Vol.02,Issue03,March2014

INTERNATIONAL JOURNAL OF RESEARCH PEDAGOGY AND TECHNOLOGY IN EDUCATION AND MOVEMENT SCIENCES (IJEMS) ISSN: 2319-3050

COMPARATIVE STUDY OF PERCEPTUAL MOTOR COORDINATION BETWEEN INTELLECTUAL CHILDREN AND CHILDREN WITH MILD INTELLECTUAL DISABILITY

[1]Ashutosh [2]Dr. Nishan Singh Deol

[1]Research Scholar, Department of Physical Education, Punjabi University Patiala,Punjab,India
[2]Professor & Head, Department of Physical Education, Punjabi University, Patiala,Punjab,India

ABSTRACT

The purpose of the study was to determine comparison between perceptual motor abilities of intellectual children and children with mild intellectual disability. 30 intellectual children from D. A. V. Public School, Patiala and 30 children with mild intellectual disability from Patiala school for the Deaf, Saifdipur were selected randomly as the subjects for this study. The necessary data was collected by carrying the measurements. In order to analyze the scores of the selected dimension of intellectual children and children with mild intellectual disability, the decrypted analysis technique was used. Further to find our significant comparison between the scores of subjects on selected dimension of intellectual children and children with mild intellectual disability. The 't' test was employed for testing of the hypothesis the level of significance was set at 0.05 level.

Keywords: Perceptual Motor Ability, Intellectual and Children.

INTRODUCTION:

Human coordinative abilities have always been the subject of many research projects. The theory of coordinative abilities is still in the stage of infancy. Though there is rapidly increasing acceptance of the term coordinative abilities yet there is no agreement regarding the number of coordinative abilities important for sports. The methodology of improving different coordinative abilities is also yet not available in full detail. But in the future it is expected that there will be a clear cut system of improving means and methods of each and every coordinative ability. Coordinative abilities are primarily dependant on the motor control and regulation process of CNS. Coordinative abilities have also important and strong links with the motor skill as motor coordination forms the basis of both coordinative abilities and motor skills. Coordinative abilities

become effective in movement only through the motor abilities and activity determined drives and cognitive processes.

Coordinative abilities are understood as relatively stabilized and generalized pattern of motor control and regulation process. These enable the sportsman to do a group of movements with better quality and effect.

Coordinative abilities should not be equated with motor skills, though both are interrelated and interdependent. Both are determined by motor coordination process. The difference lies in the degree of generality of the coordinative processes. In a motor skill processes are largely automatized for the execution of a particular movement. In coordinative abilities these processes are just stabilized and perfected for the execution of a wide number of movements similar to each other. The learning of movements, however, has a positive on the coordinative abilities and vice-versa.

The movement quality depends to a great extent on coordinative abilities. The rhythm, flow, consistency, amplitude etc., of a movement are expressions of motor coordination and are highly dependent on coordinative abilities. In technical sports beautiful and graceful movements are a product of well developed technical skill and coordinative abilities. The speed of learning of a skill and its stability is directly dependent on the level of various coordinative abilities.

Coordinative abilities are also needed for the maximal utilization of conditional abilities, technical skills and tactical skills. Without the adequately developed coordinative abilities, a sportsman cannot make maximum use of his psycho-biological capacities and reserves. Coordinative abilities also determine the maximum limits to which a sports performance can be improved.

Exceptional students their abilities and characteristics are different from group norms. Exceptional students are different from normal ones in order to be acquired with education; school's in itiations are consistent with their needs and are acquired with special education services according to their abilities (Glaver and Browning, translated by Kharazi, 2007). Early scholars tried to return the exceptional students to normal and natural life as much as possible

and create the dignity and self- esteem they lack of (Halahan and Kafman, translated by Javadian, 2002).

Different classifications are made to exceptional students. In one of these classifications, exceptional students include learn-ing disabilities, attention deficit hyperactivity disorder, emo-tional or behavioral disorder, mental retardation, communica-tion disorder, severe and multiple disabilities, isolation, traumatic and acquired brain damage, hearing and vision failure, physical and health disabilities, smartness, creativity and talent (Hardman, Michel, Kiford and Winson, translated by Ai-zadeh, 2009).

The decline in fitness during middle age, although well established for the nondisabled population (Spirduso, 1995), has received little attention with regard to people who have an intellectual disability. It is likely that health risks associated with substandard levels of fitness would become exacerbated with these individuals, given their low levels of fitness, greater propensity for obesity, and sedentary lifestyle. In fact, Pitetti and Campbell (1991) pointed out that people with an intellectual disability have an earlier onset of physical old age and a higher mortality rate than the general population. They postulated that people with an intellectual disability have a faster rate of decline in physical fitness than the general population, although no empirical support was offered. Given the need for physical fitness as a factor in community and work participation, and the link between fitness and health, the investigation of the expected decline in physical fitness during middle age seems warranted. Reid et al. (1985) published a descriptive study of the fitness of 184 adults with an intellectual disability. The data had been collected in 1983 and were based on the test items from the Canada Fitness Survey. A group of these participants were available in 1996. Thus, the purpose of the study was to describe the change in physical fitness that occurs in middle age with a sample of individuals who have an intellectual disability and to compare this change to established standards of the nondisabled population. It was hypothesized that the fitness of individuals with an intellectual disability would be lower in 1996 compared to 1983. It was also hypothesized that the magnitude of change in fitness for the adults with an intellectual disability would be greater than the magnitude of change expected in the nondisabled population.

Bearing in the mind importance of perceptual motor-abilities in all spheres of life, it is important to monitor them from early childhood, in order to detect and timely treat possible difficulties. In our country there is no unique methodological framework of early detection and treatment of children with disabilities. The instruments for assessing abilities in the field of special education are inhomogeneous, and most tests are not standardized. The aim of this research is to analyze the relation between developmental level of perceptual-motor abilities and the abilities which are prerequisites of academic skills in typically developing younger school children, in order to identify the factors which determine child's strengths and weakness in the education process. We also wanted to point out the inevitability of consistent systematic solutions in the field of special education and rehabilitation, which would lead to defining an efficient detection and treatment program of developmental disabilities.

Longitudinal research is important for persons with and without disabilities in that it provides information on participants across an extended period of time. As such, it contributes to knowledge about development and performance and the theories underlying the biocultural changes in physical performance that occur naturally with age (Malina, 2001; Sugden & Keogh, 1990). This study is an extension of initial longitudinal work on performance of Finnish adolescents with intellectual disability (ID; Lahtinen, 1975; 1986).The previous studies examined naturally occurring changes in anthropometric and physical performance measures of individuals with moderate ID across two time periods, one in 1973 and one in 1979 in which individuals were 11-16 years of age (n = 77) and 17-22 years of age (n = 74). Body composition, cardiovascular endurance, muscular strength and endurance, static and dynamic balance, and manual dexterity were measured.

Data collection was continued in 1996 and 2003. The current paper is for the first time reporting the entire follow-up data set from the last two collection periods. The number of test items reported in this paper is limited to those measured with the same tests over the years. Thus, the results are presented for height, weight, BMI, sit-up, stork stand, and pearl transfer speed.

In Lahtinen's two data collection periods (1973 & 1979), performance variability among participants and between periods was large. Across the two first periods, improvement was

noticed in most of the functional tests. Physical activity during leisure time decreased from 11 to 13 hrs per week, and slight improvement in adaptive behavior was noted. Participants who lived at home and worked or went to school developed better eye-hand coordination and better adaptive behavior over time but had a greater prevalence of obesity than those in the institution or who lived at home all day. The complete results are reported in Lahtinen (1975, 1986). Selected data from the collection in 1996 regarding health-related physical fitness, physical activity, and life quality are reported in Romar, Lahtinen, Rintala and Rusi (1998).

An early pioneer in studying the physical performance of individuals with ID was the late Dr. G. Lawrence Rarick in the United States. Summarizing earlier studies (e.g., Francis & Rarick, 1959; Malpass, 1960; Rarick, Widdop, & Broadhead, 1970), Rarick (1973) stated that intellectual disability is almost invariably accompanied by substandard levels of performance. This is well supported by the Finnish data from the 1970s (Lahtinen, 1986) in which adolescents with moderate ID had a significantly lower mean and higher performance variability than the comparison group without disabilities (n = 195, age = 13 yrs) on all components of physical performance. According to Rarick (1973), adolescents with mild ID lagged 2 to 4 years behind their age-peers without ID on measures of physical and motor performance. These findings deserve reevaluation (Sherrill, 2004), because today's adolescents have greater access to education (physical education), recreation (community fitness centers), and sport programs (e.g., Special Olympics).

One of the few existing longitudinal studies that focused on the physical fitness of adults with ID was carried out by Graham and Reid (2000). The Canadian Standardized Test of Fitness was used to assess 32 participants with mild and moderate ID, 14 women and 18 men, aged 34-57 in 1983 and in a 13-year follow-up. Four participants had Down syndrome. The physical fitness of adults with ID was lower than for the nondisabled participants and declined over time. In addition, the magnitude of change over years, as compared to the participants without ID, was greater for both males and females in body mass index (BMI) and for the females only in sit-up test.

The pattern of physical performance change of individuals with ID from young, to middle, to old age is largely unknown. Acknowledging a paucity of longitudinal studies in relation to physical performance and the well-documented importance of physical performance in relation

to overall health, these data collection periods include individuals who were still available and consist of those items that were measured in all four data collection periods. Therefore, the purpose of this study was to describe the longitudinal changes in physical performance by comparing the two previous periods with data from a third and fourth time period. The specific aims were to (a) describe the physical performance at four periods from early adolescence to later adulthood and relating to Finnish comparative data and to describe the differences related to gender and down syndrome; (b) analyze the effects of gender and Down syndrome on the longitudinal trends of the development of physical performance, when controlling for the effect of IQ; and (c) analyze the effects of intelligence on the development of physical performance. Based on widely known data regarding the developmental pattern of physical performance with age in nondisabled populations (e.g., Malina, Bouchard, & Bar-Or, 2004) and earlier findings of the performance levels of individuals with ID (e.g., Graham & Reid, 2000), we expect the physical performances to follow a general pattern with age, however, at a reduced level. We expect significant improvement in physical performance from early adolescence to late adolescence and a significant decline toward adulthood. Moreover, the level of the BMI score continuously increases over the years, indicating fatness problems. Regarding gender differences, we expect the females to have more overweight problems and lower performance on balance and abdominal strength/endurance, but higher performance on manual dexterity compared to the males over the different age periods. We also hypothesize that participants with DS would score lower on all items compared to participants without DS. Acknowledging that performance is related to intellectual level, we hypothesize that participants with low intellectual levels perform lower, especially related to balance.

OBJECTIVES:

1. To measure hand-eye coordination of children with mild intellectual disability and intellectual children.
2. To analyze the manual dexterity of children with mild intellectual disability and intellectual children.

MATERIAL & METHODS:

Total 60 boys were taken as a sample. 30 boys were intellectual and 30 with mild intellectual disability. Intellectual boys were taken from D. A. V. Public School, Patiala and boys with mild intellectual disability were taken from Patiala school for the Deaf, Saifdipur. Age of all the boys was ranging between 12 to 18 years. Different tests were applied to measure the different components of perceptual motor coordination. To measure hand eye coordination alternate hand wall toss test was applied on both intellectual children and children with mild intellectual disability and to measure manual dexterity block transfer test was applied on both the groups.

Statistical Analysis

After the collection of relevant data, it was processed and analyzed with descriptive Statistics.

Table 1

Mean and standard deviation of Hand Eye Coordination of intellectual children and children with mild intellectual disability

Sr. No.	Group	N	Mean	Standard Deviation	Df	t-value
1	Intellectual	30	18.60	4.33590	58	2.213
2	Intellectually Disable	30	15.33	6.82457		

*Significance at 0.05 level Tabulated 't' value 3.342 (58)

Table 1 and fig. 1 presents the data pertaining to mean and standard deviation values with regard to eye hand coordination of intellectual children which were recorded 18.60 and 4.33590 respectively, whereas in the case of children with mild intellectual disability were recorded 15.33 and 6.82457 respectively and were not found to be statistically significant results, because calculated t-value 2.213 was less than tabulated t-value (3.342) at 0.05 level. But mean value of

intellectual children is more than children with mild intellectual disability which shows that intellectual children were better as compared to children with mild intellectual disability.

Fig. 1. Comparative analysis of Hand Eye Coordination of intellectual children and children with mild intellectual disability

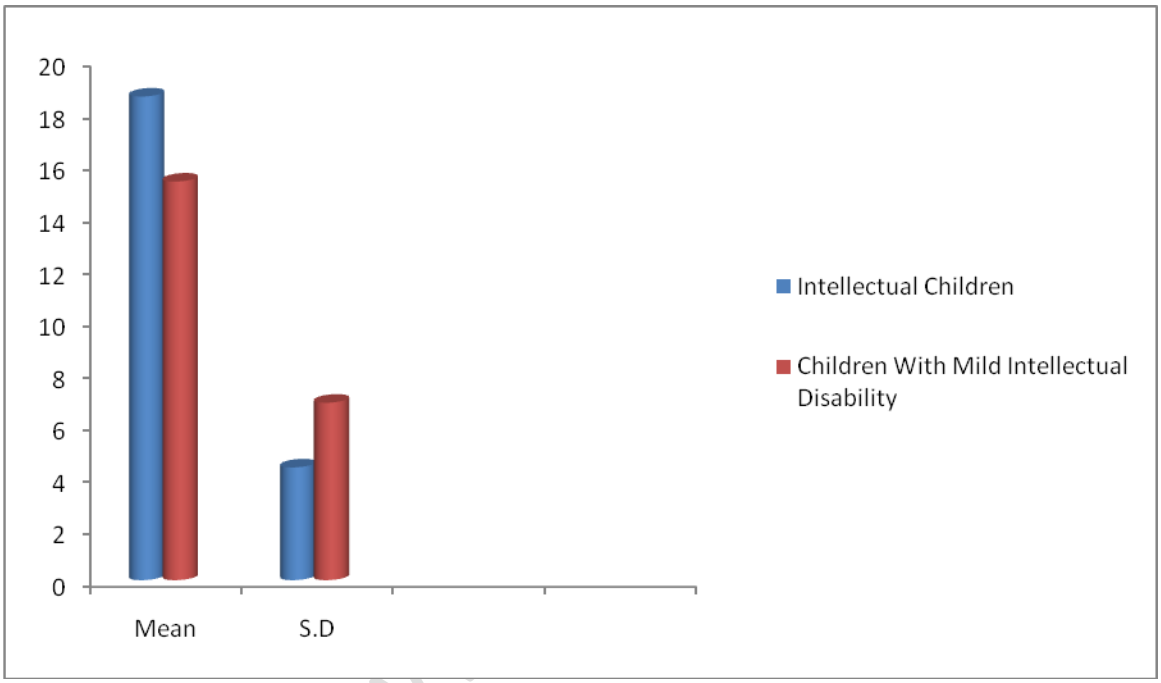


Table 2

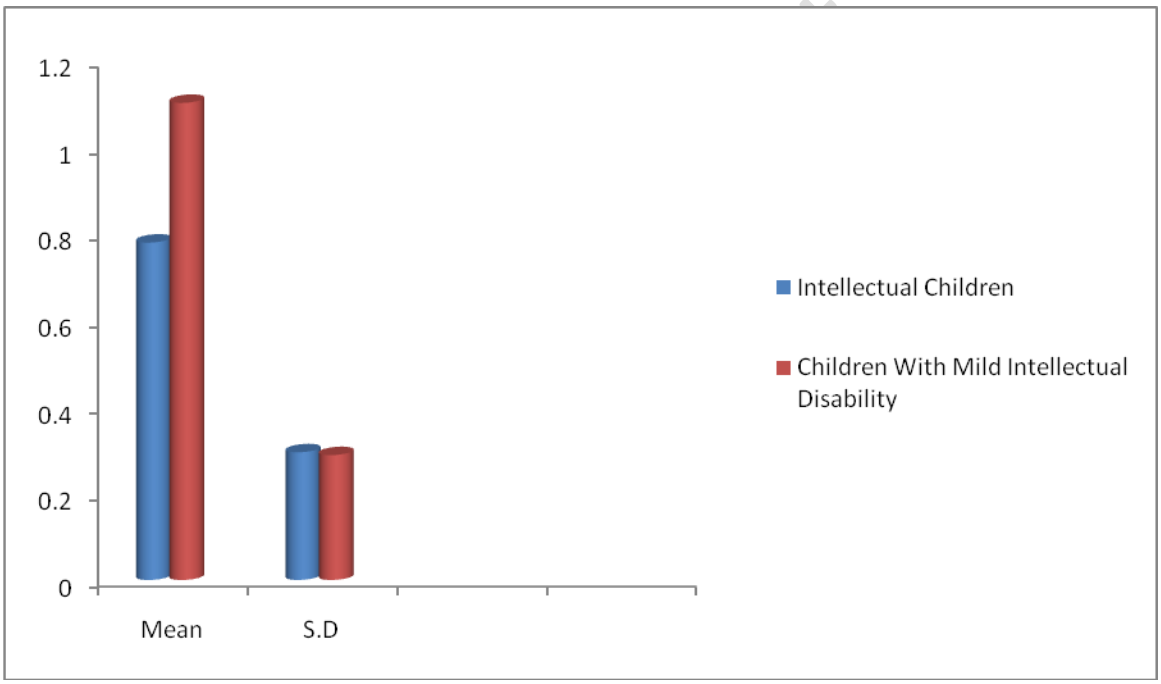
Mean and standard deviation of Manual Dexterity of intellectual children and children with mild intellectual disability

Sr. No.	Group	N	Mean	Standard Deviation	Df	t-value
1	Intellectual	30	0.7800	0.29527	58	-4.284*
2	Intellectually Disable	30	1.1030	0.28872		

*Significance at 0.05 level Tabulated 't' value 3.342 (58)

Perusal of table 2 and figure 2 showed that the mean and standard deviation values of intellectual children on the manual dexterity variable were recorded as 0.7800 and 0.29527 respectively where as in case of children with mild intellectual disability, the same were recorded as 1.1030 and 0.28872 respectively. There has been significant difference between intellectual children and children with mild intellectual disability at 0.05 level where calculated 't' value -4.284* is more than tabulated 't'-value 3.342.

Fig. 2. Comparative analysis of Manual Dexterity of intellectual children and children with mild intellectual disability



DISCUSSION AND FINDINGS:

The present study was designed to compare the perceptual motor coordination between children with mild intellectual disability and intellectual children. To fulfill these purpose total 60 boys were taken as a sample. 30 boys were intellectual and 30 with mild intellectual disability. Intellectual boys were taken from D. A. V. Public School, Patiala and boys with mild intellectual disability were taken from Patiala school for the Deaf, Saifdipur. Age of all the boys was ranging

between 12 to 18 years. Different tests were applied to measure the different components of perceptual motor coordination.

The present data shows that the perceptual motor performance of intellectual children and children with mild intellectual disability was found statistically significant with regards to Manual Dexterity. Whereas insignificant difference was found in Hand-Eye Coordination. The mean value of each variable reveals that intellectual children performed better than children with mild intellectual disability in every test item. If we look into the psychological state of both categories, both have almost similar profiles and requirements as per the age.

CONCLUSION:

On the basis of findings of present study, the following conclusions were drawn:

1. Intellectual children are superior to Children with mild intellectual disability in Hand Eye Coordination.
2. Intellectual children are superior to Children with mild intellectual disability in Manual Dexterity.

Reference

Allen W. Burton.(1990). Assessing the Perceptual-Motor Interaction in Developmentally Disabled and Nonhandicapped Children. *Adapted Physical Activity Quarterly, 7,* 325-337.

Andrew Graham, Greg Reid. (2013). Physical Fitness of Adults with an Intellectual Disability: A 13-Year Follow-up Study. *Research Quaterly for Exercise and Sport, 71,* 152-161.

Bell, A.J., & Bhate, M.S. (1992). Prevalence of overweight and obesity in Down's syndrome and other mentally handicapped adults living in the community. *Journal of Intellectual Disability Research, 36,* 359-364.

Binsted G., Chua R., Helsen W. & Elliott D. (2001) Eye– hand coordination in goal-directed aiming. *Human Movement Science,* 20, 563–85.

Carmeli E., Bar-Yossef T., Ariav C., Levy R., Liebermann D.G. (2008). Perceptual-motor coordination in persons with mild intellectual disability. *Disability and Rehabilitation, 30(8),* 323-329.

Carmeli, E. Merrick, J. Kessel, S. Bar –Chad, S. (2004). A comparisonbetween older persons with Down syndrome and a controlgroup: clinical characteris-tics, funtional status and Connolly H, Michael BT. *Performance of retarded children, with and without Down's syndrome, on the Bruininks Oseretsky Test of Motor Proficiency. Physical Therapy, 66,* 344–348.

Cheryl Missiuna, Sandra Moll, Gillian King, Debra Stewart, Kathryn Macdonald. (2008). Life Experiences Of Young Adults Who Have Coordination Difficulties. *Canadian Journal Of Occupational Therapy, 75,* 157-166.

Huette S., Kello C.T., Rhodes T., Spivey M.J. (2013). Drawing from memory: hand-eye coordination at multiple scales. *Public Library of Science, 8(3),* 58-64.

Hung Y.C., Casertano L., Hillman A., Gordon A.M. (2011). The effect of intensive bimanual training on coordination of the hands in children with congenital hemiplegia. *Research in Developmental Disabilities, 32(6),* 2724-2731.