2023

How Adaptive Sports Promote Occupational Engagement And Quality Of Life For Individuals With Disabilities In A Rural Community

Michael Helgeson

HOW ADAPTIVE SPORTS PROMOTE OCCUPATIONAL ENGAGEMENT AND QUALITY OF LIFE FOR INDIVIDUALS WITH DISABILITIES IN A RURAL COMMUNITY

by

Michael Helgeson, OTDS

Advisor: Jane Loscheider, OTD, OTR/L, ATP, CLT

A Scholarly Project

Submitted to the Occupational Therapy Department of the

University of North Dakota

in partial fulfillment of the requirements for the degree of

Occupational Therapy Doctorate

Grand Forks, North Dakota

May 2023

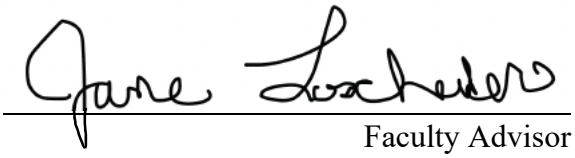
For questions regarding the product, please use the following contact information for correspondence:

Michael Helgeson

michaellarshelgeson@gmail.com

APPROVAL

This scholarly project, submitted by Michael Helgeson in partial fulfillment of the requirement for the Degree of Occupational Therapy Doctorate from the University of North Dakota, has been read by the Faculty Advisor under whom the work has been done and is hereby approved.



Faculty Advisor

4/6/2023

Date

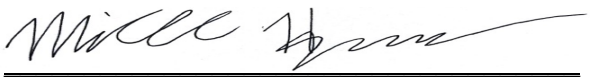
PERMISSION

Title: How Adaptive Sports Promote Occupational Engagement and Quality of Life For Individuals with Disabilities in Rural Community

Department: Occupational Therapy

Degree: Occupational Therapy Doctorate

In presenting this scholarly project in partial fulfillment of the requirements for a graduate degree from the University of North Dakota, I agree that the library of this University shall make it freely available for inspection. I further agree that permission for extensive copying for scholarly purposes may be granted by the professor who supervised my project or, in their absence, by the Chairperson of the department or the Dean of the School of Graduate Studies. It is understood that any copying or publication or other use of this scholarly project or part thereof for financial gain shall not be allowed without my written permission. It is also understood that due recognition shall be given to me and the University of North Dakota in any scholarly use which may be made of any material in my scholarly project.



Signature

03/27/2023

Date

Table of Contents

ACKNOWLEDGEMENTS

I wish to express my sincerest gratitude to my advisor, site mentor, fiancé, parents, brothers, classmates, and the entire UND Occupational Therapy faculty for their continued support as I journeyed through graduate school. It was quite a ride, but I would not have wanted it any other way or wanted to share it with anyone else. Cheers!

ABSTRACT

Health management, play, leisure, and social participation are all valued occupations related to sports. However, individuals with physical disabilities face many barriers that inhibit them from engaging in sports, depriving them of these occupations. Some of these barriers include a lack of adaptive sports resources, adaptive equipment, adaptive sports programs in rural communities, and knowledge of how to include individuals with disabilities (Obradovic et al., 2021). The purpose of this scholarly project was to address these barriers through the development of adaptive sports programs; hereby, increasing occupational engagement, quality of life (QOL), and life satisfaction for individuals with disabilities. To fulfill this purpose, an adaptive sports manual was developed to guide the implementation of adaptive sports programs at rural community facilities. The author of the scholarly project partnered with a YMCA in rural Minnesota to develop this manual and accomplish this goal. Through this partnership, an extensive literature review, community outreach efforts, and interprofessional collaboration were completed to create the current product of an adaptive sports manual. The final manual includes descriptions of three adaptive sports, modified rules, space for each sport, equipment needed, safety precautions, adaptive exercise recommendations, coach/officials training information, funding sources, an athlete registration form, a consent and release form, a program evaluation survey, advertisement poster templates, and a brief handout including adaptive sports resources and links. It is anticipated that the manual will increase adaptive sports opportunities to help improve occupational engagement, QOL, and life satisfaction for individuals with physical disabilities.

Chapter I

Introduction

In the United States (US), 61 million adults, or 26% of the adult population have some type of disability, mobility impairments being the highest functional disability (Centers for Disease Control and Prevention, 2020). Within Alexandria, Minnesota there are 3,108 individuals, or 12.2% of the community who have a disability, ambulatory difficulties being the highest (United States Census Bureau, 2021). Furthermore, individuals with disabilities, compared to the general population, have diminished health and QOL due to their disability and limited occupational engagement (Yazicioglu et al., 2012). The overarching problem is that individuals with disabilities have decreased opportunities for occupational engagement due to the barriers resulting from their disabilities. This problem leads to the purpose of this scholarly project.

The purpose of this project is to increase occupational engagement, QOL, and life satisfaction for individuals with disabilities through adaptive sports. Adaptive sports are very similar to standard sports, but they are sports that are altered or designed to accommodate the needs of people with disabilities (Rayes et al., 2022). The rules, equipment, and environment can all be adapted to help individuals of any ability level compete in sports. Adaptive sports can be modified for individuals with different types of physical disabilities including spinal cord injuries (SCIs), cerebral palsy (CP), muscular dystrophy, deafness, blindness, and many more impairments (Tow et al., 2020). There are several reasons why adaptive sports can be pursued including recreation, leisure, or competition, and it is shown that whatever the purpose, engagement in adaptive sports leads to increased physical and psychosocial benefits for

individuals with disabilities (Rayes et al., 2022). The benefits of adaptive sports emphasize the development of an adaptive sports resource manual.

Product Overview

The product of this scholarly project will comprise of an adaptive sports resource manual and a supplemental presentation to aid YMCA staff in successfully implementing adaptive sports programs within their facility. The adaptive sports manual is titled *YMCA Resource Manual for the Implementation of Adaptive Sports Programs*. The manual describes three adaptive sports including wheelchair basketball, seated volleyball, and adaptive weightlifting/exercise. It expands upon the rules, environment, equipment, and safety precautions for each sport. The resource manual also includes adaptive exercise recommendations for YMCA facilities, training, registration, and a consent form, an evaluation survey, and other necessary resources needed to implement adaptive sports programs. The supplemental presentation covers the same information that is included in the product manual to ensure YMCA staff can develop and implement adaptive sports programs in their rural communities. The adaptive sports manual and supplemental presentation are based on goals and learning objectives that were developed at the beginning of the scholarly project process.

Project Goals and Objectives

Goals

- Analyze the art and science of occupational therapy related to adaptive sports and program development including the process, reasoning, client/practitioner relationship, stakeholder relationships, and use of evidence to support and inform practice.
- Evaluate barriers and supports to adaptive sports for individuals with disabilities and advocate for them to increase their QOL and occupational engagement.

- Create a program plan related to adaptive sports within a rural community as it relates to the needs of clients/populations and their occupation of sports.

Objectives

- Compile and analyze the needs for adaptive sports programs based on successfully established programs.
- Create a final adaptive sports program manual for a rural community facility to implement in the future.

Theoretical Framework

While researching adaptive sports literature and developing the product, the Ecology of Human Performance (EHP; Dunn et al., 1994; Dunn, 2017) framework was used to analyze the performance range of individuals with disabilities. EHP consists of three main components, the person, context, and task (Dunn et al., 1994). An individual's performance range is based upon the interaction between these components (Dunn et al., 1994). A person with ideal skills and abilities, a favoring environment, and an attainable task will have a large performance range which allows them to engage in their desired occupations (Dunn et al., 1994). Someone with a physical disability often has a smaller performance range due to their personal characteristics and restricting context. This smaller performance range can limit them from engaging in their desired tasks or occupations of sports. The EHP framework also describes five intervention approaches including modify/adapt, establish/restore, alter, prevent, and create (Dunn et al., 1994). These approaches can be used to increase occupational engagement by expanding the performance range of individuals with disabilities (Dunn et al., 1994). EHP was invaluable during the development of the product and overall scholarly project. Since EHP is an occupation-based framework, it sheds light on why this project is so important to occupational therapy practice.

Significance for Occupational Therapy Practice

The Centers for Disease Control and Prevention (2020) indicates that a large portion of the US population has physical disabilities. Additionally, individuals with disabilities often have decreased occupational engagement (Yazicioglu et al., 2012). This is significant for healthcare professionals and occupational therapy practitioners since decreased occupational engagement can lead to poor health and well-being for individuals (Brown et al., 2021). Occupational therapists may see an influx of patients with disabilities if these individuals do not have the opportunity to maintain a healthy well-being through occupational engagement. The *YMCA Resource Manual for the Implementation of Adaptive Sports Programs* is an inclusive guide to help implement adaptive sports programs for all individuals, regardless of their abilities. It is unique in that it can be used at any YMCA facility across the country. The manual is significant for occupational therapy practice because it not only increases adaptive sports opportunities, but it sheds light on the occupational therapy profession outside the clinical setting. Occupational therapists possess a skill set that includes activity analysis and environmental modification skills. This adaptive sports manual is built upon activity and environmental modifications to help individuals with disabilities better engage in the occupation of sports. The implementation of this manual, which has been created by an occupational therapy student, will highlight the importance of occupational therapy practice and how it can positively impact individuals outside the standard clinical setting. The hope is that the occupational therapy concepts built into the manual will help to expand the practice settings available to occupational therapists.

Key Terms, Concepts, and Constructs

- **YMCA** – abbreviation for Young Men's Christian Association; a community family wellness and fitness facility that provides access to facilities and programs (Alexandria Area YMCA, 2022).
- **Adaptive Sports** – sports that are altered or designed to accommodate the needs of people with disabilities (Rayes et al., 2022).
- **Disability** – any individual who reports having functional difficulties with hearing, vision, cognition, ambulation, self-care, or independent living (Egbert, 2017).
- **Occupational Therapy** – "therapeutic use of everyday life occupations with persons, groups, or populations for the purpose of enhancing or enabling participation" (American Occupational Therapy Association [AOTA], 2020b, p. 80).
- **Occupation** – "everyday activities that people do as individuals, in families, and with communities to occupy time and bring meaning to life" (AOTA, 2020b, p. 79).
- **Ecology of Human Performance (EHP) Framework** – an occupation-based theoretical framework that focuses on relationships between the person, context, task, and performance range to understand human participation (Dunn et al., 1994).
- **Context** – the physical, social, cultural, and temporal environments surrounding an individual (Dunn et al., 1994).
- **Task** – objective sets of behaviors necessary and required to accomplish a goal (Dunn et al., 1994).
- **Performance Range** – the available range with which individuals can participate in tasks based upon the interaction between their characteristics, environment, and task (Dunn et al., 1994).

Chapter II

Literature Review

Occupation and its different categories are important to define as they are central to this scholarly project, occupational therapy practice, and every individual. Occupations are the everyday activities that individuals engage in which occupy their time and bring meaning to their lives (AOTA, 2020b). According to the AOTA (2020b), occupations can be divided into nine main categories including activities of daily living (ADLs), instrumental activities of daily living (IADLs), health management, rest and sleep, education, work, play, leisure, and social participation. This scholarly project will target the occupations of health management, play, leisure, and social participation as they relate to sports, specifically adaptive sports for individuals with physical disabilities.

Individuals with disabilities participate in fewer social, recreational, and leisure activities compared to the general population (Schreuer et al., 2014; Solish et al., 2010). Additionally, individuals with disabilities have diminished health and QOL due to limited community participation and decreased occupational engagement (Yazicioglu et al., 2012). Adaptive sports are a viable solution to diminished occupational engagement for individuals with disabilities; they have been shown to increase overall QOL and life satisfaction for individuals with physical disabilities (Yazicioglu et al., 2012). Lastuka and Cottingham (2015) also found that engagement in adaptive sports led to an increase in individuals' abilities and increased employment; participation in adaptive sports was shown to increase individuals' economic benefits when their employment rates were increased. However, there are still many barriers to adaptive sports engagement for individuals with disabilities. These barriers include limited information on adaptive sports resources, physical barriers for facilities to include adaptive sports, lack of

adaptive sports equipment, lack of programs and activities offered for individuals with disabilities, and a lack of awareness on how to involve disabled individuals in teams (Obradovic et al., 2021). Rural communities experience many of these same barriers including lack of adaptive sports resources, facilities, and knowledge within rural communities (Obradović et al., 2021). These barriers emphasize the problem of decreased occupational engagement for individuals with disabilities and how it can affect society.

Problem and its Societal Importance

According to the United States Access Board (2003), an individual with a disability is someone who has a physical or mental impairment that substantially limits their major life activities. The universal problem is that there are many individuals who have disabilities that inhibit their occupational engagement. As a matter of fact, over one-fourth of US adults have some type of disability, mobility impairments being the highest (Centers for Disease Control and Prevention, 2020). Additionally, there are many individuals with disabilities in rural communities, ambulatory disabilities accounting for the highest disability category (United States Census Bureau, 2021). Yazicioglu et al. (2012) found that individuals with disabilities, compared to the general population, have diminished health and QOL due to their disability and limited occupational engagement. This is important to healthcare professionals and the general population since decreased occupational engagement can lead to poor health and well-being for individuals with disabilities (Brown et al., 2021). Healthcare professionals may see an increase in patients with disabilities if these individuals do not have the opportunity to maintain a healthy well-being through occupational engagement. Parents of children with a disability may also experience greater levels of stress due to their child's perception of their disability, limitations, and potential poor QOL. Overall, there is a widespread problem of decreased occupational

engagement for individuals with disabilities, although, solutions such as adaptive sports have been significantly developing throughout history to help solve this problem (Tow et al., 2020).

Adaptive sports began in the 1880s when a sports club for the deaf was established in Germany. This eventually led to the Silent Games in 1924 which was the first international adaptive sports competition (Tow et al., 2020). Little by little, adaptive sports began to grow into wheelchair polo in England, wheelchair basketball for USA World War II veterans, and in 1948 wheelchair sports expanded into bowling, baseball, football, and basketball (Tow et al., 2020). Eventually, in 1960, the USA joined its first international Paralympic event at the games in Rome (Tow et al., 2020). As adaptive sports have gained more and more recognition, increased opportunities for individuals with disabilities have transpired. Adaptive sports have grown for junior and winter athletes, and Adapted Physical Education (APE) programs have increased as well (Tow et al., 2020). An additional benefit of increased adaptive sports is the improvements in universal design. Tow et al. (2020) found that the introduction of wheelchair athletics led to the development of accessible and universal dormitories, bus systems, and overall universal accessibility standards. The improvements in adaptive sports and universal design have led to the evolution of adaptive sports equipment as well. According to Matsuwaka and Latzka (2019), advances in adaptive sports equipment have increased competition levels, reduced injuries, and improved biomechanical efficiency. In the 1980s adaptive sports athletes used their daily manual wheelchairs to compete in sports, but today's technology has advanced to create wheelchairs for each adaptive sport (Matsuwaka & Latzka, 2019). For example, adaptive sports wheelchairs now have increased camber for better turning, wider bases of support, rear casters to prevent falling, and adjustable seat heights set uniquely for each position in each specific sport (Matsuwaka & Latzka, 2019). Other wheelchair advancements include a greater hand-rim tube diameter on

wheelchair wheels, closer footrests, angled wheels, spoke protectors, bumpers, and athlete gloves to prevent abrasions while competing (Matsuwaka & Latzka, 2019). In addition to adaptive sports wheelchairs, there have been large steps forward in adaptive sports prosthetics to help individuals with disabilities better engage in sports (De Luigi & Cooper, 2014). For example, adaptive sports prostheses now include increased ankle dorsiflexion when needed, more interchangeable components for the amount of force the sport requires, shock-absorbing systems, form-fitted sockets to the athlete's limb, and lightweight prostheses to allow for increased movement (De Luigi & Cooper, 2014). Additionally, winter sports adaptive equipment has improved by enhancing energy transfer technology and lightweight designs to help adapted athletes better engage in their sports (De Luigi & Cooper, 2014).

Even though history shows a significant development of adaptive sports, there are still minimal occupational opportunities for individuals with disabilities. To improve QOL and occupational engagement for individuals with disabilities, there must be continual evidence to support the positive outcomes of adaptive sports. Evidence shows that adaptive sports provide physiological and psychosocial benefits leading to increased QOL for individuals with disabilities (Tow et al., 2020). Additionally, the successful implementation of adaptive sports programs leads to increased occupational engagement and QOL for individuals (Brown et al., 2021). The overall purpose of the literature review is to gather evidence of successful adaptive sports programs in rural communities and the impact of adaptive sports on individuals with disabilities. The literature review will help support the goal of the scholarly project which is to develop a plan for an adaptive sports program in a rural community to support occupational engagement, life satisfaction, QOL, and peer community involvement for individuals with disabilities. To ensure the literature review is comprehensive for the final scholarly project, it

will include adaptive sports literature that is analyzed through the EHP framework topic areas such as adaptive sports, occupational engagement for individuals with disabilities, QOL, facilitators and barriers to adaptive sports, the societal importance of the project, appraisal of the literature, and the boundaries and gaps in the literature.

Theoretical Framework

This literature review was guided through the EHP framework, and the scholarly literature was analyzed through the EHP components. EHP focuses on the person variables and context of an individual to help increase their performance range and engage in meaningful tasks to improve occupational well-being (Dunn et al., 1994). Each component of the framework (person/individual, task, context, performance range) was used to develop research questions and gather sufficient evidence for the project. EHP was also used to guide the review of literature by developing a table on how adaptive sports literature supports the individual, context, and task through the five EHP intervention approaches. The EHP intervention approaches are modify/adapt, establish/restore, alter, prevent, and create (Dunn et al., 1994). Scholarly literature was analyzed using each intervention approach to determine the individual, context, and task needs of an adaptive sports program. The EHP framework organized the literature to help determine the positive impacts of adaptive sports and what aspects must be included in a successful adaptive sports program. The following will include a detailed review of the scholarly, governmental, scientific, and professional literature.

Person

There are many person variables of individuals with disabilities that create barriers for them to engage in sports. For example, individuals' physical disabilities may restrict them from participating in sports that their counterparts engage in. Declerck et al. (2021) and van der

Linden et al. (2022), found that individuals with disabilities are unable to engage in their desired sports due to their physical disabilities. Psychological barriers also play a role in decreased sports engagement for individuals with disabilities. Declerck et al. (2021) explains that individuals with disabilities do not engage in sports due to a lack of perceived desire and their overall physical disabilities. Additionally, individuals' tiredness, fear of injury, and negative stigma toward disabilities inhibit individuals from engaging in sports (van der Linden et al., 2022). Other unrelated person barriers for individuals with disabilities include characteristics of a disability, acceptance or preference for inactive lifestyles, aging, health problems, lack of concentration, and challenging behaviors (Jacinto et al., 2021). Although there are many barriers to sports engagement for individuals with disabilities, there is evidence supporting adaptive sports and their impact on individuals' abilities, interests, and needs.

Jozkowski and Hewitt (2020) assessed individuals with disabilities' interests, abilities, and needs outside of their physical activity and sports engagement to ensure positive outcomes of an adaptive sports program. These authors found that occupational opportunities in the community, such as adaptive sports, led to new learning, social participation, employment possibilities, and other IADLs (Jozkowski & Hewitt, 2020). They also found that engagement in adaptive sports increased individuals with disabilities' skills and helped them engage in activities based on their interests and needs (Jozkowski & Hewitt, 2020). In addition to person variables, individuals' context plays a huge role in their occupational engagement.

Context

The EHP framework describes context with four different categories such as physical, social, cultural, and temporal context (Dunn et al., 1994). Through the developed research questions, literature was gathered that provided evidence of how each contextual category affects

adaptive sports engagement. There are many contextual barriers that inhibit individuals with disabilities from engaging in sports, such as physical barriers. Many facilities lack adaptive physical activity and sports programs for individuals with disabilities due to barriers including a lack of appropriate adapted material and equipment, and a lack of infrastructure (Declerck et al., 2021). Other physical barriers include restrictive outdoor and indoor facility environments that lack adequate universal design layouts (Devi et al., 2013; Iverson et al., 2021). In addition to the physical context, there are social and cultural barriers that inhibit individuals with disabilities from engaging in adaptive sports. For instance, there is decreased adaptive sports engagement due to a lack of awareness on the part of people without disabilities and how to involve disabled individuals on teams, lack of personal assistance, and poor perceptions and attitudes of people who are not disabled (Obradović et al., 2021). Other social and cultural barriers include a lack of knowledgeable coaches, supervisors, and volunteers (Declerck et al., 2021; Iverson et al., 2021; van der Linden et al., 2022). Finally, there are barriers to adaptive sports engagement for individuals with disabilities due to the temporal context. There are limited adaptive sports program opportunities for individuals with disabilities due to limited policies and procedures, and a continual misconstrued view of people with disabilities where they are viewed as disabled individuals rather than individuals with unique abilities (Obradović et al., 2021). Even though there are many contextual barriers to adaptive sports engagement, there is evidence that supports successful adaptive sports programs, and the benefits facilities will have after program implementation.

Although the scholarly research is minimal on the benefits for facilities to offer adaptive sports programs, there is some evidence that highlights these benefits. For example, there have been many benefits that the Minot, North Dakota YMCA has seen since partnering with Prairie

Grit Adaptive Sports. These benefits include an increase in members who have disabilities, an overall increase in membership at the YMCA, higher observance and appreciation of the accessibility and accommodations provided at the YMCA, and an increase in the types of services that the facility can provide (T. Huber, personal communication, July 5, 2022). This firsthand evidence shows the benefits adaptive sports can have on a facility and rural community which emphasizes the value of the task on occupational engagement and community inclusion.

Task

The task of adaptive sports engagement fits within the occupations of health management, play, leisure, and social participation depending on each unique individual. Additionally, as adaptive sports fit within the occupation of health management, physical activity (i.e., exercise and strength training) also fits within the occupation health management, and therefore, adaptive sports (AOTA, 2020b). Reitz and Scaffa (2020) found that improvement of the health and well-being of individuals with disabilities is achieved through health management and occupational adaptations. It is important to address health management and the adaptive sports literature to determine how engagement in adaptive sports and exercise increase occupational engagement, community inclusion, and QOL. Jozkowski and Hewitt (2020) and Hanson et al. (2001) found that individuals who engage in adaptive sports programs have increased social connectedness and feel better connected to their community. Even though Hanson et al. (2001) was published outside the 10-year inclusion criteria, it is valuable to include as it is applicable to the present and directly relates to community integration and adaptive sports. McConkey et al. (2013) also found that individuals with disabilities who engage in sports with non-disabled athletes have greater social and community inclusion. Furthermore, there is evidence showing the benefits of adaptive sports engagement on athletes' QOL. According to

Brown et al. (2021), individuals who engaged in adaptive sports formed a different perception of their disability, experienced an increase in self-efficacy, and felt more empowered, which led to improvements in QOL and life satisfaction. Another study by Côté-Leclerc et al. (2017) found that adaptive sports engagement led to positive effects on QOL such as improved self-esteem, self-efficacy, sense of belonging, participation in meaningful activities, society's attitude towards people with mobility limitations, and physical well-being. These scholarly articles emphasize the positive impacts of adaptive sports engagement which indicates that adaptive sports may increase the performance range of individuals with disabilities.

Performance Range

An individual's performance range is based upon the interaction between their personal characteristics, the contextual environment, and the task at hand (Dunn et al., 1994). An individual with optimal skills and abilities, an opportune environment, and a feasible task will have a large performance range which allows them to engage in their desired occupations (Dunn et al., 1994). It is important to analyze the factors that lead to successful adaptive sports programs as these will increase the performance range of individuals with disabilities. The key factors that lead to the successful implementation of an adaptive sports program include incorporating viewpoints of people with disabilities while in the planning stages of the program, ensuring universal design concepts when developing the program, and planning for unforeseen complications (Schubauer, 2021). Other key factors include hiring organizers who are responsible for recruitment and organizing the program, multiple coaches who are specialized in the sport or a sport-related health profession, enough helpers to cover the athletes who need them, and parent volunteers to help in various ways (Ryan et al., 2014). Furthermore, successful adaptive sports programs must consider easily accessible environmental features, facilitated

participation, opportunities for other individuals with disabilities in the crowd, inclusive and compassionate words on the program webpage, and good, well-trained volunteers (Iverson et al., 2021). There are additional factors that adaptive sports literature suggest are vital for successful adaptive sports programs.

A successful adaptive sports program must include increased communication with health professionals and stakeholders such as sports clubs and centers, rehabilitation centers, and hospitals (Declerck et al., 2021). They must also include physical activities and sports programs for people with disabilities in public and private physical programs according to the type of disability, exercise programs by age groups, qualified instructors, instructors with disabilities, and education in communication methods (sign language) for people with disabilities (Oh & So, 2022). Sports facilities must also consider active acceptance of complaints, free entry for adaptive sports programs, provisions of health information for people with disabilities, and proper marketing of the program (Oh & So, 2022). Additionally, a successful adaptive sports facility must meet specific Americans with Disabilities Act (ADA) guidelines to ensure individuals who are disabled can safely engage in sports with fair opportunities. There are specific guidelines for who qualifies as having a disability. Adaptive sports facilities must take this into account and meet ADA guidelines by considering accessible routes, the courts and areas sports are played, dressing and locker rooms, benches, player seating, and exercise equipment (United States Access Board, 2003). Each of these factors helps build successful adaptive sports programs which can help increase an individual's engagement in adaptive sports and their overall performance range.

The goal of an adaptive sports program is to allow an individual to engage in adaptive sports so that they can increase their performance range regardless of their abilities. Evidence

shows that there are many ways adaptive sports can increase the performance range of individuals with disabilities. Yazicioglu et al. (2012) found that engagement in adaptive sports led to a greater performance range by increasing individuals' social connectedness, psychological health, and overall confidence in themselves. In addition to this, Lape et al. (2018) found that participation in adaptive sports for individuals with disabilities increased their performance by improving their views of themselves and their overall disability. It was found that those who engaged in adaptive sports had transformative benefits as they viewed their disability differently and viewed themselves as someone capable rather than disabled (Lape et al., 2018). Overall, the literature supports adaptive sports and their positive impact on individuals' performance range and overall QOL and well-being. Although, there are still many needs that must be addressed to ensure individuals with disabilities are provided equal opportunities to engage in their desired occupations.

Critical Appraisal of Evidence

The compiled literature on adaptive sports programs encompasses many aspects related to adaptive sports, QOL, occupational engagement, and individuals with disabilities. Within this literature, there are four major needs that emerge for individuals with disabilities. The first major need that emerged from the existing literature is the need for a shift in personal views of individuals with disabilities; individuals with disabilities must look at their abilities and what they can do versus their disabilities and what they cannot do. Evidence that supports this need includes individuals with disabilities' acceptance or preference for inactive lifestyles (Jacinto et al., 2021). Additionally, individuals with disabilities have a lack of perceived desire to engage in sports (Declerck et al., 2021). Finally, individuals with disabilities have emotional and psychological barriers which negatively impact their self-efficacy (Obradović et al., 2021). The

next major need that appeared in the literature includes the need for facilities to incorporate a universal design layout and access to full engagement for individuals with disabilities. Evidence shows that individuals with disabilities are restricted from engaging in sports due to the lack of appropriate adapted material and equipment, lack of infrastructure, and lack of funding (Declerck et al., 2021). Limited access also comes from barriers such as restrictive outdoor and indoor facilities that lack adequate universal design layouts (Devi et al., 2013; Iverson et al., 2021).

The third major need that arose from the literature is the need for trained adaptive sports program leaders and volunteers who are equipped with a mindset and desire to help individuals with disabilities engage in sports. This need is apparent as there are major barriers for individuals with disabilities to engage in sports due to a lack of skilled and knowledgeable supervisors, specialists, and volunteers to lead adaptive sports programs (Declerck et al., 2021; Iverson et al., 2021). In addition to this, there is a lack of awareness on the part of people without disabilities and how to involve disabled individuals on teams, and there are often poor perceptions and attitudes toward disabilities from those who are not disabled (Obradović et al., 2021). Finally, the last major need that emerged from the literature is the need for accessible programs that provide adaptive sports for individuals with disabilities to increase their QOL and community inclusion. Evidence shows that individuals with disabilities who engaged in adaptive sports experienced an increase in self-efficacy, formed a different perception of their disability, felt more empowered, and had an overall increase in QOL (Brown et al., 2021). Additionally, individuals who engage in adaptive sports programs have an increased social connectedness and feel better connected to their community (Jozkowski & Hewitt, 2020). There is an abundance of literature that supports adaptive sports engagement and adaptive sports programs, although, there are some gaps left in the literature that do not account for the specific benefits of adaptive sports.

Boundaries and Gaps in the Literature

A comprehensive literature review was completed to gather evidence on adaptive sports literature and how adaptive sports can improve occupational engagement, life satisfaction, and QOL for individuals with disabilities. Most of the literature supported adaptive sports and how they can improve the QOL and well-being of individuals with disabilities. The literature also covered topics such as facilitators and barriers to adaptive sports, what should be included in adaptive sports programs, and how adaptive sports increased community inclusion. Despite conducting a thorough literature review there was one area that was unanswered within the professional literature. This area included the benefits of facilities to offer adaptive sports programs. Throughout the literature, there were no scholarly articles that described how adaptive sports programs benefited the facilities which provided them. Through a phone conversation, a source provided an answer to this topic area. The Minot, North Dakota YMCA partnered with an adaptive sports agency, Prairie Grit Adaptive Sports, and their director stated that their facility has seen many benefits since partnering with Prairie Grit Adaptive Sports. As stated above, these benefits include an increase in members who have disabilities, an overall increase in membership at the YMCA, higher observance and appreciation of the accessibility and accommodations provided at the YMCA, and an increase in the types of services that the facility can provide (T. Huber, personal communication, July 5, 2022). This source provided evidence to show the benefits for facilities that implement adaptive sports programs, but there are still gaps in the literature to help support this, and there are other boundaries as well.

In addition to the gaps in adaptive sports literature, there are boundaries to the literature review and its capability. The overarching problem is that there are many individuals with disabilities who have decreased occupational engagement due to their disabilities. A

comprehensive review of the literature is a step in the right direction to solve this problem, but it does not solve the entire problem. It provides stakeholders with evidence on the disabled population, the benefits of adaptive sports, what to include in successful adaptive sports programs, and why adaptive sports programs will lead to positive outcomes. The boundary of this literature review is that it does not provide a plan to carry out the goal of the scholarly project, it provides concrete evidence to back it up. Although there are boundaries, the literature review will help support the future development of an adaptive sports program within a rural community.

Conclusion

The current literature review has established the problem of decreased QOL and well-being for individuals with disabilities due to diminished occupational engagement opportunities. This is due to many factors such as personal barriers, contextual barriers, societal views, and limited adaptive sports programs. Various literature has been researched to help solve this problem which includes literature on person and contextual barriers inhibiting adaptive sports engagement, benefits for facilities to offer adaptive sports, elements to include in successful programs, factors that lead to the successful implementation of adaptive sports programs, how adaptive sports increase community inclusion, and how adaptive sports improve QOL and occupational engagement. The compiled evidence from the review helped to identify four major needs of individuals with disabilities and how to implement adaptive sports to fulfill these needs. Therefore, the comprehensive literature review will be used to carry out the purpose of the scholarly project. The overall purpose of the scholarly project is to develop a plan for an adaptive sports program in a rural community to support occupational engagement, life satisfaction, and QOL for individuals with disabilities. The following chapters will explain the scholarly project

process, highlight the importance of the project topic, and detail the development of an adaptive sports program manual and how it will improve the QOL and occupational engagement of individuals with disabilities.

Chapter III

Methodology

A literature review on adaptive sports was conducted to gain an understanding of the barriers and supports for individuals with disabilities seeking adaptive sports opportunities. The literature indicated that individuals with disabilities face many barriers to sports engagement; this led to the inspiration of an adaptive sports project guided by an occupation-based framework.

Theoretical Framework

The adaptive sports product and overall scholarly project were developed using the EHP framework. The EHP framework was used to analyze the performance range of individuals with disabilities to determine how to help them increase occupational engagement and QOL. EHP focuses on the person, context, and task variables and how they affect the performance range of an individual (Dunn et al., 1994). Each component (i.e., person, context, task, performance range) and their sub-components were used to develop research questions and gather literature for the scholarly project. EHP was also used to guide the literature review by developing a table of adaptive sports literature that supports the individual, context, and task through the five EHP intervention approaches. These intervention approaches are modify/adapt, establish/restore, alter, prevent, and create (Dunn et al., 1994). The EHP intervention approaches table can be found in Appendix C. Finally, the EHP framework was used in the final product design. For each adaptive sport described in the product manual, an EHP intervention approach was incorporated into the rules, environment, equipment, and/or safety precautions. Incorporating an EHP intervention approach helps highlight how each sport meets the needs of individuals with disabilities. In addition to gathering literature and developing the product through the EHP framework, there was much more that went into completing this scholarly project.

Project Procedure

At the beginning of the project process, search terms and inclusion criteria were established to gather pertinent adaptive sports literature for a literature review. Examples of search terms used include: "(adapted sports OR adaptive sports) AND disabilities AND (quality of life)" and "(adapted sports OR adaptive sports) AND disabilities AND barriers AND facilitators". A set of inclusion criteria was established which included articles written within the last 10 years, in English, and involved adaptive or adapted sports. Research questions were also developed using the EHP framework to gather information related to the components of EHP (person, context, task, performance range). The research questions were directed toward adaptive sports barriers and facilitators for individuals with disabilities. Databases such as PubMed, ScienceDirect, and the American Journal of Occupational Therapy (AJOT) were used to conduct the literature search. An array of governmental websites, professional organizations, textbooks, and experts in the fields of adaptive sports and occupational therapy were used for the literature review. These entities included the US Department of Health and Human Services, the US Access Board, adaptive sports program directors, YMCA coordinators, AOTA, and occupational therapy textbooks. Abstracts were reviewed before diving into the sources that met the inclusion criteria. Interviews were also conducted with experts in adaptive sports to gather more literature on the topic. Using the information from rigorous research, the literature review was completed before the start of the on-site experience. After meeting with the student's site mentor and faculty mentor to finalize a schedule, the on-site experience began on January 9th, 2023.

On-site collaboration was completed within the first two weeks of the DEP experience. This consisted of discussions with site coordinators, adaptive sports program coordinators, and individuals with disabilities to expand upon existing adaptive sports literature and define a path

for the project. The literature review was finalized using stakeholder information, and a project idea was determined. After synthesizing the literature and stakeholder needs, the adaptive sports programs were narrowed down to three adaptive sports including wheelchair basketball, seated volleyball, and adaptive weightlifting/exercise. Conversations with site coordinators and individuals with disabilities were completed to evaluate barriers and supports for adaptive sports in the rural community. The student also spoke with adaptive sports program founders, toured adaptive gyms, participated in on-site programs, and surveyed the site facilities to develop a plan for the implementation of adaptive sports programs. During weeks three through five, an expense spreadsheet was developed to determine a blanket price for all equipment needed to implement adaptive sports at the site. With this, it was determined that the site would need to apply for grants to help fund the adaptive sports programs.

Throughout the second half of the on-site experience, the student contacted local agencies to help fund the adaptive sports program plan. At the end of week nine, funding from local agencies was gathered to help finance future adaptive sports programs at the site. The student met with the on-site mentor weekly to discuss the direction and progress of the final product. These weekly meetings led to the solidification of an adaptive sports program manual. Program development steps were followed during the final half of the experience to create an adaptive sports resource manual in its entirety. The student continued to communicate with their faculty mentor and on-site coordinators during the product development phase to finalize the adaptive sports program plan and ensure its sustainability after completion of the DEP. In the final weeks, the product was presented by the student to the site staff to gain feedback before completing the adaptive sports program plan. The closing weeks of the DEP experience were spent finalizing the product and ensuring its sustainability during implementation.

Ethical Considerations

The American Occupational Therapy Association [AOTA], (2020a) defines six ethical principles which guide ethical decision-making for healthcare professionals. These principles are defined in the appendix below. The ethical principles that were considered while completing the scholarly project were beneficence, autonomy, and justice. While contacting local agencies, beneficence was carried out by advocating for individuals with disabilities. The student used beneficence by incorporating safety precautions in the manual and by seeking out funding and adaptive sports opportunities to improve the lives of others. Autonomy was used during the development of the product by considering the desires of individuals with disabilities when choosing adaptive sports and adaptive exercise equipment to offer. During product development, consent and release forms were also constructed to ensure autonomy was provided to adaptive sports participants. During the entire scholarly project, justice was promoted through an emphasis on inclusion for all individuals. Justice was emphasized when choosing adaptive exercise equipment for the facility to ensure the equipment was functional for individuals with physical disabilities and those without disabilities.

Summary

The methodology used from conceptualization to completion of the product was vital to the success of the scholarly project and DEP experience. The overall process began with the conceptualization of a project topic. After the topic area of adaptive sports was chosen, a site was sought out and project ideas were proposed. Once the student and site finalized a project idea, scholarly literature was analyzed to determine an area of need and a useful solution for the site. The student then synthesized adaptive sports literature and spoke with program coordinators, site mentors, and community members to gather the information needed for product development.

The product, an adaptive sports program manual, was developed and influenced by the student, site mentors, and individuals with physical disabilities. After gathering feedback and considering ethical principles, the adaptive sports program manual was finalized and given to the site to implement and provide increased occupational opportunities for individuals with disabilities.

Chapter IV

Product

The purpose of this chapter is to introduce and outline the product of this scholarly project, *YMCA Resource Manual for the Implementation of Adaptive Sports Programs*. The aforementioned literature review helped define the needs of individuals with physical disabilities in rural communities. These needs include a shift in the views of disabilities, the need for universal design, the need for adaptive sports professionals, and the need for increased adaptive sports opportunities for individuals with physical disabilities. The overall product goal for this scholarly project is to provide more opportunities for individuals with disabilities to engage in adaptive sports to help improve their QOL and occupational engagement. The product will include an adaptive sports manual and a supplemental presentation that is intended to train YMCA staff on how to successfully implement adaptive sports programs at the YMCA facility. The *YMCA Resource Manual for the Implementation of Adaptive Sports Programs* can be found in Appendix A.

The adaptive sports resource manual will include descriptions of three adaptive sports, the modified rules, space required for each sport, equipment needed for each sport, safety precautions for each sport, adaptive exercise recommendations, information on coach/officials training, funding sources for adaptive sports programs, an athlete registration form, a consent and release form, a program evaluation survey, advertisement poster templates, and a brief resource handout including adaptive sports resources and links. There will be lists and images throughout the manual and presentation to provide visuals of the adaptive sports, adaptive equipment, and spaces where the sports will be implemented. The supplemental presentation will cover the same information included in the product manual, and it is provided in both formats as some

individuals are descriptive learners and others are visual learners. To truly show how this product was developed, it is vital to describe the framework/model that was used to guide the formation of the scholarly project.

During product development, the EHP framework was used to analyze the performance range of individuals with disabilities to help them better engage in their desired occupations. EHP focuses on the person variables and context of an individual to help increase their performance range and engage in meaningful tasks (Dunn et al., 1994). The EHP framework also describes five intervention approaches including modify/adapt, establish/restore, alter, prevent, and create (Dunn et., 1994). The definitions of these intervention approaches can be found in Appendix D. Each of these approaches can be used to change the person, their context, or task to help increase their performance range and engage in more occupations (Dunn et al., 1994). A table including the five EHP intervention approaches and adaptive sports literature was used to guide the development of the adaptive sports resource manual and ensure it considered individuals' characteristics, contextual environment, and tasks to help increase their performance range. See Appendix C for the EHP Intervention Approaches Table. It is essential to incorporate the EHP framework in this product to meet the needs of individuals with disabilities, overcome their barriers to engagement, and increase their QOL.

Chapter V

Summary

Individuals with disabilities have diminished occupational engagement and QOL due to barriers limiting their engagement opportunities (Obradovic et al., 2021). Occupational engagement is the "performance of occupations as the result of choice, motivation, and meaning within a supportive context" (AOTA, 2020b, p. 5). Quality of life (QOL) refers to an individual's view of their position in life based on their expectations, accomplishments, and standards (Obradovic et al., 2021). The purpose of this scholarly project was to address the aforementioned problem to help increase the performance range of individuals with disabilities. The overall goal was to develop adaptive sports programs in a rural community to increase this population's performance range and promote their occupational engagement and QOL. To accomplish the project goal, an adaptive sports manual was developed by partnering with a rural YMCA, conducting an in-depth literature review through a needs assessment, communicating with stakeholders and individuals with disabilities, gathering expert input from adaptive sports program coordinators, and reviewing theoretical frameworks and program development phases.

The literature review was guided by the Ecology of Human Performance (EHP) framework to develop research questions and gather literature on how adaptive sports can increase the performance range of individuals with disabilities (Dunn et al., 1994). The literature revealed that individuals with disabilities face many barriers when it comes to sports engagement (Obradovic et al., 2021). It also indicated that participation in adaptive sports improves occupational engagement and QOL through increased self-efficacy, life satisfaction, and social inclusion (Brown et al., 2021; Côté-Leclerc et al., 2017; Jozkowski & Hewitt, 2020; Yazicioglu et al., 2012). The needs assessment process continued through communication with adaptive

sports program leaders, therapists who work with individuals with disabilities, and individuals with disabilities themselves. These conversations helped to identify the barriers individuals with disabilities face in rural communities, the sports desires of individuals with disabilities, appropriate adaptive equipment to use, and how to successfully implement adaptive sports programs. After this information was gathered, the EHP framework was used to guide program development for the formation of the product.

Program development transpired through a review of program development phases, communication with faculty and site mentors, and a review of theoretical literature. The current product, *YMCA Resource Manual for the Implementation of Adaptive Sports Programs*, was developed using the EHP framework and program procedures outlined in Fazio (2017). Throughout the DEP experience, program development phase one and some of phase two were completed. The student completed the design and planning phase by conducting the needs assessment, constructing objectives, and developing a project plan (Fazio, 2017). During the preparation and implementation phase, the organizing theory was selected, budget and funding sources were identified, and program evaluation methods were constructed (Fazio, 2017). The implementation portion of this phase including securing funding was not completed as the fourteen-week DEP timeline did not allow for this. The remainder of this phase, as well as phase three, program review and evaluation, will be completed at the community site through the use of the developed product (Fazio, 2017). Utilization of the product will not only benefit the community site, but it will highlight the occupational therapy profession.

Implications for Occupational Therapy Practice

Implementation of the adaptive sports product at a rural community facility would help to increase occupational engagement opportunities and QOL for individuals with disabilities.

General facility staff, such as YMCA staff members, are well equipped to implement adaptive sports programs through the use of this product as it outlines each essential step for program development. Occupational therapy practitioners are more than qualified to implement adaptive sports programs as they possess skills apparent in the product such as occupational analysis and environmental modification skills (AOTA, 2020b). The adaptive sports manual describes activity and environmental modifications to help individuals with disabilities engage in sports; these concepts fall within the realm of occupational therapy practice. Although this product can be used by general community facility staff, it still holds large implications for the occupational therapy profession. It is anticipated that since the product was built upon occupational therapy concepts, it will shed light on the importance of the occupational therapy profession and how it can impact individuals outside the clinical setting. The incorporation of occupational therapy concepts is just one of the strengths of this product, there are many other strengths and limitations of this scholarly project.

Strengths and Limitations

The strengths of this scholarly project are that it was supported by scholarly literature through an extensive literature review process, the need was identified through an off-site needs assessment and on-site collaboration, and the product was developed in collaboration with adaptive sports experts, community members, YMCA staff, and occupational therapists. Another major strength of this project is that it was completed by an occupational therapy student who has had firsthand experience participating in and volunteering with adaptive sports programs. The developed adaptive sports manual was not only informed by scholarly literature, but it was built through collaboration with official adaptive sports international federations. These federations include the National Wheelchair Basketball Association, World Para Volley, and

World Para Powerlifting. Each federation helped to inform the product by providing official rules for each adaptive sport listed in the adaptive sports manual. Although there are many strengths of this scholarly project and product, there were some limitations as well.

The scholarly project had some unavoidable limitations due to the time constraint of the fourteen-week DEP experience as determined by the accreditation board for doctoral occupational therapy programs. Due to the fourteen-week time constraint, the implementation, program review, and evaluation phases were not fully completed as grant funding still had to be finalized. The lack of program implementation limits the product as there is no program evaluation data to help improve the product for future sustainability. Although, plans for implementation, program review, and evaluation are included within the product to ensure facility staff are able to successfully carry out adaptive sports programs. Other limitations to the scholarly project are that local community agencies refrained from donating funds to help support YMCA adaptive programs. However, grant proposals were submitted by the occupational therapy student to help fund adaptive sports at the YMCA facility. Lastly, the product was developed for a specific YMCA facility in a rural Minnesota community. Although the product can be implemented throughout other rural YMCA facilities, it is limited in its generalizability to other health and wellness institutions. Even though there are limitations to this scholarly project, an implementation plan was put in place to support adaptive sports programs.

Support for Implementation

To successfully implement adaptive sports programs at the rural YMCA facility, the adaptive sports programs will be advertised throughout the community through flyers, YMCA social media, Special Olympics social media, disability support facilities, and the local school district brochure. A list of community members, who expressed interest, will be included in the

product manual to ensure they are contacted about adaptive sports start dates. This will ensure that there are members in the community who will participate in the adaptive sports offered at the YMCA. In addition to marketing efforts, YMCA staff members will be educated on the adaptive sports program manual through an in-service presentation. The presentation includes descriptions of the three adaptive sports, the modified rules, space required for each sport, equipment needed, safety precautions for each sport, adaptive exercise recommendations, information on coach/officials training, funding sources for adaptive sports programs, athlete registration forms, consent and release forms, a program evaluation survey, advertisement poster templates, and a brief resource handout including adaptive sports resources and links. This presentation will ensure that YMCA staff are educated on the adaptive sports manual, feel competent for program implementation, and understand the plans for program sustainability.

Recommendations

Program sustainability recommendations are included within the adaptive sports program manual to ensure that adaptive sports will be carried out for years to come. The manual includes a program evaluation survey which is comprised of satisfaction, self-efficacy, and inclusion questions, as well as space for program feedback and comments. It is recommended that this evaluation survey be provided to all adaptive sports participants to gather program data and ensure participants have a voice to express their experiences and recommendations. Other recommendations for program sustainability include working with future occupational therapy doctorate students who have an interest in adaptive sports. This product was developed with an occupational therapy framework, so it is well-suited for other occupational therapy students. It is recommended that capstone students take this product and use it to implement adaptive sports within their own rural community facilities.

Conclusion

Individuals with disabilities have reduced engagement opportunities and face many challenges due to the barriers they face in everyday life. The product, *YMCA Resource Manual for the Implementation of Adaptive Sports Programs*, was developed to combat these challenges and help implement adaptive sports in a rural community, specifically for individuals with disabilities. The hope is that this product will promote occupational engagement and QOL for all individuals with physical disabilities. It was constructed through an extensive literature review, a comprehensive needs assessment, communication with stakeholders, input from adaptive sports experts, and guidance from a theoretical framework. It is anticipated that this product will provide all individuals with opportunities to engage in sports to improve their health, well-being, and QOL. Products like this adaptive sports manual have the possibility to advance adaptive sports, change society's view of disability, and improve the overall QOL of individuals with disabilities.

References

Advantage Medical. (2023). *Medical hand rails for treadmills*. https://www.advantagemedical.com/products/medical-hand-rails-for-treadmills/

Alexandria Area YMCA. (2022). *About the Y*. https://www.alexandriaymca.com/about-y

American Occupational Therapy Association. (2020a). AOTA 2020 occupational therapy code of ethics. *American Journal of Occupational Therapy, 74*(Suppl. 3), 7413410005. https://doi.org/10.5014/ajot.2020.74S3006

American Occupational Therapy Association. (2020b). Occupational therapy practice framework: Domain and process (4th ed.). *American Journal of Occupational Therapy, 74*(Suppl. 2), 7412410010. https://doi.org/10.5014/ajot.2020.74S2001

Brown, S., Bewernitz, M., Krauss, A., & Summers, L. (2021). Investigation of testimonials from participants in an adaptive sports and recreation program. *The American Journal of Occupational Therapy, 75* (Supplement 2). https://doi.org/10.5014/ajot.2021.75S2-PO120

CanDo rickshaw exerciser. (2018, January 30). Amazon. Retrieved January 30, 2023, from https://www.amazon.com/Cando-10-0690-CanDo-Rickshaw-Exerciser

Centers for Disease Control and Prevention. (2020). *Disability impacts all of us*. https://www.cdc.gov/ncbddd/disabilityandhealth/infographic-disability-impacts-all.html

Concept 2. (n.d.). *Concept 2 skierg*. https://www.concept2.com/skierg/concept2-skierg

Corada. (n.d.). *VitaGlide: 3-in-1 strength, conditioning, and cardio accessible exercise machine*. https://www.corada.com/products/vitaglide

Côté-Leclerc, F., Boileau Duchesne, G., Bolduc, P., Gélinas-Lafrenière, A., Santerre, C., Desrosiers, J., & Levasseur, M. (2017). How does playing adapted sports affect quality of

life of people with mobility limitations? Results from a mixed-method sequential explanatory study. *Health and Quality of Life Outcomes, 15*(1), 22. https://doi.org/10.1186/s12955-017-0597-9

De Luigi, A. J., & Cooper, R. A. (2014). Adaptive sports technology and biomechanics: Prosthetics. *PM & R: The Journal of Injury, Function, and Rehabilitation*, *6*(8), S40-57. https://doi.org/10.1016/j.pmrj.2014.06.011

Declerck, L., Stoquart, G., Lejeune, T., Vanderthommen, M., & Kaux, J. F. (2021). Barriers to development and expansion of adaptive physical activity and sports for individuals with a physical disability in sports clubs and centres. *Science & Sports, 36*(3), 202–209. https://doi.org/10.1016/j.scispo.2020.12.002

Devi, S., Goyal, S., & Ravindra, S. (2013). Evaluation of environmental barriers faced by wheelchair users in India. *Disability, CBR & Inclusive Development*, *24*(3), 61–74. https://doi.org/10.5463/dcid.v24i3.209

D'Isanto, T. (2020). Sports skill in sitting volleyball between disabled and non-disabled people. *Journal of Physical Education and Sport, 20*(3), 1408-1414. https://efsupit.ro/images/stories/mai2020/Art%20194.pdf

Drive medical blue streak ultra-lightweight wheelchair with flip-back arms & swing-away footrests. (2006, June 23). Amazon. Retrieved February 1, 2023, from https://www.amazon.com/Drive-Medical-Streak-Wheelchair

Dunn, W. (2017). The Ecological Model of Occupation. In J. Hinojosa, P. Kramer, & C. B. Royeen (Eds.), *Perspectives on Human Occupation: Theories Underlying Practice* (2nd ed., pp. 207-235). F.A. Davis.

Dunn, W., Brown, C., & McGuigan, A. (1994). The ecology of human performance: A

framework for considering the effect of context. *American Journal of Occupational Therapy, 48*, 595-607.

Egbert, A. (2017). *Minnesotans with disabilities: Demographic and economic characteristics*. Minnesota State Demographic Center. https://mn.gov/admin/assets/minnesotans-with-disabilities-popnotes-march2017_tcm36-283045_tcm36-283045.pdf

Eleiko. (n.d.). *Equipment*. https://eleiko.com/en-us/equipment

Equip Products. (2023). *Small lapmat*. https://equipproducts.com/products/small-lapmat

Fabrication Enterprises. (2023). *SciFit equipment*. https://www.fab-ent.com/exercise/fitness-equipment/scifit-equipment/

Fazio, L. S. (2017). *Developing occupation-centered programs with the community*. (3rd ed.). SLACK Incorporated.

Fitness Equipment Empire. (n.d.). *Cybex FT360 functional trainer*. https://www.fitnessequipmentempire.com/product/cybex-ft360-functional-trainer/

FlagHouse. (2023a). *Balls for volleyball*. https://www.flaghouse.com/Sports/Volleyball/Balls/

FlagHouse. (2023b). *Synthetic basketballs*. https://www.flaghouse.com/Sports/Basketball/

Hanson, C. S., Nabavi, D., & Yuen, H. K. (2001). The effect of sports on level of community integration as reported by persons with spinal cord injury. *The American Journal of Occupational Therapy, 55*(3), 332–338. https://doi.org/10.5014/ajot.55.3.332

Hanson, C., Pomeranz, J. L., Jones, D., & Ellison, C. (2020). An overview of wheelchair basketball with implications for life care planning. *Journal of Life Care Planning, 18*(4), 59–64. https://web-s-ebscohostcom.ezproxylr.med.und.edu/ehost/pdfviewer/pdfviewer?vid=1&sid=008e308c-dfec-486f-82a3-072cd85d1e8d%40redis

Hausse portable exercise pedal bike for legs and arms, mini exercise peddler with LCD display.

(2019, May 30). Amazon. Retrieved January 30, 2023, from https://www.amazon.com/Hausse-Portable-Exercise

How I Roll Sports. (2018a). *How I roll sports adaptive wheelchair resistance band set*. https://howirollsports.com/shop/adaptive-wheelchair-exercise-resistance-band/

How I Roll Sports. (2018b). *Thera-Band comfort ankle & wrist weights*. https://howirollsports.com/shop/thera-band-therapeutic-ankle-wrist-weights/

How I Roll Sports. (2018c). *Wheelchairs, parts, & accessories*. https://howirollsports.com/product-category/wheelchairs/

International Paralympic Committee. (2022). *World para powerlifting rules and regulations*. https://www.paralympic.org/sites/default/files/2022-08/WPPO%20Rules%20and%20Regulations_2022_v1.2_1.pdf

International Wheelchair Basketball Federation. (2021). *2021 Official wheelchair basketball rules*. https://iwbf.org/wp-content/uploads/2021/03/2021_IWBF_rules-Ver2_compressed.pdf

Invacare. (n.d.). *Basketball chairs*. Top end. https://topendwheelchair.invacare.com/all-court/category/allcourtbasketball-topend

Invictus Active. (n.d.). *Invictus active trainer*. https://www.invictusactive.com/product/invictus-active-trainer/

Iverson, M., Ng, A. V., Yan, A. F., Zvara, K., Bonk, M., Falk-Palec, D., Sylla, C., Strickland, M., Preston, R., & Braza, D. W. (2021). Navigator role for promoting adaptive sports and recreation participation in individuals with disabilities. *American Journal of Physical Medicine & Rehabilitation*, *100*(6), 592–598. https://doi.org/10.1097/PHM.0000000000001533

Jacinto, M., Vitorino, A. S., Palmeira, D., Antunes, R., Matos, R., Ferreira, J. P., & Bento, T. (2021). Perceived barriers of physical activity participation in individuals with intellectual disability: A systematic review. *Healthcare*, *9*(11), 1521. https://doi.org/10.3390/healthcare9111521

Jozkowski, A. C., & Hewitt, S. A. (2020). Promoting community inclusion and integration for youth. In M. E. Scaffa & S. M. Reitz (Eds.), *Occupational therapy in community and population health practice* (3rd ed., pp. 198-215). F. A. Davis Company.

Karman Healthcare. (n.d.). *Wheelchair parts accessories*. https://www.karmanhealthcare.com/wheelchairs/wheelchair-parts-accessories/

Lape, E. C., Katz, J. N., Losina, E., Kerman, H. M., Gedman, M. A., & Blauwet, C. A. (2018). Participant-reported benefits of involvement in an adaptive sports program: A qualitative study. *PM&R*, *10*(5), 507–515. https://doi.org/10.1016/j.pmrj.2017.10.008

Lastuka, A., & Cottingham, M. (2015). The effect of adaptive sports on employment among people with disabilities. *Disability and Rehabilitation*, *38*, 1-7. https://doi.org/10.3109/09638288.2015.1059497

Logan University. (2023). *Adapted sports and programs*. https://www.logan.edu/adapted-sports-and-programs/

Matsuwaka, S. T., & Latzka, E. W. (2019). Summer Adaptive Sports Technology, Equipment, and Injuries. *Sports Medicine and Arthroscopy Review*, *27*(2), 48–55. https://doi.org/10.1097/JSA.0000000000000231

McConkey, R., Dowling, S., Hassan, D., & Menke, S. (2013). Promoting social inclusion through unified sports for youth with intellectual disabilities: A five-nation study. *Journal*

of Intellectual Disability Research, *57*(10), 923–935. https://doi.org/10.1111/j.1365-2788.2012.01587.x

Move United. (n.d.). *Adaptive sports*. https://moveunitedsport.org/sports/adaptive-sports/

Myolyn. (n.d.). *Myocycle pro*. https://myolyn.com/for-clinics/overview/

National Wheelchair Basketball Association. (2023). *2022-2023 Official rule book*. https://cdn1.sportngin.com/attachments/document/6537-2756897/2022-2023_NWBA

NYOrtho urine drainage bag holder. (2020, August 19). Amazon. Retrieved January 30, 2023, from https://www.amazon.com/NYOrtho-Urine-Drainage-Bag-Holder

Obradović, S., Nikodelis, T., & Stojković, M. (2021). Significance of sport activities for persons with disabilities. *Godišnjak za psihologiju, 18*, 27-40. https://doi.org/10.46630/gpsi.18.2021.02

Oh, A., & So, W. Y. (2022). Assessing the needs of people with disabilities for physical activities and sports in South Korea. *Healthcare (Basel, Switzerland), 10*(2), 265. https://doi.org/10.3390/healthcare10020265

Piercy, K. L., Troiano, R. P., Ballard, R. M., Carlson, S. A., Fulton, J. E., Galuska, D. A., George, S. M., & Olson, R. D. (2018). The physical activity guidelines for Americans. *Journal of the American Medical Association*, *320*(19), 2020–2028. https://doi.org/10.1001/jama.2018.14854

Rayes, R., Ball, C., Lee, K., & White, C. (2022). Adaptive sports in spinal cord injury: A systematic review. *Current Physical Medicine and Rehabilitation Reports*, *10*(3), 145–153. https://doi.org/10.1007/s40141-022-00358-3

Reitz, S. M., & Scaffa, M. E. (2020). Occupational therapy in the promotion of health and well-being. *American Journal of Occupational Therapy, 74*(3), 1-14.

https://doi.org/10.5014/ajot.2020.743003

Ryan, J., Katsiyannis, A., Cadorette, D., Hodge, J., & Markham, M. (2014). Establishing adaptive sports programs for youth with moderate to severe disabilities. *Preventing School Failure: Alternative Education for Children and Youth*, *58*, 32–41. https://doi.org/10.1080/1045988X.2012.755666

Schreuer, N., Sachs, D., & Rosenblum, S. (2014). Participation in leisure activities: Differences between children with and without physical disabilities. *Research in Developmental Disabilities, 35*(1), 223–233. https://doi.org/10.1016/j.ridd.2013.10.001

Schubauer, M. B. (2021). *From vision to reality: Building community-based adaptive sports and fitness facilities across the United States* (Publication No. 28416907) [Doctoral dissertation, The University of New Mexico]. ProQuest Dissertations and Theses Global.

Solish, A., Perry, A., & Minnes, P. (2010). Participation of children with and without disabilities in social, recreational and leisure activities. *Journal of Applied Research in Intellectual Disabilities, 23*(3), 226–236. https://doi.org/10.1111/j.1468-3148.2009.00525.x

Southwest Medical. (n.d.). *Sport wheelchairs*. Quickie wheelchairs. https://www.quickiewheelchairs.com/Sports-Wheelchairs/1403c0

Spieth America. (n.d.). *Volleyball*. https://home-ca.spiethamerica.com/search?type=products&q=volleyball*

Spinlife. (n.d.). *Evolv adult glider*. https://www.spinlife.com/search.cfm?keyword=evolv+glider

Sports Imports. (n.d.). *Indoor volleyball*. https://www.sportsimports.com/indoor-volleyball/

SPRI Xerball medicine ball with handles. (2012, December 20). Amazon. Retrieved January 30, 2023, from https://www.amazon.com/SPRI-Dual-Xerball-Medicine

Theracycle Corporation. (n.d.). *Therapy products*. https://www.theracycle.com/motorized-exercise-bike/

Tiger Medical. (n.d.). *Mat table*. https://www.tigermedical.com/search.aspx?q=mat%20table

Tow, S., Gober, J., & Nelson, M. R. (2020). Adaptive Sports, Arts, Recreation, and Community Engagement. *Physical Medicine and Rehabilitation Clinics of North America*, *31*(1), 143–158. https://doi.org/10.1016/j.pmr.2019.09.003

United States Access Board. (2003). *A summary of accessibility guidelines for recreation facilities*. https://www.access-board.gov/files/ada/guides/sports.pdf

United States Census Bureau. (2021). *American community survey: Disability characteristics* (S1810) [Data set]. United States Department of Commerce. https://data.census.gov/table?q=disability&g=860XX00US56308

US MedRehab. (2023). *TRS4000/T4 leg stabilizer*. https://www.usmedrehab.com/products/t4-leg-stabilizer?variant=32186654359641

van der Linden, M. L., Wordie, S. J., Dufton, B. K., Jagadamma, K. C., Hunter, C., Mercer, T. H., Gaston, M. S., & Robb, J. E. (2022). Leisure time physical activity in children and young people with cerebral palsy: A population-based study. *Pediatric Physical Therapy: The Official Publication of the Section on Pediatrics of the American Physical Therapy Association*, *34*(2), 230–237. https://doi.org/10.1097/PEP.0000000000000882

Webstaurant Store. (2023). *Master caster giant foot yellow magnetic door stop*. https://www.webstaurantstore.com/master-caster-giant-foot-yellow-magnetic-door-stop

World ParaVolley. (2022). *Official sitting volleyball rules 2022-2024*. https://www.worldparavolley.org/wp-content/uploads/2021/11/Official-Sitting-Volleyball-Rules-2022-2024.pdf

Yazicioglu, K., Yavuz, F., Goktepe, A. S., & Tan, A. K. (2012). Influence of adapted sports on quality of life and life satisfaction in sport participants and non-sport participants with physical disabilities. *Disability and Health Journal, 5*(4), 249-253. https://doi.org/10.1016/j.dhjo.2012.05.003

Appendix A

YMCA Resource Manual for the Implementation of Adaptive Sports Programs

By: Michael Helgeson, OTDS

Advisor: Jane Loscheider, OTD, OTR/L, ATP, CLT

Table of Contents

ADAPTIVE SPORTS PROGRAMS

The adaptive sports programs that will be offered at the YMCA will be adapted to aid individuals with physical disabilities. The rules, equipment, and environment will all be modified using EHP intervention approaches to ensure individuals with disabilities are provided equal opportunities to engage in sports and physical activity. The product manual and presentation created include three common adaptive sports such as wheelchair basketball, seated volleyball, and adaptive weightlifting/exercise. The three sports described in the manual and presentation are relevant adaptive sports that are played all around the United States (Move United, n.d.). Each adaptive sport listed below will include an overview of the sport, the rules, environment the sport will be played in, equipment needed, and pertinent safety precautions that must be considered. All this information is included in the manual to ensure YMCA staff are competent and confident in their abilities to implement adaptive sports programs. The adaptive sports provided will be open to all individuals with physical disabilities as well as individuals without disabilities to promote equality and ensure there are enough athletes for each sport. The goal of the adaptive sports programs will be to improve the QOL and occupational engagement of all individuals regardless of their abilities.

(Alexandria Area YMCA, 2022). Used with permission from the Alexandria Area YMCA.

WHEELCHAIR BASKETBALL

(Move United, n.d.). Used with written permission from photographer.

Wheelchair basketball is a sport where people with permanent lower extremity limitations can play. People with diagnoses such as paraplegia, SCIs, spina bifida, lower limb amputations, and no limitations are all eligible to play (Hanson et al., 2020). The sport is very similar to traditional basketball with the exception of some in-game rules and the method in which athletes move around the court (Hanson et al., 2020). Players move around the basketball court by propelling themselves in lightweight wheelchairs while simultaneously dribbling the basketball (Hanson et al., 2020). The scoring rules, court dimensions, and height of the baskets are all the same as traditional basketball, although, there are some differences (Hanson et al., 2020).

RULES

Wheelchair basketball has similar rules to traditional basketball where there are 5 players at a time on the court for each team, there are two 20-minute halves (four 10-minute quarters for women), and the goal is to score more baskets than the opposing team by the end of the game (Hanson et al., 2020).

Rules Specific to Wheelchair Basketball Include:

Incorporates the Adapt/Modify Intervention Approach (Dunn et al., 1994).

- After pushing forward for a maximum of two pushes, the player must dribble the ball 1 or more times before pushing again.
- If the player pushes more than twice without dribbling, this results in a travel.

- Large wheels of the wheelchair must be behind the free-throw line and 3-point line during free-throws and 3-point goals.
- Players' wheelchairs must be inside or on the middle circle during a jump ball; players must not leave their seats during the jump ball.
- Players cannot enter the free-throw lane until the ball has left the shooter's hands.
- No deliberate tilting of the wheelchair is allowed.
- Cannot throw the ball off a player's wheelchair to gain an advantage, this will result in an automatic turnover.
- Players who intentionally leave the playing court to gain advantage will receive a technical foul, 2 technical fouls lead to an ejection.
- No press defense is allowed in the backcourt; offense must allow the defense to pass the mid-court line.
- Three-Second Rule: player on offense cannot remain in the free-throw lane (end boundary to free-throw line) for more than 3 seconds at a time.
- Overtime periods are a total of 5-minutes (Adults) and 2-minutes (Juniors) in length.

(National Wheelchair Basketball Association [NWBA], 2023)

ENVIRONMENT

Wheelchair basketball can be played in many different environments with a court including basketball facilities, camps, recreation centers, rehabilitation hospitals, community clubs, YMCAs, Veteran Affairs (VA) hospitals, and college campuses (Hanson et al., 2020).

- Rectangular surface with minimum dimensions of 84 feet in length, 50 feet in width.
- Basket height is set at 8-1/2 feet to 10-feet.
- Free-throw line is 15 feet from the end boundary line.
- A 30-second shot clock will be enforced if the pace-of-play is being delayed by not shooting the ball. (Pace-of-play is determined by the official)

(NWBA, 2023)

EQUIPMENT

Most of the equipment required for wheelchair basketball is similar to traditional basketball as this includes baskets with nets, backboards, basketballs, a game clock and shot clock, a scoreboard, a scoresheet, foul markers, and a playing court (International Wheelchair Basketball Federation [IWBF], 2021). This equipment can be adjusted based on the facility.

<u>Equipment Specific to Wheelchair Basketball Includes:</u>

Incorporates the Adapt/Modify Intervention Approach (Dunn et al., 1994).

- Adaptive sports wheelchairs
    - Protective horizontal bar in the front or footrest 11-centimeters from the floor
    - Anti-tip castors attached to the back of the wheelchair (2-centimeters from floor maximum)
    - Seat cushion at a maximum height of 63-centimeters from the floor
    - Hand rim on each large wheel
    - No brakes

- Leg, waist, and calf straps if needed
- Headgear if desired
- Mouthguard if desired

(IWBF, 2021)

Average Prices of Wheelchair Basketball Equipment:

Additional equipment pricing, website links, and vendors will be listed in the adaptive sports equipment resource handout in Appendix B.

- Basketballs: $6.75-$21.75 (FlagHouse, 2023b)
- Standard wheelchair: $1700-$2500 (new), $140-$1500 (used)
- High-quality wheelchair: $3000-$5000
- Seat cushions:
    - Foam: $40-$150, Gel: $40-$200, Air: $120-$500
- Leg and waist straps: $70
- Calf Straps: $20-$70

(Hanson et al., 2020)

SAFETY/PRECAUTIONS

Incorporates the Prevent Intervention Approach (Dunn et al., 1994).

- Personal Foul: a player who intentionally places their hands on an opponent or an opponent's wheelchair, other than the opponent's hand while in possession of the ball, will result in a foul (NWBA, 2023).
- Physical Advantage Foul: leaning the wheelchair, raising oneself from their chair, or using a lower limb to stabilize oneself on the floor will result in a foul (NWBA, 2023).

- Athlete wheelchairs must have anti-tip castors attached to the back of the wheelchair to decrease the risk of tipping/falling (IWBF, 2021).
- Cylinder Principle: there is a visual cylinder around each player that opponents must not cross to ensure player safety (IWBF, 2021). This cylinder is defined as:
    - Front: horizontal bar at front of wheelchair OR palms of the hands.
    - Rear: back outside edge of the large wheels.
    - Sides: outside edge of the large wheels where they touch the floor.

SEATED VOLLEYBALL

(Move United, n.d.). Used with written permission from photographer.

Seated or sitting volleyball is a variant of traditional volleyball where athletes compete in volleyball while sitting on the floor (D'Isanto, 2020). Athletes with permanent lower extremity impairments such as amputations, knee, hip, and ankle injuries, muscle loss injuries, and those with no impairments are eligible to participate in seated volleyball (Move United, n.d.). Individuals with disabilities and able-bodied individuals can both compete in seated volleyball simultaneously because the ability level evens out when all athletes are seated while playing (D'Isanto, 2020). Seated volleyball is very similar to traditional volleyball with the exception of its court environment and playing rules (D'Isanto, 2020).

RULES

Seated volleyball has similar rules to traditional volleyball where there are 6 players on either side of the net for each team, matches are played over a best of 5 sets up to 25 points for the first 4 sets and up to 15 points for the final set, with a win-by-2-points format for all sets (Move United, n.d.). The overall goal of the game is to hit the ball over the net and land it in the opposing team's court to score 25 points before the opponent (Move United, n.d.).

<u>Rules Specific to Seated Volleyball Include:</u>

Incorporates the Adapt/Modify Intervention Approach (Dunn et al., 1994).

- Players cannot lift their bottoms off the court when executing an attack hit.

- Players must always have some part of their body in contact with the court unless performing a defensive play where there is a brief loss of contact with the court.
- The players' hands and legs can lie in the attack or free zone outside the court.
- Back row players can hit but cannot touch or cross the attack line with their bottom.
- The ball can touch ANY part of the body during a hit.
- A team gets a maximum of 3 hits before returning the ball to the opponent. (Blocking does not count as a hit)
- One player cannot hit the ball 2 times consecutively.
- Players may touch the ball beyond the net while blocking as long as they don't interfere with the opponent before they hit the ball.
- Players may contact the net without fault as long as it doesn't interfere with play.
- Players can block or attack an opponent team's serve.
- A point is scored when:
    - The ball successfully lands on the opponent's side of the court.
    - The opponent team commits a fault. (Action against the rules)
    - The opposing team receives a penalty.
- Points are scored for both the serving and receiving teams. (Rally scoring)
- Serving alternates from team-to-team with scoring and after each set.

(World ParaVolley, 2022)

ENVIRONMENT

Seated volleyball can be played essentially anywhere where there is an open space; for those not playing in a competitive tournament, the court size and setup can be modified to

ensure all athletes can engage in the sport (Move United, n.d.). In general, a seated volleyball environment includes the playing court and free zone that is rectangular and symmetrical (World ParaVolley, 2022).

Incorporates the Adapt/Modify Intervention Approach (Dunn et al., 1994).

- Playing court is a 10-meter (approximately 32 feet) by 6-meter (approximately 19 feet) rectangle that is surrounded by a 3-meter-wide (approximately 10 feet) free zone on all sides.
- Center line under the net divides the court into two equal courts measuring 6-meters (approximately 19 feet) by 5-meters (approximately 16 feet).
- Attack line marked at 2-meters (approximately 6-1/2 feet) from the center line which forms the front zone.
- Net height is 1.15-meters (approximately 3 feet) for men and 1.05-meters (approximately 3 feet) for women.

(World ParaVolley, 2022)

EQUIPMENT

Most of the equipment required for seated volleyball is the same as traditional volleyball as this includes a volleyball, net, posts, and a scoreboard (World ParaVolley, 2022). This equipment can be adjusted based on the facility and needs of the athletes.

<u>Equipment Specific to Seated Volleyball Includes:</u>

**Incorporates the Create Intervention Approach (Dunn et al., 1994).*

- Personal wheelchairs for athletes that cannot sit on the floor unsupported
- Training volleyball that is slightly larger than a traditional volleyball (simplifies the game for beginners or those with severe physical difficulties)

- Upper extremity prosthetics for athletes that need them to help with passing serving, and blocking

(Move United, n.d.)

Average Prices of Seated Volleyball Equipment:

Additional equipment pricing, website links, and vendors will be listed in the adaptive sports equipment resource handout in Appendix B.

- Volleyballs: $5-$100, Trainer volleyballs: $13-$26 (FlagHouse, 2023a)
- Sitting volleyball net: $370-$710
- Pair of net antennas: $150
- Court boundary markers: $656

(Sports Imports, n.d.)

SAFETY/PRECAUTIONS

Incorporates the Prevent Intervention Approach (Dunn et al., 1994).

- Lower limb prosthetics are not recommended as they may cause injuries to other athletes that fall on top of them (Move United, n.d.).
- Players cannot purposefully screen their opponent preventing them from seeing the flight path of the ball, this may lead to unintended injuries.
- An official/referee must stop a rally if a serious injury or accident has occurred to an athlete.
- Physical attacks, aggressiveness, or threatening behavior will lead to a penalty, expulsion, or disqualification based on the official's judgement.

(World ParaVolley, 2022).

ADAPTIVE WEIGHTLIFTING/EXERCISE

(Move United, n.d.). Used with written permission from photographer.

To complement and enhance adaptive sports performance, individuals with physical disabilities can engage in adaptive exercise/physical activity (Move United, n.d.). Adaptive exercise is similar to conventional exercise as it includes muscular endurance, muscular strength, and muscular power routines (Move United, n.d.). Anyone with a disability can engage in adaptive weightlifting/exercise to help increase strength, prevent injuries, or improve sports performance (Move United, n.d.). Adaptive physical activity is a complement to adaptive sports as it improves sport performance and is similar to standard physical activity with the exception of modified equipment and exercise approaches (Move United, n.d.). Not only do adaptive sports fit within the occupation of health management, but physical activity (i.e., exercise and strength training) also fits within the occupation health management, and therefore, the category of adaptive sports (AOTA, 2020b). Reitz and Scaffa (2020) also found that improvement of the health and well-being of individuals with disabilities is achieved through the occupation of health management and physical activity. One of the major types of adaptive physical activity/exercise is para powerlifting.

RULES

In its simplest form, para powerlifting includes an individual who lays on their back, un-racks a weighted barbell, brings it down to their chest, pushes it back up, and re-racks the bar (Move United, n.d.). An individual can engage in para powerlifting for many reasons

including training for sports, increasing muscular endurance, strength, tone, or mass, or improving one's health (Move United, n.d.). Para powerlifting is very similar to standard bench pressing, but has some modifications to its equipment and rules (Move United, n.d.).

Incorporates the Adapt/Modify Intervention Approach (Dunn et al., 1994).

- Athlete must lower the bar to their chest, stop the bar at their chest, and then press it upwards to an arms-length with their elbows locked.
- The bar must descend to the athlete's chest evenly without it "laddering" or moving side-to-side.
- Once descended, the bar must remain static and cannot sink into the athlete's chest before pressing upwards.
- Athlete's head to heals must remain on the bench during the entire lift. Their knees must be in full extension with their feet on the bench at all times.
- Athlete's legs must not move during the lift.
- 1-2 bench straps can be used around the athlete's legs and bench to provide lower extremity stability. (Can be placed from the angle joints up to the hip joints.)
- An official can help the athlete un-rack the bar if desired.
- For competition, an athlete must have a lower extremity impairment including SCIs, spina bifida, congenital limb deficiency, lower limb amputation, CP, bone shortening, multiple sclerosis, etc.
- For competition, the athlete has 1 lift attempt in 3 separate rounds.
- For competition, athletes compete within groups determined by their bodyweight.

(International Paralympic Committee, 2022)

ENVIRONMENT

- For a para powerlifting competition, the venue must include an indoor or outdoor site with a field of play area housing a platform consisting of a powerlifting bench and ramps to enter the stage through the use of mobility aids (International Paralympic Committee, 2022). During a competitive lift, there are three referees officiating the lift simultaneously (Move United, n.d.). One referee is above the athlete's head, and the other two are on the sides of the athlete near their knees. Each referee has a red and white light which they use to determine if the athlete performs a "clean" lift; two out of three lights must be white for it considered to be a clean lift (Moved United, n.d.).
- General adaptive weightlifting/exercise can be carried out in any YMCA, recreational facility, weight room, etc. as long as there is adequate adaptive equipment for individuals with disabilities to engage in physical activity.

EQUIPMENT

The equipment needed for para powerlifting is almost identical to traditional bench press, but it requires some changes including the size and shape of the bench and the assistive bench straps for stability (Move United, n.d.). Other general adaptive exercise equipment includes different adaptations to allow individuals with disabilities to engage in physical activity.

<u>Equipment Specific to Para Powerlifting Includes:</u>

Incorporates the Create Intervention Approach (Dunn et al., 1994).

- Powerlifting bench (2100 millimeters in length, 610 millimeters wide- bed, 305 millimeters- head)

- Bar rack (adjustable for varying sized athletes)
- Powerlifting bar (20 kilogram in weight)
- Metal or rubber weighted discs (0.25 kilograms to 50 kilograms)
- Bench straps

(International Paralympic Committee, 2022)

Average Prices of Para Powerlifting Equipment:

Additional equipment pricing, website links, and vendors will be listed in the adaptive sports equipment resource handout in Appendix B.

- Generic bench strap: $20
- Powerlifting bench: $850
- Powerlifting bar: $846.25
- Weighted discs: $25-$1800

(Logan University, 2023)

SAFETY/PRECAUTIONS

Incorporates the Prevent Intervention Approach (Dunn et al., 1994).

- Each athlete must have two spotter loaders on both sides of the powerlifting bar to assist with un-racking and re-racking the bar and ensure the bar does not fall onto the athlete's upper body.
- An official may signal a "rack command" to alert the spotter loaders to grab the powerlifting bar from the athlete and re-rack it if the official detects any safety concerns.

(International Paralympic Committee, 2022)

- **Exercise Recommendations for Children:** For children younger than 6-years old, it is recommended that they get 3 hours per day of light, moderate, or vigorous activity to prevent health complications and enhance growth and development (Piercy et al., 2018). Additionally, children and adolescents ages 6-17 years, should engage in vigorous-intensity and muscle-strengthening physical activities at least 3 days per week (Piercy et al., 2018). It is recommended that children and adolescents with disabilities should strive to get the same amount of physical activity as their able-bodied peers (Piercy et al., 2018). In general, children ages 6 and older should begin bone-strengthening and muscle-strengthening exercises as earlier as possible to prevent diseases and injuries (Piercy et al., 2018).
- **Exercise Recommendations for Adults:** Adults should engage in 150-300 minutes of moderate-intensity exercise per week, or 75-150 minutes of vigorous-intensity exercise per week (Piercy et al., 2018). It is recommended that adults also engage in muscle-strengthening at least 2 days per week (Piercy et al., 2018). Adults with physical disabilities or chronic health conditions should follow the same guidelines as their able-bodied peers to improve their physical and cognitive health (Piercy et al., 2018).

ADDITIONAL EXERCISE EQUIPMENT & PRECAUTIONS

Incorporates the Adapt/Modify and Prevent Intervention Approaches (Dunn et al., 1994).

TheraCycle (Motorized bike)

- *Price*: $3299-$5599
- *Vendor & Link*: TheraCycle Corporation- https://www.theracycle.com/exercise

- *Precautions*: Stop button or safety cord can be used to instantly stop the cycle if an individual is having a safety issue (Theracycle Corporation, n.d.).

VitaGlide (Seated Rower)

- *Price*: $3299
- *Vendor & Link*: Corada- https://www.corada.com/products/vitaglide
- *Precautions*: Setting the resistance level and timed activity level too high may result in negative health complications. Grip only the handles to ensure hands and fingers do not get injured from getting caught in the handle slots (Corada, n.d.).

Concept 2 SkiErg (Vertical Rower)

- *Price*: $850
- *Vendor & Link*: Concept 2- https://www.concept2.com/skierg/concept2-skierg
- *Precautions*: User must pull the cords in a smooth motion to prevent slack in the cords while exercising, this will prevent equipment damage and injuries (Concept 2, n.d.).

Adjustable Height Functional Trainer

- *Price*: $2450
- *Vendor & Link*: Fitness Equipment Empire- https://www.fitnessequipmentempire.com/product/cybex-ft360-functional-trainer/
- *Precautions*: Users must be careful when releasing the cables to ensure they do not fling back due to the connected weight. Users must also make sure the weight pin is fully in place before exercising (Fitness Equipment Empire, n.d.).

Evolv Easy-Stand Glider (Elliptical)

- *Price*: $5799

- *Vendor & Link*: SpinLife- https://www.spinlife.com/EasyStand-Evolv
- *Precautions*: User must be properly fitted to the glider by a qualified health professional to ensure they do not fall and become injured. Never adjust the glider while the user is in the standing position (Spinlife, n.d.).

Functional Electrical Stimulation (FES) Bike

- *Price*: $9000-$30000
- *Vendor & Link*: Myolyn- https://myolyn.com/for-clinics/overview/
- *Precautions*: Before using FES bike, a qualified health professional must place electrodes and ensure the user is safe to exercise with the equipment. The electrodes and level of muscle contractions are specified for each individual, so the user must get assistance from a professional to prevent injuries (Myolyn, n.d.).

Manual Wheelchair Treadmill

- *Price*: $990-$1350
- *Vendor & Link*: Invictus Active- https://www.invictusactive.com/product/invictus
- *Precautions*: Wheelchair user must ensure that their wheelchair is secured to the treadmill using the rachet strap and hook before they begin exercising. This ensures that the user will not tip or roll off the treadmill while exercising. The user must also ensure that they have adequate air in their tires to rotate them on the treadmill without excessive force (Invictus Active, n.d.).

CanDo Rickshaw Exerciser (Weighted Sitting Dip Machine)

- *Price*: $1544
- *Vendor & Link*: Amazon- https://www.amazon.com/CandoExerciser

- *Precautions*: Users must slowly rack weights onto the machine to ensure they do not injure their hands and fingers. Users must use proper body mechanics and an appropriate weight to ensure they do not injure strain their muscles ("CanDo Rickshaw Exerciser," 2018).

Portable Hand Bike/Peddler

- *Price*: $35-$50
- *Vendor & Link*: Amazon- https://www.amazon.com/Hausse-Portable-Exercise
- *Precautions*: User must place the portable hand bike on a flat and stable surface to ensure the bike does not fall and cause an injury ("Hausse Pedal Bike," 2019).

Wheelchair Mounted Resistance Bands

- *Price*: $28
- *Vendor & Link*: How I Roll Sports- https://howirollsports.com/shop/bands
- *Precautions*: Users must clip resistance bands securely onto the bars on their wheelchair to ensure they don't unclip and recoil back at them causing an injury (How I Roll Sports, 2018a).

Thera-Band Wrist Weights

- *Price*: $19-$23
- *Vendor & Link*: How I Roll Sports- https://howirollsports.com/wrist-weights
- *Precautions*: Users must strap the wrist weights securely around their wrists to ensure they don't fall off while exercising and cause an injury (How I Roll Sports, 2018b).

Medicine Ball with Handles

- *Price*: $46-$79

- *Vendor & Link*: Amazon- https://www.amazon.com/SPRI-Dual-Xerball-Medicine
- *Precautions*: Users must focus on keeping their hands within the handles of the medicine ball to ensure it doesn't drop and cause injuries ("SPRI Xerball," 2012).

LapMat

- *Price*: $80-$85
- *Vendor & Link*: Equip Products- https://equipproducts.com/products/lapmat
- *Precautions*: LapMat is used to protect the individual's legs from injury in the event that a barbell or medicine ball is dropped on them. Users must place the LapMat with the correct side up and strap it in place to ensure it absorbs shock properly (Equip Products, 2023).

Raised Plinth Mat

- *Price*: $645-$5932
- *Vendor & Link*: Tiger Medical- https://www.tigermedical.com/search.mattable
- *Precautions*: Users must ensure that they are positioned at a near distance to the mat before sitting down to prevent falling and injuries. For mats that are collapsible, stationed on the wall, or electronically controlled, users must be cautious of where they and others are positioned so that the mat does not fall on them (Tiger Medical, n.d.).

EXERCISE EQUIPMENT MODIFICATIONS

Colostomy/Catheter Bag Holders

- *Price*: $10-$30
- *Link*: https://www.amazon.com/NYOrtho-Urine-Bag ("NYOrtho Urine Bag Holder," 2020)

NuStep Thigh Guides / Leg Stabilizers

- *Price*: $780 (Bilateral)
- *Link*: https://www.usmedrehab.com/products/t4-leg-stabilizer?variant=32186654359641 (US MedRehab, 2023)
- Simplification: An individual could use a gait belt strapped around their thighs to hold them in and stabilize their legs while they are using the NuStep.

SciFit Arm Bike Accessories

- *T-Handle Seat Adjustment Price*: $57.50
- *Assist Gloves Price*: $162.50
- *Wheelchair Ramp Price*: $775
- *Link for all*: https://www.fab-ent.com/exercise/fitness-equipment/scifit-equipment/ (Fabrication Enterprises, 2023)

Rubber Door Stop with Magnet for Seated Rower

- *Price*: $10.50
- *Link*: https://www.webstaurantstore.com/master-caster-giant-foot-yellow-magnetic-door-stop (Webstaurant Store, 2023)
- Use: Individuals can place the rubber door stop underneath the seat on the seated rower to stabilize the seat while they get on the machine. The door stop will make it easier for individuals with physical disabilities to access the rower equipment.

Extended Handrails for Treadmill

- *Price*: $550.00
- *Link*: https://www.advantagemedical.com/products/medical-hand-rails-for-treadmills/ (Advantage Medical, 2023)

OTHER ADAPTIVE EXERCISE RECOMMENDATIONS

- The YMCA facility could designate a specific running track lane as a wheelchair-designated lane to make sure wheelchair users feel comfortable and confident using the track. For example, the inside lane could be labeled as the walking/wheelchair lane to promote universal accessibility.
- Place signage around the YMCA wellness center to encourage individuals with disabilities to ask for help from YMCA staff when needed. Additionally, place signage around the wellness center encouraging able-bodied individuals to ask individuals with disabilities if they need assistance when they look like they are having difficulty using exercise equipment.
- Place signage near the YMCA smith machine designating it as a pull-ups exercise area for all wheelchair users. Wheelchair users can ask YMCA staff or another member to assist in moving the smith machine bar down if it is out of reach. Otherwise, wheelchair users can place the bar at their desired height and perform pull-ups from their wheelchair.
- Implement adaptive group fitness and exercise classes for individuals specifically with physical and/or cognitive disabilities to increase occupational engagement and membership. Individuals with disabilities often lack the confidence to exercise in community settings as they don't see many other individuals with disabilities exercising in these settings (K. Tomoson, personal communication, January 26, 2023). Offering group exercise classes such as adaptive yoga or adaptive dance may increase the membership of individuals with disabilities at the YMCA (K. Tomoson, personal communication, January 26, 2023).

- Consider purchasing adaptive exercise equipment similar to the Cybex Prestige Total Access series equipment. This equipment allows traditional seats to be moved out of the way for wheelchair users to move in and use the upper body strengthening equipment. Current strengthening equipment at the YMCA (Precor brand) does not allow for this equipment add on. Cybex Total Access series can be found at this website: https://www.lifefitness.com/en-us/cybex/strength/selectorized/prestige-total-access.

FUNDING / GRANT INFORMAITON

Funding Foundation	Focus Area	Grant Amount	Submission Timeframe	Application Link
Alexandria "Difference Maker" Grant	Health education, physical health, and mental health.	$5,000 - $30,000	May 1st – June 30th	https://www.grantinterface.com/Home/Logon?urlkey=centralmn&
Bernick's Beverages & Vending Fund Grant	Activities that address active lifestyles and well-being.	$5,000 - $40,000	July 1st – August 31st	https://www.grantinterface.com/Home/Logon?urlkey=centralmn&
Ruth McDonald Fund Grant	Social connections for people living in isolation.	$2,500 - $5,000	May 1st – June 30th	https://www.grantinterface.com/Home/Logon?urlkey=centralmn&
Walmart Local Community Grant	QOL impacts and recreation, arts, or cultural experiences for all.	$250 - $5,000	Q1: Feb 1st – April 15th Q2: May 1st – July 15th Q3: August 1st – Oct 15th Q4: Nov 1st – Dec 31st	https://www.cybergrants.com/pls/cybergrants/quiz.display_question?x_gm_id=2797&x_quiz_id=4028&x_order_by=1
Bush Foundation	Areas in MN, ND, SD, or native nations that have a defined plan and potential impact.	$198,000 - $4,000,000	Accepted Year Round	https://www.tfaforms.com/4834917
Otto Bremer Foundation	Multitude of areas for organizations in MN, MT, ND, or WI.	Up to $75,000	Accepted on a Continuous Basis	https://ottobremer.force.com/portal/FGM_Portal__CommunitySignin
Central MN Special Needs Grant	Equipment needs and programs that affect clients.	$5,000 - $20,000	September 1st – October 31st	https://www.grantinterface.com/Home/Logon?urlkey=centralmn&
Challenged Athletes Foundation	Equipment and sport expenses.	Up to $2,500	September 1st – November 3rd	https://www.tfaforms.com/4997799

Coach / Officials Training

Adaptive sports coaches and officials are required to complete training courses to become certified in the sports that they will coach or officiate. This will promote safety for the athletes participating in adaptive sports and will ensure the rules are carried out properly. There are multiple coach and officials training courses for adaptive sports; a few are listed below:

Coaching Courses:

- ***National Federation of State High School Associations coaches training***
    - https://nfhslearn.com/courses (Free & Paid Courses)
- ***Adaptive Training Academy Adaptive and Inclusive Trainer certification course***
    - https://www.ata.fit/adaptive-inclusive-training-course/ (Paid Course)
- ***BlazeSports Certified Adaptive Recreation and Sports Specialist training***
    - http://blazesportsinstitute.org/ (Paid Course)
- ***American Association of Adapted Sports Programs coaches training***
    - https://adaptedsports.org/aaasp-resource-center/#aaasp-drills (Free Wheelchair Basketball Coaching Brochures)
- ***Team USA Wheelchair Basketball Training***
    - https://mobilecoach.teamusa.org/page/2456/caf-nwba-wheelchair-basketball-training-zone (Free Videos)

Officiating Courses:

- ***Minnesota State High School League officials training***
    - https://www.mshsl.org/who-are-you/officiating (Paid Courses)
- ***National Wheelchair Basketball Association officiate resources***
    - https://www.nwba.org/officiate (Free Resources)

Athlete Registration Form

Please fill out the following form, **one per program participant/athlete.** Ensure all information is complete, legible, and a signature is provided on the second page.

Athlete (Child/Adult) Information:

Last Name: _____	First Name: _____ Nickname: _____	
Street Address: _____		
City: _____	State:_____	Zip code: _____
Gender: Female ☐ Male ☐	Date of Birth (mm/dd/yyyy): _____	
Desired Sport: Wheelchair Basketball ____ Seated Volleyball ____ Para Powerlifting ____		
T-Shirt size: (check one) Kid / Adult Small ☐ Medium ☐ Large ☐ X-Large ☐		
Are you a member of the YMCA? Yes ☐ No ☐		
List known Allergies/Medical Conditions:_____ N/A ☐		
Do you or your child require the use of: (Check all that apply) EpiPen ☐ Inhaler ☐ Other ☐ _____		
Does your child have one in his/her backpack? Yes ☐ No ☐ Nurse has it ☐		
Can he/she use it without an adult? Yes ☐ No ☐		
OTHER IMPORTANT MEDICAL INFO / NEEDS:	Describe:	
	Are you Hispanic or Latino? Yes ☐ No ☐	
	What is your race? (Check all that apply)	
	Caucasian ☐ Asian ☐ Black or African American ☐ American Indian/Alaskan Native ☐	
	Native Hawaiian or Other Pacific Islander ☐ Other: _____	

Parent/Guardian or Self Contact Information:

Primary Phone #: (___)_____-_____ Home ☐ Cell ☐

Parent/Guardian or Self Name: _____ Phone #: (___)_____-_____

Email:_____@_____.___ Work ☐ Cell ☐

Parent/Guardian or Self Name: _____ Phone #: (___)_____-_____

Email:_____@_____.___ Work ☐ Cell ☐

Emergency Contact (not parent): _____

Phone #: (___)_____-_____or (____)_____-_____

Emergency Contact's relationship to self or child: (check one)

Grandparent ☐ Aunt/Uncle ☐ Spouse ☐ Sibling ☐ Family Friend ☐ Other: _____

Athlete Registration Form Continued

Have you been diagnosed with any of the following health conditions? Check all that apply.

- ☐ Cerebral Palsy (CP)
- ☐ Spinal Cord Injury (SCI)
- ☐ Multiple Sclerosis (MS)
- ☐ Limb Amputation
- ☐ Spina Bifida
- ☐ Congenital Limb Deficiency
- ☐ Bone Shortening
- ☐ Other: _____

If you checked one of the conditions above, what type of mobility aid (if any) do you use to get around? Check all that apply.

- ☐ Walker
- ☐ Cane
- ☐ Crutches
- ☐ Ankle-Foot Orthosis (AFO)
- ☐ Wheelchair (**Circle One**: *Manual / Powered*)
- ☐ Other: _____

How did you hear about YMCA Adaptive Sports Programs?	**Have you participated in Adaptive Sports Before?**
☐ Family/Friend/Word of Mouth ☐ YMCA Staff Member ☐ YMCA Website ☐ Healthcare Professional ☐ District 206 Community Ed Brochure ☐ Special Olympics Facebook Page ☐ The Windmill Project ☐ Other: _____	☐ Yes ☐ No **If yes, which sport?** ☐ Wheelchair Basketball ☐ Seated Volleyball ☐ Para Powerlifting ☐ Other: _____

For YMCA Staff Use ONLY

Athlete Status:	**Chosen Sport:**	**Sport Location:**
☐ Enrolled ☐ Wait List	☐ Wheelchair Basketball ☐ Seated Volleyball ☐ Para Powerlifting	☐ YMCA Gym ☐ YMCA Fitness Center
Primary Coaches & Officials: Name: Name: Name:	**Below Forms Are Signed and On File:** ☐ Consent and Release Form ☐ Authorization for Use and Disclosure of Health Information ☐ Program Evaluation Survey	

Parent or Athlete Signature: _____

Program Evaluation Survey

Thank you for participating in the Alexandria Area YMCA Adaptive Sports Programs. By taking time to fill out this survey, you are helping the YMCA improve its programs.

Today's Date (MM/DD/YYY): _____ / _____ / _____
Zip Code: _____

Check which adaptive sport you participated in: (Check all that apply)

- ☐ Wheelchair Basketball
- ☐ Seated Volleyball
- ☐ Para Powerlifting

Please select how satisfied you are with the following features of the adaptive sport you participated in:

	1 Not at all satisfied	2	3	4	5 Very satisfied
The coaching provided.	☐	☐	☐	☐	☐
The officiating.	☐	☐	☐	☐	☐
The pace of play.	☐	☐	☐	☐	☐
The physical area designated for the sport.	☐	☐	☐	☐	☐
The adaptive equipment offered.	☐	☐	☐	☐	☐

Please select how much you agree with the following statements after participating in YMCA adaptive sports:

	1 Strongly disagree	2	3	4	5 Strongly agree
My self-confidence has increased.	☐	☐	☐	☐	☐
I feel more engaged in the YMCA and my community.	☐	☐	☐	☐	☐
I have built new, positive relationships.	☐	☐	☐	☐	☐
My disability does NOT hold me back.	☐	☐	☐	☐	☐
I will likely participate in adaptive sports again.	☐	☐	☐	☐	☐

Have you ever participated in adaptive sports programs in the past?

- ☐ Yes (describe the sport: _____)
- ☐ No

If yes, how does that adaptive sports program compare to the one you participated in at the Alexandria Area YMCA?

Much Worse	Worse	Similar	Better	Much Better
☐	☐	☐	☐	☐

- ■ Comments:

Were you already a member of this YMCA before starting this program?

- ☐ Yes
- ☐ No

If No, do you now plan on becoming a member of this YMCA?

- ☐ Yes, already a member.
- ☐ Yes, in the next 30 days.
- ☐ Yes, in the next 60 days.
- ☐ Yest, within the year.
- ☐ No, because: _____

On a scale of 0-10, how likely is it that you would recommend YMCA adaptive sports to others? Please circle one number.

0	1	2	3	4	5	6	7	8	9	10
Not at all likely										*Extremely likely*

How strongly do you agree with this statement? "I enjoy physical activity and sports."

	1 Strongly disagree	**2**	**3**	**4**	**5** Strongly agree
Now	☐	☐	☐	☐	☐
Before participating in YMCA Adaptive Sports programs.	☐	☐	☐	☐	☐

Additional Comments:

CONSENT & RELEASE FORM

In consideration of participating in Alexandria Area YMCA (110 Karl Drive NW, Alexandria, Minnesota) ("**YMCA**") activities, and for other good and valuable consideration, I hereby agree to **release** and **discharge from liability** arising from negligence YMCA and its owners, directors, officers employees, agents, volunteers, participants, and all other persons or entities acting for them (hereinafter collectively referred to as "Releasees"), on behalf of myself and my children, parents, heirs, assigns, personal representative and estate, and also agree as follows:

1. I acknowledge that participating in YMCA activities, **wherever located and in whatever manner said activities may be held, including without limitation onsite, virtual, and pre-recorded on video activities**, involves known and unanticipated risks which could result in physical or emotional injury, paralysis or permanent disability, death, and property damage. Risks include, but are not limited to, broken bones; exposure to or contracting of communicable diseases; torn ligaments or other injuries as a result of falls or contact with other participants; death as a result of drowning or brain damage caused by near drowning in pools or other bodies of water; medical conditions resulting from physical activity; and damaged clothing or other property. I understand such risks simply cannot be eliminated, despite the use of safety equipment, without jeopardizing the essential qualities of the activity.

2. **I expressly accept and assume all of the risks inherent in this activity or that might have been caused by the negligence of the Releasees.** My participation in this activity is purely voluntary and I elect to participate despite the risks. In addition, if at any time I believe that event conditions are unsafe or that I am unable to participate due to physical or medical conditions, then I will immediately discontinue participation.

3. **I hereby voluntarily release, forever discharge, and agree to indemnify and hold harmless Releasees from any and all claims, demands, or causes of action which are in any way connected with my participation in this activity, or my use of their equipment or facilities, arising from negligence. This release does not apply to claims arising from intentional conduct.** Should Releasees or anyone acting on their behalf be required to incur attorney's fees and costs to enforce this agreement, I agree to indemnify and hold them harmless for all such fees and costs.

4. I represent that I have adequate insurance to cover any injury or damage I may suffer or cause while participating in this activity, or else I agree to bear the costs of such injury or damage myself. I further represent that I have no medical or physical condition which could interfere with my safety in this activity, or else I am willing to assume – and bear the costs of – all risks that may be created, directly or indirectly, by any such condition.

5. In the event that I file a lawsuit, I agree to do so in state court in Douglas County, Minnesota, and I consent to the exclusive jurisdiction thereof. I further agree that the substantive law of Minnesota shall apply.

6. I agree that if any portion of this agreement is found to be void or unenforceable, the remaining portions shall remain in full force and effect. This release constitutes the entire agreement between the parties as to the representations and agreements made herein. This release is binding on my heirs, successors, affiliates, agents, insurers, and assigns, and all others asserting a claim of any kind or nature which arises from any YMCA activity.

By signing this document, I agree that if I am hurt or my property is damaged during my participation in these activities, whether onsite, video, recorded, virtual, or otherwise, then I may be found by a court of law to have waived my right to maintain a lawsuit against the parties being released on the basis of any claim for negligence.

I have had sufficient time to read this entire document and, should I choose to do so, consult with legal counsel prior to signing. Also, I understand that this activity might not be made available to me or that the cost to engage in this activity would be significantly greater if I were to choose not to sign this release and agree that the opportunity to participate at the stated cost in return for the execution of this release is a reasonable bargain. **I have read and understood this document and I agree to be bound by its terms.**

Signature_____ **Print Name**_____

Address_____ **City**_____ **State**_____ **Zip**_____

Telephone (__)_____ **Date** _____

PARENT OR GUARDIAN ADDITIONAL AGREEMENT
(Must be completed for participants under the age of 18)

In consideration of _____ (PRINT minor's names) being permitted to participate in this activity, I further agree to indemnify and hold harmless Releasees from any claims alleging negligence which are brought by or on behalf of minor or are in any way connected with such participation by minor.

Parent or Guardian_____ Print Name_____ Date_____

(If notarization is necessary, please sign & stamp this side of form.)

ADVERTISEMENT TEMPLATES

Link to Edit Template: https://www.canva.com/design/

Link to Edit Template: https://www.canva.com/design/

Link to Edit Template: https://www.canva.com/design/

Appendix B

Adaptive Sports Equipment Resource Handout

	Equipment	Pricing	Vendor/Links
Wheelchair Basketball	Standard Sport Wheelchairs	$1984-$2843	Vendor: How I Roll Sports (How I Roll Sports, 2018c) Link: https://howirollsports.com/product-category/wheelchairs/ Vendor: Amazon (“Drive Medical,” 2006) Link: https://www.amazon.com/Drive-Medical-Streak-Wheelchair
	High-Quality Wheelchairs	$2442-$4385	
	Used Sports Wheelchairs	$140-$720	
	Seat Cushions	Foam: $60-$385 Gel: $161-$554 Air: $90-$436	
	Waist Straps	$25-$180	
	Calf Straps	$67-$83	
Seated Volleyball	Volleyballs	Standard: $5-$100 Trainer: $13-$26	Vendor: Flag House (FlagHouse, 2023a) Link: https://www.flaghouse.com/Sports-/Volleyball/Balls/
	Sitting Volleyball Net	$370-$710	Vendor: Sports Imports (Sports Imports, n.d.) Link: https://www.sportsimports.com/indoor-volleyball/
	Net Antennas	$150	
	Court Boundary Markers	$656	
Adaptive Powerlifting	Bench Straps	$20-$40	Vendor: Logan University (Logan University, 2023) Link: https://www.logan.edu/adapted-sports-and-programs/
	Powerlifting Bench	$850	
	Powerlifting Bar	$846.25	
	Weighted Discs/Plates	$25-$1800	

Additional Links to Adaptive Sports Equipment:

- **Wheelchair Basketball**
  - Sports Wheelchairs:
    - Quickie Wheelchairs: $1340-$1510 (Southwest Medical, n.d.).
      - https://www.quickie-wheelchairs.com/Sports-Wheelchairs/1403c0
    - Top End Wheelchairs: $2714-$3455 (Invacare, n.d.).
      - https://topendwheelchair.invacare.com/allcourt/category/allcourtbasketball-topend
  - Equipment:
    - Anti-Tippers: $58-$165 (Karman Healthcare, n.d.).
    - Armrests: $32-$38 (Karman Healthcare, n.d.).
    - Back and Cushions: $58-$219 (Karman Healthcare, n.d.).
      - https://www.karmanhealthcare.com/wheelchairs/wheelchair-parts-accessories/
- **Seated Volleyball**
  - Equipment:
    - Volleyball Net: $399 (Spieth America, n.d.).
    - Net Antennas: $63 (Spieth America, n.d.).
    - Volleyball Net Posts: $1041-$5900 (Spieth America, n.d.).
      - https://home-ca.spiethamerica.com/search?type=products&q=volleyball*
- **Adaptive Powerlifting**
  - Equipment:
    - Powerlifting Bars: $355-$1208 (Eleiko, n.d.).
    - Barbell Collars/Clips: $112-$328 (Eleiko, n.d.).
    - Discs/Plates: $4.50-$274 (Eleiko, n.d.).
    - Powerlifting Bench: $5562 (Eleiko, n.d.).
    - Bar Pad: $22 (Eleiko, n.d.).
      - https://eleiko.com/en-us/equipment

Appendix C

EHP Intervention	Individual	Context	Task
Modify/Adapt	Person variables that restrict individuals from engaging in sports include their physical disabilities, lack of desire, deficits in social communication, cognitive barriers, emotional barriers, fear of injury, preference of inactive lifestyles, and challenging behaviors (Declerck et al., 2021; Jacinto et al., 2021; Obradović et al., 2021; van der Linden et al., 2022). An adaptive sports program will help modify traditional sports to make them accessible for all, individuals' personal barriers will be broken down and engagement in sports will increase.	Many sports facilities lack adaptive sport programs due to contextual barriers such as lack of appropriate adapted material and equipment, lack of infrastructure, lack of funding, lack of availability of supervisors, lack of skilled supervisors to monitor sessions, restrictive physical environment such as stairways instead of ramps and tight bathrooms and locker rooms, uneven roads, poorly maintained sidewalks, and inadequate public transportation systems (Declerck et al., 2021; Devi et al., 2013; Iverson et al., 2021; Obradović et al., 2021). With this literature, a YMCA facility will be modified to limit contextual barriers so that individuals with disabilities can engage in sports.	
Establish/Restore	Community adaptive sports programs lead to new learning, social participation, employment possibilities, and other IADLs. Engagement in adaptive sports for individuals with disabilities will help them establish new skills and engage in activities based on their interests and needs (Jozkowski & Hewitt, 2020).		Adaptive sports help increase social and community inclusion as well as establish a greater sense of self and a sense of community integration for individuals with disabilities. Engagement in adaptive sports have shown to connect individuals with disabilities to their community (Hanson et al., 2001; Jozkowski & Hewitt, 2020; McConkey et al., 2013). Engagement in adaptive sports will help establish greater community integration and a sense of belonging for individuals with disabilities.
Alter		Contextual barriers to engagement in sports for individuals with disabilities include a lack of suitable facilities near individuals' homes and lack of specialist coaches to help individuals with	

		disabilities engage in adaptive sports (van der Linden et al., 2022). Many individuals with disabilities who reside in rural communities lack the opportunity to engage in sports because they don't have adequate facilities. Development of an adaptive sports program within a rural community will help individuals with disabilities alter their current context and provide them with places to go and engage in adaptive sports.	
Prevent		Individuals with disabilities are restricted from engaging in sports due to contextual variables such as lack of awareness on the part of people without disabilities on how to involve disabled individuals on teams, poor perceptions and attitudes of people who are not disabled, lack of knowledgeable volunteers, and poor interactions with able-bodied people (Iverson et al., 2021; Obradović et al., 2021). An adaptive sports program developed in a rural community will prevent the lack of awareness on how to interact with individuals with disabilities and the negative perceptions of individuals with disabilities and their engagement in sports.	
Create	Engagement in adaptive sports leads to increased employment. Participation in adaptive sports helps support individuals' needs as they will have an increase in economic benefits when their employment rates are increased (Lastuka & Cottingham, 2015).	Successful adaptive sports communities include amenities and services that create opportunities for all individuals with disabilities to engage in sports. This includes qualified instructors, instructors with disabilities, specific sports facilities for those with disabilities, and universal design for the equipment, locker rooms, seating, and courts (Oh & So, 2022; United States Access board, 2003).	Individuals who engage in adaptive sports have an increased self-efficacy, increased confidence, feel empowered, have improved self-esteem, and an overall greater quality of life (Brown et al., 2021; Côté-Leclerc et al., 2017; Yazicioglu et al., 2012). Engagement in adaptive sports creates a new feeling of self-efficacy and QOL for individuals with disabilities.

Appendix C. EHP Intervention Approaches Table

Appendix D

Definitions of EHP Intervention Approaches

(Dunn et al., 1994)

Establish/Restore:

- Therapeutic intervention is focused on the person and how they can develop new skills/abilities or reinstate skills/abilities that they had lost in the past due to an injury or illness.

Alter:

- Therapeutic intervention is focused on the context and selecting an environment that enables optimal performance for a person's current skills and abilities. Rather than changing the present environment or person, a new satisfactory environment is selected.

Adapt/Modify:

- Therapeutic intervention is directed toward changing the context of the person or environment to support optimal performance. The task demands can also be modified to support performance.

Prevent:

- Therapeutic intervention is focused on preventing dysfunctional performance of the person. Components of the person, context, and task are analyzed prior to the performance to ensure dysfunctional performance does not occur.

Create:

- Therapeutic intervention is directed toward building circumstances that promote functional and optimal performance for the person. This intervention does not assume that the person has a disability that might interfere with performance.

Appendix E

Permissions

Prompt:

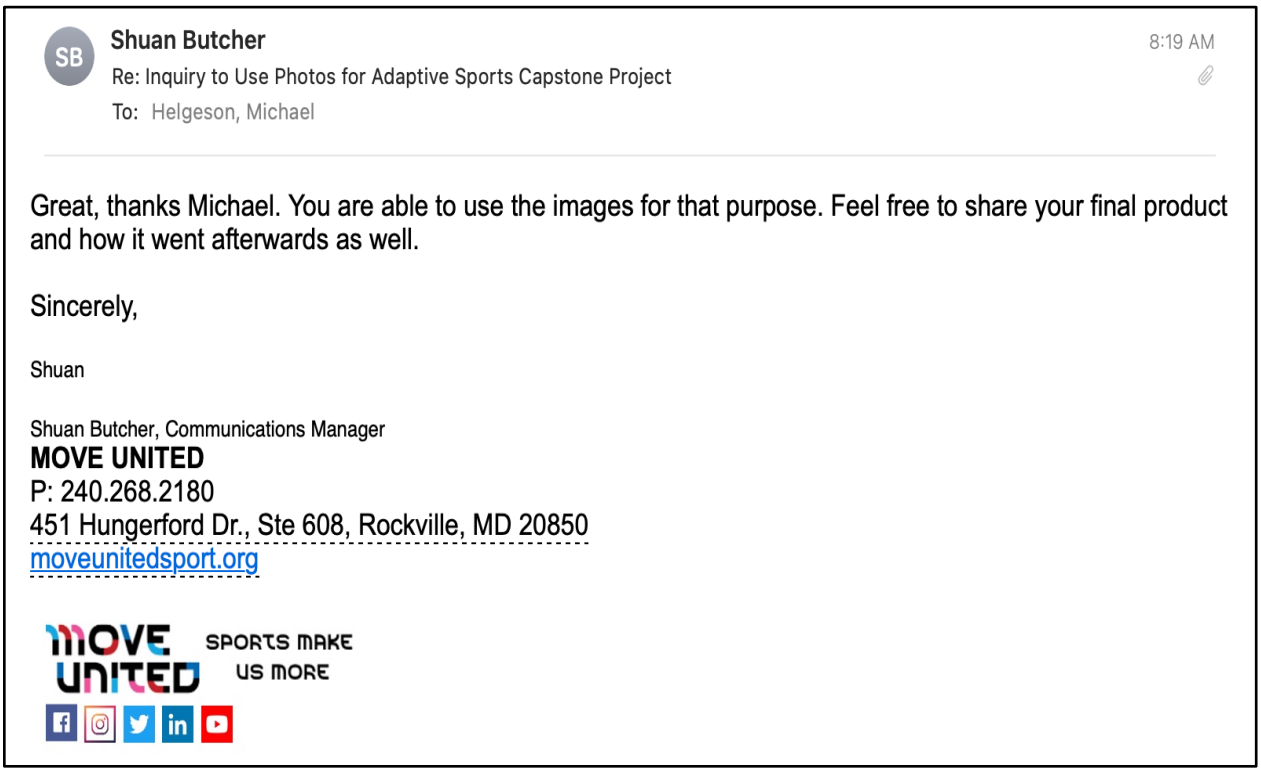
Hello (organization),

I wanted to reach out to you about images of the adaptive sports that you offer. I am an occupational therapy graduate student at the University of North Dakota (UND), and I am creating a product and presentation related to the implementation of adaptive sports at my local YMCA in Alexandria, MN. I am wondering if you would grant me permission to use photos of adaptive sports equipment and athletes that you have posted on your website. With your permission, I would be using these photos within my product and presentation while also providing proper citations and links to your website. The presentation, product, and resulting information will also be posted into a database called the UND Scholarly Commons which provides free access to all individuals and reaches thousands of people worldwide. I also hope the product I create will be implemented to help increase the number of adaptive sports programs in my rural community, and thus, increase awareness of your organization and the services you offer.

Thank you for your time and consideration,

Michael Helgeson, DOTS

Move United: Permission to use wheelchair basketball, sitting volleyball, para powerlifting images.



Shuan Butcher 8:19 AM
Re: Inquiry to Use Photos for Adaptive Sports Capstone Project
To: Helgeson, Michael

Great, thanks Michael. You are able to use the images for that purpose. Feel free to share your final product and how it went afterwards as well.

Sincerely,

Shuan

Shuan Butcher, Communications Manager
MOVE UNITED
P: 240.268.2180
451 Hungerford Dr., Ste 608, Rockville, MD 20850
moveunitedsport.org

MOVE UNITED SPORTS MAKE US MORE

Verbal permission received from the Alexandria Area YMCA to use its YMCA logo/image.

Permissions Continued

Prompt:

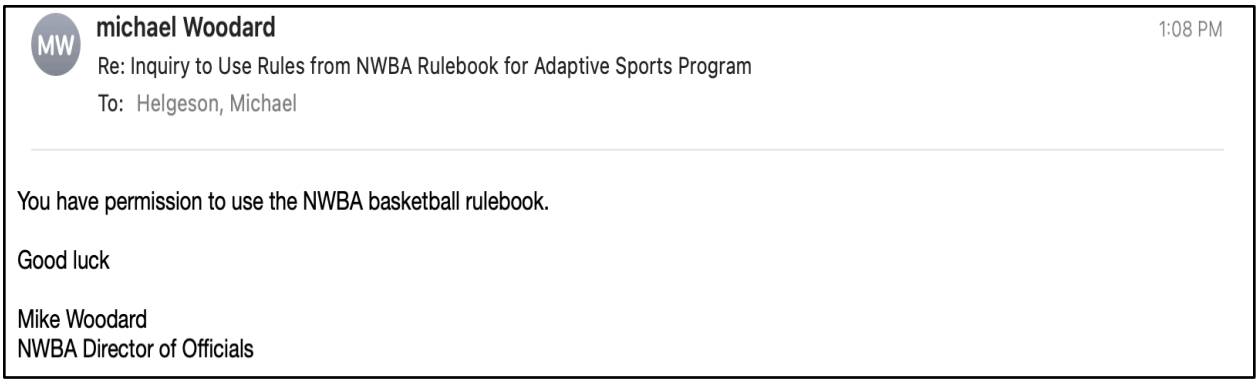
Hello (organization),

I wanted to reach out to you about using the rules defined in the (organization) rulebook for a prospective adaptive sports program. I am an occupational therapy graduate student at the University of North Dakota (UND), and I am creating a product and presentation related to the implementation of adaptive sports at my local YMCA in Alexandria, MN. I am wondering if you would grant me permission to list some of the rules for (specific sport) that are defined in the (organization) rulebook. With your permission, I would be using these rules within my product and presentation so that YMCA staff would be able to properly officiate and carry out sporting events. I would also provide proper citations and links to your (organization) website within my product and presentation. The presentation, product, and resulting information will be posted into a database called the UND Scholarly Commons which provides free access to all individuals and reaches thousands of people worldwide. I also hope the product I create will be implemented to help increase the number of adaptive sports programs in my rural community, and thus, increase awareness of your organization and the services you offer.

Thank you for your time and consideration,

Michael Helgeson, DOTS

NWBA, World ParaVolley, WPPO: Permission to use wheelchair basketball, sitting volleyball, and para powerlifting official rules.



MW **michael Woodard** 1:08 PM

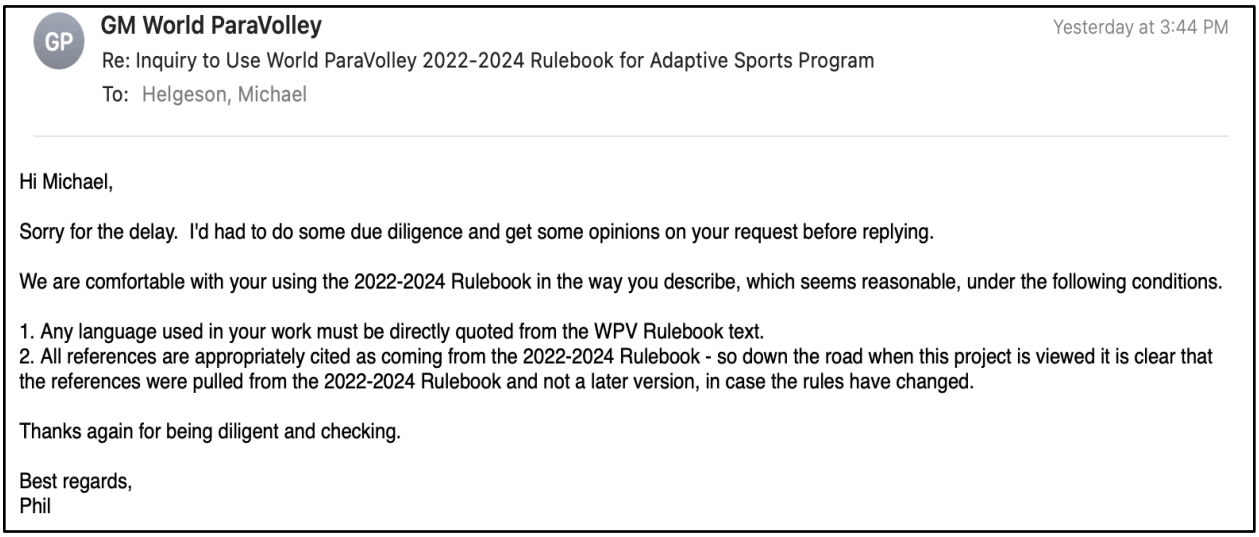
Re: Inquiry to Use Rules from NWBA Rulebook for Adaptive Sports Program

To: Helgeson, Michael

You have permission to use the NWBA basketball rulebook.

Good luck

Mike Woodard
NWBA Director of Officials



GP **GM World ParaVolley** Yesterday at 3:44 PM

Re: Inquiry to Use World ParaVolley 2022-2024 Rulebook for Adaptive Sports Program

To: Helgeson, Michael

Hi Michael,

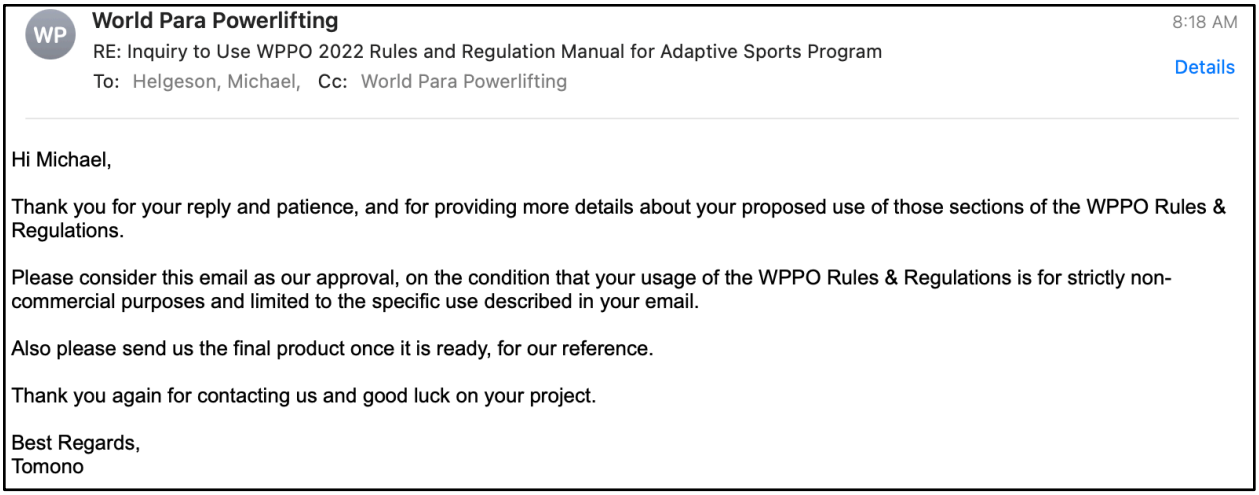
Sorry for the delay. I'd had to do some due diligence and get some opinions on your request before replying.

We are comfortable with your using the 2022-2024 Rulebook in the way you describe, which seems reasonable, under the following conditions.

1. Any language used in your work must be directly quoted from the WPV Rulebook text.
2. All references are appropriately cited as coming from the 2022-2024 Rulebook - so down the road when this project is viewed it is clear that the references were pulled from the 2022-2024 Rulebook and not a later version, in case the rules have changed.

Thanks again for being diligent and checking.

Best regards,
Phil



WP **World Para Powerlifting** 8:18 AM

RE: Inquiry to Use WPPO 2022 Rules and Regulation Manual for Adaptive Sports Program

To: Helgeson, Michael, Cc: World Para Powerlifting Details

Hi Michael,

Thank you for your reply and patience, and for providing more details about your proposed use of those sections of the WPPO Rules & Regulations.

Please consider this email as our approval, on the condition that your usage of the WPPO Rules & Regulations is for strictly non-commercial purposes and limited to the specific use described in your email.

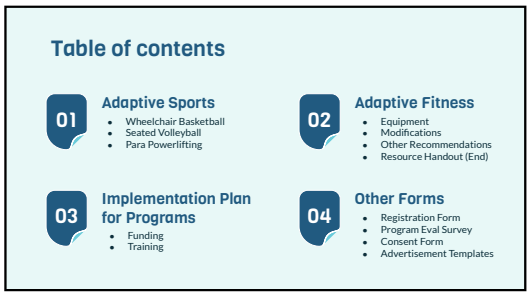
Also please send us the final product once it is ready, for our reference.

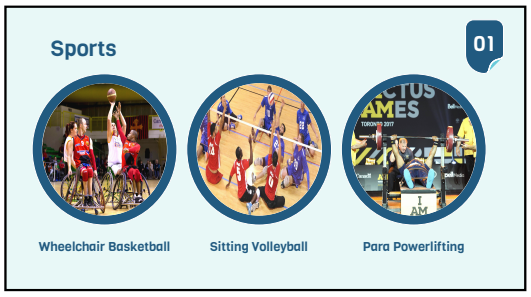
Thank you again for contacting us and good luck on your project.

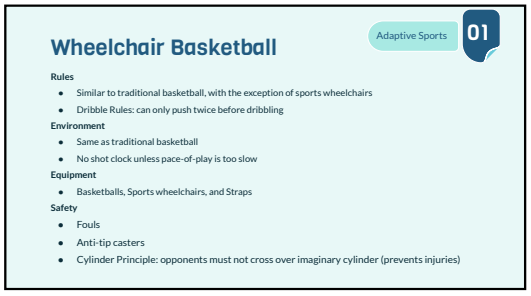
Best Regards,
Tomono

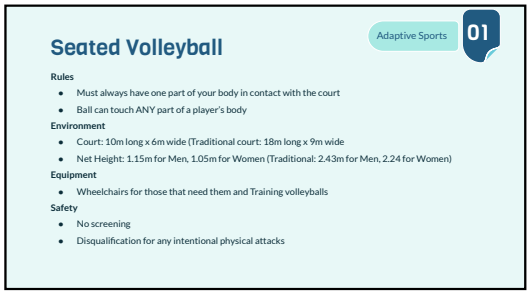
Appendix F

YMCA Adaptive Sports Manual Presentation









Para Powerlifting

Adaptive Sports 01

Rules

- Bench press competition where individuals do not use their lower extremities
- Bench straps are used for individuals who are able to use their lower body

Environment

- Powerlifting bench with a wider base than a traditional bench
- 3 referees, 1 at the head and 2 at the sides

Equipment

- Bench, Bar rack, Powerlifting bar, Weights, Bench Straps

Safety

- 2 spotter loaders on each side of the bar
- Referees signal a "rack command" if they deem any safety concerns

YMCA

Adaptive Fitness 02

Adaptive Equipment & Modifications

Adaptive Equipment

Adaptive Fitness 02

- Full list of possible adaptive equipment
- Phased list based on funding gained
- Possible partnership with Alomere to create a "***Modified Membership***" for adaptive fitness & rehab

Concept 2 SkiErg

Wall-Mounted Plinth Mat

Modifications

Adaptive Fitness 02

- List of adaptive exercise equipment modifications at the YMCA
- Benefits:
  - Less expensive
  - Take up less space
  - Easy to implement

NuStep Thigh Guides

Colostomy/Catheter Bag Holders

Other Recommendations

Adaptive Fitness 02

- Exercise recommendations for both children and adults
- Designate a running track lane as a wheelchair lane to increase inclusion
  - Ex: inside lane = walking / wheelchair-user lane
- Implement adaptive exercise classes specifically for individuals w/disabilities
  - Adaptive Yoga
  - Adaptive Dance
- Next purchase of exercise equipment could include Cybex Total-Access Series Equipment:

Swing-Away Chair for W/C Users

YMCA

Implementation Plan 03

Funding & Training

Funding & Grant Info

Implementation 03

Funding Foundation	Focus Area	Grant Amount	Submission Timeframe	Application Link
Alexandria "Difference Maker" Grant	Health education, physical health, and mental health.	\$5,000 - \$30,000	May 1st – June 30th	https://www.grantinterface.com/Home/Logon?urlkey=centralmn&
Bernick's Beverages & Vending Fund Grant	Activities that address active lifestyles and well-being.	\$5,000 - \$40,000	July 1st – August 31st	https://www.grantinterface.com/Home/Logon?urlkey=centralmn&
Ruth McDonald Fund Grant	Social connections for people living in isolation.	\$2,500 - \$5,000	May 1st – June 30th	https://www.grantinterface.com/Home/Logon?urlkey=centralmn&
Walmart Local Community Grant	QOL impacts and recreation, arts, or cultural experiences for all.	\$250 - \$5,000	Q1: Feb 1st – April 15th Q2: May 1st – July 15th Q3: August 1st – Oct 15th Q4: Nov 1st – Dec 31st	https://www.cybergrants.com/pls/cybergrants/quiz.display_question?x_gm_id=2797&x_quiz_id=4028&x_order_by=1
Bush Foundation	Areas in MN, ND, SD, or native nations that have a defined plan and potential impact.	\$198,000 - \$4,000,000	Accepted Year Round	https://www.tfaforms.com/4834917
Otto Bremer Foundation	Multitude of areas for organizations in MN, MT, ND, or WI.	Up to \$75,000	Accepted on a Continuous Basis	https://ottobremer.force.com/portal/FGM_Portal__CommunitySignin
Central MN Special Needs Grant	Equipment needs and programs that affect clients.	\$5,000 - \$20,000	September 1st – October 31st	https://www.grantinterface.com/Home/Logon?urlkey=centralmn&
Challenged Athletes Foundation	Equipment and sport expenses.	Up to \$2,500	September 1st – November 3rd	https://www.tfaforms.com/4997799

Coach & Officials Training

Implementation 03

Coach Training:

- National Federation of State High School Associations (NFHS)- ***Free & Paid courses***
- Adaptive Training Academy (ATA)- ***Paid course***
- BlazeSports- ***Paid course***
- American Association of Adapted Sports (AAASP)- ***Free Wheelchair Basketball coaching brochures***
- Team USA Wheelchair Basketball- ***Free videos***

Officials Training:

- Minnesota State High School League (MSHSL)- ***Paid courses***
- National Wheelchair Basketball Association (NWBA)- ***Free resources***

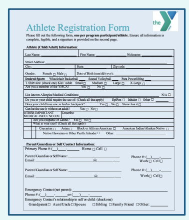
YMCA

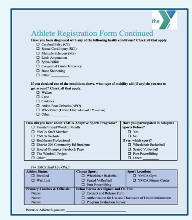
04 Other Forms

Registration, Program Eval, Consent, & Advertisements

Athlete Registration Form

Other Forms 04

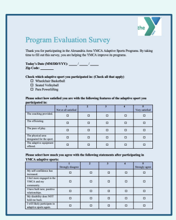




Program Evaluation Survey

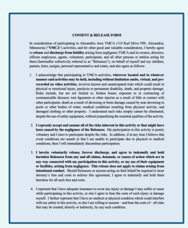
Other Forms 04

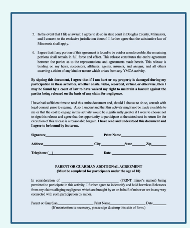
- Benefits:
  - Gain participant feedback
  - Understand participant satisfaction
  - Improve adaptive sports program
  - Ensure program sustainability



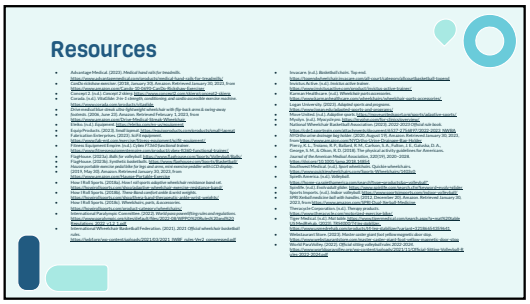
Consent & Release Form

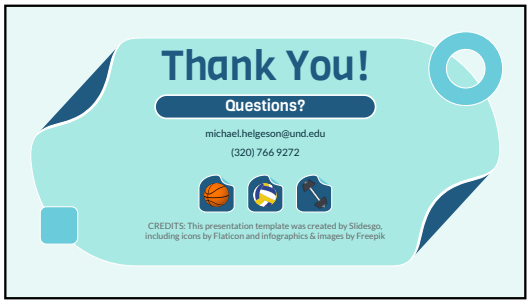
Other Forms 04






Advertisement Templates
Other Forms
04
WHEELCHAIR BASKETBALL
SEATED VOLLEYBALL
ADAPTIVE POWERLIFTING
Canva website links provided to edit templates as desired!


Resources


Thank You!
Questions?
michael.helgeson@und.edu
(320) 766 9272
CREDITS: This presentation template was created by Slidesgo, including icons by Flaticon and infographics & images by Freepik

Appendix G

Information Release Form

I, Alishia Alleson, grant permission to Michael Helgeson and the Occupational Therapy Department at the University of North Dakota School of Medicine and Health Sciences to use my information for educational, promotional, and operational purposes, or other conditions that may arise. I understand that the information may be published in scholarly work through Scholarly Commons, a repository service of the University of North Dakota libraries, which may be accessed around the world.

Signature: Alishia Alleson Date: 03/27/2023