Leisure occupations for adults with physical disabilities: a guide for occupational therapy practice

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Leisure Occupations for Adults with Physical Disabilities:

A Guide for Occupational Therapy Practice

by

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TABLE OF CONTENTS

ABSTRACT

CHAPTER

I. INTRODUCTION

II. REVIEW OF LITERATURE

   A. Physical Disability Defined
   B. Abilities-Based Approach
   C. Leisure Defined
   D. Benefits of Leisure
   E. Barriers to Participation in Leisure Activities
   F. Role of Occupational Therapy
   G. Conclusion

III. METHODOLOGY

IV. PRODUCT

V. SUMMARY

REFERENCES
ACKNOWLEDGMENTS

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Abstract

Problem: Limited research is available addressing active leisure participation and how leisure participation affects quality of life (QOL) of individuals following physical disability. Research shows a correlation between adaptive leisure participation and higher rated life satisfaction, community integration, perceived competence, and reduced negative mood states (Chun et. al., 2008; Lundberg et al., 2011a). There are currently no occupational therapy assessments for clients with physical disabilities having a goal of participation in active leisure occupations.

Purpose: To provide information and resources to occupational therapists and clients with paraplegia or lower tetraplegia spinal cord injury (SCI) in order to enhance participation in active leisure occupation.

Methodology: A review of literature was conducted utilizing scholarly databases such as CINAHL, PubMed, and SPORTDiscus. It was evident that there is limited research discussing the role of occupational therapy in leisure participation advocacy. From the review of literature and synthesis with the Person-Environment-Occupation model (Law et al., 1996), the following product was developed and is ready for clinical application.

Results: A Guide for Occupational Therapy Practice in Active Leisure Occupations for Adults with Paraplegia and Lower Tetraplegia was developed to encourage active leisure participation for the target population. Product sections include educational materials, Adaptive Active Leisure Occupational Therapy Evaluation and Intervention Planning, and a case study example. Additional resources are provided for adaptive equipment and adaptive programming.
Conclusion: This guide was developed by the authors to address the need for active leisure assessment and intervention planning for clients with physical disability. Occupational therapists are well equipped with professional skills and competencies (i.e., manual skills, clinical reasoning, interpersonal skills, and advocacy tools) which will help to meet the needs of this population. To our knowledge, there are no other tools that match the scope of information and resources that are provided in this guide.
CHAPTER 1
INTRODUCTION

In 2016, there were an estimated 282,000 individuals, with a range from 243,000 to 347,000 (depending on source), living with a spinal cord injury (SCI) in the United States and approximately 17,000 new cases occurring each year (National SCI Statistical Center, 2016). Incomplete tetraplegia is the most frequent neurological category (45%), followed by incomplete paraplegia (21.3%), and complete paraplegia (20%). Complete tetraplegia accounts for only 13.3% of cases. In this study, the population of interest is individuals with complete or incomplete paraplegia and lower incomplete tetraplegia. This population was chosen because it encompasses a majority of SCI cases and is more probable that these individuals would pursue active leisure participation following injury. Tetraplegia, formerly termed quadriplegia, as defined by the International Standards for Neurological and Functional Classification of Spinal Cord Injury, results in impairment or total loss of function in the arms, trunk, legs, and pelvic organs (Maynard et al., 1997). Paraplegia refers to “impairment or loss of motor and/or sensory function in the thoracic, lumbar or sacral (but not cervical segments of the spinal cord… With this injury, arm functioning is spared (Maynard et al., 1997, p. 267)”. Absence of sensory and motor function in the lowest sacral segment is a complete injury. Partial preservation of sensory and/or motor function below the neurological level and includes the lowest sacral segment is an incomplete injury.

Occupational therapists are attuned to helping individuals return to self-cares, work, driving, and more complex daily tasks; however, the role in return to leisure is not
clear. Physical disability limits one’s ability to complete daily routines, basic self-cares, ambulate, participate in family and social roles, and presents symptoms of pain and fatigue (Hutchinson, Loy, Kleiber, & Dattilo, 2003; Lundberg, Bennett, & Smith, 2011a). Therefore, we hope to clarify the role of occupational therapy (OT) in return to leisure occupations and the differences from other disciplines. Additionally, there are currently no OT assessments for clients with physical disabilities having a goal of participation in active leisure occupations. We hope to provide information and resources to occupational therapists and clients with paraplegia or lower tetraplegia SCI, to enhance participation in active leisure occupation. Leisure is defined as any “nonobligatory activity that is intrinsically motivated and engaged in during discretionary time, that is, time not committed to obligatory occupations such as work, self-care, or sleep” (American Occupational Therapy Association, 2014, p. S21). Active leisure includes activities that are vigorous and demanding (ex. rock climbing, downhill skiing, basketball, yoga) (Ball, Corr, Knight, & Lowis, 2007). Conversely, passive leisure includes activities that are done at home and require no active involvement (ex. reading, listening to music, watching television, stroking one’s pet).

There is a need for an organizational framework to guide occupational therapy evaluation and intervention regarding the occupation of leisure, specifically active leisure. By developing a guide for occupational therapists working with individuals following SCI interested in active leisure participation, this need was met. The guide provides educational materials, an OT evaluation framework, and a case study example of incorporating active leisure into occupational therapy practice. The guide was created to serve as a template for
occupational therapists in encouraging their clients to participate in any active leisure activity.

There are other disciplines that work in the occupation of leisure; therefore, those professionals and the tools they utilize are factors influencing application of this project. Current adaptive programming is run through non-profit organizations with volunteers as the main facilitators. We must advocate for the role of occupational therapy and our unique qualifications in this area to receive positions in these settings. Leisure is not commonly reimbursed by insurance companies, nor is adaptive equipment for leisure activities. Application of this OT evaluation and intervention framework will be influenced by availability of private-payment or grant-funding. Nevertheless, there is literature supporting the significantly positive effect active leisure activity has on life satisfaction, community integration, mood states, and perceived competence (Chun et al., 2008; Lundberg et al., 2011a). These positive findings support the use of active leisure occupations in goal setting and intervention planning.

This product was developed based on the Person-Environment-Occupation (PEO) model of occupational performance in order to improve occupational performance in active leisure occupations by facilitating or enhancing the fit between the person, environment, and occupation (Law et al., 1996). The PEO model presents “person” as a dynamic, motivated, and ever-changing being and addresses physical, cognitive, and psychosocial components (Turpin, & Iwama, 2011). The PEO model acknowledges that the person and environment are interdependent and cannot be separated. Occupational performance is occupation-specific and context-specific and is facilitated through the transaction of and maximum fit between person, environment, and occupation. Using the PEO model to
address leisure participation for adults with spinal cord injuries helps to support rehabilitation of person components, modifications in the environment, and adaptation of the occupation to increase leisure performance and independence. The PEO model is most appropriate to fit the needs of this population with return to active leisure occupations following SCI because it addresses the interconnectedness of all variables to facilitate occupational performance. To help individuals with physical disabilities, specifically paraplegia and lower tetraplegia SCI, to participate in active leisure occupations, *A Guide for Occupational Therapy Practice in Active Leisure Occupations for Adults with Paraplegia and Lower Tetraplegia* was developed.

In Chapter II, a comprehensive literature review examines the impact of participation in leisure occupations and barriers to participation for individuals with physical disabilities. A description of how the product, *A Guide for Occupational Therapy Practice in Active Leisure Occupations for Adults with Paraplegia and Lower Tetraplegia*, was developed follows in Chapter III. Chapter IV further describes and includes the product. A summary of recommendations, limitations, and justifications found throughout project development are included in Chapter V.
CHAPTER II
REVIEW OF LITERATURE

Physical Disability Defined

Adults' experience of disabilities is multifaceted, affecting areas of work, health, leisure, and community integration. Healthcare services continue to transition from traditional or direct inpatient services to opportunities that provide services in the community, where the importance of health maintenance, quality of life, and leisure are more relevant (Tasiemski, Kennedy, Gardner, & Taylor, 2005 as cited in Chun, Lee, Lundberg, McCormick, & Heo, 2008). The current, traditional approach to service delivery follows a medical model and focuses on disability (Emes, Longmuir, & Downs, 2002). In contrast, an abilities-based approach would emphasize person-centeredness, openness, and compatibility. This approach does not ignore disability; it simply shifts the emphasis to search for capacity within the person.

The World Health Organization (WHO) defined handicapped as “not being able to take part in social roles which decreases their community integration” (Hanson, Nabavi, & Yuen, 2001). Development of individualized education programs (IEP) has altered the definition, yet again, recognizing “disability as neither bad nor good but rather as invested with personal meaning acquired through reciprocal interactions with the total ecology (i.e. both internal and external environments)” (Emes et al., 2002). In higher education, current healthcare professions’ education programs use a categorical approach to define disability, which supports perpetuating stereotypical perceptions of individuals with disability (Emes
et al., 2002). This teaching approach helps to define why people with disability are different and assists students in showing mastery of definitions, causes, and etiology. It helps health professionals visualize what disability may look like, but it impairs their ability to see the person first. The development of a noncategorical, abilities-based approach is a systematic change that must occur; nonetheless, there are numerous concerns that must be confronted prior to implementing new practices, which are discussed further in the next section.

Physical disability limits one’s ability to complete daily routines, basic self-cares, ambulate, participate in family and social roles, and presents symptoms of pain and fatigue (Hutchinson, Loy, Kleiber, & Dattilo, 2003; Lundberg, Bennett, & Smith, 2011a). Additionally, the experience of acquired disability is different than congenital disability (Cook, & Shinew, 2014). For individuals whom recently acquired a disability, loss of function, diminished social roles, and physical/emotion symptoms are among the biggest stressors. Individuals with acquired disabilities, who once saw themselves as powerful and skilled, may now see themselves as less competent and unable to perform challenging and/or routine tasks. These individuals are less likely to focus on the future because the future is conditional to the extent to which they improve (Morgan & Jongbloed, 1990). Additionally, their significant others’ tend to have past orientation, preferring to remember and talk about what used to be. Typical challenges associated with returning home from hospitalization after a traumatic injury include: general alienation, bitterness, boredom, substance abuse, unemployment, poor mental health, and difficulty in relationships. The combined effect of these outcomes suggest that individuals with acquired disabilities experience an extremely diminished quality of life and increased negative mood states.
Abilities-Based Approach

Aligning with an ecological theory, an abilities-based approach attends to the interaction of person and the physical and social environment. Assessment in this approach matches a person’s functional abilities with the demands of participation in a specific activity and increases the compatibility of the two. This approach also suggests a shift from professional role as expert to a participatory role or partner. Together with the client, the professional seeks to know about interests, abilities, capacities, and what supports are needed to express them. Outcome of the process is shared learning among learner and partner.

An abilities-based approach emphasizes ‘openness’, which is a philosophical progression of ‘inclusion’. Inclusion offers acceptable flexibility and incorporation; it also suggests limits. On the other hand, openness is nonjudgmental, all encompassing, receptive to new ideas, and is without restrictions. By attempting to modify current models of practice, options for change are restricted. By developing a new model using openness as a central variable, thinking is unrestricted.

In adopting an abilities-based approach, active listening, nonverbal communication, and body language are essential skills. Difficulties are not relevant to the process until the client’s goals and objective are clearly defined by the individual. Only then should questions focused on impairment be asked (“What assistance do you need to reach you goals or to participate?” or “What are risks you might face in this program due to health?”). Developing compatibility between client abilities and activity demands requires thorough assessment and innovation.
Leisure Defined

The domain and process of occupational therapy is “Achieving health, well-being, and participation in life through engagement in occupation” (American Occupational Therapy Association, 2014, p. S4); one of the eight areas of occupation is leisure. Leisure participation includes engagement in “nonobligatory” activities that are “intrinsically motivated”, either sedentary or active (AOTA, 2014, p. S21). According to the Healthy People 2010 report, people with disabilities are far less likely to engage in physically active lifestyles (56%) compared to people without disabilities (36%) (Rimmer, Riley, Wang, Rauworth, & Jurkowski, 2004). In a study of healthy older adults, participants (n=70) reported engaging in a total of 189 various leisure occupations (Ball, Corr, Knight, & Lowis, 2007). Of these occupations, 23% were considered active, with gardening and walking most frequently reported. Reading, a passive leisure occupation, was engaged in most frequently, along with watching television and listening to music (18%). Passive leisure activities are those done at home with no active involvement required (Desrosiers et al., 2007). Engagement in passive leisure occupations has been linked to poorer health among the general population; nevertheless, passive occupations have been found to be the number one coping strategy for individuals with physical limitations (Cook, & Shinew, 2014). ‘Social leisure occupations’ (24%) included doing things with family and socializing with friends (Ball et al., 2007). Going to the theatre, supporting a football team, and making crafts were among those reported for ‘hobbies and interests’ (20%). ‘Other occupations’ included travel, shopping, and education (15%). In the study by Ball et al., (2007), the main motivators identified for participation in leisure occupations included enjoyment/pleasure/relaxation, satisfaction/well-being,
friendship/companionship/belonging, keeping physically and mentally active, temporal structure to day, and change of surroundings.

In order for an individual with a physical disability to participate in these identified leisure occupations, specifically active leisure occupations, a vast majority would require adaptation by the individual or modification to the environment. The term adaptive sports and recreation refers to any modification of a given sport or activity to accommodate the varying ability levels of an individual with a disability (Lundberg, Taniguchi, McCormick, & Tibbs, 2011b). These activities often require the provision of specialized equipment which facilitates maximum independence in participation. Nearly every sport or activity has the capacity to be adapted. Current programs supporting the engagement of individuals with disabilities include: archery, baseball, basketball, biathlon, bocce, bowling, canoeing, cross-country skiing, curling, cycling, downhill skiing, equestrian, fishing, golf, hand cycling, hiking, hunting, kayaking, martial arts, mountain biking, paddling, rafting, rock climbing, rowing, running, sailing, scuba, shooting, skateboarding, sled hockey, snowboarding, snowshoeing, soccer, strength training, surfing, swimming, table tennis, tai chi, tennis, triathlon, volleyball, waterskiing, wheelchair racing, windsurfing, and yoga (Disabled Sports USA, 2016; National Ability Center, 2015).

Benefits of Leisure

Individuals view their disability as a single attribute, stating “I am more than my disability”; participation in leisure activities encourages development of additional roles that allow individuals to feel like “doers” and “contributors” (Cook & Shinew, 2014, pp. 427-428). Participants in a study by Hutchinson et al. (2003) reported that they did not consciously seek out leisure activity to relieve stress; however, in retrospect, it was agreed
that their involvement helped to reduce stress. Two main coping functions were identified: 1) Leisure as a buffer from immediate stressor, and 2) Leisure as a source of motivation to sustain coping efforts. Overall, leisure activities created structure to participants’ day and participating in these activities improved aspects of both physical and mental health. Leisure participation was a coping strategy, but also a way to challenge individuals’ ability to cope with frustration in a supportive environment (Rogers, Mallinson, & Peppers, 2014). Natural, random variables found in leisure contexts encourage utilization of coping strategies in real-time situations and improve generalization to other daily activities. Among those with physical disabilities, leisure has been found as a positive coping strategy, helps improve self-identify, fosters a sense of self-acceptance, is a valued way to rejuvenate, improves quality of life (QOL), facilitates community integration, reduces negative mood states, improves motor and social skills, and promotes maintenance of physical functioning and health (Chun et al., 2008; Cook, & Shinew, 2014; Lundberg et al., 2011a; Sharp, Dunford, & Seddon, 2012).

There is a correlation between adaptive sports participation and higher rated life satisfaction, community integration, QOL, perceived competence, and reduced negative mood states (Chun et al., 2008; Lundberg et al., 2011a). QOL is a subjective assessment of how an individual sees their life within broad categories of physical and mental health, the state of one’s relationships, and the quality of physical environment in which one lives (Lundberg et al., 2011a). According to Pasek and Schkade (1996) individuals who were both novice and experienced skiers (n=14) and participated in a six-day adaptive ski program did experience relative mastery and increase self-esteem and QOL while
participating at the National Sports Center for the Disabled (NSCD) in Winter Park, Colorado.

Community integration, which is defined as “successful engagement in occupational, social, and community activities”, is a significant predictor of all four domains of quality of life, physical, psychological, social, and environment (Chun et al. 2008). Community integration is not a quantitative predictor of overall QOL; nevertheless, qualitatively, leisure was found to be essential to overall QOL and physical and emotional well-being (Cook, & Shinew, 2014). Therefore, community integration through leisure participation is a viable goal for improving QOL for people with disability and should be a priority in rehabilitation (Chun et al., 2008).

In a randomized controlled trial conducted by Desrosiers et al. (2007), 62 participants previously admitted to a rehabilitation or acute care facility post-stroke were assigned to an experimental group (n=33) or control group (n=29). The experimental group engaged in an eight to twelve-week leisure education program with objectives “to enhance the participants’ personal empowerment with a view to optimizing leisure experiences” targeting the components of leisure awareness, self-awareness, and competency development (p. 1096). The control group participants were also visited by a recreational therapist for 60 minutes per week for eight to twelve weeks; however, topics discussed were unrelated to leisure (i.e. family, politics, news, everyday life). A recreational therapist was responsible for carrying out weekly intervention while an occupational therapist acted as consultant and administered outcome measures. After participation in the empowerment-based leisure education program, individuals in the experimental group increased number of minutes spent engaging in active leisure activities and were more
satisfied with their activities. Participants engaged in active activities (i.e. bowling, taking a walk, going to church, painting, small jobs inside/outside, shopping, etc.) more often than passive activities (i.e. listening to music, watching television). The mean difference between groups was a modest 14 minutes per day; however, the program targeted personal empowerment which was more likely to increase variables measuring satisfaction, not time. Additionally, after the program, the experimental groups’ depressive symptoms were considerably reduced by nearly fifty percent. By recognizing the importance of leisure, having a better perception of remaining abilities, developing competency in using leisure-related resources, and recognizing the social benefits of participation, participants had higher levels of engagement in and satisfaction with leisure.

Acquired physical disability impacts self-esteem; leisure-related competence provides an opportunity for individuals to experience success and to demonstrate a new level of ability, improving self-worth (Lundberg et al., 2011a). Adaptive sports programs can be a way to facilitate vigor, a sense of energy, and enthusiasm for individuals adjusting to a new way of life with disability. Previous studies have shown a significant decline in leisure participation following a stroke, especially in active leisure pursuits which has a potentially negative impact on QOL (Desrosiers et al., 2007). A short-term, week long sports camp provided participants with a range of acquired physical disabilities an opportunity to try new sports and develop physical and mental skills that could be transferred to other contexts of life. At the end of the camp, participants reported feeling empowered; despite being involved for only a short period, transformation in participants was present (Ashton-Shaeffer, Gibson, Autry, & Hansen, 2001). In contrast, a study by Giacobbi, Stancil, Hardin, and Bryant (2008) provided insight into the experience of highly
active individuals with physical disability. Participants reported that regular participation in wheelchair basketball helped them to feel good, stay focused on life, decrease effect of stressors, and contributed to development of good work ethics.

In a study by Zabriskie, Lundberg, and Groff (2005), authors sought to identify the impact of participation in community-based therapeutic recreation and adaptive sports program on quality of life and athletic identity. Participants with physical disabilities were enrolled in either the alpine skiing or horseback riding programs for three to five weeks. The results showed that the three to five-week program was more beneficial than a single lesson or experience. Forty percent of participants had never participated in the chosen activity prior to injury. Eighty percent of participants reported that they were good or excellent in skiing or riding after participating in the National Ability Center programs. Overall, adaptive sports agencies, such as the National Ability Center or Disabled Sports USA, that focus on community-based therapeutic recreation as their core mission, can help individuals with disabilities and their families reach their sense of identity and highest quality of life through adaptive active leisure activities.

**Barriers to Participation in Leisure Activities**

Despite these aforementioned benefits of participation in leisure, these activities can also be a source of stress, especially for marginalized groups like persons with physical disabilities (Cook & Shinew, 2014). The need to plan ahead, physical inaccessibility, and need for assistive devices have been identified as the top barriers to leisure participation. This section has been organized following the major concepts of the Person Environment Occupation model by Mary Law (1996). First, barriers to leisure participation associated
with the person will be discussed, then barriers within the environment, and finally, barriers to participation in active and sedentary leisure occupation.

**Person.** In PEO, the first major concept is person. The person is seen “holistically as a composite of mind, body, and spiritual qualities” (Law et al., 1996, p. 16). Dealing with social issues related to stigma, labelling, and negative stereotyping were among the greatest barriers to an individual’s participation in adaptive sports and recreations (Lundberg et al., 2011b; Sharp et al., 2012). In a study by Sharp et al. (2012), 17 individuals with disabilities participated in in-depth open-ended interviews including topics of perceived benefit of participation in adaptive sports and recreation, effects on overall health, effects on personal and family relationships, view of one’s self, and general impact on quality of life. Participants were selected based on prior involvement in adaptive sports and recreation programs at the National Ability Center in Park City, Utah. Upon qualitative analysis of the interviews, authors discerned that participation in these programs allowed individuals to challenge negative perceptions by building social networks, experiencing a sense of freedom and success, allowing them to positively compare themselves to others without disabilities, and feeling a sense of normalcy. Authors used social construction theory to explain the positive outcomes of participation in adaptive sports and recreation, stating that the reality in which we live is created by our social and cultural context and our associations/conversations with others shape our self-identities. One way to facilitate identity reconstruction is through opportunity for new experiences, feedback from peers, skill acquisition, and social development. Adaptive sports programs provide a novel context to develop new skills and to acquire new self-knowledge during the identity reconstruction process.
In a study titled *Four Types of Integration in Disability Identity Development* by Gill (1997) as discussed in Cook and Shinew (2014), adults in the Baby Boomer generation with physical disabilities often avoided association with others who had disabilities when they were children; possible explanations for this phenomena included: fear of stigmatization, avoidance of memories of separation into “special schools” or summers spent at camp for children with disabilities, and concern that it would aid in disguising society’s biased view of inclusion. Cook and Shinew (2014) sought to understand the perceptions of the significance of leisure, how individuals perceived their own disability, and what beliefs and relationship contributed to quality of life and work-life balance for five individuals with mobility impairments. Upon analysis of two semi-structured interviews, researchers revealed that leisure was valued as essential to overall quality of life, specifically physical and emotional well-being, and contributed to positive identity. Nevertheless, considerable leisure related stress was also reported. Stressors included accessibility, few options, lack of companions, and resistance to using mobility devices. Some participants discussed an openness to engaging with others of similar abilities, but did not know how to connect with potential leisure companions in order to build a network. As individuals aged and developed a greater sense of identity, engaging with others of similar abilities was more appealing and they finally realized, “... you always need that ‘in group’... the people that understand you” (p. 430). Differences of disability were often visually apparent; however, the issues participants were more concerned about were less apparent including negotiating self-cares, additional rest breaks, bowel and bladder concerns, and assistance with toileting. Although there was a desire to remain active throughout the challenges of aging, individuals were often reluctant to use
additional mobility devices (crutches, walker, wheelchair, scooter). It is important to account for leisure related stress when seeking to understand the strategies individuals with physical disabilities use to cope with their disability.

**Environment.** Sometimes an activity is no longer able to be performed due to physical disability (Morgan & Jongbloed, 1990). However, severity of disability is not the most significant predictor of the adjustment process. The interaction of the person and his or her total environment, both physical and social, must also be assessed. In PEO, environment is broadly defined giving “equal importance to the cultural, socio-economic, institutional, physical, and social considerations” of the context of which occupation occurs (Law et al., 1996, p. 16). Inaccessibility of the physical environment is a common source of discomfort and often leaves those with physical disabilities at a standstill (Cook & Shinew, 2014). Transportation and distance to the facility are important considerations when making decisions about activity participation (Morgan & Jongbloed, 1990). Additionally, attitudes of family and friends, parts of the cultural context, influence how activities are maintained or altered.

Focus groups were conducted with participants recruited from the ten regional offices of the Disability and Business Instructional Technology Assistance Centers (DBITACs) from 2001 to 2002 (Rimmer et al., 2004). Each focus group included four to six people comprised of: 1) people with disabilities, 2) architects, 3) fitness/recreated professionals, 4) city planner and park district managers. Upon analysis, 178 barriers and 130 facilitators to participation in physical activity were identified and categorized into ten main themes. The first theme was built and natural environment. Inaccessibility issues in the environment were common amongst all participants and included lack of curb cuts,
lack of elevators, doorways too narrow, front desk too high for communication, lack of ramps into whirlpools, etc. Facilitators to address these barriers included nonslip mats, additional accessible parking spaces, zero-depth entry pools, and family changing rooms. Costs of retrofitting pre-existing facilities, purchasing adaptive equipment, membership fees, and transportation costs were economic concerns for consumers and professionals. Issues related to equipment were reported: not enough space for wheelchair between machines, poor maintenance, and lack of adaptive equipment. There was an overall need for more adaptive equipment such as pool water chairs, Velcro® straps, upper-body aerobic equipment, and strength equipment that does not require transferring.

Individuals in the architect group discussed issues related to the Americans with Disabilities Act (ADA); many viewed the laws loosely, as recommendations or guidelines. Members in all four groups agreed that legislation is needed to enforce ADA guidelines. Lack of professional knowledge, education, and training were common amongst consumers, facility staff, and personal trainers. Individuals with disabilities were reluctant to participate in physical activities due to perceptions that the environment was unfriendly, feeling self-conscious, lack of support from friends/family, and fear of unknown. “Participation in society is not contingent upon merely the individual limitations of disabled people, but rather the physical and social restrictions of an essentially hostile environment” (Barton, 1993, p. 44 as cited in Emes et al., 2002). Facilitators to reduce the impact of these issues include peer support, providing day passes to test out the new environment, and rehabilitation support to assist with transition from rehabilitation to community programs by physical or occupational therapists. Facility programmers admitted that fear of liability, staff laziness, and negative attitudes toward disabilities were
major barriers. Consumers generally agreed that professionals need to increase awareness and sensitivity to the experiences of persons with disabilities (Rimmer et al., 2004).

**Occupation.** According to PEO, occupation is defined as “clusters of activities and tasks in which the person engages in order to meet his/her intrinsic needs for self-maintenance, expression, and fulfillment” (Law et al., 1996, p. 16). Among persons’ post-stroke, individuals who had a wide range of leisure interests prior to stroke were more likely to be able to continue performing a previous activity (Morgan & Jongbloed, 1990). Those with more limited leisure interests were more likely to need to acquire new skills. Additionally, those with acquired disabilities must explore options for adapting activities via adaptive equipment or companionship of an able-bodied individual.

Hanson et al. (2001) conducted a study to determine the impact of participation in sports on individuals with a spinal cord injury (SCI) in community integration. The study examined individuals based on athletic ability as identify by their participation in wheelchair sports throughout a week. Using the Craig Handicap Assessment and Reporting Technique (CHART), community integration was measured by the 5 subsections: physical independence, mobility, occupation, social integration, and economic self-sufficiency. Individuals in the study were divided into two groups; athletes and nonathletes per self-report of their level of sport participation. The athlete group requirements were at least four hours per week or exercise that was at least three times per week for 30 minutes in wheelchair sports. Nonathletes were classified as not meeting the requirement for the athlete group or they did not participate regularly in wheelchair sports. The results of the study showed that members of the athlete group had a significantly
higher score on four of five subsections (physical independence, mobility, occupation and social integration) of the CHART.

Role of Occupational Therapy

In the early days of occupational therapy (OT), leisure activities were used to provide diversion or boost patient morale (Ball et al., 2007). Today, the focus of intervention is more on using leisure effectively and participation in the community. Nevertheless, the most common way to measure the success of rehabilitation continues to be independence in activities of daily living (ADLs) and mobility (Morgan & Jongbloed, 1990). For functional reasons, restoration of the prerequisite physical/cognitive skills for ADLs is essential; however, social and leisure aspects are also impacted by physical disability. “Occupational therapists have a unique opportunity to use the occupation of sports to integrate the roots of the profession with the cultural demands of society” (Hanson et al., 2001, p. 337).

Growth in confidence helps to empower people to believe they have the ability to do things independently. Participation in activity is a step toward developing ownership of a disability and developing personal identity. Occupational therapy offers a holistic perspective and therapists can assess abilities and interests, make adaptations, advocate for clients, educate family and community members, and ensure a client-centered approach. The ultimate purpose of the rehabilitation process is to help people resume activities, roles, and a lifestyle that they found meaningful prior to disability (Desrosiers et al., 2007; Lundberg et al., 2011a). For those without disabilities, it is commonly understood that leisure participation is beneficial to overall health and well-being. Still, a less understood finding is that leisure participation has equivalent benefits for persons with congenital and
acquired disabilities. These findings support a need to incorporate leisure occupations into goal setting, the therapeutic process, and into daily life for individuals with physical disabilities (Specht, King, Brown, & Foris, 2002).

Rehabilitation professionals can assist with the transition from hospital rehabilitation to community programs and reduce the reluctance of people to join and participate in recreational facilities (Rimmer et al., 2004). Leisure programmers can help to make linkages between individuals with similar abilities taking into account interests, employment, family and friends, and life experiences, not only diagnosis. Recognizing diversity, practitioners must be mindful that each person is both similar and different from each other. OT can play a role by providing social and leisure networking opportunities which can help individuals meet peers and potential peer role models (Sharp et al., 2012). Meaningful experiences such as these would help individuals to develop self-efficacy, self-worth, and autonomy motivating them to become more involved. There is a decline in leisure participation in adolescence and young adulthood, which could be attributed to lack of supportive networks or lack of meaningful occupation options. Individual participation may not always be meaningful; however, a shared experience of participation in activity is and can help in the development of greater leisure community within a safe environment.

By understanding the motivators for participation, occupational therapists are able to prioritize leisure in assessment and intervention. Age-related changes may limit the types of occupation which individuals engage; nevertheless, occupational therapists are equipped to help modify current occupations or to develop new occupations to enhance health and quality of life. It is recommended that service providers have “auditing skills for recognizing and identifying the needs associated with modifying environments that are
physically, socially, and/or emotionally restrictive” (Emes et al., 2002). Occupational therapists are experts in task-analysis and adaptation and can challenge individuals and systems on an appropriate level (Sharp et al., 2012). As part of task analysis, occupational therapists are equipped to identify “prerequisite skills” necessary for safe and successful participation in various activities (Taylor & McGruder, 1996, p.40). These “prerequisite skills” include postural stability and control, balance reaction, trunk rotation, upper extremity range of motion and strength, bilateral reciprocal movement, and grasp. Upon assessment of a person’s skills, adaptations can be made to activity and/or modifications to the environment to ensure safety and comfort of participants. Simple adaptations or adaptive techniques can help individuals with physical disabilities experience a sport that they thought was impossible after injury (Hanson et al., 2001). Fear of further injury and fear of fatigue are also areas that occupational therapy can address by helping clients overcome their fears and provide advice regarding energy conservation. Modifying the environment, adapting the activity, and generalization of skills to other occupations are areas of expertise for occupational therapists. OT can help to intervene to facilitate occupational performance by intervening on and enhancing the congruence between person, environment, and occupation (Law et al., 1996).

Conclusion

Research supports the use of meaningful leisure occupation in the therapy process, as well as the positive benefits that participation in leisure occupation has on physical and mental QOL, community integration, and self-esteem among other factors. Through the review of literature, it is evident that several studies call for more research to be conducted regarding the role of OT and how to structure evaluation and treatment planning when
working with individuals with physical disabilities in regards to leisure participation. OTs are uniquely qualified to assess transactions between person, environment, and occupation in order to facilitate successful occupational performance. More focus and direction needs to be given to therapists and those with physical disabilities in order to increase participation in leisure occupations, thus a guide including an evaluation framework and resources for therapists, clients, and families would be beneficial. The next chapter will include methodology used to obtain and develop a review of literature. Furthermore, a summary of the products developed, as well as theoretical application of the Person-Environment-Occupation (PEO) model will be introduced.
CHAPTER III

METHODOLOGY

The product, *A Guide for Occupational Therapy Practice in Active Leisure Occupations for Adults with Paraplegia and Lower Tetraplegia*, described in Chapter IV was developed to assist individuals with spinal cord injury (SCI) with participation in leisure. It was intended to provide clients with resources for participation in active leisure following injury, as well as to assist occupational therapists in conducting evaluation and providing appropriate recommendations for active leisure pursuit. A review of literature was conducted using the following databases: PubMed, CINAHL, SPORTDiscus, and the American Journal of Occupational Therapy (AJOT). Following the search and review of literature, the aforementioned product was created based on the areas of need that were found.

This product utilizes the Person-Environment-Occupation (PEO) model as its theoretical foundation and organizational framework (Law et al., 1996). Following concepts of PEO, the focus of occupational therapy intervention can be placed on any, or all, areas: person, environment, or occupation. The goal of the guide is to facilitate maximal fit between these areas, thereby enhancing occupational performance, with the client as the agent of change and the occupational therapist as the agent of the environment.

After completing the review of literature and selecting the theoretical framework, product development began. Authors started with a broad population (i.e., physical
disabilities) then further defined the population as individuals with paraplegia and lower tetraplegia due to SCI to narrow the scope of product. Authors chose this population based on the large number of adaptations required for participation in active leisure activities, the variation between types of adaptive equipment, high-cost of equipment, and the need for additional resources for occupational therapists serving these individuals.

The guide consists of educational materials for both occupational therapist and the client to clarify terminology and increase knowledge on the benefits of physical activity and active leisure participation. Next, the guide introduces an evaluation framework, which breaks down person, environment, and occupation variables unique to each individual and selected active leisure occupation. The evaluation framework was developed by the authors and is intended to be adapted by occupational therapists for use with clients having various physical diagnoses and for all types of active leisure occupations. The guide also includes in-depth analysis of four active leisure occupations, chosen to represent one category of activity (snow, water, individual, and team), and integrates resources for adaptive equipment to support occupational performance. Contact information for groups and adaptive programming in the state of Colorado is included to support socialization and community reintegration and assist in developing a social network of similar-bodied individuals. Colorado was chosen as geographical focus area due to the proximity to all types of terrain and weather conditions. Additionally, both authors plan to utilize this guide in future practice in this area.

Templates and built-in cover pages from Microsoft™ (2010) were used in formatting the product. All materials are original creations by the authors and can be adapted by occupational therapy practitioners based on the needs of the client. Chapter IV
consists of the product, *A Guide for Occupational Therapy Practice in Active Leisure Occupations for Adults with Paraplegia and Lower Tetraplegia*, in its entirety.
CHAPTER IV

PRODUCT

A Guide for Occupational Therapy Practice in Active Leisure Occupations for Adults with Paraplegia and Lower Tetraplegia

by

Kelsey Glatt and Tracy Perish

May 13, 2017
A GUIDE FOR OCCUPATIONAL THERAPY PRACTICE IN ACTIVE LEISURE OCCUPATIONS FOR ADULTS WITH PARAPLEGIA AND LOWER TETRAPLEGIA

Kelsey Glatt, OTS; Tracy Perish, OTS
Advisor: Jan Stube, PhD, OTR/L, FAOTA
# Table of Contents

**Introduction** ............................................................................................................... 3  

**Educational Materials** ............................................................................................... 6  
   Terminology .................................................................................................................... 7  
   Spinal Cord Injury Statistics and Facts ........................................................................... 8  
   Benefits of Active Leisure Participation ........................................................................ 9  

**Adaptive Active Leisure Occupational Therapy Evaluation & Intervention Planning** ................................................................. 10  
   Section I: Client Questionnaire ...................................................................................... 12  
   Section II: Occupational Therapist Evaluation of Client Functioning ......................... 14  
   Section III: Client/OT Intervention and Goal Planning ................................................ 17  
      Snow Activities: Alpine (Downhill) Skiing ................................................................. 18  
      Water Activities: Waterskiing .................................................................................... 24  
      Individual Activities: Hand Cycling ........................................................................... 30  
      Team Activities: Wheelchair Basketball .................................................................... 36  

**Case Study** .................................................................................................................. 45  

**References** .................................................................................................................. 55  

Image on cover from: https://logomakr.com
Introduction

A Guide for Occupational Therapy Practice in Active Leisure Occupations for
Adults with Paraplegia and Lower Tetraplegia is organized to provide beneficial
information to occupational therapists (OT) and clients with paraplegia or lower tetraplegia
spinal cord injuries (SCI). This guide is designed to assist OTs with client evaluation and
intervention planning in order to encourage increased participation in active leisure
occupations. Educational materials, targeted at both OT and client/family members, are
included with goal of increasing knowledge on general spinal cord injury statistics and the
overall benefits of participation in active leisure occupations. A framework for initial
evaluation breaks down the person, environment, and occupation (PEO) factors associated
with various active leisure occupations, titled the Adaptive Active Leisure Occupational
Therapy Evaluation (Law, Cooper, Strong, Stewart, Rigby, & Letts, 1996). A description,
image, price, and resource for purchase of adaptive equipment options follows each task
analysis. Additionally, Colorado-based programs and organizations providing
opportunities for involvement are listed.

The materials provided will incorporate the Person Environment Occupation (PEO)
model of occupational performance (Law et al., 1996). The PEO model was chosen
because it presents “person” as a dynamic, motivated, and ever-changing being and
addresses physical, cognitive, and psychosocial components (Turpin, & Iwama, 2011).
PEO acknowledges that the person and environment are interdependent and cannot be
separated. Occupational performance is occupation-specific and context-specific and is
facilitated through the transaction of and maximum fit between person, environment, and
occupation. Using the PEO model to address leisure participation for adults with spinal cord injuries helps to support rehabilitation of person components, modifications in the environment, and adaptation of the occupation in order to increase leisure performance and independence.

The procedure is as follows for using *A Guide for Occupational Therapy Practice in Active Leisure Occupations for Adults with Paraplegia and Lower Tetraplegia*:

- **Educational Materials:** handouts include terminology, spinal cord injury statistics and facts, and benefits of active leisure participation. Handouts can be utilized by OT, client, or family members and can be provided at any point during intervention.

- **Adaptive Active Leisure Occupational Therapy Evaluation & Intervention Planning:** an evaluation, conducted via informal interview and occupational therapist observation of client function in daily tasks, designed to capture information regarding client factors, performance skills, and performance patterns required for safe and successful participation in active leisure activities. With this information, occupational therapists can better match the client with an activity of appropriate activity demands in relation to the therapeutic goals and environment/contextual factors.
  - **Section I: Client Questionnaire:** to be completed by the client with goal of choosing an active leisure occupation.
  - **Section II: Occupational Therapist Evaluation of Client Functioning:** to be completed through observation and evaluation by OT.
Section III: Client/OT Intervention and Goal Planning: used as a guide for discussion of environment and occupation variables. There is one sport described for each category (snow, water, individual, and team). Additionally, each sport includes programs located in Colorado and adaptive equipment description.

- **Case Study:** provides an example client and illustrates how the *Adaptive Active Leisure Occupational Therapy Evaluation and Intervention Planning* can be implemented in OT practice and intervention. This is to be used as a general administration example; however, the evaluation can be interpreted by each OT.
Educational Materials

To be provided by OT to the client and/or family member, using OT discretion
TERMINOLOGY

LEISURE

“Nonobligatory activity that is intrinsically motivated and engaged in during discretionary time, that is, time not committed to obligatory occupations such as work, self-care, or sleep.”

(American Occupational Therapy Association, 2014)

Active leisure: Activities that are vigorous and demanding (ex. Rock climbing, downhill skiing, basketball, yoga)

Passive leisure: Activities that are done at home and require no active involvement (ex. Reading, listening to music, watching television, stroking one’s pet)

(Ball, Corr, Knight, & Lowis, 2007; Radomski & Trombly-Latham, 2014)

SPINAL CORD INJURY

Paraplegia: an impairment in motor and sensory impairment at the thoracic, lumbar, or sacral segments of the spinal cord. Results in sparing of arm function and, depending on level of the lesion, impairment in trunk, legs, and pelvic organs.

Tetraplegia: an impairment in motor and/or sensory function in the cervical segments of the spinal cord, previously termed quadriplegia. Results in functional impairment in the arms, trunk, legs, and pelvis organs.

Functional Level: the lowest segment at which strength of important muscles is graded 3+ or above out of 5 on manual muscle testing (MMT) and sensation is intact.

Complete: absence of sensory and motor function in the lowest sacral segments (S4-S5).

Incomplete: partial preservation of sensory and/or motor function below the neurological level and must include the sacral segments

(Radomski & Trombly-Latham, 2014)

References


SPINAL CORD INJURY

STATISTICS AND FACTS

- It is estimated that there are approximately 17,000 new SCI cases each year.
- The average age at injury has increased from 29 years during the 1970s to 42 years currently.
- 79% male & 21% female
- Incomplete tetraplegia is the most frequent neurological category (45%), followed by incomplete paraplegia (21.3%), and complete paraplegia (20%). Complete tetraplegia accounts for only 13.3% of cases.
- Vehicle crashes are the leading cause of SCI, followed by falls, acts of violence, and sports injury.
- Days hospitalized have declined from 24 days in acute care (1970s) to 11 days (2010). Similarly, days spent in rehabilitation units are down from 98 days to 36 days.
- For the first year following injury, average yearly health care and living expenses for an individual with low tetraplegia is $757,458; paraplegia $510,883.

References

BENEFITS OF ACTIVE LEISURE PARTICIPATION

PEOPLE WITH DISABILITIES ARE LESS LIKELY TO PARTICIPATE IN PHYSICAL ACTIVITY COMPARED TO PEOPLE WITHOUT DISABILITIES. HOWEVER, YOUR ENTIRE BODY BENEFITS FROM PHYSICAL ACTIVITY.

Exercise improves:
- Respiration (breathing) ➔ Self-confidence
- Muscle strength ➔ Mood
- Circulation ➔ Stress tolerance
- Body fat ➔ Independence
- Self-esteem

Exercise also helps to prevent:
- Urinary tract infections ➔ Diabetes
- Pressure ulcers ➔ Immune system infection
- Respiratory infections ➔ Constipation

How much and how long?
As a beginner, aim for at least 30 minutes of physical exercise 2-3 times a week.

Precautions for active leisure participation:
Before participating in active exercise, consider:
- Monitor blood pressure (BP): Blood flow is not as efficient in returning to the legs
- Monitor temperature and heart rate: Individuals with SCI often have trouble maintaining a normal heart rate and temperature.
- Promote hydration and frequent emptying of bladder to avoid UTIs

While exercising:
- Reposition frequently and limit friction/sliding to prevent skin tears and pressure areas
- Keep skin dry and clean
- Drink plenty of fluids
- Check blood pressure
- Take medications as prescribed

Before you begin any exercise program, consult your occupational therapist.

REMEMBER TO TAKE IT AT YOUR OWN PACE.

References

Adaptive Active Leisure
Occupational Therapy
Evaluation & Intervention
Planning

Kelsey Glatt, OTS & Tracy Perish, OTS
Adaptive Active Leisure Occupational Therapy Evaluation &
Intervention Planning
Kelsey Glatt, OTS & Tracy Perish, OTS

Purpose:
The purpose of the Adaptive Active Leisure Occupational Therapy Evaluation &
Intervention Planning is to holistically evaluate a client and the environmental factors that
support or are barriers to participation in active leisure occupations. This includes
physical activity that one chooses to do in one’s free time. The goal is to improve
occupational performance by facilitating or enhancing the fit between person,
environment, and occupation (Law et al., 1996).

Description:
The Adaptive Active Leisure Occupational Therapy Evaluation & Intervention Planning is
an evaluation, conducted via informal interview and occupational therapist observation of
client function in daily tasks, designed to capture information regarding client factors,
performance skills, and performance patterns required for safe and successful
participation in active leisure activities. With this information, occupational therapists can
better match the client with an activity of appropriate activity demands in relation to the
therapeutic goals and environment/contextual factors. Upon completion of the evaluation,
the occupational therapist can also provide recommendations for necessary adaptive
equipment and/or physical assistance needed from a sports companion. The client will
complete Section I: Client Questionnaire. The occupational therapist will evaluate the
client through observation of performance and informal interview to complete Section II:
Occupational Therapist Evaluation of Client Functioning. Section III: Client/OT
Intervention and Goal Planning includes information which facilitates maximal fit between
person factors, environment, and the chosen active leisure occupation (Law et al., 1996).
Administration time of Sections I and II is approximately 30 minutes. Administration time
of Section III is dependent upon client complexity and prior experience with chosen
activity.
Name: _____________________________ Date: _____________________________
Age: _________ DOB: _________ Therapist: _________________________
Level of SCI: ______________________ Precautions: _______________________
  □ Complete
  □ Incomplete
Functional Level: _____________________
Setting:
  □ Inpatient rehabilitation
  □ Outpatient
  □ Community
  □ Other:
Occupational Profile:
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

Section I:
Client Questionnaire

Instructions: Read each statement and answer to the best of your ability. Feel free to make comments in the space below each statement.

In the past 7 days, how many days did you participate in *mild* intensity physical activity? (i.e. Makes you feel like you are working a little bit, but you can keep doing them for a long time)

__________________________________________

In the past 7 days, how many days did you participate in *moderate* intensity physical activity? (i.e. Make you feel like you are working somewhat hard, but you can keep doing them for a while without getting tired)

__________________________________________

In the past 7 days, how many days did you participate in *heavy* intensity physical activity? (i.e. Make you feel like you are working really hard, almost maximum)

__________________________________________
Please check all of the leisure occupations that you participated in prior to your injury.

<table>
<thead>
<tr>
<th>Snow Activities</th>
<th>Water Activities</th>
<th>Individual Activities</th>
<th>Team Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>❑ Alpine (downhill) skiing</td>
<td>❑ Rowing</td>
<td>❑ Golf</td>
<td>❑ Basketball</td>
</tr>
<tr>
<td>❑ Cross Country Skiing</td>
<td>❑ Kayaking</td>
<td>❑ Swimming</td>
<td>❑ Tennis</td>
</tr>
<tr>
<td>❑ Snowboarding</td>
<td>❑ Waterskiing</td>
<td>❑ Track &amp; Field</td>
<td>❑ Baseball</td>
</tr>
<tr>
<td>❑ Snowshoeing</td>
<td>❑ Fishing</td>
<td>❑ Yoga</td>
<td>❑ Softball</td>
</tr>
<tr>
<td></td>
<td>❑ Swimming</td>
<td>❑ Rock climbing</td>
<td>❑ Soccer</td>
</tr>
<tr>
<td></td>
<td>❑ Sailing</td>
<td>❑ Hiking/Biking</td>
<td></td>
</tr>
<tr>
<td></td>
<td>❑ Paddle</td>
<td>❑ Hand</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Boarding</td>
<td>cycling</td>
<td></td>
</tr>
<tr>
<td></td>
<td>❑ Scuba</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>❑ White water rafting</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Please check all of the leisure occupations that you are interested in participating in now.

<table>
<thead>
<tr>
<th>Snow Activities</th>
<th>Water Activities</th>
<th>Individual Activities</th>
<th>Team Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>❑ Alpine (downhill) skiing</td>
<td>❑ Rowing</td>
<td>❑ Golf</td>
<td>❑ Basketball</td>
</tr>
<tr>
<td>❑ Cross Country Skiing</td>
<td>❑ Kayaking</td>
<td>❑ Swimming</td>
<td>❑ Tennis</td>
</tr>
<tr>
<td>❑ Snowboarding</td>
<td>❑ Waterskiing</td>
<td>❑ Track &amp; Field</td>
<td>❑ Baseball</td>
</tr>
<tr>
<td>❑ Snowshoeing</td>
<td>❑ Fishing</td>
<td>❑ Yoga</td>
<td>❑ Softball</td>
</tr>
<tr>
<td></td>
<td>❑ Swimming</td>
<td>❑ Rock</td>
<td>❑ Soccer</td>
</tr>
<tr>
<td></td>
<td>❑ Sailing</td>
<td>climbing</td>
<td></td>
</tr>
<tr>
<td></td>
<td>❑ Paddle</td>
<td>❑ Hiking/Biking</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Boarding</td>
<td>❑ Hand</td>
<td></td>
</tr>
<tr>
<td></td>
<td>❑ Scuba</td>
<td>cycling</td>
<td></td>
</tr>
<tr>
<td></td>
<td>❑ White water</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>rafting</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Select one activity (from above) that you would like to participate in again.

**Chosen activity:** _______________________________________________________

Have participated in this activity prior to your injury? **YES ____ NO ____**

This task is:
- ❑ New learning
- ❑ A prior task
### Section II: Occupational Therapist Evaluation of Client Functioning

Instructions: OT fills out after client completes Section I: Client Questionnaire to develop an intervention plan matching the client’s current motor, cognitive, and psychosocial function. Please check the most appropriate box or use the space provided to include description.

**Person (P)**

<table>
<thead>
<tr>
<th><strong>Motor</strong></th>
<th><strong>Balance</strong></th>
<th>[ ] Static seated</th>
<th>[ ] Dynamic seated</th>
<th>[ ] Paraspinal muscles</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Upper Extremity (UE) function</strong></td>
<td>[ ] Scapular stabilizers</td>
<td>[ ] Shoulder</td>
<td>[ ] Biceps</td>
<td>[ ] Triceps</td>
</tr>
<tr>
<td></td>
<td>[ ] Wrist extensors</td>
<td>[ ] Tenodesis grasp</td>
<td>[ ] Hand muscles</td>
<td>[ ] Abductor digiti minimi</td>
</tr>
<tr>
<td><strong>Hand/Wrist function</strong></td>
<td>[ ] ROM</td>
<td>[ ] MMT</td>
<td>[ ] Dynamometer R _____#  L _____#</td>
<td>[ ] Pinchometer R _____#  L _____#</td>
</tr>
<tr>
<td></td>
<td>[ ] Tone (circle) spastic  athetoid  flaccid  normal</td>
<td>[ ] No ambulation</td>
<td>[ ] Ambulate with bracing/crutches short distance</td>
<td>[ ] Ambulate with bracing/crutches mid-range distance</td>
</tr>
<tr>
<td><strong>Lower Extremity (LE) function</strong></td>
<td>[ ] Difficulty walking stairs</td>
<td>[ ] Type of wheelchair cushion:</td>
<td>[ ] Adequate</td>
<td>[ ] Inadequate</td>
</tr>
<tr>
<td><strong>Pressure relief</strong></td>
<td>[ ] Adequate</td>
<td>[ ] Inadequate</td>
<td>[ ] Type of wheelchair cushion:</td>
<td>[ ] Adequate</td>
</tr>
</tbody>
</table>
| LE sensitivity to temperature | □ Adequate for hot and cold  
     □ Adequate for hot  
     □ Adequate for cold  
     □ Inadequate for hot and cold  |
|-----------------------------|------------------------------|
| UE Proprioception           | □ Eyes open  
     □ Eyes closed  |
| Bowel and Bladder           | □ Independent  
     □ Needs assistance for catheterization  
     □ Incontinent bowel  |
| Vision                      | □ No impairments 20/20  
     □ Wears corrective contacts/glasses  |
| **Cognitive**               |                              |
| **Attention** (circle)      | □ Sustained attention: able to attend to task  
     YES NO  
     □ Alternating: able to manage switching attention back and forth for task completion  
     YES NO  
     □ Divided: able to multitask  
     YES NO  |
| Sequence                    | □ Performs steps in an effective or logical order (does not repeat steps)  
     □ Requires assist 1-2 times per multi-step task  
     □ Requires constant use of compensatory strategies  |
| Inquires                    | □ Seeks needed verbal or written information by asking questions or reading directions or labels  
     □ Requires assist 1-2 times per verbal or written information  
     □ Requires constant use of verbal or written information  |
| Navigates                   | □ Moves the arm, body, or wheelchair without bumps into obstacles when moving in the task environment or interacting with task objects  
     □ Frequently bumps into objects when moving in the task environment  
     □ Constantly bumping into object while moving in the task environment  |
| Memory |  ❑ Able to recall small amount of information for immediate use  
       |  ❑ Able to recall large amounts of information for long-term use  
       |  ❑ Unable recall and recognize any information, past experiences, or tasks  |
|----------------|
| **Psychosocial** | **Self-awareness** |  ❑ Adequate for age  
       |  ❑ Needs improvement  
       |  ❑ Lacking, further evaluation necessary  |
| **Self-efficacy** |  ❑ Confident in familiar roles/tasks  
       |  ❑ Needs improvement for new roles/tasks  
       |  ❑ Lacking, further evaluation necessary  |
| **Mood/Affect** |  ❑ Adequate (Euthymic/Normal)  
       |  ❑ Inadequate (Flat/Blunted/Constricted)  
       |  ❑ Other  |
| **Peer support** |  ❑ Supportive  
       |  ❑ Not supportive  
       |  ❑ Other  |

**Additional Notes:**

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

Section III: Client/OT Intervention and Goal Planning

This section to be used as guide for discussion between client and OT in order to maximize fit between person factors, environment, and occupation and ensure safety while participating in the chosen active leisure occupation (Law et al., 1996).
SNOW ACTIVITIES:
ALPINE (DOWNHILL) SKIING
SNOW ACTIVITIES: ALPINE (DOWNHILL) SKIING

Environment

Chosen mountain ski resort: __________________________________________

Socioeconomic

Cost:
- Lift Ticket $
- Personal day locker rental $

Ski apparel- personally own or borrow/rent:
- Goggles
- Helmet
- Ski jacket
- Snow pants
- Gloves or mittens
- Ski socks
- Base layer
- Backpack

Institutional
- Universal handicap accessible campus
- Accessible restrooms
- Ramp access to lodge
- Accessible transportation to/from mountain
- Not handicap accessible

Cultural

- Holiday or long-weekend (busy, many tourists)
- Weekday (less busy, locals)
- Prior to injury, how much knowledge did you have on ski culture?
  - Very little
  - Average
  - Very much
- How much do you know about the culture of adaptive skiing?
  - Very little
  - Average
  - Very much
- No concerns with fitting into the ski culture
- Concerns with fitting into the ski culture

If so, please describe
_________________________________________________________________
_________________________________________________________________
_________________________________________________________________

Social

- Individual (with/without companion)
- Group (multiple adaptive skiers)
Occupation

Comfort level/experience:
- Low (green runs)
- Medium (blue runs)
- High (black runs)

Companion:
- With a companion
- Without a companion
- With a buddy
- Solo

Companion defined: A person that is guiding the skier by either providing physical assistance during or after skiing or assisting the skier with the use of tethers.
Buddy defined: A person that is paired with an independent skier for safety reasons, no physical assistance is needed during or after skiing.

Adaptive Equipment:
- Outriggers
  - One
  - Two
- Tethers
- Monoski
- Bi-Ski
- Other
- Seat Cushions
  - Standard
  - Customized
- Leg Covers
- Safety harness
- Other adaptive equipment
Adaptive Alpine (Downhill) Skiing in Colorado

Aspen
**Challenge Aspen**
(970)923-0578
Email: info@challengeaspen.org
Website: https://challengeaspen.org/

Boulder
**Boulder Parks and Recreation EXPAND Program (BlazeSports)**
(303)441-4947
Email: hustonj@ci.boulder.co.us
Website: https://bouldercolorado.gov/parks-rec/expand-program-for-people-with-disabilities

Breckenridge
**Breckenridge Outdoor Education Center**
(970)453-6422
Email: skiconfirmation@boec.org
Website: https://www.boec.org/

Crested Butte
**Adaptive Sports Center**
(970)349-2296
PO Box 1639

Durango
**Adaptive Sports Association**
(970)259-0374
Email: asa@frontier.net
Website: http://www.asadurango.org/index.html

Keystone
**Keystone Adaptive Center**
(970)453-6422 or (800)383-2632
Website: http://www.keystoneresort.com/ski-and-snowboard/adaptive-programs.aspx

Mesa- Powderhorn Resort
**Colorado Discover Ability**
(970)257-1222
Email: allstaff@coloradodiscobverability.org
Website: http://coloradodiscobverability.org

Steamboat Springs
**Steamboat STARS Adaptive Recreational Program**
(888)330-1454
Email: info@steamboatstars.com
Website: https://steamboatstars.com/
Facebook link: https://www.facebook.com/STARS.Steamboat?fref=ts

Telluride
**Telluride Adaptive Sports Program**
(970)728-5010
Email: tasp@tellurideadaptivesports.org
Website: http://www.tellurideadaptivesports.org/
Facebook link: https://www.facebook.com/TellurideAdaptiveSports/

Vail
**Vail Adaptive Learning Programs**
(970)754-3264
Email: vailadaptiveprogram@vailresorts.com

Winter Park
**National Sports Center for the Disabled (NSCD)**
(303)316-1518 or (970)726-1518
Email: info@nscd.org
Website: http://nscd.org/
Facebook link: https://www.facebook.com/National-Sports-Center-for-the-Disabled-63972531146
### Adaptive Equipment for Alpine (Downhill) Skiing

<table>
<thead>
<tr>
<th>Adaptive Equipment</th>
<th>Description</th>
<th>Image</th>
<th>Price</th>
<th>Resource for purchase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outriggers</td>
<td>Used to assist in balancing, stopping, turning, and getting on and off the lift.</td>
<td><img src="image" alt="Outriggers Image" /></td>
<td>$300-$500</td>
<td><a href="http://enablingtech.com/">http://enablingtech.com/</a></td>
</tr>
<tr>
<td></td>
<td>Superlite Outrigger Mono Ski and Bi ski</td>
<td><img src="image" alt="Superlite Outrigger Image" /></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tethers</td>
<td>The tether straps with carabiners allow an instructor or ski buddy to control the Bi-Unique or Dynamique from behind.</td>
<td><img src="image" alt="Tethers Image" /></td>
<td>$30.00</td>
<td><a href="http://enablingtech.com/">http://enablingtech.com/</a></td>
</tr>
<tr>
<td></td>
<td>Dual Tethers &amp; Carabiners</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Monoski</td>
<td>A monoski consists of a molded seat or bucket attached to an alpine ski by a suspension system. The ski is a great choice for beginner and advanced skiers alike.</td>
<td><img src="image" alt="Monoski Image" /></td>
<td>$5,295.00</td>
<td><a href="http://enablingtech.com/">http://enablingtech.com/</a></td>
</tr>
<tr>
<td>Bi-Ski</td>
<td>The biski consists of a molded seat or bucket attached to two articulating side-cut ski by a suspension system.</td>
<td><img src="image" alt="Bi-Ski Image" /></td>
<td>$2,500.00-$3,950.00</td>
<td><a href="http://enablingtech.com/">http://enablingtech.com/</a></td>
</tr>
<tr>
<td>Product</td>
<td>Description</td>
<td>Price</td>
<td>Website</td>
<td></td>
</tr>
<tr>
<td>------------------</td>
<td>------------------------------------------------------------------------------</td>
<td>-------------</td>
<td>-------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Carbon articulated seat</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gelcoat articulated seat</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leg Covers</td>
<td>These covers are wide enough to protect the arms of the passenger in case of severe weather. 3 adjustable straps can be fastened to hold the cover firmly against the passenger.</td>
<td>No price listed</td>
<td><a href="http://www.dualski.com/en/seats-for-sitski/">http://www.dualski.com/en/seats-for-sitski/</a></td>
<td></td>
</tr>
</tbody>
</table>


WATER ACTIVITIES:
WATERSKIING
WATER ACTIVITIES: WATERSKIING

Environment

Chosen lake area or program: ___________________________________________________

Socioeconomic

Water apparel- personally own or borrow/rent:

☐ Life jacket or vest
☐ Wetsuit
☐ Swim trunks or suit
☐ Water shoes

Institutional

☐ Accessible cabin
☐ Ramp to dock
☐ Accessible boat or assistance provided for transfer
☐ Accessible transportation

Physical

Distance from home to lake:

Social

☐ Group of adaptive skiers
☐ Group of able-bodied skiers

Cultural

☐ Holiday or long-weekend (busy, many tourists)
☐ Weekday (less busy, locals)
☐ Prior to injury, how much knowledge did you have on water ski culture?
  ☐ Very little
  ☐ Average
  ☐ Very much

☐ How much do you know about the culture of adaptive water skiing?
  ☐ Very little
  ☐ Average
  ☐ Very much

☐ No concerns with fitting into the water ski culture
☐ Concerns with fitting into the water ski culture

If so, please describe
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
Occupation

Companion

- With a companion
- Without a companion
- With a buddy
- Solo

Companion defined: A person that is guiding the skier by providing physical assistance during or after skiing or assisting the skier with use of conjoined tow ropes.

Buddy defined: A person that is paired with an independent skier for safety reasons, no physical assistance is needed during or after skiing.

Adaptive Equipment

- Sit Ski
  - Beginner
  - Intermediate/Advanced
  - Jump
  - Trick
- Starting block
- Outriggers
- Back support
- Cage
- Edge Triple Bar
- Riser
Adaptive Water Skiing in Colorado

Boulder
**Boulder Parks and Recreation EXPAND Program (BlazeSports)**
(303)441-4947
Email: hustonj@ci.boulder.co.us
Website: [https://bouldercolorado.gov/parks-rec/expand-program-for-people-with-disabilities](https://bouldercolorado.gov/parks-rec/expand-program-for-people-with-disabilities)

Grand Junction
**Colorado Discover Ability**
(970)257-1222
Email: allstaff@coloradodiscoverability.org
Website: [http://coloradodiscoverability.com/](http://coloradodiscoverability.com/)

Lakewood
**Adaptive Adventures**
(303)679-2770
## Adaptive Equipment for Water Skiing

<table>
<thead>
<tr>
<th>Adaptive Equipment</th>
<th>Description</th>
<th>Image</th>
<th>Price</th>
<th>Resource for purchase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sit Ski Beginner</td>
<td>15 inches wide, flat or shallow concave bottom adds stability, usually includes starting block</td>
<td><img src="image1.png" alt="Image" /></td>
<td>$1,395.00</td>
<td><a href="http://www.liquidaccess.org/ClinicSki.html">http://www.liquidaccess.org/ClinicSki.html</a></td>
</tr>
<tr>
<td>Intermediate / Advanced</td>
<td>10-13 inches wide, deeper concave bottom, adjustable fin, performance enhancing edge</td>
<td><img src="image2.png" alt="Image" /></td>
<td>$1,395.00</td>
<td><a href="http://www.liquidaccess.org/AOS.html">http://www.liquidaccess.org/AOS.html</a></td>
</tr>
<tr>
<td>Jump</td>
<td>Commonly used for competitions, flat bottom, 90 degree edges, lightweight graphite construction</td>
<td><img src="image3.png" alt="Image" /></td>
<td>$1,595.00</td>
<td><a href="http://www.liquidaccess.org/AirSki.html">http://www.liquidaccess.org/AirSki.html</a></td>
</tr>
<tr>
<td>Trick</td>
<td>Designed for performing tricks on surface of water or in air, no wider than 30% the length</td>
<td><img src="image4.png" alt="Image" /></td>
<td>$1,995.00</td>
<td><a href="http://enablingtech.com/products/kbg-water-ski">http://enablingtech.com/products/kbg-water-ski</a></td>
</tr>
<tr>
<td>Starting block</td>
<td>Cleat to hold the rope at the tip of the ski</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Outriggers</td>
<td>Two short ski tips attached to sides of sit ski</td>
<td><img src="image5.png" alt="Image" /></td>
<td>$350.00</td>
<td><a href="http://www.liquidaccess.org/outriggers.html">http://www.liquidaccess.org/outriggers.html</a></td>
</tr>
</tbody>
</table>

### Starting block
- **Description**: Cleat to hold the rope at the tip of the ski
- **Price**: $350.00

### Outriggers
- **Description**: Two short ski tips attached to sides of sit ski
- **Price**: $350.00
<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Benefits</th>
<th>Cost</th>
<th>Website</th>
</tr>
</thead>
<tbody>
<tr>
<td>Back Support</td>
<td>Padded backrest prevents posterior displacement from sit ski</td>
<td>Useful for individuals with little to no sitting balance or extensor spasticity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cage</td>
<td>Seat for sit ski</td>
<td></td>
<td>$800.00</td>
<td><a href="http://www.liquidaccess.org/Standard.html">http://www.liquidaccess.org/Standard.html</a></td>
</tr>
<tr>
<td>Edge Triple Bar</td>
<td>Three interlocking metal tubes that slide apart into three separate handles attached to the boat by three individual tow lines</td>
<td>Allows 2 instructors to physically assist a beginner to gain balance, then separate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Riser plate</td>
<td>Used to raise cage up from the deck of the ski</td>
<td>Useful for programs that have limited number of cages to fit equipment to multiple participants</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Citation: [http://www.usawaterski.org/pages/divisions/wsda/adaptivewaterskiequipment.pdf](http://www.usawaterski.org/pages/divisions/wsda/adaptivewaterskiequipment.pdf)
INDIVIDUAL ACTIVITIES:
HAND CYCLING
INDIVIDUAL ACTIVITIES: HAND CYCLING

Environment

Chosen hand cycling area: ________________________________

Socioeconomic
Cycling apparel- personally own or borrow/rent:
- Helmet
- Gloves
- Shorts
- Top/jersey
- Socks
- Road or mountain shoes (dependent on type of terrain)

Cycling Program Fees

Institutional
- Accessible restrooms
- Accessible transportation
- Not handicap accessible

Physical
Type of terrain:
- Mountainous
- Flat land
- Gravel terrain
- Paved terrain
- Mixed terrain

Cultural
- Prior to injury, how much knowledge did you have on cycling culture?
  - Very little
  - Average
  - Very much
- How much do you know about the culture of hand cycling?
  - Very little
  - Average
  - Very much
- No concerns with fitting into the hand cycling culture
- Concerns with fitting into the hand cycling culture
  If so, please describe
  ___________________________________________________
  ___________________________________________________
  ___________________________________________________

Social
- Group
- Individual
Occupation

**Level of intensity**
- Recreational
- Competitive
- Crosstrain/Off road

**Adaptive Equipment**
- Hand cycle
- Seat cushion
  - Standard
  - Customized
- Foot straps
- Gloves
  - Left hand
  - Right hand
  - Both
- Other adaptive equipment
Hand Cycling in Colorado

Breckenridge
**Breckenridge Outdoor Education Center**
(970)453-6422
Email: wildprog@boec.org
Website: [http://www.boec.org/2008/07/01/adaptive-cycling-program/](http://www.boec.org/2008/07/01/adaptive-cycling-program/)

Durango
**Adaptive Sports Association**
(970)259-0374
Email: annmarie@asadurango.com
Website: [http://www.asadurango.com/summer/daily_activities.html](http://www.asadurango.com/summer/daily_activities.html)

U.S. Handcycling Federation (USHF)
(303)910-9851
Website: [www.ushf.org](http://www.ushf.org)

**A Community for Handcycling Information**
Handcycling Yahoo Group
Online forum for information sharing, tips, events, training
[https://groups.yahoo.com/neo/groups/handcyclists/info](https://groups.yahoo.com/neo/groups/handcyclists/info)
Adaptive Equipment for Hand Cycling

<table>
<thead>
<tr>
<th>Adaptive Equipment</th>
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<th>Image</th>
<th>Price</th>
<th>Resource for purchase</th>
</tr>
</thead>
</table>
| Hand cycle         | Quickie Attitude Wheelchair Hand Bike
-Fits Quickie Q7, 7R/7RS, 5R, QRi, GP, and Quickie 2 Lite Fixed Front
-220lb weight capacity
-8 or 30 speed
-Easy gear change
| NJ Compact Bike | Just Universal!
(Leisure cycling) | ![](image) | | http://www.proactiv-gmbh.com/compact-bike_nj1.html#daten |
| COMP CC - Alois Praschberger | (Mountain/All-terrain) | ![](image) | | http://www.spokesnmotion.com/comp%20cc?form=119 |
| Seat cushion       | Supracor Stimulite Sport Wheelchair Cushion, a two-inch thick Stimulite.
-pressure relief
-reduced shearing | ![](image) | $219.00 | http://www.sportaid.com/stimulite-sport-cushion.html |
- ventilation that allows for true heat and moisture control.

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Price</th>
<th>Link</th>
</tr>
</thead>
<tbody>
<tr>
<td>Helmet</td>
<td>Injection-molded ABS shell and full-surround expanded polystyrene (EPS) protective inner foam for high-impact protection (mens and women’s sizing)</td>
<td>$35.00</td>
<td><a href="https://www.rei.com/rei-garage/product/106012/nutcase-bike-helmet-mens">https://www.rei.com/rei-garage/product/106012/nutcase-bike-helmet-mens</a></td>
</tr>
</tbody>
</table>

http://www.disabledsportsusa.org/sports/adaptive-equipment/cycling-equipment/

https://howirollsports.com/
TEAM ACTIVITIES:
WHEELCHAIR BASKETBALL
TEAM ACTIVITIES: WHEELCHAIR BASKETBALL

Environment

Chosen Wheelchair Basketball Program: ________________________________

Socioeconomic
Cost:
- Annual membership fee National Wheelchair Basketball Association (NWBA): $375
- Program Fees $
- Parking $
Apparel- personally own or borrow/rent:
- Gym clothes
- Jersey or t-shirt with visible number and matching with team

Institutional
- Universal handicap accessible campus
- Accessible restrooms
- Ramp access to gym
- Accessible transportation to/from gym
- Not handicap accessible

Cultural
- Prior to injury, how much knowledge did you have on the culture of basketball?
  - Very little
  - Average
  - Very much
- How much do you know about the culture of wheelchair basketball?
  - Very little
  - Average
  - Very much
- No concerns with fitting into the wheelchair basketball culture
- Concerns with fitting into the wheelchair basketball culture
If so, please describe
____________________________________
____________________________________
____________________________________

Social
- Individual practices
- Team (5-15 players per team)
Occupation

Experience using wheelchair
- No experience
- 1-6 months
- 7-12 months
- 1-2 years
- 3-5 years
- 5+ years

Performance rating:
Functional classification system
- **Class 1.0** - No active movement of the trunk in the vertical, forward or sideways plane
- **Class 1.5** - Has characteristics of a class 1.0, but able to move partially out into forward plane, able to rotate upper trunk, able to transition from catching to passing or shooter faster than class 1.0, more stable upon contact than class 1.0, and more at ease with ball within cylinder of movement.
- **Class 2.0** - Has active use of upper trunk in the vertical and forward planes, able to rotate the upper trunk while upright in both directions, able to hold the ball forward with both arms extended, able to lean the trunk into the forward plane about 45 degrees with control and return to the upright sitting position, able to actively bring upper trunk off the backrest of the chair, and uses hands to return to upright of trunk if no thighs-unless knees are significantly higher than the hips.
- **Class 2.5** - Has characteristics of class 1.0, but able to lean forward 90 degrees and return to upright sitting position without proper upper extremity assist with knees higher than hips, able to lean forward and rotate the upper trunk simultaneously, active movement of both the Upper and Lower Trunk but not coordinated or as one unit, lower Trunk is not against the backrest at all times, may have a lordosis (Curve in low back) to assist in returning to upright, and more stable than a Class 2.0 player but still has loss of stability in trunk.
- **Class 3.0** - Displays active use of the upper and lower trunk in the forward and vertical planes: Can lean forward 90 degrees, placing chest on thighs and return to upright with ease without knees significantly higher than hips, can hold the ball with both hands outstretched in front of face without loss of stability, can rotate upper and lower trunk as a unit not supported by wheelchair backrest, rotation of the trunk occurs at the level of the pelvis not the waist, unable to maintain stability leaning sideways, and works within a ‘Cylinder’
- **Class 3.5** - Has characteristics of a class 3.0, but able to move partially out into the sideways plane and return to upright sitting, able to remain upright in hard contact situations forward, able to sit with hips higher than knees, often raises and lowers trunk with each push, able to generate some power in legs with pushing, able to retrieve a ball with two hands on the floor slightly to the side and return to upright position, can lean to the side but remains within his base of support, plays within a WIDER cylinder than a Class 3.0 player, does not have full volume of action to either side.
- **Class 4.0** - Displays the ability to move the trunk maximally in all planes of movement with weakness to one side, has one strong side and one weaker side, able to lean
strongly to one side, usually able to lean to weak side slightly, can hold the ball with outstretched hands in front or overhead without loss of stability even in contact situations, no need to counterbalance even in contact situations unless contact is forceful and directed into the weaker side.

- **Class 4.5** - Displays the ability to move the trunk maximally in all planes of movement with no significant weakness in any direction, full volume of action in all planes, displays ability to lean to either side during shooting, passing, contesting a shot or trying to intercept a pass.

Must be classified by a team reviewer certified by National Wheelchair Basketball Association (NWBA)

*15 points allowed on court at a time***

**Adaptive Equipment:**

- **Sport Chair**
  - Top End Schulte 7000 Series Basketball Wheelchair
  - Top End Pro Basketball Wheelchair
  - Quickie All Court Titanium Basketball Wheelchair

Additional wheel Options
- Tri spoke wheels
- Five spoke wheels
- Molten game ball
  - Women BGL6X
  - Men BGL7X

**Getting Started: Rules**

- **Court Size:** A regular court surface must be free from obstructions with minimum dimensions of 84 feet (25.6m) in length and 50 feet (15.24m) in width.
- **Jersey:** Each team must have matching jerseys or t-shirts with visible numbers on them. (recommended that each team have a light and a dark jersey in case of conflict with another team).


Table of Contents:
- RULE 1 - COURT & EQUIPMENT........................................ 5
- RULE 2 - OFFICIALS & THEIR DUTIES ..................... 6
- RULE 3 - PLAYERS, SUBS & EQUIPMENT................. 6
- RULE 4 – DEFINITIONS ............................................. 7
- RULE 5 - SCORING & TIMING REGULATIONS ...... 7
- RULE 6 - LIVE BALL & DEAD BALL ...................... 8
- RULE 7 - OUT OF BOUNDS & THROW-IN............. 8
- RULE 8 - VIOLATIONS & PENALTIES............... 8
- RULE 9- FOULS & PENALTIES ................................. 9
- RULE 10-CLASSIFICATION & TEAM ................... 9-11
- RULE 11-FREE THROW LANE REQUIREMENT......... 12
- COMMENTS ON THE RULES ................................. 12-14
What are the wheelchair regulations?

1. The height of the seat rail must be no more than 21 inches. Measurement must be made from ground or court to the top of the seat rail bar (highest point) with the player in the chair.

2. The part of the footrest or roll bar that projects forward the farthest and which would be the first point of contact with another wheelchair in head-on contact must be at a height of no more than five inches from the ground.

3. A strap must be attached firmly and drawn taut to the telescope bar of the foot rest platform. This strap shall measure no less than one and one-half inches in width and the bottom of the strap should be drawn taut so that a foot may not be used as a brake.

4. Use of a cushion is condoned, being of a common understanding that it is for therapeutic reason specifically. As such, it shall be composed of any therapeutic material as made by popular manufacturers, and shall not exceed four inches at its highest point (thickness) for Class I and II players, and no more than two inches at its highest point (thickness) for Class III players. Pneumatic cushions and contoured cushions are permissible providing they are commercially manufactured for therapeutic use and do not exceed thickness restrictions (above). Cushions composed of non-therapeutic materials, such as hard (non-pliable) rubber, wood, or other solid composition, shall not be acceptable. In all situations, the decision of the officials shall be final.

5. Each chair must be equipped with a roll bar, or the foot platforms must be adequately covered on their undersides to insure against damage to the playing surface.

6. The footrest must have rounded or smooth corners. Door bumpers, knobs, projections of folding footrest, or other projection from the body of the footrest, which may readily become entangled in the wheels and/or spokes of another chair, or used to hook and/or hold an opponent, shall not be allowed.

7. Any chair equipped with either a horizontal bar behind the backrest or push handles extending to the rear, must have these areas sufficiently padded so as to prevent injury to another player.

8. When the chair is in the forward driving position the chair is permitted to have anti-tip casters attached to the underside or rear of the chair. The lowest point of the anti-tip caster cannot exceed 1” from the floor nor can any part of the anti-tip caster project from the chair rearward so that it would extend past any part of the rear wheels.

http://www.nwba.org/page/show/2019929-getting-started
Adaptive Wheelchair Basketball Programs in Colorado

Centennial
Colorado Adaptive Sports Foundation
(303)564-9375
Email: info@coloradoadaptivesports.org
5416 S. Telluride St.
Centennial, CO 80015

Denver
YMCA and Colorado Wheelchair Basketball
(720)524-2700
Email: rsloan@denverymca.org
Website: http://www.denverymca.org/aurora-family-ymca/wheelchair-basketball

Colorado Springs
National Wheelchair Basketball Association (NWBA)
(719)226-4082
1130 Elkton St. Suite A
Colorado Springs, CO 80907, USA
Email: info@nwba.org
Facebook link: https://www.facebook.com/nationalwheelchairbasketballassociation/
Website: http://www.nwba.org/
## Adaptive Equipment for Wheelchair Basketball

<table>
<thead>
<tr>
<th>Adaptive Equipment</th>
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<th>Image</th>
<th>Price</th>
<th>Resource for purchase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sports chair: Top End Schulte 7000 Series Basketball Wheelchair</td>
<td>Ready to play right out of the box and includes 25” high performance sport wheels, high pressure tires, a seat cushion, side guards, rear frame protector, single swivel anti-tip bar and positioning strap.</td>
<td><img src="https://example.com/image1" alt="Image" /></td>
<td>$2,399.00</td>
<td><a href="https://howirollsports.com/shop/top-end-pro-2-all-sport-wheelchair/">https://howirollsports.com/shop/top-end-pro-2-all-sport-wheelchair/</a></td>
</tr>
<tr>
<td>Sport Chair: Top End Pro Basketball Wheelchair</td>
<td>- Quick adjustments&lt;br&gt;- Top End’s exclusive quick release rear seat height adjustment system gives you the leeway to make your adjustment as needed&lt;br&gt;- Adjustable front seat height, center of gravity, back height/angle, back upholstery and footrest positioning: fore/aft, up/down, angle.&lt;br&gt;- Adjustable position for feet and toe stops and strap.</td>
<td><img src="https://example.com/image2" alt="Image" /></td>
<td>$1,999.00</td>
<td><a href="https://howirollsports.com/shop/top-end-pro-basketball-wheelchair/">https://howirollsports.com/shop/top-end-pro-basketball-wheelchair/</a></td>
</tr>
<tr>
<td>Quickie All Court Titanium Basketball Wheelchair</td>
<td>The premium is the Quickie Ti All Court Titanium basketball wheelchair, designed to reflect the winning spirit.</td>
<td><img src="https://example.com/image3" alt="Image" /></td>
<td>$2,845.00</td>
<td><a href="https://howirollsports.com/shop/quickie-all-court-titanium-basketball-wheelchair/">https://howirollsports.com/shop/quickie-all-court-titanium-basketball-wheelchair/</a></td>
</tr>
</tbody>
</table>
Quickie (aluminum) All Court, but improved in weight to durability ratio by a titanium seat-frame.
3 pounds on the weight of the chair with titanium. Find your competitive edge with a new range of options on your Quickie Ti All Court. Basketball. Quad Rugby. Hockey. Football.

<table>
<thead>
<tr>
<th>Description</th>
<th>Price</th>
<th>Link</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wheels</td>
<td>$855.00</td>
<td><a href="https://howirollsports.com/shop/spinergy-slx-x-laced-24-spoke-sport-wheel/">https://howirollsports.com/shop/spinergy-slx-x-laced-24-spoke-sport-wheel/</a></td>
</tr>
<tr>
<td>-Tri spoke</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-five spoke</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spinergy “SLX”</td>
<td></td>
<td></td>
</tr>
<tr>
<td>X-Laced 24 Spoke Sport Wheels</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wheelchair Tire</td>
<td>$42.50</td>
<td><a href="https://howirollsports.com/shop/schwalbe-speedair-wheelchair-tire/">https://howirollsports.com/shop/schwalbe-speedair-wheelchair-tire/</a></td>
</tr>
<tr>
<td>“SpeedAir”</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wheelchair Tires</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sizes: 24&quot;, 25&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Schwalbe</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tire Lever</td>
<td>$3.95</td>
<td><a href="https://howirollsports.com/shop/continental-tire-levers/">https://howirollsports.com/shop/continental-tire-levers/</a></td>
</tr>
<tr>
<td>(sold in a set of 3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Will peel even the most tenacious tire off any wheelchair sport rim. Stackable, has spoke holders, and are reinforced to help alleviate frustrating breakage.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Top End Click Strap

Three Sizes:
Small 8”,
Medium 10”
large 12”

Securing your body to your handcycle or sports wheelchair for increased responsiveness. They are designed to keep your position securely, and securely lock you in place so your body feels as one with your cycle or chair.

$68.99
https://howirollspors.com/shop/top-end-click-strap/

Molten game basketball

Women BGL6X

Men BGL7X

$44.98
http://moltenusa.com/shop-all/basketball/competition/
Case Study

For purposes of OT education on learning how to best apply these active leisure materials.
Case Study

Occupational Profile:
Harris is a 42-year-old White male with a diagnosis of incomplete SCI at T3 and resultant paraplegia. After a four week stay Harris has graduated from rehabilitation at Mountain Run Hospital in Steamboat Springs, Colorado after a 35-day stay. Harris was in an automobile accident that resulted in his injuries. He was a passenger in his wife’s car and was struck from the right side by another car. Harris was pinned in the car for a short period of time and reports having no feeling in his legs immediately after the two cars collided.

Harris lives with his wife of 20 years, Marsha, in a 2-story home in Steamboat Springs. Harris works full-time for an engineering firm as a chemical engineer. Prior to his injury, during the little free time he had, he enjoyed travelling with Marsha, golfing with friends, downhill skiing at Steamboat Resort, playing pickup basketball at the local YMCA, and hiking. He had no functional deficits prior to the accident. Harris’ family is extremely supportive and visits daily. His son, Jeff, lives in Denver, CO and calls frequently. His wife makes all his favorite treats and brings them to the hospital. Marsha, a dental hygienist, has taken time off work to be with Harris every day at the hospital, but will need to return to work in 2 weeks.

Harris was admitted to the rehab hospital with the goal of returning home. He looks forward to picking up his life where it was before it was disrupted by the accident. Harris has since discharged and returned home. He has begun working part-time and is attending outpatient therapy 3x/wk. He is interested in getting back into leisure occupations.

OT Evaluation:
- Harris is in a wheelchair with lateral supports.
- When asked how he has been feeling since the accident, he replies “fine”. When the quested is rephrased as to his emotional state, his response is the same. Harris is short in response, especially when asked questions regarding feelings.
- No cognitive, perceptual, visual, or hearing deficits
- No AROM in BLExs
- Left UE strength WNL, Right UE 4/5
- Stiffness in neck
- Good sitting balance
- Able to propel self in wheelchair short to medium distances
- Min assist for dressing (don socks/shoes)
- Feeds without assist, but reports “it is messy sometimes”
- Requires a catheter for urination and has started a bowel program
Adaptive Active Leisure Occupational Therapy Evaluation & Intervention Planning
Kelsey Glatt, OTS & Tracy Perish, OTS

Purpose:
The purpose of the Adaptive Active Leisure Occupational Therapy Evaluation & Intervention Planning is to holistically evaluate a client and the environmental factors that support or are barriers to participation in active leisure occupations. This includes physical activity that one chooses to do in one’s free time. The goal is to improve occupational performance by facilitating or enhancing the fit between person, environment, and occupation (Law et al., 1996).

Description:
The Adaptive Active Leisure Occupational Therapy Evaluation & Intervention Planning is an evaluation, conducted via informal interview and occupational therapist observation of client function in daily tasks, designed to capture information regarding client factors, performance skills, and performance patterns required for safe and successful participation in active leisure activities. With this information, occupational therapists can better match the client with an activity of appropriate activity demands in relation to the therapeutic goals and environment/contextual factors. Upon completion of the evaluation, the occupational therapist can also provide recommendations for necessary adaptive equipment and/or physical assistance needed from a sports companion. The client will complete Section I: Client Questionnaire. The occupational therapist will evaluate the client through observation of performance and informal interview to complete Section II: Occupational Therapist Evaluation of Client Functioning. Section III: Client/OT Intervention and Goal Planning includes information which facilitates maximal fit between person factors, environment, and the chosen active leisure occupation (Law et al., 1996). Administration time of Sections I and II is approximately 30 minutes. Administration time of Section III is dependent upon client complexity and prior experience with chosen activity.
Name: ___________ Harris
Age: ___42_____ DOB: 01/07/1975
Level of SCI: ___T3______________
   □ Complete
   ❌ Incomplete
Functional Level: __T3____________
Setting:
   □ Inpatient rehabilitation
   ❌ Outpatient
   □ Community
   □ Other:
Precautions: _______ pressure sores
               □ follow bowel & bladder program
Occupational Profile:
   __Injury from MVA; Wife of 23 years- Marsha; enjoys traveling, golf with friends, downhill skiing, hiking, and basketball; lives in Steamboat Springs in a 2-story home, no steps to enter; supportive family, son in Denver; works at as chemical engineer at private firm______________________________

Section I:
Client Questionnaire

Instructions: Read each statement and answer to the best of your ability. Feel free to make comments in the space below each statement.

Harris’ responses are as follows (in red):

In the past 7 days, how many days did you participate in mild intensity physical activity? (i.e. Makes you feel like you are working a little bit, but you can keep doing them for a long time)

Four

In the past 7 days, how many days did you participate in moderate intensity physical activity? (i.e. Make you feel like you are working somewhat hard, but you can keep doing them for a while without getting tired)

Two

In the past 7 days, how many days did you participate in heavy intensity physical activity? (i.e. Make you feel like you are working really hard, almost maximum)

None

74
Please check all of the leisure occupations that you participated in prior to your injury.

<table>
<thead>
<tr>
<th>Snow Activities</th>
<th>Water Activities</th>
<th>Individual Activities</th>
<th>Team Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>■ Alpine (downhill) skiing</td>
<td>■ Rowing</td>
<td>■ Golf</td>
<td>■ Basketball</td>
</tr>
<tr>
<td>■ Cross Country Skiing</td>
<td>■ Kayaking</td>
<td>■ Swimming</td>
<td>■ Tennis</td>
</tr>
<tr>
<td>■ Snowboarding</td>
<td>■ Waterskiing</td>
<td>■ Track &amp; Field</td>
<td>■ Baseball</td>
</tr>
<tr>
<td>■ Snowshoeing</td>
<td>■ Fishing</td>
<td>■ Yoga</td>
<td>■ Softball</td>
</tr>
<tr>
<td></td>
<td>■ Swimming</td>
<td>■ Rock climbing</td>
<td>■ Soccer</td>
</tr>
<tr>
<td></td>
<td>■ Sailing</td>
<td>■ Horseback</td>
<td></td>
</tr>
<tr>
<td></td>
<td>■ Paddle Boarding</td>
<td>■ Hiking/Bac</td>
<td></td>
</tr>
<tr>
<td></td>
<td>■ Scuba</td>
<td>■ Hand</td>
<td></td>
</tr>
<tr>
<td></td>
<td>■ White water rafting</td>
<td>■ cycling</td>
<td></td>
</tr>
</tbody>
</table>

Please check all of the leisure occupations that you are interested in participating in now.

<table>
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<td></td>
</tr>
</tbody>
</table>

Select one activity (from above) that you would like to participate in again.

**Chosen activity:** _____Downhill skiing________________________________________

Have participated in this activity prior to your injury? **YES ❌ NO ____**

This task is:
- ❏ New learning
- ❌ A prior task
### Section II: Occupational Therapist Evaluation of Client Functioning

Instructions: OT fills out after client completes Section I: Client Questionnaire to develop an intervention plan matching the client’s current motor, cognitive, and psychosocial function. Please check the most appropriate box or use the space provided to include description.

Occupational Therapist responses are as follows (in red):

<table>
<thead>
<tr>
<th>Person (P)</th>
</tr>
</thead>
</table>
| **Motor** Balance | ❑ Static seated  good  
| | ❑ Dynamic seated  fair-  
| | ❑ Paraspinal muscles  weak  
| Upper Extremity (UE) function | ❗ Scapular stabilizers  
| | ❗ Shoulder  
| | ❗ Biceps  
| | ❗ Triceps  
| | ❗ Wrist extensors  
| | ❑ Tenodesis grasp  
| | ❗ Hand muscles  weak grasp  
| | ❗ Abductor digiti minimi  
| Hand/Wrist function | ❑ ROM  L: WFL  
| |  
| | R: 75% range  
| | ❑ MMT  L: WFL  
| |  
| | R: 4/5 shoulder flexion & abduction  
| |  
| | 3/5 elbow flexion  
| | ❑ Dynamometer  R 40#  L 70#  
| | ❑ Pinchometer  R 5#  L 15# palmar  
| | ❑ Tone (circle)  spastic  athetoid  flaccid  normal  
| Lower Extremity (LE) function | ❗ No ambulation  assist to propel long distance  
| | ❑ Ambulate with bracing/crutches short distance  
| | ❑ Ambulate with bracing/crutches mid-range distance  
| | ❑ Difficulty walking stairs  

76
Pressure relief

- Type of wheelchair cushion: ROHO
  - Adequate
  - Adequate w/ lateral support
  - Inadequate

LE sensitivity to temperature

- Adequate for hot and cold
- Adequate for hot
- Adequate for cold
- Inadequate for hot and cold

UE Proprioception

- Eyes open: good
- Eyes closed: max difficulty

Bowel and Bladder

- Independent
- Needs assistance for catheterization
- Incontinent bowel: recently started bowel program

Vision

- No impairments: 20/20
- Wears corrective contacts/glasses

Cognitive

**Attention** (circle)

- Sustained attention: able to attend to task
  - YES
  - NO
- Alternating: able to manage switching attention back and forth for task completion
  - YES
  - NO
- Divided: able to multitask
  - YES
  - NO

**Sequence**

- Performs steps in an effective or logical order (does not repeat steps)
- Requires assist 1-2 times per multi-step task
- Requires constant use of compensatory strategies

**Inquires**

- Seeks needed verbal or written information by asking questions or reading directions or labels
- Requires assist 1-2 times per verbal or written information
- Requires constant use of verbal or written information

**Navigates**

- Moves the arm, body, or wheelchair without bumping into obstacles when moving in the task environment or interacting with task objects
- Frequently bumps into objects when moving in the task environment
- Constantly bumping into object while moving in the task environment
| Memory | • Able to recall small amount of information for immediate use  
| | • Able to recall large amounts of information for long-term use  
| | • Unable recall and recognize any information, past experiences, or tasks |
| **Psychosocial** | **Self-awareness** | • Adequate for age  
| | | • Needs improvement  
| | | • Lacking, further evaluation necessary |
| | **Self-efficacy** | • Confident in familiar roles/tasks  
| | | • Needs improvement for new roles/tasks  
| | | • Lacking, further evaluation necessary |
| | **Mood/Affect** | • Adequate (Euthymic/Normal)  
| | | • Inadequate (Flat/Blunted/Constricted)  
| | | • Other |
| | **Peer support** | • Supportive family  
| | | • Not supportive  
| | | • Other no social network post-injury |

**Additional Notes:**

Areas to address: R UE strength, grip/pinch strength, proprioception, asking questions, navigating environment in w/c safely, developing confidence in new roles, developing social network with individuals of similar interests

### Section III: Client/OT Intervention and Goal Planning

Instructions: This section to be used as guide for discussion between client and OT in order to maximize fit between person factors, environment, and occupation and ensure safety while participating in the chosen active leisure occupation (Law et al., 1996).

## SNOW ACTIVITIES: ALPINE (DOWNHILL) SKIING

### Environment

Chosen mountain ski resort: [Steamboat STARS Adaptive Recreational Program](#)

### Socioeconomic

- **Cost:**
  - Lift Ticket $35
  - Buddy pass $35
  - Personal day locker rental $10 large

- **Ski apparel - personally own or borrow/rent:**
  - [ ] Goggles
  - [ ] Helmet
  - [ ] Ski jacket
  - [ ] Snow pants
  - [ ] Gloves or mittens
  - [ ] Ski socks
  - [ ] Base layer
  - [ ] Backpack

- **Ownership:** Owns all

### Cultural

- **Holiday or long-weekend (busy, many tourists) [x]**
- **Weekday (less busy, locals) [ ]**
- **Prior to injury, how much knowledge did you have on ski culture?**
  - [ ] Very little
  - [ ] Average
  - [x] Very much
- **How much do you know about the culture of adaptive skiing?**
  - [x] Very little
  - [ ] Average
  - [ ] Very much
- **No concerns with fitting into the ski culture [ ]**
- **Concerns with fitting into the ski culture [x]**

*If so, please describe*

“I can’t ski with my friends anymore. I’m just going to have to go alone since I’ll be slow.”

### Institutional

- **Universal handicap accessible campus [x]**
- [ ] Accessible restrooms
- **Ramp access to lodge [x]**
- [ ] Accessible transportation to/from mountain
- [ ] Not handicap accessible

### Physical

- **Distance from home:** 10 miles
- **# of ski lifts:** 16 total
- **# of trails:** 165

### Social

- **Individual (with/without companion) [x]**
- [ ] Group (multiple adaptive skiers)
Occupation

Comfort level/experience:
- ❌ Low (green runs)
- ❑ Medium (blue runs)
- ❑ High (black runs)

Companion: will need to locate
- ❌ With a companion
- ❑ Without a companion
- ❑ With a buddy
- ❑ Solo

Companion defined: A person that is guiding the skier by either providing physical assistance during or after skiing or assisting the skier with the use of tethers.
Buddy defined: A person that is paired with an independent skier for safety reasons, no physical assistance is needed during or after skiing.

Adaptive Equipment:
- ❑ Outriggers
  - ❑ One
  - ❌ Two
- ❌ Tethers
- ❑ Monoski
- ❌ Bi-Ski
- ❑ Other
- ❑ Seat Cushions
  - ❌ Standard
  - ❑ Customized
- ❌ Leg Covers
- ❌ Safety harness
- ❑ Other adaptive equipment
References


CHAPTER V

SUMMARY

There is a limited amount of literature regarding the role of occupational therapy in selecting and promoting leisure participation for individuals with physical disabilities, specifically active leisure. The guide, presented in Section IV, was developed with intent of implementation by an occupational therapist into rehabilitation or leisure settings to provide holistic evaluation and intervention planning using active leisure activities. A Guide for Occupational Therapy Practice in Active Leisure Occupations for Adults with Paraplegia and Lower Tetraplegia was developed as a framework for evaluation and intervention planning and may be modified based on case necessity. A goal of improved occupational performance in active leisure participation is addressed by evaluating person, environment, and occupation variables and facilitating maximum transactive fit, using the Person-Environment-Occupation (PEO) model (Law et al., 1996).

Some limitations exist in regards to development of this scholarly project and inclusivity. This guide has not yet been implemented. Another limitation is that leisure participation is not typically reimbursed by third-party payers, hence, occupational therapists would have to modify documentation and advocate for the provision of these specific services. A final limitation of the guide is that it is inclusive only to Colorado adaptive programming and that there is in-depth analysis for only one activity from each category (winter, summer, individual and team). The guide can be implemented into any rehabilitation or leisure setting focused on participation in active leisure occupation. It
was developed with intent to be generalized to all activities and to individuals with any physical disability or limitation.

There is a correlation between adaptive sports participation and higher rated life satisfaction, community integration, quality of life, perceived competence, and reduced negative mood states (Chun et al., 2008; Lundberg et al., 2011a). This evidence-based guide provides a holistic and client-centered occupational therapy-focused evaluation and intervention planning framework for client participation in active leisure occupations. Occupational therapists are uniquely qualified to assess clients with physical disabilities, the environment of occupation, and the active leisure activity while keeping in mind the transactive and interdependent relationship between variables. These findings support the incorporation of leisure occupations into the therapeutic process and daily life for individuals with physical disabilities (Specht, King, Brown, & Foris, 2002).

Authors recommend completion of a pilot study with pre/post-test to determine effectiveness of evaluation and intervention planning using the guide. The next step in the development of *A Guide for Occupational Therapy Practice in Active Leisure Occupations for Adults with Paraplegia and Lower Tetraplegia* would be to pursue copyright protection of materials. Furthermore, in the future, authors would implement this guide into rehabilitation and leisure settings and distribute to occupational therapists working in physical disabilities settings.

The effect of physical disability is multifaceted and uniquely impacts each individual for which it occurs. Individuals with disabilities are far less likely to engage in physically active lifestyles compared to people without disabilities; nevertheless, participation in active leisure occupation is a step toward identity development and
ownership of the disability (Rimmer, Riley, Wang, Rauworth, & Jurkowski, 2004).

Findings from the review of literature support the use of *A Guide for Occupational Therapy Practice in Active Leisure Occupations for Adults with Paraplegia and Lower Tetraplegia* for individuals following any type of physical disability or injury. This guide describes the role of occupational therapy has in leisure occupations and emphasizes occupational therapists as an integral part of the interdisciplinary team for re-integration in all types of meaningful occupations.
REFERENCES


