

Special Olympics Completed Research Bibliography

Adler, P., Duigan, A., & Woodhouse, J. (2004). Vision in Athletes with Intellectual Disabilities: The Need for Improved Eye care. *Journal of Intellectual Disability Research*, **48**, 736-745.

Special Olympics provides sporting opportunities for people with intellectual disabilities (ID), and Lions Clubs International Opening Eyes GB offers vision screening for athletes at Special Olympics Games. Opening Eyes GB screened the vision of 505 UK athletes at its inaugural event in 2001. The results were analyzed and are presented here. Results showed that athletes do not differ from other people with ID in being at high risk of ocular and visual defects and many are not accessing eye care. 15% reported never having an optometric eye examination, and yet 19% of these athletes had a significant refractive error, 32% had ocular anomalies and 6% were visually impaired. Overall, findings confirmed the high prevalence of refractive errors and strabismus amongst people with ID. 40% of athletes had ocular abnormalities, including 15.6% with blepharitis, a readily treatable condition that causes discomfort. 9% had lens opacities, of which half were probably impairing sight. An important finding was that many athletes have reduced vision and 14% could be classified as visually impaired (WHO definition) even when refractive errors were fully corrected. Conclusions Special Olympics athletes should be encouraged to have regular eye examinations (as indeed, should all people with ID), and educators, care people and coaches need appropriate information about the visual status of their charges.

Balic, M.G., Mateos, E.C., & Blasco, C.G. (2000). Physical fitness levels of physically active and sedentary adults with Down syndrome. *Adapted Physical Activity Quarterly*, **17**(3), 310-321.

The purpose was to compare physical fitness of two groups of adults with Down syndrome, one active group of Special Olympians (9 males, 4 females), and one sedentary group (5 males, and 2 females). The active group had trained for an average of 4.9 hours per week for a minimum of 1 year for Special Olympics competitions. Participants underwent laboratory testing, including (a) treadmill test to determine peak oxygen uptake; (b) isometric strength tests of handgrip, lower back, and quadriceps; (c) explosive power; and (d) body composition. Peak oxygen consumption and muscle strength were significantly greater in the active group. Although cross-sectional, these findings suggest that long term exercise training, at a greater than previously reported weekly training load, may enhance physical fitness in individuals with Down syndrome.

Baumann, U., Hey, C., Hild, D., Euler, H. A., Montgomery, J., & Neumann, K. (2008). High prevalence of hearing disorders at the Special Olympics indicate need to screen persons with intellectual disability. *Journal of Intellectual Disability Research*, **52** (6), 528.

Persons with intellectual disabilities are at increased risk for hearing impairment which often remains undetected. If left untreated, such hearing impairments may worsen the social and communicative problems of these persons. The aims of this study were to determine the prevalence of hearing impairment, to specify type and degree of hearing loss, and to evaluate the sensitivity and specificity of the screening in this population. During the German Special Olympics Summer Games 2006, 552 athletes with ID had their hearing screened according to the international protocol of Healthy Hearing, Special Olympics. This screening protocol includes otoscopy, measurement of distortion product otoacoustic emissions, and, if necessary, tympanometry and pure tone audiometry (PTA) screening at 2 and 4 kHz. Additionally, 195 athletes underwent a full diagnostic PTA. The results of the screenings and diagnostic PTA were compared. Results of the 524 athletes who completed the screening protocol; 76% passed and 24% failed it. Ear wax was removed in 48% of all athletes. 42% of the athletes were recommended to consult an otolaryngology or an acoustician. Of the 99 athletes whose screening-based suspicion of a hearing loss was confirmed with diagnostic PTA, 74 had an undetected hearing loss. The correlation (Cramer's V) between screening and diagnostic PTA was .98. The sensitivity of the screening was 100% and the specificity 98%. The screening reliably detects hearing disorders among persons with ID. The prevalence of hearing impairment in this population is considerably higher than in the general population, and the proportion of undetected hearing impairments is large, even among people with only

mild and moderate ID, as examined in this study. Therefore, a screening is highly recommended and special attention from caregivers and professionals as well as regular hearing assessment and standard therapy programmers are required for persons with ID.

Bezdičková, M., Machová, I. & Válková, H. (2001). Evaluation of the EMN (Electrophoretical Mobility of Nuclei) index in persons with mental retardation, specially with Down syndrome. In H. Válková & Z. Hanelová (Eds.) **Proceedings of the 2nd International Conference, Movement & Health**, pp. 83-86. Olomouc: Faculty of Physical Culture. ISBN 80-244-0322-6.

The method of Electrophoretical Mobility of Nuclei (EMN) is a new strategy to evaluate balance of an organism's inner environment. This method is based on electrokinetics and electrostatics properties of the cell membranes and their changes in relation to changes of condition (e.g. stress, intensity of physical exercises, tiredness etc.). The aim of the pilot study was to provide comparison of the EMN index in relation to physical strain before and after physical strain (before and after the National Special Olympics Games in swimming). A secondary aim was to assess achievement in swimming (between preliminary and final heats) with EMN indices and to deduce the relevance of the "honest effort rule" (15% - useful for practice). In the pilot study, 11 Special Olympics athletes with mental retardation and 9 sportsmen with Down Syndrome participated. It was discovered that the EMN index is sensitive to preliminary and final achievements and relevant with the effort in both competitions. The EMN index in relation to physical activity shows the similar trend of a decreasing tendency of the EMN index after certain physical exercise of persons with mental retardation as well as non-mental retardation.

Birrer, R. (2004). The Special Olympics athlete: evaluation and clearance for participation. **Clinical Pediatrics**, **43**(9), 777-782.

Evaluating and clearing the Special Olympics athlete for participation in sports and recreational activities can be a challenging task for a primary care physician. Radiographic clearance of the cervical spine is mandatory for all athletes with Down syndrome. Regular physical activity for this special population has measurable physiologic and psychosocial benefits.

Birrer, R.B. (1994). The Special Olympics: an injury overview. **The Physician and Sports Medicine**, **12**(4), 95-97.

The Special Olympics is a program of sports training and athletic competition for mentally retarded children and young adults. This article summarizes the injuries during the 1980 and 1981 New Jersey State Special Olympics. Eighty-seven of the 2,056 athletes as well as 47 spectators needed medical attention. There were only 58 athletic trauma injuries, and they were mild to moderate. Environmental factors were responsible for some heat cramps, fatigue, and sunburn. There were no seizures, medication problems, or difficulties related to the athletes' retardation. The injuries during the Special Olympics were similar in type and number to those in regular sports events. The results of this study show that it is safe for these athletes to participate in competitive sports.

Block, M.E., Conatser, P., Montgomery, R., Flynn, L., Munson, D., & Dease, R. (2001). Effects of middle school-aged partners on the motor and affective behaviors of students with severe disabilities. **Palaestra**, **17**(4), 34-40.

The purpose of this study was to determine effects of 5th and 6th grade elementary age students without mental retardation serving as partners on the motor skill performances and aberrant behaviors of students, ages 7 through 14, with severe, multiple disabilities. The training protocol used in this study was the Special Olympics Motor Activities Training Program (MATP). Twenty-six students (13 boys and 13 girls) enrolled in a special education school in the mid-Atlantic region of the United States participated

in the study. Twenty-five partners (15 girls and 10 boys) from fifth and sixth grades (10-12 years of age) from a local private school were recruited to serve as partners. Students who participated in the 12-week MATP with the assistance of partners showed significant improvements in motor skills development and adaptive behaviors. It appeared partners as young as 5th grade can be trained to provide safe, systematic motor and behavior training to students with severe, multiple disabilities leading to positive outcomes.

Block, M.E. & Moon, M. (1992). Orelove, Wehman, and Wood revisited: an evaluative review of Special Olympics ten years later. *Education and Training in Mental Retardation*, **27**, 379-386.

Ten years ago, Orelove, Wehman, and Wood (1982) critically evaluated Special Olympics. Their review included the history and impact of Special Olympics, positive aspects of Special Olympics, limitations of Special Olympics and suggestions for improving Special Olympics. Since this article was published, Special Olympics has made a variety of modifications and improvements to its overall organization and program. Yet, Special Olympics continues to be researched and critiqued. Has Special Olympics implemented any of the suggestions for improvement outlined by Orelove et al., or does Special Olympics continue to be the antithesis of the current philosophies of special education? The purpose of the paper is to objectively review the changes Special Olympics has made over the past ten years and evaluate special Olympics in 1992. Emphasis is given to the efforts Special Olympics has made to meet the concerns raised by Orelove, Wehman, and Wood. New suggestions will be provided for improving Special Olympics or for initiating community alternatives.

Block, S. S., Beckerman, S.A., & Berman, P.E. (1997). Vision profile of the athletes of the 1995 Special Olympics World Summer Games. *Journal of American Optometric Association*, **68**(11), 699-708.

Special Olympics were organized in 1968 by Eunice Shriver as a program of physical fitness for individuals with mental handicaps. Numerous epidemiologic studies report an increase in visual problems in this population. A comprehensive vision screening was conducted at the 1995 Special Olympic World Summer Games to identify the prevalence of visual anomalies in this select group. Testing included visual acuity, refractive error, ocular motor skills, stereopsis, color vision, contrast sensitivity, eye-hand coordination, eye-foot coordination, and an ocular health evaluation. Nine hundred five special athletes, ranging in age from 8 to 58 years, participated in the screening. More than 65% of the participants had not received eye care for more than 3 years. The most commonly reported symptom was difficulty in seeing. Other ocular health problems included refractive errors, poor distance monocular acuity, and strabismus. The results of the study indicate that Special Olympians have a high prevalence of vision anomalies that may go undetected. This population demonstrates a high prevalence of refractive errors, decreased visual acuity, ocular health problems, and strabismus. In addition, based on the number of individuals who have not received eye care within the last year, there is a need to increase the availability of vision care to these and other people with mental retardation.

Briere, D. & Siegel, D. (2008). The effects of the Unified Sports basketball program on special education students' self-concepts: four students' experiences, *Teaching Exceptional Children*, **41**(2), 5.

Unified Sports is Special Olympics' response to the inclusion movement. The program includes both students with and without disabilities working together in athletic competitions. The article describes 4 students who participated in the program: 3 females and 1 male. The students' disabilities varied and included mobility impairment, traumatic brain injury, and learning disabilities. Pre and post-surveys were administered and one-on-one interviews were conducted with the participants at the completion of the Unified Sports basketball season. Teams learned about and practiced the game of basketball twice a week (during gym class) and ventured to competitions across Connecticut against other schools. The competitions occurred toward the end of the 6-month program. The Unified Sports basketball program had a positive effect on these students' attitudes. All of the participants verbally expressed highly positive feelings about the

program and each of them recommended the program be continued in the future. Social self-concept showed the most significant positive change and physical self-concept showed the least.

Brundige, T.L., Hautala, R.M., & Squires, S. (1990). The Special Olympics developmental sports program for persons with severe and profound disabilities: an assessment of its effectiveness. *Education and Training in Mental Retardation*, 25, 376-380.

The locomotor skills portion of Level III of the Special Olympics Development Sports Skill Program of specific motor skill development for persons with severe and profound disabilities was compared to a general motor training program and a non-intervention approach. Pre and post-program testing for skills developed in threeweek training programs using the Special Olympics Developmental Sports Skills Assessment indicated no significant differences among group performances, with the exception of "fitness walking" in the general and specific training groups. The lack of sufficiently small gradations for scoring skill achievements, and lack of continuity between Assessment and Training items were noted.

Burns, M. Storey, K., & Certo, N.J. (1999). Effect of service learning on attitudes towards students with severe disabilities. *Education and Training in Mental Retardation and Developmental Disabilities*, 34(1), 58-65.

This study utilized quantitative methodology to explore regular education students' attitudinal change towards students with severe disabilities through the inclusion of special education students in service learning projects. Regular education students were given an attitudinal questionnaire that measured perceptions towards students with severe disabilities before engaging in an inclusion service learning project and then again, after its conclusion. The first intervention class contained 12 volunteers that implemented their semester-long project, involving creation of a community garden on campus, with eight students with severe disabilities from a self-contained special education transition class on campus. Thus, the students with severe disabilities were contributors to the service with their same-age high school peers. By contrast, the second intervention class consisted of 12 Outdoor Education students whose service learning consisted of assisting eight students with severe disabilities from the self-contained class on campus at a Special Olympics event. As such these students with disabilities were the receivers of service. A control group of students enrolled in a social studies class, who did not participate in any service learning projects, also participated.

Carek, P.J., Dickerson, L., & Hawkins, A. (2002). Special Olympics, special athletes, special needs? *The Journal of the South Carolina Medical Association*, 98(4), 180-183.

Based upon the current study, the review of the literature, and our experience, the preparticipation physical examination for Special Olympics is an opportunity for physicians of all specialties to assist and encourage a group of athletes with special physical and emotional characteristics not found in other athletes. The physician should review the medical condition of the athlete (including prescribed medications and their potential side effects), the physical demands of the proposed activity, and the presence of volunteers to assist the athlete when necessary. Full or limited participation should be recommended in most cases. "No participation" should only apply to unstable medical conditions or situations that would place the athlete at risk for injury despite activity modification and close supervision.

Castagno, K.S. (2001). Special Olympics unified sports: changes in male athletes during a basketball season. *Adapted Physical Activity Quarterly*, 18, 193-206.

The purpose was to describe the changes occurring in athletes with and without mental retardation (MR) during participation in a Special Olympics Unified Sports Program. The method was evaluation research. Participants were 58 males (24 with MR, 34 without MR) in Grades 6-8. Before- and after-program data were collected on the Self-Esteem Inventory, the Adjective Checklist, the Friendship Activity Scale, and the Basketball Sports Skills Assessment. Athletes (Special Olympics Athletes and Partners) participated

in an after-school basketball program for 8 weeks, 1.5 hour per session, three times per week. Dependent *t* tests revealed that each group scored significantly higher after participation in the program than before on all tests.

Cotugua, N. & Vickery, C.E. (2003). Community health and nutrition screening for Special Olympics athletes. *Journal of Community Health, 2*(6), 451-457.

Since 1961, Special Olympics has provided sports training and athletic competition for people with mental retardation. A recent addition to these Olympics has been the Healthy Athletes Program, designed to help the athletes improve their health and fitness, leading to enhanced sports experiences and well being. Original health services included dental and eye screening. In 2002, Special Olympics Delaware piloted a Wellness Park to add nutrition, blood pressure, and flexibility screening. Faculty from a university's health college trained discipline specific students to conduct the screenings. Thirty nutrition and dietetics students measured height, weight, waist circumference, and calculated body mass index (BMI) for the athletes. Figures and risk assessments were recorded on a "health report card." Two hundred ten athletes attended the nutrition screening. Ages ranged from 8-63 years; 81 percent males and 19 percent females. According to BMI standards, 32 percent of the athletes were overweight; 17 percent were obese. Twenty-five percent of adult males and 73 percent of adult females had a high risk waist circumference. Athletes at high risk for obesity-related diseases were referred to their primary physician for follow up. Nutrition education handouts included a simplified Food Guide Pyramid, tips for healthy eating in restaurants, 5 A Day information, and healthful hydration guides. Approximately 1, 250 athletes participate in Special Olympics Delaware each year, providing a great opportunity to do some much needed health screening and improve access to health care for this often neglected population.

Croce, R., Horvat, M., & Roswal, G. (1994). A preliminary investigation into the effects of exercise duration and fitness level on problem solving ability in individuals with mild mental retardation. *Clinical Kinesiology, 48*,48-54.

The purpose of the present investigation was to determine the speed and accuracy of problem solving in more-fit and less-fit individuals with mild retardation, exercising at a moderate intensity level at different durations of exercise at different durations of exercise. Subjects' problem solving ability was determined by their speed and accuracy on 15 computer generated addition and subtraction problems immediately, 15-, and 30 minute postexercise. Sixteen male ($n = 10$) and female ($n = 6$) volunteers, ages 16-19, with mild mental retardation ($IQ = 59.93 + 5.20$; range = 52-70) were divided into more-fit and less-fit groups based on The Canadian Step Test and the Jette equation for predicting VO_2 max. Separate $2 \times 3 \times 3$ (fitness level \times duration \times postexercise performance trials) analyses of variance (ANOVA) with repeated measures on the last two factors were used to assess differences in speed (time to complete answering 15 additional and subtraction equations) and accuracy (number of correct responses) of problem solving. No significant postexercise differences in accuracy were found. Results of this preliminary investigation indicated that moderate intensity exercise for a short duration may facilitate problem solving ability in individuals with mild mental retardation.

Croce, R., Roswal, G., Horvat, M., & Forbus, W. (1994). The influence of contextual interference on coincidence-anticipation timing tasks in individuals with mental retardation. *Palaestra, 10*(2), 8.

Coaches and physical education teachers often attempt to develop practice schedules that promote acquisition, retention, and transfers of motor skills. Application of contextual interference on the enhancement of transfer and retention with individuals with mental retardation is critical since ability to retain and generalize learned skills is crucial to motor performance. The study used twenty-two male subjects between the ages of 15-20 years old. They were randomly selected from a pool of 80 basketball players participating in Special Olympics chapter games. Basketball players were chosen because of their participation in an open sport skill. The subjects learned a simple coincidence-anticipation timing task on a Bassin Anticipation Timer. The Bassin Anticipation Timet consisted of three 16-lamp runaways

attached end to end. The task was to depress a response button coinciding with the arrival of moving lights at the end of the runway. There were no significant differences found between groups and blocks of trial or groups and velocities in acquisition, retention, or transfer. The random group had a larger mean absolute error than the other two groups. Also, the sequenced group had a lower mean absolute error than the other two groups.

Davis, R.W., Woodard, R.J., Ferrara, M.S., & Campbell, A. (2004). Athletic training students' perceptions during Special Olympics competitions. *Athletic Therapy Today*, *9*(1), 55-57.

Athletic Training students (ATs), received comprehensive preparation in the care and prevention of athletic injuries for individuals without disabilities. Few, however, received training on the care and prevention of athletic injuries for Special Olympics (SO) athletes. The purpose of this study was to describe the perceptions of athletic training students who provided care to athletes participating in several SO three championships (basketball, volleyball, and track). A total of 51 ATs (80% rate of return) were asked to complete a survey that reported their perceptions of SO athletes before, during and postcompetition. Participants included 36 female and 15 male ATs, of which 53% were juniors or seniors. Sixty-three percent (n = 32) indicated that these state championships were their first exposure to an SO competition. When considering the ATs perception of working with SO athletes before the competition, 60% of the respondents were somewhat to strongly concerned about their ability to relate to the athletes, and 60% indicated that they did not know what to expect. The perceptions of the ATs changed during competition. Over 90% of the ATs began to see the athletic performance of the individual rather than the disability. Thirty-eight of the ATs responded to the open-ended questions on the survey. Several ATs indicated that they could not understand the athletes, which made injury assessment difficult, but 34% felt that they had not had any difficulties with injury assessment.

Demark, J., Diamond, T., Lovald, B., & Weiss, J. (2008). Involvement in Special Olympics and its relations to self-concept and actual competency in participants with developmental disabilities. *Research in Developmental Disabilities*, *24*, 281-305.

A study involving 97 participants (ages 9-43) in the Ontario Special Olympics (SO) and their parents, found the more athletes participated in competition, the more positive their general self-worth. The length of time in SO and the total number of sports were found to predict self-concept of physical competence.

Dluzewska-Martyniec, W. (2002). The need of autonomy in Special Olympics athletes and its satisfying through sports activity. *Gymnica*, *32*(1), 53-58.

This research has revealed that it is possible to develop autonomy through sports activity for athletes with moderate mental retardation. It has been diverse level of autonomy need in the studied group. There were sportsmen expecting autonomy, but others avoided it requiring their need for independent functioning to be activated. The extent of autonomy offered to particular athletes by the coaches varied and was not always adjusted to their needs. A number of athletes declaring autonomy need obtained their coaches' consent to satisfy it, but the disturbing fact is the presence of individuals, whose aspiration for autonomy was blocked by coaches. A coach should consciously aim at shaping the mentally retarded competitor's ability to behave autonomously. This reported study is a part of larger research program financed by KBN Poland.

Downs, S.B., & Wood, T.M. (1996). Validating a Special Olympics volleyball skills assessment test. *Adapted Physical Activity Quarterly*, *13*(2), 166-179.

This study examined the validity and reliability of a Volleyball Skills Assessment Test (VSAT) as a measure of volleyball skill and as a predictor of team success in Special Olympics International (SOI) volleyball competition. Test-retest reliability data from 130 SOI volleyball players with mental retardation

(101 males and 29 females) in the sixth week of an SOI volleyball training program yielded intraclass reliability coefficients (R) above .80 for all VSAT subtests (forearm pass, spike, set, serve) across gender with the exception of the set test for females ($R = .75$). Multivariate test battery test-retest reliability, examined using canonical correlation analysis, yielded moderate total redundancy estimates ranging between 62.5 and 66.1%. A high degree of concurrent validity was evidenced when correlating VSAT scores with judges' ratings of performance on the four skills: $r = .93$ ($r^2 = .86$) serve, $r = .94$ ($r^2 = .88$) pass, $r = .98$ ($r^2 = .96$) spike, and $r = .86$ ($r^2 = .74$) set. Contingency table analysis, multiple regression, and discriminant function analysis revealed that the predictive validity of the VSAT as the primary determinant for allocating teams to pools of equal ability is questionable.

Draheim, C.C., Williams, D.P., & McCubbin, J.A., (2003). Cardiovascular disease risk factor differences between Special Olympians and non-Special Olympians. *Adapted Physical Activity Quarterly*, 20(2), 118-133.

The purpose of this study is to determine whether cardiovascular disease risk factor differences exist between Active Special Olympians, Inactive Non-Special Olympians, and Active Non-Special Olympians. Resting blood pressure, total and abdominal body fat, fasting cholesterol profiles, and fasting insulin were measured. This study used 145 adults (72 women, 73 men) with mild mental retardation. Subjects were categorized into three groups as determined by their degree of participation in Special Olympics (SO) and their reported activity habits. This study used a cross-sectional descriptive comparative design to determine whether SOI participation was associated with lower CVD risk factor as opposed to not participating in SOI, and whether SOI participation was associated with lower CVD risk factors as opposed to participation in other nonSOI community based physical activities for adults with mental retardation. Forty-five subjects reported regular participation in SO programs one or more times a week and therefore were categorized as Active Special Olympians (ASO). Thirty-eight participants reported no regular participation in SO programs and no regular participation in any other physical activities (less than once per week) and were categorized as Inactive Non-Special Olympians (INSO). Sixty-two participants reported they did not regularly participate in SO program (less than once per week) but did participate in other physical activities considered to be moderate to vigorous in intensity on a weekly basis (one or more times per week). Active Special Olympians ($n = 45$) possessed lower diastolic blood pressures, body fat percentages, abdominal fat, triglycerides, and insulin than Inactive Non-Special Olympians ($n = 38$) and possessed lower body fat percentages than Active Non-Special Olympians ($n = 62$). Active Non-Special Olympians possessed lower triglycerides and insulin than Inactive Non-Special Olympians.

Dubová, P. (2003) Differences in visuo-motor variables after two years intervention program. Unpublished Master Thesis. Olomouc: Faculty of Physical Culture, Palacky University.

The results of a three-year research project were presented. Three groups of persons with moderate mental disability (male and female, adolescent age between 18-34 years) participated in three different intervention programs: Special Olympics sports program (75 participants), arts/craft program (59 participants), and basic education program (65 participants). The Developmental Test of Visual-Motor Integration (VMI), (Beery & Buktenica, 1989) was used. No statistically significant findings were reported related to visuo-motor skills and abilities. Even the arts/craft program, which involved drawing, painting, and fine motor craft manipulation did not result in an improvement of skills. Probably cognitive limits in adolescent age are not sensitive to this type of intervention.

Dykens, E.M. & Cohen, D.J. (1996). Effects of Special Olympics International on social competence in persons with mental retardation. *Journal of the Academy of Child and Adolescent Psychiatry*, 35(2), 223-229.

Evaluated the social and emotional goals of Special Olympics International, specifically whether Special Olympics facilitates social competence and self-esteem in persons with mental retardation. Findings were "triangulated" across three studies on the social competence, adaptation, and self-perceptions of 104

athletes from 1993 Team USA (mean age=22 years; mean IQ=59). Study 1 related behavior to athletes' length of time in Special Olympics. Study 2 compared Team USA to an appropriately matched group of non-Special Olympians. Study 3 assessed Team USA before and 4 months after their participation in the World Games held in Salzburg, Austria. Relative to age and IQ, length of time in Special Olympics was the most powerful predictor of social competence. Special Olympics athletes had higher social competence scores and more positive self-perceptions than the comparison group. Team USA's behavioral data remained stable over time, suggesting that high pre-Game scores were not simply a function of parental or athlete pre-Game excitement. Based on the most conservative meaning of triangulation, more support was found linking Special Olympics to social competence than to remaining behavioral domains.

Emes, C. & Page, S. (1992). Training Special Olympics athletes: a pilot study. *Perceptual and Motor Skills*, **75**(2), 413-414.

An individualized fitness program had no significant effect on the development of selected strength and endurance measures of 5 Special Olympics athletes.

Escamilla, R.F., Lowry, T. M., Osbahr, D. C., & Speer, K. P. (2001). Biomechanical analysis of the deadlift during the 1999 Special Olympics World Games. *Medicine and Science in Sports and Exercise*, **33**(8), 1345-1353.

Improper lifting techniques may increase injury risks and decrease performance. The aim of this study was to compare and contrast biomechanical parameters between sumo and conventional style deadlifts and between high- and low-skilled lifters who participated in the powerlifting event during the 1999 Special Olympics World Games. Two synchronized video cameras collected 60 Hz of data from 40 subjects. Parameters were quantified at barbell liftoff (LO), when the barbell passed the knees (KP), and at lift completion. Compared with the conventional group, the sumo group had a 100 % greater stance width, 20 % smaller hand width, 10 % less vertical bar distance, a more vertical trunk at LO, a more horizontal thigh at LO and KP, a less vertical shank at KP, and greater forefoot abduction. The sumo group generated ankle dorsiflexor, knee extensor, and hip extensor moments, whereas the conventional group produced ankle plantar flexor, knee flexor and extensor, and hip extensor moments. Compared with low-skilled lifters, high-skilled lifters had a 40 % greater barbell load, 15 % greater stance width (sumo group only), greater knee flexion at LO (conventional group only), greater knee extension at KP, a less vertical shank position at LO (sumo group only), 15% less vertical bar distance, less first peak bar velocity between LO and KP (conventional group only), smaller plantar flexor and hip extensor moment arms at LO and KP, and greater knee extensor moment arms at LO. The sumo deadlift may be more effective in working ankle dorsiflexors and knee extensors, whereas the conventional deadlift may be more effective in working ankle plantar flexors and knee flexors. High-skilled lifters exhibited better lifting mechanics than low-skilled lifters by keeping the bar closer to the body, which may both enhance performance and minimize injury risk.

Farrell, R.J., Crocker, R.E., McDonough, M.H., & Sedgwick, W.A. (2004). The driving force: motivation in Special Olympians. *Adapted Physical Activity Quarterly*, **21**(2), 153-166.

Special Olympics programs provide competitive sport opportunities for athletes with intellectual disabilities. This study investigated athletes' perceptions of motivation in Special Olympics. Using Self-Determination Theory (SDT) as a guiding framework to explore athletes' experiences, 38 Special Olympians (21 males and 17 Females) from British Columbia, Canada were interviewed. The data suggested that factors participants' motivation in Special Olympics programs. These factors included positive feedback, choice, learning skills, demonstrating ability, friendship, social approval, and fun. Social support from significant others was a key factor related to participation motivation. There was also evidence for the motivating aspects of extrinsic rewards. Motivation was undermined primarily by conflicts with coaches and teammates.

Gencoz F. (1997). The effects of basketball training on the maladaptive behaviors of trainable mentally retarded children. *Research on Developmental Disabilities*, **18**(1),1-10.

The effects of basketball training on the maladaptive behaviors of 19 trainable mentally retarded children attending a special state school were investigated. Children in the experimental group took 7 weeks of basketball training (Special Olympics Inc.) designed for mentally retarded children, whereas the control group children engaged in free play activities with the ball. Both groups were assessed before the training and free play activity applications (preassessment), immediately after the applications (postassessment) and 30 days after the applications (follow-up assessment). All the children were observed (Classroom Behavior Checklist developed for this study) in their classroom during the academic tasks in which they were involved. Furthermore, their mothers were interviewed to get information about manifested maladaptive behaviors at home. To assess the children's level of improvement in basketball skills, the Sports Skills Assessment was utilized. Children trained in basketball skills showed a reduction in their level of maladaptive behavior both at home and in the school. This reduction was maintained in the follow-up period. Thus, basketball training can be proposed as an effective and practical rehabilitation program for trainable mentally retarded children attending an institution.

Gibbons, S.L., & Bushakara, F.B. (1989). Effects of Special Olympics participation on the perceived competence and social acceptance of mentally retarded children. *Adapted Physical Activity Quarterly*, **6**, 40-51.

Little research has been conducted on the psychosocial outcomes that may occur in adapted populations who participate in Special Olympics. This study examined changes in perceived competence of participants and nonparticipants of a 1½ -day Special Olympics track and field meet. Pre- and post test measures of the physical, cognitive, peer acceptance, and maternal acceptance subscales of the Pictorial scale of Perceived Competence and Social Acceptance for Young Children were obtained from participants (N=24) and non-participant controls (N=24). A test of homogeneity of variance on pretest scores revealed that both groups were equivalent on the perceived competence and social acceptance measures. A MONOVA was conducted to compare gain scores on all four measures between the two groups. Results indicated that both groups differed significantly on the perceived physical competence and peer acceptance measures. The stability of gains in perceived competence over time, and further examination of perceived competence and its correlates with adapted population, were suggested as future directions for research.

Gillespie, M. (2008). Participation patterns in an urban Special Olympics program. *British Journal of Learning Disabilities*.

Purpose of the study was to examine participation patterns of people with intellectual disabilities in Special Olympics. Participation of athletes according to age, sex and sports participated in were analysed. Findings indicated that the demographics of this Special Olympics cohort were predominantly male, older in years than other sport organisations and engaged in a small number of sports. Results indicated there are significant gaps in relation to participation that may have long-term impacts on health for people with intellectual disabilities. Special Olympics is the largest competitive sports organisation in the world for athletes with intellectual disabilities. The organisation has attempted to make adjustments to its programmes in order to stay relevant to participants. However, minimal investigation relative to participation patterns and demographics of athletes are available. Given the trend towards inclusive programmes, such analysis appears relevant. The purpose of the present investigation was to examine the population demographics and participation characteristics of Special Olympics participants. Registration information for 284 athletes was analysed with regard to age, sex and sports participated in. Findings indicated that the demographics of this Special Olympics cohort were predominantly male, older in years than other sport organisations and engaged in a small number of sports. Results are discussed

in terms of the impact of an ageing athlete population, female participation patterns, health-related physical fitness implications of participation in certain sports and the range of activities offered.

Goodwin, D. L., Fitzpatrick, D. A., Thurmeier, R., & Hall, C. (2006). The Decision to Join Special Olympics: Parents' Perspectives. *Adapted Physical Activity Quarterly*, **23**, 163-183.

This phenomenological study explored the decision making experience of parents whose children joined Special Olympic programs. The experiences of 16 families with children 10-22 years old were gathered through interviews, artifacts, and field notes. Three themes emerged from the thematic analysis (a) thoughtful instruction, (b) finding the fit, and (c) security of acceptance. Parents sought instructors who were interested in building relationships with their children and creating anxiety free instructional environments for them and their children. A good program fit occurred when instructors had expectations for motor skill development and increased independence. Parents also preferred environments that encouraged meaningful peer interactions. The findings were interpreted within the context of self-determination theory.

Gregg, M.J., Hrycaiko, D., Mactavish, J.B., & Martin, G.L. (2004). A mental skills package for Special Olympics athletes: A preliminary study. *Adapted Physical Activity Quarterly*, **21**(1), 4-18.

The purpose in this study was to replicate and extend the mental skills training (MST) package of Wanlin, Hrycaiko, Martin, and Mahon (1997) to Special Olympics track and field athletes with intellectual disabilities. Three participants ranged in age from 21 to 23 years. A multiple baseline design across individuals was used to assess the effects of the intervention on off-task behaviors and athletic performances (i.e., work output and competition results). The results were clearly beneficial for two participants, decreasing the frequency and duration of off-task behaviors and increasing the percentage of laps completed for the third participant. A social validity assessment provided further support for the effectiveness of the intervention.

Harris, N., Rosenberg, A., Jangda, S., O'Brien, K., & Gallagher, M.L. (2003). Prevalence of obesity in international Special Olympic athletes as determined by body mass index. *Journal of the American Dietetic Association*, **103**(2), 235-237.

The heights and weights of 1,749 Special Olympics athlete volunteers participating in the Special Olympics Games in 1999 and 2001 were measured, and body mass index (BMI) was computed. Results indicated that athletes from the United States (US) under 18 years of age had a significantly ($P < .001$) higher prevalence of being overweight or at risk of being overweight compared with athletes from other countries. Similarly, adult athletes from the United States were at least 3.1 times more likely to be overweight or obese compared with their non-US counterparts. The risk of obesity in US Special Olympics athletes parallels the prevalence of obesity in the general US population. There is a clear need for further research, surveillance, and treatment of the risky health behaviors that contribute to the development of obesity in this group.

Hassall, J. & Townsend, M. (2007). Mainstream students' attitudes to possible inclusion in Unified Sports with students who have an intellectual disability. *Journal of Applied Research in Intellectual Disabilities*, **20**(3), 9.

Background Schools in New Zealand do not normally include students with intellectual disability in their sports programmes. This study examined regular students' attitudes towards the possible inclusion of students with an intellectual disability in an integrated sports programme within their school. A total of 170 school students at year 6 (10 years) and year 12 (16 years) at four Auckland schools completed an attitude scale assessing their acceptance of a possible unified sports programme at their school, a test of their knowledge about Special Olympics, and wrote open-ended comments about unified sports; a

subsample at each age level was interviewed. Students had positive attitudes towards possible involvement alongside students with an intellectual disability in unified sports. These attitudes were moderated by age and gender, but not knowledge about Special Olympics. The strengthening of inclusion and normalization through unified sports would likely have positive peer social acceptance by typical students in New Zealand.

Herer, G. R., McPherson, D. L., Montgomery, J. K., & Sinha, A. K. (2008). Hearing screening outcomes for persons with intellectual disability: A preliminary report of findings from the 2005 Special Olympics World Winter Games. *International Journal of Audiology, 47* (7).

The Special Olympics Healthy Hearing Program provides a unique opportunity to determine the hearing service needs of individuals with mild intellectual disabilities participating in athletic endeavors in countries throughout the world. The Healthy Hearing Program screened 855 of 1800 athletes with intellectual disability over a period of a week at Nagano, Japan. Of 855 athletes screened, 58% passed the DPOAE screen and therefore required no further testing. Of the remaining 42%, 186 did not pass pure-tone screening. This number of athletes represents 21.8% of all athletes screened. Tympanometry outcomes for the 186 athletes failing pure-tone screening showed 56% (104) also failing this measure of middle-ear function. 65% of these 104 athletes' outer ear canals were blocked/partially-blocked with cerumen. This amount is in contrast to the 38% presence of cerumen for the 82 athletes failing pure-tone screening but passing tympanometry.

Hild, U., Hey, C., Baumann, U., Montgomery, J., Euler, H., & Neumann, K. (2008). High prevalence of hearing disorders at the Special Olympics indicate need to screen persons with intellectual disability. *Journal of Intellectual Disability Research, 52*(6), 520-528.

Persons with intellectual disabilities (ID) are at increased risk for hearing impairment which often remains undetected. If left untreated, such hearing impairments may worsen the social and communicative problems of these persons. The aims of this study are to determine the prevalence of hearing impairment, to specify type and degree of hearing loss, and to evaluate the sensitivity and specificity of the screening in this population. During the German Special Olympics Summer Games 2006, 552 athletes with ID had their hearing screened according to the international protocol of Special Olympics Healthy Hearing. This screening protocol includes otoscopy, measurement of distortion product otoacoustic emissions, and, if necessary, tympanometry and pure tone audiometry (PTA) screening at 2 and 4 kHz. Additionally, 195 athletes underwent a full diagnostic PTA. The results of the screening and diagnostic PTA were compared. Of the 524 athletes who completed the screening protocol, 76% passed and 24% failed it. Ear wax was removed in 48% of all athletes. 42% of the athletes were recommended to consult an otolaryngologist or an acoustician. Of the 99 athletes whose screening-based suspicion of a hearing loss was confirmed with diagnostic PTA, 74 had an undetected hearing loss. The correlation (Cramer's V) between screening and diagnostic PTA was .98. The sensitivity of the screening was 100% and the specificity 98%. The screening reliably detects hearing disorders among persons with ID. The prevalence of hearing impairment in this population is considerably higher than in the general population, and the proportion of undetected hearing impairments is large, even among people with only mild and moderate ID, as examined in this study

Horvat, M., Croce, R., & Roswal, G. (1993). Magnitude and reliability of measurements of muscle strength across trials for individuals with mental retardation. *Perceptual and Motor Skills, 77*, 643-649.

The purpose of this investigation was to examine the magnitude and reliability of strength measures on the Nicholas Manual Muscle Tester for individuals with mental retardation. 17 subjects were given six trials with the dominant and non-dominant flexor and extensor muscle groups. No significant differences were found between dominant and nondominant muscle groups by side or by muscle group. Interclass correlations ranged from .96 to .98 for six and three trials, respectively. It was concluded that the test was

appropriate for reliably assessing strength in this population and that these individuals can achieve a sufficient magnitude on three trials for a reliable measure of strength.

Horvat, M., Croce, R. & Roswal, G. (1994). Intratester reliability of the Nicholas Manual Muscle Tester on individuals with intellectual disabilities by a tester having minimal experience. *Archives of Physical Medical and Rehabilitation*, **75**, 808-811.

The purpose of this investigation was to determine the intratester reliability of measurements obtained with the Nicholas Manual Muscle Tester (NMMT) by a tester having minimal experience on individuals with intellectual disabilities. Seventeen individuals classified as moderately mentally retarded between the ages of 14 and 24 (\bar{x} = 18.65) were evaluated with the NMMT using a test-retest reliability procedure after a familiarization session. Test-retest strength score relationships for dominant and nondominant elbow flexors and extensors revealed differences between test and retest values. Finally, intraclass correlation coefficients ranging from .98 to .99 were evident in comparing the first trial to mean of three trials from the first testing session. It was concluded that testers with minimal experience with the NMMT could obtain reliable measurements with the NMMT for determining isometric force of elbow flexors and extensors in individuals with intellectual disabilities.

Horvat, M. Croce, R., Roswal, G., & Seagraves, F. (1995). Single trial versus maximal or mean values for evaluating strength in individuals with mental retardation. *Adapted Physical Activity Quarterly*, **12**, 52-59.

The purpose of the investigation was to use hand-held dynamometry to compare a single trial versus maximal or mean values of muscular strength in individuals with mental retardation. Twenty-three subjects classified as moderately mentally retarded (12 male, 11 female) performed three trials on six muscle groups. The magnitudes of the first, maximal, and mean isometric force across muscle groups were compared using a repeated measures analysis of variance and the Greenhouse-Geiser adjustment for the critical level of significance. Data analysis revealed a significant main muscle group effect and measurement score effect, but no significant differences between a single trial and mean of three trials. However, there was a significant difference between the first or mean scores and maximal scores. Intraclass correlation coefficients demonstrated consistency across muscle groups. Findings support the use of a single trial or mean of three trials to document muscular strength in individuals with mental retardation.

Hourcade, J.J. (1989). Special Olympics: a review and critical analysis. *Therapeutic Recreation Journal*, **23**(1), 58-65.

Since its inception in the 1960s, the Special Olympics program for individuals with mental retardation has provided thousands of participants recreational opportunities via athletic competitions. Over the last decade, however, the program has come under increased criticism. Potential problems include the segregated nature of the program, its emphasis on nonfunctional skills, and the possibly damaging effects of labeling on participants. This paper identifies and summarizes these and other criticisms, notes possible benefits of Special Olympics, and outlines possible modifications of the program to correct theorized shortcomings. Identifies the perceived limitations of the Special Olympics for individuals with mental retardation as the following: 1) the principle of normalization is not adhered to by the segregating nature of the activity, 2) the skills learned are not of practical utility in normalizing the individual, 3) instructional time is inefficiently utilized, 4) the child-like atmosphere can elicit inappropriate behaviours from participants and an inaccurate perception of the mentally retarded by the public, 5) labeling and stigmatization, 6) patronization of participants, 7) sympathy, pity, and charity are evoked, 8) competitiveness is emphasized, and 9) the program has failed to provide empirically verifiable benefits. States that benefits include additional attention for the individuals, public awareness of mental retardation, and potential gains in physical skills. Outlines ways in which the Special Olympics could be modified to address the limitations.

Hudson, P.B. (1988). Participating screening of Special Olympics athletes. *The Physician and Sports Medicine*, **16**(4), 97-99.

Although preparticipation examinations are required for all Special Olympics athletes, information in the medical literature is limited concerning the difficulty in screening this group and in clearing them for competition. The results of 176 preparticipation exams are included in this report. The most striking finding was deficient visual acuity in half the athletes tested. Ruling out atlantoaxial subluxation in the athletes with Down's syndrome presented a special problem. The author suggests that the most effective method for screening Special Olympics athletes is a single-station/single-examiner format performed during school hours. She suggests improvements in the design of the consent forms to make physicians and parents aware of the special needs of these athletes.

Kennedy, C., Macpherson, L., Sweeney, M., & Turner, S. The Oral Health of People Participating in the UK Special Olympics. *Journal of Intellectual Disability Research*, **52**, 29-36.

Research on the dental health of people with intellectual disability has consistently reported more untreated dental disease, more extractions and fewer fillings than in the general population. This paper describes the oral health of participants at the 2005 Glasgow Special Olympics (SO), relating this to the general population studied in the 1998 UK Adult Dental Health Survey (ADHS) and to participants' age and region of residence. Consenting SO participants were offered oral examinations, which followed the standardized SO protocol, plus an innovative soft tissue examination. Urgency of any treatment required was noted and reported to participants and care people. Three measures of good dental health--having 21 or more natural teeth, absence of fillings and having no obvious untreated decay--were compared across age groups, regions and with the general population. Logistic regression was used to control for age differences between regions. In total, 1021 oral examinations were completed. Older SO participants were more likely to have fewer than 21 teeth and to have fillings, untreated decay, gum inflammation and heavy plaque levels. In all, 28% of SO participants had 21 or more teeth, no fillings and no obvious decay. Those from the north, midlands and south regions of England had significantly more chance of good dental health so defined compared with participants from Scotland [ORs 1.67 (1.09, 2.67), 1.69 (1.12, 2.54), 1.99 (1.26, 3.16), respectively]. Compared with the general population surveyed in the 1998 ADHS study, SO participants were more likely to be free from fillings and obvious untreated decay, but fewer had 21 or more natural teeth among older age groups. Nine per cent were found to have soft tissue problems, and one in four of these required follow-ups. Gum inflammation was common. Overall, 5% of participants were judged to require urgent treatment for dental or soft tissue problems and 40% to require non-urgent treatment. This rose to 9% and 66% respectively among those aged 35 years and over. The low prevalence of untreated decay and fillings among SO participants compared with the general population may be due to their being well supported by family and care people. The study identifies the vulnerability of the older participants to dental problems, and this may indicate greater difficulty maintaining surveillance as individual's age or informal care people become less able or available. Regional variations are similar to those found in the general population. The implications for the organization of care for this group are discussed.

Klein, T., Gilman, E. & Zigler, E. (1993). Special Olympics: An evaluation by professionals and parents. *Mental Retardation*, **31**(1), 15-23.

Attitudes toward Special Olympics were examined in a group of 41 experts in the field of mental retardation and 40 parents of participants in the Special Olympics program. Experts completed a 15-item questionnaire that included Likert-type items regarding possible Special Olympics goals and their importance and fulfillment and open-ended questions regarding program benefits, strengths and weaknesses. Experts were also asked how the program might fit into the normalization debate. Parents were given a similar survey that also included child and parent participation questions. Generally, both groups viewed the program as highly beneficial, particularly in terms of social adjustment and life

satisfaction. As to concerns cited, some experts noted potentially segregative aspects of the program, whereas parents focused on administrative issues.

Kluka, D.A., & Love, P.A. (1992). Contrast sensitivity in International Special Olympics, women's invitational volleyball championships, and recreational volleyball players. *Palaestra*, **8**(3), 11-12.

Processing of information through the visual system involves photopic (day) vision, scotopic (night) vision, color perception, stereopsis (depth perception), pattern perception, and movement perception. Accuracy of this processing is critical for success in sport. The purpose of the study was to answer the question of the status of contrast sensitivity (identify objects in varying lighting conditions) in Special Olympics International volleyball players in comparison to other athletes in the same sport. It has been found that motion of the ball or the player to create a dynamic environment reduces the ability to discriminate smaller objects. Thirty-six volunteers served as subjects for this investigation. Athletes represented volleyball teams participating in the International Special Olympics Games (N=12), the 1990 Women's International Volleyball Championships (WIVC), and a 1989 recreational volleyball program at Louisiana Tech University. Significant differences were found in scores at the higher spatial frequencies (12 and 18) between SOI volleyball players and WIVC players, and between recreational players.

Kozub, F.M., & Porretta, D.L. (1998). Interscholastic coaches' attitudes toward integration of adolescents with disabilities. *Adapted Physical Activity Quarterly*, **98**(15), 328-344.

The purpose of this study was to identify issues that may need to be addressed so that adolescents with disabilities are better integrated into interscholastic sports programs. The coaches Attitude Toward Integration Questionnaire (CATIQ) was developed specifically to survey coaches' attitudes about including adolescents with disabilities in interscholastic programs. After preliminary reliability checks were made and content validity established, the CATIQ was mailed to a random sample of 397 public school coaches. Results indicated that coaches tend to show agreement with the statement that adolescent with disabilities "have a right to sport opportunities" in interscholastic programs. However, coaches felt inadequately trained to address the needs of individuals with disabilities in integrated interscholastic sports setting.

Kumar, S.A., Montgomery, J.K., Herer, G.R., & McPherson, D.L. (2008). Hearing screening outcomes for persons with intellectual disability: a preliminary report of finding from the 2005 Special Olympics World Winter Games. *International Journal of Audiology*, **47**(7), 399-403.

The Special Olympics Healthy Hearing Program provides a unique opportunity to determine the hearing service needs of individuals with mild intellectual disabilities participating in athletic endeavors in countries throughout the world. The Healthy Hearing Program screened 855 of 1800 athletes with intellectual disability over a period of a week at Nagano, Japan. Of 855 athletes screened, 58% passed the DPOAE screen and therefore required no further testing. Of the remaining 42%, 186 did not pass pure-tone screening. This number of athletes represents 21.8% of all athletes screened. Tympanometry outcomes for the 186 athletes failing pure-tone screening showed 56% (104) also failing this measure of middle-ear function. 65% of these 104 athletes' outer ear canals were blocked/partially-blocked with cerumen. This amount is in contrast to the 38% presence of cerumen for the 82 athletes failing pure-tone screening but passing tympanometry.

Lauff, J. (2008). *International Disability Sport Competition: Participation Data 1991 to 2007* (Deaflympics, Paralympic Games and Special Olympics World Games Summer and Winter). Berlin: Freie Universitat.

For international games, participation data is a common measure of the size of an event and most often quoted is the number of countries and the number of athletes. For international disability sport

competition, this is the first attempt at collating the participation data for the Deaflympics, Paralympic Games and Special Olympics World Games together. This CD-ROM includes the participation data from 1991 to 2007 in summer and winter Deaflympics, Paralympic Games and Special Olympics World Games. The data was collected during 2007 from the governing bodies of each movement; the International Committee of Sports for the Deaf (ICSD), International Paralympic Committee (IPC) and Special Olympics International (SOI) in association with the Erasmus Mundus Master in Adapted Physical Activity. Also included on this CD-ROM is background information to help you understand how the data was collected and what it contains, along with simple instructions to help you access the information. The participation data is presented in three separate spreadsheets in a format that is easy to use and a summary table is provided for quick reference. This data is unique because it: (1) allows comparative analysis between games, movements, regions and genders, (2) enables analysis of developed and developing country participation, (3) provides data that is currently not available on websites of the governing bodies of each movement, and (4) expands on the information available in Special Olympics Participation Reports by focusing on Special Olympics World Games only.

Lord, M.A. & Lord, W.J. (2000). Effects of the Special Olympics Texas athletes for outreach program on communication competence among individual with mental retardation. *Communication Education*, **49**(3), 267-283.

Previous research has indicated that individuals with mental retardation exhibit deficits in communication and social competence. In addition, earlier studies have provided some evidence that Special Olympics programs can provide increased physical and social competence for participants, but prior to this study no one has addressed Special Olympics' impact on communication competence. Communicative performance is critical to social interaction and impacts perceived social competence. Consequently, if individuals participating in the Special Olympics' Athletes for Outreach program (AFO) develop improved communication skills and an enhanced social role as a result of their involvement, the authors speculate that others could benefit from a similar program and experience.

Maano, C., Ninot, G. & Erras, B. (2001). Effects of alternated sport competition in perceived competence for adolescent males with mild to moderate mental retardation. *International Journal of Rehabilitation Research*, **24**(1), 51-58.

The purpose of this study is to examine the effects of organized sport competitions (Special Olympics, INAS-FID, and Alternated sport) and type of sport (basketball versus running) on domains of perceived competence and general self-worth. The participants were 32 AMR (Mean age 13.5 years, SD = 0.80) divided equally into four groups: (a) alternated basketball; (b) alternated running; (c) control, adapted physical activity; (d) control, sedentary. The experimental treatment was for 7 months. The sport groups participated in 2 hours training each week and six competitive meets. Researchers administrated Harter's (1985) Self-Perception Profile for Children seven times to determine changes in perceived competence and general self-worth. Results indicated no significant changes in the specific domains of perceived competence and general self-worth.

Malinauskas, B.,M. & Overton, R.F. (2007). College sport management student perceptions regarding Special Olympics curriculum and service learning, *The Sport Journal*, **10**, 3.

This pre-test/post-test study evaluated college sport management student ($N = 21$) perceptions of Special Olympics North America curriculum/field experience. Pre-event and post-event values indicate that students had positive perceptions. Significant individual effects were found for General Orientation, Facilities and Safety, and Event Management. The strongest correlate relationships were for General Orientation with Volunteerism (52% predictive), Event Management (50%), and Athletes (53%), and Volunteerism with Event Management (54%) and Athletes (62%). Overall, results indicate that service learning can be implemented successfully

into a sport management curriculum, field experience is an effective practical experience, and feedback from students should be used to improve teaching.

Malinauskas, B.M., Aeby, B.G., Harris, N., Overton, R.F., & Pawlak, R. (2007). Adult Special Olympics athletes: health risks related to food choices. *Journal of Family and Consumer Sciences*, **99**(3), 37-42.

This article is about a study which examines food related health risks confronting adult Special Olympic athletes. Fifty-eight Special Olympic athletes with ages ranging from 18-62 participated and were evaluated in this study. It was found that the rate of obese and overweight athletes were high in these participants. In this study, it shows that some of the participants made their own choices for food intake. The athletes that made these choices had a higher frequency intake of carbonated and sweetened drinks, rather than high intake of drinking water on a daily basis. The participants who relied solely on their care providers (guardians) to make food choices for them had better, more efficient water and nutrition intake. This alone gave beneficial improvements to these athletes both physically and mentally. The bad eating habits resulted in sluggish outcomes in behavior and attentiveness. By applying healthier diets and improving exercise plans, the obesity rate would have to fall among Special Olympians. This will not only improve health, but give confidence, improve self-esteem and increase self worth to participants. Motivation and the desire to continue in a healthy, active lifestyle will automatically come when positive results start to show on each and every athlete dealing with disabilities.

Maxwell, B.M. (1984). The nursing role in the Special Olympic program. *Journal of School Health*, **54**(3), 131-133.

Special Olympics is an international program of physical fitness, recreation and sports for the handicapped of all ages and provides competition at all ability levels by grouping participants into divisions according to age, sex and performance ability. Special Olympics, a year-round program of physical training for mentally handicapped children and adults, contributes positively to the physical, social and psychological development of these individuals. Special Olympic participants must have a physical examination prior to the training activities or athletic competition to determine limitations and to prescribe special precautions to follow while participating. School nurse practitioners play an important role in seeing that physical examinations are completed prior to scheduled events in addition to identifying immediate health needs, counseling students, teachers and parents about specific problems, updating medical information and seeking appropriate referrals for the participants. School nurse practitioner's attendance at Special Olympics competition is vital to the success of the program.

McCarthy, E., Aufmesser, P.M., Patterson, P., Nichols-Bernhard, J., & Burke, J. (1996). The reliability and validity of the Rockport Fitness 1-Mile Walk Test as a measure of cardiovascular fitness in Special Olympics athletes. *Research Quarterly for Exercise and Sport Supplement*, **67**, 120.

The Purpose of this study was to examine the reliability and validity of the Rockport Fitness 1-Mile Walk Test (RFWT) as a measure of cardiovascular fitness in adults with developmental disabilities involved in a Special Olympic track and field program. The subjects for this study were eight adults (5 males, 3 females) with developmental disabilities ranging in age from 14 to 39 years. Each subject completed a minimum of two RFWT's on separate days and once criterion VO₂ max treadmill test. Prior to VO₂ max treadmill testing, all subjects participated in a treadmill and expiratory gas system familiarization sessions. Intraclass correlation coefficients for test-retest reliability for the RFWT times were R=.90 and R=.71 for heart rate. The validity coefficient for the RFWT was $r = -.80$ ($p < .05$, with the 95% confidence interval ranging from .22 to .96). A one way repeated measures ANOVA comparing actual VO₂ ($x=35.81$ ml/kg-1min-1) with predicted VO₂ using the Kline et al. ($x=45.18$ ml/kg-1 min-1) and Rintala ($x=40.78$ ml/kg-1min-1) RFWT equations resulted in a significant difference ($F_{2, 14}=8.0$; $p=.005$). A TukeyHSD post-hoc test indicated other significant differences were detected. With the constraints of a small sample size, the resulting data should be viewed with discretion.

McCormick, D.P., Ivey, F.M., Gold, D.M., Zimmerman, D.M., Gemma, S. & Owen, M.J. (1988). The preparation sports examination in Special Olympics athletes. *Texas Medicine*, **84**, 39-43.

It is the policy of Special Olympics, Inc., that athletes have a physical examination prior to participation in Special Olympics events. Eighty Special Olympics athletes were examined in two settings. In setting 1 (1985) individual examinations were performed by pediatric residents; in setting 2 (1986) screenings by the station method were performed using a sports health team. Sports significant abnormalities were detected in 39% of the athletes. Percentages of abnormalities detected in the two settings were similar. The single most common category of problem detected among the athletes was neurologic (16%), followed by ophthalmologic (15%), musculoskeletal (6%), and medical (5%). The parent questionnaire detected 71% of the sports significant abnormalities. Personnel costs for examinations appeared comparable to the cost of a physical examination performed by a private practitioner. Further work needs to be done to determine the incidence of sports injury in Special Olympics athletes and to elucidate any possible association between pre-existing abnormalities and subsequent injury. Policies should be developed based on the effectiveness of the required yearly physical examination to prevent injury in athletes.

McCormick, D.P., Niebuhr, V. N. & Risser, W. L. (1990). Injury and illness surveillance at local Special Olympic games. *British Journal of Sports Medicine*, **24**(4), 221-224.

The purposes of this study were to: determine the incidence of injury and illness among Special Olympic athletes at local competitions; assess the relative risk of medical problems among Down's syndrome athletes; and compare the relative risk of sports injury incurred by athletes participating in various Special Olympic events. Health stations were set up at all sports venues and injury/illness surveillance records were kept for all injury/illness encounters during a 3-day competition for 777 Special Olympic athletes. A total of 3.5 percent of the athletes required injury/illness care during the games. Down's syndrome athletes were 3.2 times as likely to encounter a medical problem. Track and field events provided the least activity time and the most injuries. These data suggest that Special Olympic games at the local level are safe and that planners should prepare to treat more illnesses than injuries at such competitions.

Megginson, N.L., Nakamura, A., & Furst, D.M. (1997). Parental perception of Special Olympics benefits and outcomes. *Palaestra*, **13**(1), 12-13.

The purpose of this study was to address parental perception on the benefits and outcomes of Special Olympics participation on their child as it relates to the development of sport skills, self-confidence, interdependence, and community involvement. Forty parents of Special Olympics athletes from the Northern California area, attending a sanctioned one-day regional track and field event participated as subjects in this study. Participation in the study was strictly voluntary; therefore there was no random selection of subjects. Either gender parent of the SO athlete could complete the short questionnaire developed specifically for this study. The questionnaire consisted of four demographic data items concerning the SO athletes, with four Likert-type and four open-ended items addressing parental perceptions regarding the overall benefits of participation in this organization on their children, with specific interest in gains of sport skill, confidence, independence, and involvement with other community/school activities. Parents involved in this study strongly supported the overall beneficial aspects of SO participation for their children with mental retardation consistent with previous research.

Miller, S.E. (1987). Training personnel and procedures for Special Olympics athletes. *Education and Training in Mental Retardation*, **22**(4), 244-249.

The concept, sports training, as it is applied to Special Olympics, was studied. Questionnaires were mailed to 194 Special Olympics coaches in Ohio, resulting in a return of 88%. The intent of the survey

was to establish a data base about the persons who coach Special Olympics. Results showed the profile of a Special Olympics coach to be a female physical educator, aged 26-35, with a B.S. degree. Training began 8.4 weeks prior to events and 3.6 hours per week were spent in training. While a high percentage of coaches had experience and training in coaching, 70% of the coaches did not feel qualified to train athletes with mental retardation for Special Olympics competition. It is recommended that coaches avail themselves of coaching clinics, university coursework in adapted physical education, and the expertise of other professional colleagues.

Mikelkeviciute, J., Sajute, J., Paulauskaite, L. (2005, July). Preliminary study of motivation for participation in Special Olympics activities. Paper presented at the International Symposium on Adapted Physical Activity, Verona, Italy.

The interest with which persons with mental retardation (MR) take to sport is evidenced by the growth of Special Olympics to more than one million persons with MR from 150 countries. Majority of scientists proved that participation in regular exercise sessions encourage to keep self-assessment of disabled, to realize herself, perceive her competence, fortify in social life, to take active part in life of society. The Special Olympics program is associated also with improvements in physical fitness, motor skills, self-esteem, social competence, as well as positive self-perception. Despite of popularity and benefits of Special Olympics programs, there is little information on motivation aspects of participation in sport for persons with MR. The purpose of the study was to identify motivational aspects of participation in sport programs and to determine does the age, gender, or played sports have an influence on the reasons for participation. This study examined motivation of sport participation of 154 Lithuanian Special Olympics (SO) athletes within ages 12 to 26 years. Interview was used for data collection. The questionnaire consisted of questions and statements based on postulates cognitive motivation and calculated for reliability and validity as well. The results of the study showed that motivation for participation in sport program of Lithuanian SO athletes depend on wishes to win medals and possibility for social interaction as well as the possibility to have fun. On the other hand, SO athletes do not like the difficulties during the sessions and innovations. As the date of the study showed, motivation for participation of SO athletes did not depend on gender and age, but some differences appeared in data analysis according to the level of mental retardation of SO athletes.

Momola, I. & Marszalek, R. (2004). Motor skills in mentally retarded children. *Acta Universitatis Palackianae Olomucensis Gymnica*, **34**(2), 67-70.

The research whose results are described in this work emphasized motor skills of children with mental retardation. The examination was conducted among 49 children, aged 10-19 years, using the and Ozierecki test. According to the test results the children with substantial mental retardation had more difficulties in performing the tasks. These children were most impaired with respect to the speed and precision of their reactions.

Neumann, K., Dettmer, G., Euler, H.A., Giebel, A., Gross, M., Herer, G., Hoth, S., Latterman, C., & Montgomery, J. (2006). Auditory status of persons with intellectual disability at the German Special Olympic Games. *International Journal of Audiology*, **45**, 83-90.

Among persons with intellectual disability, the prevalence of hearing impairments is high. During the German Special Olympics Summer Games 2004, a hearing screening was conducted on 755 athletes with intellectual disabilities. Obligatory screening included ear inspection and recording of otoacoustic emissions, and optional screening included tympanometry and brief pure-tone audiometry; 38.0% of the athletes failed the screening, 53.0% needed ear wax removal, 56.1% of the fails indicated sensorineural hearing loss and 13.6% indicated mixed hearing loss. 12.5% of the fails were caused by unremovable ear wax, 1.4% by ear canal affections, and 16.4% by middle ear problems. Left ear fails were more frequent than right ear fails. A peripheral hearing disturbance can thus be expected in every third subject. The high failure rate, a considerable percentage of previously undetected profound hearing loss (1.1%), and the

frequent need for ear wax removal, suggest that nearly half of persons with intellectual disabilities need regular otological or audiological consultations.

O'Connell, J., Rutland, M., & O'Connell, D. (2006). Grip Strength of Texas Special Olympians. *Perceptual & Motor Skills*, **102**(2), 461-466.

Little is known about the physical fitness parameters of individuals who participate in the Special Olympics. The purpose of this study was to assess the grip strength of 104 Special Olympians participating in the winter Olympic Games. Men were significantly stronger than women across age groups 20 to 59 yr. Women's right hands were stronger than their left, while the opposite was true for men, despite the fact that 78.8% of the subjects reported right hand dominance. Mean right and left grip strengths were 25-40% less than the 1985 normative data of Mathiowetz, et al. by age groups. Special Olympian men and women have grip strengths comparable to elderly people rather than age-matched men and women.

Onyewadume, I.U. (2002) Physical fitness profile of Special Olympic-bound athletes: implications for performance success, injury proneness and future preparations. *Research Bi-annual for Movement*, **18**(2), 18-36.

This survey was motivated by the dearth of fitness/performance data on African athletes with disabilities and, in particular, African Special Olympic athletes. It represents a concerted effort at evolving a data bank on African athletes with disabilities; particularly those with mental retardation. Fourteen male (age, 14.3 +/- 2.15 yrs) and fifteen female (age, 14.5 +/- 3.14 yrs) Botswana athletes with mental retardation (MR), preparing for the 10th Special Olympics World Summer Games, participated in the study. Physical variables measured included body weight, height, body density, BMI, % body fat, selected muscle circumferences, skin-folds and skeletal lengths and diameters. Selected motor performance measures also studied included trunk flexion and extension, grip and back strengths, jumping reach, sit ups and push ups. Cardio-respiratory endurance was estimated using Tee-Koh and McCubbin's (1999) regression equation for estimating absolute PeakVO₂ measures of adolescents with mental retardation. Twenty-four teachers of these athletes answered some questions on the training schedules of their athletes. The study showed a low fitness level in all fitness components measured. This low level of fitness has grave implications for performance success and injury proneness. Establishment of basal fitness levels, inclusion of specific exercises aimed at developing various components of physical fitness, designing future training schedules adequate in frequency, intensity and duration in recognition of athletes' capabilities and in-service training of teachers in physical education/adapted physical education were recommended. It is hoped that these measures would enhance performance and decrease injury-proneness.

Onyewadume, I.U. (2005, July). *Fitness retention among past Special Olympians: implications for structured maintenance sports program*. Paper presented at the International Symposium on Adapted Physical Activity, Verona, Italy.

This biennial follow-up study compares the physical and motor performance characteristics of past Special Olympics athletes with mild mental retardation with their characteristics two years earlier. With paucity of literature on follow-up studies on African Special Olympians in the aspect of physical and motor performance profiles, this study seeks to provide additional literature and propose the institution of structured maintenance sports programs in schools for people with mental retardation. Twenty-seven previously studied Special Olympians from various schools for individuals with mental retardation in Botswana were purposively selected to take part in this study—11 males and 16 females. Data were collected following the procedure of the International Society for the Advancement of Kinanthropometry. Data were analyzed using the descriptive statistics and t-test for matched samples. Results show significant deteriorations in most parameters studied. A call was made for the institutionalization of sports

programs that are aimed at improving the fitness levels and quality of life of the children in schools for individuals with mental retardation in Botswana.

Orelove, F.P., Wehman, P. & Wood, J. (1982). An evaluative review of Special Olympics: Implications for community integration. *Education and Training of the Mentally Retarded*, 17, 325-329.

The Special Olympics program for retarded children and youth was critically analyzed. Positive aspects and limitations of the Special Olympics are described in the context of the historical role of the program and in the need to pursue community-based recreation programming. Suggestions for improving the Special Olympics were provided.

Overton, R.F. & Malinauskas, B.M. (2007). College sport management student perceptions regarding Special Olympics curriculum and service learning. *Sports Journal*, 10(3), 1-9.

This pre-test/post-test study evaluated college sport management student (N = 21) perceptions of Special Olympics North America curriculum/field experience. Pre-event and post-event values indicate that students had positive perceptions. Significant individual effects were found for General Orientation, Facilities and Safety, and Event Management. The strongest correlate relationships were for General Orientation with Volunteerism (52% predictive), Event Management (50%), and Athletes (53%), and Volunteerism with Event Management (54%) and Athletes (62%). Overall, results indicate that service learning can be implemented successfully into a sport management curriculum, field experience is an effective practical experience, and feedback from students should be used to improve teaching.

Özer, D. (2005). A comparison of physical fitness and body awareness between Special Olympics athletes and nonathletes with intellectual disabilities. *International Council for Health, Physical Education, Recreation, Sport and Dance Journal*, (3), 55-60.

The aim of this study was to compare physical fitness and body awareness of non-athletes and Special Olympics (SO) athletes who gained first four place in National Soccer Game in 2001. Participants were 37 SO athletes (age=17.02±2.87) and 37 nonathletes (age= 17.96±2.64). SO athletes participated in soccer training program for 8 weeks, 3 days in a week, 1.5 hours in a day. Nonathletes were selected randomly among children with the same age, intellectual level among children without physical and sensory disabilities who didn't participate in any sport activity. SO athletes had a significantly higher performance in all the parameters of physical fitness and body awareness score. The results of this study can be said to highlight the importance of participating in physical activity for children with Intellectual disabilities (ID).

Ozer, D., Baran, F., Nalbant, S., Aktop, A., Ozdol, Y., Ozer, K., and Astar, B. (2005, July). *Special Olympics unified sports: changes in male athletes during a football season*. Paper presented at the International Symposium on Adapted Physical Activity, Verona, Italy.

Unified sports is a registered program of Special Olympics (SO) that combines athletes with developmental or cognitive disabilities and their peers (partners) without disabilities on the same team for training and competition. The purpose of the study was to investigate the changes on physical fitness and football skills occurring in male athletes with and without mental retardation (MR) during participation in a SO unified sport program. Participants were 46 children with and without MR, 23 with MR and 23 without MR, in the experimental group (EG) and 30 children, 15 with MR and 15 without MR, in the control group (CG). As special athletes for EG, all of the school children between ages 12 and 15 years, attending a special education school, educable mentally retarded and no second handicap and were given permission to participate in a study. As partners, children without disability were selected randomly in regular secondary school with the same age, gender and number of special abilities. Participants in the CQ were selected by random sampling among participants with the same criteria as the EG. Before

and after the program, data were collected on height, weight, skinfolds, flexibility, standing long jump, hand grip, sit-ups, flexed arm hang and football sports skills assessment. EG participated in 8 weeks, 1.5 hour per session, three times per week, an after school football program. CG did not participate in any sports program without the school physical education class. Dependent t tests revealed that SO athletes and partners scored significantly higher with regard to physical fitness and football skills in more parameters compared with the CG at the end of the program. Athletes with MR who participated in a Unified Sports basketball program previously showed significant improvement in both social self-perception and basketball skills.

Paciorek, M.J. (1992). Preparing for the future: Special Olympics research at the 1991 ISSOG. *Palaestra*, **8**(2), 35-37.

Special Olympics International is interested in program improvement, and took advantage of the 1991 ISSOG to collect data and conduct several research projects. Six research projects were planned by Special Olympics research staff. Most projects involved programmatic research to assist staff, evaluate current status of Special Olympics, and determine procedures in organization, training, competition, and sport offerings that may need subsequent modifications. (1) A research project developing a participation profile of athletes over the age of 35. (2) A study to determine the impact of involvement in Special Olympics in assisting athletes over the age of 21 years and no longer in school settings to lead independent lives in their own communities. (3) An international study of how coaches are trained. (4) a study on the degree to which persons considered mentally retarded are integrated with non-mentally retarded individuals in competitive sport activities. (5) A study to investigate reliability of scores submitted for divisioning prior to final events. (6) A study of the self-concept, through physical appearance, among powerlifters.

Pastorfield, C., Pueschael, S., Lenihan, A., Medlen, J., Wagner, M., & Corbin, S. (2003). Low bone mineral density among persons with intellectual disabilities at the 2003 Special Olympics World Summer games. *Healthy Athletes Healthy Promotion*. New York: Special Olympics, Inc.

Osteopenia and osteoporosis appear to be more frequent among people with disabilities, especially Down syndrome (DS). To validate and better estimate the prevalence of this finding, we measured the calcaneal bone mineral densities (BMD), using PIXI technology, of athletes participating in the 2003 Special Olympics World Summer Games in Dublin, Ireland. The results showed that 111 (17.6%) had at least one BMD with a T-score in the range of -1.0 to -2.49; 17 (2.6%) individuals had at least one BMD with a T-score of less than or equal to -2.5. Therefore 128 (20.2%) met the usual criteria for osteopenia or osteoporosis. T-scores, however, compare the BMD of subjects with the BMD expected of 30 year-old adults. Most of the athletes studied were younger and normal ranges for bone density have not been established among adolescents. Our data tend to confirm a high prevalence of low BMD among people with intellectual disabilities, even when they are engaged in athletic activities. Future work is needed to assess bone health among adolescents and young adults with intellectual disabilities.

Pitetti, K.H., Jackson, J.A., Stubbs, N.B., Campbell, K.D., & Battar, S.S. (1989). Fitness levels of adult Special Olympic participants. *Adapted Physical Activity Quarterly*, **6**(4), 354-370.

Comparative and longitudinal studies were performed to determine the effect of Special Olympics activities on the physical fitness of participants. The comparative study compared cardiovascular fitness, percent body fat, and blood lipid profiles of non-Down, mildly mentally retarded adult Special Olympics participants (SOP) with those of nontraining, nonhandicapped (NTNH) and training nonhandicapped (TNH) adults. The results indicated that SOP displayed lower fitness profiles than TNH. Male SOP demonstrated fitness profiles similar to NTNH while female SOP showed lower cardiovascular fitness levels than both TNH and NTNH. The longitudinal study compared cardiovascular fitness and percent body fat on non-Down, mildly mentally retarded adult SOP before and after 4 to 18 months of Special Olympics activities. This latter study showed no significant change in body weight, percent body

fat, or cardiovascular fitness during a time period that averaged over 13 months for each participant. The results indicated that the intensity level of activity for the SOP in this study failed to improve physical fitness.

Platt, L.S. (2001). Medical and orthopedic conditions in Special Olympics athletes. *Journal of Athletic Training* 36(1), 74-80.

Many Special Olympics athletes experience hypokinetic diseases and comorbid conditions that may predispose them to serious injuries during physical activity. A clear understanding of these conditions and diseases may assist health care professionals in preventing further distress and managing the injuries sustained by these athletes. Such diseases and conditions include overweight and obesity, diabetes, vision problems, seizure disorders, and Down syndrome, which is often associated with atlantoaxial instability. Data sources include MEDLINE, SPORT Discus, and Special Olympics information sources for the years 1990-2000 using the key terms Special Olympics, mental retardation, comorbidity, Down syndrome, hypokinetic diseases, and physical activity were searched. A basic review of hypokinetic diseases and comorbid conditions prepares health care professionals for working with people with mental retardation. Health care volunteers at Special Olympics events treat athletes with mental retardation who may also have some of the comorbid conditions and hypokinetic diseases observed commonly in this population. Moreover, many of these conditions and diseases are typical in athletes without mental retardation. Athletic trainers should be familiar with these conditions and diseases but should review the unique conditions and prescription medications commonly found in the Special Olympics population before providing medical services for these athletes.

Polloway, E.A., & Smith, J.D. (1978). Special Olympics: a second look. *Education and Training of the Mentally Retarded*, 13, 432-433.

Few elements of contemporary American culture have escaped open and vigorous critique. Certain traditions and institutions, however, have achieved "mother and apple pie" status and have continued to receive seemingly unquestioned respect. The Special Olympics have justly earned such a reserved status in the public consciousness since their inception in 1968. While we certainly support the joyous spirit central to the theme of these activities, there are certain aspects of the Olympics that warrant closer inspection. This second look is offered in light of current trends in the delivery of services to retarded children.

Porretta, D.L., Gillespie, M., & Jansma, P. (1996). Perceptions about Special Olympics from service delivery groups in the United States: a preliminary investigation. *Education and Training in Mental Retardation and Developmental Disabilities*, 31, 44-54.

Special Olympics has been providing sport/recreation opportunities for individual with mental retardation for over a quarter of a century. Recent trends such as access, inclusion, and the use of the noncategorical approach in identifying individuals with disabilities, however, has led Special Olympics to reevaluate its programs. To this end, a 15 question survey instrument was developed and sent to a total of 232 potential respondents across 9 identified strata. These respondents represented various agencies/organizations throughout the United States that provide a variety of services to individuals with disabilities. Survey questions addressed terminology, philosophy, perceptions, and programming. An overall response rate of 50.4 percent was obtained across the 9 strata, with 117 total questionnaires returned. Results indicate that: (1) the mission of Special Olympics should be to place more emphasis on inclusion opportunities, (2) there appears to be a trend away from the term "mental retardation" toward other terms, (3) Special Olympics should provide opportunities to a wider variety of individuals with disabilities, and (4) Special Olympics should examine its mission statement in order to stay abreast with current philosophies being espoused by other agencies/organizations. Future research efforts should extend the efforts of this preliminary investigation in examining Special Olympics' mission and goals.

Porretta, D.L., Moore, W., & Sappenfield, C. (1992). Situational anxiety in Special Olympics athletes. *Palaestra*, *8*, 46-50.

The purpose of this study is to examine the state-anxiety of youth Special Olympic participants. All 39 participants in the study were between 12 and 18 years of age and all were diagnosed with mild mental retardation, having IQ's ranging from 56 to 70. The authors hypothesized that the participants in this study would have increases in state-anxiety when placed in a competitive setting. These results have been observed in athlete without development disability. To test the hypothesis, the researchers administered the State-Trait Anxiety Inventory for Children (STAIC) to the participants on the three occasions:(a) three weeks prior to the competition (while athletes were in training); (b) one week prior to competition; and c) 10 to 15 minutes before starting an event. The coaches read the questions to the participants. Performance was also measured by performance in the individual events. Pearson's Correlation revealed a low, nonsignificant correlation between IQ and state-anxiety ($r=.34$). In addition, there were no significant gender differences in training or competitive state anxiety. Furthermore, no significant evidence in support of their assertion that state-anxiety increases in the face of competition. Examination of the means and standard deviations revealed that participants' scores on the STAIC were similar to the STAIC scores for athletes without developmental delay. The results of this study suggest that participation in local Special Olympics competition does not evoke competitive state-anxiety responses. The Special Olympics competitions are organized so they de-emphasize competition and focus on fun, inclusion, and ability. This type of competition may not be viewed by its participants as threatening, and as a result, anxiety does not factor in to competition. These results might change if the researchers had used a state-anxiety instrument developed specifically for athletes with developmental delays. Furthermore, the authors suggest that future studies should replicate this study with national or international Special Olympics participants. It may be that the elite level competitors may exhibit more anxiety than those competing at the local level. In conclusion then, it may not be necessary to implement sport psychology techniques designed to control anxiety of Special Olympians participating at the local level.

Prokopová, K. (2003) Reflexion of "the disability phenomenon" in popular media. Unpublished Master Thesis. Olomouc: Faculty of Physical Culture, Palacky University.

The results of an analysis of articles in popular journals (including journals for children, period 1995-2002) from the aspect of frequency of "the disability phenomenon" were presented. Articles yjsy str charity-oriented, family education or education in general have occurred, but with a very rare orientation on sports (only 3 paralympians biographies). There was nothing found about Special Olympics. Only four articles were found in children's journals, all with a charity orientation and nothing about Special Olympics.

Reid, B., Chenette, R., Macek, M. (2008). Prevalence and predictors of untreated caries and oral pain among Special Olympic athletes. *Special Care in Dentistry*, *23*(4), 139-142.

The authors assessed the prevalence and predictors of untreated caries and oral pain among Special Olympic athletes. The study population consisted of a convenience sample of 9,620 athletes who were participating in the 2001 Special Olympics events held at 40 sites in the United States, and who consented to a standardized oral health screening. The prevalence of oral pain and untreated caries was 13.5% and 30.4%, respectively. Statistically significant independent associations (adjusted odds ratios [OR], $p \geq 0.05$) between untreated caries and oral pain (OR=1.50), gingivitis (OR=1.92), injury (OR=1.28), missing teeth (OR=1.79), and home care (frequency of cleaning their teeth once or less per week compared with once or more per day OR=2.13) were found. In another model, we found statistically significant independent associations between oral pain and untreated caries (OR=1.58), gender (OR=1.28), gingivitis (OR=1.30), and home care (frequency of cleaning their teeth once or less per week compared to once or more per day OR=4.60). Substantial levels of untreated caries and oral pain were prevalent and related to poor oral hygiene and poor oral health. These findings were discouraging given

that the study participants represented a generally well-supported, high-functioning stratum of persons with mental retardation in the United States.

Riggen, K., & Ulrich, D. (1993). The effects of sport participation on individuals with mental retardation. *Adapted Physical Activity Quarterly*, *10*(1), 42-51.

The study compared 25 individuals with mental retardation participating in a traditional segregated Special Olympics program with 25 individuals with mental retardation participating in the new Unified Special Olympics program. Self-perceptions (SPs) of physical ability, social skills, and general self-worth (GSW) were assessed with a modified version of the Perceived Competence Scale for Children. Actual physical abilities were also compared among the 2 groups and a control group of 25 individuals not participating in sports programs. Unified subjects demonstrated an increase in social SP, which remained unchanged in the traditional subjects. There were no significant increases found in SPs of physical abilities and GSW for the traditional and Unified subjects. Both the segregated and integrated basketball subjects demonstrated significant increases in basketball skills but not in cardiovascular fitness.

Rizzo, T., Woodard, R.J., & Buswell, D.J. (2002). Improving flexibility of Special Olympic athletes and coaches. *Adapted Physical Activity Quarterly*, *19*(4), 514.

This study used the sit and reach test to assess the effects of using proprioceptive neuromuscular facilitation (PNF) and static stretching on performance improvement following two performances 3-4 weeks apart of individuals with and without mental retardation (MR). Another purpose was to determine if teaching the PNF technique to individuals with MR was possible. Participants were 18 Special Olympians with mild to moderate mental retardation. After a short aerobic warm up, each participant performed the sit and reach test as a baseline. Baseline testing was followed by a 10-second static stretch and 10-second relaxation and then a second sit and reach performance. A 10-second PNF stretch and 10-second relaxation followed by a third sit and reach was then performed. Three to four weeks later, the participants repeated the procedure with the order of the static stretch and the PNF stretch reversed. Results showed improvement from baseline to static-stretch to PNF with significant differences for both groups. For the baseline, PNF, static stretch order there was significant improvements between baseline-PNF and baseline-static stretch comparisons for both groups but no significant differences between PNF-static stretch for either group. The researchers reported minor decreases in flexibility as measured by the sit and reach test in the baseline, PNF, static stretch order after the static-stretch.

Roper, P.A. (1990). Special Olympics Volunteers' Perceptions of People with Mental Retardation. *Education and Training in Mental Retardation*, *25*(2), 164-175.

Changing beliefs and perceptions through contact has been a recognised process for some time. However, few studies in the area of integration of people with mental retardation have examined underlying assumptions of contact situations. Existing stereotypes and prejudices concerning people with mental retardation were described within a psychosocial model of mental retardation. A conceptual view of contact between volunteers and people with mental retardation at a Special Olympics' state games was undertaken within the five components of contact theory. This conceptual review indicates that instances of negative effect may limit extent of change expected in the perceptions volunteers hold of people with mental retardation. Results of a questionnaire study appeared to offer some support for such interpretation. It was found, that contact, as compared to no contact, did contribute to positive changes in perception.

Rosegard, E., Pegg, S., & Compton, D.M. (2001). Effect of Unified sport on maladaptive behaviors among Special Olympics athletes. *World Leisure Journal*, *43*(2), 39-48.

The purpose of this study was to examine the effects of participating in a Unified Bowling program on maladaptive behaviors among Special Olympic athletes. Athletes aged 11 to 68 years with a mean of 32

years participated in a 12-week Unified Bowling program. The Child Behavior Checklist (CBCL) was administered to parents before, immediately following, and 18 months after the 12 week study. A measure of maladaptive behaviors was derived from responses of the CBCL. Results revealed a significant multivariate interaction effect. Results showed that the treatment group reported significantly lower internalizing and externalizing scores over time.

Roswal, G.M., Damentko, M.B., Smtih, G.W., Braycich, M.J., & Krogulec, M. (2003). Sport for individuals with mental disabilities in Asia, Eurasia, and Europe. *Palaestra*, *19*(4), 20-24.

The report describes the Special Olympics University initiative, an innovative approach to include sports for athletes with mental disability in university physical education programs in Asia and Eurasia. The project was designed to assist university professors teach a course in Special Olympics as a part of the physical education curriculum or include a unit on Special Olympics in adapted physical education coursework. Specifically, the project attempted to: (a) introduce ideas about sport for people with disability, (b) discuss principles of Special Olympics sports training and competition, (c) present resources to launch Special Olympics practical programs with university students, and (d) provide incentives for universities to become involved in the Special Olympics movement. To accomplish these goals, a Special Olympics curriculum was designed to facilitate the inclusion of Special Olympics in the university physical education program. The curriculum consists of classroom instruction discussing philosophy and practices of Special Olympics training and competition, as well as strategies to include a Special Olympics coaching and/or sports management training experience. The Special Olympics University initiative has been incorporated into physical education programs in 56 universities in Armenia, Azerbaijan, Belarus, Bulgaria, China, Estonia, Finland, Georgia, Kazakhstan, Kyrgystan, Latvia, Lithuania, Moldova, Poland, Russia, Tadjikistan, Ukraine, and Uzbekistan. Approximately 90 university teachers have been trained, resulting in the introduction of Special Olympics philosophy to over 7,000 university students. This has also resulted in the creation of nearly 400 Special Olympics events, benefiting over 12,000 new Special Olympics athletes. The project has been a partnership between Special Olympics national programs and the universities. Future plans include seminars in the Balkan Region of Europe (with universities in Albania, Bosnia, Kosovo, and Macedonia), in Rome for 20 universities in countries of western and central Europe, and in China. It is projected that the Special Olympics university initiative will provide sports training and competition opportunities for 15,000 Special Olympics athletes in Europe and Eurasia and 50,000 athletes in China by 2005.

Roswal, G.M., Roswal, P.M., & Dunleavy, A.O. (1984). Normative health-related fitness data for Special Olympians. In C. Sherrill, *Sport and Disabled Athletes*. Champaign, IL: Human Kinetics Publishers (pp. 231-238).

In the area of health-related physical fitness, a mentally retarded athlete compared with AAHPERD health-related physical fitness norms would be placed at a lower percentile ranking than if compared to his or her Special Olympic peers. The sample subjects consisted of 887 mentally retarded individuals, aged 8 to 68 years, participating in the Alabama Special Olympics program. Three items in the AAHPERD Health-Related Physical Fitness Test were administered. (a) modified push-ups, (b) sit and reach, and (c) body composition (triceps, subscapular, and sum). Data was collected across five dependent variables: (a) age (8-15 years, 16-19 years, 20 years and over), (b) gender, (c) class (mild or moderate), (d) event (basketball, bowling, swimming, track and field), and (e) region (rural or urban). MANOVA results at four levels (basketball, bowling, swimming, track and field); age at three levels, gender two levels, region at two levels (rural, urban), and class at two levels (mild, moderate), and across the five dependent variables provided estimates of the differences among scores due to each source variance within the design. Data generated suggest that percentile norms in the format of present AAHPERD fitness norms should be appropriate for use with the Special Olympics population. Further investigation in Phase II will use those sources of variation examined in the present study and their contribution toward explaining performance variance among this handicapped population.

Schicklová, D. (2003). Individual Skill Test of Table Tennis in Special Olympics. Unpublished Master Thesis. Olomouc: Faculty of Physical Culture, Palacky University.

Validity and reliability of the official Individual Skill Test for Special Olympics Table Tennis were ascertained. Individual Skills Test results of 25 Special Olympics athletes (low ability and high ability) were compared with the results of 3 national tournaments. Individual skills test results of high ability athletes were relevant with their achievements in tournaments. Individual skills test results of low ability athletes were very different. Decision making seems to be a strong variable in achievements in "inter-active game".

Shapiro, D.R. (2003). Participation motives of Special Olympics athletes. *Adapted Physical Activity Quarterly*, **20**(2), 150-166.

This study was examined sport participation motives of 147 Special Olympics athletes ages 21 to 70 years. Athletes completed a Sport Motivation Questionnaire (SMQ). No significant differences in participation motives were found for gender, age, race, or sport. Special Olympics athletes participate to win ribbons and medals, play with other people, get exercise, do something they're good at, and have fun. Consistent with Nicholls' achievement motivation theory, Special Olympics athletes participate primarily for task oriented and social integrative reasons rather than for ego oriented reasons. For Special Olympics athletes, optimal motivation results in a task oriented environment where coaches provide time for fun, facilitate opportunities for fitness, provide time to be with friends, and emphasize effort and improvement.

Sinha, A.K. (2008). Hearing screening outcomes for persons with intellectual disability: A preliminary report of findings from the 2005 Special Olympics World Winter Games, *International Journal of Audiology*, **47**(7), 399-403.

The Special Olympics Healthy Hearing Program provides a unique opportunity to determine the hearing service needs of individuals with mild intellectual disabilities participating in athletic endeavors in countries throughout the world. The Healthy Hearing Program screened 855 of 1800 athletes with intellectual disability over a period of a week at Nagano, Japan. Of 855 athletes screened, 58% passed the DPOAE screen and therefore required no further testing. Of the remaining 42%, 186 did not pass pure-tone screening. This number of athletes represents 21.8% of all athletes screened. Tympanometry outcomes for the 186 athletes failing pure-tone screening showed 56% (104) also failing this measure of middle-ear function. 65% of these 104 athletes' outer ear canals were blocked/partially-blocked with cerumen. This amount is in contrast to the 38% presence of cerumen for the 82 athletes failing pure-tone screening but passing tympanometry.

Siperstein, G.N. & Hardman, M.L. (2001). *National Evaluation of the Special Olympics Unified Sports Program*. Washington, DC: Special Olympics, Inc.

Special Olympics has been dedicated for more than 30 years to providing training and competition for individuals with mental retardation. Special Olympics has grown to include 20,000 competitions annually within the 50 U.S. states and 164 nations around the world. Since Special Olympics started, it has continually responded to changes in societal policies and attitudes toward individuals with mental retardation. One such change has been Special Olympics response to the inclusion movement by developing Integrated Sports, which is now called Unified Sports. The goal of Unified Sports was to bring together individuals with and without mental retardation of similar age and ability to compete as a team on an equal playing field. In 1997, a U.S. based Unified Sports Resource Committee was established to address the continued expansion of Unified Sports within the U.S. In 1998, the United States Leadership Council Games and Competition Committee sponsored a Unified Sports Summit, which had a number of goals including evaluating the philosophy of Unified Sports and its value to the Special Olympics movement. Evaluation included coaches participation in Unified Sports, family members perspective on

Unified Sports, and partners' participation in Unified Sports. The evaluation sample included 60 coaches from 11 states. The mean years of experience were 6.3 years. Coaches were involved with an average of three sports each. Nearly 6 out of 10 (58%) also reported that they were a family member of an athlete or partner in the Unified Sports program. Nearly 8 out of 10 (78%) reported that they coached Unified Sports for personal satisfaction. Four out of ten (40%) reported that they coached because they were a family member of an athlete or a partner. Unified sports is seen as a positive aspect for families and athletes in Special Olympics.

Siperstein, G.N., Norins, J., Corbin, S., & Shriver, T. (2003). ***Multinational Study of Attitudes Toward Individuals with Intellectual Disabilities***. Washington, DC: Special Olympics, Inc.

The study sets out to understand the attitudinal barriers to inclusion of individuals with intellectual disabilities worldwide. The study focused on the public's perceptions of the capabilities of individuals with intellectual disabilities, their beliefs about where they should live, work and go to school, and their beliefs and expectations about the obstacles to and consequences of inclusion. The study was commissioned by Special Olympics and conducted by the Center for Social Development and Education at the University of Massachusetts Boston, with support from the Center for Survey Research and Gallup Organization International. The study's aim is to understand the attitudinal barriers to inclusion of individuals with intellectual disabilities worldwide. The study was conducted in 10 different countries which included Brazil, China, Egypt, Germany, Japan, Nigeria, Republic of Ireland, Russia, UK (Northern Ireland) and the United States. The sample size was approximately 800 individuals of the general public of each country and 200 people from Special Olympics samples in Japan and the United States. Sampling of the public was random, and selected from either a nationwide pool or from selected cities. The survey was conducted either on the phone or face to face. Worldwide, this study found the public perceives individuals with intellectual disabilities very differently, more capable of engaging in simple activities but less capable of engaging in more complex activities, only somewhat capable of self-determination, very capable of participating in sports with other players with intellectual disabilities, but few people believe they are capable of participating in inclusive sports. The vast majority of people believe that children with intellectual disabilities should be educated in special schools, separate from other children, work in special workshops, and live with their family. Worldwide, people believe that there are significant obstacles to the inclusion of individuals with intellectual disabilities in society.

Smits, P. (1981). A partnership of service: a study of the relationship between American higher education and Special Olympics. (Doctoral dissertation, State University of New York at Buffalo, 1980). ***Dissertation Abstracts International*, 42**, 108A.

This study was concerned with an analysis of the relationship between the system of higher education in the United States and the Special Olympics for the mentally retarded. It is intended to provide for higher education an assessment of one of its significant public service activities; for Special Olympics, it provides heretofore unavailable data on the operation of the program at a fundamental level, the area program. The researcher developed a taxonomy of thirty-three critically needed services that are necessary for the successful implementation of an area Special Olympics program. This taxonomy was necessary in order to have available a theoretical framework by operations against what ought to be the ideal Special Olympics are program. Particular attention was given to the number of colleges and universities assisting Special Olympics, the levels of support they provide in the various service categories, and the current and desired impact of college and university services on Special Olympics. The data used in this study were gathered from a mail questionnaire sent to every Special Olympics area coordinator in the United States and the District of Columbia (839). Responses to the questionnaire were received from 498 area coordinators, for a response rate of 59.4 percent. Background data on the area, the coordinator and the type of site used for area games and programs were collected, as was information on the current and desired impact of facilities services, financial framework developed from the review of the literature was applied to the data collected. It was found that colleges and universities are the second most popular type of site chosen by the area coordinators for the conduct of their games and programs, Further, of all the types of sites chosen, colleges, and universities are making more services available and these

services are having a greater impact on current success of area games and programs that are other types of sites. Since this study was exploratory in nature, it has opened new vistas for important social research on higher education and its relationship with Special Olympics.

Snoblová, K. (2002). The 15% Special Olympics rule in athletics (Czech Republic). Unpublished Master Thesis. Olomouc: Faculty of Physical Culture, Palacky University.

Analysis of the athletic results achieved in preliminary and final heats during the 2002 European Special Olympics competition in Groningen and the Czech Special Olympics national games (1998-2002) was presented. Findings of statistical evaluation showed more diversity between preliminary heats and final heats with "low level ability athletes" than in "high level ability athletes" as well as more diversity in field disciplines (standing long jump, softball throw) than in track disciplines. This was especially true for long distance events. The findings support a recommendation for implementation of the Special Olympics "honest effort competition rule") for low level and high level athletes. A comparison with world champions in javelin, shot-put and long jump was also conducted. The achievements of top world athletes vary during all the competitive process throughout the year by about 3-4%.

Spar, D., & Macknin, M. (2001). Use of letters and phone calls to encourage preparticipation Special Olympics physical examinations to be done in a medical home: a randomized, controlled trial. ***Clinical Pediatrics***, 40(12), 685-687.

The purpose of this study was to determine if a letter from the Special Olympics regional director and follow-up telephone calls would successfully encourage participants to receive their preparticipation exam from their primary care physician. A randomized, controlled study was conducted comparing families receiving the letters and telephone calls with a group receiving no intervention. The most notable aspect of the study was that among children who participated in Special Olympics, those in the intervention group were significantly more likely to have had their physical examination at their medical home than were those in the control group. Those who received the intervention made significantly more frequent visits to a primary care physician than those who did not receive the intervention.

Special Olympics. (2001). Promoting Health for individuals with mental retardation. ***The Exceptional Parent***, 31(4), 94-104.

To respond to the wealth of data on the health people with mental retardation, Special Olympics commissioned a Special report on the health status and needs of individuals with mental retardation. The purpose of this report is to identify opportunities that may be available, given current scientific knowledge and technology, to improve the quality and length of life for people with mental retardation and Special Olympic athletes. At the 1995 Special Olympics World Summer Games in Connecticut about 30% of the athletes had visual problems and 29% had severe pain despite having been seen by doctors. Individuals with mental retardation suffer from a range of chronic and acute diseases and conditions. In many instances they experience more frequent and sever symptoms than the general population. This is not solely a result of the primary disability of mental retardation, but reflects more fully the totality of risk factors and risk reduction opportunities made available to or denied them. The report also makes recommendations to improve access to and the quality of healthcare for people with mental retardation.

Special Olympics. (2003). ***Public Attitudes to Learning Disability/Mental Handicap in Ireland***. Unpublished study. Washington, D.C.: Special Olympics, Inc.

A survey was conducted on public attitudes to learning disability/mental handicap in Ireland, North and South. The survey was commissioned by the National Disability Authority and KARE and was conducted by Research and Evaluation Services. The two key objectives of the survey were to baseline attitudes to learning disability in Ireland and to measure public awareness of Special Olympics and the Special

Olympics World Games which were hosted by Ireland in 2003. The survey forms part of a multinational study on public attitudes which involved 8 other participating countries, including the USA and China. The survey was based on telephone interviews with representative samples of 400 adults (ages 18 years and older) from the Republic of Ireland and Northern Ireland.

Starska, K., & Lukomski, M. (2006). Realization of international healthy hearing program in Poland— hearing evaluation in participants of Special Olympics, *Advances in Medical Sciences*, **51**, 197-199.

International Healthy Hearing Program developed by International Special Olympics in Washington DC performs hearing screening during athletics competitions of athletes with mental retardation. The aim of this study was to introduce hearing screening performed according to Special Olympics Incorporated (SOI) Healthy Athletes Program. MATERIAL AND METHODS: The study was performed in Polish participants of Special Olympics during Summer National Special Olympics Game in Olsztyn in 2005 and Winter National Special Olympics Game in Bialystok in 2004. HH evaluation was divided into 4 screening sequences: otoscopy, otoacoustic emission (DPOAE), tympanometry and pure-tone audiometry. During athletics competitions 208 Polish participants were examined. RESULTS: Of the total 208 athletes screened: 156 passed OAE (75%), 42 passed pure tone screening at 25 dB HL (20.2%), and 5 more passed the pure tone threshold test (2.4%). It means total of 203 passing hearing testing (97.6%). Hearing impairments were detected in 4.8% athletes and 2.4% of athletes needed hearing aids. CONCLUSIONS: HH Program provided a more precise analysis of hearing in the group of athletes with mental retardation and a recognition of subjects who need audiological care.

Stopka, C., Morley, K., Siders, R., Schuette, J., Houch, A., & Gelmet, Y. (2002). Stretching techniques to improve flexibility in Special Olympics athletes and their coaches. *Journal of Sport Rehabilitation*, **11**(1), 22-34.

The purpose of the study was to examine the effects of static and proprioceptive neuromuscular facilitation (PNF) stretching on Special Olympics athletes and coaches on sit-and-reach performance. Repeated-measures ANOVA with Scheffe post hoc analyses on 2 groups: Special Olympics athletes (n = 18, mean age = 15.7) and their coaches without mental retardation (n = 44, mean age = 22.2) was conducted. Stretching performance was measured in centimeters using a sit-and-reach flexibility box, examining 2 series of 3 stretches. For both groups, the first set of 3 stretches was performed in the following order: baseline, static, PNF. Three to 4 weeks later, the order of the stretches was reversed: baseline, PNF, static. PNF stretching improved performance regardless of stretching order after baseline and static measures. Static stretching improved performance only from baseline. Individuals of various ages and cognitive abilities can apparently perform and benefit from PNF stretching.

Storey, K., Stern, R., & Parker, R. (1990). A comparison of attitudes towards typical recreational activities versus the Special Olympics. *Education and Training in Mental Retardation*, **25**, 94-99.

This study compared the attitudes of college students toward a woman with disabilities participating in either the Special Olympics or typical recreational activities. One class of college students saw a slide presentation depicting the woman engaged in activities at the Special Olympics. The second class saw a slide presentation should the woman engaged in matched activities in community settings. The results indicated that the class that viewed the Special Olympic presentation regarded the woman as younger, and felt that she should be in more segregated school and recreational settings. There were no significant differences in responses to questions related to functioning level, living situation, and vocational situations.

Svozilová, M. (2004) Possibilities and limits of Special Olympics sportsmen in “endurance” disciplines (case studies). Unpublished Master Thesis. Olomouc: Faculty of Physical Culture, Palacky University.

Five case studies (girls between 16-20 years with a moderate level of mental disability) processed during 4 years of Special Olympics training and achievement evaluation are presented. Motivation appeared to

be a basic problem for adherence and performance in endurance sports. Motivation included a combination of running, swimming, and cycling. In spite of the similar training process in the group of 5 girls, skills differences (swimming, cycling) occurred and were maintained.

Townsend, M. & Hassall, J. (2007). Mainstream students' attitudes to possible inclusion in unified sports with students who have an intellectual disability. *Journal of Applied Research in Intellectual Disabilities*, **20**, 265-273.

The research that was presented in this study was to determine the attitude of mainstream students' inclusion to students with intellectual disability pertaining to sports participation. In New Zealand, students who have intellectual disabilities do not usually get the opportunity to participate in sports programs. A total of 170 school students at year 6 (10 years old) and year 12 (16 years old) at four Auckland schools completed an attitude scale assessing their acceptance of a possible unified sports programme at their school, a test of their knowledge about Special Olympics, and wrote open-ended comments about unified sports; a subsample at each age level was interviewed. Students had positive attitudes towards possible involvement alongside students with an intellectual disability in unified sports. These attitudes were moderated by age and gender, but not knowledge about Special Olympics. The strengthening of inclusion and normalization through unified sports would likely have positive peer social acceptance by typical students in New Zealand.

Travis, C.A., & Sachs, M.L. (1991). Applied sport psychology and persons with mental disabilities. *Sport Psychologist*, **5**(4), 382-391.

One of the largest groups of persons with disabilities is that of persons with mental retardation. More than 1,000,000 athletes with mental retardation, for example, participate in Special Olympics each year. Sport psychology can help with performance enhancement as well as enhancing the quality of the sport experience for persons with mental retardation. Additionally, participation in exercise and sport can result in increased benefits such as enhanced self-esteem, self-reliance, and willingness to take risks. The literature in this area is reviewed, and extensive suggestions on working with athletes with mental retardation are offered. Due to the cognitive limitations that are one characteristic of persons with mental retardation, the sport psychologist faces particular challenges in providing sport psychology services for this population. A case study is provided to illustrate some of the challenges and rewards in working with athletes with mental retardation.

Turner, S., Sweeney, M., Kennedy, C., & Macpherson, L. (2008). The oral health of people with intellectual disability participating in the UK Special Olympics. *Journal of Intellectual Disability Research*, **52**(1), 29-36.

Research on the dental health of people with intellectual disability has consistently reported more untreated dental disease, more extractions and fewer fillings than in the general population. This paper describes the oral health of participants at the 2005 Glasgow Special Olympics (SO), relating this to the general population studied in the 1998 UK Adult Dental Health Survey (ADHS) and to participants' age and region of residence. Consenting SO participants were offered oral examinations which followed the standardized SO protocol plus an innovative soft tissue examination. Urgency of any treatment required was noted and reported to participants and carers. Three measures of good dental health, having 21 or more natural teeth, absence of fillings and having no obvious untreated decay, were compared across age groups, regions and with the general population. Logistic regression was used to control for age differences between regions. In total, 1021 oral examinations were completed. Older SO participants were more likely to have fewer than 21 teeth and to have fillings, untreated decay, gum inflammation and heavy plaque levels. In all, 28% of SO participants had 21 or more teeth, no fillings and no obvious decay. Those from the north, midlands and south regions of England had significantly more chance of good dental health so defined compared with participants from Scotland [ORs 1.67 (1.09, 2.67), 1.69 (1.12, 2.54), 1.99 (1.26, 3.16), respectively]. Compared with the general population surveyed in the 1998

ADHS study, SO participants were more likely to be free from fillings and obvious untreated decay, but fewer had 21 or more natural teeth among older age groups. Nine per cent were found to have soft tissue problems, and one in four of these required follow-up. Gum inflammation was common. Overall, 5% of participants were judged to require urgent treatment for dental or soft tissue problems and 40% to require non urgent treatment. This rose to 9% and 66% respectively among those aged 35 years and over. The low prevalence of untreated decay and fillings among SO participants compared with the general population may be due to their being well supported by family and carers. The study identifies the vulnerability of the older participants to dental problems, and this may indicate greater difficulty maintaining surveillance as individuals age or informal carers become less able or available. Regional variations are similar to those found in the general population. The implications for the organization of care for this group are discussed.

Valkova, H. (1996). The differences in behaviour indices of participants and non-participants in Special Olympics movement. *Gymnica*, **26**, 39- 44.

A specific program that enables mentally disabled people to take part in sport activities at all levels of performance is the Special Olympics movement. The intention of the study was to compare a group of mentally disabled people taking part in Special Olympics sport events (participants-SO) with a similar group of non-sporting mentally disabled people (non-participants-NON). The comparison was done in terms of motor competence as well as in terms of special behavior. The study included 39 comparable SO and NON pairs from 15 Special Olympics clubs in Czech Republic took. The investigation consisted of measuring the motor competence indices (selected physical condition, fitness indices and psychomotor indices) and evaluating social behavior. Except for expected differences in motor competence, the considerable differences in social behavior indices were surprising. Factually, the differences are in terms of better adaptability of sporting people but also in considerable varied inner experience of both groups. This was ascertained by unfinished sentence technique.

Válková, H. (1998). The development of indices of motor competence and social behavior of participants and non-participants in the Special Olympics movement. *Acta Universitatis Palackianae Olomucensis Gymnica*, **28**, 53-59.

A cross-sectional investigation of differences in motor competence indices and social behavior was conducted in 1995 and 1997. Two groups of adolescents with mental retardation were compared: Special Olympics sportsmen (SO) included in the Special Olympics Sports Program and NON-nonsportsmen (NON). The published results (Valkova 1996) showed, in general, better results for Special Olympics subjects, although causality of the sport program influence could not be confirmed. This was the reason for a repeated measurement of the same participants in June 1997 after an ongoing sport program. First of all the repeated measurement documented that a two year period is sufficient enough for assimilation of the intervention variable (targeted sports program) for adolescents with mental retardation (MR). The results of the 1995/1997 comparative investigation presented different developmental trends between SO and NON groups. Decreasing trends in motor competence items and stabilized or slightly increasing trends of social behavior were found in the NON-group. A stabilized trend for motor competence items and increasing trends were found in social behavior in the SO-group.

Valkova, H. (2003). Perception of health value and wellness of Special Olympics sportsmen. In Vaverka (Eds.) *Proceedings of the 3rd International Conference, Movement & Health*, pp. 67-73. Olomouc: Faculty of Physical Culture. ISBN 80-244-0831-7.

With respect to basic human rights, all persons, including individuals with mental disability, have a right for appropriate wellness and health. Special Olympics participants (with mental disability) and two other non-sport participants groups were assessed before and after an 18-month intervention program (Special Olympics sports program, arts/craft program, basic education program). The technique of "incomplete sentences" was applied to individuals with moderate mental disability of adolescent age. In spite of the

fact assessed clients were mentally disabled any intensive intervention can benefit their spiritual life and strengthen inner experience. The Special Olympics sports program seemed to be worth more in intensive perception of active life and wellness, spirit values like friendship, home, peace, and health. Persons with mental disability are able to perceive wellness related to their wishes and values orientation (very often simply desire, small realistic aspiration) in comparison with general society without mental disability.

Válková, H. & Thaiszová, V. (1989). A contribution to the motor abilities of mentally subnormal population. *Acta Universitatis Palackianae Olomucensis Gymnica*, **19**, 97-119.

The report is concerned with the results of a two-year study of some motor features of young boys with mental disability. Groups each contained 10 boys (mild mental disability, 3 groups of moderate mental disability and Down Syndrome). Motor level displayed a close connection with the level of mental deficiency, as well as with origin and etiology. Different lengths of training were applied to be able to pass simple motor tests (standing long jump, 60 meter run, stick movement. combination etc.), from 3 attempts up to 60 days. The training effect was different related to level of disability and origin. Beside the motor abilities domain, results showed that mental disability influences the personality of a human being as a unit, not only the cognitive area but also emotional, motivational, cognitive areas. Social behavior was also influenced significantly.

Válková, H., Hansgut, V., & Nováčková, M. (1999). The reflection of Special Olympics sports international programme in inner experience of adolescents with mental retardation. *Acta Universitatis Palackianae Olomucensis Gymnica*, **29**, 57-64.

The article presents a part of an extensive longitudinal project undertaken during the years 1995-1997. The methodology used was described (Valkova, 1996; Valkova, 1998). The content of article is focused on the development of inner experiences of adolescents with mental retardation. Members of the Special Olympics (SOI) group were involved in Special Olympics sports programming, the members of the non-sportsman group (NON) did not participate in any sports activities. The research project lasted more than 2 years. The Special Olympics sports program constituted a minimum of 4 hours per week more than the program for general education with the NON group in residential homes. The "technique of incomplete sentences" was used for analysis of inner personal experience of adolescents with mental retardation. Research assessment was applied during March 1995 and repeated in June 1997. SOI and NON groups presented different pictures both in the first and later in repeated assessments, in the categories meal and board orientation, performance orientation, home and house, hypercriticism, attitudes towards sports activities, ideals, etc. After two years of different programs, different developmental trends were found in SOI and NON groups in subjective personal experience categories. We can hence deduce that the influence of inner enrichment in experience of adolescents with mental retardation as well as socialization seems to be very important.

Valkova, H., Nováčková, M., Hansgut, V. & Salavová, H. (2001). Comparison of different intervention programs on the background of Special Olympics (survey of social behavior analysis). In H. Válková, Z. Hanelová (Eds.) *Proceedings of the 2nd International Conference, Movement & Health*, pp. 486-490. Olomouc: Faculty of Physical Culture. ISBN 80-244-0322-6.

The findings of a three-year project confirmed that controlled training with practical, intensive activity is important even with young adolescents with mental disability. The results of three intensive programs (Special Olympics sports program, arts/crafts program, basic education program) showed slightly different trends of changes related to gender, etiology of mental disability and capacity/category of activities. Health related variables seemed to be stabilized after all three programs. Motor competence variables (fitness and fine-motor) stabilized in Special Olympics and arts/craft program and slightly decreasing in basic education program. Strong significant changes were confirmed in social behavior variables in the

Special Olympics sports program. These indices seem to be in close relation with independent living concept (theory of empowerment).

Valkova, H., Nováčková, M., Salavová, H. & Hansgut, V. (1999). The design of Special Olympics research project. In H. Válková, Z. Hanelová (Eds.) **Proceedings of the 1st International Conference, Movement & Health**, pp. 540-542. Olomouc: Faculty of Physical Culture. ISBN 80-244-0004-9.

The strategy and design of a three-year research project are presented. Three groups of persons with mental disability went through different intervention programs, including a Special Olympics sports program (75 participants), an arts/craft program (59 participants), and a basic education program (65 participants). Pre- and post- assessment included: health related variables, motor competence variables (fitness and fine motor), social behavior indices and self-perception indices, and the type and amount of physical activity. Participants were individuals with moderate mental disability, male and female, of adolescent age (18-34 years).

Vrátná M. (2002). Analysis of information in sports and disability in media/newspapers (2001, 2002) and university students. Unpublished Master Thesis. Olomouc: Faculty of Physical Culture, Palacky University.

The results of the analysis of sport reports in selected newspapers (4 frequent public newspapers) during a period of Olympic, Paralympic, and Special Olympics world events was presented. Paralympic games events are quite frequent in Czech newspapers, but there is little about Special Olympics (except two articles from Special Olympics participants/head of delegation). As newspapers can influence knowledge and attitudes of university students, the students knowledge reflected this situation. Only adapted physical activity students are "in the picture" of Special Olympics (due to their program of study). Other university students (natural sciences, philosophy, even special education) have no information presented about the existence of Special Olympics.

Weiss, J. (2008). Role of Special Olympics for mothers of adult athletes with intellectual disability. **American Journal on Mental Retardation**. **113(4)**, 241-253.

The role of Special Olympics in the lives of mothers of adult athletes was examined. Forty-six mothers participated in a longitudinal study, completing a parenting stress questionnaire, a measure of their child's maladaptive behavior, and a survey of athlete involvement in Special Olympics at two time periods, 42 months apart. Results confirm that involvement in Special Olympics is negatively correlated with mothers' role restriction, isolation, depression, and problems with competence and attachment. Involvement in Special Olympics fully mediated the effect of child social maladjustment on maternal role restriction and depression and partially mediated its effect on maternal problems with competence. Taken together, these findings suggest that Special Olympics can function as a formal support for mothers.

Weiss, J., Diamond, T., Demark, J., & Lovald, B. (2003). Involvement in Special Olympics and its relations to self-concept and actual competency in participants with developmental disabilities. **Research in Developmental Disabilities**, **24**, 281-305.

The current study examined the relations among components of a physical activity program, Special Olympics (SO), and the self-concepts (i.e., perceived physical competence, social acceptance, and general self-worth) and adaptive behaviors of individuals with developmental disabilities. This research can assist in the development of theoretical models of how physical activity programs can be implemented to effect psychological change. Participants consisted of a randomly selected group of 97 individuals with developmental disabilities, between 9 and 43 years of age, and their parents. Participants' self-concepts and adaptive behaviors were measured both by direct interview and parental report. Examined program components consisted of the length of time affiliated to the organization, number of competitions attended, of hours spent in training, of sports, and of medals obtained. Multiple regression

analyses suggest relations between specific components of SO and participants' self-concepts and adaptive behaviors. These relations highlight the importance of competition and sport for individuals with developmental disabilities.

Weiss, Jonathan A., Diamond, T. (2005). Stress in parents of adults with intellectual disabilities attending Special Olympics competitions. *Journal of Applied Research in Intellectual Disabilities*, **18**, 263-270.

It is important to determine how programs serving the individual with intellectual disability may also help to reduce stress in parents of adult children with intellectual disabilities. The aim of this study was to test whether parents who frequently watch their children at Special Olympics (SO) competitions report less stress than those who watch with less frequency. A total of 57 mothers and 39 fathers completed the Parenting Stress Index in reference to their children with intellectual disability, whose ages ranged from 27 to 42.3 years. Frequency of parental attendance at competition and volunteering for SO was also assessed. Parents who frequently attended their children's competitions reported less stress than those who attended with less frequency. Mothers who volunteer, reported more child-related stress than those who did not. A number of other gender-specific relations were found. These results support the hypothesis that parents who frequently see their children compete in SO have a more positive parent-child experience than those who do not attend with the same frequency. Experimental research, with controlled pre-post designs, is needed to directly assess any causal effect.

Wekesa, M. & Onsongo, J. (1992). Kenyan team care at the Special Olympics - 1991. *British Journal of Sports Medicine*, **26**(3), 128-133.

The Kenyan team that competed at the International Summer Special Olympics comprised 38 athletes (both men and women) selected from all competitors at the national championships. The team was examined and a physiological fitness test carried out. The results enabled the organizers to arrange for treatment of prevailing illnesses, and the training programme was adjusted to the athletes' level. This team was voted the best team of the month of July, having won 33 gold, three silver and two bronze medals. Sound medical care of athletes should be taken before and during competition. Such management should aim at minimizing injuries and enabling athletes to perform at their best.

White, S.A. & Zientek, C.E. (1991). Verbal persuasion and self-concept: an exploratory analysis in Special Olympians. *Clinical Kinesiology*, **45**(1), 9-13.

Self-concept literature has consistently shown disabled populations to be weaker than able-bodied populations in component aspects of the self (Loeb & Sarigiani, 1986; Yachnik, 1986). A recent field-setting study by White and Zientek (1990) examined athletes who competed in the Seoul, South Korea Paralympic Games and found the athletes to have low self-concept scores on the Tennessee Self-Concept Scale (TSCS). The purpose of the present study was to investigate self-concept levels in nonrandomly chosen Special Olympian basketball players and to assess the effect of verbal persuasion on self-concept. Seven athletes (ages 19-25) volunteered to serve as subjects in the experiment and were administered TSCS before and after intervention. The results of the study supported the findings of previous research which have shown that individuals with disabilities scored below the norm on components of self-concept. Paired t tests on each of the eight dimensions of the TSCS were significantly different from pretest to posttest. Interestingly, verbal persuasion as the intervention increased four of the eight TSCS dimensions in all subjects. These dimensions included: Identity, Self-Satisfaction, Family Self, and Social Self. Further, examination of verbal persuasion as an effective method of improving self-concept in similar and non-similar subjects was recommended.

Wickiser, C. (2002). Differences in the social competency of mentally retarded adolescents based on type of participation in Special Olympics (Doctoral dissertation, Texas Woman's University, 2002). *Digital Dissertations*, AAT1408626.

The Special Olympics organization has always contended that it is a program, which provides athletes with an arena in which to enhance their social competency. The Special Olympics organization answered a recent call for change in the type and quality of interactions provided to its athletes by developing Unified Games, a program that involves disabled and non-disabled individuals of similar skill level competing jointly in competitions. The present study examined the social competency levels of mentally retarded individuals competing in Unified Games, Traditional Games, and those not involved in Special Olympics. Subjects between the ages of 14 and 18 years with an IQ range of 55-70 were obtained through both the Special Olympics Texas and the Arlington Independent School District in Arlington, Texas. Parents of eligible participants completed the Behavior Assessment Systems for Children (BASC) and the Social Skills Rating System (SSRS). Completed tests were collected and analyzed in order to obtain mean scores for each group on the Adaptive Skills Composite score of the BASC and the Social Skills scale of the SSRS. Multivariate analyses of the data yielded no significant differences in social competency levels between groups.

Wieczorek, M. (2001). Functional and dynamic asymmetry in 14 year-old boys with minor mental handicap. In *Acta Universitatis Palackianae Olomucensis Gymnica*, **31**, 2, 35-40.

Research studies on the level of laterality of limbs in children with mild mental disability have shown that the process of laterality is delayed. The aim of the project was to verify this idea on a group of 32 boys with mild mental disability, aged 14 years. Tests for direction of functional asymmetry and for proportions of asymmetry were applied. The results showed the process of laterality is delayed for dynamic asymmetry while as far as functional asymmetry is concerned there are no disorders of the process.

Wilhite, B., & Kleiber, D.A. (1992). The effects of Special Olympics participation on community integration. *Therapeutic Recreation Journal*, **4**, 9-20.

Involvement with organized competitive sports by individuals with mental retardation, particularly Special Olympics, has been thought to contribute to well-being in a variety of ways. In the current investigation, differential impacts on community integration, depending on the severity of the disability, are indicated. Individuals with moderate to severe mental retardation showed a positive association between competitive sport involvement and general involvement in the community, while for those with mild retardation, the relationship was somewhat negative. These findings are discussed with respect to programmatic implications.

Wolfensberger, W. (1995). Of "normalization", lifestyles, the Special Olympics, de-institutionalization, mainstreaming, integration, and cabbages and kings. *Mental Retardation*, **33**(2), 128-131.

A commentary on an article by Klein et al. that appeared in *Mental Retardation*, vol. 31, 1993, pp. 15-23. In the article, the Special Olympics was cited as an example of an enterprise that provides normal lifestyle elements in a nonintegrated fashion, the construct of "choice" for retarded persons was strongly emphasized, and studies reporting that "mainstreamed" handicapped children interact relatively little with their peers in educational programs were cited as relevant proof of the invalidity of the normalization concept. The writer contends that there has always been a great deal of integration going on through the Special Olympics, that the promotion of unrestrained radical individualism for people who are by definition impaired in mental competence appears to be anywhere from thoughtless to unconscionable, and that the citation literature in the article by Klein et al. was highly biased.

Woodhouse, M.J., Adler, P.M., & Duignan, A. (2003). Ocular and visual defects amongst people with intellectual disabilities participating in Special Olympics. *Ophthalmic & Physiological Optics*, **23**, 3, 221-232.

The purpose of the study was to analyse data from vision screening of people with intellectual disabilities from the UK participating in Special Olympics during the National Summer Games in Cardiff 2001, in order to determine visual status and access to eye care. Athletes were invited to take part in vision screening, according to Special Olympics protocols. Findings confirmed the high prevalence of eye and vision defects reported in other studies of people with intellectual disabilities. In particular, visual acuity was below normal for most athletes. Significant improvement to acuity could be achieved with spectacles although correction after full refraction did not always provide normal vision. Over 40% of athletes undergoing full refraction had below normal corrected acuity. Athletes with intellectual disabilities were no more likely to access eye care and have adequate spectacle correction than other people with intellectual disabilities. Optometrists need to be aware of the high prevalence of defects and the importance of regular eye examinations in people with intellectual disabilities.

Woodhouse, M.J., Adler, P., Duignan, A. (2004). Vision in athletes with intellectual disabilities: the need for improved eyecare. *Journal of Intellectual Disability Research*, 48,(8), 736-745.

Special Olympics provides sporting opportunities for people with intellectual disabilities (ID), and Lions Clubs International Opening Eyes GB offers vision screening for athletes at Special Olympics Games. Opening Eyes GB screened the vision of 505 UK athletes at its inaugural event in 2001. The results were analyzed and are presented here. Results showed that athletes do not differ from other people with ID in being at high risk of ocular and visual defects and many are not accessing eyecare, 15% reported never having an optometric eye examination, and yet 19% of these athletes had a significant refractive error, 32% had ocular anomalies and 6% were visually impaired. Overall, findings confirmed the high prevalence of refractive errors and strabismus amongst people with ID. 40% of athletes had ocular abnormalities, including 15.6% with blepharitis, a readily treatable condition that causes discomfort. 9% had lens opacities, of which half were probably impairing sight. An important finding was that many athletes have reduced vision and 14% could be classified as visually impaired (WHO definition) even when refractive errors were fully corrected. Conclusions Special Olympics athletes should be encouraged to have regular eye examinations (as indeed, should all people with ID), and educators, carers and coaches need appropriate information about the visual status of their charges.

Wright, J. & Cowden, J.E. (1986). Changes in self-concept and cardiovascular endurance of mentally retarded youths in a Special Olympics swim training program. *Adapted Physical Activity Quarterly*, 3, 177-183.

Although it has been said that Special Olympics competition contributes significantly to the physical fitness and self-concept of mentally retarded participants, no experimental research has been reported on the Special Olympics program. The purpose of this study was to investigate changes in self-concept and cardiovascular endurance of mentally retarded youths after participating in a Special Olympics swim training program. One group (n=25) participated in a 10-week Special Olympics swim training program, while the control group (n=25) adhered to their normal daily living activities. The 9-Minute Run/Walk test yielded the data for measuring cardiovascular endurance, and the Piers and Harris Children's Self-Concept Scale was selected to measure self-concept. Results of the analysis of variance for each test were significant. It was concluded from the findings of this study that participation of mentally retarded youth in a Special Olympics swim training program contributed to a significant increase in self-concept and cardiovascular endurance.

Yang, J. & Poretta, D.L. (1998). The effect of a pre-shoot routine on the free throw shooting accuracy of Special Olympics basketball players: a pilot study. *Palaestra*, 14(2), 38-44.

This study was to show with a pre-shot routine, individuals with disabilities can increase shooting accuracy of Special Olympics basketball players. Two individuals with mental retardation one female and one male participated in this study. The female was 14.6 years of age and the male was 17.9 years of age. The pre-shot routine consists of four phrases, 1. Bouncing the ball three times. 2. Holding the ball in

a comfortable shooting position, 3. Looking at the front of the rim and 4. Shooting the ball. Both participants performed 20 free throws each session. Both participants showed an increase in performance. These findings demonstrate that the use of a free-throw pre shot routine may be beneficial for improving the free throw shooting accuracy of basketball players with mental retardation.

Zyla, J. (1990). Measuring up: status and stigma within a Special Olympic floor hockey team. an ethnographic study. Unpublished master's thesis, University of British Columbia. *Digital Dissertations*, AAT MM59534.

The purpose of this thesis was to discover the Special Olympic floor hockey athletes' understanding of the coaches', teams' and players' goals, priorities and expectations. Traditionally, the viewpoint of the mentally retarded has been represented by professionals and parents on the 'outside'. The emphasis on the athletes' perspective focused on the 'insider' point of view. The subjects consisted of approximately thirty members of a Special Olympic floor hockey team ranging in age from nineteen to forty-six years. Four members were female and twenty-six were male. They were studied ethnographically utilizing the techniques of participant observation and informal interview in varied settings. The study was conducted from early January through mid April, 1988. Data elicited revealed themes related to socialization, stigma and sport culture. Impression management, front and back stage performances are strategies employed by the mentally retarded to manage tension. Sport culture is an avenue for the athletes to learn about the social stock of knowledge and the relevance structures of the dominant culture. Myths concerning the athletes emerged gradually, revealing that coaches and athletes each have a theory of behaviour that is bound and defined by their respective cultures. Of significance to Special Olympics is the value of uncovering and understanding dominant cultural assumptions and biases, potentially resulting in more effective athlete/coach interaction.

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