Physiological Responses of Wheelchair Tennis Players

A team of researchers from Birmingham, Alabama, where the Lakeshore Foundation is located, conducted a study to measure the cardiovascular requirements for elite level wheelchair tennis. To determine this, the authors measured heart rate and peak oxygen uptake in six skilled athletes to represent the intensity of wheelchair tennis play during competition. The reliability of both of these measures was high. After comparing these values to previous literature on able-bodied athletes and standardized norms, the authors concluded that to improve on-court wheelchair tennis performance athletes should have a moderate to high level of aerobic fitness which would allow them to play longer without fatiguing. This work clearly demonstrates that wheelchair tennis can effectively stress the cardiovascular system in skilled wheelchair tennis players. Persons who are interested in the training requirements for high level disability sport will enjoy reading this article. The methodology is tightly designed to elicit a lucid player profile of what it takes to be a competitive wheelchair tennis player.


Physical Activity Performance and Gross Motor Function of Adolescents With Cerebral Palsy

This study reported a self-analysis of performance in physical activity by adolescents with cerebral palsy. Adolescents with cerebral palsy (CP; n = 156) completed the Activities Scale for Kids- Performance Version (ASKp) and the Gross Motor Function Classification System (GMFCS). The GMFCS was used to classify the functional abilities of the children with CP (I-V). Distinctions in levels are based on functional limitations, the need for assistance mobility devices, wheeled mobility, and quality of movement. The ASKp is a self-report of the type and frequency of engaging in various physical activities such as personal care, play/sport, locomotion, standing skills, and transfer skills. Results indicated that members of each level grouped by the GMFCS participated in the same type and with the same frequency of physical activity. However, results indicated that none of the groups changed the amount or type of physical activity participation over time (one year later). Results of participants grouped in Level I (walks without restrictions; limitations in advanced gross motor skills) were comparable to children without musculoskeletal impairments and higher than individuals with mild disabilities. Adolescents grouped in levels II through V could not perform most of the personal care or mobility activities indicating the need for physical assistance throughout the day. Professionals interested in examining the movement capabilities of individuals with cerebral palsy will find this paper interesting.

Effects of Talking Pedometers on Children With Visual Impairments or Deaf-Blindness

Research has suggested that individuals who engage in regular physical activity experience higher energy levels of and are less susceptible to various types of disease (heart disease, diabetes, etc). However, individuals who are visually impaired (blind or have low vision) have lower levels of physical activity and health-related fitness than do those who are sighted. This lack of physical activity may be due to the children’s perceptions of their own ability and competence to perform such activities. The purpose of this article served two functions. The first was to investigate walking behavior of children with visual impairments who used a talking pedometer before and after a summer sports camp. Walking was chosen because it provided a realistic challenge for children with visual impairments. The second was to examine the children’s perceptions of the value and usefulness of physical activity and the talking pedometer. Results suggest significant increases in the number of steps children took while at the camp compared to the week prior to the camp. Likewise, children’s perceptions of walking and the use of the pedometer uncovered four distinct themes. Researchers and practitioners concerned with motivating children who are visually impaired to be more physically active will be interested in the results of this study. This study also provides evidence regarding the benefits of using pedometers.


Defining Teacher Competencies Within the Adapted Educational Setting

Requirements of both the No Child Left Behind Act of 2001 (NCLB) and the recently reauthorized Individuals with Disabilities Education Act (IDEA, 2004) have compelled states, districts, and schools to reexamine their ability to assist students with disabilities achieve adequate yearly progress (AYP) toward grade-level academic content standards. Two studies were reported in this article. The first identified and validated a set of competencies educators need in order to meet standards-based education for students with disabilities as concluded by university researchers, representatives from the U.S. Department of Education, Special Education Programs, and other teacher education professionals. Ten proposed competencies that both general education and special education teachers need to support achievement of students with disabilities were reported. The second study compared how well teacher licensure requirements of the Interstate New Teacher Assessment and Support Consortium (INTASC) model standards aligned with teacher education standards of one specific state. Results of the second study suggest that both sets of standards align well, but that areas existed where more specific references to standards-based education were needed. Continued investigation into
these issues is warranted in order for adapted physical education professionals to ensure that students with disabilities continue to receive appropriate services.


**Understanding Physical Activity Behavior in Older Adults**

Though the benefits of physical activity are well documented, many individuals continue to remain inactive. Older adults (age 65+) have been recognized as one of the most inactive populations within the United States. The intentions of this article were twofold. The first was to categorize and understand psychosocial determinants of physical activity behavior change among older adults by integrating constructs from three theoretical approaches: Transtheoretical Model of Behavioral Change (TTM), the Theory of Planned Behavior (TPB), and the Self-Determination Theory (SDT). The second was to identify “barriers and facilitators” to physical activity among older adults. Conclusions drawn by the authors suggest that constructs from the highlighted theoretical models can lead to a comprehensive understanding of the psychosocial factors of physical activity behavior change among older adults. This in turn, provides a clearer path for the development of intervention strategies to increase physical activity levels. With regard to barriers and facilitators to physical activity, many of the perceived barriers have been noted to serve as facilitators to exercise activity. Even though the participants of this study were older adults without disabilities, exercise behavior is often similar to individuals with disabilities. The results are especially useful to individuals developing exercise and physical activity programs for similar populations.


**Postoperative Resistance Exercise in Children With Cerebral Palsy**

The purpose of the study was to examine the effects of a home-based post operative exercise program on muscular strength and spasticity in children with cerebral palsy (CP). Thirty-nine children (ages 6-16 years) were randomly assigned to an exercise group or a control group after orthopedic surgery. Both the exercise and control groups received conventional physical therapy, while the exercise group also participated in three home-based sessions per week for one year. The home-based resistance training program focused on hip flexion/extension, knee flexion/extension, and abdominal exercises. Data collection took place prior to surgery and six months and one year following surgery. The results of the study indicated no significant group by time interactions for any of the isometric and isokinetic outcomes. The authors concluded that the low cost, home based resistive exercise program was not more beneficial than conventional physical therapy.
alone. Although adapted professionals may intuitively believe that additional long term exercise may improve leg strength in children with CP, this study suggests otherwise.


Predicting VO_{2}Max in Children With Cerebral Palsy

The purpose of the study was to determine the reliability and validity of two new shuttle run tests designed to predict maximum oxygen consumption (VO_{2}peak) in children with cerebral palsy. Two ten-meter shuttle run tests were developed for children with cerebral palsy with abilities at level I (able to walk indoors and out without limitations) or II (able to walk indoors and outdoors and climb stairs holding on to a railing, but experience limitations in walking on uneven surfaces and inclines) on the Gross Motor Function Classification System (GMFCS). Fourteen children at level I and eleven children at level II performed the 10 meter shuttle run test and a VO_{2}peak treadmill tests with gas analysis. To determine the validity, the VO_{2}peak from the treadmill test was compared to the VO_{2}peak from the shuttle run test. To determine the reliability, children at both levels performed the 10 meter shuttle run test two weeks apart. The results indicated that both shuttle run tests were reliable (ICC ranged 0.97 - 0.99) and valid (ICC ranged 0.84 – 0.94). The children reported a preference for the shuttle run tests over the treadmill tests. These newly developed tests may be easily used in educational settings in conjunction with or as a substitute for the other commonly used Fitnessgram Pacer test and/or the Brockport physical fitness test. For more information and protocols for the tests contact, Mr. Verschuren at: o.verschuren@dehoogstraat.nl.