energy expended for actual ASR participation. Additionally, some participants used the "other" blank (instead of a pre-determined activity listed) to identify most meaningful or frequent activity. These selections did not always have specific MET values available making calculating the overall intensity more challenging. For example, beep baseball (for visually impaired) was an activity identified by a respondent that did not have any CPA or WCPA MET value listed and the researcher therefore used the CPA score for more traditional version of baseball instead. When an identified activity had multiple CPA values listed, the researcher averaged the sum of the multiple values to estimate the best possible estimation of the activity intensity.

### *Measurement of Social Structure*

This study pre-determined the social nature of activities by classifying activities as either individual or team oriented. Due to the survey's nature, the researcher did not have specific information about what the *typical* social nature of the participant's true engagement in the

activity. Therefore, the pre-determined classification of the social nature of the activities may not have been the most accurate way to determine the true sense of social engagement and connection in an ASR activity. Data may not have therefore indicated the true social nature of an activity and only accounted for the designed social structure of the activity. For future, researchers should have individuals classify their individual perceptions of the social nature of their activities. This will allow researchers to examine social aspects from individual perspectives rather than from a structural program perspective. This issue will be further discussed in this section.

### **Examining ASR and Veteran Sense of Community**

While the stated methodological limitations may have directly impacted a lack of relationships, there remains some interesting findings that can help those serving veterans to promote community reintegration and sense of community. To gain further perspectives from this study, some additional measures were examined to help better serve those practitioners who design programs for veterans. The following provides some issues for consideration.

#### *Promoting Meaningful Participation for Veterans*

A secondary finding in this study indicated that attributes significantly differed ( $p < .001$ ) when compared between most frequent and most meaningful activities suggesting a difference in what veterans frequently do and those activities most meaningful. Further understanding the constraints to this gap is the first step in determining why these are so different and what practitioners can do to reduce these gaps. If researchers can understand the individual cognitive processes that determine the difference in perspectives between those activities that are most meaningful and those that are most frequently participated, it will help better understand the

specific characteristics that make participation in these activities so meaningful so those can possibly be facilitated with those most frequent activities. This also provides practitioners the opportunity to investigate those challenges and constraints that make meaningful activities less frequently participated. Participants and athletes are key stakeholders in sporting environments and the sense of community fostered within each program may be an important element of making ASR activities more meaningful. Therefore, studying sense of community is an important aspect to determine within ASP programs. A strong sense of community is durable and will persist despite the natural flow of new athletes being introduced and older athletes departing (Warner & Dixon, 2011). Understanding the athletes' individual perspectives of an ASR program can help practitioners build strong programs with lasting levels of sense of community. In turn, it remains a priority for practitioners to help veterans participate in their more meaningful activities more often and for longer periods.

### *The Need for Social Participation*

The most significant finding in this study was that the social nature of ASR is an important aspect of ASR programs and remains a critical need for veterans once removed from active service. The only significant correlations in this study involved the social aspects of sense of community. It is a human need to be socially connected with others (Baumeister & Leary, 1995). Veterans too have a need to be connected (Rogers et al., 2016). Rogers and colleagues (2016) explored the impact that outdoor recreation had on injured military members when they examined the role that outdoor recreation had on developing a social community for veterans. The small community created, where participants began as strangers evolved into them leaving as “best friends” which they referred to as a “band of brothers”. Participants in the Rogers et al. study revealed that while some had connections through military rank or branch, but ultimately

these factors did not matter to them. It was important to have those experiences with other veterans that only other military members would understand. These newfound social connections in ASR and unrelated to previously established military connections provided the opportunity for participants to form a sense of belonging. Participation in ASR resulted in a cohesive unit between participants that was interchanged with previous military culture, values and training instilled in them.

#### *Understanding the Individual Social Experience in Adaptive Sport and Recreation*

As mentioned earlier, pre-designation of the social structure within the list of ASR activities to “traditional” engagement may have constrained and limited the various ways individuals, including veterans, experience ASR. Social engagement occurs even in “individual” activities and the perception of the degree of social nature is and always determined by participants. For example, track athletes traditionally compete as individuals but there is still extensive social engagement within and beyond the actual activity that may lead to the development of one’s sense of community. The sample mean ( $\bar{x} = 1.14$ ) of social structure indicated respondents most frequently participated in ASR structured as “individual” activities. When examining the means of those ASR that were most meaningful the sample mean ( $\bar{x} = 1.1$ ) indicated that social structures tended to be more “individual” in structure. Analysis revealed that despite activities being categorized as “individual”, participants still had opportunity to build social communities regardless of the social structure of the ASR.

Regardless of the social structure of an activity, opportunities for participants to create social communities were present. Understanding what factors within a program can foster increased social nature of an ASR activity is important. While the social structure of activities mostly fell in the “individual” classification, participants still sought out these activities due to

their social nature. Sense of community mean scores for the social spaces ( $\bar{x} = 2.26$ ) and common interest ( $\bar{x} = 2.2$ ) indicated that participants did find a social community from these “individual” activity structures. Additional research on individual’s perspectives of the social nature and experience within an activity can help practitioners foster an increased sense of community in ASR programs.

This has been confirmed in previous research. For example, Rogers and colleagues (2016) explored the impact that outdoor recreation on injured military members. A major theme that was found was the significant role that outdoor recreation had on developing a social community for participants. Most of these activities at this veteran event were individual in nature (e.g., archery, trap shooting, fishing). None-the-less, a small community was still created in those more informal social conversations and interactions beyond the mere individual ASR engagement. Rogers et al. (2016) suggested an organized ASR program for veterans created these newfound social connections unrelated to previously established military connections that ultimately provided the opportunity to form a new sense of belonging.

#### *Trends in Veteran Participation in Adaptive Sport and Recreation*

Finally, as mentioned earlier, the most frequent activities in the sample included fitness, weightlifting, basketball, dance, fishing, golf, and gardening/landscape. The major theme in most of the frequent ASR activities is the focus on physical fitness. The foundations and structure of military service emphasize these same patterns through consistent physical fitness for military preparedness. The experience of military service may create a physical fitness lifestyle habits for some veterans that carries over into civilian life. While interest is always contextualized to individual veterans, practitioners should consider this possibility of veterans desiring activities that focus on fitness due to the habits established during their previous military service. In

addition, examining the most “meaningful” ASR activities included fishing, yoga/meditation, gardening/landscape, mountain climbing/hiking, basketball, bicycling/handcycling, and archery. Overall, most meaningful activities were self-care oriented with focus placed on mindfulness, meditation and being in nature. While the value of the ASR experience for veterans is certainly pertinent to one’s individualized experience, it may be necessary to examine those activity participation patterns that seek needs that carry over from their military experience and those that may have potentially been created because of the military experience of veterans.

### **Future Research**

Due to the many difficulties veterans face when transitioning from military to civilian life, there remains a need for future research on evidence-based interventions and policies to help ease the transition and eliminate some difficulties (Thomas & Bowie, 2016). Military technology and war tactics are rapidly advancing each year, in turn creating higher survival rates of soldiers and veterans with various disabilities and diagnosis (Smith & Bellamy, 2005) creating needs for advancements in the care and interventions veterans are receiving. Future research into specific interventions and their effectiveness will be vital for providing the highest level of care for all veterans.

Another avenue for future research is to further examine the differences in sense of community between wheelchair users and ambulatory individuals. Those individuals who used wheelchairs for mobility had lower means across all five SCS domains than the ambulatory veterans (mean differences ranged from .218-.833). The total SCS mean score for ambulatory veterans was 2.175 while the non-ambulatory total SCS mean score was 1.700. This difference could not be reported as a finding in this study because of the disproportionate numbers of

ambulatory veterans vs. non-ambulatory, but the large difference in scores provides interest with future studies with more proportionate sampling. Examining sense of community across the presence of physical disability may provide further insights into the identity and reintegration challenges faced by those post-duty veterans with physical disabilities (Rogers et al., 2016).

There are a few additional avenues for future research that allows for examination of specific aspects and how they influence community reintegration. One is examining the influence between serious leisure or sport specialization and its influence of sense of community. This will allow researchers to examine any potential benefits that specializing in one sport has on fostering a sense of community within its program and for its participants. Another avenue for future research is to provide face to face surveying as a method to increase response rates. A larger sample size will increase the precision of results (Andrade, 2020). Face to face surveying can decrease the reluctance in veterans to seek or share any information that relates to their health (Olenick et al., 2015). Finally, adding a limitation or cap to the years since being discharged (<5 years). Resulting in a population of veterans that are more recently discharged and in early stages of transitioning from military to civilian life.

### **Practical Implications of Study**

The future implications of this research hope to provide feedback for CTRS's to improve their services and create a sense of community in veteran populations. While findings in this study may differ somewhat from previous research (Baird et al., 2018), there remains key information that can provide CTRS's with knowledge to help create the most effective and targeted treatment plans for clients. One of the flaws in this study may have been the inability of the survey methods to accurately capture the true essence of the veteran experience in ASR. The

CTRS needs to continue to strive to modify or adapt their program based off the clients' stated needs and experiences. Program evaluations are assessments of a specific program to gather feedback and evidence of the program's effectiveness in providing the outcomes it is intended to achieve (Savaya & Waysman, 2008). The survey used in this study, SSC (Warner et al., 2013) can be classified as a consumer-based program evaluation that asks consumers of services an accumulation of questions or procedures with the sole intention of how determining how effective a *program* is in achieving its intended outcomes through participant needs and opinions (Bledsoe & Graham, 2005). By providing insight into how an ASR program fosters a sense of community in veterans can lead to a greater understanding of how sense of community is created through ASR in the veteran population.

A crucial factor of community reintegration is that adaptive sport or recreation program can foster sense of community for participants (Pollock, 2018). Sense of community is not often considered by the CTRS providing ASR programs for veterans. Warner defines sense of community as “community characteristics that lead to members feeling a sense of belonging, attachment, and shared faith and interests in common goals or values” (Warner, 2016). When a sport or recreation program has an elevated sense of community, it results in several benefits for not only participants but the sport, agency, and community (Warner, 2016) including increased retention of participation, health benefits, justification and demand of the sport, and civic participation (Warner, 2016). As mentioned earlier, adaptive sport and recreation activities often create an environment that draws like-minded individuals together based on the shared interests of the sport (Warner et al., 2012c). This social environment serves as a catalyst for creating and fostering a strong community within participants (Warner et al., 2012c). Sporting environments are created as a direct reflection of how a sports program is structured and managed for

participants (Warner et al., 2012c). Understanding the role of management and programming within sporting environments is beneficial for those in and around the program (Warner & Dixon, 2011). By providing facilitators with key context important to participants, managers and practitioners can help foster and maintain a sense of community for participants (Warner et al., 2012). Accounting for the athletes' perspective into sense of community and using the SCS survey can help sport and recreation leaders evaluate sense of community as key a key piece of the puzzle to better serve those in our veteran community.

### **Conclusion**

In a survey on Iraq and Afghanistan war veterans, around 70% reported having difficulties transitioning from military to civilian life (Thomas & Bowie, 2016). Due to several emotional, physical, social, and societal issues, numerous veterans that return from war remain disengaged from society due to inability to reintegrate (Thomas & Bowie, 2016). While there were few to no significant correlations between demographic variables and participation in ASR, there remains important information related to the social connections veterans desire and can experience in ASR activities. Secondary findings found that the social nature of ASR activities played an important role in SCS scores regardless of the social structure. Understanding what veterans go through during their reintegration process and the role SCS has is important for providing the most effective care. Further research on factors within an ASR program that foster a SCS will continue to help this veteran population with reintegration efforts.

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## **SECTION II:**

### **EXTENDED LITERATURE REVIEW**

#### **Veterans and Community Reintegration**

Many veterans experience traumatic events throughout their service that can lead to injuries, disabilities, and problems transitioning back to civilian life (Ahern et al., 2015). The transitioning difficulties cause increased risk in veterans having long-term problems (Ahern et al., 2015). Ahern and colleagues (2015) examined the problems that Afghanistan and Iraq veterans face during their military to civilian life transition. The researchers conducted in person or telephone interviews with 24 veterans on their experiences including family, friends, the general community, and fellow veterans. The results indicated 3 main themes: military as family, normal is alien, and searching for a new normal. Military as family indicated to the concepts that veterans share a family bond with those they serve with, only those who served together knew exactly what they went through/experienced, and that the military took care of its members during service. Alien is normal<sub>2</sub> addressed the alienation that veterans felt when returning to their civilian life, disconnection from the community, loss of purpose, and unsupportive institutions. Most veterans spoke about the idea that the reality that what used to feel “normal” felt “alien” due to changes that occur within the veteran and their life at home (Ahern et al., 2015). The last major theme, searching for a new “normal” examines different tactics used by veterans to help address alienation and move forward. Unfortunately, many veterans found more challenges with support due to others not having those same experiences in military services.

United States veterans are a unique and complex population that can experience many injuries, problems, and obstacles in life post service (Olenick et al., 2015). Olenick and colleagues (2015) attempted to gain more insight into all the issues faced by veterans to better

educate health care professionals who work with veterans. The researchers also gathered information related to health problems in this population to gain a better understanding of reintegration needs. First, veterans are at a higher risk of mental illnesses which can be substance abuse disorders, depression, anxiety, manic-depressive disorders and more. Due to the risk of these mental health issues, research has shown that veterans who experience these are at a greater risk of suicide (Olenick et al., 2015). Many veterans get post-traumatic stress disorder (PTSD) from their experiences, 36% of male veterans have PTSD compared to 8% of non-military males (Olenick et al., 2015) The researchers found that PTSD is commonly linked to traumatic brain injuries (TBI), pain, psychiatric disorders, sleep problems and more. TBI results from blunt force to the head and can occur in a number of ways. Most common symptoms include problems with memory, focus, irritability, and mobility. Veterans have a 14% diagnosis rate for depression, an 82% rate of reporting chronic pain, and a large number (1,573 since 2010) have major limb amputations (Olenick et al., 2015). Amputations can cause problems with mental health, mobility, body image, social interactions and experiences, and employment. Unfortunately, there is limited research on the long-term effects of exposure to various hazardous chemicals. Short term effects are seen immediate, but it is difficult to tell how these exposures will affect a veteran in the long term. A high rate of veteran's experience homelessness due to one or more of these issues, 51% of homeless veterans have disabilities, 50% suffer from severe mental illnesses, and 70% have substance abuse disorders (Olenick et al., 2015). The researchers state that successful reintegration is vital for holistic and effective care and can be achieved through veteran-specific content. This involves understanding these complex mental, physical and behavioral disorders, importance of community reintegration, and reintegration obstacles. In 2013, 8.9 million veterans were utilizing Veterans Affairs (VA) services which is only half of the veteran

population (Olenick et al., 2015). Showcasing the importance of educating health providers on this population due to the mass number of veterans that utilize community/civilian medical services instead of or alongside VA services. Veteran research has shown that community reintegration is a reoccurring problem facing veterans in their transition from military to civilian life.

Resnik and Allen (2007) performed a pilot study to examine how the International Classification of Functioning, Disability and Health (ICF) can be used to understand various community reintegration problems for veterans. Veterans reported challenges in many aspects of community reintegration including community life (d910), recreation and leisure (d920), political life and citizenship (d950), tolerance in relationships (d7102), regulating behaviors in interactions (d7202), informal social relationships (d750), general domestic life (d600), and more. While most veterans face adversity, the results found that those with more severe polytraumatic injuries had more challenges reintegrating. The clinician interviews revealed that common traits seen among veterans are social isolation, withdrawal, apathy due to this feeling of disconnect. Clinicians indicated that many veterans also experience a strain or break in their intimate relationships, difficulties starting new social relationships, and emotional distance from those around them. Numerous veterans reported not being able to attend community events due to large crowds, loud noises, adversity in other aspects of life causing their community lives to be affected, unsafe going out after dark, physical limitations, and general disconnection from others around them. This study helped to address and further examine the issues that veterans face when trying to integrate back into their communities. Community reintegration for the veteran population remains a challenge that requires an examination of those pathways to promote a successful transition into community life after one's military duty.

### *Sense of Community Theory*

One aspect to community reintegration is fostering a sense of community between individuals and their community of support. In this study, a sense of community is defined as attributes within the community or environment that foster an individual's sense of belonging and support (Sarason, 1974). Macmillan and Chavis (1986) broke down sense of community into four main elements. The first element is *membership* which is known as the perception of sharing personal relatedness and belonging with others. The second element is *influence*, which comes from the perception of making a difference to a group, sense of mattering, and a group mattering to its' members. The third element refers to the integration and fulfillment of one's needs through membership in a group known as *reinforcement*. The final element is *shared emotional connection* which refers to members having common ground by having similar experiences, places, and history. Sense of community is typically developed by individuals interacting within one's "community." Gusfield (1975) suggested that one's "community" refers to both geographic territories (e.g., neighborhoods, towns, cities) and relational (e.g., those associations developed around similar interests and skills. One of those relational communities includes sports.

Furthermore, Baumeister and Leary (1995) suggested that for individuals to have increased well-being there are certain needs that need to be met. Individuals inherently have a drive to create and maintain significant, positive and long-lasting interpersonal relationships (Baumeister & Leary. 1995) that can fill one's fundamental need to belong (Pillow et al., 2016). Bryan and Heron (2015) also conducted a cross-sectional study that examined if this sense of belonging influenced post deployment depression in military personnel. Findings supported that a stronger sense of belonging served as a buffer to depressive symptoms before and after military

deployment. Secondary findings also indicated that belonging to a cohesive group/team served as a shield from negative cognitions and emotions. Through participation in group social activities, such as sport and recreation, permitted community members an opportunity to focus on the greater group/team task at hand that often emphasized unit cohesion and social support strength.

### *Sense of Community in Sport and Recreation*

Sense of community within the sports world plays a major role in the possible benefits that increase quality of life for its members (Warner & Dixon, 2011). Warner and Dixon (2011) developed the Sense of Community in Sport Theory through a study that examined athletes' perspective on sense of community within the context of sport. The researchers identified the seven key factors that fostered sense of community within a sport context: leadership opportunities, social spaces, administrative consideration, competition, and equity in administrative decisions, leadership opportunities, and voluntary action (Warner & Dixon, 2011). Figure 1 provides an overview of these key factors developed by Warner and Dixon (2011). Warner et al. (2013) further outlined the seven factors as: a) *administrative consideration* refers to the vocalization of concern, care, and intentionality of program administrators; b) *common interest* is the group dynamic that fosters social networks and friendships of individuals brought together through common interest; c) *equity of administrative decisions* refers to the commitment that all decisions are fair and show all members are equal; d) *leadership opportunities* can be informal or formal chances for members to guide and direct others within the community; and e) *social spaces* are those common areas that foster interaction between members and athletes.



**Figure 1**

*The Sport and Sense of Community Theory (Warner & Dixon, 2012)*

Sport and sense of community has become a more popular element of community reintegration in recent years. However, limited research has examined sport and sense of community among military populations. Pollock (2018) conducted a master's thesis that examined if sport and recreation could foster a sense of community in the Canadian military. This quantitative approach looked to examine two research questions: (1) if recreation participants had higher levels of sense of community compared to non-recreation participants, and (2) if there was a relationship between various attributes of recreation participation and individuals' sense of community. Results indicated that voluntary action, defined as “self-fulfilling and self-determining activities resulting from little to no external pressure or incentive” (p. 41), was the only factor that had a significant relationship ( $p < .05$ ) with sense of community. The results also found that various attributes (e.g., the number of recreational activities, the number of combined activities, and total duration of participation) were significantly related

( $p < .05$ ) to three factors of sense of community (*administrative consideration, common interest, and voluntary action*). This study provided evidence that the nature of sport and recreation activities foster various factors of sense of community in military veterans. Sport and recreation have also been found to be a critical factor in fostering a sense of community in non-military populations (Warner & Dixon, 2011; Warner et al., 2012; Warner et al., 2013). Ahern et al. (2015) suggested the transition for military life can be promoted by creating an increased sense of community through common associations. Sport and recreation can often serve as common association of individuals with a shared interest. There remains a crucial need to further explore the impact of sport and recreation on sense of community in military populations.

### **Adaptive Sport and Recreation as an Intervention for Sense of Community in Veterans**

Throughout the literature, there is evidence that there are positive impacts that ASR have on community reintegration. Community reintegration can be increased and achieved in many ways including increased confidence in self and abilities to do tasks and responsibilities, acquiring a job and life-related skills, and improving social ties and networks throughout the community. For individuals with disabilities, research is shifting to acknowledge the vital roles that social and community reintegration play in the rehabilitation process (Sidiropoulos et al., 2022). McVeigh and colleagues (2009) performed a cross sectional study that examined wheelchair sport participants with spinal cord injuries on community reintegration and quality of life. The researchers found that participation in wheelchair sports after injury correlated with many positive outcomes. The outcomes that were found to have a significant difference ( $p < 0.01$ ) included improved education, community reintegration, employment status, and overall higher quality of life.

Rogers and colleagues (2016) conducted a qualitative study that examined veterans' insight and attitudes towards outdoor recreation. The intervention was a four-day outdoor recreation event involving fishing, archery, and skeet shooting. The researchers gathered data through individual interviews, observations, and various informal interactions. One main theme that emerged from the results indicated the development of a social community. Many participants stated that this event had brought them genuine connections with individuals who understand what they've experienced, sometimes without even having to say it. Participants in this study started out as complete strangers but through the recreational event were able to form and create this community referred to as "band of brothers". Veterans have a high risk of encountering obstacles as they transition from military to civilian life. Current research has found adaptive sports and recreation to be an effective form of treatment for veterans that can be supported by gaining further empirical support.

Similarly, Brittain and Green (2012) used a qualitative study to examine the use of sports as a rehabilitation tool for military personnel with sudden traumatic injuries received during service. The first major theme found was the rehabilitative power of sport and the enjoyment individuals receive through participation. The next major theme was directions that included discovering and acknowledging individual limitations, improving quality of life, and increasing effective community reintegration, and improvement of life skills. The third major theme was self-actualization including encouraging positive thinking/attitudes and gaining new coping strategies and behaviors. The last major theme found was achievement including increased determination, focus, and increased ability to set goals and achieve them. This study highlighted the important visible and invisible outcomes that adaptive sports had for individuals reintegrating back into their communities by addressing all three dimensions.

Likewise, a master's thesis conducted by Pearsall (2019) examined how frequency and duration of ASR participation influenced sense of community and community reintegration. Results suggested that there were no significant positive relationships ( $p > .05$ ) between frequency and duration of ASR participation and sense of community. However, results indicated a positive relationship ( $p = .01$ ) between sense of community and community reintegration. A secondary finding of the study revealed that type of ASR activity had a high level of influence over a participant's sense of community compared to frequency and duration of participation. Highlighting the importance of fostering and maintaining sense of community levels has on community reintegration for participants. This study provided some insight into athlete perspectives on what factors were important for creating a sense of community within an activity.

Along with social support ASR can provide participants with new coping skills and strategies as seen in Hutchinson and colleagues (2003). The researchers in this qualitative study focused on how individuals with traumatic brain injuries use leisure as a coping tool. Kleiber (1999) defines leisure as enjoyable free time activities that can differ based on personal preference. Leisure is a wide range of activities including physical activity and other recreational activities that can be used as a resource for emotion and problem focused coping (Hutchinson et al., 2003). The results indicated two main roles leisure served for coping, the first as a buffer to immediate perceived stressors, and the second as motivation to sustain coping strategies for daily challenges encountered. The study highlighted mental distractions from challenges faced in daily life due to current situations and an escape from the individual's disability or illness as some of the main outcomes of leisure-based coping. The participants stated that involvement in leisure activities increased their sense of belonging and acceptance away from stigmas and increased

their social connections. Leisure activities can differ the same as ASR based on personal preference or interests, and the main benefit themes emerged as consistent throughout participation.

Chan and colleagues (2019) performed a systematic review of all literature on the therapeutic benefits of physical activity. Some therapeutic benefits that were noted with regular exercise included increased positive mood state while decreasing the occurrence of negative moods, increased resilience to stress, and are less likely to have anxiety or depression compared to inactive individuals. The researchers examined physical intensity of exercise as it related to mood improvements or benefits. Results for aerobic exercises appeared inconsistent indicating some studies found more dominance in results with higher intensity exercises while others found greater improvements in moderate intensity aerobic activities. In anaerobic exercises results indicated a greater change when participating in moderate intensity for non-sedentary individuals. While research on the effects of physical intensity is more generalized, the current study looks to address this gap by providing evidence that examines specific intensities of ASR activities. Attempting to address if a particular intensity of an ASR activity provides increased benefits resulting in a greater level of community reintegration.

### **Promoting Sense of Community through the Attributes of ASR**

ASR has long been a mechanism for rehabilitation in populations with disabilities (Brittain and Green, 2012). However, there has been less examination of how ASR facilitates the process of community reintegration. Loy et al. (2003) examined how leisure influenced adjustment for individuals with spinal cord injuries. The researchers used Livneh and Antonak (1997) definition of adjustment which states, that it “can be viewed once a person assimilates his or her functional limitations and becomes fully engaged in the environment” (Loy et al., 2003, p3

here). This definition of adjustment into society after a disability is very closely related to the definition used in this study for community reintegration. An indirect influence on adjustment is the social support that comes from the inherent social nature of most leisure activities (Loy et al., 2003). The results indicated a significant relationship between the influence of leisure engagement and social support on adjustment (Loy et al., 2003). This study provides evidence that leisure and its inherent social nature helps individuals with disabilities adjust to circumstances faced in their lives. There is a connection between adjustment as defined in Loy et al., (2003) and community reintegration. For an individual to be fully integrated into their community, they must go through the process of adjusting to their life, limitations and disability. ASR research has found that it fosters adjustment and community reintegration for individuals who participate.

Arthur-Banning and colleagues (2020) examined the effectiveness of a community-based adaptive sport model in the effectiveness of reintegrating veterans back into the community. Participants included veterans who've experienced a traumatic brain injury, stroke, or various physical impairments. This study addressed reintegration for veterans but also attempted to increase student and community involvement and advocacy for this population. Researchers examined perceptions, feelings, and insight into the program through administering online surveys following a participant's camp experience. Results indicated that participants were interested in seeking more information related to paralympic sports/players, the sport, and various skills involved, as well as access to more coaching information to continue gaining skills and knowledge. Participants were also very interested in gaining more time and access to interactions with students, volunteers, and coaches. Many stated that having sport as a buffer helped to enhance and ease the transition of integrating and creating networks with the

community, volunteers, and students. This study provides evidence that community-based adaptive sports programs have a positive impact in aiding and enhancing reintegration for veterans. Many participants were interested to find out the next steps in how they could continue integrating and creating networks in the community and adaptive sports

Fiorilli and colleagues (2013) performed a controlled study that investigated the impact of wheelchair basketball on mental health and social participation skills. The researchers found that participation provided increased personal growth ( $p < 0.01$ ), self-acceptance in ability complete daily tasks and form positive relations ( $p < 0.01$ ), positive relations and interactions with others ( $p < 0.01$ ). The importance of participation is shown through improvements in mental health, increased feelings of community and social networks, and overall psychological well-being where the p-value of all included domains were significant ( $p < 0.01$ ). Adaptive sports involvement has been shown to have many benefits in community reintegration for individuals with disabilities.

Hutchinson and colleagues (2003) suggested that the social support found within ASR networks often provide new coping skills and strategies. Results provided two main roles recreation and leisure served for coping including a) recreation and leisure as a “buffer” and b) as motivation to sustain coping strategies for daily challenges met. The study highlighted how recreation, including sport, provides mental distractions from challenges faced in daily life due to current situations and an escape from the individual's disability or illness as some of the main outcomes of leisure-based coping. Participants confirmed that involvement in recreation and sport activities increased their sense of belonging and acceptance away from stigmas and ultimately increased their social connections. Leisure activities can differ the same as ASR based

on personal preference or interests, and the main benefit themes appeared as consistent throughout participation.

Veterans often encounter obstacles as they transition from military to civilian life (Ahern et al., 2015). Current research has found adaptive sports and recreation to be an effective form of treatment for veterans that can be supported by gaining further empirical support. Further examining different ASR attributes including the frequency, duration, physical demands, social aspects. The social aspect of sports refers to the inherent social makeup of sports. The frequency of ARS refers to the number of sessions, games or activities participated in or how often over a given period and the duration of an activity refers to the length of time spent participating (Oja et al., 2018). The physical demand attribute examines if various levels of intensities within ASR affect community reintegration. These attributes all offer pros and cons to those athletes participating in them.

## **Appendix A**

### **Demographic Survey**



**Demographics**

What year were you born?

What is your gender?

Male

Female

other:

What is your race?

Caucasian

African American

American Indian, Alaskan

Asian/Pacific Islander

Hispanic

other:

What is your martial status?

Married/Cohabiting

Single/Widow/Divorced

other:

What is your employment status?

Employed

Unemployed

How many hours per week do you work?

What was your military rank?

Enlisted

Non-commissioned officer

Warrant officer

Officer

other:

How many years were you in military service?

What year were you discharged from military service?

**Adaptive Sport and Recreation Habits**

The next portion of the survey will ask about those sports and recreation activities that you participated in most FREQUENTLY and those activities that were most MEANINGFUL to you. Remember that these activities may be similar or very different. Please answer as accurately as possible.

Here is a list of potential recreational activities, please DO NOT check any boxes. This is to help give you ideas of the 3 MOST FREQUENT specific recreation sports and activities. Please note that you do not have to limit yourself to those activities named on this list.

- |  |   |  |
|--|---|--|
| <input type="checkbox"/> Auto mechanics (non-work)     | <input type="checkbox"/> Gardening                        | <input type="checkbox"/> Wheelchair rugby  |
| <input type="checkbox"/> Archery                       | <input type="checkbox"/> Golf                             | <input type="checkbox"/> Rock climbing   |
| <input type="checkbox"/> Basketball                    | <input type="checkbox"/> Goal ball                        | <input type="checkbox"/> Sailing/windsurfing   |
| <input type="checkbox"/> Wheelchair basketball         | <input type="checkbox"/> Hockey                           | <input type="checkbox"/> Sewing/knitting/crochet   |
| <input type="checkbox"/> Beep ball                     | <input type="checkbox"/> Wheelchair hockey                | <input type="checkbox"/> Shooting (trap/air rifle/archery)                                 |
| <input type="checkbox"/> Boccia                        | <input type="checkbox"/> Horseback riding                 | <input type="checkbox"/> Paracuting/parasailing  |
| <input type="checkbox"/> Bicycling                     | <input type="checkbox"/> Hunting                          | <input type="checkbox"/> Scuba diving/snorkeling   |
| <input type="checkbox"/> Bird watching                 | <input type="checkbox"/> Ice skating                      | <input type="checkbox"/> Snow Skiing/sledding  |
| <input type="checkbox"/> Bowling                       | <input type="checkbox"/> Jet skiing/waverunners/boating   | <input type="checkbox"/> Soccer  |
| <input type="checkbox"/> Camping                       | <input type="checkbox"/> Karate/martial arts              | <input type="checkbox"/> Power soccer  |
| <input type="checkbox"/> Ceramics                      | <input type="checkbox"/> Landscaping/yardwork             | <input type="checkbox"/> Softball/baseball   |
| <input type="checkbox"/> Cycling                       | <input type="checkbox"/> motorcycles/all terrain vehicles | <input type="checkbox"/> Swimming  |
| <input type="checkbox"/> Cooking/baking                | <input type="checkbox"/> Mountain climbing/hiking         | <input type="checkbox"/> Table tennis /ping pong   |
| <input type="checkbox"/> Creative writing/poetry/drama | <input type="checkbox"/> Photography                      | <input type="checkbox"/> Tennis  |
| <input type="checkbox"/> Dance                         | <input type="checkbox"/> Racquetball                      | <input type="checkbox"/> Volleyball  |
| <input type="checkbox"/> Fishing                       | <input type="checkbox"/> Radio controlled cars/planes     | <input type="checkbox"/> Waterskiing   |
| <input type="checkbox"/> Fitness (aerobic/pushing)     | <input type="checkbox"/> Rafting/kayaking/canoeing        | <input type="checkbox"/> Weight Lifting  |
| <input type="checkbox"/> Flying airplane/helicopter    | <input type="checkbox"/> Meditation/yoga                  | Other:<br><input type="checkbox"/> <input style="width: 80px; height: 15px;" type="text"/> |
| <input type="checkbox"/> Football                      | <input type="checkbox"/> Road racing/track & field        | Other:<br><input type="checkbox"/> <input style="width: 80px; height: 15px;" type="text"/> |
| <input type="checkbox"/> Wheelchair football           | <input type="checkbox"/> Rugby                            | Other:<br><input type="checkbox"/> <input style="width: 80px; height: 15px;" type="text"/> |

**MOST FREQUENT ACTIVITIES**

Of those activities above, please write below the three activities you participated in MOST FREQUENTLY over the PAST YEAR. Then, circle how often and long you participated in the activity during the past year.

a. "My MOST frequently participated in activity was \_\_\_\_\_" (from the list above).

a. "During the PAST YEAR, I participated in this activity about \_\_\_ times."

1   5   10   15   20   25   30   35   40   45   50+

Check the one that applies most

\_\_\_\_\_

b. "During the PAST YEAR, I participated in this activity about \_\_\_ times."

1 5 10 15 20 25 30 35 40 45 50+

Check the one that applies most

b. Select the TYPICAL length of time you participated in this activity for EACH session.

- 30 minutes
- 45 minutes
- 1 hour
- 1.5 hours
- 2 hours
- 2.5 hours
- 3+ hours

c. "My THIRD most frequently participated in activity was \_\_\_\_\_" (from the list above).

\_\_\_\_\_

c. "During the PAST YEAR, I participated in this activity about \_\_\_ times."

1 5 10 15 20 25 30 35 40 45 50+

Check the one that applies most

c. Select the TYPICAL length of time you participated in this activity for EACH session.

- 30 minutes
- 45 minutes
- 1 hour
  
- 1.5 hours
- 2 hours
- 2.5 hours
- 3+ hours

Here is a list of potential recreational activities, please DO NOT check any boxes. This is to help give you ideas of specific recreation sports and activities. Please note that you do not have to limit yourself to those activities named on this list.

- |  |   |  |
|--|---|--|
| <input type="checkbox"/> Auto mechanics (non-work)     | <input type="checkbox"/> Gardening                        | <input type="checkbox"/> Wheelchair rugby                  |
| <input type="checkbox"/> Archery                       | <input type="checkbox"/> Golf                             | <input type="checkbox"/> Rock climbing                     |
| <input type="checkbox"/> Basketball                    | <input type="checkbox"/> Golf ball                        | <input type="checkbox"/> Sailing/windsurfing               |
| <input type="checkbox"/> Wheelchair basketball         | <input type="checkbox"/> Hockey                           | <input type="checkbox"/> Sewing/knitting/crochet           |
| <input type="checkbox"/> Beep ball                     | <input type="checkbox"/> Wheelchair hockey                | <input type="checkbox"/> Shooting (trap/air rifle/archery) |
| <input type="checkbox"/> Bocce                         | <input type="checkbox"/> Horseback riding                 | <input type="checkbox"/> Paracuting/parasailing            |
| <input type="checkbox"/> Bicycling                     | <input type="checkbox"/> Hunting                          | <input type="checkbox"/> Scuba diving/snorkeling           |
| <input type="checkbox"/> Bird watching                 | <input type="checkbox"/> Ice skating                      | <input type="checkbox"/> Snow skiing/sledding              |
| <input type="checkbox"/> Bowling                       | <input type="checkbox"/> Jet skiing/waverunners/boating   | <input type="checkbox"/> Soccer                            |
| <input type="checkbox"/> Camping                       | <input type="checkbox"/> Karate/martial arts              | <input type="checkbox"/> Power soccer                      |
| <input type="checkbox"/> Ceramics                      | <input type="checkbox"/> Landscaping/yardwork             | <input type="checkbox"/> Softball/baseball                 |
| <input type="checkbox"/> Cycling                       | <input type="checkbox"/> Motorcycles/all terrain vehicles | <input type="checkbox"/> Swimming                          |
| <input type="checkbox"/> Cooking/baking                | <input type="checkbox"/> Mountain climbing/hiking         | <input type="checkbox"/> Table tennis /ping pong           |
| <input type="checkbox"/> Creative writing/poetry/drama | <input type="checkbox"/> Photography                      | <input type="checkbox"/> Tennis                            |
| <input type="checkbox"/> Dance                         | <input type="checkbox"/> Racquetball                      | <input type="checkbox"/> Volleyball                        |
| <input type="checkbox"/> Fishing                       | <input type="checkbox"/> Radio controlled cars/planes     | <input type="checkbox"/> Waterskiing                       |
| <input type="checkbox"/> Fitness (aerobic/pushing)     | <input type="checkbox"/> Rafting/kayaking/canoeing        | <input type="checkbox"/> Weight lifting                    |
| <input type="checkbox"/> Flying airplane/helicopter    | <input type="checkbox"/> Meditation/yoga                  | Other: _____   |
| <input type="checkbox"/> Football                      | <input type="checkbox"/> Road racing/track & field        | Other: _____   |
| <input type="checkbox"/> Wheelchair football           | <input type="checkbox"/> Rugby                            | Other: _____   |

MOST MEANINGFUL ACTIVITIES

Of those activities above, please write below the three activities you participated in over the LAST YEAR that were the MOST MEANINGFUL to you. Then, circle how often you participated in the activity the PAST YEAR. Please note these activities can be the same or different as your most frequent.

a. "My MOST MEANINGFUL activity that I participated in over the PAST YEAR was \_\_\_\_\_" (from the list above).

a. "During the PAST YEAR, I participated in this activity about \_\_\_ times."

1 5 10 15 20 25 30 35 40 45 50+

Check the one that applies most

a. Select the TYPICAL length of time you participated in this activity for EACH session.

- 30 minutes
- 45 minutes
- 1 hour
- 1.5 hours
- 2 hours
- 2.5 hours
- 3+ hours

b. "My SECOND MOST MEANINGFUL activity that I participated in over the PAST YEAR was \_\_\_\_\_" (from the list above).

b. "During the PAST YEAR, I participated in this activity about \_\_\_ times."

1 5 10 15 20 25 30 35 40 45 50+

Check the one that applies most

b. Select the TYPICAL length of time you participated in this activity for EACH session.

- 30 minutes
- 45 minutes
- 1 hour
- 1.5 hours
- 2 hours
- 2.5 hours
- 3+ hours

c. "My THIRD MOST MEANINGFUL activity that I participated in over the PAST YEAR was \_\_\_\_\_" (from the list above).

c. "During the PAST YEAR, I participated in this activity about \_\_\_ times."

1 5 10 15 20 25 30 35 40 45 50+

Check the one that applies most

c. Select the TYPICAL length of time you participated in this activity for EACH session.

- 30 minutes
- 45 minutes
- 1 hour
- 1.5 hours
- 2 hours
- 2.5 hours
- 3+ hours

## **Appendix B**

**The SCS-Sport Assessment (Warner et al., 2013)**

**The Sense of Community Scale (SCS)**

Leaders of my adaptive sport and recreation activities care about other members.

	Not At All True	Somewhat True	Mostly True	Completely True
Click the one that most applies to the above statement	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Leaders of my adaptive sport and recreation activities support other members.

	Not At All True	Somewhat True	Mostly True	Completely True
Click the one that most applies to the above statement	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I feel comfortable talking openly with the Leaders of my adaptive sport and recreation activities.

	Not At All True	Somewhat True	Mostly True	Completely True
Click the one that most applies to the above statement	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

The leaders make me feel like a valued member of a TEAM or GROUP.

	Not At All True	Somewhat True	Mostly True	Completely True
Click the one that most applies to the above statement	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I share similar values with other members in my adaptive sport and recreation activities.

	Not At All True	Somewhat True	Mostly True	Completely True
Click the one that most applies to the above statement	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I share similar values with other members in my adaptive sport and recreation activities.

	Not At All True	Somewhat True	Mostly True	Completely True
Click the one that most applies to the above statement	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I feel like I belong in my adaptive sport and recreation activities.

	Not At All True	Somewhat True	Mostly True	Completely True
Click the one that most applies to the above statement	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

My adaptive sport and recreation activities provides me with friends who share a strong commitment to that activity.

	Not At All True	Somewhat True	Mostly True	Completely True
Click the one that most applies to the above statement	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I trust the members of my adaptive sport and recreation activities.

	Not At All True	Somewhat True	Mostly True	Completely True
Click the one that most applies to the above statement	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I feel a bond with other members of my adaptive sport and recreation activities when I'm competing against them.

Not At All True      Somewhat True      Mostly True      Completely True

Click the one that most applies to the above statement:                       

I like the level of competition within my adaptive sport and recreation activities.

Not At All True      Somewhat True      Mostly True      Completely True

Click the one that most applies to the above statement:                       

Competing with other members in my adaptive sport and recreation activities is fun.

Not At All True      Somewhat True      Mostly True      Completely True

Click the one that most applies to the above statement:                       

There is too much competition between members in my adaptive sport and recreation activities.

Not At All True      Somewhat True      Mostly True      Completely True

Click the one that most applies to the above statement:                       

Leaders in my adaptive sport and recreation activities make decisions that benefit everyone.

Not At All True      Somewhat True      Mostly True      Completely True

Click the one that most applies to the above statement:                       

Leaders in my adaptive sport and recreation activities make decisions that are fair.

Not At All True      Somewhat True      Mostly True      Completely True

Click the one that most applies to the above statement:                       

The decisions made by leaders in my adaptive sport and recreation activities favor some members over others.

Not At All True      Somewhat True      Mostly True      Completely True

Click the one that most applies to the above statement:                       

Leaders in my adaptive sport and recreation activities consider everyone's needs when making decisions.

Not At All True      Somewhat True      Mostly True      Completely True

Click the one that most applies to the above statement:                       

I have influence over what my adaptive sport and recreation activities are like.

Not At All True      Somewhat True      Mostly True      Completely True

Click the one that most applies to the above statement:                       

If there is a problem in my adaptive sport and recreation activities, I can help to solve it.

Not At All True      Somewhat True      Mostly True      Completely True

Click the one that most applies to the above statement:                       

I have a say about what goes on in my adaptive sport and recreation activities.

Not At All True    Somewhat True    Mostly True    Completely True

Click the one that most applies to the above statement

          

**Being a member of my adaptive sport and recreation activities gives me opportunities to lead.**

Not At All True    Somewhat True    Mostly True    Completely True

Click the one that most applies to the above statement

          

**When going to my adaptive sport and recreation event or practice, there are places where I can interact with other members.**

Not At All True    Somewhat True    Mostly True    Completely True

Click the one that most applies to the above statement

          

**When going to my adaptive sport and recreation event or practice, I know I'll have an area where I can interact with other members.**

Not At All True    Somewhat True    Mostly True    Completely True

Click the one that most applies to the above statement

          

**My adaptive sport and recreation practices and competitions create a place for me to interact with other members.**

Not At All True    Somewhat True    Mostly True    Completely True

Click the one that most applies to the above statement

          

**My adaptive sport and recreation provides me a place to interact with other members.**

Not At All True    Somewhat True    Mostly True    Completely True

Click the one that most applies to the above statement

          

**I am a part of my adaptive sport and recreation because I want to be.**

Not At All True    Somewhat True    Mostly True    Completely True

Click the one that most applies to the above statement

          

**Participating in my adaptive sport and recreation never feels like a chore (or job).**

Not At All True    Somewhat True    Mostly True    Completely True

Click the one that most applies to the above statement

          

**I participate in my adaptive sport and recreation because of pressure from my family or friends.**

Completely True    Mostly True    Somewhat True    Not At All True

Click the one that most applies to the above statement

          

**I am not forced to be a member of my adaptive sport and recreation.**

Not At All True    Somewhat True    Mostly True    Completely True

Click the one that most applies to the above statement

## **Appendix C**

### **Compendium of Physical Activities (CPA) (Ainsworth, 2011)**

2011 Compendium of Physical Activities

\*Italicized codes and METs are estimated values

CODE	METS	MAJOR HEADING	SPECIFIC ACTIVITIES
01003	14.0	bicycling	bicycling, mountain, uphill, vigorous
01004	16.0	bicycling	bicycling, mountain, competitive, racing
<i>01008</i>	8.5	bicycling	bicycling, BMX
<i>01009</i>	8.5	bicycling	bicycling, mountain, general
01010	4.0	bicycling	bicycling, <10 mph, leisure, to work or for pleasure (Taylor Code 115)
01011	6.8	bicycling	bicycling, to/from work, self selected pace
01013	5.8	bicycling	bicycling, on dirt or farm road, moderate pace
01015	7.5	bicycling	bicycling, general
01018	3.5	bicycling	bicycling, leisure, 5.5 mph
01019	5.8	bicycling	bicycling, leisure, 9.4 mph
01020	6.8	bicycling	bicycling, 10-11.9 mph, leisure, slow, light effort
01030	8.0	bicycling	bicycling, 12-13.9 mph, leisure, moderate effort
01040	10.0	bicycling	bicycling, 14-15.9 mph, racing or leisure, fast, vigorous effort
<i>01050</i>	12.0	bicycling	bicycling, 16-19 mph, racing/not drafting or > 19 mph drafting, very fast, racing general
01060	15.8	bicycling	bicycling, > 20 mph, racing, not drafting
01065	8.5	bicycling	bicycling, 12 mph, seated, hands on brake hoods or bar drops, 80 rpm
01066	9.0	bicycling	bicycling, 12 mph, standing, hands on brake hoods, 60 rpm
<i>01070</i>	5.0	bicycling	unicycling
02001	2.3	conditioning exercise	activity promoting video game (e.g., Wii Fit), light effort (e.g., balance, yoga)
02003	3.8	conditioning exercise	activity promoting video game (e.g., Wii Fit), moderate effort (e.g., aerobic, resistance)
02005	7.2	conditioning exercise	activity promoting video/arcade game (e.g., Exergaming, Dance Dance Revolution), vigorous effort
02008	5.0	conditioning exercise	army type obstacle course exercise, boot camp training program
<i>02010</i>	7.0	conditioning exercise	bicycling, stationary, general
02011	3.5	conditioning exercise	bicycling, stationary, 30-50 watts, very light to light effort
02012	6.8	conditioning exercise	bicycling, stationary, 90-100 watts, moderate to vigorous effort
02013	8.8	conditioning exercise	bicycling, stationary, 101-160 watts, vigorous effort
02014	11.0	conditioning exercise	bicycling, stationary, 161-200 watts, vigorous effort
02015	14.0	conditioning exercise	bicycling, stationary, 201-270 watts, very vigorous effort
02017	4.8	conditioning exercise	bicycling, stationary, 51-89 watts, light-to-moderate effort
02019	8.5	conditioning exercise	bicycling, stationary, RPM/Spin bike class
<i>02020</i>	8.0	conditioning exercise	calisthenics (e.g., push ups, sit ups, pull-ups, jumping jacks), vigorous effort
02022	3.8	conditioning exercise	calisthenics (e.g., push ups, sit ups, pull-ups, lunges), moderate effort
02024	2.8	conditioning exercise	calisthenics (e.g., situps, abdominal crunches), light effort
02030	3.5	conditioning exercise	calisthenics, light or moderate effort, general (e.g., back exercises), going up & down from floor (Taylor Code 150)
02035	4.3	conditioning exercise	circuit training, moderate effort
02040	8.0	conditioning exercise	circuit training, including kettlebells, some aerobic movement with minimal rest, general, vigorous intensity
02045	3.5	conditioning exercise	Curves™ exercise routines in women
02048	5.0	conditioning exercise	Elliptical trainer, moderate effort
02050	6.0	conditioning exercise	resistance training (weight lifting, free weight, nautilus or universal), power lifting or body building, vigorous effort (Taylor Code 210)
02052	5.0	conditioning exercise	resistance (weight) training, squats, slow or explosive effort
02054	3.5	conditioning exercise	resistance (weight) training, multiple exercises, 8-15 repetitions at varied resistance
02060	5.5	conditioning exercise	health club exercise, general (Taylor Code 160)
02061	5.0	conditioning exercise	health club exercise classes, general, gym/weight training combined in one visit
02062	7.8	conditioning exercise	health club exercise, conditioning classes
02064	3.8	conditioning exercise	home exercise, general
<i>02065</i>	9.0	conditioning exercise	stair-treadmill ergometer, general
02068	12.3	conditioning exercise	rope skipping, general
<i>02070</i>	6.0	conditioning exercise	rowing, stationary ergometer, general, vigorous effort
02071	4.8	conditioning exercise	rowing, stationary, general, moderate effort

CODE	METS	MAJOR HEADING	SPECIFIC ACTIVITIES
02072	7.0	conditioning exercise	rowing, stationary, 100 watts, moderate effort
02073	8.5	conditioning exercise	rowing, stationary, 150 watts, vigorous effort
02074	12.0	conditioning exercise	rowing, stationary, 200 watts, very vigorous effort
02080	6.8	conditioning exercise	ski machine, general
02085	11.0	conditioning exercise	slide board exercise, general
02090	6.0	conditioning exercise	slimnastics, jazzercise
02101	2.3	conditioning exercise	stretching, mild
02105	3.0	conditioning exercise	pilates, general
02110	6.8	conditioning exercise	teaching exercise class (e.g., aerobic, water)
02112	2.8	conditioning exercise	therapeutic exercise ball, Fitball exercise
02115	2.8	conditioning exercise	upper body exercise, arm ergometer
02117	4.3	conditioning exercise	upper body exercise, stationary bicycle - Airdyne (arms only) 40 rpm, moderate
02120	5.3	conditioning exercise	water aerobics, water calisthenics, water exercise
02135	1.3	conditioning exercise	whirlpool, sitting
02140	2.3	conditioning exercise	video exercise workouts, TV conditioning programs (e.g., yoga, stretching), light effort
02143	4.0	conditioning exercise	video exercise workouts, TV conditioning programs (e.g., cardio-resistance), moderate effort
02146	6.0	conditioning exercise	video exercise workouts, TV conditioning programs (e.g., cardio-resistance), vigorous effort
02150	2.5	conditioning exercise	yoga, Hatha
02160	4.0	conditioning exercise	yoga, Power
02170	2.0	conditioning exercise	yoga, Nadisodhana
02180	3.3	conditioning exercise	yoga, Surya Namaskar
02200	5.3	conditioning exercise	native New Zealander physical activities (e.g., Haka Powhiri, Moteatea, Waita Tira, Whakawatea, etc.), general, moderate effort
02205	6.8	conditioning exercise	native New Zealander physical activities (e.g., Haka, Taiahab), general, vigorous effort
03010	5.0	dancing	ballet, modern, or jazz, general, rehearsal or class
03012	6.8	dancing	ballet, modern, or jazz, performance, vigorous effort
03014	4.8	dancing	tap
03015	7.3	dancing	aerobic, general
03016	7.5	dancing	aerobic, step, with 6 - 8 inch step
03017	9.5	dancing	aerobic, step, with 10 - 12 inch step
03018	5.5	dancing	aerobic, step, with 4-inch step
03019	8.5	dancing	bench step class, general
03020	5.0	dancing	aerobic, low impact
03021	7.3	dancing	aerobic, high impact
03022	10.0	dancing	aerobic dance wearing 10-15 lb weights
03025	4.5	dancing	ethnic or cultural dancing (e.g., Greek, Middle Eastern, hula, salsa, merengue, bamba y plena, flamenco, belly, and swing)
03030	5.5	dancing	ballroom, fast (Taylor Code 125)
03031	7.8	dancing	general dancing (e.g., disco, folk, Irish step dancing, line dancing, polka, contra, country)
03038	11.3	dancing	ballroom dancing, competitive, general
03040	3.0	dancing	ballroom, slow (e.g., waltz, foxtrot, slow dancing, samba, tango, 19 <sup>th</sup> century dance, mambo, cha cha)
03050	5.5	dancing	Anishinaabe Jingle Dancing
03060	3.5	dancing	Caribbean dance (Abakua, Beguine, Bellair, Bongo, Brukin's, Caribbean Quadrills, Dinki Mini, Gere, Gumbay, Ibo, Jonkonnu, Kumina, Oreisha, Jambu)
04001	3.5	fishing and hunting	fishing, general
04005	4.5	fishing and hunting	fishing, crab fishing
04007	4.0	fishing and hunting	fishing, catching fish with hands
04010	4.3	fishing and hunting	fishing related, digging worms, with shovel
04020	4.0	fishing and hunting	fishing from river bank and walking
04030	2.0	fishing and hunting	fishing from boat or canoe, sitting
04040	3.5	fishing and hunting	fishing from river bank, standing (Taylor Code 660)
04050	6.0	fishing and hunting	fishing in stream, in waders (Taylor Code 670)
04060	2.0	fishing and hunting	fishing, ice, sitting
04061	1.8	fishing and hunting	fishing, jog or line, standing, general

<b>CODE</b>	<b>METS</b>	<b>MAJOR HEADING</b>	<b>SPECIFIC ACTIVITIES</b>
04062	3.5	fishing and hunting	fishing, dip net, setting net and retrieving fish, general
04063	3.8	fishing and hunting	fishing, set net, setting net and retrieving fish, general
04064	3.0	fishing and hunting	fishing, fishing wheel, setting net and retrieving fish, general
04065	2.3	fishing and hunting	fishing with a spear, standing
04070	2.5	fishing and hunting	hunting, bow and arrow, or crossbow
04080	6.0	fishing and hunting	hunting, deer, elk, large game (Taylor Code 170)
04081	11.3	fishing and hunting	hunting large game, dragging carcass
04083	4.0	fishing and hunting	hunting large marine animals
04085	2.5	fishing and hunting	hunting large game, from a hunting stand, limited walking
04086	2.0	fishing and hunting	hunting large game from a car, plane, or boat
04090	2.5	fishing and hunting	hunting, duck, wading
04095	3.0	fishing and hunting	hunting, flying fox, squirrel
04100	5.0	fishing and hunting	hunting, general
04110	6.0	fishing and hunting	hunting, pheasants or grouse (Taylor Code 680)
04115	3.3	fishing and hunting	hunting, birds
04120	5.0	fishing and hunting	hunting, rabbit, squirrel, prairie chick, raccoon, small game (Taylor Code 690)
04123	3.3	fishing and hunting	hunting, pigs, wild
04124	2.0	fishing and hunting	trapping game, general
04125	9.5	fishing and hunting	hunting, hiking with hunting gear
04130	2.5	fishing and hunting	pistol shooting or trap shooting, standing
04140	2.3	fishing and hunting	rifle exercises, shooting, lying down
04145	2.5	fishing and hunting	rifle exercises, shooting, kneeling or standing
05010	3.3	home activities	cleaning, sweeping carpet or floors, general
05011	2.3	home activities	cleaning, sweeping, slow, light effort
05012	3.8	home activities	cleaning, sweeping, slow, moderate effort
05020	3.5	home activities	cleaning, heavy or major (e.g. wash car, wash windows, clean garage), moderate effort
05021	3.5	home activities	cleaning, mopping, standing, moderate effort
05022	3.2	home activities	cleaning windows, washing windows, general
05023	2.5	home activities	mopping, standing, light effort
05024	4.5	home activities	polishing floors, standing, walking slowly, using electric polishing machine
05025	2.8	home activities	multiple household tasks all at once, light effort
05026	3.5	home activities	multiple household tasks all at once, moderate effort
05027	4.3	home activities	multiple household tasks all at once, vigorous effort
05030	3.3	home activities	cleaning, house or cabin, general, moderate effort
05032	2.3	home activities	dusting or polishing furniture, general
05035	3.3	home activities	kitchen activity, general, (e.g., cooking, washing dishes, cleaning up), moderate effort
05040	2.5	home activities	cleaning, general (straightening up, changing linen, carrying out trash, light effort
05041	1.8	home activities	wash dishes, standing or in general (not broken into stand/walk components)
05042	2.5	home activities	wash dishes, clearing dishes from table, walking, light effort
05043	3.3	home activities	vacuuming, general, moderate effort
05044	3.0	home activities	butchering animals, small
05045	6.0	home activities	butchering animal, large, vigorous effort
05046	2.3	home activities	cutting and smoking fish, drying fish or meat
05048	4.0	home activities	tanning hides, general
05049	3.5	home activities	cooking or food preparation, moderate effort
05050	2.0	home activities	cooking or food preparation - standing or sitting or in general (not broken into stand/walk components), manual appliances, light effort
05051	2.5	home activities	serving food, setting table, implied walking or standing
05052	2.5	home activities	cooking or food preparation, walking
05053	2.5	home activities	feeding household animals
05055	2.5	home activities	putting away groceries (e.g. carrying groceries, shopping without a grocery cart), carrying packages
05056	7.5	home activities	carrying groceries upstairs

<b>CODE</b>	<b>METS</b>	<b>MAJOR HEADING</b>	<b>SPECIFIC ACTIVITIES</b>
05057	3.0	home activities	cooking Indian bread on an outside stove
05060	2.3	home activities	food shopping with or without a grocery cart, standing or walking
05065	2.3	home activities	non-food shopping, with or without a cart, standing or walking
05070	1.8	home activities	ironing
05080	1.3	home activities	knitting, sewing, light effort, wrapping presents, sitting
05082	2.8	home activities	sewing with a machine
05090	2.0	home activities	laundry, fold or hang clothes, put clothes in washer or dryer, packing suitcase, washing clothes by hand, implied standing, light effort
05092	4.0	home activities	laundry, hanging wash, washing clothes by hand, moderate effort
05095	2.3	home activities	laundry, putting away clothes, gathering clothes to pack, putting away laundry, implied walking
05100	3.3	home activities	making bed, changing linens
05110	5.0	home activities	maple syruping/sugar bushing (including carrying buckets, carrying wood)
05120	5.8	home activities	moving furniture, household items, carrying boxes
05121	5.0	home activities	moving, lifting light loads
05125	4.8	home activities	organizing room
05130	3.5	home activities	scrubbing floors, on hands and knees, scrubbing bathroom, bathtub, moderate effort
05131	2.0	home activities	scrubbing floors, on hands and knees, scrubbing bathroom, bathtub, light effort
05132	6.5	home activities	scrubbing floors, on hands and knees, scrubbing bathroom, bathtub, vigorous effort
05140	4.0	home activities	sweeping garage, sidewalk or outside of house
05146	3.5	home activities	standing, packing/unpacking boxes, occasional lifting of lightweight household items, loading or unloading items in car, moderate effort
05147	3.0	home activities	implied walking, putting away household items, moderate effort
05148	2.5	home activities	watering plants
05149	2.5	home activities	building a fire inside
05150	9.0	home activities	moving household items upstairs, carrying boxes or furniture
05160	2.0	home activities	standing, light effort tasks (pump gas, change light bulb, etc.)
05165	3.5	home activities	walking, moderate effort tasks, non-cleaning (readying to leave, shut/lock doors, close windows, etc.)
05170	2.2	home activities	sitting, playing with child(ren), light effort, only active periods
05171	2.8	home activities	standing, playing with child(ren) light effort, only active periods
05175	3.5	home activities	walking/running, playing with child(ren), moderate effort, only active periods
05180	5.8	home activities	walking/running, playing with child(ren), vigorous effort, only active periods
05181	3.0	home activities	walking and carrying small child, child weighing 15 lbs or more
05182	2.3	home activities	walking and carrying small child, child weighing less than 15 lbs
05183	2.0	home activities	standing, holding child
05184	2.5	home activities	child care, infant, general
05185	2.0	home activities	child care, sitting/kneeling (e.g., dressing, bathing, grooming, feeding, occasional lifting of child), light effort, general
05186	3.0	home activities	child care, standing (e.g., dressing, bathing, grooming, feeding, occasional lifting of child), moderate effort
05188	1.5	home activities	reclining with baby
05189	2.0	home activities	breastfeeding, sitting or reclining
05190	2.5	home activities	sit, playing with animals, light effort, only active periods
05191	2.8	home activities	stand, playing with animals, light effort, only active periods
05192	3.0	home activities	walk/run, playing with animals, general, light effort, only active periods
05193	4.0	home activities	walk/run, playing with animals, moderate effort, only active periods
05194	5.0	home activities	walk/run, playing with animals, vigorous effort, only active periods
05195	3.5	home activities	standing, bathing dog
05197	2.3	home activities	animal care, household animals, general
05200	4.0	home activities	elder care, disabled adult, bathing, dressing, moving into and out of bed, only active periods
05205	2.3	home activities	elder care, disabled adult, feeding, combing hair, light effort, only active periods
06010	3.0	home repair	airplane repair
06020	4.0	home repair	automobile body work
06030	3.3	home repair	automobile repair, light or moderate effort
06040	3.0	home repair	carpentry, general, workshop (Taylor Code 620)
06050	6.0	home repair	carpentry, outside house, installing rain gutters (Taylor Code 640),carpentry, outside house, building a fence

<b>CODE</b>	<b>METS</b>	<b>MAJOR HEADING</b>	<b>SPECIFIC ACTIVITIES</b>
06052	3.8	home repair	carpentry, outside house, building a fence
06060	3.3	home repair	carpentry, finishing or refinishing cabinets or furniture
06070	6.0	home repair	carpentry, sawing hardwood
06072	4.0	home repair	carpentry, home remodeling tasks, moderate effort
06074	2.3	home repair	carpentry, home remodeling tasks, light effort
06080	5.0	home repair	caulking, chinking log cabin
06090	4.5	home repair	caulking, except log cabin
06100	5.0	home repair	cleaning gutters
06110	5.0	home repair	excavating garage
06120	5.0	home repair	hanging storm windows
06122	5.0	home repair	hanging sheet rock inside house
06124	3.0	home repair	hammering nails
06126	2.5	home repair	home repair, general, light effort
06127	4.5	home repair	home repair, general, moderate effort
06128	6.0	home repair	home repair, general, vigorous effort
06130	4.5	home repair	laying or removing carpet
06140	3.8	home repair	laying tile or linoleum, repairing appliances
06144	3.0	home repair	repairing appliances
06150	5.0	home repair	painting, outside home (Taylor Code 650)
06160	3.3	home repair	painting inside house, wallpapering, scraping paint
06165	4.5	home repair	painting, (Taylor Code 630)
06167	3.0	home repair	plumbing, general
06170	3.0	home repair	put on and removal of tarp - sailboat
06180	6.0	home repair	roofing
06190	4.5	home repair	sanding floors with a power sander
06200	4.5	home repair	scraping and painting sailboat or powerboat
06205	2.0	home repair	sharpening tools
06210	5.0	home repair	spreading dirt with a shovel
06220	4.5	home repair	washing and waxing hull of sailboat or airplane
06225	2.0	home repair	washing and waxing car
06230	4.5	home repair	washing fence, painting fence, moderate effort
06240	3.3	home repair	wiring, tapping-splicing
07010	1.0	inactivity quiet/light	lying quietly and watching television
07011	1.3	inactivity quiet/light	lying quietly, doing nothing, lying in bed awake, listening to music (not talking or reading)
07020	1.3	inactivity quiet/light	sitting quietly and watching television
07021	1.3	inactivity quiet/light	sitting quietly, general
07022	1.5	inactivity quiet/light	sitting quietly, fidgeting, general, fidgeting hands
07023	1.8	inactivity quiet/light	sitting, fidgeting feet
07024	1.3	inactivity quiet/light	sitting, smoking
07025	1.5	inactivity quiet/light	sitting, listening to music (not talking or reading) or watching a movie in a theater
07026	1.3	inactivity quiet/light	sitting at a desk, resting head in hands
07030	1.0	inactivity quiet/light	sleeping
07040	1.3	inactivity quiet/light	standing quietly, standing in a line
07041	1.8	inactivity quiet/light	standing, fidgeting
07050	1.3	inactivity quiet/light	reclining, writing
07060	1.3	inactivity quiet/light	reclining, talking or talking on phone
07070	1.3	inactivity quiet/light	reclining, reading
07075	1.0	inactivity quiet/light	meditating
08009	3.3	lawn and garden	carrying, loading or stacking wood, loading/unloading or carrying lumber, light-to-moderate effort
08010	5.5	lawn and garden	carrying, loading or stacking wood, loading/unloading or carrying lumber
08019	4.5	lawn and garden	chopping wood, splitting logs, moderate effort

<b>CODE</b>	<b>METS</b>	<b>MAJOR HEADING</b>	<b>SPECIFIC ACTIVITIES</b>
08020	6.3	lawn and garden	chopping wood, splitting logs, vigorous effort
08025	3.5	lawn and garden	clearing light brush, thinning garden, moderate effort
08030	6.3	lawn and garden	clearing brush/land, undergrowth, or ground, hauling branches, wheelbarrow chores, vigorous effort
08040	5.0	lawn and garden	digging sandbox, shoveling sand
08045	3.5	lawn and garden	digging, spading, filling garden, composting, light-to-moderate effort
08050	5.0	lawn and garden	digging, spading, filling garden, composting, (Taylor Code 590)
08052	7.8	lawn and garden	digging, spading, filling garden, composting, vigorous effort
08055	2.8	lawn and garden	driving tractor
08057	8.3	lawn and garden	felling trees, large size
08058	5.3	lawn and garden	felling trees, small-medium size
08060	5.8	lawn and garden	gardening with heavy power tools, tilling a garden, chain saw
08065	2.3	lawn and garden	gardening, using containers, older adults > 60 years
08070	4.0	lawn and garden	irrigation channels, opening and closing ports
08080	6.3	lawn and garden	laying crushed rock
08090	5.0	lawn and garden	laying sod
08095	5.5	lawn and garden	mowing lawn, general
08100	2.5	lawn and garden	mowing lawn, riding mower (Taylor Code 550)
08110	6.0	lawn and garden	mowing lawn, walk, hand mower (Taylor Code 570)
08120	5.0	lawn and garden	mowing lawn, walk, power mower, moderate or vigorous effort
08125	4.5	lawn and garden	mowing lawn, power mower, light or moderate effort (Taylor Code 590)
08130	2.5	lawn and garden	operating snow blower, walking
08135	2.0	lawn and garden	planting, potting, transplanting seedlings or plants, light effort
08140	4.3	lawn and garden	planting seedlings, shrub, stooping, moderate effort
08145	4.3	lawn and garden	planting crops or garden, stooping, moderate effort
08150	4.5	lawn and garden	planting trees
08160	3.8	lawn and garden	raking lawn or leaves, moderate effort
08165	4.0	lawn and garden	raking lawn (Taylor Code 600)
08170	4.0	lawn and garden	raking roof with snow rake
08180	3.0	lawn and garden	riding snow blower
08190	4.0	lawn and garden	sacking grass, leaves
08192	5.5	lawn and garden	shoveling dirt or mud
08195	5.3	lawn and garden	shoveling snow, by hand, moderate effort
08200	6.0	lawn and garden	shovelling snow, by hand (Taylor Code 610)
08202	7.5	lawn and garden	shoveling snow, by hand, vigorous effort
08210	4.0	lawn and garden	trimming shrubs or trees, manual cutter
08215	3.5	lawn and garden	trimming shrubs or trees, power cutter, using leaf blower, edge, moderate effort
08220	3.0	lawn and garden	walking, applying fertilizer or seeding a lawn, push applicator
08230	1.5	lawn and garden	watering lawn or garden, standing or walking
08239	3.5	lawn and garden	weeding, cultivating garden, light-to-moderate effort
08240	4.5	lawn and garden	weeding, cultivating garden (Taylor Code 580)
08241	5.0	lawn and garden	weeding, cultivating garden, using a hoe, moderate-to-vigorous effort
08245	3.8	lawn and garden	gardening, general, moderate effort
08246	3.5	lawn and garden	picking fruit off trees, picking fruits/vegetables, moderate effort
08248	4.5	lawn and garden	picking fruit off trees, gleaning fruits, picking fruits/vegetables, climbing ladder to pick fruit, vigorous effort
08250	3.3	lawn and garden	implied walking/standing - picking up yard, light, picking flowers or vegetables
08251	3.0	lawn and garden	walking, gathering gardening tools
08255	5.5	lawn and garden	wheelbarrow, pushing garden cart or wheelbarrow
08260	3.0	lawn and garden	yard work, general, light effort
08261	4.0	lawn and garden	yard work, general, moderate effort
08262	6.0	lawn and garden	yard work, general, vigorous effort
09000	1.5	miscellaneous	board game playing, sitting

<b>CODE</b>	<b>METS</b>	<b>MAJOR HEADING</b>	<b>SPECIFIC ACTIVITIES</b>
09005	2.5	miscellaneous	casino gambling, standing
09010	1.5	miscellaneous	card playing, sitting
09013	1.5	miscellaneous	chess game, sitting
09015	1.5	miscellaneous	copying documents, standing
09020	1.8	miscellaneous	drawing, writing, painting, standing
09025	1.0	miscellaneous	laughing, sitting
09030	1.3	miscellaneous	sitting, reading, book, newspaper, etc.
09040	1.3	miscellaneous	sitting, writing, desk work, typing
09045	1.0	miscellaneous	sitting, playing traditional video game, computer game
09050	1.8	miscellaneous	standing, talking in person, on the phone, computer, or text messaging, light effort
09055	1.5	miscellaneous	sitting, talking in person, on the phone, computer, or text messaging, light effort
09060	1.3	miscellaneous	sitting, studying, general, including reading and/or writing, light effort
09065	1.8	miscellaneous	sitting, in class, general, including note-taking or class discussion
09070	1.8	miscellaneous	standing, reading
09071	2.5	miscellaneous	standing, miscellaneous
09075	1.8	miscellaneous	sitting, arts and crafts, carving wood, weaving, spinning wool, light effort
09080	3.0	miscellaneous	sitting, arts and crafts, carving wood, weaving, spinning wool, moderate effort
09085	2.5	miscellaneous	standing, arts and crafts, sand painting, carving, weaving, light effort
09090	3.3	miscellaneous	standing, arts and crafts, sand painting, carving, weaving, moderate effort
09095	3.5	miscellaneous	standing, arts and crafts, sand painting, carving, weaving, vigorous effort
09100	1.8	miscellaneous	retreat/family reunion activities involving sitting, relaxing, talking, eating
09101	3.0	miscellaneous	retreat/family reunion activities involving playing games with children
09105	2.0	miscellaneous	touring/traveling/vacation involving riding in a vehicle
09106	3.5	miscellaneous	touring/traveling/vacation involving walking
09110	2.5	miscellaneous	camping involving standing, walking, sitting, light-to-moderate effort
09115	1.5	miscellaneous	sitting at a sporting event, spectator
10010	1.8	music playing	accordion, sitting
10020	2.3	music playing	cello, sitting
10030	2.3	music playing	conducting orchestra, standing
10035	2.5	music playing	double bass, standing
10040	3.8	music playing	drums, sitting
10045	3.0	music playing	drumming (e.g., bongo, conga, benbe), moderate, sitting
10050	2.0	music playing	flute, sitting
10060	1.8	music playing	horn, standing
10070	2.3	music playing	piano, sitting
10074	2.0	music playing	playing musical instruments, general
10077	2.0	music playing	organ, sitting
10080	3.5	music playing	trombone, standing
10090	1.8	music playing	trumpet, standing
10100	2.5	music playing	violin, sitting
10110	1.8	music playing	woodwind, sitting
10120	2.0	music playing	guitar, classical, folk, sitting
10125	3.0	music playing	guitar, rock and roll band, standing
10130	4.0	music playing	marching band, baton twirling, walking, moderate pace, general
10131	5.5	music playing	marching band, playing an instrument, walking, brisk pace, general
10135	3.5	music playing	marching band, drum major, walking
11003	2.3	occupation	active workstation, treadmill desk, walking
11006	3.0	occupation	airline flight attendant
11010	4.0	occupation	bakery, general, moderate effort
11015	2.0	occupation	bakery, light effort
11020	2.3	occupation	bookbinding

CODE	METS	MAJOR HEADING	SPECIFIC ACTIVITIES
13050	2.0	self care	showering, toweling off, standing
14010	2.8	sexual activity	active, vigorous effort
14020	1.8	sexual activity	general, moderate effort
14030	1.3	sexual activity	passive, light effort, kissing, hugging
15000	5.5	sports	Alaska Native Games, Eskimo Olympics, general
15010	4.3	sports	archery, non-hunting
15020	7.0	sports	badminton, competitive (Taylor Code 450)
15030	5.5	sports	badminton, social singles and doubles, general
15040	8.0	sports	basketball, game (Taylor Code 490)
15050	6.0	sports	basketball, non-game, general (Taylor Code 480)
15055	6.5	sports	basketball, general
15060	7.0	sports	basketball, officiating (Taylor Code 500)
15070	4.5	sports	basketball, shooting baskets
15072	9.3	sports	basketball, drills, practice
15075	7.8	sports	basketball, wheelchair
15080	2.5	sports	billiards
15090	3.0	sports	bowling (Taylor Code 390)
15092	3.8	sports	bowling, indoor, bowling alley
15100	12.8	sports	boxing, in ring, general
15110	5.5	sports	boxing, punching bag
15120	7.8	sports	boxing, sparring
15130	7.0	sports	broomball
15135	5.8	sports	children's games, adults playing (e.g., hopscotch, 4-square, dodgeball, playground apparatus, t-ball, tetherball, marbles, arcade games), moderate effort
15138	6.0	sports	cheerleading, gymnastic moves, competitive
15140	4.0	sports	coaching, football, soccer, basketball, baseball, swimming, etc.
15142	8.0	sports	coaching, actively playing sport with players
15150	4.8	sports	cricket, batting, bowling, fielding
15160	3.3	sports	croquet
15170	4.0	sports	curling
15180	2.5	sports	darts, wall or lawn
15190	6.0	sports	drag racing, pushing or driving a car
15192	8.5	sports	auto racing, open wheel
15200	6.0	sports	fencing
15210	8.0	sports	football, competitive
15230	8.0	sports	football, touch, flag, general (Taylor Code 510)
15232	4.0	sports	football, touch, flag, light effort
15235	2.5	sports	football or baseball, playing catch
15240	3.0	sports	frisbee playing, general
15250	8.0	sports	frisbee, ultimate
15255	4.8	sports	golf, general
15265	4.3	sports	golf, walking, carrying clubs
15270	3.0	sports	golf, miniature, driving range
15285	5.3	sports	golf, walking, pulling clubs
15290	3.5	sports	golf, using power cart (Taylor Code 070)
15300	3.8	sports	gymnastics, general
15310	4.0	sports	hacky sack
15320	12.0	sports	handball, general (Taylor Code 520)
15330	8.0	sports	handball, team
15335	4.0	sports	high ropes course, multiple elements
15340	3.5	sports	hang gliding
15350	7.8	sports	hockey, field

CODE	METS	MAJOR HEADING	SPECIFIC ACTIVITIES
15360	8.0	sports	hockey, ice, general
15362	10.0	sports	hockey, ice, competitive
15370	5.5	sports	horseback riding, general
15375	4.3	sports	horse chores, feeding, watering, cleaning stalls, implied walking and lifting loads
15380	4.5	sports	saddling, cleaning, grooming, harnessing and unharnessing horse
15390	5.8	sports	horseback riding, trotting
15395	7.3	sports	horseback riding, canter or gallop
15400	3.8	sports	horseback riding, walking
15402	9.0	sports	horseback riding, jumping
15408	1.8	sports	horse cart, driving, standing or sitting
15410	3.0	sports	horseshoe pitching, quoits
15420	12.0	sports	jai alai
15425	5.3	sports	martial arts, different types, slower pace, novice performers, practice
15430	10.3	sports	martial arts, different types, moderate pace (e.g., judo, jujitsu, karate, kick boxing, tae kwan do, tai-bo, Muay Thai boxing)
15440	4.0	sports	juggling
15450	7.0	sports	kickball
15460	8.0	sports	lacrosse
15465	3.3	sports	lawn bowling, bocce ball, outdoor
15470	4.0	sports	moto-cross, off-road motor sports, all-terrain vehicle, general
15480	9.0	sports	orienteering
15490	10.0	sports	paddleball, competitive
15500	6.0	sports	paddleball, casual, general (Taylor Code 460)
15510	8.0	sports	polo, on horseback
15520	10.0	sports	racquetball, competitive
15530	7.0	sports	racquetball, general (Taylor Code 470)
15533	8.0	sports	rock or mountain climbing (Taylor Code 470) (Formerly code = 17120)
15535	7.5	sports	rock climbing, ascending rock, high difficulty
15537	5.8	sports	rock climbing, ascending or traversing rock, low-to-moderate difficulty
15540	5.0	sports	rock climbing, rappelling
15542	4.0	sports	rodeo sports, general, light effort
15544	5.5	sports	rodeo sports, general, moderate effort
15546	7.0	sports	rodeo sports, general, vigorous effort
15550	12.3	sports	rope jumping, fast pace, 120-160 skips/min
15551	11.8	sports	rope jumping, moderate pace, 100-120 skips/min, general, 2 foot skip, plain bounce
15552	8.8	sports	rope jumping, slow pace, < 100 skips/min, 2 foot skip, rhythm bounce
15560	8.3	sports	rugby, union, team, competitive
15562	6.3	sports	rugby, touch, non-competitive
15570	3.0	sports	shuffleboard
15580	5.0	sports	skateboarding, general, moderate effort
15582	6.0	sports	skateboarding, competitive, vigorous effort
15590	7.0	sports	skating, roller (Taylor Code 360)
15591	7.5	sports	rollerblading, in-line skating, 14.4 km/h (9.0 mph), recreational pace
15592	9.8	sports	rollerblading, in-line skating, 17.7 km/h (11.0 mph), moderate pace, exercise training
15593	12.3	sports	rollerblading, in-line skating, 21.0 to 21.7 km/h (13.0 to 13.6 mph), fast pace, exercise training
15594	14.0	sports	rollerblading, in-line skating, 24.0 km/h (15.0 mph), maximal effort
15600	3.5	sports	skydiving, base jumping, bungee jumping
15605	10.0	sports	soccer, competitive
15610	7.0	sports	soccer, casual, general (Taylor Code 540)
15620	5.0	sports	softball or baseball, fast or slow pitch, general (Taylor Code 440)
15625	4.0	sports	softball, practice
15630	4.0	sports	softball, officiating

<b>CODE</b>	<b>METS</b>	<b>MAJOR HEADING</b>	<b>SPECIFIC ACTIVITIES</b>
15640	6.0	sports	softball,pitching
15645	3.3	sports	sports spectator, very excited, emotional, physically moving
15650	12.0	sports	squash (Taylor Code 530)
15652	7.3	sports	squash, general
15660	4.0	sports	table tennis, ping pong (Taylor Code 410)
15670	3.0	sports	tai chi, qi gong, general
15672	1.5	sports	tai chi, qi gong, sitting, light effort
15675	7.3	sports	tennis, general
15680	6.0	sports	tennis, doubles (Taylor Code 430)
15685	4.5	sports	tennis, doubles
15690	8.0	sports	tennis, singles (Taylor Code 420)
15695	5.0	sports	tennis, hitting balls, non-game play, moderate effort
15700	3.5	sports	trampoline, recreational
15702	4.5	sports	trampoline, competitive
15710	4.0	sports	volleyball (Taylor Code 400)
15711	6.0	sports	volleyball, competitive, in gymnasium
15720	3.0	sports	volleyball, non-competitive, 6 - 9 member team, general
15725	8.0	sports	volleyball, beach, in sand
15730	6.0	sports	wrestling (one match = 5 minutes)
15731	7.0	sports	wallyball, general
15732	4.0	sports	track and field (e.g., shot, discus, hammer throw)
15733	6.0	sports	track and field (e.g., high jump, long jump, triple jump, javelin, pole vault)
15734	10.0	sports	track and field (e.g., steeplechase, hurdles)
16010	2.5	transportation	automobile or light truck (not a semi) driving
16015	1.3	transportation	riding in a car or truck
16016	1.3	transportation	riding in a bus or train
16020	1.8	transportation	flying airplane or helicopter
16030	3.5	transportation	motor scooter, motorcycle
16035	6.3	transportation	pulling rickshaw
16040	6.0	transportation	pushing plane in and out of hangar
16050	2.5	transportation	truck, semi, tractor, > 1 ton, or bus, driving
16060	3.5	transportation	walking for transportation, 2.8-3.2 mph, level, moderate pace, firm surface
17010	7.0	walking	backpacking (Taylor Code 050)
17012	7.8	walking	backpacking, hiking or organized walking with a daypack
17020	5.0	walking	carrying 15 pound load (e.g. suitcase), level ground or downstairs
17021	2.3	walking	carrying 15 lb child, slow walking
17025	8.3	walking	carrying load upstairs, general
17026	5.0	walking	carrying 1 to 15 lb load, upstairs
17027	6.0	walking	carrying 16 to 24 lb load, upstairs
17028	8.0	walking	carrying 25 to 49 lb load, upstairs
17029	10.0	walking	carrying 50 to 74 lb load, upstairs
17030	12.0	walking	carrying > 74 lb load, upstairs
17031	3.5	walking	loading /unloading a car, implied walking
17033	6.3	walking	climbing hills, no load
17035	6.5	walking	climbing hills with 0 to 9 lb load
17040	7.3	walking	climbing hills with 10 to 20 lb load
17050	8.3	walking	climbing hills with 21 to 42 lb load
17060	9.0	walking	climbing hills with 42+ lb load
17070	3.5	walking	descending stairs
17080	6.0	walking	hiking, cross country (Taylor Code 040)
17082	5.3	walking	hiking or walking at a normal pace through fields and hillsides

<b>CODE</b>	<b>METS</b>	<b>MAJOR HEADING</b>	<b>SPECIFIC ACTIVITIES</b>
17085	2.5	walking	bird watching, slow walk
17088	4.5	walking	marching, moderate speed, military, no pack
17090	8.0	walking	marching rapidly, military, no pack
17100	4.0	walking	pushing or pulling stroller with child or walking with children, 2.5 to 3.1 mph
17105	3.8	walking	pushing a wheelchair, non-occupational
17110	6.5	walking	race walking
17130	8.0	walking	stair climbing, using or climbing up ladder (Taylor Code 030)
17133	4.0	walking	stair climbing, slow pace
17134	8.8	walking	stair climbing, fast pace
17140	5.0	walking	using crutches
17150	2.0	walking	walking, household
17151	2.0	walking	walking, less than 2.0 mph, level, strolling, very slow
17152	2.8	walking	walking, 2.0 mph, level, slow pace, firm surface
17160	3.5	walking	walking for pleasure (Taylor Code 010)
17161	2.5	walking	walking from house to car or bus, from car or bus to go places, from car or bus to and from the worksite
17162	2.5	walking	walking to neighbor's house or family's house for social reasons
17165	3.0	walking	walking the dog
17170	3.0	walking	walking, 2.5 mph, level, firm surface
17180	3.3	walking	walking, 2.5 mph, downhill
17190	3.5	walking	walking, 2.8 to 3.2 mph, level, moderate pace, firm surface
17200	4.3	walking	walking, 3.5 mph, level, brisk, firm surface, walking for exercise
17210	5.3	walking	walking, 2.9 to 3.5 mph, uphill, 1 to 5% grade
17211	8.0	walking	walking, 2.9 to 3.5 mph, uphill, 6% to 15% grade
17220	5.0	walking	walking, 4.0 mph, level, firm surface, very brisk pace
17230	7.0	walking	walking, 4.5 mph, level, firm surface, very, very brisk
17231	8.3	walking	walking, 5.0 mph, level, firm surface
17235	9.8	walking	walking, 5.0 mph, uphill, 3% grade
17250	3.5	walking	walking, for pleasure, work break
17260	4.8	walking	walking, grass track
17262	4.5	walking	walking, normal pace, plowed field or sand
17270	4.0	walking	walking, to work or class (Taylor Code 015)
17280	2.5	walking	walking, to and from an outhouse
17302	4.8	walking	walking, for exercise, 3.5 to 4 mph, with ski poles, Nordic walking, level, moderate pace
17305	9.5	walking	walking, for exercise, 5.0 mph, with ski poles, Nordic walking, level, fast pace
17310	6.8	walking	walking, for exercise, with ski poles, Nordic walking, uphill
17320	6.0	walking	walking, backwards, 3.5 mph, level
17325	8.0	walking	walking, backwards, 3.5 mph, uphill, 5% grade
18010	2.5	water activities	boating, power, driving
18012	1.3	water activities	boating, power, passenger, light
18020	4.0	water activities	canoeing, on camping trip (Taylor Code 270)
18025	3.3	water activities	canoeing, harvesting wild rice, knocking rice off the stalks
18030	7.0	water activities	canoeing, portaging
18040	2.8	water activities	canoeing, rowing, 2.0-3.9 mph, light effort
18050	5.8	water activities	canoeing, rowing, 4.0-5.9 mph, moderate effort
18060	12.5	water activities	canoeing, rowing, kayaking, competition, >6 mph, vigorous effort
18070	3.5	water activities	canoeing, rowing, for pleasure, general (Taylor Code 250)
18080	12.0	water activities	canoeing, rowing, in competition, or crew or sculling (Taylor Code 260)
18090	3.0	water activities	diving, springboard or platform
18100	5.0	water activities	kayaking, moderate effort
18110	4.0	water activities	paddle boat
18120	3.0	water activities	sailing, boat and board sailing, windsurfing, ice sailing, general (Taylor Code 235)

<b>CODE</b>	<b>METS</b>	<b>MAJOR HEADING</b>	<b>SPECIFIC ACTIVITIES</b>
19100	12.5	winter activities	skiing, cross country, 5.0-7.9 mph, brisk speed, vigorous effort
19110	15.0	winter activities	skiing, cross country, >8.0 mph, elite skier, racing
19130	15.5	winter activities	skiing, cross country, hard snow, uphill, maximum, snow mountaineering
19135	13.3	winter activities	skiing, cross-country, skating
19140	13.5	winter activities	skiing, cross-country, biathlon, skating technique
19150	4.3	winter activities	skiing, downhill, alpine or snowboarding, light effort, active time only
19160	5.3	winter activities	skiing, downhill, alpine or snowboarding, moderate effort, general, active time only
19170	8.0	winter activities	skiing, downhill, vigorous effort, racing
19175	12.5	winter activities	skiing, roller, elite racers
19180	7.0	winter activities	sledding, tobogganing, bobsledding, luge (Taylor Code 370)
19190	5.3	winter activities	snow shoeing, moderate effort
19192	10.0	winter activities	snow shoeing, vigorous effort
19200	3.5	winter activities	snowmobiling, driving, moderate
19202	2.0	winter activities	snowmobiling, passenger
19252	5.3	winter activities	snow shoveling, by hand, moderate effort
19254	7.5	winter activities	snow shoveling, by hand, vigorous effort
19260	2.5	winter activities	snow blower, walking and pushing
20000	1.3	religious activities	sitting in church, in service, attending a ceremony, sitting quietly
20001	2.0	religious activities	sitting, playing an instrument at church
20005	1.8	religious activities	sitting in church, talking or singing, attending a ceremony, sitting, active participation
20010	1.3	religious activities	sitting, reading religious materials at home
20015	1.3	religious activities	standing quietly in church, attending a ceremony
20020	2.0	religious activities	standing, singing in church, attending a ceremony, standing, active participation
20025	1.3	religious activities	kneeling in church or at home, praying
20030	1.8	religious activities	standing, talking in church
20035	2.0	religious activities	walking in church
20036	2.0	religious activities	walking, less than 2.0 mph, very slow
20037	3.5	religious activities	walking, 3.0 mph, moderate speed, not carrying anything
20038	4.3	religious activities	walking, 3.5 mph, brisk speed, not carrying anything
20039	2.0	religious activities	walk/stand combination for religious purposes, usher
20040	5.0	religious activities	praise with dance or run, spiritual dancing in church
20045	2.5	religious activities	preparing food at church
20046	2.0	religious activities	preparing food at church
20047	3.3	religious activities	washing dishes, cleaning kitchen at church
20050	1.5	religious activities	eating at church
20055	2.0	religious activities	eating/talking at church or standing eating, American Indian Feast days
20060	3.3	religious activities	cleaning church
20061	4.0	religious activities	general yard work at church
20065	3.5	religious activities	standing, moderate effort (e.g., lifting heavy objects, assembling at fast rate)
20095	4.5	religious activities	Standing, moderate-to-heavy effort, manual labor, lifting ≥ 50 lbs, heavy maintenance
20100	1.3	religious activities	typing, electric, manual, or computer
21000	1.5	volunteer activities	sitting, meeting, general, and/or with talking involved
21005	1.5	volunteer activities	sitting, light office work, in general
21010	2.5	volunteer activities	sitting, moderate work
21015	2.3	volunteer activities	standing, light work (filing, talking, assembling)
21016	2.0	volunteer activities	sitting, child care, only active periods
21017	3.0	volunteer activities	standing, child care, only active periods
21018	3.5	volunteer activities	walk/run play with children, moderate, only active periods
21019	5.8	volunteer activities	walk/run play with children, vigorous, only active periods
21020	3.0	volunteer activities	standing, light/moderate work (e.g., pack boxes, assemble/repair, set up chairs/furniture)
21025	3.5	volunteer activities	standing, moderate (lifting 50 lbs., assembling at fast rate)

## **Appendix D**

**The Compendium of Wheelchair-related Physical Activities (Conger & Bassett Jr., 2011)**

**Table 3 Energy Cost of Various Activities Performed by Wheelchair Users**

Code	Activity Category	Energy Cost* (kcal·kg <sup>-1</sup> ·hr <sup>-1</sup> )	Example	Reference
90101	Exercise	1.6	Aerobics	Collins et al., 2010
90102		2.2	Arm ergometer (16W)	Collins, et al. 2010
90103		2.4	Arm ergometer (20W @ 60 RPM)	Hiremath & Ding, 2009
90104		2.7	Arm ergometer (32W)	Collins et al., 2010
90105		3.2	Arm ergometer (40W @ 60 RPM)	Hiremath & Ding, 2009
90106		3.3	Arm ergometer (48W)	Collins et al., 2010
90107		4.0	Arm ergometer (40W @ 100 RPM)	Hiremath & Ding, 2009
90108		4.0	Arm ergometer (64W)	Collins et al., 2010
90109		4.5	Arm ergometer (80W)	Collins et al., 2010
90110		5.1	Arm ergometer (60W @ 60 RPM)	Lee et al., 2010
90111		5.4	Arm ergometer (96W)	Collins et al., 2010
90112		2.3	Circuit training	Collins et al., 2010
90113		2.8	Handcycle (4.9 mph on oval track)	Mukherjee & Samanta, 2004
90114	Household Activities	4.4	Handcycle (5 mph)	Collins et al., 2010
90115		7.5	Handcycle (10 mph)	Collins et al., 2010
90116		12.5	Handcycle (all out)	Collins et al., 2010
90117		2.2	Weight training	Collins et al., 2010
90118		2.3	Wheelchair dynamometer (10W)	Algood et al., 2004
90119		2.5	Wheelchair dynamometer (12W)	Algood et al., 2004
90120		3.1	Wheelchair dynamometer (14W)	Algood et al., 2004
90121		3.3	Wheelchair dynamometer (2 mph)	Hiremath & Ding, 2009
90122		4.3	Wheelchair dynamometer (3 mph)	Hiremath & Ding, 2009
90201		2.3	Bed making	Collins et al., 2010
90202		3.1	Dressing/undressing	Collins et al., 2010
90203		1.8	Dusting	Collins et al., 2010
90204		1.9	Laundry	Collins et al., 2010
90205	3.5	Mopping	Lee et al., 2010	
90206	3.7	Moving furniture or boxes	Lee et al., 2010	
90207	2.2	Moving items	Collins et al., 2010	
90208	1.9	Showering	Collins et al., 2010	
90209	2.7	Vacuuming	Collins et al., 2010; Lee et al., 2010	
90210	Inactivity	1.6	Washing dishes	Collins et al., 2010
90301		1.1	Deskwork	Collins, 2010; Hiremath & Ding, 2009; Lee et al., 2010
90302		1.1	Reading	Lee et al., 2010
90303		0.8	Resting	Abel et al., 2003; Abel et al., 2008; Collins et al., 2010; Hiremath & Ding, 2009; Lee et al., 2010

Code	Activity Category	Energy Cost* (kcal·kg <sup>-1</sup> ·hr <sup>-1</sup> )	Example	Reference
90304		1.1	Sitting/watching TV	Lee et al., 2010
90401	Miscellaneous	1.8	Driving	Collins et al., 2010
90402		1.2	Fishing/casting	Collins et al., 2010
90403		1.9	Grocery shopping	Collins et al., 2010
90501	Sports/ Recreation Activities	6.1	Basketball (game play)	Abel et al., 2008; Bernardi et al., 2010; Burke et al., 1985; Collins et al., 2010
90502		3.2	Basketball (shooting baskets)	Collins et al., 2010
90503		1.8	Billiards	Collins et al., 2010
90504		1.8	Bowling	Collins et al., 2010
90505		1.6	Darts	Collins et al., 2010
90506		7.1	Fencing	Bernardi et al., 2010
90507		4.5	Handcycle racing	Abel et al., 2003
90508		11.8	Nordic sit skiing	Bernardi et al., 2010
90509		2.7	Rugby	Abel et al., 2008
90510		2.2	Table tennis	Collins et al., 2010
90511		4.1	Tennis	Abel et al., 2008; Bernardi et al., 2010
90512		7.9	Wheelchair racing	Abel et al., 2008; Bernardi et al., 2010
90601	Wheeling for Transportation	2.4	On carpet	Collins et al., 2010
90602		4.0	On grass	Collins et al., 2010
90603		2.6	Outside	Collins et al., 2010
90604		2.7	On an oval track (0.9 mph)	Mukherjee et al., 2002
90605		4.0	On an oval track (2.1 mph)	Mukherjee et al., 2002
90606		4.7	On an oval track (2.7 mph)	Mukherjee et al., 2002
90607		3.8	On sidewalk	Collins et al., 2010; Lee et al., 2010
90608		3.0	On slalom course (0° of wheel camber)	Perdios et al., 2007
90609		3.2	On slalom course (3° of wheel camber)	Perdios et al., 2007
90610		3.1	On slalom course (6° of wheel camber)	Perdios et al., 2007
90611		2.2	On tile floor	Collins et al., 2010; Hire- math & Ding, 2009; Lee et al., 2010
90612		3.9	Up a ramp	Lee et al., 2010

\* Data are expressed as kcal·kg<sup>-1</sup>·hr<sup>-1</sup>. It should be noted that 1.0 kcal·kg<sup>-1</sup>·hr<sup>-1</sup> = 3.5 ml·kg<sup>-1</sup>·min<sup>-1</sup>, but the values are not called "METs" because the term is controversial. Some researchers use METs to refer to multiples of 3.5 ml·kg<sup>-1</sup>·min<sup>-1</sup>, while others use it to refer to multiples of measured resting metabolic rate. Because RMR is lower in wheelchair users, the MET values would be affected by how a MET is defined.

**Appendix E**

**East Carolina University Institutional Review Board Approval**



**EAST CAROLINA UNIVERSITY**  
**University & Medical Center Institutional Review Board**  
Willis Building · Mail Stop 682  
600 Moye Boulevard · Greenville, NC 27834  
Office **252-744-2914** · Fax **252-744-2284**  
[rede.ecu.edu/umcirb/](http://rede.ecu.edu/umcirb/)

### Notification of Exempt Certification

From: Social/Behavioral IRB  
To: [Kristen Tarantino](#)  
CC: [David Loy](#)  
Date: 2/20/2024  
Re: [UMCIRB 24-000007](#)  
Community Reintegration Through Adaptive Sports

I am pleased to inform you that your research submission has been certified as exempt on 2/20/2024. This study is eligible for Exempt Certification under category # 2A.

It is your responsibility to ensure that this research is conducted in the manner reported in your application and/or protocol, as well as being consistent with the ethical principles of the Belmont Report and your profession

This research study does not require any additional interaction with the UMCIRB unless there are proposed changes to this study. Any change, prior to implementing that change, must be submitted to the UMCIRB for review and approval. The UMCIRB will determine if the change impacts the eligibility of the research for exempt status. If more substantive review is required, you will be notified within five business days.

Document	Description
Consent Letter (2).pdf(0.03)	Consent Forms
Dempographic and SCS Survey.pdf(0.02)	Surveys and Questionnaires
Incentives Survey Qualtrics.pdf(0.02)	Surveys and Questionnaires
The Influence of Adaptive Sport and Recreation Attributes on Community Reintegration in Veterans (0.03)	Study Protocol or Grant Application

For research studies where a waiver or alteration of HIPAA Authorization has been approved, the IRB states that each of the waiver criteria in 45 CFR 164.512(i)(1)(i)(A) and (2)(i) through (v) have been met. Additionally, the elements of PHI to be collected as described in items 1 and 2 of the Application for Waiver of Authorization have been determined to be the minimal necessary for the specified research.

The Chairperson (or designee) does not have a potential for conflict of interest on this study.

IRB00000705 East Carolina U IRB #1 (Biomedical) IORG0000418  
IRB00003781 East Carolina U IRB #2 (Behavioral/SS) IORG0000418

**Appendix F**  
**Social Media Flyer**



## SURVEY RESEARCH PARTICIPANTS NEEDED!



**STUDY PURPOSE:** To examine the **influence of adaptive sports and recreation attributes on community reintegration in veterans**

An electronic \$20 Amazon gift card will be provided to the first 50 qualified veterans who complete the **10-minute** survey. This information is anonymous.



### **INCLUSION CRITERIA:**

- a) served at least 4 years of military deployment and/or combat service and are transitioning back into civilian life,
- b) participated in some form of adaptive sports and recreation over the last year,
- c) self-identified as having a mental or physical disability or illness,
- d) the ability to read English, and
- e) a valid email address to receive a \$20 gift card.



### **Any questions?**

Please contact:

Kristen Tarantino

[tarantinok19@students.ecu.edu](mailto:tarantinok19@students.ecu.edu)

East Carolina University, Recreation  
Sciences Department

**CLICK HERE FOR SURVEY!**



#UMCIRB 24-000007