

## Physical Disabilities Research

### TRO Research Hub: TR-Related Literature

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#### **Adolescent girls' involvement in disability sport: A comparison of social support mechanisms**

Anderson, D. M., Wozencroft, A., & Bedini, L. A. (2008). Adolescent girls' involvement in disability sport: A comparison of social support mechanisms. *Journal of Leisure Research*. 40 (2), 183-207.

Women and girls with disabilities are historically disenfranchised from physical recreation due to the “double whammy” of being female and having a disability. The literature suggests that challenges to participation likely include lack of social support for girls with disabilities to participate in sport. Therefore, the purpose of the study was to examine differences in social support received by girls with disabilities who did and did not participate in organized wheelchair sport programs. In addition, the relationship between social support and outcomes tied to wheelchair sport participation were investigated. Data were collected using semi-structured interviews and analyzed using constant comparison techniques. Utilizing a model of social support as a framework, the findings illustrate multiple differences in social support mechanisms for girls who are and who are not involved in wheelchair sport programs.

*Keywords: disability, females, social support, sport*

#### **Influence of adapted sport on quality of life: Perceptions of athletes with cerebral palsy**

Groff, D. G., Lundberg, N. R., & Zabriskie, R. B. (2009). Influence of adapted sport on quality of life: Perceptions of athletes with cerebral palsy. *Disability & Rehabilitation*, 31(4), 318-326. doi:10.1080/09638280801976233

This study sought to examine the effect of adaptive sports participation on athletic identity and influence on quality of life (QOL) for individuals with cerebral palsy (CP) participating in the CP World Games. Surveys were conducted with 73 international athletes competing in the 2005

CP World Championships. The survey included descriptive questions about sport involvement and socio-demographics, the Athletic Identity Measurement Scale, and the Influence on Quality of Life Scale. A significant relationship was found between influence on QOL and athletic identity ( $r = 0.505$ ;  $p < 0.001$ ). There was a moderate negative correlation between influence of adaptive sport on QOL and severity of disability ( $r = -0.264$ ,  $p < 0.05$ ). The majority of the sample either agreed or strongly agreed that adaptive sport positively influenced their overall health (84.9%) quality of life (80.8%), quality of family life (53.4%), and quality of social life (56.1%). Athletic identity ( $\beta = 0.54$ ) was the strongest predictor of influence on QOL with severity of disability ( $\beta = -0.29$ ) also a significant contributor. These athletes also had significantly higher mean AIMS scores when compared to collegiate non-athletes, collegiate recreational athletes, and recreational athletes with disabilities. The results suggest that participation in adapted sport is related to QOL and athletic identity for individuals with CP. To foster these benefits advocates for persons with disabilities should work toward increasing opportunities to compete in sports.

*Keywords: Adapted sport, athletic identity, cerebral palsy, quality of life*

### **SCIREhab project series: The therapeutic recreation taxonomy**

Cahow, C., Skolnick, S., Joyce, J., Jug, J., Dragon, C., & Gassaway, J. (2009). SCIREhab project series: The therapeutic recreation taxonomy. *The Journal of Spinal Cord Medicine*, 32(3), 298-306. doi:10.1080/10790268.2009.11760783

Outcomes research of therapeutic recreation (TR) activities and interventions for spinal cord injury (SCI) rehabilitation is made more difficult by a lack of uniform descriptions and the absence of a formal treatments classification system (taxonomy). The objective of this study was to describe a taxonomy developed by Certified Therapeutic Recreation Specialists. TR lead clinicians and researchers from 6 SCI rehabilitation centers developed a TR documentation system to describe the details of each TR session involving patients with SCI enrolled in the SCIREhab study. The SCIREhab study uses the practice-based evidence methodology, a rigorous observational methodology that examines current practice without introducing additional treatments, to capture details of each TR session for 1,500 SCI rehabilitation patients at 6 US inpatient SCI rehabilitation facilities. This may be the first attempt to document the many details of the TR rehabilitation process for patients with SCI. The TR taxonomy consists of 6 activities (eg, leisure education and counseling, outings, and leisure skill work in center) and activity-specific interventions, as well as time spent on each activity. Activity descriptions are enhanced with additional details that focus on assistance needs for each activity, patient ability to direct

care, and patient/family involvement, which may help to determine TR activity selection. Development and application of a TR taxonomy, which is comprehensive for patients with SCI and efficient to use, are feasible despite significantly different TR programs at the 6 SCIR rehab centers.

*Keywords: spinal cord injuries, rehabilitation, therapeutic recreation, outcomes research, taxonomy, practice-based evidence, Functional Independence Measure*

### **Therapeutic recreation treatment time during inpatient rehabilitation**

Gassaway, J., Dijkers, M., Rider, C., Edens, K., Cahow, C., & Joyce, J. (2011). Therapeutic recreation treatment time during inpatient rehabilitation. *Journal of Spinal Cord Medicine*, 34(2), 176-185. doi:10.1179/107902611X12971826988138

Following spinal cord injury (SCI), certified therapeutic recreation specialists (CTRSs) work with patients during rehabilitation to re-create leisure lifestyles. Although there is much literature available to describe the benefits of recreation, little has been written about the process of inpatient or outpatient rehabilitation therapeutic recreation (TR) programs or the effectiveness of such programs. To delineate how TR time is used during inpatient rehabilitation for SCI. Six rehabilitation centers enrolled 600 patients with traumatic SCI for an observational study. CTRSs documented time spent on each of a set of specific TR activities during each patient encounter. Patterns of time use are described, for all patients and by neurologic category. Ordinary least-squares stepwise regression models are used to identify patient and injury characteristics predictive of total treatment time (overall and average per week) and time spent in TR activities. Ninety-four percent of patients enrolled in the SCIR rehab study participated in TR. Patients received a mean total of 17.5 hours of TR; significant differences were seen in the amount of time spent in each activity among and within neurologic groups. The majority (76%) of patients participated in at least one structured therapeutic outing. Patient and injury characteristics explained little of the variation in time spent within activities. The large amount of variability seen in TR treatment time within and among injury group categories, which is not explained well by patient and injury characteristics, sets the stage for future analyses to associate treatments with outcomes.

*Keywords: spinal cord injuries, rehabilitation, health services research, therapeutic recreation, paraplegia, tetraplegia*

### **Outcomes of adaptive sports and recreation participation among veterans returning from combat with acquired disability**

Lundberg, N., Bennett, J., & Smith, S. (2011). Outcomes of adaptive sports and recreation participation among veterans returning from combat with acquired disability. *Therapeutic Recreation Journal*, 45(2), 105-120.

The purpose of this study was to examine changes in quality of life, mood states, and sports related competence for veterans of Operation Iraqi Freedom and Operation Enduring Freedom who participated in a therapeutic adaptive sports and recreation program. The researchers hypothesized that participation would lead to increases in physical, psychological, social, and environmental QoL, increases in sports related competence, and reductions in mood disturbances such as depression and anger. A total of 18 veterans participated in one on three week-long therapeutic and adaptive sports programs in Sun Valley, Idaho. Veterans responded on a pretest and posttest questionnaire. Because no control group was available, multiple paired sample t-tests with Bonferoni adjustments were used to look at the differences between the pretest and posttest scores. Results identified significant pre and posttest differences in psychological health, overall quality of life, mood states including tension, depression, anger, and vigour, and sports related competence. The results highlight the impact that therapeutic adaptive sports and recreation programs potentially have for combat veterans in areas of quality of life, reduction of mood disturbances, and sports related competence.

*Keywords: adaptive sports, competence, Iraq, mood states, quality of life, veterans*

### **Active video game play in children with cerebral palsy: Potential for physical activity promotion and rehabilitation therapies**

Howcroft, J., Klejman, S., Fehlings, D., Wright, V., Zabjek, K., Andrysek, J., & Biddiss, E. (2012). Active video game play in children with cerebral palsy: Potential for physical activity promotion and rehabilitation therapies. *Archives of Physical Medicine and Rehabilitation*, 93(8), 1448-1456. doi:10.1016/j.apmr.2012.02.033

To evaluate the potential of active video game (AVG) play for physical activity promotion and rehabilitation therapies in children with cerebral palsy (CP) through a quantitative exploration of energy expenditure, muscle activation, and quality of movement. Moderate levels of physical activity were achieved during the dance (metabolic equivalent for task [MET]=3.20±1.04) and boxing (MET=3.36±1.50) games. Muscle activations did not exceed maximum voluntary

exertions and were greatest for the boxing AVG and for the wrist extensor bundle. Angular velocities and accelerations were significantly larger in the dominant arm than in the hemiplegic arm during bilateral play. A high level of enjoyment was reported on the PACES (4.5±0.3 out of 5). AVG play via a low-cost, commercially available system can offer an enjoyable opportunity for light to moderate physical activity in children with CP. While all games may encourage motor learning to some extent, AVGs can be strategically selected to address specific therapeutic goals (e.g., targeted joints, bilateral limb use). Future research is needed to address the challenge of individual variability in movement patterns/play styles. Likewise, further study exploring home use of AVGs for physical activity promotion and rehabilitation therapies, and its functional outcomes, is warranted.

*Keywords: cerebral palsy, child, exercise, motor activity, rehabilitation, video games*

### **Therapeutic horse back riding of a spinal cord injured veteran: A case study**

Asselin, G., Penning, J. H., Ramanujam, S., Neri, R., & Ward, C. (2012). Therapeutic horse back riding of a spinal cord injured veteran: A case study. *Rehabilitation Nursing, 37*(6), 270-276. doi:10.1002/rnj.027

To determine an incomplete spinal cord injured veteran's experience following participation in a therapeutic horseback riding program. Following the establishment of a nationwide therapeutic riding program for America's wounded service veterans in 2007, a Certified Rehabilitation Registered Nurse from the Michael E. DeBakey Veteran Affairs Medical Center worked with an incomplete spinal cord injured veteran who participated in the Horses for Heroes program. This program resulted in many benefits for the veteran, including an increase in balance, muscle strength, and self-esteem. A physical, psychological, and psychosocial benefit of therapeutic horseback riding is shown to have positive results for the spinal cord injured. Therapeutic riding is an emerging field where the horse is used as a tool for physical therapy, emotional growth, and learning. Veterans returning from the Iraq/Afghanistan war with traumatic brain injuries, blast injuries, depression, traumatic amputations, and spinal cord injuries may benefit from this nurse-assisted therapy involving the horse.

*Keywords: horseback riding, veterans, spinal cord injured, rehabilitation*

### **Re-conceptualising active living for individuals with spinal cord injury**

Zahl, M. L. (2012). Re-conceptualising active living for individuals with spinal cord injury. *World Leisure Journal*, 54(3), 230-239. doi:10.1080/04419057.2012.702453

Adults with traumatic spinal cord injury (SCI) seeking an active lifestyle face exponentially increased challenges compared to the general population. Three dimensions commonly affected are physical activity, social participation and psychological activity. Physical inactivity among persons with SCI presents limits to life expectancy, increases secondary health conditions and susceptibility to illness and diminishes capacity for participation in all life activities. Restrictions to social participation and disruptions of daily habits may compromise feelings of connectedness or social support and prevent active involvement in social activity, thus increasing the risk of social isolation. Decreased or limited psychological activity contributes to the decline of psychological and emotional functioning, leading to depression, anxiety or substance abuse. An increase in active living across all three dimensions could insulate individuals with SCI from disease, thus increasing protective factors for health and wellbeing. This manuscript begins to conceptualise active living as involving physical, social and psychological activities.

*Keywords: active living, spinal cord injury, physical activity, social activity, psychological living*

### **Relationship of therapeutic recreation inpatient rehabilitation interventions and patient characteristics to outcomes following spinal cord injury: The SCIREhab project**

Cahow, C., Gassaway, J., Rider, C., Joyce, J. P., Bogenschutz, A., Edens, K., Kreider, S. E. D., Whiteneck, G. (2012). Relationship of therapeutic recreation inpatient rehabilitation interventions and patient characteristics to outcomes following spinal cord injury: The SCIREhab project. *Journal of Spinal Cord Medicine*, 35(6), 547-564.  
doi:10.1179/2045772312Y.0000000066

To investigate associations of therapeutic recreation (TR) interventions during inpatient rehabilitation for patients with traumatic spinal cord injury (SCI) with functional, participation, and quality of life outcomes. In this prospective observational study, data were obtained from systematic recording of TR services by certified TR specialists, chart review, and patient interview. TR interventions, including exposure to community settings and leisure activities, add to the variance explained (in addition to the strong predictors of injury classification, admission motor Functional Independence Measure (FIM), and other patient characteristics) in outcomes at the time of rehabilitation discharge (FIM, discharge to home) and at the 1-year injury

anniversary (FIM, working or being in school, residing at home, and societal participation as measured by the Craig Handicap Assessment and Reporting Technique (CHART)). They also are associated with less rehospitalization and less pressure development after discharge. In addition, more time spent in specific TR activities during rehabilitation is associated with more participation in the same type of activities at the 1-year injury anniversary. Greater participation in TR-led leisure skill and community activities during rehabilitation is a positive predictor of multiple outcomes at rehabilitation discharge and the 1-year injury anniversary demonstrating that TR activities are associated with a return to a productive and healthy life after SCI. Further research should focus on the impact of TR on longer-term outcomes to determine whether relationships continue or change as persons continue to adapt to their life after SCI.

*Keywords: spinal cord injuries, rehabilitation, therapeutic recreation, outcomes, practice-based evidence, tetraplegia, paraplegia*

### **Risky bodies in risky spaces: Disabled people's pursuit of outdoor leisure**

Burns, N., Watson, N., & Paterson, K. (2013). Risky bodies in risky spaces: Disabled people's pursuit of outdoor leisure. *Disability & Society*, 28(8), 1059-1073.  
doi:10.1080/09687599.2012.749180

Risk is used to deny disabled people access to many parts of mainstream life. Using qualitative data we explore disabled people's views and experiences of outdoor recreation, bringing together ideas from two areas of sociology – disability studies and risk using the concepts of edgework and psycho-emotional disablism. Many people felt that the outdoors represented a risky environment. For some, risk was one of the main drivers for going out into the countryside; whilst for others, risk was a major cause of their reluctance to venture into the countryside. Engaging in risk both can disable and can challenge disablist views.

*Keywords: disabled people, risk, outdoors, psycho-emotional disablism, edgework, identity*

### **Enhancing communication between a person with TBI and a significant other through arts: Pilot project**

Carbonneau, H., Le Dorze, G., Joyal, F., & Plouffe, M. (2013). Enhancing communication between a person with TBI and a significant other through arts: Pilot project. *Annals of Leisure Research*, 16(3), 252-268. doi:10.1080/11745398.2013.826125

The neurological consequences following a traumatic brain injury (TBI) greatly affect the person's daily life as well as that of the supporting relatives who often feel powerless. The social integration of people suffering from TBI is a long-term situation. TBI often involves communication and behavioural disorders that become limitations to social participation. In general, interventions focus on reducing the individual's difficulties and do not consider strengthening their potential. Leisure, notably arts, has been found to assist in adapting to the loss of autonomy and enhancing social reintegration. This paper proposes a new approach focused on strengthening potential through artistic recreational activities as a medium for improving communication between a person with a TBI and his/her relative. A pre-experimental study was conducted with a group of dyads of persons with TBI and their significant other (n=5 dyads). Unexpected quantitative changes were found on the Perception of Relationship and Activities Scale, more specifically on the sharing pleasant events sub-scale which decreased for the significant other group, as well as decreases on the feelings, values and feasibility of this sub-scale. However, the qualitative results revealed interesting impacts of the programme on self-realization and relationships. These data will allow us to further test the programme in an experimental study.

*Keywords: arts, communication, traumatic brain injury, positive aspects, caregivers, leisure*

### **Effectiveness of aquatic exercise for musculoskeletal conditions: A meta-analysis**

Barker, A. L., Talevski, J., Morello, R. T., Brand, C. A., Rahmann, A. E., & Urquhart, D. M. (2014). Effectiveness of aquatic exercise for musculoskeletal conditions: A meta-analysis. *Archives of Physical Medicine and Rehabilitation*, 95(9), 1776-1786. doi:10.1016/j.apmr.2014.04.005

To investigate the effectiveness of aquatic exercise in the management of musculoskeletal conditions. A systematic review was conducted using Ovid MEDLINE, Cumulative Index to Nursing and Allied Health Literature, Embase, and The Cochrane Central Register of Controlled Trials from earliest record to May 2013. We searched for randomized controlled trials (RCTs)

and quasi-RCTs evaluating aquatic exercise for adults with musculoskeletal conditions compared with no exercise or land-based exercise. Outcomes of interest were pain, physical function, and quality of life. The electronic search identified 1199 potential studies. Of these, 1136 studies were excluded based on title and abstract. A further 36 studies were excluded after full text review, and the remaining 26 studies were included in this review. Two reviewers independently extracted demographic data and intervention characteristics from included trials. Outcome data, including mean scores and SDs, were also extracted. The Physiotherapy Evidence Database (PEDro) Scale identified 20 studies with high methodologic quality (PEDro score  $\geq 6$ ). Compared with no exercise, aquatic exercise achieved moderate improvements in pain (standardized mean difference [SMD] =  $-.37$ ; 95% confidence interval [CI],  $-.56$  to  $-.18$ ), physical function (SMD =  $.32$ ; 95% CI,  $.13$ – $.51$ ), and quality of life (SMD =  $.39$ ; 95% CI,  $.06$ – $.73$ ). No significant differences were observed between the effects of aquatic and land-based exercise on pain (SMD =  $-.11$ ; 95% CI,  $-.27$  to  $.04$ ), physical function (SMD =  $-.03$ ; 95% CI,  $-.19$  to  $.12$ ), or quality of life (SMD =  $-.10$ ; 95% CI,  $-.29$  to  $.09$ ). The evidence suggests that aquatic exercise has moderate beneficial effects on pain, physical function, and quality of life in adults with musculoskeletal conditions. These benefits appear comparable across conditions and with those achieved with land-based exercise. Further research is needed to understand the characteristics of aquatic exercise programs that provide the most benefit.

*Keywords: arthritis, exercise, hydrotherapy, musculoskeletal diseases, osteoarthritis, rehabilitation*

### **The Special Olympics: Advantages and disadvantages of participation**

Decloe, D. (2014). The Special Olympics: Advantages and disadvantages of participation. *Therapeutic Recreation: Practice & Research Journal of Therapeutic Recreation Ontario*. 9, 1-7.

The Special Olympics has been known to be a worldwide leader in providing year-round sport training and competition opportunities for individuals with disabilities (Harada, Parker, & Siperstein, 2008). More than 3.1 million athletes in 175 countries participate in the Special Olympics (Harada et al., 2008). However, controversy exists within this sporting program (Storey, 2008). Special Olympics has been said to be beneficial to one's overall well-being – physically, mentally, and socially; yet it also reinforces stereotypes, strengthens segregation, lacks in formal abilities, lack of consideration of age appropriateness, and lacks normalization (Marks, Sisirak, Heller, & Wagner, 2010; Murphy & Carbone, 2008; Robertson & Emerson, 2010; Storey, 2004, 2008). This paper explores the complexities of participation in the Special

Olympics to reveal the various and multiple “truths” behind how individuals with disabilities are viewed. Understanding these “truths” is important for therapeutic recreation practitioners to be able to bring about change that benefits the lives of people with developmental disabilities in our communities.

*Keywords: Special Olympics, therapeutic recreation, stereotypes, disabilities, well-being*

### **Policies supporting participation in leisure activities for children and youth with disabilities in Canada: From policy to play**

Shikako-Thomas, K., & Law, M. (2015). Policies supporting participation in leisure activities for children and youth with disabilities in Canada: From policy to play. *Disability & Society*, 30(3), 381-400. doi:10.1080/09687599.2015.1009001

Children with disabilities are at risk for lower participation in leisure. This study maps and analyzes disability-related leisure policies in Canada. Policy mapping and analysis were performed based on scope, social justice, disability models, and use of evidence. Few policies use scientific evidence, and their scope in supporting participation is often limited to organized sports, transportation, and financial incentives/exemptions. Few policies exist to support leisure promotion for children with disabilities. Action plans, benchmarking, and uptake measurement are rarely identified. Research-based evidence can be used to support socially-just policies to promote participation in leisure. Families should be able to identify mechanisms to guarantee access to their rights. Researchers, service providers, and families can use this framework of policy mapping and analysis to identify gaps where evidence can support policy development, to use these policies where services are needed, and to foster participation of children with disabilities in leisure.

*Keywords: leisure, policy, childhood disability, participation*

### **Effectiveness of the Xbox Kinect™ system to develop balance and range of motion in stroke patients**

T Scott, K. (2016). Effectiveness of the Xbox Kinect™ system to develop balance and range of motion in stroke patients. *Therapeutic Recreation: Practice & Research Journal of Therapeutic Recreation Ontario*. 11, 50-56.

The Microsoft Xbox Kinect™ system with a motion sensor has evolved into an effective therapeutic recreation intervention for the rehabilitation patients at Credit Valley Hospital. This approach to treatment, specifically for stroke survivors, has proven to improve dynamic balance and range of motion. A patient is able to receive instant feedback of progress through their body movement and visual display on a large flat screen television. In addition, the camera recording capability of the Xbox Kinect™ can be played back for a patient to review their movement. The Sports Kinect software displays the time of completion of an activity, allowing a patient to improve their balance and range of motion through several therapeutic recreation intervention sessions. Additional progress measurements can be obtained for upper and lower extremity range of motion by reaching and stepping movements through specific targets.

*Keywords: Xbox Kinect™, virtual rehabilitation, stroke patients, standing tolerance, balance, range of motion*

**Disability, personalisation and community arts: Exploring the spatial dynamics of children with disabilities participating in inclusive music classes**

Levy, S., Robb, A. J., & Jindal-Snape, D. (2017). Disability, personalisation and community arts: Exploring the spatial dynamics of children with disabilities participating in inclusive music classes \*. *Disability & Society*, 32(2), 254-268. doi:10.1080/09687599.2016.1276433

This paper uses personalisation and the capabilities approach to explore inclusive music classes for children with disabilities in Scotland. It provides a unique insight into the impact of participation through the voices of the disabled young musicians, their parents and tutors. The study highlights the power of inclusive spaces to transform lives, to build confidence and contest disabled identities. It engages in the spatial dynamic of opening up inclusive spaces, as well as exposing emerging tensions in the liminal space that is created through movement between safe and supported spaces and the antithesis, spaces that disempower and marginalise. The findings suggest good practice around personalisation, when conceived of from a social justice perspective, as a template for working with other marginalised groups and in other professional settings.

*Keywords: personalisation, capabilities approach, inclusive music, disability, children, social justice*