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Physical Activity and Intellectual Disabilities

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Abstract

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Persons with intellectual disabilities are often characterized by having motor difficulties and limitations expressed in the performance of sports skills. These difficulties may influence cognitive, social emotional and other areas of functioning or be influenced by them. Therefore, work on the motor field serves both as a therapeutic and rehabilitative tool for each functioning domain (Hemayattala & Movahedi, 2010). The development of the motor domain is of great significance to the independence of a person living in the community as a disabled person. (Hotzler, 2004; Almosni, 2007). This article will presents the advantages of exercise for people with intellectual disabilities. Research in the field of sports with people with intellectual disabilities mostly shows positive influences of physiological aspects such as gaining weight, fitness and health, quality of life, coordination aspects and muscular flexibility, a sense of self-efficacy and self-esteem (Ben Sira et. al., 2005; Ninot & Maiano, 2007; Lejcarova, 2009)

Keywords: Intellectual disability; physical education.

I. Introduction

In the context of recreation sport connotes moving, pushing or pulling activities that distract people from the burdens of daily life. In the context of rehabilitation, the connection between sport and Physical disability is important as it serves as a bridge beyond the physical limitations with which disabled individuals must grapple in their lives. Nonetheless, the term "sport" has many definitions depending on the culture and history (Hutzler, 2012). In order to help people with intellectual

disabilities to improve their motor skills, a training program tailored to their capabilities must be conducted to take advantage of the potential.

2. Literature Review

The term "Intellectual Disability" refers to varying levels of intelligence, where intellectual development and the resulting social adjustment do not meet the criteria of what is defined as "normative development". Diagnosis of disability is based on one's IQ score, which is an objective measure of the child's social adaptability capability. This disability develops until age 18 (Nissim et. al., 2010). The distribution of IQ people with intellectual disabilities is described via a bell shaped curve. About half of the population's IQ score are on the range of 90 – 110. This range is considered "average and normative intelligence". In the bell shaped curve there are three standard deviations, one of which pertains to the population of intellectually disabled individuals, whose IQ level is below 70 (Ronen, 2005; Nissim et. al., 2010).

Researchers grapple with the challenges involved in forming the definition of intellectual disability and have not yet been able to reach a unanimous solution. The 20th century was characterized by the transition from a single view of intellectual disability to various, inherently different views. Each view affects diagnosis, classification, the level of retardation and ways of working with mentally disabled individuals. There are two major sources of disagreement: one paradigm regards the individual as the source of the disability. This paradigm prevailed until the 1950s and emphasized the medical model according to which the source of disability is pathological-biological-organic, and is the same in every society and culture. According to this paradigm, the pathology exists whether the individual has been diagnosed or not. The second paradigm emerged in the 1960s and regarded disability as a social product. It emphasized the sociological model according to which intellectual disability is a social status; meaning it characterizes those individuals who do not comply with norms and expectations of society in the area of specific adaptive and cognitive achievements (Ronen, 2007).

Between 1959 and 1992, various definitions of intellectual disability have been published. The 1992 definition expressed a significant change compared to previous ones and constitutes the grounds for the subsequent currently prevailing 2002 definition. The Israeli definition adds to the American one by also including individuals with special needs and other disabilities in the population of individuals with intellectual disabilities: individual with physical, mental, emotional-behavioral, sensory, cognitive, language disabilities or general develop intellectual disabilities (Special Education Law, 2002; Ronen, 2005).

The traditional DMS4 definition describes intellectual disability as a significant limitation in present functioning characterized by intellectual performance that is significantly lower than average, before the age of 18 and with problems in adaptive behavior. Intellectual disability is divided into a number of levels: mild, medium, hard and deep.

In the new definition, Luckasson et. al. (2002) defined intellectual disability as a handicap characterized by significant disabilities in both intellectual functioning and adaptive behavior, as it is expressed in the required conceptual, social and practical adaptation skills. This disability begins before

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age 18 (Luckasson et. al., 2002). In other words, for a person to be classified as having intellectual disabilities, the three conditions in the definition must exist: significant intellectual functioning limitations – IQ level of 70 – 75 or below, and significant adaptive behavior impairment which is assessed by tests seeking to examine conceptual, social and practical skills. Furthermore, intellectual disability must manifest before the age of 18. On the surface, there is no difference between the old definition and the new one/ the previous definition placed the top threshold level of individuals with intellectual disabilities at an IQ level of 70. The new definition raised the threshold to 75, thus adding more individuals into the range of intellectual disability. Modern society has become more scientific and technologically based. Individuals with intellectual disabilities have found it hard to adjust to the developing technologies and hence found themselves without employment. The designers of the new definition have emphasized that the IQ has not changed, but the environment has, and individuals with intellectual disability require more support. Normalization is a process by which people with disabilities strive to normal lives, as accepted by their surroundings and the countries in which they live from a rehabilitative perception based on an ideology of achieving normative conditions as much as possible. That is to say, employing normative cultural means that help people live in similar conditions to 'normal' people. This definition contradicts all previous perceptions and proposes a new way of relating to people with disabilities. We all have an equal right to live a life as close as possible to the norm and in the least restrictive environment.

In 2005, Almosni et. al., (2005) conducted a study in Israel among 90 young adults between the ages of 18 to 21, with mild intellectual disabilities, but only those who did not have any physical disabilities. The study sought to examine the influence of various teaching methods: Command style, Divergent Production Style and structured style of physical activity on the quality of life of the young adults with slight to average intellectual disabilities. The research tools were a Quality of life Questionnaire and the Tennessee Self-Image questionnaire. The following parameters were included in this study: self-image – physical, moral, personal, family, and social. The measures for quality of life were: satisfaction, happiness, ability to be productive and independence, and social belonging. The experiment was conducted by using three different teaching methods in three stages before, at the conclusion and then after a period of no instruction or intervention by researchers.

Results of the study showed that each instruction style had some influence on the variables. In the intervention stage a substantial improvement was noticeable in all realms of quality of life; whereas the variables of strength, independence, social belonging yielded no significant improvement in the Command Style group. Only three self-image parameters improved during intervention: self-satisfaction, social self-image and behavior. With the last two variables, there was a certain regression in the Command Style group, while improvement characterized only the two other groups. Thus, learning in different teaching styles had different effects on the quality of life as well as self-image variables in each stage of the experiment. It was clear that this group of individuals with intellectual disabilities responded positively to all styles of instruction, including those that were previously unacceptable. Hence, physical education individuals with intellectual disabilities can improve their quality of life.

A study was conducted in France by Gregory & Christophe in 2007 with the purpose of examining differences between two groups of individuals with intellectual disabilities, aged 13-17, in terms of social acceptance and self-esteem. The two groups included individuals with intellectual disabilities who trained in groups together with normative individuals, in contrast to the second group which was comprised only of individuals with intellectual disabilities who trained in a non-integrative framework. Several sports were included, among them basketball, swimming and athletics. Forty eight women with slight-moderate intellectual disability participated in the study (N=48, with an IQ of 40-78, between the ages of 13-17). The primary data collection tool was Harpers spp. Variables examined in this study were social acceptance and self-esteem. The findings showed no differences between the groups in terms of social acceptance; however, findings of the study demonstrated a significantly lower level of self-esteem among the basketball group, as opposed to the athletics group. Another interesting finding showed that an integrative environment helped adolescents with intellectual disabilities to adopt realistic expectations with regard to their physical abilities.

In 2009 Lejcarova conducted a study in Prague, which sought to examine the correlation between the intellectual level and various coordination capabilities. 153 children participated in the study (N=153, 61 f, 92 m) all with intellectual disabilities, but with normal cognitive development according to the following subdivision: 11 pupils with an IQ of 50-59, 31 pupils with an IQ of 60-19, 61 pupils with an IQ of70-79, 36 pupils with an IQ of80-89, 14 pupils with an IQ of 90-100, all between the chronological ages of 9 and 11. The research tools were various tests to measure elements of coordination: Cohen's d index, Non rhythmic drumming test, asynchronous and asymmetrical arm movement, one leg standing endurance test with eyes closed, jump over a skipping rope, routine with rod test, backward long jump test, and jump onto target test.

Coordination was measured in terms of balance and kinesthetic ability. Results of the study showed that there were significant differences between the pupils who were at the bottom of the mildly disabled category and those pupils whose intellectual abilities were at the top of mild disability. Moreover, it was apparent that there was an inverse relationship between intellectual level and coordination level – the more severe the intellectual disability, the lower the physical performance.

Despite this finding, the best results were surprisingly found among the pupils whose mental level was just below average, and not among those with higher level intellectual abilities. The conclusion is that the differences do not necessarily depend on the intellectual level, but also on the etiology and personality, i.e. the participants' motivation, and environment.

In 2009 in England, Robertson & Emerson conducted a study to examine participation in sports among the mildly mentally disabled. 2,784 participants with mild intellectual disabilities took part in the study (N=2,784) between the ages of 16-91. The main research tool was a personal interview and when the interviewees encountered difficulties in answering the questions, the researchers used a tool called "proxy respondents". The results of this study showed that 41% of the participants had done some form of sport activity and swimming in the month before. 97% of the participants reported liking the activity. Of those who did not take part in any sport, 34% said they would like to take part in a sports activity more frequently. Some of the mentally disabled participants did not take part in sports because of their low socioeconomic state, felt too insecure in their neighborhood to venture out and

attend a sports activity. The study may point to the possibility that socioeconomic factors come into play and can deter participation in sports activities.

In 2010 in Italy, Franciosi conducted a research study to evaluate the contribution made by certain variables to sports achievements and to analyze the correlation between each variable and the level of intellectual disability. The participants were twenty nine trained athletes (N=29, 17 m, 12 f) with varying levels of intellectual disabilities according to the following subdivision: 9 mild intellectual disability, 8 with moderate intellectual disability, 9 with high intellectual disability, and 3 extreme intellectual disability between the chronological ages 20-45. Two main tests were used: Physical fitness and coordination test battery; Step test.

The variables under scrutiny were body size, flexibility, muscle strength, explosive power in legs, endurance and the cardio-vascular system, and motor coordination. The results of the study showed that for each test there was a particular variable which influenced the results. In the 60 meter sprint – coordination and body weight; in the 300 meter run – percentage of body fat and explosive power in legs; in long jump - explosive power in legs; 100 meter run - percentage of body fat. Similarly it was found that the lower the level of disability, the higher the achievements in motor coordination and sit-ups.

In Italy, Guidetti et.al. (2010) conducted a study to find if sports activities affect the physical fitness and health of young adults with intellectual disabilities. Sixty four participants were included in the study (N=64, 38% mild disabilities, 22% moderate, 38% difficult and 3% extreme). Participants in each sport were as follows: 22 athletics, 19 basketball, 23 participated in no sports whatsoever. All were in the age range of 18-45 years of age. The following research tools were used: Step test; Standing long jump test; Hand grip test; Sit ups and push-ups test; Timed up and go test; Flamingo test; Sit and reach test; Spearman correlation analysis.

The examined variables were: standing, jumping, hand grasp, sit-ups, standing on one foot. The results of the study showed that BMI values and static equilibrium had changed in all groups. Athletes and basketball players displayed higher achievements of explosive power performance than non-athletes. Additionally, better results were apparent in the athletic groups for cardiovascular endurance and motor coordination – the grades were higher as the intellectual disability was milder.

In Holland Westendrop and others (2011) conducted a study among individuals with intellectual disabilities to examine the correlation between motor abilities and participation in organized sports activity. 156 children with mild intellectual disabilities participated in the study (N=156, 104 m, 52 f) between the ages of 7 and 12, and 255 children with normal development (N=255, 138 m, 117 f) in a similar age bracket. The examined variables were running, leaping, jumping, sliding, catching, kicking, bouncing and throwing. Each skill was measured twice and valued on a scale of level of success. Research tools used were TGMD-test of gross motor development, as well as self-report measure and the data was analyzed using SPSS. Results showed the children with intellectual disabilities scored significantly lower than their normative counterparts in almost all of the motor skills. Those with high scores regularly took part in more organized sport activities. Moreover, participation in sports activities improved the motor skills of the intellectually disabled children. More progress was observed in the object control skills such as throwing, rolling, kicking and catching.

Nevertheless, children with mild intellectual disability attained lower scores in the loco-motor measures, such as running, racing and jumping in comparison with borderline children.

In Spain Cuesta, Vargas et. al. (2011) conducted a study to examine and describe the physical activity profile of athletic adults with intellectual disabilities and identify whether there is a performance difference between those who are active and those who are inactive in sports, and the difference between male and female performance. 266 people with mild intellectual disabilities participated in the study (N=266, 187 m, 79 f); the mean age was 31.1. Research tools focused on various elements of flexibility: Passive Knee Extension Test, calf muscle flexibility test, anterior hip flexibility test, functional shoulder rotation test, timed stand test, the partial sit up test, seated push up test, the grip test, the single leg stance open and closed eyes, 3 min. walk test.

The variables being tested were shoulder, knee, thigh, and hip flexibility, standing on one foot, opened and closed eyes, 3 minute walk, and sit-ups. Results of the study showed a definite gap between the genders in flexibility performance. Male performance was higher for strength and balance. There was no significant difference in those who took part on sports activities and those who did not, with the exception of one flexibility test. The statistical differences recorded between the sexes were of no significance.

As previously mentioned, a number of studies were found to engage in the effect of training, both mental and physical on cognitive abilities. The aim of Hemayattalab's study, which was conducted in Iran in 2010, was to examine the effect of five variations of exercise on the learning abilities among adolescents with intellectual disabilities. The five variations of training were as follows: physical training, mental training (use of imagination), physical training and some mental training in combination, mental training with some physical training in combination, and a control group with no training whatsoever. 40 adolescents aged 12 – 15 with mild intellectual disabilities participated in this study (N=40). The research tools were EMG, self-report measures ANOVA and the variable which was examined was free toss into a basket. Results of the study showed an improvement in all of the groups that had some form of training. The best results were in the groups that utilized both physical and mental training in some combination. The major conclusion drawn from this study is for physical educational instructors to use some combination of mental and physical training to attain most effective achievements with adolescents with mild intellectual disabilities.

Hayakawa et. al. (2011) in Japan, also conducted a study on the topic of effectiveness of various types of training using special training equipment on improving stable position and muscle strength of individuals with mild intellectual disabilities and or autism. 23 participants (N=23,) took part in the study, some of them with limited mobility who needed accompaniment but most functioned independently in their everyday life. The variables examined were standing position, different exercises in sitting position, walking and running on gym equipment. Results of the study showed that there was a marked improvement in the physical condition of the participants in running, hurdle walk and running on a treadmill. Additionally, knee flexibility increased. Use of gym equipment increased motivation the participants' to exercise more.

To summarize, in the past, several studies have examined the correlation between motor activities and intelligence. Results of these studies led to numerous conclusions with regard to the nature of this

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connection between the two variables, indicating that only some of the motor variables, such as coordination, balance and kinesthetic sense demonstrated a positive correlation with level of intelligence (Singer, 1968; Franciosi et. al., 2010).

Other studies showed the correlation between intelligence and sport to be fluctuating, relative to the intelligence level when measuring reaction time and characteristics of motor activities measured while measuring the length of motor activity (Nettlebeck, & Kriby, 1983; Campbell & Noldy, 1985).

A small number of studies engaged in the influence of age on the correlation between intelligence and physical activity. Results of the studies showed a stronger correlation in younger children than in adults, albeit the quality of the connection did not diminish gradually or uniformly with age, but rather in accordance with maturity, learning experience and other environmental factors which blurred the connection. (Dibner & Kron, 1969; Silva et. al., 1982).

Singer (1984) claimed that the difficulties encountered in learning motor skills depend on motor experience rather than on the level of intelligence. Children and adults do not differ in their level of success in learning motor skills, but rather in the manner in which they learn. (Almosani et. al., 2005) added that the style of teaching has an effect on the components of quality of life and self-image among the intellectually disabled individuals. Studies conducted by Yando (Yando et. al., 1978; Weiss, 1983) and Almosani (2005) have related to learning motor skills as being connected to verbal capabilities. For instance, a group of adolescents used verbal and nonverbal models during motor learning as opposed to preschool children who learn solely on the basis of observation.

Individuals with disabilities first entered the Olympic competitions in 2000. They participated only in three sport branches: swimming, gymnastics and basketball. During the games it was found that there were deceits regarding their classification and level of intellectual performance. Countries issued fictitious certificates just to get the athlete with intellectual disabilities to a lower classification, and thus the chance of winning an Olympic medal increased. For this reason the method has changed and so far no athletes with intellectual disabilities have participated in the Paralympics (which are for physically handicapped athletes who were handicapped in birth or in the course of their lives).

For 12 years since the last time individuals with intellectual disabilities participated in the Paralympics, have different organizations (e.g. INAS for Para-Athletes with an Intellectual Disability and IPC – International Paralympics Committee) attempted to create an objective and measurable classification methods that would be relevant to sport. The organizing committees have required criteria that would assess whether the intellectual disability affects functioning in a specific sport.

In the 2012 London Olympic Games, athletes with intellectual disabilities participated only in four sport branches: swimming (class 14), gymnastics, basketball and rowing integrated into a category of motor handicap.

There are a few organizations engaging in sports for individuals with intellectual disabilities. The largest organization is Special Olympics (SO), established in 1968. SO started as a community school program and developed into an organization encompassing some 3,000,000 people around the world competing in more than 30 sports (Maclean, 2008). Most participants are male and at a relatively old age for competitive sport (Gillespie, 2008). Few studies were conducted in the SO domain, some of which focused on the physiological advantages and health implications for SO participants as well as

on So influence on the participants quality of life (e.g. Meghann et. al., 2012; Gibson et. al., 2011; Hild et. al., 2008). Some of the studies focus on the advantages and disadvantages of participating in SO (e.g. Maclean, 2009; Glidden et. al., 2011; Smith et. al., 2010; Storey, 2004; 2008). Other studies focus on the influence of SO participation on mothers and families of children with intellectual disabilities, both from the perspective of the family unit and that of the influence of participation on the pressure within the family (Weiss & Diamond, 2005; Weiss, 2008).

3. Conclusion

Persons with intellectual disabilities are often characterized by having motor difficulties and limitations expressed in the performance of sports skills.

These difficulties may influence cognitive, social or emotional areas of functioning or be influenced by them.

Therefore, work on the motor field serves both as a therapeutic and rehabilitative tool for each functioning domain.

The review of studies shows relations between physical and mental training, and their impact on the capabilities of people with intellectual disabilities. Therefore, to whatever extent a special physical activity and adapted to be able to move forward and towards independent living.

References

Almosni, Y; Raiter, S; Ben Sira, D. (2005). The Impact of Different Teaching Styles on Quality of life of Young People with Mild and Moderate mental retardation. Bitnua: Jurnal of Science Physical Education and Sport. 7 (3-4): 139-176

Almosani, Y. (2007). "Jumping the Stairs"—The influence of engaging in physical activity on improving the quality of life of youngsters with moderate and light mental disability. *Issues in Special Education and Rehabilitation, 22*(1) 19–40 (Hebrew).

Ben-Sira, D., Reiter, S., & Almosani, Y. (2005). The influence of different physical education teaching styles on the quality of life of youngsters with moderate and light mental disability. *Bi'Tnua: Physical Education and Sports Journal, 7*(3-4), 139-176 (Hebrew).

Campbell, K.B. & Noldy- Cullum, N. (1985). Mental Chronometry: Vol. II. Individual Differences In B.D.Kirkcaldy (Ed). Individual Differences in Movement. Pp147-167. Lancaster. MTP. Press

Cuesta - Vergas, A. I., Paz - Lourido, B. P., Rodriguez, A. (2011). Physical fitness profile in adults with intellectual disabilities: differences between levels of sport practice. Research in Developmental Disabilities, 32, 788-794.

Dibner, A.S. & Korn, E.J. (1969). Group Administration of the Bender Gestalt Test to Predict Early School Perfomance. J. Clin. Psychol. 25, 263-8

Franciosi, E., Baldari, C., Gallotta, M. C., Emerenziani, G. P., Guidetti, L. (2010). Selected factors correlated to athletic performance in adults with mental retardation. Journal of Strength and Conditioning Research. Vol. 24, Iss. 4 59-64.

Gibson, J. C., Temple V. A., Anholt, J. P., Gaul, C. A. (2011). Nutrition needs assessment of young Special Olympics participants. Journal of Intellectual and Developmental Disability, Vol. 36(4), 268-272.

Gillespie, M. (2008). Participation patterns in an urban special Olympics program. British Journal of Learning Disabilities, 37, 21-27

Glidden, L. M., Bamberger, K. T., Draheim, A. R., Kersh, J. (2011). Parent and Athlete perceptions of Special Olympics participation: Utility and danger of proxy responding. Journal of Intellectual and Developmental Disability, Vol. 49(1), 37-45.

Guidetti, L., Franciosi, M., Gallotta, M. C., Emerenziani G. P. (2010). Could sport specialization influence fitness and health of adults with mental retardation? Research in Developmental Disabilities, 31, 1070-1075.

Gregory, C; Christophe, M (2007). Long-term effects of athletics meet on the perceived competence of individuals with intellectual disabilities. Research in Developmental Disabilities 28, 176-186.

Hayakawa, K., Kobayashi, K. (2011). Physical and motor skill training for children with intellectual disabilities. Perceptual and Motor Skills 112, 2, 573-580.

Hemayattalab, R., Movahedi, A. (2010). Effects of Different Variations of Mental and Physical Practice on Sport Skill Learning in Adolescents with Mental Retardation

Hild, U., Hey, C., Baumann U., Montegomery, J., Euler, H. A., 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, Vol. 52(6), 520-528

Hotzler, Y. (2004). Psychological-Social Empowerment among persons with disabilities via physical activity. Motor Behavior: Psychological and Sociological Aspects. Jerusalem: Hebrew University: Magnes Publications (In Hebrew).

Hozler, Y. Oz, M., & Barak, S. (2012). Motivation for physical activity among athletes with intellectual disabilities participate in developmental activities—Organizing Special Olympics athletes without disabilities. Wingate: Israel (Hebrew).

Lejcarova, A., (2009). Coordination Skills in 9 To 11 Years Old Pupils At Practical Elementary Schools in Relationship To Their Degree Of Intellectual Disability. Acta Univ. Palacki. Olomuc., Gymn. 39 (4), 53-62.

Luckasson, R., Borthwick-Duffy, S., Buntinx, W. H. E., Coulter, D. L., Craig, E. M., & Reeve, A. (2002). Mental retardation: Definition, classification, and systems of support (10th ed.). Washington, DC.

Maclean, W. E. (2009). Special Olympics: the rest of the story. Research & Practice For Persons With Severe Disabilities, Vol. 33, 3, 146-149

Meghann, L., Viviene, A. T., John, F. (2012). International BMI comparison of children and youth with intellectual disabilities participating in special Olympics. Research in Developmental Disabilities, 33 (6) 1708-1714

Nettlebeck, T. & Kirby, N.H. (1983). Measures of Timed Performance and Intelligence. Intelligence 7, 39-52.

Ninot, G., & Maiano, C. (2007). Long-term effects of athletics meet on perceived competence of individuals with intellectual disabilities. *Research in Development Disabilities, 28*, 176-186.

Nissim, d. Aminadav, H. Sheyms M. Brorman, A. (2010). Intellectual disability: Definition, classification and systems of support. Kiryat Bialik: Ah

Robertson, J., Emerson, E. (2010). Participation in sports by people with intellectual disabilities in England: A brief report. Journal of Applied Research in Intellectual Disabilities, 23, 616-622.

Ronen, H. (2005). Mental retardation: study, work and teaching methods. Kiryat Bialik: AH. (Hebrew)

Ronen, H. (2007). Major issues of mental retardation. Issues in special education and rehabilitation (22), 13-18 (Hebrew).

Singer, R.N. (1968). Interrelationship of Physical Perceptual- motor and Academic Variables in Elementary School Children. Percept. Motor Skills 27 1323-32

Singer, R. N. (1984). What do children want in youth sport? In H. Reider (Ed.), *Sport Psychology International* (pp. 115-26). Koln: B.P.S. Verlag.

Silva, P.A., McGee, & Williams, S. (1982). Prospective Study of the Association Between Delayed Motor Development at Ages Three and five and low Intelligence and Reading Difficulties at age Seven: A Report From the Dunedin Multidisciplinary Child Development Study. J.Hum. move. Stud. 8, 187-93

Smith, G., Cahn, A., Ford, S. (2010). Sports commerce and peace: The special case of special Olympics. Journal of Business Ethics, Vol. 89(4), 587-602.

Storey, K. (2004). The case against the special Olympics. Journal Disability policy Studies, Vol. 15(1), 35-42.

Storey, K. (2008). The More Things Change, the More They are the Same: Continuing Concerns With the Special Olympics. Research & Practice for Persons with Severe Disabilities. Vol. 33 Issue 3, p 134-142.

Weiss, M.R. & Bredemeier , B.J. (1983). Developmental Sport Psychology: A Theoretical Perspective for Studying Children in Sport. J. Sports Psychol. 5 216-30.

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

Weiss, J. A. (2008). Role of special Olympics for mothers of adults Athletes with intellectual disability. American Journal on Mental Retardation, Vol. 113(4), 241-253.

Westendrop, W., Houwen, S., Hartman, E., & Visscher, C. (2011). Are gross motor skills and sports participation related in children with intellectual disabilities? *Research in Developmental Disabilities, 32,* 1147-1153.

Yando, P., Seitz, V.& Zigler, E. (1978). Imitation: A Developmental Perspective. Wiley, New York.

Hutzler, Y. (2012). Sports Adapted Physical Activity and Sport in Rehabilitation. International encyclopedia of rehabilitation. 18\11\13 http://cirrie.buffalo.edu/encyclopedia/en/article/12/

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http://www.kolzchut.org.il/he/%D7%AA%D7%99%D7%A7%D7%95%D7%9F_%D7%9E%D7%A1'_7_%D7%9C%D7%97%D7%95%D7%A7_%D7%97%D7%99%D7%A0%D7%95%D7%9A_%D7%9E%D7%99%D7%95%D7%97%D7%93_-_%22%D7%97%D7%95%D7%A7_%D7%94%D7%A9%D7%99%D7%9C%D7%95%D7%91%22