

**MEASURING HEALTH QUALITY OF LIFE, WELLBEING, AND SOCIAL AND
PERSONAL RELATIONSHIP OUTCOMES THROUGH PARTICIPATION IN
ADAPTED RECREATION**

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MEASURING HEALTH QUALITY OF LIFE, WELLBEING, AND SOCIAL AND
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Dedication

This paper is dedicated to my incredibly supportive family. My academic career has been one of trials, tribulations, wins, losses, grief, joy, early mornings, late nights, and copious amounts of coffee. When I began this journey, I could never have foreseen all the challenges that would come. I wish with all of my heart that my dad was here to see what I have accomplished since his unexpected and untimely passing. Dad, in the event this dedication makes its way to heaven, I want you to know that I really miss you. I have felt your presence- thank you for all of the paperclips. What I wouldn't give to have you sitting at the back of the room when I walk across the stage. I wish that my grandfather was here, too. Grandpa, unlike dad, you would have been front and center to cheer me on. I know you liked to make jokes that I "got my smarts from you". I love you and miss you so very much. I can still hear your voice in my head. I think of you with such fondness. You truly were the kindest man I have ever known. Granny always reminds me how proud you both would have been, and I know she is right. She and I are doing our best to keep going. We find things to laugh about and value the joy we have in the simple moments together. Life has not been the same without you two. As I write this dedication, it seems so strange to be filled with such intense grief as I commemorate one of my greatest accomplishments to date. In earlier iterations of this dedication, I skipped over the sad parts entirely. I only wrote about why this research matters to me so much and where I hope to go next; the truth is, the sad parts of this story *do* exist, and the sad parts of this story also lend themselves to why the happy parts are so meaningful. Without recognition of the challenges, the wins don't seem to mean as much. We can't really see how far we have come without reflection on where we have been. As much as I wish I

could have skipped the very difficult times, I would not be the person I am today without them. Through the past few years, I have grown to be more caring, thankful, resilient, and brave. And I would not be here without massive support from so many wonderful people. To my dear Mom- How many possible ways can a person say thank you? Even if I could figure this out, it would still not be enough to adequately describe just how much I love and appreciate you. You have been here through all of this. Encouraging me, reading my papers, telling me not to give up. Without you, I would never have kept going. You have taught me to be kind and loving and have always encouraged me, no matter how insane my ideas and goals have been, you have always been here for me- through it all. I owe so much to you, Mom. From the bottom of my heart, I love you!

To my Husband- You have been my rock, my best friend and one of my biggest cheerleaders. I could not imagine my life without you in it. We have been through so much together and I can't wait for our next adventure. Thank you for being so level-headed and so calm in times of great stress. Thank you for being my 'person' and for filling in the gaps when I have had my head buried in schoolwork and research. I love you so much.

To my Children- No matter what I accomplish in life, no matter what opportunities come my way, no matter what accolades I achieve, nothing could ever compare to how much you mean to me. As long as I live, you two will *always* be what I am the very proudest of. I hope that as you grow and learn and chase after your own dreams and goals, you may draw some inspiration from me. I hope that you feel a sense of pride when you see the things I have earned, and I hope that you always remember that you can achieve anything you put your minds to. I love you with all that I am.

Abstract

Across the world there are millions of children, youth, and adults that live with some form of a physical, cognitive or mental health limitation. The use of recreation therapy, outdoor recreation, and adapted recreation are underutilized services that can assist in the quality of life and wellbeing experience for individuals of all abilities. As such, this study aimed to fill a gap in the current literature by investigating the outcomes of two adapted recreation activities for children, youth and adults living with physical, cognitive and mental health challenges. This pilot study addresses two questions 1) Will engaging in one session of Equine Assisted Therapy impact social skills and personal relationship characteristics in participants ages 8-30 living with physical and mental health disorders? 2) Will engaging in one adapted fishing experience impact Health Quality of Life and wellbeing for clients living with physical, cognitive, and mental health issues and for volunteers and family/ caregivers ages 18 +? Findings indicate that recreation therapy in the form of equine assisted therapy and adapted fishing are likely to have positive impacts on social and personal relationship skills and positive impacts on self-perceived quality of life and wellbeing.

Preface

This thesis is an original work by Amanda Ervin. No part of this thesis has been previously published. This thesis was written using a manuscript-based format.

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I am deeply grateful to all those who have supported me throughout this journey.

First and foremost, I would like to express my sincere appreciation to my supervisor, Dr. Jon

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Table of Contents

Dedication	iii
Abstract	v
Preface	vi
Acknowledgements	vii
Table of Contents	viii
List of Tables	ix
List of Figures	x
List of Acronyms	xi
List of Definitions	xii
Chapter 1: Literature Review	1
Chapter 2: Equine Assisted Therapy	20
Chapter 3: Adapted Fishing	49
Chapter 4: Global Discussion	90
References	99
Appendices	108

List of Tables

Table 1: Flourishing Through Leisure & Equine Assisted Therapy Connection.....	23
Table 2: Participant Specific Demographics and Diagnosis	27
Table 3: Equine Assisted Therapy Intervention Protocol	35
Table 4: Qualitative Theme & Social Personal Relationship Scale Connection	43
Table 5: Flourishing Through Leisure & Adapted Fishing Connection	54
Table 6: Participant Specific Demographics and Diagnosis	58
Table 7: WHOQOL-BREF-26 Assessment Factors	60
Table 8: Adapted Fishing Intervention Protocol.....	66
Table 9: Qualitative Theme & WHOQOL-BREF-26 & WEMWBS Connection	83

List of Figures

Figure 1A & 1B: Images displaying EAT Adaptations.....	32
Figure 2: Social Personal Relationship Scale FACTOR Totals.....	39
Figure 3: Social Personal Relationship Scale- SOCIAL Totals.....	40
Figure 4: Social Personal Relationship Scale-PERSONAL Totals	41
Figure 5: WHOQOL-BREF-26 Pre-Post Factors Total.....	69
Figure 6: WHOQOL-BREF-26 Pre and Post Physical Factors	71
Figure 7 WHOQOL-BREF-26 Pre and Post Psychological Factors	72
Figure 8: WHOQOL-BREF-26 Pre and Post Social Factors.....	73
Figure 9: WHOQOL-BREF-26 Pre and Post Environmental Factors	74
Figure 10: WHOQOL-BREF-26 Pre and Post Questions 1 & 2	76
Figure 11: WEMWBS Pre Post Factors Total	79
Figure 12: WEMWBS Pre Post Categories	80

List of Acronyms

Acronyms:

ADD	Attention Deficit Disorder
ADHD	Attention Deficit Hyperactivity Disorder
AF	Adapted Fishing
ASD	Autism Spectrum Disorder
CP	Cerebral Palsy
DD	Developmental Delay
DS	Down Syndrome
EAT	Equine Assisted Therapy
FASD	Fetal Alcohol Spectrum Disorder
HQOL	Health Quality of Life
MH	Mental Health
ODD	Oppositional Defiant Disorder
PTSD	Post Traumatic Stress Disorder
SCI	Spinal Cord Injury
SUD	Substance Use Disorder
SPRS	Social Personal Relationship Scale
TBI	Traumatic Brain Injury
WEMWBS	Warwick Edinburgh Wellbeing Scale
WHOQOL-BREF	World Health Organization Quality of Life Brief

List of Definitions

Definitions:

Riders: In this study, the term riders is used to describe participants taking part in an equine assisted therapy program.

Client: In this study, the term client is used to describe individuals living with physical, cognitive or mental health challenges, who participate in an adapted recreation activity with assistance.

Volunteer: In this study, the term volunteer is used to describe individuals who have registered to assist clients with adapted recreation activities. Volunteers may or may not be living with physical, cognitive or mental health challenges.

Family/Caregiver: In this study, the term family/ caregiver is used to describe individuals who's loved ones or whose individuals in their care have been registered to participate in adapted recreation activities. Family/ Caregivers may also choose to participate in the adapted recreation activities.

CHAPTER 1: MEASURING HEALTH QUALITY OF LIFE, WELLBEING, AND SOCIAL AND PERSONAL RELATIONSHIP OUTCOMES THROUGH PARTICIPATION IN ADAPTED RECREATION

1.0 Introduction

The following chapter discusses mental health, physical and cognitive health factor, recreation therapy, theoretical construct, equine assisted therapy, and fishing. This section provides a literature summary that reviews these items and establishes a connection to the premise of adapted recreation for individuals living with a variety of mental, physical, and cognitive challenges.

Individuals living with physical disabilities, cognitive disabilities, and mental health (MH) often experience lower self-esteem, a lower sense of wellbeing, and decreased autonomy (Babik & Gardner, 2021). In 2016, more than 5.3 million Canadians, totaling almost 16% of the population, were living with some form of disability affecting their level of independence, freedom, and quality of life (Easter Seals, 2016). This population includes upwards of 200,000 children and youth (Easter Seals, 2016), and a connection has been made linking poor physical health to poorer outcomes of MH in children and youth (Statistics Canada, 2019). MH disorders and illnesses have been identified as a major indicator of health issues affecting Canadian youth and children (Waddell et al., 2014; Wiens et al., 2020). Along with the high prevalence of MH disorders, documentation establishes that healthcare and health related services are oftentimes much less available or accessible for MH disorders than they are for many physical disorders (Waddell et al., 2014; Wiens et al., 2020). Youth in Canada that reported poor MH were also more likely to report living with some type of recurrent pain, while headaches and trouble sleeping were also associated with poorer MH in children and youth (Statistics Canada, 2019).

A longitudinal study discovered that up to 75% of those currently living with a diagnosed MH disorder received their initial diagnosis in their childhood/adolescence, indicating that childhood and adolescence may in fact be the most impactful time in a person's life to address MH issues, possibly limiting MH challenges from severely affecting their future (Waddell et al., 2014)

Physical, cognitive, social/emotional, and behavioral wellbeing are all factors of mental wellness and MH (Statistics Canada, 2019). Good mental wellness in children and youth is dependent on many factors. According to Waddell, et al (2014) good MH in children involves more than the lack of a diagnosis - MH in children involves social and emotional aspects, as well as physical factors, cognitive factors, and even cultural factors (Waddell et al., 2014; Wiens et al., 2020). Importantly, social, and emotional development skills are considered to be a major element responsible for the capability in children and youth to be able to reach their full potential and to flourish in life (Malik et al., 2022; Waddell et al., 2014). MH factors affect how individuals act, think, and feel, and have major impacts on how individuals relate to others, make choices, and handle stress and stressful situations (Statistics Canada, 2019).

1.1 Outcomes of low physical and mental health in youth

The most common MH disorders in children and youth in Canada are anxiety, attention deficit hyperactivity disorder (ADHD), conduct disorder and depression (Canadian Mental Health Association, 2014). In 2020, upwards of 30,000 individuals between the ages of 5-24 were hospitalized for MH disorders and of that, 58% were female (Canadian Institute for Health Information, 2022).

MH challenges in children and youth have been directly linked to poorer experiences with social relationships, lower grades in school, and disturbances with developmental skills (Statistics Canada, 2019). MH disorders in children and youth that are not addressed and are not being treated are known to cause significant personal impairments, as well as distress in the community and at home and school (Waddell et al., 2005). Poor MH in children has been directly correlated to difficulty making friends (Statistics Canada, 2019) and studies show that limited social relationships have both short and long-term effects on health; these effects can often arise in childhood, and eventually have impacts on lifelong health outcomes (Umberson & Montez, 2010). MH challenges in childhood can lead to issues throughout adulthood, having been linked to criminal behavior, unemployment, and additional MH disturbances such as substance use disorder (SUD) and suicide (Waddell et al., 2005)

1.2 Barriers to conventional recreation and leisure for health-challenged youth

Development in children is largely dependent on their ability to participate socially (Law et al., 2007; Oberle et al., 2019). In fact, participation has been coined as being a ‘fundamental’ component to development in children (King et al., 2003; Law et al., 2007). Through participation in social activities children learn how to communicate, learn about the expectations of society, learn to build friendships, and cohabitate with others, and are introduced to many competencies and skills needed later in life (King et al., 2003; Law et al., 2007). Participation in various activities has major effects on a child’s overall health and wellbeing, where participation in recreation and sports activities is associated with fine and gross motor skill development and has notable benefits such as lower rates of obesity and better cardiovascular health (Law et al., 2007; Soto-Icaza et al., 2015).

Children and youth living with physical, or MH disability often engage in less physical activity than their neurotypical peers (Shields & Synnot, 2016).

This may be due to a number of factors such as a lack of local opportunities, a lack of a mentor, unwillingness and/or inability for opportunities to be inclusive and wanting to avoid the negative attitudes that society may display towards individuals living with a disability (Shields & Synnot, 2016). Involvement with out of school activities is known to provide many benefits to children such as life satisfaction, better peer relations, emotional wellbeing, and better grades in school-and a reduction in behavioral and emotional challenges (Law et al., 2007; Oberle et al., 2019).

Children living with physical and mental disabilities have more barriers to participation in recreation and leisure compared to children living without disabilities (Law et al., 2007). Notable barriers to participation include support and relationships, natural and built environment, beliefs, attitudes and values, and service systems and policies (Law et al., 2007). Additionally, environmental factors such as terrain, temperature, noise, lighting, and large crowds can cause significant barriers for children with disabilities (Law et al., 2007). Looking specifically at a community level, a sheer lack of municipal resources leads to substantial barriers - communities with a lack of inclusive schools, few programs with adaptive equipment, accessible transportation shortages and limited inclusive recreation programs will undoubtedly have a major effect on the ability for children with physical and mental disabilities to participate (Banda-Chalwe et al., 2014; Law et al., 2007).

Adults living with a physical or MH disability also describe being less physically active than adults not living with a disability (Hassett et al., 2021). One study that investigated comparisons of leisure-time physical and activity participation by adults with and without a disability revealed that 54% of respondents with a disability reported not meeting physical activity guidelines, compared to 38% of adults living without a disability (Hassett et al., 2021). Poor health was the most commonly reported barrier to recreation and leisure pursuits amongst adults living with a disability, while adults living without a disability reported a lack of time being the main barrier to participation in leisure pursuits (Hassett et al., 2021). Comparing adults and children living with a disability, one study found that decreased participation in leisure activities was more associated to individual circumstances and perceived difficulties than to disability-related factors (Badia et al., 2011). External factors such as accessible spaces and suitable transportation may either facilitate or hinder participation in recreation and leisure (Badia et al., 2011; Banda-Chalwe et al., 2014). Accessibility in a developed environment is perceived as being crucial to ensuring equity of participation for individuals living with disabilities (Banda-Chalwe et al., 2014). Inaccessibility of a person's workplace, educational institutions, and leisure spaces have been linked to a reduction in participation for individuals living with mobility issues, and can be connected to negative factors in family, personal, and economic aspects of life (Banda-Chalwe et al., 2014). Participation in leisure activities has been noted as being an important factor, supporting community inclusion, and can contribute to better quality of life (Badia et al., 2011).

Adults living with Down Syndrome (DS) may experience additional barriers to participation in recreation and leisure, namely a lack of independence with daily living skills plus an absence of someone to organize and attend leisure opportunities, both thought to be contributing factors (Mahy et al., 2010). Additionally, other factors such as a lack of transportation, lack of support from others, medical and physiological factors, lack of desire to be physically active, and a lack of support from family can further contribute to decreased participation (Mahy et al., 2010).

Another study that discovered that a lack of leisure partners, poor physical health and finances were also barriers to leisure for adults with DS (Mihaila et al., 2020).

1.3 Premise of adapted recreation for health-challenged youth

‘Adapted recreation’ is used to describe any leisure based, sports based, or physically focused recreation pursuit that is modified to allow individuals of greatly varying levels of ability to fully participate (DelGrande et al., 2020; Diaz et al., 2019; Menzies et al., 2021).

1.4 Social and personal relationship characteristics

Social and personal relationships can be strongly linked to the experiences that individuals have in life (Malik et al., 2022; Waddell et al., 2014). Social and personal relationships, sometimes referred to as social ties, represent both formal and informal relationships individuals have with others (Umberson & Montez, 2010). Examples of social and personal relationships may include one’s spouse, involvement with volunteer associations, religious congregations, and friends (Umberson & Montez, 2010). Research has demonstrated that social relationships are connected to physical health outcomes (Umberson & Montez, 2010).

Within this study, social characteristics are described as skills needed to have a positive interaction with others, and personal characteristics are described as skills needed to have self-representation while engaging with others.

1.5 Empowerment theory

The ‘Empowerment Theory Model’ is an evaluation framework and intervention design that has been used to encourage physical activity for children youth with physical and MH disabilities (Bowling et al., 2022). Within this model, the term ‘empowerment’ describes a strengths-based approach to leisure opportunities, where individuals are given the right to behave autonomously, are provided with support only when needed, and are given the right to have control over their own lives (Moran et al., 2017).

In the field of adapted recreation and disability health, empowerment theory suggests that health behavior changes are most likely to occur when children and youth with physical or MH disabilities are “empowered to be active participants in and have personal control over their own lives” (Bowling et al., 2022). Health behavior changes in these individuals are further enhanced when caregivers, service providers, and programs have the necessary knowledge, skills, and tools to provide effective services and support (Bowling et al., 2022). There are three key concepts built into this model: training, support, and continuum of opportunity (Bowling et al., 2022).

Within this framework, training includes the teaching and training implemented to ensure the participant/parent/ staff, etc. are able to all use specialized equipment, promoting inclusion and empowered engagement. Support speaks to education, resources and infrastructure, while continuum of opportunity speaks to the group structure and setting of the intervention (e.g., inclusive of the disability group; specialized to the reverse-inclusive with those without the disability), which has proven to be an important activity design choice, that assists in determining necessary training and support needed to implement the adapted intervention (Bowling et al., 2022).

1.6 Premise of therapeutic recreation for health-challenged youth

Therapeutic recreation (TR) is the “purposeful and careful facilitation of quality leisure experiences and the development of personal and environmental strengths, which lead to greater wellbeing for people due to illness, disability, or other life circumstances, need individualized assistance in achieving their goals and dreams” (Anderson & Heyne, 2011, p 130).

1.6.1 Flourishing Through Leisure Model

When providing TR services, a strengths-based model of practice that is recommended is the Flourishing Through Leisure Model (Anderson & Heyne, 2012). The flourishing model focuses on the following key principles: 1) TR services are centered on the participant, 2) the TR process is driven by the participant's aspirations, dreams and goals, 3) the participant is viewed within the rich environmental context where participation occurs, 4) the TR provider takes into account all facets of the participant in a holistic way (including leisure) and considering all domains- physical, cognitive, social, emotional, spiritual and psychological, 5) during the TR process, both the participant's unique strengths and the strengths and resources of the environment are taken into consideration, 6) a thriving life is encouraged by the participant's strengths as well as the resources and strengths of the environment, 7) services for TR are outcome-based and take into account the complexity of human wellbeing and quality of life (Anderson & Heyne, 2012).

Participation in both adapted recreation and TR for persons with disabilities is associated with improvements in mental, emotional, and physical health (DelGrande et al., 2020; Menzies et al., 2021; Merrick et al., 2020; Slater & Meade, 2004).

Individuals with impairments affecting mobility and cognition, such as spinal cord injury (SCI), cerebral palsy (CP), and traumatic brain injury (TBI), have experienced improvements from adapted recreation that contribute to overall wellbeing and health-quality of life (HQOL), as well as improvements in motor and social function (DelGrande et al., 2020; Menzies et al., 2021; Merrick et al., 2020; Slater & Meade, 2004; Glennys et al., 2012; Martin et al, 2020; Rosenbaum, 2009).

Further, research has demonstrated that adapted sports can improve physical fitness, provide numerous psychosocial benefits, and generate an opportunity for individuals to continue to participate in activities they enjoy. Most importantly, adapted sports can positively impact ones' quality of life, increase mindfulness, facilitate self-efficacy, and allow participants to experience improved happiness while decreasing perceived stress (Diaz et al., 2019; Mutz & Müller, 2016). Adapted recreation provides access to activities for individuals of all abilities, and a common goal of these interventions is to improve mental and physical health (Nieman et al., 2021; Diaz et al., 2019; Wilson & Christensen., 2012). When participants are asked to report their HQOL and wellbeing, improvements are frequently noted after participation, and this finding persists across a variety of different activities. Further, physical fitness and increased opportunity for gross and fine motor movement are associated with adapted recreation, as are social benefits, self-efficacy, life satisfaction, feelings of autonomy, and improvements in perceptions of body image (Diaz 2019; Merrick et al., 2020; Hallberg, 2017).

Several activities and sports can be adapted to allow individuals of all abilities to participate. Equine assisted therapy (EAT), rock climbing, mountain biking, fishing/watersports, and team sports (basketball, hockey) are a few examples of activities that may be modified through the use of adapted equipment and trained staff (Escobar, 2019; DelGrande et al., 2020; Diaz et al., 2019; Merrick et al., 2020). Watersports such as kayaking or canoeing may be adapted by applying specialized equipment to existing kayaks or canoes. An outrigger can help balance a kayak, thus providing more stability (Schmid et al., 2019). Further, using a kayak with two seats (tandem kayak) may allow a second paddler to steer and guide the kayak, allowing individuals with a variety of needs the opportunity to participate in this activity.

Hiking opportunities can become adaptive by using a TrailRider (James et al., 2018). A TrailRider is a piece of equipment that features one seat, a single wheel, hand brakes and handles (James et al., 2018). This equipment may be used to provide individuals with disabilities an opportunity to experience hiking interventions (James et al., 2018). Current literature reveals that adapted recreation can assist with the treatment of several illnesses, both mental and physical, such that a variety of health challenges may be improved through the use of adapted recreation (Escobar, 2019; Hallberg, 2017; Diaz et al., 2019).

1.6.2 Physical health benefits of therapeutic recreation

Physical benefits of TR can include management of weight, a reduction in the occurrence of cancer and diabetes, lower rates of hypertension and decreased rates of depression (Brady et al, 2017). Moreover, physical benefits of TR may also include increased strength, improvements in fine and gross motor skills, improved flexibility, lower risk for heart disease and an increase in bone strength (Cook & Kohl, 2013).

1.6.3 Mental health benefits of therapeutic recreation

TR has been linked to positive impacts on mental health. Known benefits include improvements in quality of life, feelings of satisfaction, decrease in anxiety and depression symptoms, increased relaxation and satisfaction, feelings of autonomy and opportunities for social interaction (Brady et al., 2017; Moxham et al., 2015). TR can contribute to freedom of choice and feelings of intrinsic motivation (Anderson & Heyne, 2012; Moxham et al., 2015).

1.7 Green Care and Blue Space

Adapted recreation can be provided in a variety of settings. Adapted recreation opportunities occurring outdoors may provide additional benefits, compared to activities that occur indoors; activities that are facilitated in nature are often referred to as Green Care (Artz & Davis, 2017).

Green Care offers many types of activities, while promoting wellbeing, mental and physical health, while connecting with nature and outdoor spaces (Dorsch et al., 2016; Moriggi et al., 2020; Berget et al., 2010). The reported psychological benefits of Green Care are many, the most common being social inclusion, improvements in wellbeing and HQOL, and improvements in mental health (Moriggi et al., 2020; Sempik, 2010). Green Care activities may lead to disease prevention and health-promotion, all while providing opportunities for social and physical growth (Barfield et al., 2021). Further, common goals for outdoor activities may include increased intrinsic motivation, increased autonomy, increased social relatedness and increased health related knowledge growth (Barfield et al., 2021).

Water based interventions provide access to Blue Space. Blue Space can be defined as “all forms of natural and manmade surface water” (Smith et al., 2021, pg. 1). Researchers found that individuals that spent time near a blue space once per week, reported better mental health (White et al., 2020). Further, research also outlines that time spent in nature and natural environments can be attributed to better self-reported general health, mental wellbeing, vitality, improvement in depression symptoms and even improved blood pressure (White et al., 2020). Exposure to Blue Space and aquatic environments could promote human health- specifically having positive impacts on HQOL and wellbeing (Smith et al., 2021; White et al., 2020).

Blue Space and Green Care offer similar benefits as both provide opportunity to experience connectedness with nature (Smith et al., 2021). One research study discovered that when individuals intentionally spend time in or near water, they often experience immediate short-term stress reduction (White et al., 2020). In 2014, a study was conducted with children aged 7-10 living with a MH diagnosis of ADHD, to investigate how blue space impacted their MH symptoms (Amoly et al., 2014). Researchers also measured children's behaviors and reported that more used emotional coping skills (Amoly et al., 2014). In 2014, research established that the more time the children spent near the water, the more pro-social behaviors and fewer emotional problems were demonstrated (Amoly et al., 2014). Similar to what has been reported in children, benefits of blue space can be seen in older adults, too (White et al., 2020). Blue space experiences can be linked to better mental health, general physical health and positive social relationships and positive social experiences in the elderly (White et al., 2020). As people age, having visual access to blue spaces becomes more and more important, especially as mobility challenges emerge (White et al., 2020).

1.8 Equine Assisted Therapy

Equine assisted therapy (EAT) is defined as “therapeutic intervention for both young people and adults, offering unique experiences and positive benefits to participants’ physical, emotional, mental, and spiritual wellbeing where horses are utilized alongside professionals” (Escobar, 2019, p. 23). Therapeutic Horseback Riding (THR) is “the adaptive or modified sport (sport as therapy) of equitation; the purpose is to contribute positively to cognitive, physical, emotional, and social wellbeing of people with disabilities” (Stergiou et al., 2017).

Individuals with disabilities, including CP, have shown improvements in motor and social function when having engaged in EAT (Glennys et al., 2012; Martin et al, 2020; Rosenbaum, 2009). Escobar (2019) found that children with disabilities experienced health benefits when engaging with horses. Hallberg (2017) has suggested that “horse riding at a walking gait provides the stimulation of a walking exercise more easily and effectively than does human walking”. Reflecting on this further, one may assume that riding horses can be an effective option in facilitating treatment for individuals with physical disabilities (Hallberg, 2017).

According to Hallberg, many researchers have tested theories about the way in which interaction with horses can impact MH disorders (Hallberg, 2017). Many elements of EAT are thought to impact the participant’s experience. The way in which the horse reacts and responds to riders, its sheer size, and even its instinctual nature are all thought to be attributes that positively impact the participants self-esteem, and self-confidence (Hallberg, 2017). Further, the horse-human relationship is thought to foster an environment in which mental wellness may be achieved (Hallberg, 2017).

EAT provides benefits to individuals with the following conditions: autism, ADHD, intellectual disability, behavior disorders, low vision/ blindness, mental illness, physical disability, TBI and learning disability (Hallberg, 2017; Martin et al., 2020).

Riding a horse riding at a walking gait pace facilitates the stimulus of walking and is cited as having more physical benefits than walking alone. Horse riding is especially beneficial in providing sensory and motor benefits for those with physical impairments (Hallberg, 2017).

Both mothers and their children with disabilities reported health benefits when engaging with horse. Children with disabilities showed improvements in problem-solving skills, coping, communication with others and increased socialization, and the mothers reported health benefits in themselves as a result of witnessing the healing effects of EAT on their child (Escobar, 2019).

EAT offers all participants a unique and therapeutic experience while having positive health outcomes across all of the domains- physical, cognitive, spiritual and emotional (Escobar, 2019; Hallberg, 2017; Glennys et al., 2012; Rosenbaum, 2009). Numerous theories exist about the ways that individuals with mental health issues may benefit from EAT.

1.8.1 Outcomes of EAT

Individuals with impairments in balance, gross and fine motor function, gait, spasticity, and coordination are thought to benefit from EAT (Stergiou et al., 2017). Known challenges of mental disorders in children can include irritability, aggressive behavior, challenges in social situations, disruptive behavior, and changes in mood (Ogundele, 2018). EAT programs may provide benefits within the social and cognitive domains and offer improvements in wellbeing (Stergiou et al., 2017). Children with disabilities showed improvements in gross motor function, emotional wellbeing, improved social interaction with human and horses, and positive changes in communication and problem-solving skills (Escobar, 2019). Lastly, individuals who attend EAT programs may experience these benefits to an even greater level when these programs happen outdoors (Stergiou et al., 2017).

Aforementioned, studies focusing on EAT have suggested that interaction with horses may help remedy the following conditions: ADHD, autism spectrum disorder (ASD), behavior disorders, intellectual disability, learning disability, low vision and blindness, mental illness, physical disability and TBI (Hallberg, 2017).

1.8.2 EAT as Green Care

When adapted recreation is facilitated outdoors, oftentimes there are reports of additional benefits for participants. An example of this can be seen with EAT. In traditional EAT programs occurring in an indoor arena setting, benefits are listed as improvements in gross motor function, emotional wellbeing, improved social interaction with human and horses and positive changes in communication and problem-solving skills.

When EAT occurs outside in nature, there are greater reported improvements in mental health and feelings of connectedness with nature (Escobar, 2019; Hallberg, 2017). Further, a farm setting is an unpredictable and lively environment, providing an atypical setting for therapy to occur (Hallberg, 2017). When EAT is conducted within an outdoor farm setting, numerous sensory stimulation opportunities are made available; being outdoors on a farm provides the participant with interaction to nature and oftentimes other animals such as barn cats (Hallberg, 2017). The outdoor farm setting also provides greater opportunities for human-animal connection, and facilitates interspecies interaction, social opportunities, along with the development of social and relationship skills (Hallberg, 2017). Intentionally providing EAT outdoors can enhance the participants experience simply by being in nature; known health benefits of being in nature are becoming more and more apparent as research on this subject is growing (Hallberg, 2017).

Although Green Care is a wide-ranging term used to describe many interventions that occur in nature, EAT has been widely studied, specifically with children and adolescents (Artz & Davis, 2017). EAT being conducted outdoors has become known as a beneficial intervention to assist with the health development of social and emotional function in adolescents and children (Artz & Davis, 2017). One study revealed that a majority of EAT participants (82%) believed that visiting the farm alleviated their negative, sad, or mad emotional states and that being on the farm led to the experience of happy feelings (Artz & Davis, 2017). Additionally, upwards of 50% of study respondents indicated that EAT was their favorite activity, suggesting that the farm setting as a whole may have assisted in the alleviation of negative affect, and that EAT may have had major impacts on the positive emotional response (Artz & Davis, 2017).

1.9 Adapted Fishing

Fishing is an activity that may be modified and adapted for those with mobility and/or cognitive challenges. For example, there are several adaptive equipment pieces available, to enable participation in fishing by individuals with all levels of abilities (United Spinal Association, 2021). Given what is known about the health benefits of fishing and adaptive sports, one may assume that adaptive fishing could provide the same benefits to participants as does a traditional fishing intervention. The social and self-improvement benefits associated with recreational fishing have been found to be even higher for anglers with disabilities, whenever compared to anglers without disabilities (Freudenberg & Arlinghaus, 2009).

Anglers living with disabilities experience significantly more and varied barriers to participation in fishing and other outdoor activities (Freudenberg & Arlinghaus, 2009).

In addition to the known benefits specifically related to fishing, other opportunities secondary to the activity such as being outdoors, are incurred. Outdoor recreation has been known to increase mindfulness, increase self-efficacy, and cause participants to have an improvement in wellbeing (Mutz & Müller, 2016). Outdoor recreational opportunities may decrease perceived stress and improve happiness (Mutz & Müller, 2016), highlighting the need for targeted management actions specifically directed at people with disabilities so they may also benefit from nature-based recreation activities such as fishing (Freudenberg & Arlinghaus, 2009).

1.9.1 Outcomes of Adapted Fishing

Fishing is a popular outdoor activity with many known attributes, such as social engagement, psychological betterment, educational opportunities, and economic benefits. Fishing can nurture a positive state of mind, increase relaxation, improve mental health, improve wellbeing in general and inspire feelings of fun and joy (Arlinghaus et al., 2019; Hunt & McManus, 2016). There are a number of identifiable reasons individuals choose to fish recreationally, including nutritional benefits, access to leisure, mental health benefits and being a part of a social community (Nieman et al., 2021). Previous studies have found fishing can relieve stress, improve social connections, and is an accessible form of physical activity for older adults and people recovering from illness (Lindsay et al., 2022).

Summary

This review has established that individuals living with cognitive and physical disabilities may experience a lower sense of wellbeing, lower self-esteem, and have decreased autonomy (Babik & Gardner, 2021).

Nearly 20% of Canadians are living with some form of a disability, including an estimated 200,000 children and youth (Easter Seals, 2016). It is known that participation in adapted recreation may facilitate improvements in mental, emotional, and physical health (DelGrande et al., 2020; Menzies et al., 2021; Merrick et al., 2020; Slater & Meade, 2004).

Research Questions

In an effort to understand the self-perceived impacts that adapted recreation has on HQOL and wellbeing, as well as the observable impacts in social and personal relationships seen in children and adults living with physical and cognitive impairments, this thesis explored the following questions:

1. Will engaging in one session of Equine Assisted Therapy impact social skills and personal relationship characteristics in participants ages 8-30 living with physical and mental health disorders?

It is predicted that social skills and personal relationship skills will see improvements in participants ages 8-30, after one session of EAT.

2. Will engaging in one adapted fishing experience impact Health Quality of Life and wellbeing for clients living with physical, cognitive, and mental health issues and for volunteers and family/ caregivers ages 18 +?

It is predicted that health quality of life and wellbeing will improve in clients, volunteers, and family/caregivers after one session of adapted fishing.

CHAPTER 2: EQUINE ASSISTED THERAPY

Abstract

A pilot clinical trial research study was conducted to investigate the impact that participation in one session of equine assisted therapy would have on social and personal affect in individuals aged 8-30, living with physical and mental health challenges. Equine assisted therapy has been known to promote self-confidence, self-efficacy, and to help participants achieve an improvement in wellbeing. Our data revealed that equine assisted therapy may increase social and personal affect skills, as improvements in self-confidence, conflict management, and respect towards others were noted after one session of this equine assisted therapy intervention. These findings provide encouraging implications for equine assisted therapy, outdoor recreation, and the ecological approach to therapeutic recreation.

Keywords: equine assisted therapy, recreation, adapted recreation, flourishing leisure, social wellbeing, therapeutic recreation

2.1 Introduction

Equine assisted therapy (EAT) is defined as therapeutic intervention for both young people and adults. EAT offers unique experiences and positive benefits to participants' physical, emotional, mental, and spiritual wellbeing where horses are used in collaboration with professionals, promoting gross motor movements, social skills, and confidence while riding (Escobar, 2019; Martin et al., 2020). Studies show that individuals with disabilities have experienced improvements in motor and social function when having engaged in EAT (Glennys et al., 2012; Martin et al, 2020; Rosenbaum, 2009). Further, when EAT occurs outdoors, there are greater reported improvements in mental health and feelings of connectedness with nature (Escobar, 2019; Hallberg, 2017).

2.1.1 Equine Assisted Therapy for Mental and Physical Challenges

EAT has been linked to MH benefits, as well as physical benefits (Hallberg, 2017). Additionally, research has identified that children living with a disability often experience health benefits when engaging with horses (Escobar, 2019). EAT may allow participants a unique and therapeutic experience while having positive health outcomes across all the domains- physical, cognitive, spiritual, and social/ emotional (Escobar, 2019; Hallberg, 2017; Glennys et al., 2012; Rosenbaum, 2009).

EAT has been known to provide improvement in balance, gross and fine motor skills plus better gait with decreased spasticity (Stergiou et al., 2017). Individuals with disabilities showed improvements in emotional wellbeing, greater social interaction with humans and horses, and positive changes in communication and problem-solving skills (Escobar, 2019).

Studies focusing on EAT have found that contact with horses may help manage ADHD, ASD, behavior disorders, intellectual disability, learning disability, low vision and blindness, mental illness, physical disability, and traumatic brain injury (TBI) (Hallberg, 2017).

2.1.2 Recreational therapy interventions for co-occurring conditions

EAT can provide benefits to individuals with a number of physical and mental health conditions such as: learning disabilities, intellectual disabilities, behavior disorders, low vision/ blindness, mental illness, and physical disabilities (Hallberg, 2017; Martin et al., 2020). Several theories exist about the ways that individuals with mental health issues may benefit from EAT. Self-esteem and self-confidence can emerge from EAT specifically stemming from the horse-human relationship that is facilitated (Hallberg, 2017; Martin et al., 2020).

When providing therapeutic recreation (TR) services, a strengths-based model of practice that is recommended is the Flourishing Through Leisure Model (Anderson & Heyne, 2012). The Flourishing Through Leisure Model focuses on many key principles that are also commonly seen in EAT as a TR intervention. Detailed examples of parallels within the Flourishing Through Leisure Model, EAT and the goals of one EAT organization are presented in Table 1. For example, where the Flourishing Through Leisure Model places importance on factoring in all components of the participant in a holistic way, including all of the domains, the same can be seen with EAT. Escobar (2019) shared that EAT was perceived to be a ‘holistic intervention’ with positive, healing effects for the child. Further, EAT offers unique experiences and positive benefits to participants’ physical, emotional, mental, and spiritual wellbeing where horses are used.

Table 1-Flourishing Through Leisure & Equine Assisted Therapy Connection
Comparison of the Flourishing Through Leisure Model, goals of an equine assisted therapy program and a connection to literature

Flourishing Through Leisure Model	EAT Goals	Equine Assisted Therapy Literature
1. The participant is viewed within the rich environmental context where participation occurs	Hope- To inspire hope and confidence through connection with horses.	In traditional EAT programs occurring in an indoor arena setting, benefits are listed as improvements in gross motor function, emotional wellbeing, improved social interaction with human and horses and positive changes in communication and problem-solving skills (Escobar, 2019; Hallberg, 2017).
2. The therapeutic recreation provider takes into account all facets of the participant in a holistic way (including leisure) and considering all domains: physical, cognitive, social, emotional, spiritual and psychological	Respect- To provide an environment of mutual respect for people, animals, and facilities	The final principal theme that emerged was EAT as a holistic intervention with positive, healing effects for the child, with more than the majority of mothers describing EAT as an intervention that had positive and healing (Escobar, 2019). EAT offers unique experiences and positive benefits to participants' physical, emotional, mental, and spiritual wellbeing where horses are used in collaboration with professionals, (Escobar, 2019; Martin et al., 2020).

Flourishing Through Leisure Model	EAT Goals	Equine Assisted Therapy Literature
3. During the therapeutic recreation process, both the participant's unique strengths and the strengths and resources of the environment are taken into consideration	Inclusion- We believe that all individuals are distinct, unique, and deserve to be treated equally and fairly. We create a welcoming environment for all and are strength based in our approach.	Participation in leisure activities has been noted as being an important factor, supporting community inclusion, and can contribute to better quality of life (Badia et al., 2011).
4. A thriving life is encouraged by the participant's strengths as well as the resources and strengths of the environment	Confidence- We believe that our clients can become more confident in themselves and their abilities through interaction with horses. Further we believe that confidence can be built within the community through our credentials.	When EAT occurs outside in nature, there are greater reported improvements in mental health and feelings of connectedness with nature (Escobar, 2019; Hallberg, 2017). Further, a farm setting is an unpredictable and lively environment- providing an atypical setting for therapy to occur (Hallberg, 2017). When EAT is conducted within an outdoor farm setting, numerous sensory stimulation opportunities are made available; being outdoors on a farm provides the participant with interaction to nature and oftentimes other animals such as barn cats (Hallberg, 2017).

2.1.3 Summary of study rationale

A pilot clinical trial research study was implemented to investigate the impacts that EAT would have on the social and personal relationship skills for clients 8-30 years old with a mean age of 16 and a standard deviation of 7. Specifically, 12 participants were 8-14 years old, 3 were 15-24 years old and 2 were 25-30 years old and are living with physical and mental challenges. Based on the above noted literature, it is predicted that social-emotional skills and personal relationships will be positively impacted with one session of EAT, for riders with physical and mental health disorders. Specifically, it is predicted that positive changes will be noted within both social and personal relationships in participants, as measured by the Social Personal Relationship Scale (SPRS), following engagement in one session of EAT. Sample social characteristics taken from the SPRS include *shares with others, cooperates with peers, takes turns, and shows courtesy towards others*. Sample personal relationship characteristics taken from the SPRS include *expresses self creatively, participates as follower in activity, self-confidence and demonstrates sense of accomplishment*.

Although noted that nearly 5.3 million Canadians including 200,000 children and youth in Canada in 2016 were living with disabilities (Easter Seals, 2016), a literature review on this topic revealed a lack of current and specific data related to the social and personal relationships of this cohort. Moreover, an even larger gap in the literature exists when specifically exploring disabilities in females ages 8-14 in Canada. Lastly, even less is known about the EAT outcomes on social and personal relationship characteristics for individuals living with physical, cognitive and MH limitations.

2.2 Methodology

2.2.1 Design

A descriptive study was used to examine the observable social and personal relationship skills prior to and following one EAT intervention. A convenience style clinical study approach was used. These data were collected according to a study approved (#2021-084) by the Human Participant Research Committee at a university in Southern Alberta. Ethics approval letter provided in Appendix A.

2.2.2 Participants

Participants were 17 individuals ranging in age from 8-30 years old with MH, and physical impairments, participating in an EAT opportunity through an organization that provides said opportunities in Southern Alberta. In this study, the term *rider* was used to identify individuals who registered to participate in EAT via the support of the organization. There were 2 male and 15 female riders and 12 were 8-14; 3 were 15-24 years old and 2 were 25-30 years old and participants self-identified as either Caucasian (n = 16) or Caucasian/ Indigenous/ Jamaican or (n=1). At the time of program admission, family/ caregivers of riders reported diagnoses of anxiety, depression, ADHD, Attention Deficit Disorder (ADD), Fetal Alcohol Syndrome Disorder (FASD), ASD, Cerebral Palsy (CP) and visual impairment. Detailed participant demographics are presented in Table 2.

Table 2-Participant Specific Demographics and Diagnosis (n=17)

Pseudonym	Age	Gender	Ethnicity	Diagnosis
Alice	8	Female	Caucasian	CP, Hydrocephalus
Sharon	10	Female	Caucasian	ADHD, Anxiety
Andrea	10	Female	Caucasian	ASD
Helen	11	Female	Caucasian	Epilepsy, Trisomy X, Visual/ Cortical Impairment, Non-Verbal
Tasha	11	Female	Caucasian	CP
Emelia	12	Female	Caucasian	ADHD, Down's Syndrome
Erin	12	Female	Caucasian	ADHD, DD, Epilepsy
Barb	12	Female	Caucasian	ASD
Jessica	13	Female	Caucasian/ Jamaican/ Indigenous	FASD
Ryan	13	Male	Caucasian	Williams Syndrome
Ashley	14	Female	Caucasian	ADHD, ADD, ODD, Cognitive Delay
Mandy	14	Female	Caucasian	CP
Shelley	18	Female	Caucasian	Trisomy X
Sheila	24	Female	Caucasian	ASD, CP, Epilepsy, Cortical Impairment
Carrie	24	Female	Caucasian	DS
Dan	30	Male	Caucasian	ASD
Robin	30	Female	Caucasian	Brain Stem Atrophy

CP= Cerebral Palsy ADHD= Attention deficit hyperactivity disorder ADD=Attention deficit disorder ODD = Oppositional defiant disorder ASD=Autism spectrum disorder DS= Down syndrome DD= Developmental delay FASD=Fetal alcohol spectrum disorder

2.3 Measures

Parents, guardians, and/ or support workers of the riders were asked to complete the Social Personal Relationship Scale (SPRS) (Litchke et al., 2021), based on their observation of the rider pre- and post- the EAT intervention. In addition to the SPRS, parents, guardians, and/or support workers were also invited to answer seven open-ended questions on a feedback survey.

2.3.1 Social Personal Relationship Scale

The Social Personal Relationship Scale (SPRS) was used to observe social skills between individuals and group members, as well as emotional elements related to building personal relationships with others and within a group. The SPRS includes 20-items measured on a 5-point Likert-scale from 1-5, with 1 being ‘very slightly or not at all’, and 5 being ‘extremely’. The SPRS has a reliability coefficient alpha at pre-test/post-test of .97 (Litchke et al., 2021). Full SPRS survey is provided in Appendix B.

The SPRS is divided into two subcategories namely, 10-item social affect score (SAS) and 10-item personal affect score (PAS). The SAS is calculated by adding values marked on SPRS questions 1, 3, 5, 9, 10, 12, 14, 16, 17, and 19, and scores can range from 10 – 50. Higher scores represent higher levels of social interaction with others. PAS is calculated by adding values marked on SPRS questions 2, 4, 6, 7, 8, 11, 13, 15, 18, and 20. Again, combined scores can range from 10 to 50. Higher scores indicate higher levels of self-representation to others. In addition to calculations in each subcategory, a total score will be calculated by adding both the SAS and PAS score at pre and post. Three overall total combined categories exist and are as indicated: low skills =10-32; moderate skills= 33-66; and high skills= 67-100.

Within this scale, social affective characteristics can be described as skills needed to have a positive interaction with others, and personal affective characteristics can be described as skills needed to have self-representation while engaging with others. For example, sample social characteristics taken from the scale include *shares with others, cooperates with peers, takes turns, and shows courtesy towards others*. Sample personal relationship characteristics taken from the scale include *expresses self creatively, participates as follower in activity, self-confidence and demonstrates sense of accomplishment*.

2.3.2 Feedback survey

After the EAT session, parents, legal guardians and/ or support workers along with the rider were offered a laptop to fill in a 7-question survey, consisting of various open-ended questions. Participants were also able to access this form on the organization's website on their own time. Sample questions include *What did you hope to achieve from participating in this experience? What did you gain from this experience? and What could have made this experience better today?* Full feedback survey is provided in Appendix C.

2.4 EAT Intervention

EAT riders registered online to participate in an EAT session as provided by the organization. These sessions are offered for a 1-hour weekly riding opportunity, across a 6-week duration and occur several times throughout the calendar year. Riders met at the organization located in Southern Alberta. At any session, there were two staff members from the organization including the program coordinator, up to six riders, three to seven volunteers, one undergraduate researcher and one primary investigator.

All volunteers and researchers took part in safety training prior to the intervention commencing. The program coordinator was responsible for scheduling riders EAT sessions, scheduling volunteers, leading the EAT sessions, and conducting a daily visual assessment on each of the rider. Child riders and adult riders who are not able to legally sign documents, and whose caregivers/ parents decided to take part in the research study completed an assent form. Full assent form is provided in Appendix D. All participants were required to fill out paperwork for the host agency, separate from the research paperwork. Program days were advertised via the host sites Facebook page, website and by emails were sent to participants from the previous year. Within these advertisements, the research project was also mentioned. This was done in an effort to inform participants that the study was occurring, and provided them a chance to think about participating, rather than being caught off guard when they arrived for their program days.

2.4.1 Session Schedule

Arrival. Volunteers arrive at the organization and catch horses based on program coordinator's instructions. Volunteers walk the horses into the arena and clean their hooves. Next, the riders arrive in the arena and a visual and verbal assessment is conducted by the program coordinator. The program coordinator asks riders and parents/ legal guardians a variety of questions related to how they are feeling that day. These steps are conducted to ensure that riders have all the support they need, each time they ride. The program coordinator assesses the riders and asks for information each time they ride as they may be at varying levels of functioning, depending on the day. At this time the program coordinator introduces the primary investigator to the riders and parents/caregivers and provides a description of the research project.

Participants who decide to take part in the study are provided with a digital pre-paperwork package on a laptop, comprised of an assent form, and a pre- SPRS survey. When participants complete the pre- paperwork forms, the primary investigator password protected and locked these documents within the laptop.

Riders choose boots and helmets to the best of their abilities and volunteers assist if necessary. Next riders collect their brushes and horse grooming items to the best of their skills. The organization has prepared accommodations such as photos and labels, to allow riders as much independence as possible. Lastly, riders select their (blanket, saddle, reins, etc.) and carry to arena, and set up their tack to the best of their ability. Horse grooming begins at this step, and riders are assisted by volunteers where required. Adapted recreation measures are put in place geared at promoting rider independence, autonomy, responsibility, and success. Throughout the facility, equipment and supplies are labeled with various signage, photos and are colour coded. This is to ensure that riders can be self-sufficient as much as possible. An example of these modifications are presented in Figures 1A and 1B.

Figure 1A- Names of horses and equipment labels can be seen.



Figure 1B- Colour coded tags can be seen, indicating which equipment belongs to which horse.



Warm Up. Riders walk around the arena with their horse and volunteer and prepare to mount their horse. Modifications for mounting the horse are available if needed, namely a lift, a ramp, and a large wooden stand used to assist riders in mounting their horse. The program coordinator calls out to each rider when it is their turn to mount the horse. At this step, the program coordinator checks all equipment to ensure safety. Volunteers assist based on specific client needs.

Program. The program coordinator announces the start of the EAT program when all the riders are safely on their horse. If weather allows, riders are offered an opportunity to ride outside of the arena. Riders will stay outside for 8-12 minutes and then follow the program coordinator back inside of the arena for the remainder of the program. Once back inside, riders are invited to engage in a variety of physical and cognitive exercises and games. This allows the riders an opportunity to practice balance, hand-eye coordination, turn taking, listen to directions, respect for others, and more. At this stage, physical and cognitive exercised and games satisfy many of the TR goals and benefits often seen with EAT. Stand by and assist based on specific client needs. Specific EAT intervention details are presented in Table 3.

Table 3- Equine Assisted Therapy Intervention Protocol

Action	Tasks	Time	TR Goal/ Benefit	Adapted Recreation/ Modifications	Practice Area
Program begins	-Warm up -Riders are offered an opportunity to ride outside. Riders will stay outside for 8-12 minutes or -Riders walk laps inside of the arena	8-12 minutes	-To physically and mentally prepare for the EAT intervention	- Program coordinator and volunteers assist only as needed to promote participant responsibility and independence -Modified equipment	Outdoor recreation, Green Care, TR, EAT
EAT Intervention	-Riders are invited to engage in a variety of physical and cognitive exercises and games. Physical Exercises: -arms up, count to 10 -arms sides, count to 10 -stretch side to side, count to ten -using no reigns stand in the stirrups for a lap around the arena	30 minutes	-To promote physical and cognitive functioning -To promote independence and confidence -To improve/ maintain fine and gross motor skills -To provide the opportunity for socialization and social appropriateness -To provide the opportunity to take turns and practice listening skills	- Program coordinator and volunteers assist only as needed to promote participant responsibility and independence -Modifications to exercises as needed by the group	TR, EAT

Action	Task	Time	TR Goal/ Benefit	Adapted Recreation/ Modifications	Practice Area
EAT Intervention	Cognitive Exercises: -Lead horse in a half circle, switch directions -Back up 2 steps -come forward, 2 steps				
Program Ends	-Riders dismount their horse -Return horse to stable	5-8 minutes	-To provide the opportunity to care for animals -To promote responsibility	- Program coordinator and volunteers assist only as needed to promote participant responsibility and independence -Labels on animal care items	Outdoor recreation, Green Care, TR

Cool down. Near the end of the 45-minute EAT session, riders will do a final lap around the arena. As they did at the start of the program, riders take turns dismounting from their horse. Riders reacquire their grooming items and perform care to their horse again. Equipment is returned to its respective location and riders thank their horses for their ride. At this time, a post digital paperwork package was offered to research participants. The same forms were provided, with the addition of a feedback survey. Forms were digitally labeled as *post* to avoid any confusion when conducting data analysis.

Conclusion. Riders and volunteers take turns leading their horses out of the arena and place a treat on the ground for the horse. Volunteers often invite riders to accompany them as they walk the horse back to their pen. Riders collect their personal items and exit the arena.

2.5 Data Analysis

Pre- and post- session scores for SPRS and Social Affective scores (SAS) and Personal Affective scores (PAS) total scores and individual items were compared using Wilcoxon Signed Ranks testing. Feedback survey results underwent qualitative coding and theming.

2.5.1 Results

Seventeen riders participated in this research study, with no riders withdrawing. At the time of data collection, one additional rider submitted pre and post forms, but was excluded as they did not meet the minimum age requirement. Further, this study was limited to pre and post comparative factors from one intervention.

Statistical analysis of pre- and post- findings were conducted using Wilcoxon Signed Ranks, pre-experimental design, on one session of EAT.

Analysis was conducted on one group of riders. Based on negative ranks, mean post minus pre SAS value was $z=-2.254$ and mean post minus pre PAS value was $z=-3.128$. Statistically significant improvement was demonstrated (post-pre) for SAS and PAS factors and investigating social and personal factors specifically, a statistically significant improvement was noted on ten questions. Looking exclusively at the categorical changes, 3 of 17 riders recorded a change in functional category from moderate social/personal skills to high social/ personal skills, and 1 of 17 riders recorded a change from low social/ personal skills to high social/ personal skills. 2 of 17 riders recorded a decrease in social/ personal category from high skills to moderate skills with the other 11 riders remaining in the same functional category post EAT intervention. Results are presented in Figure 2 and Appendix E.

Figure 2- Social Personal Relationship Scale FACTOR Totals

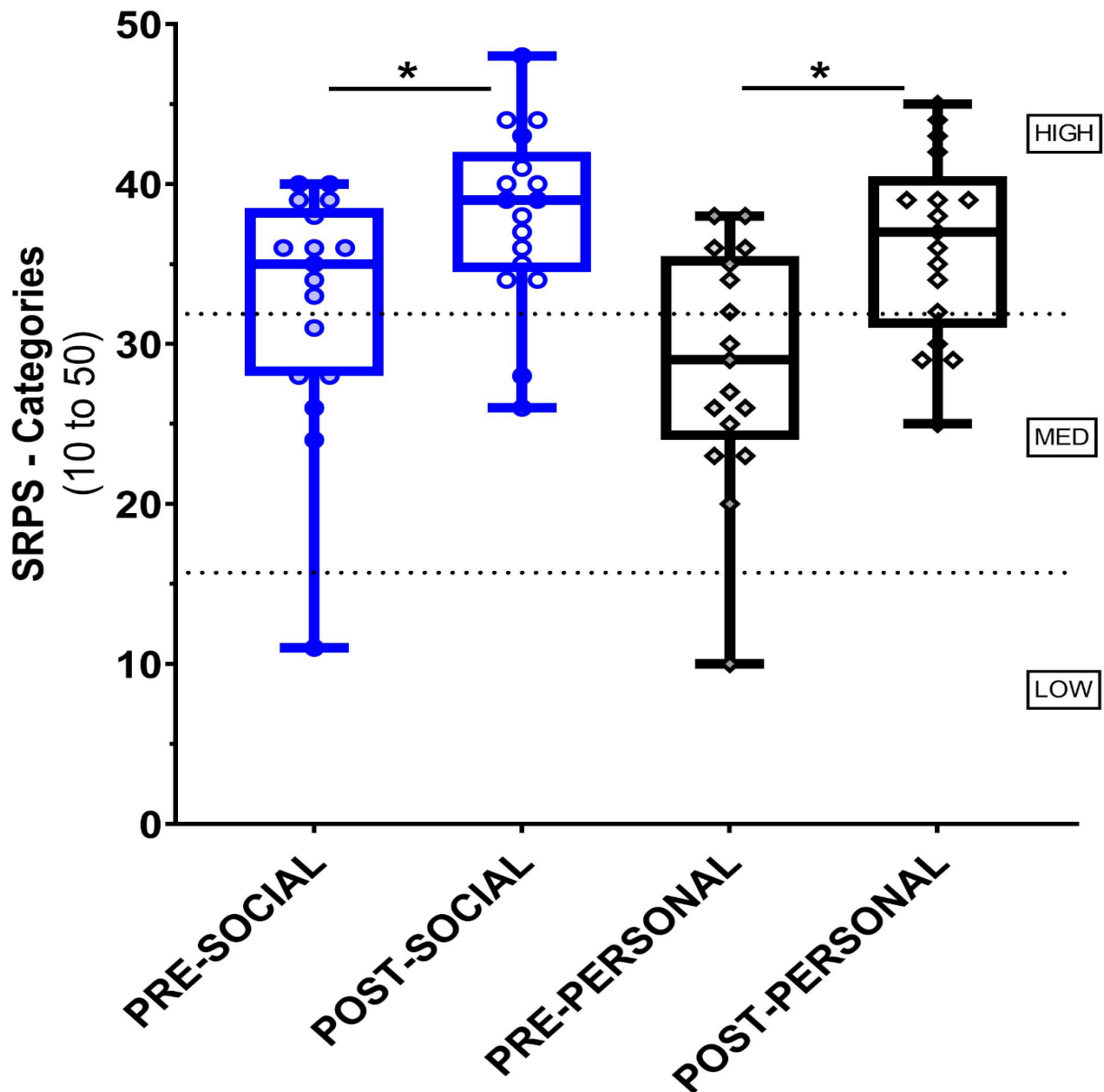


Fig 2. N=17. Surveys were completed on a laptop, and were completed by caregivers/ parents of riders, PRE and POST a single group equine assisted therapy session. Blue indicates social factors whereas black indicates personal factors. Social and personal factors are displayed using a box and whiskers for pre and post measures, with the whiskers going up and down to the highest scores. The top and bottom of the box are the 75th and 25th quartile score, where the line through the box is the median score. Individual scores are overlaid. The line and star at the top indicate that pre scores are significantly different from post scores using a Wilcoxon signed ranks test, with a significance level of $p=.05$. Consistent improvement can be seen between PRE and POST measures.

A significantly improved difference post EAT intervention was noted on three items within the SAS, precisely these questions were: *respect others*, *demonstrates sense of accomplishment*, and *accepts responsibility for own behavior*. Results are presented in Figure 3 and Appendix F.

Figure 3- Social Personal Relationship Scale-SOCIAL Totals

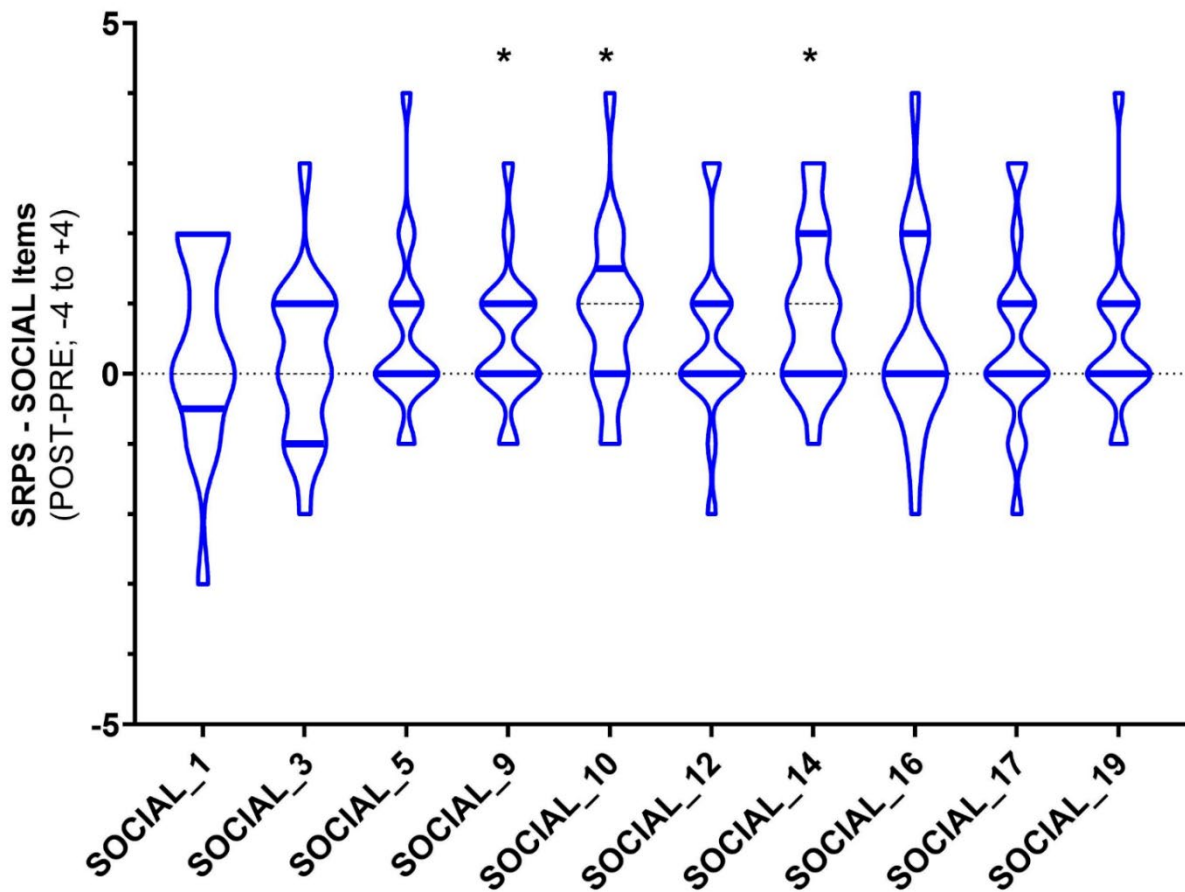


Fig 3. N=17. Surveys were completed on a laptop, and were completed by caregivers/parents of riders, PRE and POST a single group equine assisted therapy session. This figure displays social affect findings. Specific question numbers can be seen at the bottom of the figure. The dotted horizontal line indicated the median and the solid horizontal lines are the 25th and 75th percentile. The star at the top indicate that post scores are significantly different from post scores using a Wilcoxon signed ranks test, with a significance level of $p=.05$. Within the violin graph, the violin is consistently wider where there are more scores. Statistical significance at post is seen in items 9, 10 and 14.

A significantly improved difference post EAT intervention was noted on seven items on the PAS, precisely these questions were: *self-confidence while moving, handles conflict, appreciates others performance, takes on leadership role in activity, respect for self, follows directions, and self-discipline when learning new skill*. Results are presented in Figure 4 and Appendix G.

Figure 4- Social Personal Relationship Scale-PERSONAL Totals

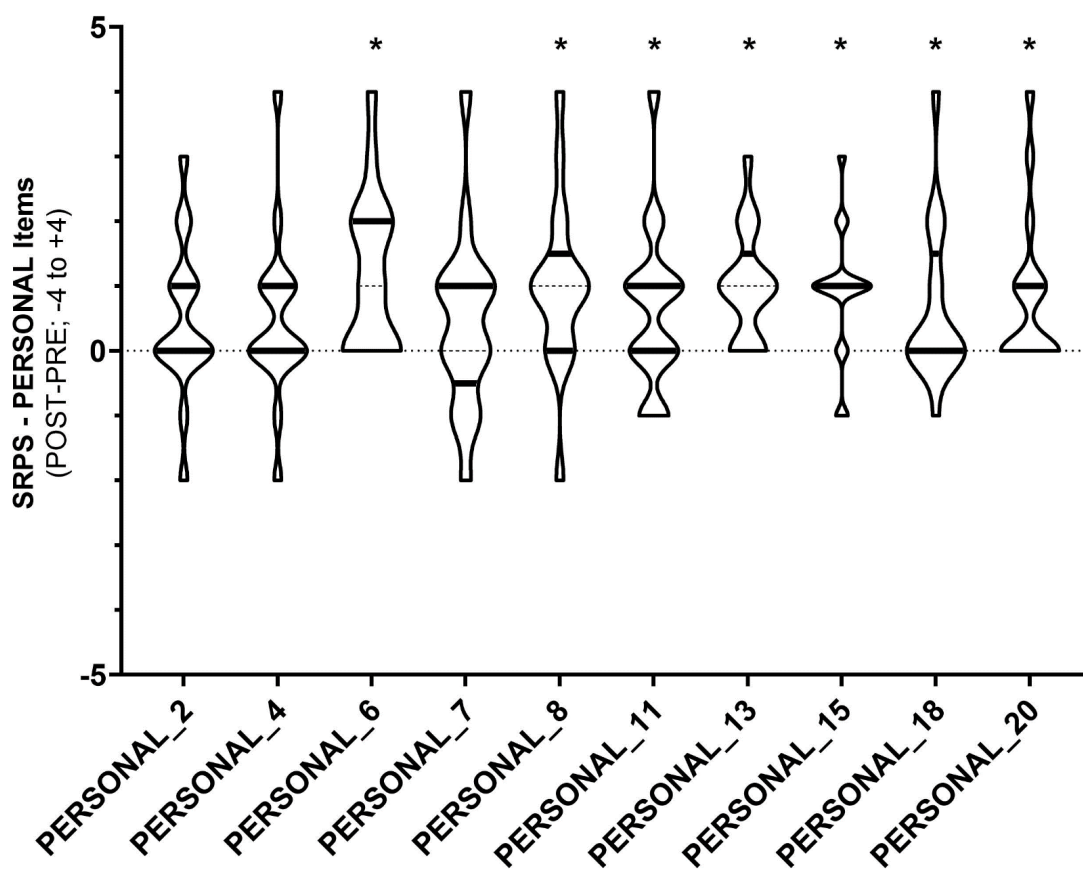


Fig 4. N=17. Surveys were completed on a laptop, and were completed by caregivers/parents of riders, PRE and POST a single group equine assisted therapy session. This figure displays personal affect findings. Specific question numbers can be seen at the bottom of the figure. The dotted horizontal line indicated the median and the solid horizontal lines are the 25th and 75th percentile. The star at the top indicate that post scores are significantly different from post scores using a Wilcoxon signed ranks test, with a significance level of $p=.05$. Within the violin graph, the violin is consistently wider where there are more scores. Statistical significance at post is seen in items 6, 8, 11, 13, 15, 18 & 20.

Qualitative analysis was conducted on the feedback survey (n=3). Coding and theming of this data identified 6 main themes being- 1) increased self-confidence, 2) expresses accomplishment/ displays responsibility, 3) displays socialization/ connection/ respectful relationships, 4) active participation, 5) physical benefits, and 6) happiness/ mental wellness.

The data from the feedback survey were coded using a color highlighting system for each TR domain. Domains included physical, cognitive, social/ emotional, and spiritual. For example, all comments related to the physical domain were coded yellow, whereas all comments related to the social domain were colored green. The text units were copied into a worksheet with a domain specific color-coding applies. Next, broader categories were identified by looking for patterns within the table. At this stage, colors were removed, and keywords were underlined.

When investigating qualitative themes, a connection was identified to several questions on the SPRS, many of which provided significantly improved findings. At the time of thematic analysis, 6 questions from the SPRS were identified as having a connection to the feedback survey responses. For example, question 6 *self-confidence while moving* can be connected back to the following quotes- “Connection with the horse to increase confidence in one’s own ability”, “Her confidence is improving”, “Watching my daughter gain more confidence riding”. Further, question 10 on the SPRS *demonstrates sense of accomplishment* can be connected to a qualitative theme as well - “Seeing [name] grow and change and be able to accomplish new goals almost every week- and the huge smile in her face that goes with it”. Perhaps these qualitative data speak to the quantitative findings. Qualitative themes are presented in Table 4.

Table 4- Qualitative Theme & Social Personal Relationship Scale Connection

Theme	Connection to Literature	Quotation	SPRS Connection
<u>Increased self confidence</u>	The way in which the horse reacts and responds to riders, its sheer size, and even its instinctual nature is all thought to be attributes that positively impact the participants self-esteem, and self confidence (Hallberg, 2017).	“Connection with the horse to increase <u>confidence</u> in ones own ability” “Her <u>confidence</u> is improving” “Watching my daughter gain more <u>confidence</u> riding”	Q6: Self <u>confidence</u> while moving
<u>Expresses accomplishment/ displays responsibility</u>	Improvements were seen in communication skills, self control, social interaction, and responsibility in those who participated in the therapeutic horseback riding group (Zhao et al., 2021)	“I seeing [name] grow and change and be able to <u>accomplish</u> new goals almost every week- and the huge smile in her face that goes with it” “She is <u>learning to care for the horse</u>” She loves them and <u>cares about them</u>	Q 10. Demonstrates sense of <u>accomplishment</u> Q 20. <u>Self-discipline</u> when learning new skill Q18. Follows directions Q 14. Accepts <u>responsibility</u> for own behavior
<u>Displays socialization/ connection/ respectful relationships</u>	EAT offers unique experiences and positive benefits to participants’ physical, emotional, mental, and spiritual wellbeing where horses are used in collaboration with professionals, promoting gross motor movements, social skills and confidence while riding (Escobar, 2019; Martin et al., 2020).).	For my daughter to <u>socialize connected</u> with the instructor and the volunteers and started to get an <u>understanding of her fellow riders.</u> she is also making an emotional <u>connection</u> with the horses.	Q9. <u>Respect</u> others

Theme	Connection to Literature	Quotation	SPRS Connection
Active participation	Further, research has demonstrated that adapted sports can improve physical fitness, provide numerous psychosocial benefits, and generate an opportunity for individuals to continue to participate in activities they enjoy; most importantly, adapted sports can positively impact ones' quality of life, increase mindfulness, facilitate self-efficacy, and allow participants to experience improved happiness while decreasing perceived stress (Diaz et al., 2019; Mutz & Müller, 2016).	"Have an activity she can <u>actively participate</u> in with her disability" "We continue to sign up every session. These are a highlight for [name]. We are so grateful for this program as it is difficult to find opportunities like this for [name]"	
Physical benefits	Participation in both adapted recreation/ therapeutic recreation for persons with disabilities is associated with improvements in mental, emotional, and physical health (DelGrande et al., 2020; Menzies et al., 2020; Merrick et al., 2021; Slater & Meade, 2004).	"<u>Physical benefits</u> of helping [name] with <u>strength</u> and <u>balance</u> helping to improve <u>core strength</u> as well as provide a <u>stretch</u> for her hips" "<u>Core strength has increased</u> tremendously!" "Increased <u>physical strength</u>"	
Happiness/ Mental Wellness	Adapted sports can improve physical fitness, provide numerous psychosocial benefits, and generate an opportunity for individuals to continue to participate in activities they enjoy; most importantly, adapted sports can positively impact ones' quality of life, increase mindfulness, facilitate self-efficacy, and allow participants to experience improved happiness while decreasing perceived stress (Diaz et al., 2019; Mutz & Müller, 2016).	"The huge <u>smile</u> in her face that goes with it. I know [name] <u>enjoys everything about it</u>" "Riding (moving!) is what brings the most smiles" "<u>Thrilled</u> to be back in the saddle!" "For my daughter to socialize work on her <u>anxiety</u>" "Tuesdays also seem to <u>ground</u>" [name]'s week"	

2.6 Discussion

The purpose of this study was to explore how equine assisted therapy may impact social and personal relationship skills in individuals with MH, cognitive and physical limitations.

Our findings show that EAT has a positive impact on observable social and personal relationship traits across all questions on the SPRS. Results from this study indicated that participants were most likely to see social improvements on the following points-respect others, demonstrates sense of accomplishment and accepts responsibility for own behavior. Participants are most likely to see improvements personally on the following points- self-confidence while moving, handles conflict, appreciates others performance, takes on leadership role in activity, respect for self follows directions, and self-discipline when learning new skill. Current literature reveals that adapted recreation can assist with the treatment of several illnesses, both mental and physical; a variety of health challenges can be improved through the use of adapted recreation (Escobar, 2019; Hallberg, 2017; Diaz, 2019).

Likewise, a similar study revealed that participation in EAT may improve a rider's social participation in community settings and in home settings (Martin et al., 2019). Further, social and personal relationships outcomes are a part of the TR experience as EAT provides participants a therapeutic experience across all of the domains (physical, cognitive, spiritual and emotional/ spiritual) (Escobar, 2019; Hallberg, 2017; Glennys et al., 2012; Rosenbaum, 2009).

Adapted recreation provides access to activities for individuals of all abilities, and a common goal of these interventions is to improve mental and physical health (Nieman et al., 2021; Diaz et al., 2019; Wilson & Christensen., 2012). Further, physical fitness and increased opportunity for gross and fine motor movement are associated with adapted recreation, as are social benefits, self-efficacy, life satisfaction, feelings of autonomy and improvements in perceptions of body image (Diaz, 2019; Merrick et al., 2020; Hallberg, 2017). This study revealed that EAT participants were likely to experience improvements in social and personal relationships.

These findings matter because poor MH in children has been directly correlated to difficulty making friends (Statistics Canada, 2019) and studies show that limited social relationships have both short and long-term effects on health; these effects can develop in childhood, eventually having impacts on lifelong health outcomes (Umberson & Montez, 2010). Current literature reveals that adapted recreation can assist with the treatment of several illnesses, both mental and physical; a variety of health challenges can be improved through the use of adapted recreation (Escobar, 2019; Hallberg, 2017; Diaz, 2019).

Development in children is largely dependent on their ability to participate socially (Law et al., 2007). In fact, participation has been coined as being ‘fundamental’ component to development in children and through participation in social activities, children learn how to communicate, to learn about the expectations of society, to build friendships, to cohabitate with others and are introduced to the competencies and skills needed later in life (Law et al., 2007).

2.6.1 Strengths and Limitations

These data revealed that participants with MH, cognitive and physical disabilities are likely to have improved observable social and personal relationship skill traits after participation in an EAT intervention. These findings provide encouraging implications for EAT, outdoor recreation, Green Care and TR. Despite the encouraging findings, there are limitations to this study. This study utilized an observation-based assessment, meaning the findings may not be conducive to the experience of the EAT participant. The data analysis conducted was limited to pre and post comparative factors from one intervention. At the time of data collection, all 17 research participants had previous experience with EAT, thus results may not truly be reflective of one session of EAT, rather inadvertently reflective of several EAT sessions. As all 17 riders had previous EAT involvement prior to this research inquiry, it was not possible to collect pre and post measures from their first EAT experience. Lastly, this study utilized a small convenience sample and had little variation in participant demographics, with over 90% of participants self-reporting being Caucasian. Moreover, this study was limited to mainly female participants.

2.6.2 Recommendations for Research and Practice

Future research should seek to confirm these findings as well as investigate additional outcomes of EAT for individuals with mental and physical challenges. As the SPRS was used to measure social and personal affect outcomes from EAT, future recreational therapy researchers might investigate the outcomes of participation in a variety of activities recommended for individuals with physical and mental health.

As the SPRS is a short survey and proved to be easily completed by parents/ caregivers in this study, recreation therapy professionals and researchers might consider using the SPRS in addition to progress reports, assessments, outcome measures and/or other tools for tracking how recreational therapy treatments are working. Because low self-confidence, and low self-efficacy are at times seen in individuals with physical and mental health challenges, SPRS questions related to these areas may be especially helpful to recreation therapy professionals when measuring the outcomes of programs and interventions for these populations.

2.7 Conclusions

This study provides support for the social-emotional benefits of an EAT intervention for individuals with MH and physical limitations. As environmental factors have been identified as a major barrier for both children and adults living with disabilities (Law et al., 2007; Hassett et al., 2021) EAT may combat this barrier because of how much this activity can be adapted. Overall, EAT literature, and Green Care studies often support a positive relationship between social-emotional functioning and EAT benefits for adults and children.

CHAPTER 3: ADAPTED FISHING

Abstract

A pilot research study was conducted to investigate the impact that participation in one session of adapted fishing (AF) would have on self-perceived health-quality of life (HQOL) and wellbeing in 10 individuals. Client diagnoses here included disabilities of physical and MH. This AF program utilized the WHOQOL-BREF-26 assessment tool along with the Warwick Edinburgh Wellbeing Scale to quantify self-perceived outcomes of AF. Pre and post session scores for WHOQOL-BREF-26 and WEMWBS total score and individual items were compared using Wilcoxon Signed Ranks testing. Feedback survey results underwent qualitative coding and theming. Our pre and post data revealed that AF may increase HQOL and wellbeing for clients, volunteers, and family/ caregivers. These findings provide encouraging implications for AF, outdoor recreation, and the ecological approach to therapeutic recreation. Recreational therapy applications and research implications are also discussed.

Keywords: Adapted fishing, outdoor recreation, therapeutic recreation, wellbeing, health quality of life, Green Care

3.1 Introduction

In 2016, more than 5.3 million Canadians, totaling almost 16% of the population, were living with some form of disability affecting their levels of independence, freedom, and quality of life (Easter Seals, 2016). Individuals living with physical and/or cognitive disabilities often experience lower self-esteem, a lower sense of wellbeing, and decreased autonomy (Babik & Gardner, 2021). Further, 1 in 3 Canadians are likely to experience mental illness during their life (Government of Canada, 2017). Effective and accessible therapeutic recreation must be developed and delivered for this population.

3.1.1 Adapted Fishing for Mental and Physical Challenges

Fishing is a popular outdoor activity with many known positive outcomes for participants, such as social engagement, psychological improvement, and educational opportunities (Arlinghaus et al., 2019; Hunt & McManus, 2016). Further, fishing is an activity that may be modified and adapted for those with mobility and/or cognitive challenges (Arlinghaus et al., 2019) and is known to provide to mental and physical health benefits (Lindsay et al., 2022).

Accessibility can be enhanced through the use of adaptive equipment, enabling participation in fishing for individuals of all levels of abilities (United Spinal Association, 2021). The social and self-improvement benefits associated with recreational fishing have been found to be even higher for anglers with disabilities, compared to anglers without disabilities (Arlinghaus et al., 2019).

Where research has demonstrated that individuals living with disabilities experience significantly more and varied barriers to participation outdoor activities (Freudenberg & Arlinghaus, 2009; Lindsay et al., 2022), it has also been discovered that fishing is a more accessible form of physical activity for older adults and people recovering from illness (Griffiths et al., 2017; Lindsay et al., 2022). Fishing is typically classified as light-to-moderate physical activity, and thus may be more accessible than other outdoor sports for individuals living with disabilities (Lindsay et al., 2022).

In addition to the benefits specifically related to fishing, additional benefits may be experienced as AF is an outdoor activity (Lindsay et al., 2022). Fishing can nurture a positive state of mind, increase relaxation, improve MH, raise wellbeing in general and inspire feelings of fun and joy (Arlinghaus et al., 2019; Hunt & McManus, 2016).

There are a number of identifiable reasons individuals choose to fish recreationally, including nutritional benefits, access to leisure, MH benefits and being a part of a social community (Lindsay et al., 2022; Nieman et al., 2021). Adapted recreation can be provided in a variety of settings, and opportunities occurring outdoors may provide additional benefits, compared to activities that occur indoors; activities that are facilitated in nature are often referred to as Green Care or Blue Care (Artz & Davis, 2017; Britton et al., 2020). When adapted recreation is facilitated outdoors, oftentimes there are reports of additional benefits for participants (Escobar, 2019; Hallberg, 2017). A study conducted in the UK suggests adaptive fishing could be a more appropriate green prescription for older men living with disabilities, especially when compared to other potential outdoor activity prescriptions given by health professionals (Lindsay et al., 2022).

Green Care offers many types of activities, promoting wellbeing, mental and physical health while connecting with nature and outdoor spaces (Dorsch et al., 2016; Moriggi et al., 2020; Berget et al., 2010). The reported benefits of Green Care are many- the most common being social inclusion, improvements in wellbeing and HQOL, and improvements in MH (Moriggi et al., 2020; Sempik, 2010).

3.1.2 Recreational therapy interventions and outdoor recreation

Outdoor recreation and AF have been known to raise mindfulness, increase self-efficacy, and generate an improvement in wellbeing (Lindsay et al., 2022; Mutz & Müller, 2016). Research suggests that AF can be a useful intervention for engaging individuals with disabilities who may be at higher risk for physical inactivity (Lindsay et al., 2022) AF is an outdoor sport and as such, may provide the benefits associated with being in nature, health benefits of being near water thus leading to MH benefits and wellbeing (Lindsay et al., 2022).

When providing therapeutic recreation (TR) services, a strengths-based model of practice that is recommended is the Flourishing Through Leisure Model (Anderson & Heyne, 2012). The Flourishing Through Leisure Model focuses on many key principles that are also commonly seen in AF as a therapeutic recreation (TR) intervention. Adaptive outdoor recreation and leisure as a TR intervention aligns with several of the principles in the Flourishing Through Leisure Model.

Where the Flourishing Through Leisure Model places importance on ensuring that TR services are centered on the participant, adapted recreation is used to describe any leisure based, sports based, or physically focused recreation pursuit that is modified to allow individuals of greatly varying levels of ability to fully participate (DelGrande et al., 2020; Diaz et al., 2019; Menzies et al., 202). Detailed examples of praxis connecting the Flourishing Through Leisure Model, adapted fishing and the goals of the host adaptive outdoor organization are presented in Table 5.

Table 5-Flourishing Through Leisure & Adapted Fishing Connection
Comparison of the Flourishing Through Leisure Model, goals of an AF program and a connection to literature.

Flourishing Through Leisure Model	Adapted Recreation Goals	AF Literature
1. Therapeutic recreation services are centered on the participant	Goal: To provide opportunities for people living with disabilities to experience the benefits of outdoor recreation	Adapted recreation is used to describe any leisure based, sports based, or physically focused recreation pursuit that is modified to allow individuals of greatly varying levels of ability to fully participate (DelGrande et al., 2020; Diaz et al., 2019; Menzies et al., 2021).
2. The participant is viewed within the rich environmental context where participation occurs	Goal: To work toward better accessibility in outdoor recreation areas	Accessibility in a developed environment is perceived as being crucial to ensuring equity of participation for individuals living with disabilities (Banda-Chalwe et al., 2014). Green Care offers many types of activities, while promoting wellbeing, mental and physical health, while connecting with nature and outdoor spaces (Dorsch et al., 2016; Moriggi et al., 2020; Berget et al., 2010). The reported psychological benefits of Green Care are many, the most common being social inclusion, improvements in wellbeing and HQOL, and improvements in mental health (Moriggi et al., 2020; Sempik, 2010). Green Care activities may lead to disease prevention and health-promotion, all while providing opportunities for social and physical growth (Barfield et al., 2021).

Flourishing Through Leisure Model	Adapted Recreation Goals	AF Literature
3. The therapeutic recreation provider takes into account all facets of the participant in a holistic way (including leisure) and considering all domains: physical, cognitive, social, emotional, spiritual and psychological	Goal: To engage a diverse group of people, providing opportunities for people of all ages living with a variety of different disabilities “We use adaptive equipment, teamwork, and creativity to allow people of all abilities to experience the benefits of outdoor recreation, leading to physically and mentally healthier individuals, families and communities”	Further, common goals for outdoor activities may include increased intrinsic motivation, increased autonomy, increased social relatedness and increased health related knowledge growth (Barfield et al., 2021).
4. During the therapeutic recreation process, both the participant's unique strengths and the strengths and resources of the environment are taken into consideration	Goal: To offer adaptive outdoor recreation programs for people living with disabilities, using adaptive equipment and/or appropriate support	Participation in leisure activities has been noted as being an important factor, supporting community inclusion, and can contribute to better quality of life (Badia et al., 2011).

3.1.3 Summary of study rationale

A pilot research study was implemented to investigate the impacts that AF would have on self-perceived HQOL and wellbeing for clients, volunteers, and family/ caregivers ages 26-72, living with physical and mental challenges. It was predicted that self-perceived HQOL and wellbeing would be positively impacted with one session of AF, for clients with physical and MH disorders as well as volunteers and family members/ caregivers. Specifically, it is predicted that positive changes will be noted within both the World Health Organization Quality of Life Brief 26 (WHOQOL-BREF-26) and the Warwick-Edinburgh Mental Wellbeing Scale (WEMWBS) scales, following engagement in one session of AF. Sample factors taken from the WHOQOL-BREF-26 include: *How would you rate your quality of life? How much do you enjoy life?* and *To what extent do you have the opportunity for leisure activities?* Sample factors taken from the WEMWBS include *I've been feeling good about myself, I've been feeling interested in other people* and *I've been interested in new things*.

Although noted that 1 in 3 Canadians are likely to experience mental illness during their life (Government of Canada, 2017), and that fishing can relieve stress and improve social connections (Lindsay et al., 2022), a literature review on these topics revealed a lack of current and specific data related to the self-perceived HQOL and wellbeing outcomes of AF within these cohorts. Moreover, an even larger gap in the literature exists when specifically exploring the perceived HQOL and wellbeing outcomes from a volunteer's perspective. Lastly, even less is known about AF outcomes on social and personal relationship characteristics for individuals living with physical, cognitive and MH limitations.

3.2 Methodology

3.2.1 Design

A descriptive study was used to examine the perceived HQOL and wellbeing of adults with substance use, MH, and physical impairments before and after participation in one AF intervention. These data were collected according to a study approved (#2021-084) by the Human Participant Research Committee at a university in Southern Alberta. Ethics approval letter provided in Appendix A. ¹

3.2.2 Participants

Participants were 10 adults ranging in age from 26-72 years old, with a mean age of 39 and a standard deviation of 14.6. Participants were individuals with substance use, MH and physical impairments, participating in adapted outdoor recreation opportunities through an organization that provides said opportunities in Southern Alberta. In this study, the term *client* was used to identify individuals who registered to participate in adapted recreation via the support of the organization. The term *volunteer* was used to identify individuals who registered with the organization to assist clients with adapted recreation and the term *family/caregiver* was used to identify family members and caregivers of clients who registered to participate in adapted recreation activities.

There were 6 male and 4 female participants and 6 were 26-35 years old; 1 was 36-45 years old; 1 was 46-55 years old and 2 were 55+ years old, and participants self-identified as either Caucasian (n = 9) or did not report ethnicity (n=1). Of participants categorized as *clients* (n=6), 5 self-reported having substance use disorders and/ or alcohol use disorders, as well as various MH related diagnoses including anxiety, depression, and post-traumatic stress disorder (PTSD), one client was a wheelchair user.

¹ Ethics approval letter covers two studies

Of participants categorized as *volunteers* (n=3) one participant reported single lower leg amputation. The participant categorized as a *family/ caregiver* did not self-report health related information. Full participant demographic data are presented in Table 6.

Table 6-Participant Specific Demographics and Diagnosis (n=10)

Pseudonym	Age	Gender	Ethnicity	Diagnosis
Client				
Claire	26	Female	Caucasian	SUD/AUD
Ann	29	Female	Caucasian	SUD/AUD
Dave	30	Male	Caucasian	SUD/AUD
Carmen	30	Female	Caucasian	AUD
Carly	33	Female	Caucasian	CP
Mike	33	Male	Caucasian	SUD
Volunteer				
Luke	39	Male	Not reported	Not reported
James	46	Male	Caucasian	Not reported
Philip	56	Male	Caucasian	Lower leg amputation
Family/ Caregiver				
Paul	72	Male	Caucasian	Not reported

SUD= substance use disorder; AUD: alcohol use disorder; CP: cerebral palsy

3.3 Measures

Participants were asked to complete the World Health Organization Quality of Life Brief 26 (WHOQOL-BREF-26; World Health Organization [WHO], 1996) and a wellbeing self-assessment taken from the Warwick-Edinburgh Mental Wellbeing Scale (WEMWBS) (Tennant et al., 2007) both prior to and immediately following participation in AF. In addition to the WHOQOL-BREF-26 and the WEMWBS, participants were also invited to answer seven open-ended questions on a feedback survey.

3.3.1 WHOQOL-BREF-26

The WHOQOL-BREF-26 is a short form of the WHOQOL-100 which is a quality-of-life assessment jointly developed with fifteen international field centers (WHO, 1996, p. 5). The World Health Organization's definition of quality of life includes the perception of an individual in relation to their expectations, the systems in which they exist, and their personal goals, whilst considering values and culture and how respondents feel about their situation in life (WHO, 2021). The WHOQOL-BREF-26 contains a total of 26 questions on a Likert scale across four domains: environment (8 questions), physical health (7 questions), psychological (6 questions), and social relationships (3 questions) (WHO, 1996). Additional WHOQOL-BREF-26 information is presented in Table 7. Full WHOQOL-BREF-26 is provided in Appendix H.

Table 7- WHOQOL-BREF 26 Assessment Factors

Domains	Assesses the respondent's perception on:
Physical	Activities of daily living, dependence on medicinal substances and medical aids, energy and fatigue, mobility, pain/ discomfort, sleep/ rest and work capacity
Psychological	Bodily image and appearance, negative feelings, positive feelings, self-esteem, spirituality / religion / personal beliefs and thinking, learning, memory and concentration
Social	Personal relationships, social support and intimate relationships
Environmental	Financial resources, freedom, physical safety/ security, health and social care (accessibility/ quality), home environment, opportunities for acquiring new information/ skills, participation in and opportunities for recreation / leisure activities, physical environment (pollution / noise / traffic) and transportation

Participants were instructed to answer the questions based on the last two-weeks prior to activity, then answer the same questions again post activity. This was done to measure how AF impacted the participants responses. The WHOQOL-BREF-26 indicates that the higher an individual scores, the higher their perceived HQOL (WHO, 1996). Participants were instructed to answer 26 questions based on a Likert Scale from 1 (never/very poor/ not at all/very dissatisfied) to 5 (very good/ extremely/ very satisfied/always). Worth noting, 3 questions on the WHOQOL-BREF-26 feature reverse scoring, meaning a 1 (never) would be an optimal score. An example of this can be seen on question 26 *How often do you have negative feelings such as blue mood, despair, anxiety, depression?* On question 26, a score of 1 would indicate that the respondent ‘never’ experiences negative feelings or a blue mood. Sample questions from the WHOQOL-BREF-26, withing the physical domain include *Do you have enough energy for everyday life?* Social domain questions include *How satisfied are you with your personal relationships?* Environmental domain questions include *To what extent do you have the opportunity for leisure activities?* Psychological domain questions include *To what extent do you feel your life to be meaningful*”. In an effort to circumvent pre scores influencing post scores, participants pre scores were not made visible when answering post questions.

3.3.2 WEMWBS

The WEMWBS contains 14 statements about feelings and thoughts on a Likert scale ranging from 1 (never) to 5 (always). Participants were asked to score the statements based on the last two weeks, and then again, immediately following the activity to indicate how the activity impacted those same statements.

As with the WHOQOL-BREF-26, participants pre scores were not made visible when answering post questions in an effort to circumvent pre scores influencing post scores. The highest and lowest scores on the WEMWBS can be from 14 to 70, and scores can be differentiated as being low (14-32), below average (32-40), average (40-59) and above average (59-70) (Tennant et al., 2007). Higher scores indicate better MH.

Categorically, each section on the WEMWBS has different recommendations based on respondents scores. Low wellbeing and below average scores come with the recommendation that the respondent should access support and speak to their general practitioner, whereas average wellbeing scores suggests that respondents can always improve their wellbeing and may also benefit from support. Above average wellbeing scores encourage respondents to continue with the activities that are keeping them well (Tennant et al., 2007). Sample statements from the WEMWBS include *I've been feeling optimistic about the future*, and *I've been feeling good about myself*. Full WEMWBS survey is provided in Appendix I.

3.3.3 Feedback survey

After the AF session, participants were offered a feedback question survey, consisting of various seven open-ended questions. Participants were also able to access this form on the organization's website on their own time. Sample questions include: *What did you hope to achieve from participating in this experience? What did you gain from this experience?* and *What could have made this experience better today?* Full feedback survey is provided in Appendix C. ²

² Feedback survey was used for multiple studies and can be seen in Appendix C

3.4 AF Intervention

Clients, volunteers, and family/ caregivers registered online to participate in a variety of outdoor adventure and water-based activities as provided by the organization. These opportunities were offered across five weekends during summer months. Participants met at a lake located in a provincial park in Southern Alberta. On location, there was a program coordinator, two additional staff members from the organization, three to seven volunteers, up to six clients, two to four undergraduate and graduate students and one research primary investigator. All staff, volunteers and students took part in safety training prior to the intervention commencing. Adult participants who decided to take part in the research study were completed a consent form. Full consent form is provided in Appendix J. All participants were required to fill out paperwork for the host agency, separate from the research paperwork. Program days were advertised via the host sites Facebook page, website and by emails that were sent to participants from the previous year. Within these advertisements, the research project was also mentioned. This was done in an effort to inform participants that the study was occurring, and provided them a chance to think about participating, rather than being caught off guard when they arrived for their program days.

3.4.1 Session Schedule

Arrival. Volunteers arrive at the provincial lake and assemble the adapted equipment based on program coordinator's instructions. Volunteers and the program coordinator discuss the clients that have registered for the adapted recreation experience. Next, the clients arrive at the provincial lake, and a visual and verbal assessment is conducted by the program coordinator.

The program coordinator asks clients a variety of questions related to how they are feeling that day. These steps are conducted to ensure that clients have all the support they need, each time they participate in adapted recreation activities. The program coordinator assesses the clients and asks for information each time they participate as they may be at varying levels of functioning, depending on the day. Next clients, family/ caregivers and volunteers all gather for a safety meeting. This is done each time an adapted program is provided. Clients select equipment (fishing gear, life jacket, etc.) to the best of their abilities and volunteers assist if necessary. All equipment such as life jackets, fishing gear and kayaks were provided to participants. During the safety meeting, the program coordinator introduces the primary investigator, and provides a description of the research project. Participants who decide to take part in the study are provided with a pre paperwork package, comprised of a consent form, WHOQOL-BREF-26 and a WEMWBS survey, a clipboard, and a pen. When consenting participants complete the pre paperwork forms, the primary investigator locked these documents in the trunk of a car. Paperwork packages were also available online.

The organization has prepared accommodations including a wide variety of modified and adapted equipment, to allow participants as much independence as possible. Adapted equipment included electric fishing rods with various switches, fishing rod gripping aids and regular fishing rods and reels. Adapted recreation measures are put in place geared at promoting the client's independence, autonomy, responsibility, and success. In addition to the adapted equipment, the provincial park is developed for accessibility and is fashioned with a dock that had a kayak launch. These adaptations ensure that clients can be self-sufficient as much as possible.

Program. The program coordinator announces the start of the AF program when all of the participants have all of their safety gear on and are matched with a volunteer or volunteers. When necessary, staff assist clients to transfer to and from equipment, offer additional safety and training cues, provide hand-over-hand support with fishing gear and work to develop the client's fishing knowledge and skills. Participants and volunteers have the option to participate in in both a morning and an afternoon adapted recreation activity sessions. Various interventions happen simultaneously (i.e., fishing, kayaking, etc.) and participants are free to join in one or all the activities, promoting an opportunity to be autonomous. Each activity includes approximately 3 hours of activity time with a one-hour break in between morning and afternoon. As required, clients are provided one to one assistance from the program coordinator, other organization staff and volunteers. Specific AF intervention details are presented in Table 8.

Table 8- Adapted Fishing Intervention Protocol

Action	Tasks	Time	TR Goal/ Benefit	Adapted Recreation/ Modifications	Practice Area
Program begins	-Participate in safety discussion -Don safety gear -Choose AF equipment	20-30 minutes	-To physically and mentally prepare for the AF intervention	- Program coordinator and volunteers assist only as needed to promote participant responsibility and independence -Modified equipment	TR, Green Care/ Blue Space, Outdoor recreation, AF
AF Intervention	-Participants are invited to engage in a variety of physical and cognitive actions (i.e.: casting, reeling)	90-120 minutes	-To promote physical and cognitive functioning -To promote independence and confidence -To improve/ maintain fine and gross motor skills -To provide the opportunity for socialization and social appropriateness -To provide the opportunity to take turns and practice listening skills	- Program coordinator and volunteers assist only as needed to promote participant responsibility and independence -Modifications to program as needed by the group	TR, Green Care/ Blue Space, Outdoor recreation, AF
Program Ends	-Doff safety gear -Return equipment to proper location	10-15 minutes	-To provide the opportunity to care for animals -To promote responsibility	- Program coordinator and volunteers assist only as needed to promote participant responsibility and independence -Labels on equipment	TR, Green Care/ Blue Space, Outdoor recreation, AF

Cool Down. Near the end of 3-hour AF session, clients are forewarned that the activity will be ending soon. The volunteers and staff ask clients questions related to their experience and share information about future program days.

Conclusion. As they did at the start of the program, clients are offered assistance with transfers out of equipment, and take turns returning their fishing and adventure gear. Equipment is returned to its respective location and clients thank volunteers and staff for their adapted recreation experience. At this time, a post paperwork package was offered to consenting research participants. The same forms were provided, with the addition of a feedback survey. Forms were labeled as *post* to avoid any confusion when conducting data analysis.

3.5 Data Analysis

Pre- and post- session scores for WHOQOL-BREF-26 physical, psychological, social, and environmental categories as well as questions A and B WEMWBS total score and individual items were compared using Wilcoxon Signed Ranks testing. Feedback survey results underwent qualitative coding and theming.

3.5.1 Results

Ten participants took part in this research study, with no participants withdrawing. At the time of data collection, 5 of the 6 participants who were clients experienced fishing for the first time. Data collection was from 3 separate AF program days. Day one included 1 *client* and 1 *family member* research participant, day two included 5 *clients* and 1 *volunteer* research participant and day three included 2 *volunteer* research participants.

Other individuals took part in the AF programming on those days but declined participation in the research project. Program days occurred during the summer months, and on Saturdays.

Analysis was conducted on one group of clients, volunteers, and family members/caregivers, on one session of AF. The WHOQOL-BREF-26 is divided into 4 categories. Our findings show that AF had a positive impact on WHOQOL-BREF-26 physical, psychological, and environmental categories as these were significantly improved at post. Based on negative ranks, physical post-pre value was $z=-2.201$; psychological post-pre value was $z=-2.705$; environmental post-pre value was $z=-2.521$. Results are presented in Figure 5 and Appendix K

Figure 5- WHOQOL-BREF-26 Pre-Post Factors Total

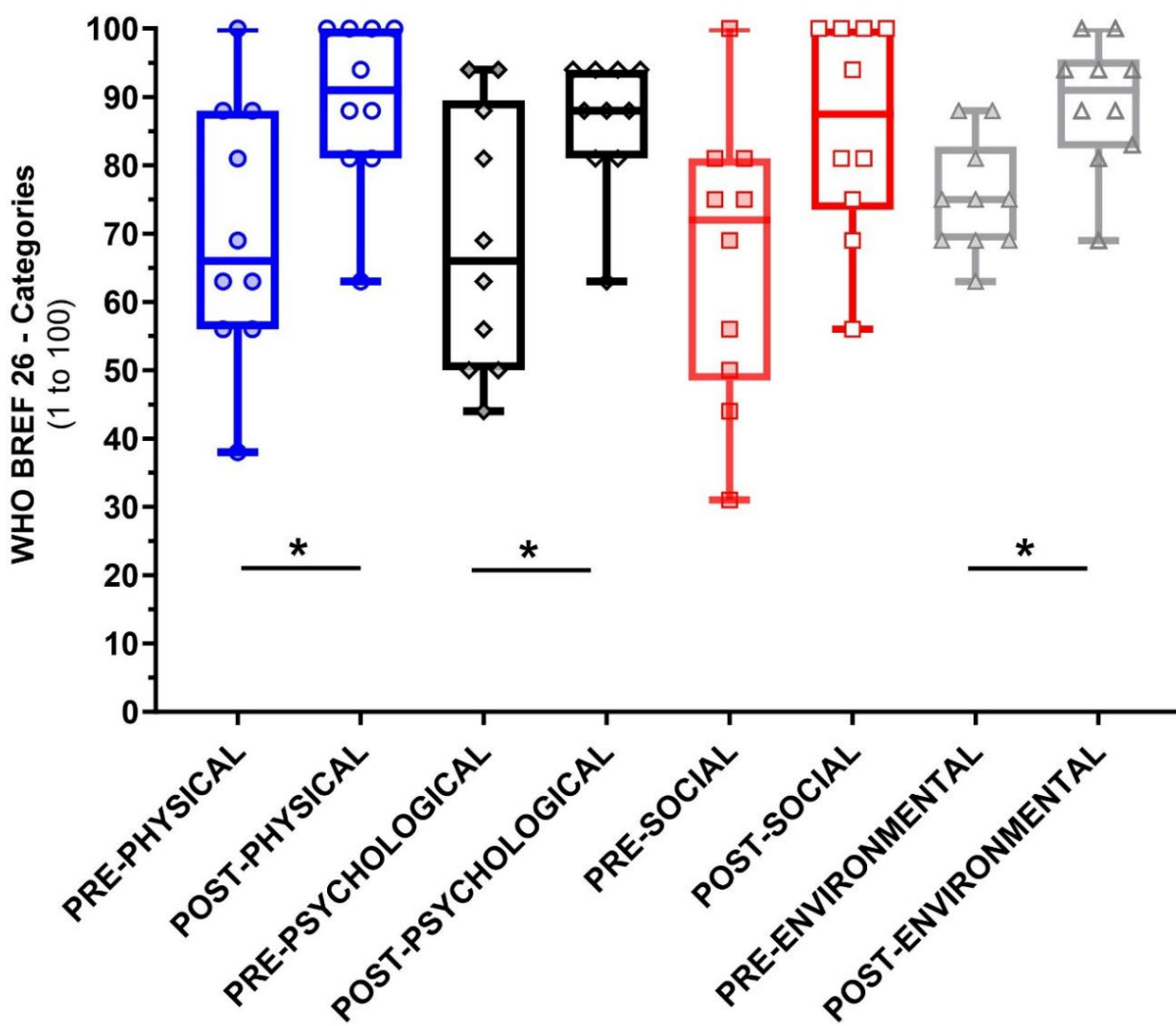


Fig 5. N=10. Surveys were completed on a laptop or by hand, and were completed by clients, volunteers and family/ caregivers, PRE and POST a single group adapted fishing session. Blue indicates physical factors, black indicates psychological factors, red indicates social factors and gray indicates environmental factors. All factors are displayed using a box and whiskers for pre and post measures, with the whiskers going up and down to the highest scores. The top and bottom of the box are the 75th and 25th quartile score, where the line through the box is the median score. Individual scores are overlaid. The line and star at the bottom indicate that pre scores are significantly different from post scores using a Wilcoxon signed ranks test, with a significance level of $p=.05$. Consistent improvement can be seen between PRE and POST measures within 3 categories.

Statistically significant improvement post AF was demonstrated (post-pre) for 12 individual questions, within all 4 categories. A significant difference post AF intervention was noted on four items within the physical category, precisely these questions were: *To what extent do you feel that physical pain prevents you from doing what you need to do?*; *How much do you need any medical treatment to function in your daily life?*; *How satisfied are you with your sleep?*; *How satisfied are you with your ability to perform your daily living activities?* Results from the physical category are presented in Figure 6 and Appendix L.

Figure 6- WHOQOL-BREF-26 Pre and Post Physical Factors

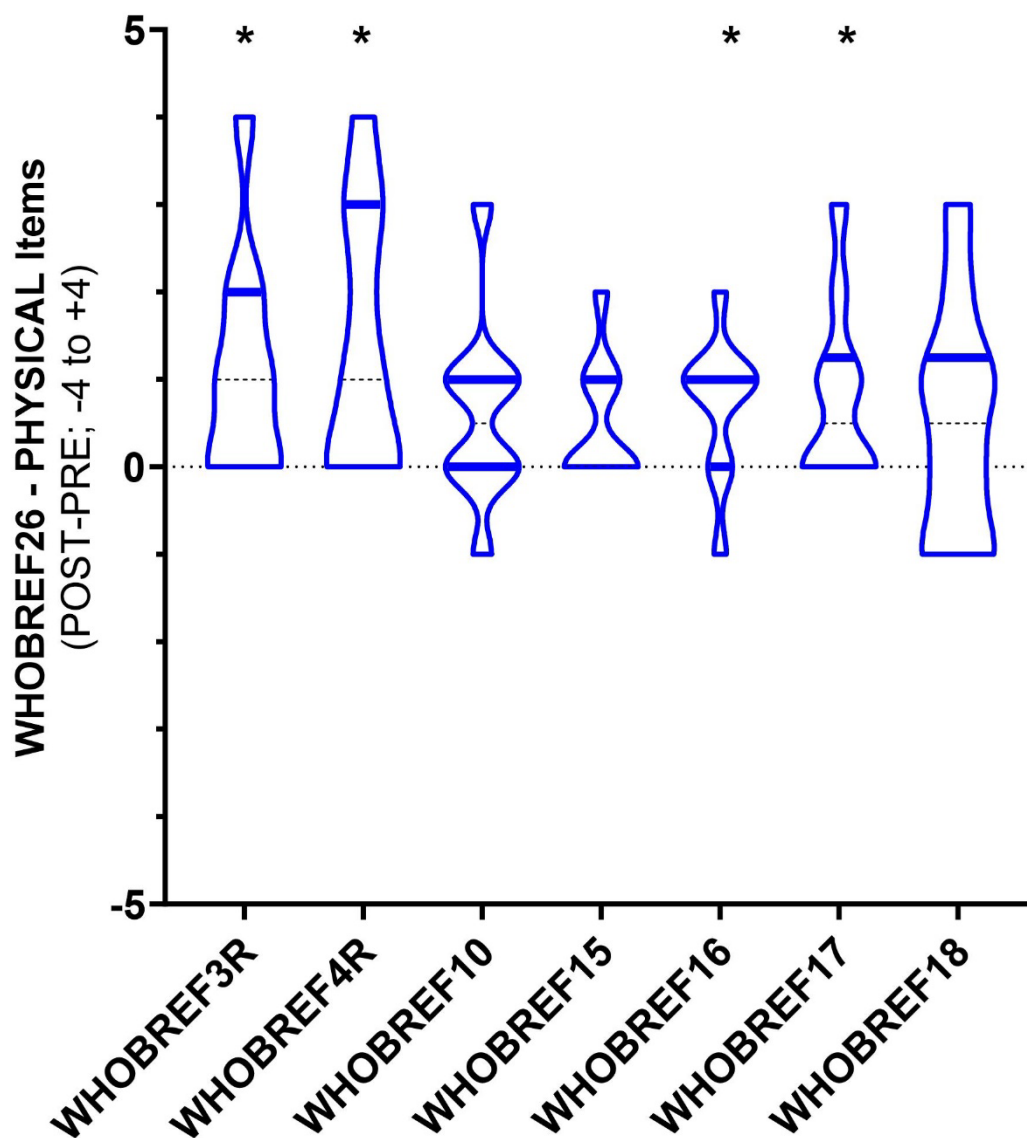


Fig 6. N=10. Surveys were completed on a laptop or by hand, and were completed by clients, volunteers and family/ caregivers, PRE and POST a single group adapted fishing session. This figure displays physical category findings. Specific question numbers can be seen at the bottom of the figure. The dotted horizontal line indicated the median and the solid horizontal lines are the 25th and 75th percentile. The star at the top indicate that post scores are significantly different from post scores using a Wilcoxon signed ranks test, with a significance level of $p=.05$. Within the violin graph, violin is consistently wider where there are more scores. Statistical significance at post is seen in items 3, 4, 16 and 17.

A statistically significant improvement post AF intervention was noted on three items within the psychological category, precisely these questions were *How much do you enjoy life? How well are you able to concentrate? How often do you have negative feelings such as blue mood, despair, anxiety, depression?* Results from the psychological category are presented in Figure 7 and Appendix M.

Figure 7- WHOQOL-BREF-26 Pre and Post Psychological Factors

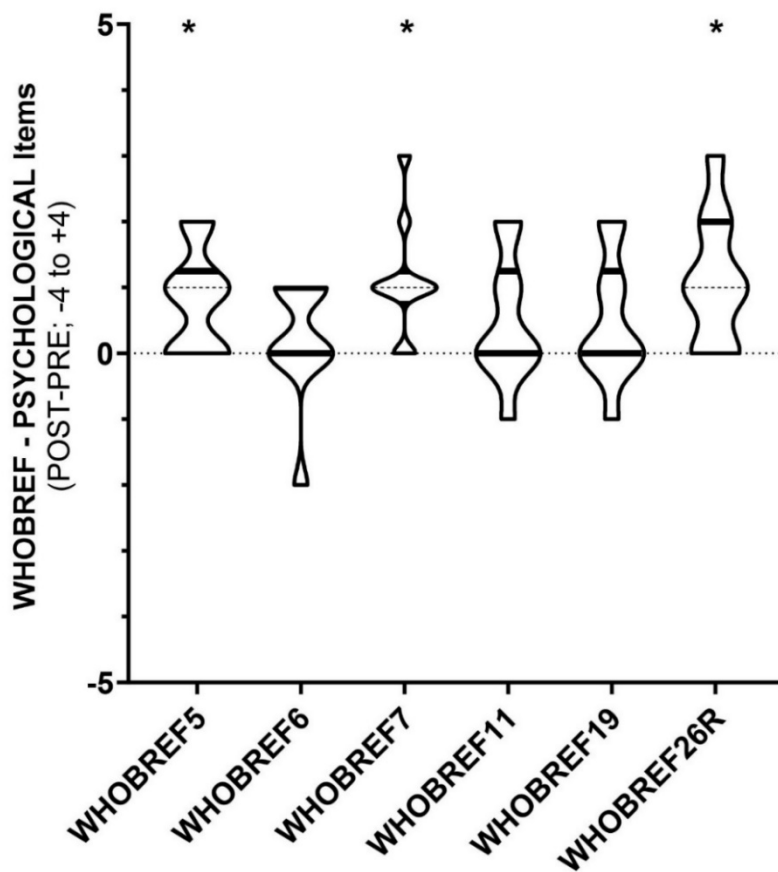


Fig 7. N=10. Surveys were completed on a laptop or by hand, and were completed by clients, volunteers and family/ caregivers, PRE and POST a single group adapted fishing session. This figure displays psychological category findings. Specific question numbers can be seen at the bottom of the figure. The dotted horizontal line indicated the median and the solid horizontal lines are the 25th and 75th percentile. The star at the top indicate that post scores are significantly different from post scores using a Wilcoxon signed ranks test, with a significance level of $p=.05$. Within the violin graph, violin is consistently wider where there are more scores. Statistical significance at post is seen in items 5, 7 and 26.

A statistically significant improvement post AF intervention was noted on one item within the social category, precisely this question was *How satisfied are you with your personal relationships?* Results from the social category are presented in Figure 8 and Appendix N.

Figure 8- WHOQOL-BREF-26 Pre and Post Social Factors

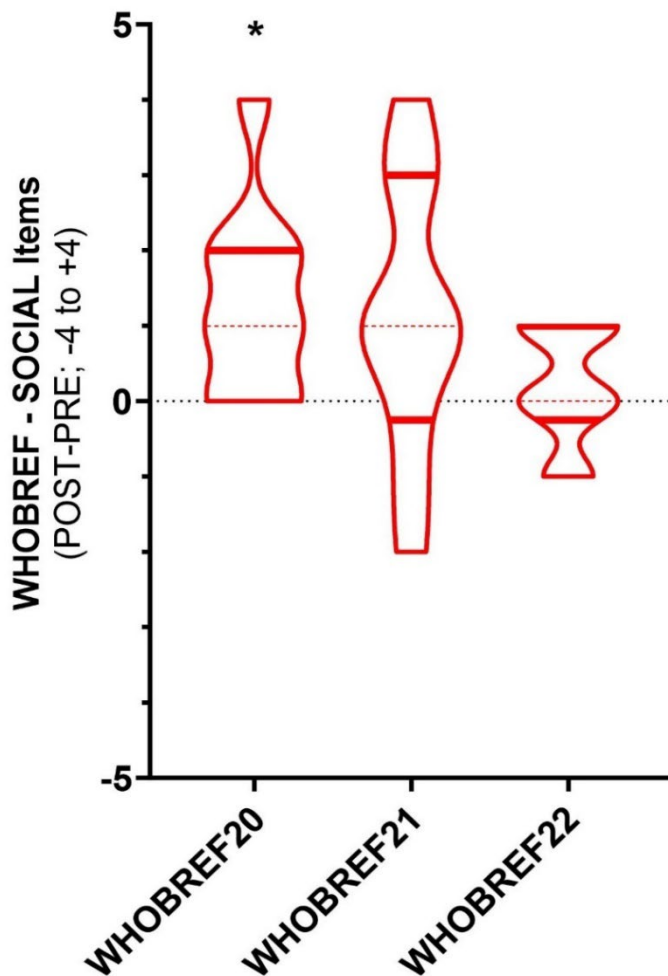


Fig 8. N=10. Surveys were completed on a laptop or by hand, and were completed by clients, volunteers and family/ caregivers, PRE and POST a single group adapted fishing session. This figure displays social category findings. Specific question numbers can be seen at the bottom of the figure. The dotted horizontal line indicated the median and the solid horizontal lines are the 25th and 75th percentile. The star at the top indicate that post scores are significantly different from post scores using a Wilcoxon signed ranks test, with a significance level of $p=.05$. Within the violin graph, violin is consistently wider where there are more scores. Statistical significance at post is seen on item 20.

A statistically significant improvement post AF intervention was noted on four items within the environmental category, precisely these questions were *How safe do you feel in your daily life? How healthy is your physical environment? Have you enough money to meet your needs? To what extent do you have the opportunity for leisure activities?* Results from the environmental category are presented in Figure 9 and Appendix O.

Figure 9- WHOQOL-BREF-26 Pre and Post Environmental Factors

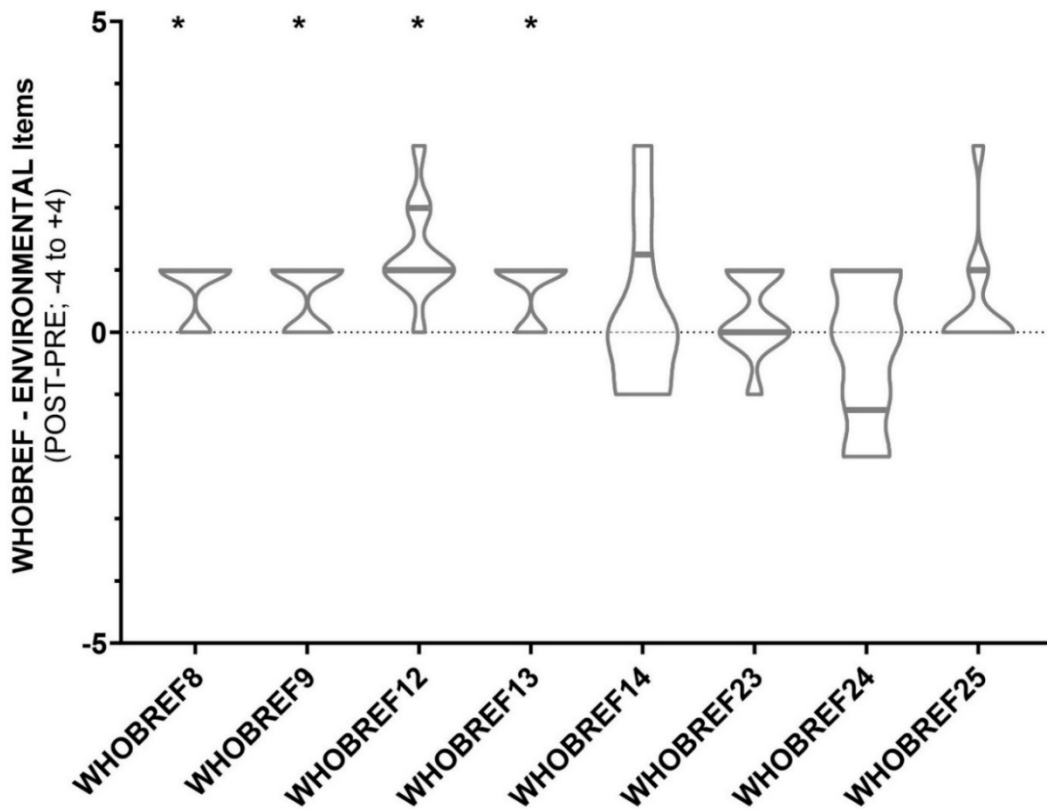


Fig 9. N=10. Surveys were completed on a laptop or by hand, and were completed by clients, volunteers and family/ caregivers, PRE and POST a single group adapted fishing session. This figure displays environmental category findings. Specific question numbers can be seen at the bottom of the figure. The dotted horizontal line indicated the median and the solid horizontal lines are the 25th and 75th percentile. The star at the top indicate that post scores are significantly different from post scores using a Wilcoxon signed ranks test, with a significance level of $p=.05$. Within the violin graph, violin is consistently wider where there are more scores. Statistical significance at post is seen on items 8, 9, 12 and 13. Post scores were markedly worse on question 24 at post.

When scoring the WHOQOL-BREF-26, questions 1 and 2 are not calculated within the totals presented within the 4 categories. As such, an analysis was conducted on these questions specifically. These questions ask *How would you rate your quality of life? (comfort or satisfaction)*; *How satisfied are you with your health?* A statistically significant improvement post AF intervention was noted on both of these questions. Based on negative ranks, question A mean post minus pre value was $z = -2.27$, whereas question B mean post minus pre was $z = -2.460$. Results are presented in Figure 10 and Appendix P.

Figure 10- WHOQOL-BREF-26 Pre and Post Questions 1 & 2

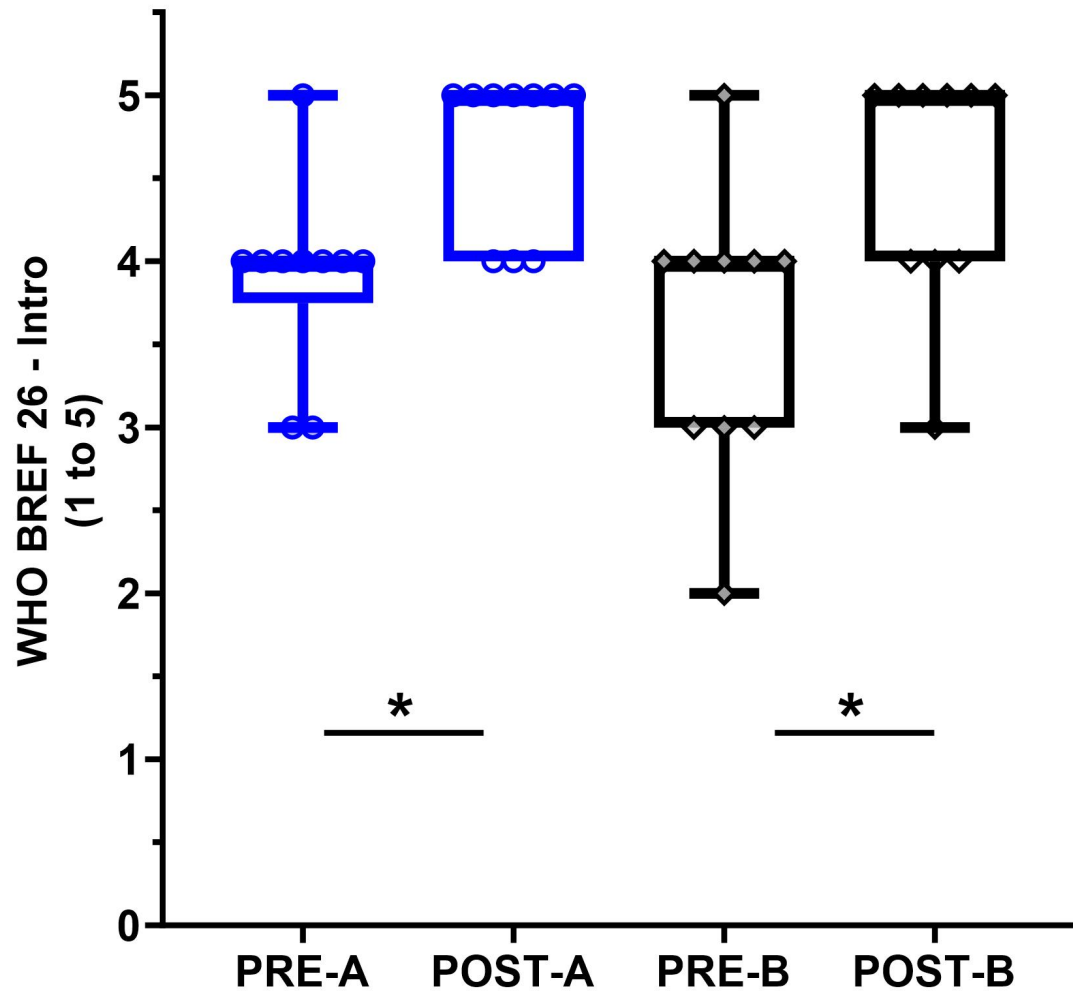


Fig 10. N=10. Surveys were completed on a laptop or by hand, and were completed by clients, volunteers and family/ caregivers, PRE and POST a single group adapted fishing session. This figure displays questions 1 and 2 findings. Blue indicates question 1 whereas black indicates question 2. Results are displayed using a box and whiskers for pre and post measures, with the whiskers going up and down to the highest scores. The top and bottom of the box are the 75th and 25th quartile score, where the line through the box is the median score. Individual scores are overlaid. The line and star at the top indicate that pre scores are significantly different from post scores using a Wilcoxon signed ranks test, with a significance level of $p=.05$.

WHOQOL-BREF-26 scores across all 10 participants showcase the most improvement in the environmental section, with 90% of respondents reporting a positive change. Remaining categories showing increased post scores across all participants as follow: psychological (80%) social (70%) & physical (60%). Clients (n=6) specifically saw the biggest change in the environmental section, with 100% reporting increased scores post participation in AF. Speaking further to clients exclusively, 83% of clients reported an increased HQOL score within the psychological and social domains, where 50% reported an improvement within the physical domain. It is worth noting that no clients reported decreased scores at post, denoting 100% of clients had improved or maintained post scores following participation in AF. Volunteers (n=3) scores show 100% of respondents with increased scores within the physical domain, 67% with increased scores within the psychological domain, 67% with increased scores within the social domain and 100% with increased scores within the environmental domain. One family/caregiver participated in the study, and their scores were the only scores to see a decrease post participation in AF within the environmental and social domains. Research has identified that because outdoor activities require more planning, there is potential that these types of activities may cause a disruption in the day-to-day demands of caregiving, thereby causing feelings of stress for the caregiver (Wakui et al., 2012). Perhaps this explains the decreased scores as seen in within the environmental domain, as this section of questioning relates to perceived opportunities for recreation and leisure, as well as accessibility, and health and social care. Physical domain scores were maintained within this participant and there was an increase within the psychological domain.

Statistical significance was demonstrated (post-pre) across all 14 items on the WEMWBS. Based on negative ranks, post-pre value was $z=-2.666$. Investigating individual factors revealed a statistically significant improvement on 10 items. Precisely, these items were *I've been feeling relaxed; I've been feeling interested in other people; I've had energy to spare; I've been thinking clearly; I've been feeling good about myself; I've been feeling close to other people; I've been feeling confident; I've been able to make up my own mind about things; I've been interested in new things; I've been feeling cheerful*. Results are presented in Figure 11 and Appendix Q.

Figure 11- WEMWBS Pre Post Factors Total

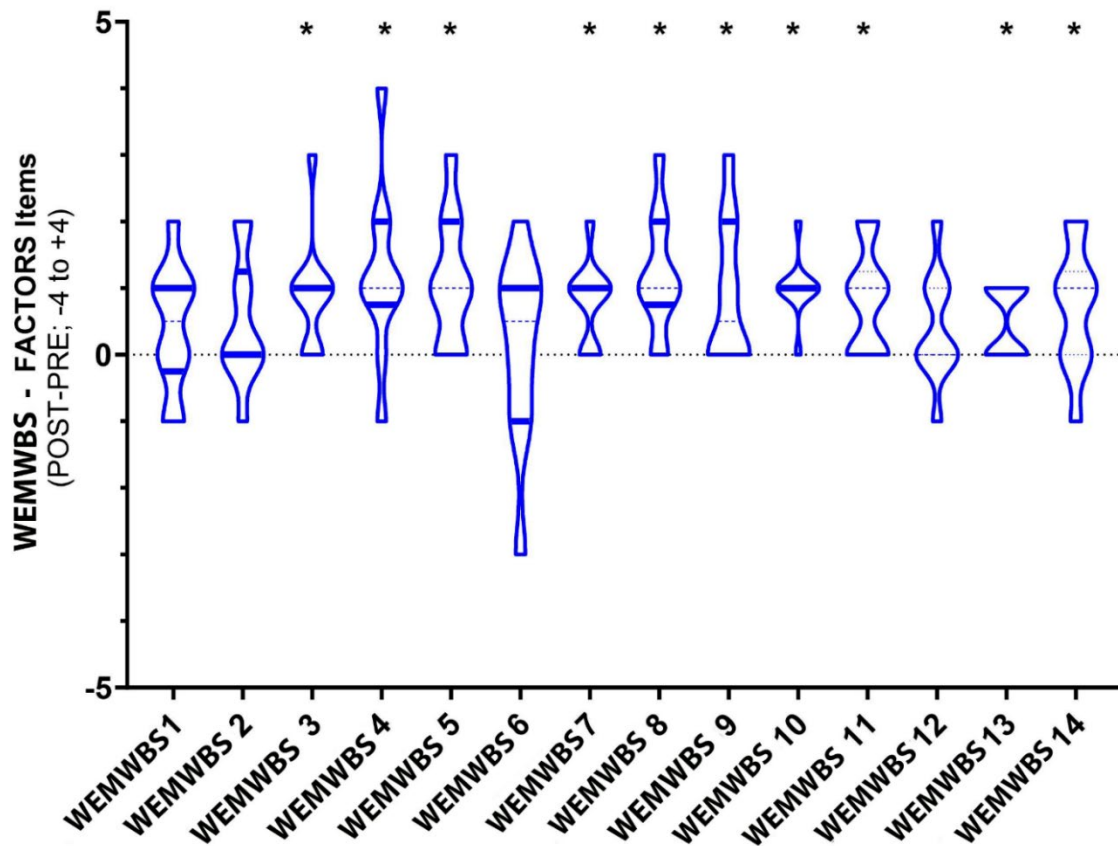


Fig 11. N=10. Surveys were completed on a laptop or by hand, and were completed by clients, volunteers and family/ caregivers, PRE and POST a single group adapted fishing session. This figure displays WEMWBS findings. Specific question numbers can be seen at the bottom of the figure. The dotted horizontal line indicated the median and the solid horizontal lines are the 25th and 75th percentile. The star at the top indicate that post scores are significantly different from post scores using a Wilcoxon signed ranks test, with a significance level of $p=.05$. Within the violin graph, the violin is consistently wider where there are more scores. Statistical significance at post is seen on items 3, 4, 5, 7, 8, 9, 10, 11, 13 & 14. Post scores were markedly worse on question 6.

Looking exclusively at the categorical changes on the WEMWBS, a Statistically significant improvement was seen from ‘average’ to ‘above average’. Results are presented in Results are presented in Figure 12 and Appendix R.

Figure 12- WEMWBS Pre Post Categories

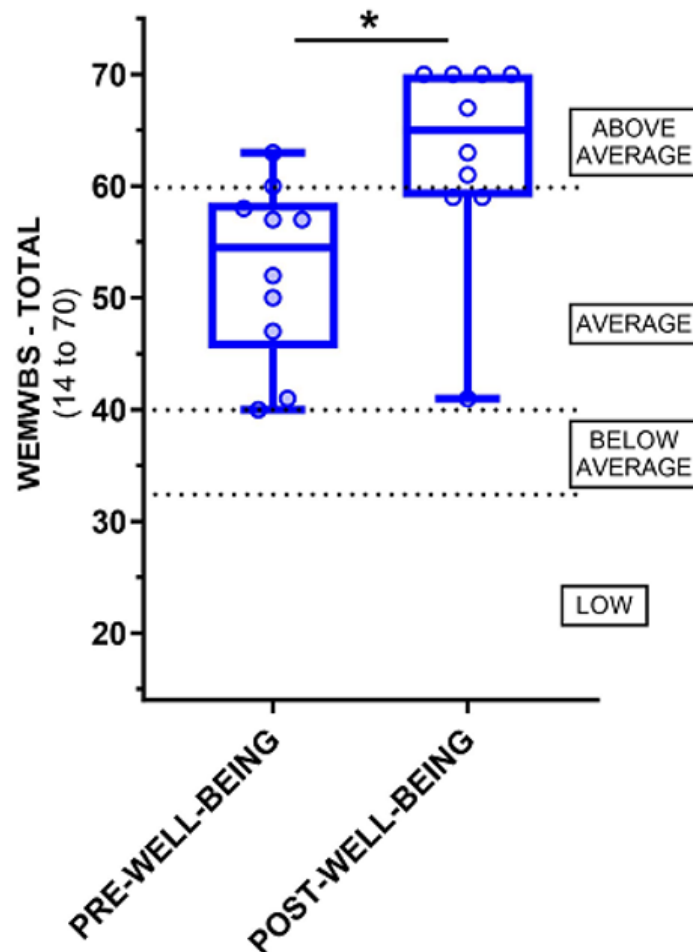


Fig 12. N=10. Surveys were completed on a laptop or by hand, and were completed by clients, volunteers and family/ caregivers, PRE and POST a single group adapted fishing session. This figure displays WEMWBS findings. Factors are displayed using a box and whiskers for pre and post measures, with the whiskers going up and down to the highest scores. The top and bottom of the box are the 75th and 25th quartile score, where the line through the box is the median score. Individual scores are overlaid. The line and star at the top indicate that pre scores are significantly different from post scores using a Wilcoxon signed ranks test, with a significance level of $p=.05$. Consistent improvement can be seen between PRE and POST measures, with half of respondents showing an improvement in category.

Across all participants (n=10) an overall percentage of 90% increased wellbeing scores after participation in AF. In clients specifically (n=6), 83% had a self-reported increase in wellbeing after participation in one AF intervention, with one client reporting no change at post. 100% of volunteers (n=3) had a self-reported increase in wellbeing after participation in one AF experience. 100% of family/caregivers (n=1) had a self-reported increase in wellbeing after participation in one AF experience. In summary, no decreased wellbeing scores were documented post participation in AF. 90% of participants self-reported an increase in wellbeing. Speaking specifically to categorical changes, 60% of participants saw changes from their pre and post wellbeing category, with half (n=5) moving from average to above average, and one participant moving from below average to above average.

Qualitative analysis was conducted on the feedback survey (n=10). Coding and theming of this data identified 6 main themes being- 1) value of outdoor leisure/ freedom, 2) opportunity for socialization, 3) values- knowledge of staff/ safety, 4) learning new skills, 5) inclusivity in participation, 6) happiness/ fun and enjoyment. The data from the feedback survey were coded using a color highlighting system for each TR domain. Domains included physical, cognitive, social/ emotional, and spiritual. For example, all comments related to the physical domain were coded yellow, whereas all comments related to the social domain were colored green. The text units were copied into a worksheet with a domain specific color-coding applies. Next, broader categories were identified by looking for patterns within the table. At this stage, colors were removed, and keywords/ phrases were underlined.

When investigating qualitative themes, a connection was identified to several questions on both the WHOQOL-BREF-26 and the WEMWBS, many of which provided statistically significant findings. At the time of thematic analysis, 7 questions from the WHOQOL-BREF-26 were identified as having a connection to the feedback survey responses. Questions include *To what extent do you have the opportunity for leisure activities?*; *How satisfied are you with your personal relationships?*; *How safe do you feel in your daily life?*; *How healthy is your physical environment?*; *To what extent do you have the opportunity for leisure activities?*; *How much do you enjoy life?*; *How often do you have negative feelings such as blue mood, despair, anxiety, depression?* At the time of thematic analysis, 7 questions from the WEMWBS were identified as having a connection to the feedback survey responses. Questions include *I've been feeling interested in other people*; *I've been feeling close to other people*; *I've been interested in new things*; *I've been able to make up my own about things, I've been feeling confident*; *I've been feeling cheerful*; *I've been feeling good about myself*. For example, question 13 on the WEMWBS *I've been interested in new things* can be connected back to the following quotes- “Experience something I have always wanted to try” “I got to learn new skills” “doing something different- I am trying to be open-minded”. Further, question 20 on the WHOQOL-BREF-26 *How satisfied are you with your personal relationships?* can be connected to a qualitative theme as well – “I enjoy the camaraderie”; “I liked meeting new people”; “I got to experience group bonding”; “I enjoyed socializing”; “Interaction with others”; “I got to meet new people”. Perhaps these qualitative data speak to the quantitative findings. Qualitative themes are presented in Table 9.

Table 9- Qualitative Theme & WHOQOL-BREF-26 & WEMWBS Connection

Theme	Connection to Literature	Quotation	WHOQOL/WEMWBS Connection
Value of outdoor leisure/freedom	Green Care offers many types of activities, while promoting wellbeing, mental and physical health, while connecting with nature and outdoor spaces (Dorsch et al., 2016; Moriggi et al., 2020; Berget et al., 2010). The reported psychological benefits of Green Care are many, the most common being social inclusion, improvements in wellbeing and HQOL, and improvements in mental health (Moriggi et al., 2020; Sempik, 2010). Green Care activities may lead to disease prevention and health-promotion, all while providing opportunities for social and physical growth (Barfield et al., 2021).	“I love <u>outdoor leisure</u>” “I enjoy <u>being outdoors</u>” “To relax in <u>nature</u>”	To what extent do you have the opportunity for leisure activities?
Opportunity for socialization	TR has been linked to positive impacts on mental health. Known benefits include improvements in quality of life, feelings of satisfaction, decrease in anxiety and depression symptoms, increased relaxation and satisfaction, feelings of autonomy and opportunities for social interaction (Brady et al., 2017; Moxham et al., 2015). TR can contribute to freedom of choice and feelings of intrinsic motivation (Anderson & Heyne, 2012; Moxham et al., 2015).	“I enjoy the <u>camaraderie</u>” “I liked <u>meeting new people</u>” “I got to experience <u>group bonding</u>” “I enjoyed <u>socializing</u>” “<u>Interaction</u> with others” “I got to <u>meet new people</u>”	How satisfied are you with your personal relationships? I've been feeling interested in other people I've been feeling close to other people

Theme	Connection to Literature	Quotation	WHOQOL/WEMWBS Connection
Values-knowledge of staff/ safety	In the field of adapted recreation and disability health, empowerment theory suggests that health behavior changes are most likely to occur when children and youth with physical or MH disabilities are “empowered to be active participants in and have personal control over their own lives” (Bowling et al., 2022). Health behavior changes in these individuals are further enhanced when caregivers, service providers, and programs have the necessary knowledge, skills, and tools to provide effective services and support (Bowling et al., 2022).	<u>“Knowledgeable staff”</u> <u>“safety”</u> <u>“Staff are helpful and encouraging”</u> <u>“Kind and supportive staff”</u> <u>“Knowledgeable staff and volunteers”</u> <u>“Kind and helpful”</u> <u>“Helpful and encouraging”</u> <u>“I get to share my knowledge with others”</u> <u>“Knowledgeable, friendly and wonderful staff”</u>	How safe do you feel in your daily life? How healthy is your physical environment?
Learning new skills	Participation has been coined as being a ‘fundamental’ component to development in children (King et al., 2003; Law et al., 2007). Through participation in social activities children learn how to communicate, learn about the expectations of society, learn to build friendships, and cohabitate with others, and are introduced to many competencies and skills needed later in life (King et al., 2003; Law et al., 2007).	<u>“Experience something I have always wanted to try”</u> <u>“I got to learn new skills”</u> <u>“Doing something different- I am trying to be open-minded”</u>	I've been interested in new things; I've been able to make up my own about things I've been feeling confident;

Theme	Connection to Literature	Quotation	WHOQOL/WEMWBS Connection
Inclusivity in participation	Participation in leisure activities has been noted as being an important factor, supporting community inclusion, and can contribute to better quality of life (Badia et al., 2011). The reported psychological benefits of Green Care are many, the most common being social inclusion, improvements in wellbeing and HQOL, and improvements in mental health (Moriggi et al., 2020; Sempik, 2010).	<u>“Inclusive activity- the ability to experience activities like anybody else”</u> <u>“To watch my wife be able to enjoy herself”</u> <u>“Experience something I have always wanted to try”</u>	To what extent do you have the opportunity for leisure activities? I've been feeling interested in other people I've been feeling close to other people;
Happiness/ Fun and enjoyment	Research has demonstrated that adapted sports can improve physical fitness, provide numerous psychosocial benefits, and generate an opportunity for individuals to continue to participate in activities they enjoy; most importantly, adapted sports can positively impact ones' quality of life, increase mindfulness, facilitate self-efficacy, and allow participants to experience improved happiness while decreasing perceived stress (Diaz et al., 2019; Mutz & Müller, 2016).	<u>“I gained a smile”</u> <u>“I had so much fun!”</u> <u>“I loved it”</u> <u>“To watch my wife be able to enjoy herself”</u>	How much do you enjoy life? I've been feeling cheerful I've been feeling good about myself How often do you have negative feelings such as blue mood, despair, anxiety, depression?

3.6 Discussion

The purpose of this study was to explore how adapted fishing may impact HQOL and wellbeing in individuals with MH, cognitive and physical limitations. Our findings show that participation in AF had a positive effect on participants perceived HQOL and wellbeing. HQOL and wellbeing are especially important to maintain in individuals with disabilities, due to the fact that there is a high prevalence of mood related disorders seen in this population (Diaz et al., 2019). Mood related challenges can significantly impact a person's perceived quality of life (Diaz et al., 2019). Likewise, a similar study revealed that a therapeutic fly-fishing intervention for veterans with combat related disabilities saw a reduction in symptoms of depression, a reduction in post-traumatic stress (PTS), a reduction in perceived stress, improvement in self-determination, and increased leisure satisfaction (Bennett et al., 2017). It is worth noting that within these veterans, leisure satisfaction was also maintained 3 months after the intervention concluded (Bennett et al., 2017).

This study explored HQOL and wellbeing and how it was perceived by individuals pre and post participation in AF. A descriptive study was used to examine the perceived HQOL and wellbeing of adults with substance use, MH, and physical impairments before and after participation in an AF intervention. Our findings show that AF has a positive impact in self-perceived HQOL across all domains (physical/ social/ environmental/ psychological) and wellbeing, amongst clients and volunteers.

Adapted recreation provides access to activities for individuals of all abilities, and a common goal of these interventions is to improve mental and physical health (Nieman et al., 2021; Diaz et al., 2019; Wilson & Christensen., 2012).

When participants are asked to report their HQOL and wellbeing, improvements are frequently noted after participation; across numerous studies, improvements are recorded for a variety of different activities. Current literature reveals that adapted recreation can assist with the treatment of several illnesses, both mental and physical; a variety of health challenges can be improved through the use of adapted recreation (Escobar, 2019; Hallberg, 2017; Diaz, 2019).

It has been suggested that participation in recreational opportunities and adapted sports provides numerous psychosocial and physical benefits to individuals with disabilities (Diaz et al., 2019). Physical fitness and increased opportunity for gross and fine motor movement are associated with adapted recreation, as are social benefits, self-efficacy, life satisfaction, feelings of autonomy and improvements in perceptions of body image (Diaz, 2019; Merrick et al., 2020; Hallberg, 2017).

Identifying and overcoming current barriers to participation and providing more opportunities for people with disabilities to fish, could be an extremely useful tool to address the overall inequity in sports participation, between vulnerable persons with a disability and those without a disability (Lindsay et al., 2022).

3.6.1 Strengths and Limitations

These data revealed that participants with MH, addiction and physical disabilities are likely to have increased self-perceived HQOL and wellbeing after participation in AF. Moreover, participation in AF was beneficial for clients, volunteers, and family/caregivers. These findings provide encouraging implications for AF, outdoor recreation, adapted sport and therapeutic recreation. Despite the encouraging findings, there are limitations to this study.

This study utilized a small convenience sample and had little variation in participant demographics, with 90% of participants self-reporting being Caucasian. Moreover, this study was limited to only one family/ caregiver participant. In addition, there were no female volunteers, only male volunteers. Lastly, the data analysis conducted was limited to pre and post comparative factors, suggesting a need for further consideration of differences on other variables in future studies.

3.6.2 Recommendations for Research and Practice

Future research should seek to confirm these findings as well as investigate additional outcomes of AF for individuals with mental and physical challenges. As the WHOQOL-BREF-26 was used to measure HQOL outcomes from AF, and the WEMWBS used to measure wellbeing, future recreational therapy researchers might investigate the HQOL and wellbeing outcomes of participation in a variety of activities recommended for individuals with physical and MH. Because the WHOQOL-BREF-26 and the WEMWBS are short surveys, and proved to be easily completed by clients, volunteers and family/caregivers in this study, recreation therapy professionals and researchers might consider using these measures in addition to progress reports, assessments, outcome measures and/or other tools for tracking how recreational therapy treatments are working. As low self-confidence and low self-efficacy are at times seen in individuals with physical and MH challenges, WEMWBS questions related to these areas may be especially helpful to recreation therapy professionals when measuring the outcomes of programs and interventions for these populations.

3.7 Conclusions

This study provides support for the HQOL and wellbeing benefits of an AF intervention for individuals with MH and physical limitations. Future research on the benefits of AF using measurement scales on HQOL and wellbeing to measure self-perceived benefits is warranted. The challenge of fishing and the relaxation benefits should be emphasized to encourage greater uptake of fishing. In addition, addressing barriers of cost, transport and the importance of leisure partners could improve accessibility of fishing and address inequities in fishing accessibility.

CHAPTER 4: GLOBAL DISCUSSION

A research study was implemented to investigate how a pair of adapted recreation therapy activities, built on outdoor recreation, outdoor adventure, Green Care, and blue space, would impact HQOL, wellbeing, and social and personal relationships for individuals living with cognitive and physical challenges.

This research study aimed to answer the following specific research questions:

1. Will engaging in one session of Equine Assisted Therapy impact social skills and personal relationship characteristics in participants ages 8-30 living with physical and mental health disorders?
2. Will engaging in one adapted fishing experience impact Health Quality of Life and wellbeing for clients living with physical, cognitive, and mental health issues and for volunteers and family/ caregivers ages 18 +?

It was predicted that self-perceived HQOL and wellbeing would be positively impacted with one session of AF, both for clients with physical and mental health disorders and for volunteers and family members caregivers. Likewise, it was believed that social-emotional skills and personal relationships would be positively impacted with one session of EAT for riders with physical and mental health disorders. Specifically, it was anticipated that positive changes would be noted following engagement in one session of adapted recreation across all categories as measured by the WHOQOL-BREF-26 and WEMBMS scales, as well as social and personal relationship factors, as measured by the SPRS.

4.0 Outcomes of EAT

Data from this study revealed that EAT can increase social and personal affect skills. Our findings show that EAT had a positive impact on observable social affect skills and personal affect relationship when combining factors on the SPRS. 3 of 17 riders recorded a change in functional category from moderate social/personal skills to high social/ personal skills, and 1 of 17 riders recorded a change from low social/ personal skills to high social/ personal skills. 2 of 17 riders recorded a decrease in social/ personal category from high skills to moderate skills with the other 11 riders remaining in the same functional category post EAT intervention. A significant increase post EAT intervention was noted on three items within the SAS, precisely the questions of: *respect others*, *demonstrates sense of accomplishment*, and *accepts responsibility for own behavior* while a significant increase post EAT intervention was noted on seven items on the PAS, namely the questions: *self-confidence while moving*, *handles conflict*, *appreciates others performance*, *takes on leadership role in activity*, *respect for self*, *follows directions*, and *self-discipline when learning new skill*. This research has demonstrated that adapted recreation and leisure pursuits, such as EAT, can provide support for the management of mental and physical illnesses, and that a variety of health challenges can be improved through the use of adapted recreation.

4.1 Study Implications for EAT

EAT is likely to provide social and personal relationship improvements as a part of a TR experience. EAT provides participants a therapeutic experience, as all of the domains are encouraged (physical, cognitive, social and emotional/ spiritual) (Escobar, 2019; Hallberg, 2017; Glennys et al., 2012; Rosenbaum, 2009).

When exploring the benefits of EAT, individuals with disabilities in this study showed improvements in emotional well-being, improved social interaction with humans and horses, and positive changes in communication and problem-solving skills. EAT has been shown to promote self-confidence self-efficacy and cause participants to have an improvement in wellbeing (Escobar, 2019).

Positive social and personal relationship outcomes were also displayed amongst the participant group. These findings suggest that EAT is a viable TR intervention for individuals living with a variety of physical, cognitive and MH disorders, and that benefits can be seen across a large age range. Thus, EAT may be an effective intervention for TR practitioners to use with a variety of clientele.

4.2 Outcomes of AF

Data from this study revealed that individuals who participated in one session of AF recorded a statistically significant improvement on physical, psychological, and environmental categories, as well as on 2 global questions, aimed at measuring the perception of quality of life and health in general, as per the WHOQOL-BREF-26. Moreover, a significant improvement was demonstrated across all 14 items on the wellbeing measurement scale, the WEMWBS.

This study determined that AF is likely to increase self-perceived HQOL wellbeing for clients and volunteers. It is important to note that within this study, clients and volunteers both reported living with mental, and/ or physical limitations. Initial predictions proved to be correct with the exception of how adapted fishing may impact family members/ caregivers.

This study revealed that family members/ caregivers may not experience increased HQOL as initially predicted, with this participant reporting lower post HQOL scores than pre HQOL scores. Specifically, a notable decrease in question 24: *How satisfied are you with your access to health services?* was noted. This decrease in post score for the family/caregiver may be explained because this program day was a special activity and may have been a glaring reminder that adapted recreation opportunities such as this may not always be possible. It has been documented that outdoor activities require more planning and there is potential that these types of activities may cause a disruption in the day-to-day demands of caregiving, thereby causing feelings of stress for the caregiver (Wakui et al., 2012). These intersecting concerns may have conflicted the family/ caregivers' feelings on access to health services. In summary, perhaps this explains the decreased scores as seen within the environmental domain, as this section of questioning relates to perceived opportunities for recreation and leisure, as well as accessibility, and health and social care. From a social perspective, perhaps the family/ caregiver participating in an adapted recreation adventure-based activity was focused on the experience for their loved one, rather than the social aspect of the program day. Interestingly, this family/ caregiver stated that "camaraderie" was the best part of their program day.

Although 9 of 10 participants in AF reported an improvement on the WEMBMS, one participant score remained the same at post. Further, when looking at question 6 specifically *I've been dealing with problems well*, a notable decrease was noted.

In this scenario, it is worth mentioning that half of this participant group identified that they are in recovery from substance use disorder (SUD), alcohol use disorder (AUD) or SUD/AUD. It has been documented that individuals living with SUD, AUD, or a comorbidity of both can struggle with problem solving (Kolesnikova & Osis, 2013). It is possible that this decrease in question 6 on the WEMBMS may point to the fact that participants may have experienced challenging moments during the AF intervention, such as not catching a fish, or experiencing a malfunction with their fishing equipment. Encouragingly, it has been identified that offering opportunities for problem solving can be an effective part of SUD/ AUD recovery (Kolesnikova & Osis, 2013).

4.3 Study Implications for AF

AF and outdoor recreation are known to generate mindfulness, increase self-efficacy, and cause participants to have an improvement in wellbeing. This study provides support for the HQOL and wellbeing benefits of an AF intervention for individuals with MH and physical limitations. These findings indicate that AF is a viable TR intervention for individuals living with a variety of physical and MH disorders. Perhaps AF may be an effective intervention for TR practitioners to offer to a variety of clientele living with SUD, AUD, and SUD/AUD.

Although not explicitly explored within this study, it has been documented that AF can provide many HQOL and wellbeing benefits to individuals across a large age span. Perhaps future researchers may choose to apply AF as a TR intervention with children, youth, or seniors specifically, to investigate if the HQOL and wellbeing outcomes seen in this study are typical.

4.4 Therapeutic Recreation, Green Care & Outdoor Recreation

Therapeutic recreation is purposeful and is delivered with the intent to provide quality leisure experiences to promote development of individual and environmental strengths and to create opportunities for individuals of all levels of ability to experience greater wellbeing (Anderson & Heyne, 2011). As individuals living with cognitive and physical disabilities may experience a lower sense of wellbeing, lower self esteem, and have decreased autonomy (Babik & Gardner, 2021), providing TR interventions known to combat these challenges is a logical step. TR can not only be an enjoyable experience for participants but can also promote physical and mental health outcomes (DelGrande et al., 2020; Menzies et al., 2020; Merrick et al., 2020; Slater & Meade, 2004). As this study, along many others, has established, adapted recreation opportunities occurring outdoors can provide additional benefits (Artz & Davis, 2017). Green Care promotes the improvement of mental and physical health and provides an opportunity for individuals to connect with nature and outdoor spaces (Dorsch et al., 2016; Moriggi et al., 2020; Berget et al., 2010). Psychological benefits of Green Care include feelings of social inclusion, improvements in wellbeing and HQOL, and improvements in mental health (Moriggi et al., 2020; Sempik, 2010). TR has been linked to positive impacts on mental health, specifically, improvements in quality of life, feelings of satisfaction, decrease in anxiety and depression symptoms, increased relaxation and satisfaction, feelings of autonomy and opportunities for social interaction (Brady et al., 2017; Moxham et al., 2015). TR can promote freedom of choice and feelings of intrinsic motivation (Anderson & Heyne, 2012; Moxham et al., 2015).

4.5 Limitations

This study had several limitations. First, data were collected from one adapted recreation session, meaning these results may be short term and may not last over time without additional adapted recreation therapy sessions. Further, this study utilized convenience sampling, and had little variation in participant demographics, with 90% of participants self-reporting being Caucasian. Moreover, this study was limited to only one family/ caregiver participant. Additionally, this study utilized an observation-based assessment for the EAT intervention, meaning the findings may not be representative to the experience of the EAT participant. Lastly, some participants had previous experience with these TR interventions prior to the collection of pre and post data, meaning these results may not speak to their experience with one experience, rather may be more descriptive of their ongoing involvement with adapted recreation. As such, generalizability of these findings should be taken with caution.

Despite these limitations, a pilot study with pre-post measurement with a single group is a worthwhile and valuable form of a clinical trial (In, 2017). A pilot study can be used to identify the impact in conducting a full-scale study, providing evidence for the viability and potential success of a main study (In, 2017). Further, investigating the outcomes of a single adapted recreation session is important because an immediate change pre-post session could indicate the establishment of a meaningful connection between the participant and the adapted recreation experience. Pre-post intervention measures from one session could provide the opportunity to capture a participant's true feelings in that moment, offering a clear view into their perception of the intervention.

A similar study was conducted using pre-post measurements for one TR session and discovered that social and emotional benefits were experienced by participants (Litchke & Hutson., 2021). In addition, participants reported fun and enjoyment as an outcome of participation in one TR session (Litchke & Hutson., 2021)

4.6 Conclusion

This study furthers the knowledge we have on the outcomes of adapted recreation and how these interventions impact HQOL, wellbeing and social and personal relationship skills. Adapted recreation can have positive impacts of HQOL and wellbeing and can also offer observable improvements in social and personal relationship skills for clients and volunteers. Future research should investigate the impact these adapted recreation interventions have on family members/ caregivers and may choose to consider the influence of caregiver stress. Offering adapted recreation therapy activities to individuals living with a disability can provide opportunities for autonomy, social connection, and inclusion. As identified in a number of other studies, this research inquiry also discovered that when participants are asked to report their HQOL and wellbeing before and after participation in adapted recreation, improvements are frequently noted after interventions occur. Research has indicated that EAT, AF, and a variety of other adapted recreation activities can provide health promotion for both mental and physical illnesses, meaning that ones' health, HQOL and wellbeing may be improved through the use of adapted recreation (Escobar, 2019; Hallberg, 2017; Diaz et al., 2019. Adapted recreation provides access to activities for individuals of all abilities, with a goal of health and wellness improvements (Nieman et al., 2021; Diaz et al., 2019; Wilson et al., 2012).

In conclusion, positive health behaviour changes are most likely to be seen in individuals living with disabilities when recreation therapy professionals choose to work with theoretical frameworks and models of delivery aimed at empowering participants. We are most likely to see positive health and behavior changes occur when individuals are “empowered to be active participants in and have personal control over their own lives” (Bowling et al., 2022). When resources, autonomy, accessible spaces, trained staff/ volunteers, equipment, and adapted opportunities all come together, meaningful, and important benefits can be seen.

This study has provided encouraging implications for equine assisted therapy, outdoor recreation, adapted fishing, and the ecological approach to therapeutic recreation. Future research should seek to confirm these findings as well as investigate additional outcomes of adapted recreation for individuals with mental and physical challenges. Given these findings, it is recommended that recreation therapy practitioners implement a variety of adapted recreation interventions or seek out organizations that can provide these opportunities. Throughout this study, it has been well documented that social opportunities are vitally important, as are the benefits one gains from being outdoors. Adapted recreation and therapeutic recreation can provide both of these outcomes.

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Appendix A- Ethics Approval Letter



Office of Research Ethics
4401 University Drive
Lethbridge, Alberta, Canada
T1K 3M4
Phone: (403) 329-2747
Email: research.services@uleth.ca
FWA 00018802 IORG 0006429

Friday, 20 August 2021

Principal Investigator: Lyn Litchke, Faculty of Health Sciences

Co-Investigators: Amanda Ervin, Faculty of Health Sciences
Lucy Gerrand, Faculty of Health Sciences
Stephen Holly, Adaptable Outdoors
Sara Braun Holly, Adaptable Outdoors

Study Title: Measuring Health – Quality of Life and Wellbeing for Individuals of all Abilities through Participation in Adapted Recreation

Action: Approved
HPRC Protocol Number: 2021-084

Approval Date: August 20, 2021

Annual Renewal Report Due: On or before September 30, 2022

Dear Lyn,

Your human research ethics application with co-investigators Amanda Ervin, Lucy Gerrand, Stephen Holly and Sara Braun Holly titled “Measuring Health – Quality of Life and Wellbeing for Individuals of all Abilities through Participation in Adapted Recreation” has been reviewed and approved on behalf of the University of Lethbridge Human Participant Research Committee (HPRC) for the **approval period August 20, 2021 to September 30, 2022** and assigned Protocol #2021-084. The HPRC conducts its reviews in accord with University policy and the Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans (2018).

Please be advised that any changes to the protocol or the informed consent must be submitted for review and approval by the HPRC before they are implemented. An annual renewal report for continuing ethics certification will be required and is due to the Office of Research Ethics on or before September 30, 2022.

We wish you and your colleagues the best with this research.

Sincerely,

Susan Entz, M.Sc., Ethics Officer
Office of Research Ethics
University of Lethbridge
4401 University Drive
Lethbridge, Alberta, Canada
T1K 3M4

Appendix B- Social Personal Relationship Scale

ID# _____ Date: _____ AORS # _____ LTRC# _____

SOCIAL AND PERSONAL RELATIONSHIP SCALE-PRE

We are interested in some of the ways your child feels on the average over the last 2 weeks.
The following is a list of words that describe different social and personal skills. Please read each item and then circle the appropriate number to indicate to what extent your child generally feels on average.

Affective Characteristics	Very slightly or not at all	A little	Moderately	Quite a bit	Extremely
1. shares with others	1	2	3	4	5
2. expresses self creatively	1	2	3	4	5
3. cooperates with peers	1	2	3	4	5
4. participates as follower in activity	1	2	3	4	5
5. takes turns	1	2	3	4	5
6. self-confidence while moving	1	2	3	4	5
7. shows courtesy towards others	1	2	3	4	5
8. handles conflict	1	2	3	4	5
9. respect others	1	2	3	4	5
10. demonstrates sense of accomplishment	1	2	3	4	5
11. appreciates others performance	1	2	3	4	5
12. shows concern when others are upset	1	2	3	4	5
13. takes on leadership role in activity	1	2	3	4	5
14. accepts responsibility for own behavior	1	2	3	4	5
15. respect for self	1	2	3	4	5
16. listens to others	1	2	3	4	5
17. has fun with others during activity	1	2	3	4	5
18. follows directions	1	2	3	4	5
19. respect for equipment	1	2	3	4	5
20. self-discipline when learning new skill	1	2	3	4	5

Appendix C - Feedback Survey

ID# _____ Date _____ AORS# _____

Check one of the following:

Volunteer: _____ Child: _____ Adult: _____ Senior (over 55) _____ Family/Caregiver _____

Age: _____ Gender _____ Ethnicity _____

Diagnosis _____

We may collect some or all of the above listed information from this organization. Please indicate if you consent YES or NO to the collection of this information.

YES NO (Circle one)

Signature: _____

Feedback Survey

1. What did you hope to achieve from participating in this experience? Did you achieve it?
2. What else did you gain from this experience?
3. What other activities would you like to see offered here?
4. What did you enjoy most about your program day(s)?
5. What could have made this experience better today?
6. Will you attend more of these types of experiences/programs?
7. Do you have any other comments you would like to share about the staff/volunteers or the day in general?

Appendix D- Assent Form



Why are you here? Our names are Dr. Lyn Litchke and Amanda Ervin- University Researcher and Graduate Student from the University of Lethbridge. We want to see if you would like to be in this study. We want to learn what you think about adapted recreation activities and how it affects your health and well-being and social and personal relationships.

What is expected of you? If you agree to be in my study, your parents, guardians or caregivers will fill out a survey about the recreation activity and what you think about how it affects your health and life. This will take about 15 minutes before your session and 15 minutes after your session. You can do the recreation activity even if you don't do the research part.

Who will know you are in my study? We will do our best to keep all the information you share with us private. We will not use your real name when we report the findings of the study. We will keep all your answers on a locked laptop. If you complete a paper copy, your answers will be kept safely away from others. Since we are doing some activities as a group, others may know your name but we will not tell anyone else about the information you write on your forms. All helpers sign a promise to keep your name private.

Where will the study take place? The study will take place at an outdoor venue or horse arena.

Do I have to be in the study? No. Your parents or guardian have to agree for you to be in my study and then you get to decide if you want to be in my study. If you don't want to be in my study, no one will be upset with you and you can still do the activity today. If you want to be in the study and then change your mind later, you can do that too. You can stop being in my study at any time by telling me. You can also choose to skip any written questions if you are not comfortable with answering them.

What if I have questions? You can ask questions at any time Amanda can be reached at: 403-393-0744 or at Amanda.ervin@uleth.ca. You can also ask your parents or guardian if you have any questions because the study has been explained to them. If you want, you can also contact the Office of Research Ethics at the University of Lethbridge at 403-329-2747 or research.services@uleth.ca to ask questions. I will give you a copy of this form in case you want to ask questions later. [If interested in obtaining feedback on research findings can email Amanda Ervin at Amanda.ervin@uleth.ca](#)

Agreement I have decided to be in the study even though I know that I don't have to do it.

_____ Printed Name of Participant _____ Date

Participant Consent (please circle)



_____ Printed Name of Parent/ Guardian _____ Date

_____ Signature of Parent/ Guardian _____ Date

_____ Printed Name of Researcher _____ Date

_____ Signature of Researcher _____ Date

Appendix E- Social Personal Relationship Scale FACTOR Totals

NPar Tests

Output Created		24-APR-2023 11:23:35
Comments		
Input	Active Dataset	DataSet1
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	34
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics for each test are based on all cases with valid data for the variable (s) used in that test.
Syntax		NPAR TESTS /WILCOXON=PRE_SOC_TOT PRE_PERSON_TOT WITH POST_SOC_TOT POST_PERSON_TOT (PAIRED) /MISSING ANALYSIS.
Resources	Processor Time	00:00:00.00
	Elapsed Time	00:00:00.00
	Number of Cases Allowed ^a	349525

Notes

a. Based on availability of workspace memory.

Wilcoxon Signed Ranks Test

Ranks

		N	Mean Rank	Sum of Ranks
POST_SOC_TOT - PRE_SOC_TOT	Negative Ranks	4 ^a	7.25	29.00
	Positive Ranks	13 ^b	9.54	124.00
	Ties	0 ^c		
	Total	17		
POST_PERSON_TOT - PRE_PERSON_TOT	Negative Ranks	2 ^d	5.25	10.50
	Positive Ranks	15 ^e	9.50	142.50
	Ties	0 ^f		
	Total	17		

- a. POST_SOC_TOT < PRE_SOC_TOT
- b. POST_SOC_TOT > PRE_SOC_TOT
- c. POST_SOC_TOT = PRE_SOC_TOT
- d. POST_PERSON_TOT < PRE_PERSON_TOT
- e. POST_PERSON_TOT > PRE_PERSON_TOT
- f. POST_PERSON_TOT = PRE_PERSON_TOT

Test Statistics^a

	POST_SOC_TOT - PRE_SOC_TOT	POST_PERSON_TOT - PRE_PERSON_TOT
Z	-2.254 ^b	-3.128 ^b
Asymp. Sig. (2-tailed)	.024	.002

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

Appendix F- Social Personal Relationship Scale SOCIAL Totals

NPar Tests

Notes		
Output Created		24-APR-2023 11:20:36
Comments		
Input	Active Dataset	DataSet1
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	34
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics for each test are based on all cases with valid data for the variable (s) used in that test.
Syntax		NPAR TESTS /WILCOXON=PRE_SOC1 PRE_SOC3 PRE_SOC5 PRE_SOC9 PRE_SOC10 PRE_SOC12 PRE_SOC14 PRE_SOC16 PRE_SOC17 PRE_SOC19 WITH POST_SOC1 POST_SOC3 POST_SOC5 POST_SOC9 POST_SOC10 POST_SOC12 POST_SOC14 POST_SOC16 POST_SOC17 POST_SOC19 (PAIRED) /MISSING ANALYSIS.
Resources	Processor Time	00:00:00.00
	Elapsed Time	00:00:00.00
	Number of Cases Allowed ^a	125829

a. Based on availability of workspace memory.

Wilcoxon Signed Ranks Test

		N	Mean Rank	Sum of Ranks
POST_SOC1 - PRE_SOC1	Negative Ranks	4 ^a	5.00	20.00
	Positive Ranks	7 ^b	6.57	46.00
	Ties	6 ^c		
	Total	17		
POST_SOC3 - PRE_SOC3	Negative Ranks	5 ^d	6.60	33.00
	Positive Ranks	7 ^e	6.43	45.00
	Ties	5 ^f		
	Total	17		
POST_SOC5 - PRE_SOC5	Negative Ranks	2 ^g	3.50	7.00
	Positive Ranks	7 ^h	5.43	38.00
	Ties	8 ⁱ		
	Total	17		
POST_SOC9 - PRE_SOC9	Negative Ranks	2 ^j	4.50	9.00
	Positive Ranks	8 ^k	5.75	46.00
	Ties	7 ^l		
	Total	17		
POST_SOC10 - PRE_SOC10	Negative Ranks	2 ^m	5.00	10.00
	Positive Ranks	11 ⁿ	7.36	81.00
	Ties	4 ^o		
	Total	17		
POST_SOC12 - PRE_SOC12	Negative Ranks	2 ^p	5.25	10.50
	Positive Ranks	7 ^q	4.93	34.50
	Ties	8 ^r		
	Total	17		
POST_SOC14 - PRE_SOC14	Negative Ranks	1 ^s	3.50	3.50
	Positive Ranks	10 ^t	6.25	62.50
	Ties	6 ^u		
	Total	17		
POST_SOC16 - PRE_SOC16	Negative Ranks	3 ^v	2.67	8.00
	Positive Ranks	5 ^w	5.60	28.00
	Ties	9 ^x		
	Total	17		
POST_SOC17 - PRE_SOC17	Negative Ranks	3 ^y	4.83	14.50
	Positive Ranks	7 ^z	5.79	40.50
	Ties	7 ^{aa}		
	Total	17		

		N	Mean Rank	Sum of Ranks
POST_SOC19 - PRE_SOC19	Negative Ranks	2 ^{ab}	4.00	8.00
	Positive Ranks	7 ^{ac}	5.29	37.00
	Ties	8 ^{ad}		
	Total	17		

- a. POST_SOC1 < PRE_SOC1
- b. POST_SOC1 > PRE_SOC1
- c. POST_SOC1 = PRE_SOC1
- d. POST_SOC3 < PRE_SOC3
- e. POST_SOC3 > PRE_SOC3
- f. POST_SOC3 = PRE_SOC3
- g. POST_SOC5 < PRE_SOC5
- h. POST_SOC5 > PRE_SOC5
- i. POST_SOC5 = PRE_SOC5
- j. POST_SOC9 < PRE_SOC9
- k. POST_SOC9 > PRE_SOC9
- l. POST_SOC9 = PRE_SOC9
- m. POST_SOC10 < PRE_SOC10
- n. POST_SOC10 > PRE_SOC10
- o. POST_SOC10 = PRE_SOC10
- p. POST_SOC12 < PRE_SOC12
- q. POST_SOC12 > PRE_SOC12
- r. POST_SOC12 = PRE_SOC12
- s. POST_SOC14 < PRE_SOC14
- t. POST_SOC14 > PRE_SOC14
- u. POST_SOC14 = PRE_SOC14
- v. POST_SOC16 < PRE_SOC16
- w. POST_SOC16 > PRE_SOC16
- x. POST_SOC16 = PRE_SOC16
- y. POST_SOC17 < PRE_SOC17
- z. POST_SOC17 > PRE_SOC17
- aa. POST_SOC17 = PRE_SOC17
- ab. POST_SOC19 < PRE_SOC19
- ac. POST_SOC19 > PRE_SOC19
- ad. POST_SOC19 = PRE_SOC19

Test Statistics ^a				
	POST_SOC1 - PRE_SOC1	POST_SOC3 - PRE_SOC3	POST_SOC5 - PRE_SOC5	POST_SOC9 - PRE_SOC9
Z	-1.179 ^b	-.504 ^b	-1.897 ^b	-1.998 ^b
Asymp. Sig. (2-tailed)	.238	.614	.058	.046

Test Statistics ^a				
	POST_SOC10 - PRE_SOC10	POST_SOC12 - PRE_SOC12	POST_SOC14 - PRE_SOC14	POST_SOC16 - PRE_SOC16
Z	-2.581 ^b	-1.469 ^b	-2.676 ^b	-1.438 ^b
Asymp. Sig. (2-tailed)	.010	.142	.007	.150

Test Statistics ^a		
	POST_SOC17 - PRE_SOC17	POST_SOC19 - PRE_SOC19
Z	-1.358 ^b	-1.809 ^b
Asymp. Sig. (2-tailed)	.174	.070

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

Appendix G- Social Personal Relationship Scale PERSONAL Totals

NPar Tests

Notes		
Output Created		21-APR-2023 12:27:06
Comments		
Input	Active Dataset	DataSet1
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	34
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics for each test are based on all cases with valid data for the variable (s) used in that test.
Syntax	NPAR TESTS /WILCOXON=PRE_PERS2 PRE_PERS4 PRE_PERS6 PRE_PERS7 PRE_PERS8 PRE_PERS11 PRE_PERS13 PRE_PERS15 PRE_PERS18 PRE_PERS20 WITH POST_PERS2 POST_PERS4 POST_PERS6 POST_PERS7 POST_PERS8 POST_PERS11 POST_PERS13 POST_PERS15 POST_PERS18 POST_PERS20 (PAIRED) /MISSING ANALYSIS.	
Resources	Processor Time	00:00:00.02
	Elapsed Time	00:00:00.01
	Number of Cases Allowed ^a	125829

a. Based on availability of workspace memory.

Wilcoxon Signed Ranks Test

		N	Mean Rank	Sum of Ranks
POST_PERS2 - PRE_PERS2	Negative Ranks	2 ^a	5.00	10.00
	Positive Ranks	7 ^b	5.00	35.00
	Ties	8 ^c		
	Total	17		
POST_PERS4 - PRE_PERS4	Negative Ranks	2 ^d	5.50	11.00
	Positive Ranks	7 ^e	4.86	34.00
	Ties	8 ^f		
	Total	17		
POST_PERS6 - PRE_PERS6	Negative Ranks	0 ^g	.00	.00
	Positive Ranks	10 ^h	5.50	55.00
	Ties	7 ⁱ		
	Total	17		
POST_PERS7 - PRE_PERS7	Negative Ranks	4 ^j	6.38	25.50
	Positive Ranks	8 ^k	6.56	52.50
	Ties	5 ^l		
	Total	17		
POST_PERS8 - PRE_PERS8	Negative Ranks	1 ^m	10.00	10.00
	Positive Ranks	12 ⁿ	6.75	81.00
	Ties	4 ^o		
	Total	17		
POST_PERS11 - PRE_PERS11	Negative Ranks	3 ^p	5.00	15.00
	Positive Ranks	9 ^q	7.00	63.00
	Ties	5 ^r		
	Total	17		
POST_PERS13 - PRE_PERS13	Negative Ranks	0 ^s	.00	.00
	Positive Ranks	12 ^t	6.50	78.00
	Ties	5 ^u		
	Total	17		
POST_PERS15 - PRE_PERS15	Negative Ranks	2 ^v	6.50	13.00
	Positive Ranks	13 ^w	8.23	107.00
	Ties	2 ^x		
	Total	17		
POST_PERS18 - PRE_PERS18	Negative Ranks	1 ^y	2.00	2.00
	Positive Ranks	6 ^z	4.33	26.00
	Ties	10 ^{aa}		
	Total	17		

		N	Mean Rank	Sum of Ranks
POST_PERS20 - PRE_PERS20	Negative Ranks	0 ^{ab}	.00	.00
	Positive Ranks	8 ^{ac}	4.50	36.00
	Ties	9 ^{ad}		
	Total	17		

- a. POST_PERS2 < PRE_PERS2
- b. POST_PERS2 > PRE_PERS2
- c. POST_PERS2 = PRE_PERS2
- d. POST_PERS4 < PRE_PERS4
- e. POST_PERS4 > PRE_PERS4
- f. POST_PERS4 = PRE_PERS4
- g. POST_PERS6 < PRE_PERS6
- h. POST_PERS6 > PRE_PERS6
- i. POST_PERS6 = PRE_PERS6
- j. POST_PERS7 < PRE_PERS7
- k. POST_PERS7 > PRE_PERS7
- l. POST_PERS7 = PRE_PERS7
- m. POST_PERS8 < PRE_PERS8
- n. POST_PERS8 > PRE_PERS8
- o. POST_PERS8 = PRE_PERS8
- p. POST_PERS11 < PRE_PERS11
- q. POST_PERS11 > PRE_PERS11
- r. POST_PERS11 = PRE_PERS11
- s. POST_PERS13 < PRE_PERS13
- t. POST_PERS13 > PRE_PERS13
- u. POST_PERS13 = PRE_PERS13
- v. POST_PERS15 < PRE_PERS15
- w. POST_PERS15 > PRE_PERS15
- x. POST_PERS15 = PRE_PERS15
- y. POST_PERS18 < PRE_PERS18
- z. POST_PERS18 > PRE_PERS18
- aa. POST_PERS18 = PRE_PERS18
- ab. POST_PERS20 < PRE_PERS20
- ac. POST_PERS20 > PRE_PERS20
- ad. POST_PERS20 = PRE_PERS20

Test Statistics^a

	POST_PERS2 - PRE_PERS2	POST_PERS4 - PRE_PERS4	POST_PERS6 - PRE_PERS6	POST_PERS7 - PRE_PERS7
Z	-1.513 ^b	-1.408 ^b	-2.848 ^b	-1.112 ^b
Asymp. Sig. (2-tailed)	.130	.159	.004	.266

Test Statistics^a

	POST_PERS8 - PRE_PERS8	POST_PERS11 - PRE_PERS11	POST_PERS13 - PRE_PERS13	POST_PERS15 - PRE_PERS15
Z	-2.550 ^b	-1.977 ^b	-3.169 ^b	-2.839 ^b
Asymp. Sig. (2-tailed)	.011	.048	.002	.005

Test Statistics^a

	POST_PERS18 - PRE_PERS18	POST_PERS20 - PRE_PERS20
Z	-2.058 ^b	-2.585 ^b
Asymp. Sig. (2-tailed)	.040	.010

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

Appendix H- WHOQOL-BREF-26

Time: _____ Date: _____

I.D. number

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WHOQOL-BREF -ADULT

AGE: _____

ETHNICITY: _____

GENDER: _____

DIAGNOSIS: _____

This assessment asks how you feel about your quality of life, health, or other areas of your life. Please answer all the questions. If you are unsure about which response to give to a question, please choose the one that appears most appropriate. This can often be your first response.

Please read each question, assess your feelings, and circle the number on the scale for each question that gives the best answer for you.

		Very poor	Poor	Neither poor nor good	Good	Very good
1	How would you rate your quality of life? (comfort or satisfaction)	1	2	3	4	5
		Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied
2	How satisfied are you with your health?	1	2	3	4	5

The following questions ask about how much you have experienced certain things in the last two weeks.

		Not at all	A little	A moderate amount	Very much	Extremely
3	To what extent do you feel that physical pain prevents you from doing what you need to do?	1	2	3	4	5
4	How much do you need any medical treatment to function in your daily life?	1	2	3	4	5
5	How much do you enjoy life?	1	2	3	4	5

The following questions ask about how fully you experienced or were able to do certain things in the last two weeks.

6	To what extent do you feel your life to be meaningful?	1	2	3	4	5
7	How well are you able to concentrate?	1	2	3	4	5
8	How safe do you feel in your daily life?	1	2	3	4	5
9	How healthy is your physical environment?	1	2	3	4	5

		Not at all	A little	Moderately	Mostly	Completely
10	Do you have enough energy for everyday life?	1	2	3	4	5
11	Are you able to accept your appearance?	1	2	3	4	5
12	Have you enough money to meet your needs?	1	2	3	4	5
13	How available to you is the information that you need in your day-to-day life?	1	2	3	4	5
14	To what extent do you have the opportunity for leisure activities?	1	2	3	4	5
15	How well are you able to get around?	1	2	3	4	5

The following questions ask you to say how good or satisfied you have felt about various aspects of your life over the last two weeks.

		Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied
16	How satisfied are you with your sleep?	1	2	3	4	5
17	How satisfied are you with your ability to perform your daily living activities?	1	2	3	4	5
18	How satisfied are you with your capacity for work?	1	2	3	4	5
19	How satisfied are you with yourself?	1	2	3	4	5
20	How satisfied are you with your personal relationships?	1	2	3	4	5

The following questions ask you to say how good or satisfied you have felt about various aspects of your life over the last two weeks.

		Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied
--	--	----------------------	--------------	---	-----------	-------------------

21	How satisfied are you with your close intimate relationships?	1	2	3	4	5
22	How satisfied are you with the support you get from your friends?	1	2	3	4	5
23	How satisfied are you with the conditions of your living place?	1	2	3	4	5
24	How satisfied are you with your access to health services?	1	2	3	4	5
25	How satisfied are you with your transportation?	1	2	3	4	5
		Never	A little	Quite often	Very often	Always
26	How often do you have negative feelings such as blue mood, despair, anxiety, depression	1	2	3	4	5

Appendix I- WEMWBS Scale



Wellbeing Self-Assessment – ADULT

Date: _____

I.D. number

--	--	--	--

Role (Circle One): Volunteer Client Family

Below are some statements about feelings and thoughts. Please choose the option that best describes your experience of each over the last two weeks. Keep a note of your score on each statement and add them up to get an overall wellbeing score at the end.

Statement	None of the time	Rarely	Some of the time	Often	All of the time
I've been feeling optimistic about the future engagement in activities like this	1	2	3	4	5
I've been feeling useful	1	2	3	4	5
I've been feeling relaxed	1	2	3	4	5
I've been feeling interested in other people	1	2	3	4	5
I've had energy to spare	1	2	3	4	5
I've been dealing with problems well	1	2	3	4	5
I've been thinking clearly	1	2	3	4	5
I've been feeling good about myself	1	2	3	4	5
I've been feeling close to other people	1	2	3	4	5
I've been feeling confident	1	2	3	4	5
I've been able to make up my own mind about things	1	2	3	4	5
I've been feeling loved	1	2	3	4	5
I've been interested in new things	1	2	3	4	5
I've been feeling cheerful	1	2	3	4	5

Appendix J- Consent Form

ID # _____

AORS _____

LTRC _____



University of
Lethbridge

PARTICIPANT CONSENT FORM

Title of Study: Measuring Health-Quality of Life and Wellbeing for Individuals of All Abilities Through Participation in Adapted Recreation

Principal Investigator: Dr. Lyn Litchke

Research/Study Coordinator: Amanda Ervin

You are being asked to be in this study because you are over the age of 18 and have registered for an adapted recreation activity as an adult client, volunteer, or family/caregiver. The activity you selected may last a different amount of time (approximately 1 hour) depending on the activity you register for. Most of the activities will be in a group with other people interested in that activity.

You can do the activity you registered for regardless of if you do the research part described below.

We will ask you to fill out 2 scales before you start your first activity that will take about 15 minutes to complete. One is about your physical and mental health; one is about your social-emotional well-being. We will be there to help you if you need us to help clarify any of the questions. You can decide to not answer any questions you do not want to. At the end of the activity, we will ask all participants to fill out 2 of the same scales you did at the start plus a feedback scale about the activity experience. This will take about 15 minutes. On the feedback form, we ask you to fill out a section of demographics information. We may collect this same information as you provided it to the organization. You can consent or decline allowing us to collect this data from the organization on your behalf.

Before you make a decision one of the researchers will go over this form with you. You are encouraged to ask questions if you feel anything needs to be made clearer. You will be given a copy of this form for your records.

The purpose of this research study is to explore the impact of a variety of adapted recreation activities on health quality of life and well-being for persons (ages 8+) with physical, cognitive, and mental health challenges, as well as volunteers and families/caregivers 18+.

Here are the steps we will take today:

1. We will review this consent form with you verbally and ask you to sign if you agree to participate in the study. This will take 5 minutes.
2. Then you will fill out 2 scales that take 10 minutes to complete. They are the 1) WHOQOL-BREF-24 items, AND 2) Well-being Self-Assessment-14 items.
3. After the recreation activity you will fill out the same 2 scales plus a feedback scale. This will take 15 minutes.

- All the information and scale data from all participants in the study will be grouped together to report our results.

There are minimal risks related to this research.

- You may experience discomfort with filling out the scales and survey
- You may become frustrated with the frequency of the scales

It is not possible to know all of the risks that may happen in a study, but the researchers have taken all reasonable safeguards to minimize any known risks to a study participant. That is why we can modify all physical activities. If you feel you need support, we are able to inform management staff of your concerns. If you are a minor your emergency contact person as indicated on your intake form can be contacted.

Participation is voluntary. Being in this study is your choice. If you decide to be in the study, you can change your mind and stop being in the study at any time, and it will in no way affect the access to the recreational activity that you are entitled to.

You do not have to answer any scale questions that you are not comfortable with.

You can withdraw from the scales at any time. If you do not want to continue, just tell the researcher at the site. We will only use your data if you came to enough of the sessions meaning you came to 1-4 sessions. If you completed the scales and then decide to withdraw, you can contact Amanda Ervin at 403-393-0744 to have the scale data removed from the study.

You will not be paid to participate in this study.

To address privacy and confidentiality, we will do everything we can to make sure that this data is kept private. No data relating to this study that includes your name will be released outside of the researcher's office or published by the researchers. Sometimes, by law, we may have to release your information with your name so we cannot guarantee absolute privacy. Since the adapted recreation activities most likely take place in a group there are limits to privacy. Thus, we ask that you respect the privacy of others and do not reveal their names outside of the sessions. We will make every legal effort to make sure that your information is kept private.

After the study is done, we will still need to securely store your data that was collected as part of the study. We will keep data stored for 5 years after the end of the study.

If you have any questions about the research now or later, please contact Amanda Ervin at 403-393-0744. If you are interested in obtaining feedback on research findings can email Amanda Ervin at amanda.ervin@uleth.ca

This study has been reviewed and approved by the Human Participant Research Committee at the University of Lethbridge. If you have any questions regarding your rights as a research participant, you may contact the Office of Research Ethics at the University of Lethbridge at 403-329-2747 or research.services@uleth.ca. This office has no affiliation with the study investigators.

The study is being conducted/sponsored by the University of Lethbridge to cover the costs of doing this study.

I agree to take part in this study:
Signature of Research Participant _____
(Printed Name) _____
Date: _____
Signature of Researcher _____
Printed Name of Researcher _____

Appendix K- WHOQOL-BREF-26 Factor TOTALS

~~NPar~~ Tests

Notes		
Output Created		23-JUN-2023 13:28:36
Comments		
Input	Data	R:\LabStudents\amanda eryin\ex2_data.sav
	Active Dataset	DataSet2
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	11
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics for each test are based on all cases with valid data for the <u>variable</u> (s) used in that test.
Syntax	NPAR TESTS /WILCOXON=PRE_WHO_PHYS_TOT PRE_WHO_SOCIALTOT PRE_WHO_ENVIR_TOT PRE_WHO_PSYCH_TOT WITH POST_WHO_PHYS_TOT POST_WHO_SOCIALTOT POST_WHO_ENVIR_TOT POST_WHO_PSYCH_TOT (PAIRED) /MISSING ANALYSIS.	
Resources	Processor Time	00:00:00.02
	Elapsed Time	00:00:00.01
	Number of Cases Allowed ^a	241979

a. Based on availability of workspace memory.

[DataSet2] R:\LabStudents\amanda eryin\ex2_data.sav

Wilcoxon Signed Ranks Test

Ranks

		N	Mean Rank	Sum of Ranks
POST_WHO_PHYS_TOT - PRE_WHO_PHYS_TOT	Negative Ranks	0 ^a	.00	.00
	Positive Ranks	6 ^b	3.50	21.00
	Ties	4 ^c		
	Total	10		
POST_WHO_SOCIALTOT - PRE_WHO_SOCIALTOT	Negative Ranks	1 ^d	5.00	5.00
	Positive Ranks	7 ^e	4.43	31.00
	Ties	2 ^f		
	Total	10		
POST_WHO_ENVIR_TOT - PRE_WHO_ENVIR_TOT	Negative Ranks	1 ^g	1.00	1.00
	Positive Ranks	9 ^h	6.00	54.00
	Ties	0 ⁱ		
	Total	10		
POST_WHO_PSYCH_TOT - PRE_WHO_PSYCH_TOT	Negative Ranks	0 ^j	.00	.00
	Positive Ranks	8 ^k	4.50	36.00
	Ties	2 ^l		
	Total	10		

a. POST_WHO_PHYS_TOT < PRE_WHO_PHYS_TOT

b. POST_WHO_PHYS_TOT > PRE_WHO_PHYS_TOT

c. POST_WHO_PHYS_TOT = PRE_WHO_PHYS_TOT

d. POST_WHO_SOCIALTOT < PRE_WHO_SOCIALTOT

e. POST_WHO_SOCIALTOT > PRE_WHO_SOCIALTOT

f. POST_WHO_SOCIALTOT = PRE_WHO_SOCIALTOT

g. POST_WHO_ENVIR_TOT < PRE_WHO_ENVIR_TOT

h. POST_WHO_ENVIR_TOT > PRE_WHO_ENVIR_TOT

i. POST_WHO_ENVIR_TOT = PRE_WHO_ENVIR_TOT

j. POST_WHO_PSYCH_TOT < PRE_WHO_PSYCH_TOT

k. POST_WHO_PSYCH_TOT > PRE_WHO_PSYCH_TOT

l. POST_WHO_PSYCH_TOT = PRE_WHO_PSYCH_TOT

Test Statistics^a

	POST_WHO_P HYS_TOT - PRE_WHO_PH YS_TOT	POST_WHO_S OCIALTOT - PRE_WHO SO CIALTOT	POST_WHO_E NVIR_TOT - PRE_WHO EN VIR_TOT	POST_WHO_P SYCH_TOT - PRE_WHO PS YCH_TOT
Z	-2.201 ^b	-1.829 ^b	-2.705 ^b	-2.521 ^b
Asymp. Sig. (2-tailed)	.028	.067	.007	.012

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

Appendix L- WHOQOL-BREF-26 PHYSICAL FACTOR Totals

NPar Tests

Output Created		23-JUN-2023 14:13:40
Comments		
Input	Data	R:\LabStudents\amanda eryin\ex2_data.sav
	Active Dataset	DataSet2
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	11
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics for each test are based on all cases with valid data for the <u>variable</u> (s) used in that test.

N
o
t
e
s

Notes

Syntax		NPAR TESTS /WILCOXON=PRE_WHO3 PRE_WHO4 PRE_WHO10 PRE_WHO15 PRE_WHO16 PRE_WHO17 PRE_WHO18 WITH POST_WHO3 POST_WHO4 POST_WHO10 POST_WHO15 POST_WHO16 POST_WHO17 POST_WHO18 (PAIRED)...
Resources	Processor Time	00:00:00.02
	Elapsed Time	00:00:00.02
	Number of Cases Allowed ^a	165564

a. Based on availability of workspace memory.

Wilcoxon Signed Ranks Test

Ranks

		N	Mean Rank	Sum of Ranks
POST_WHO3 - PRE_WHO3	Negative Ranks	6 ^a	3.50	21.00
	Positive Ranks	0 ^b	.00	.00
	Ties	4 ^c		
	Total	10		
POST_WHO4 - PRE_WHO4	Negative Ranks	6 ^d	3.50	21.00
	Positive Ranks	0 ^e	.00	.00
	Ties	4 ^f		
	Total	10		
POST_WHO10 - PRE_WHO10	Negative Ranks	1 ^g	3.00	3.00
	Positive Ranks	5 ^h	3.60	18.00
	Ties	4 ⁱ		
	Total	10		
POST_WHO15 - PRE_WHO15	Negative Ranks	0 ^j	.00	.00
	Positive Ranks	4 ^k	2.50	10.00
	Ties	6 ^l		
	Total	10		
POST_WHO16 - PRE_WHO16	Negative Ranks	1 ^m	4.00	4.00
	Positive Ranks	7 ⁿ	4.57	32.00

		N	Mean Rank	Sum of Ranks
	Ties	2 ^a		
	Total	10		
	Negative Ranks	0 ^b	.00	.00
	Positive Ranks	5 ^d	3.00	15.00
POST_WHO17 - PRE_WHO17	Ties	5 ^c		
	Total	10		
	Negative Ranks	3 ^b	3.50	10.50
	Positive Ranks	5 ^d	5.10	25.50
POST_WHO18 - PRE_WHO18	Ties	2 ^a		
	Total	10		

- a. POST_WHO3 < PRE_WHO3
- b. POST_WHO3 > PRE_WHO3
- c. POST_WHO3 = PRE_WHO3
- d. POST_WHO4 < PRE_WHO4
- e. POST_WHO4 > PRE_WHO4
- f. POST_WHO4 = PRE_WHO4
- g. POST_WHO10 < PRE_WHO10
- h. POST_WHO10 > PRE_WHO10
- i. POST_WHO10 = PRE_WHO10
- j. POST_WHO15 < PRE_WHO15
- k. POST_WHO15 > PRE_WHO15
- l. POST_WHO15 = PRE_WHO15
- m. POST_WHO16 < PRE_WHO16
- n. POST_WHO16 > PRE_WHO16
- o. POST_WHO16 = PRE_WHO16
- p. POST_WHO17 < PRE_WHO17
- q. POST_WHO17 > PRE_WHO17
- r. POST_WHO17 = PRE_WHO17
- s. POST_WHO18 < PRE_WHO18
- t. POST_WHO18 > PRE_WHO18
- u. POST_WHO18 = PRE_WHO18

Test Statistics ^a				
	POST_WHO3 - PRE_WHO3	POST_WHO4 - PRE_WHO4	POST_WHO10 - PRE_WHO10	POST_WHO15 - PRE_WHO15
Z	-2.232 ^b	-2.214 ^b	-1.667 ^c	-1.890 ^c
Asymp. Sig. (2-tailed)	.026	.027	.096	.059

Test Statistics ^a			
	POST_WHO16 - PRE_WHO16	POST_WHO17 - PRE_WHO17	POST_WHO18 - PRE_WHO18
Z	-2.111 ^c	-2.060 ^c	-1.098 ^c
Asymp. Sig. (2-tailed)	.035	.039	.272

a. Wilcoxon Signed Ranks Test

b. Based on positive ranks.

c. Based on negative ranks.

Appendix M- WHOQOL-BREF-26 PSYCHOLOGICAL FACTOR Totals

NPar Tests

Notes

Output Created		23-JUN-2023 14:16:17
Comments		
Input	Data	R:\LabStudents\amanda eryin\ex2_data.sav
	Active Dataset	DataSet2
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	11
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics for each test are based on all cases with valid data for the <u>variable</u> (s) used in that test.

Syntax		NPAR TESTS /WILCOXON=PRE_WHO5 PRE_WHO6 PRE_WHO7 PRE_WHO11 PRE_WHO19 PRE_WHO26 WITH POST_WHO5 POST_WHO6 POST_WHO7 POST_WHO11 POST_WHO19 POST_WHO26 (PAIRED)...
Resources	Processor Time	00:00:00.02
	Elapsed Time	00:00:00.02
	Number of Cases Allowed ^a	185042

a. Based on availability of workspace memory.

Wilcoxon Signed Ranks Test

Ranks

		N	Mean Rank	Sum of Ranks
POST_WHO5 - PRE_WHO5	Negative Ranks	0 ^a	.00	.00
	Positive Ranks	6 ^b	3.50	21.00
	Ties	4 ^c		
	Total	10		
POST_WHO6 - PRE_WHO6	Negative Ranks	1 ^d	5.00	5.00
	Positive Ranks	4 ^e	2.50	10.00
	Ties	5 ^f		
	Total	10		
POST_WHO7 - PRE_WHO7	Negative Ranks	0 ^g	.00	.00
	Positive Ranks	8 ^h	4.50	36.00
	Ties	2 ⁱ		
	Total	10		
POST_WHO11 - PRE_WHO11	Negative Ranks	1 ^j	2.00	2.00
	Positive Ranks	4 ^k	3.25	13.00
	Ties	5 ^l		
	Total	10		
POST_WHO19 - PRE_WHO19	Negative Ranks	1 ^m	2.00	2.00
	Positive Ranks	4 ⁿ	3.25	13.00

		N	Mean Rank	Sum of Ranks
POST_WHO26 - PRE_WHO26	Ties	5 ^d		
	Total	10		
	Negative Ranks	7 ^e	4.00	28.00
	Positive Ranks	0 ^f	.00	.00
	Ties	3 ^f		
	Total	10		

- a. POST_WHO5 < PRE_WHO5
- b. POST_WHO5 > PRE_WHO5
- c. POST_WHO5 = PRE_WHO5
- d. POST_WHO6 < PRE_WHO6
- e. POST_WHO6 > PRE_WHO6
- f. POST_WHO6 = PRE_WHO6
- g. POST_WHO7 < PRE_WHO7
- h. POST_WHO7 > PRE_WHO7
- i. POST_WHO7 = PRE_WHO7
- j. POST_WHO11 < PRE_WHO11
- k. POST_WHO11 > PRE_WHO11
- l. POST_WHO11 = PRE_WHO11
- m. POST_WHO19 < PRE_WHO19
- n. POST_WHO19 > PRE_WHO19
- o. POST_WHO19 = PRE_WHO19
- p. POST_WHO26 < PRE_WHO26
- q. POST_WHO26 > PRE_WHO26
- r. POST_WHO26 = PRE_WHO26

Test Statistics^a

	POST_WHO5 - PRE_WHO5	POST_WHO6 - PRE_WHO6	POST_WHO7 - PRE_WHO7	POST_WHO11 - PRE_WHO11
Z	-2.271 ^b	-.707 ^b	-2.636 ^b	-1.518 ^b
Asymp. Sig. (2-tailed)	.023	.480	.008	.129

Test Statistics^a

	POST_WHO19 - PRE_WHO19	POST_WHO26 - PRE_WHO26
Z	-1.518 ^b	-2.414 ^c
Asymp. Sig. (2-tailed)	.129	.016

Appendix N- WHOQOL-BREF-26 SOCIAL FACTOR Totals

NPar Tests

Output Created		23-JUN-2023 14:21:50
Comments		
Input	Data	R:\LabStudents\amanda erwin\ex2_data.sav
	Active Dataset	DataSet2
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	11
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics for each test are based on all cases with valid data for the <u>variable</u> (s) used in that test.
Syntax		NPAR TESTS /WILCOXON=PRE_WHO2 0 PRE_WHO21 PRE_WHO22 WITH POST_WHO20 POST_WHO21 POST_WHO22 (PAIRED) /MISSING ANALYSIS.
Resources	Processor Time	00:00:00.02
	Elapsed Time	00:00:00.02
	Number of Cases Allowed ^a	285975

a. Based on availability of workspace memory.

Wilcoxon Signed Ranks Test

		N	Mean Rank	Sum of Ranks
POST_WHO20 - PRE_WHO20	Negative Ranks	0 ^a	.00	.00
	Positive Ranks	7 ^b	4.00	28.00
	Ties	3 ^c		
	Total	10		
POST_WHO21 - PRE_WHO21	Negative Ranks	2 ^d	4.50	9.00
	Positive Ranks	7 ^e	5.14	36.00
	Ties	1 ^f		
	Total	10		
POST_WHO22 - PRE_WHO22	Negative Ranks	2 ^g	3.50	7.00
	Positive Ranks	4 ^h	3.50	14.00
	Ties	4 ⁱ		
	Total	10		

a. POST_WHO20 < PRE_WHO20

b. POST_WHO20 > PRE_WHO20

c. POST_WHO20 = PRE_WHO20

d. POST_WHO21 < PRE_WHO21

e. POST_WHO21 > PRE_WHO21

f. POST_WHO21 = PRE_WHO21

g. POST_WHO22 < PRE_WHO22

h. POST_WHO22 > PRE_WHO22

i. POST_WHO22 = PRE_WHO22

Test Statistics^a

	POST_WHO20 - PRE_WHO20	POST_WHO21 - PRE_WHO21	POST_WHO22 - PRE_WHO22
Z	-2.401 ^b	-1.630 ^b	-.816 ^b
Asymp. Sig. (2-tailed)	.016	.103	.414

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

Appendix O- WHOQOL-BREF-26 ENVIRONMENTAL FACTOR Totals

NPar Tests

Notes		
Output Created		23-JUN-2023 14:19:45
Comments		
Input	Data	R:\LabStudents\amanda eryin\ex2_data.sav
	Active Dataset	DataSet2
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	11
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics for each test are based on all cases with valid data for the <u>variable</u> (s) used in that test.
Syntax		NPAR TESTS /WILCOXON=PRE_WHO8 PRE_WHO9 PRE_WHO12 PRE_WHO13 PRE_WHO14 PRE_WHO23 PRE_WHO24 PRE_WHO25 WITH POST_WHO8 POST_WHO9 POST_WHO12 POST_WHO13 POST_WHO14 POST_WHO23 POST_WHO24 POST_WHO25 (PAIRED)...
Resources	Processor Time	00:00:00.00
	Elapsed Time	00:00:00.01
	Number of Cases Allowed ^a	149796

a. Based on availability of workspace memory.

Wilcoxon Signed Ranks Test

Ranks

		N	Mean Rank	Sum of Ranks
POST_WHO8 - PRE_WHO8	Negative Ranks	0 ^a	.00	.00
	Positive Ranks	7 ^b	4.00	28.00
	Ties	3 ^c		
	Total	10		
POST_WHO9 - PRE_WHO9	Negative Ranks	0 ^d	.00	.00
	Positive Ranks	6 ^c	3.50	21.00
	Ties	4 ^e		
	Total	10		
POST_WHO12 - PRE_WHO12	Negative Ranks	0 ^b	.00	.00
	Positive Ranks	9 ^b	5.00	45.00
	Ties	1 ^f		
	Total	10		
POST_WHO13 - PRE_WHO13	Negative Ranks	0 ^j	.00	.00
	Positive Ranks	7 ^k	4.00	28.00
	Ties	3 ^l		
	Total	10		
POST_WHO14 - PRE_WHO14	Negative Ranks	3 ^m	2.50	7.50
	Positive Ranks	3 ⁿ	4.50	13.50
	Ties	4 ^o		
	Total	10		
POST_WHO23 - PRE_WHO23	Negative Ranks	1 ^p	3.00	3.00
	Positive Ranks	4 ^q	3.00	12.00
	Ties	5 ^r		
	Total	10		
POST_WHO24 - PRE_WHO24	Negative Ranks	4 ^s	4.75	19.00
	Positive Ranks	3 ^t	3.00	9.00
	Ties	3 ^u		
	Total	10		
POST_WHO25 - PRE_WHO25	Negative Ranks	0 ^v	.00	.00
	Positive Ranks	3 ^w	2.00	6.00
	Ties	7 ^x		
	Total	10		

a. POST_WHO8 < PRE_WHO8

b. POST_WHO8 > PRE_WHO8

c. POST_WHO8 = PRE_WHO8

d. POST_WHO9 < PRE_WHO9

- e. POST_WHO9 > PRE_WHO9
- f. POST_WHO9 = PRE_WHO9
- g. POST_WHO12 < PRE_WHO12
- h. POST_WHO12 > PRE_WHO12
- i. POST_WHO12 = PRE_WHO12
- j. POST_WHO13 < PRE_WHO13
- k. POST_WHO13 > PRE_WHO13
- l. POST_WHO13 = PRE_WHO13
- m. POST_WHO14 < PRE_WHO14
- n. POST_WHO14 > PRE_WHO14
- o. POST_WHO14 = PRE_WHO14
- p. POST_WHO23 < PRE_WHO23
- q. POST_WHO23 > PRE_WHO23
- r. POST_WHO23 = PRE_WHO23
- s. POST_WHO24 < PRE_WHO24
- t. POST_WHO24 > PRE_WHO24
- u. POST_WHO24 = PRE_WHO24
- v. POST_WHO25 < PRE_WHO25
- w. POST_WHO25 > PRE_WHO25
- x. POST_WHO25 = PRE_WHO25

Test Statistics ^a				
	POST_WHO8 - PRE_WHO8	POST_WHO9 - PRE_WHO9	POST_WHO12 - PRE_WHO12	POST_WHO13 - PRE_WHO13
Z	-2.646 ^b	-2.449 ^b	-2.754 ^b	-2.646 ^b
Asymp. Sig. (2-tailed)	.008	.014	.006	.008

Test Statistics ^a				
	POST_WHO14 - PRE_WHO14	POST_WHO23 - PRE_WHO23	POST_WHO24 - PRE_WHO24	POST_WHO25 - PRE_WHO25
Z	-.647 ^b	-1.342 ^b	-.879 ^c	-1.633 ^b
Asymp. Sig. (2-tailed)	.518	.180	.380	.102

- a. Wilcoxon Signed Ranks Test
- b. Based on negative ranks.
- c. Based on positive ranks.

Appendix P- WHOQOL-BREF-26 Questions 1 & 2 TOTALS

NPar Tests

Notes

Output Created		26-JUN-2023 21:55:12
Comments		
Input	Active Dataset	DataSet0
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	10
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics for each test are based on all cases with valid data for the <u>variable</u> (s) used in that test.
Syntax		NPAR TESTS /WILCOXON=PREA PREB WITH POSTA POSTB (PAIRED) /MISSING ANALYSIS.
Resources	Processor Time	00:00:00.02
	Elapsed Time	00:00:00.03
	Number of Cases Allowed ^a	349525

a. Based on availability of workspace memory.

[DataSet0]

Wilcoxon Signed Ranks Test

Ranks

		N	Mean Rank	Sum of Ranks
POSTA - PREA	Negative Ranks	0 ^a	.00	.00
	Positive Ranks	6 ^b	3.50	21.00
	Ties	4 ^c		
	Total	10		
POSTB - PREB	Negative Ranks	0 ^d	.00	.00
	Positive Ranks	7 ^e	4.00	28.00
	Ties	3 ^f		
	Total	10		

a. POSTA < PREA

b. POSTA > PREA

c. POSTA = PREA

d. POSTB < PREB

e. POSTB > PREB

f. POSTB = PREB

Test Statistics^a

	POSTA - PREA	POSTB - PREB
Z	-2.271 ^b	-2.460 ^b
Asymp. Sig. (2-tailed)	.023	.014

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

Appendix Q- WEMWBS FACTOR totals

NPar Tests

Notes

Output Created		23-JUN-2023 14:06:59
Comments		
Input	Data	R:\LabStudents\amanda ervin\ex2_data.sav
	Active Dataset	DataSet2
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	11
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics for each test are based on all cases with valid data for the <u>variable</u> (s) used in that test.

Notes							
Syntax	<pre> NPAR TESTS /WILCOXON=PRE_WEMW BS1 PRE_WEMWBS2 PRE_WEMWBS3 PRE_WEMWBS4 PRE_WEMWBS5 PRE_WEMWBS6 PRE_WEMWBS7 PRE_WEMWBS8 PRE_WEMWBS9 PRE_WEMWBS10 PRE_WEMWBS11 PRE_WEMWBS12 PRE_WEMWBS13 PRE_WEMWBS14 WITH POST_WEMWBS1 POST_WEMWBS2 POST_WEMWBS3 POST_WEMWBS4 POST_WEMWBS5 POST_WEMWBS6 POST_WEMWBS7 POST_WEMWBS8 POST_WEMWBS9 POST_WEMWBS10 POST_WEMWBS11 POST_WEMWBS12 POST_WEMWBS13 POST_WEMWBS14 (PAIREd) /MISSING ANALYSIS. </pre>						
Resources	<table> <tr> <td>Processor Time</td><td>00:00:00.03</td></tr> <tr> <td>Elapsed Time</td><td>00:00:00.02</td></tr> <tr> <td>Number of Cases Allowed^a</td><td>95325</td></tr> </table>	Processor Time	00:00:00.03	Elapsed Time	00:00:00.02	Number of Cases Allowed ^a	95325
Processor Time	00:00:00.03						
Elapsed Time	00:00:00.02						
Number of Cases Allowed ^a	95325						

a. Based on availability of workspace memory.

Wilcoxon Signed Ranks Test

		Ranks		
		N	Mean Rank	Sum of Ranks
POST_WEMWBS1 - PRE_WEMWBS1	Negative Ranks	2 ^a	3.50	7.00
	Positive Ranks	5 ^b	4.20	21.00
	Ties	3 ^c		
	Total	10		
POST_WEMWBS2 - PRE_WEMWBS2	Negative Ranks	1 ^d	2.00	2.00
	Positive Ranks	4 ^e	3.25	13.00
	Ties	5 ^f		
	Total	10		
POST_WEMWBS3 - PRE_WEMWBS3	Negative Ranks	0 ^g	.00	.00
	Positive Ranks	7 ^h	4.00	28.00
	Ties	3 ⁱ		
	Total	10		
POST_WEMWBS4 - PRE_WEMWBS4	Negative Ranks	1 ^j	3.50	3.50
	Positive Ranks	8 ^k	5.19	41.50
	Ties	1 ^l		
	Total	10		
POST_WEMWBS5 - PRE_WEMWBS5	Negative Ranks	0 ^m	.00	.00
	Positive Ranks	7 ⁿ	4.00	28.00
	Ties	3 ^o		
	Total	10		
POST_WEMWBS6 - PRE_WEMWBS6	Negative Ranks	3 ^p	5.00	15.00
	Positive Ranks	5 ^q	4.20	21.00
	Ties	2 ^r		
	Total	10		
POST_WEMWBS7 - PRE_WEMWBS7	Negative Ranks	0 ^s	.00	.00
	Positive Ranks	7 ^t	4.00	28.00
	Ties	3 ^u		
	Total	10		
POST_WEMWBS8 - PRE_WEMWBS8	Negative Ranks	0 ^v	.00	.00
	Positive Ranks	8 ^w	4.50	36.00
	Ties	2 ^x		
	Total	10		
POST_WEMWBS9 - PRE_WEMWBS9	Negative Ranks	0 ^y	.00	.00
	Positive Ranks	5 ^z	3.00	15.00
	Ties	5 ^{aa}		
	Total	10		

Ranks		N	Mean Rank	Sum of Ranks
POST_WEMWBS10 - PRE_WEMWBS10	Negative Ranks	0 ^{ab}	.00	.00
	Positive Ranks	9 ^{ac}	5.00	45.00
	Ties	1 ^{ad}		
	Total	10		
POST_WEMWBS11 - PRE_WEMWBS11	Negative Ranks	0 ^{ac}	.00	.00
	Positive Ranks	6 ^{cf}	3.50	21.00
	Ties	4 ^{ag}		
	Total	10		
POST_WEMWBS12 - PRE_WEMWBS12	Negative Ranks	1 ^{ah}	2.50	2.50
	Positive Ranks	4 ^{ai}	3.13	12.50
	Ties	5 ^{aj}		
	Total	10		
POST_WEMWBS13 - PRE_WEMWBS13	Negative Ranks	0 ^{ak}	.00	.00
	Positive Ranks	5 ^{al}	3.00	15.00
	Ties	5 ^{am}		
	Total	10		
POST_WEMWBS14 - PRE_WEMWBS14	Negative Ranks	1 ^{an}	3.00	3.00
	Positive Ranks	6 ^{ao}	4.17	25.00
	Ties	3 ^{ap}		
	Total	10		

- a. POST_WEMWBS1 < PRE_WEMWBS1
- b. POST_WEMWBS1 > PRE_WEMWBS1
- c. POST_WEMWBS1 = PRE_WEMWBS1
- d. POST_WEMWBS2 < PRE_WEMWBS2
- e. POST_WEMWBS2 > PRE_WEMWBS2
- f. POST_WEMWBS2 = PRE_WEMWBS2
- g. POST_WEMWBS3 < PRE_WEMWBS3
- h. POST_WEMWBS3 > PRE_WEMWBS3
- i. POST_WEMWBS3 = PRE_WEMWBS3
- j. POST_WEMWBS4 < PRE_WEMWBS4
- k. POST_WEMWBS4 > PRE_WEMWBS4
- l. POST_WEMWBS4 = PRE_WEMWBS4
- m. POST_WEMWBS5 < PRE_WEMWBS5
- n. POST_WEMWBS5 > PRE_WEMWBS5
- o. POST_WEMWBS5 = PRE_WEMWBS5
- p. POST_WEMWBS6 < PRE_WEMWBS6
- q. POST_WEMWBS6 > PRE_WEMWBS6

r. POST_WEMWBS6 = PRE_WEMWBS6
 s. POST_WEMWBS7 < PRE_WEMWBS7
 t. POST_WEMWBS7 > PRE_WEMWBS7
 u. POST_WEMWBS7 = PRE_WEMWBS7
 v. POST_WEMWBS8 < PRE_WEMWBS8
 w. POST_WEMWBS8 > PRE_WEMWBS8
 x. POST_WEMWBS8 = PRE_WEMWBS8
 y. POST_WEMWBS9 < PRE_WEMWBS9
 z. POST_WEMWBS9 > PRE_WEMWBS9
 aa. POST_WEMWBS9 = PRE_WEMWBS9 ab.
 POST_WEMWBS10 < PRE_WEMWBS10 ac.
 POST_WEMWBS10 > PRE_WEMWBS10 ad.
 POST_WEMWBS10 = PRE_WEMWBS10 ae.
 POST_WEMWBS11 < PRE_WEMWBS11 af.
 POST_WEMWBS11 > PRE_WEMWBS11 ag.
 POST_WEMWBS11 = PRE_WEMWBS11 ah.
 POST_WEMWBS12 < PRE_WEMWBS12 ai.
 POST_WEMWBS12 > PRE_WEMWBS12 aj.
 POST_WEMWBS12 = PRE_WEMWBS12 ak.
 POST_WEMWBS13 < PRE_WEMWBS13 al.
 POST_WEMWBS13 > PRE_WEMWBS13 am.
 POST_WEMWBS13 = PRE_WEMWBS13 an.
 POST_WEMWBS14 < PRE_WEMWBS14 ao.
 POST_WEMWBS14 > PRE_WEMWBS14 ap.
 POST_WEMWBS14 = PRE_WEMWBS14

Test Statistics^a

	POST_WEMWBS1 - PRE_WEMWBS1	POST_WEMWBS2 - PRE_WEMWBS2	POST_WEMWBS3 - PRE_WEMWBS3	POST_WEMWBS4 - PRE_WEMWBS4
Z	-1.265 ^b	-1.518 ^b	-2.530 ^b	-2.326 ^b
Asymp. Sig. (2-tailed)	.206	.129	.011	.020

Test Statistics^a

	POST_WEMWBS5 - PRE_WEMWBS5	POST_WEMWBS6 - PRE_WEMWBS6	POST_WEMWBS7 - PRE_WEMWBS7	POST_WEMWBS8 - PRE_WEMWBS8
Z	-2.414 ^b	-.439 ^b	-2.530 ^b	-2.588 ^b
Asymp. Sig. (2-tailed)	.016	.660	.011	.010

Test Statistics^a

	POST_WEMWB S9 - PRE_WEMWBS 9	POST_WEMWB S10 - PRE_WEMWBS 10	POST_WEMWB S11 - PRE_WEMWBS 11	POST_WEMWB S12 - PRE_WEMWBS 12
Z	-2.041 ^b	-2.887 ^b	-2.271 ^b	-1.414 ^b
Asymp. Sig. (2-tailed)	.041	.004	.023	.157

Test Statistics^a

	POST_WEMWB S13 - PRE_WEMWBS 13	POST_WEMWB S14 - PRE_WEMWBS 14
Z	-2.236 ^b	-1.933 ^b
Asymp. Sig. (2-tailed)	.025	.053

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

Appendix R- WEMWBS PRE and POST totals

NPar Tests

Notes		
Output Created		23-JUN-2023 13:44:21
Comments		
Input	Data	R:\LabStudents\amanda erwin\ex2_data.sav
	Active Dataset	DataSet2
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	11
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics for each test are based on all cases with valid data for the <u>variable</u> (s) used in that test.
Syntax		NPARTESTS /WILCOXON=PRE_WEMWBS_TOT WITH POST_WEMWBS_TOT (PAIRED) /MISSING ANALYSIS.
Resources	Processor Time	00:00:00.02
	Elapsed Time	00:00:00.01
	Number of Cases Allowed ^a	449389

a. Based on availability of workspace memory.

Wilcoxon Signed Ranks Test

		N	Mean Rank	Sum of Ranks
POST_WEMWBS_TOT - PRE_WEMWBS_TOT	Negative Ranks	0 ^a	.00	.00
	Positive Ranks	9 ^b	5.00	45.00
	Ties	1 ^c		
	Total	10		

- a. POST_WEMWBS_TOT < PRE_WEMWBS_TOT
b. POST_WEMWBS_TOT > PRE_WEMWBS_TOT
c. POST_WEMWBS_TOT = PRE_WEMWBS_TOT

Test Statistics^a

	POST_WEMWBS_TOT - PRE_WEMWBS_TOT
Z	-2.666 ^b
Asymp. Sig. (2-tailed)	.008

- a. Wilcoxon Signed Ranks Test
b. Based on negative ranks.