

**“A COMPARATIVE STUDY OF DEVELOPMENT OF MOTOR ABILITIES
IN NORMAL AND THAT IN DEAF AND DUMB CHILDREN
FROM 8 TO 14 YEARS”**

***Dr. Shatrujay M. Kote, Assistant Professor, M.S.M's. College of Physical Education,
Aurangabad, M.S. India***

INTRODUCTION:

Today's education is not merely a vast sea of mental acrobatics but also a source of physical activity that leads to all round perfection of an individual. Modern thinkers in education, now a day, emphasize that the best individual is one who is physically fit, mentally sound and sharp, emotionally balanced and socially well adjusted and as a result the birth of physical education is witnessed. The broad objectives of physical education are physical development, motor development, mental development and social development.

Motor development objectives are concerned with making physical movements, useful with as little expenditure of energy as possible. The term motor is derived from the relationship of a nerve or nerve fiber to the one that connects the Central Nervous System with muscles through their convections the movements' results. Effective motor movement can only results if there is harmonious working of the muscular and the nervous system. It helps in keeping a greater distance between fatigue and peak performance. The activities that involve hanging, jumping, dodging, leaping, kicking, bending, throwing will enable a person to perform his daily work much effectively without reaching a point of wearing out, so quickly.

Considering the equal stature and right of exposure in sports participation; the need for the research in understanding the performance prerequisite: motor abilities development of the normal and the deaf dumb children has emerged. The need today is to search some extraordinary talent in an individual for the laurels in international sports arena. In this case it becomes obvious that the search should not limit only with the normal. The qualities that an individual possess should be innate and may be nurtured with good scientific platform, deaf dumb being no exception to it. Hence the search to prove the innate qualities of the deaf dumb and bring them to equal stature with normal.

OBJECTIVES OF THE STUDY:

1. To find out, assess and analyze the developments taking in motor abilities among normal children and that of deaf dumb at particular age group.
2. To understand if any higher or compensatory ability among deaf dumb children is noticed when compared to the normal children.
3. To understand various parameters of motor ability in certain age group of certain physical abnormality.
4. To understand scientific base for methods of training physically handicapped children.
5. To understand how the society would help its weak counterpart.

SIGNIFICANCE OF THE RESEARCH:

1. The study may reveal the physical and mental problems of deaf dumb children.
2. The study may also profound a training methodology and loading procedure in motor training for physically challenged children in specific age group.
3. Results may also be helpful to enhance sports terminology communication skills with physically handicapped children.
4. Evaluation of development of motor abilities may fetch platform for establishing training methodology for enhancing performance in specific sports.
5. The comparison of development of motor abilities will give clear picture of the positive and negative aspects of the motor abilities, which in turn ensure the proper training.

HYPOTHESIS:

1. H1: According to the researcher, there may be some compensatory physical and mental abilities with physically handicapped children.
2. H2: The researcher hypothesize that though being deaf dumb the children do not show considerable differences in the development of motor abilities to that in normal children.
3. H3: There is no significant difference in the growth of height and weight between boys and girls (normal and deaf dumb) from 8 to 14 years of age.
4. H4: There is no significant difference in the development of speed, strength, endurance, flexibility and coordinative abilities between boys and girls (normal and deaf dumb) from 8 to 14 years of age.

METHODOLOGY:

The samples of this study is randomly selected form different schools with their date of birth lying between 1999 to 1993 in normal subjects (boys and girls) and deaf dumb subjects (boys and girls). The selected age groups of the subjects were from 8 to 14 years. In each group 30 subjects were selected initially with a margin of ± 5 . All the selected subjects were non-sportsman staying either in school hostels or at their residence to ensure the untrained development in motor abilities. In all 840 subjects were tested initially and the same 840 subjects were tested finally after one academic year (10 months). The tests were conducted for two days for four hours on each group of 30 subjects approximately. In all 700 subjects were considered for obtaining the difference between growth and development is evaluated by subtracting the initial test score from the final test score. Every subject was allotted with a code and a separate self contained form for test results. The tests were selected in the aspects of growth and development. In growth, height and weight is evaluated and in development of motor abilities the researcher has selected the standard tests in speed, strength, endurance, flexibility, coordinative abilities and their complex forms for evaluation. The tests are administered individually under standard conditions applicable for specific tests and the time period required between two tests is amply considered.

VARIABLES:

INDEPENDENT VARIABLES: (1) Normal boys. (2) Deaf dumb boys. (3) Normal girls. (4) Deaf dumb girls.

INTERWEAVING VARIABLES: (1) Sex: Boys and Girls. (2) Age: 8 years to 14 years. (3) Criteria: Non sportsman. (4) Times: Initial and Final.

DEPENDENT VARIABLES: **GROWTH:** (1) Height. (2) Weight.

DEVELOPMENT OF MOTOR ABILITIES: (1) Acceleration ability. (2) Locomotion ability. (3) Upper extremity explosive strength. (4) Abdomen explosive strength. (5) Lower extremity explosive strength. (6) Metabolic Equivalent (MET). (7) Maximum oxygen uptake capacity ($\text{VO}_2 \text{ max.}$) (8) Shoulder flexibility. (9) Trunk flexibility. (10) Hip joint flexibility. (11) Reaction ability. (12) Balancing ability. (13) Agility.

TOOLS AND MEANS:

Personal data bank: It is used to collect the information of an individual. Personal data bank consists of the following aspect: Full name, name and address of the school, date of birth and age, gender, deaf dumb / normal, diet (vegetarian / mix), sportsman / non-sportsman, physical maturity, height and weight.

Motor ability tests: (1) Fifty yard dash for Acceleration ability. (2) 30 meters flying start for Locomotion ability. (3) Medicine ball put for Upper extremity explosive strength. (4) Sit-ups for Abdomen explosive strength. (5) Standing vertical jump for Lower extremity explosive strength. (6) 20 meters shuttle run (Canadian fit test) for metabolic rate. (7) 20 meters shuttle run (Canadian fit test) for Maximum oxygen uptake capacity ($\text{VO}_2 \text{ max.}$). (8) Shoulder rotation test for Shoulder flexibility. (9) Forward bend and reach for Trunk flexibility. (10) Side split test for Hip joint flexibility. (11) Nelson's hand reaction test for Reaction ability. (12) Stork stands for Static balancing ability. (13) 6 X 10 meters shuttle run for Agility.

PROCEDURE:

The subjects were selected from different schools in normal category (boys and girls) and deaf dumb schools (boys and girls). In all 15 testes were selected for evaluating the growth and development of motor abilities of the subjects between 8 to 14 years. The tests were administered with all specified and standard conditions starting with warming up exercises, optimum active rest periods in between and cooling down at the end. The condition of the subjects was observed normal and motivated to take part in the tests. An introductory talk regarding the initial day's workout is assessed for confirmation of tireless and recovered state.

COLLECTION OF DATA:

The subjects were selected from different schools in normal category (boys and girls) and deaf dumb schools (boys and girls). In all 15 testes were selected for evaluating the growth and development of motor abilities of the subjects between 8 to 14 years. To have the difference of data for assessing the development it was decided to organize the

test on 840 subjects; 30 in each group; 28 groups in all and the same subjects to be evaluated after a gap of one academic year. The subjects were tested initially for their growth and development in motor abilities from 02nd January 2006 to 15th March 2006 and the second test on the same subjects was organized from 01st November 2006 to 15th January 2007 for evaluating the natural motor development (which is untrained). Much of the samples were collected from the regions of Maharashtra and Andhra Pradesh. The scores are then entered individually in the forms provided accordingly. For identification of variables different colors are used: Normal boys- yellow; Normal girls- green; Deaf dumb boys- blue; Deaf dumb girls- pink.

STATISTICAL METHODS:

(1) To analyze the collected data the scores are arranged according to the comparison and in sequential order so as to find out the statistical values. The following statistical variables are selected for comparing, analyzing and interpretation of numerical values and basing on which the findings are discussed. (2) Mean is computed by adding all the scores and then dividing by the number of scores involved. The mean is used in the study to measure the average in growth and development. (3) Standard Deviation is computed in the study for the measures of variability. Standard deviation reflected the magnitude of the deviations of the scores from their mean. (4) Correlation is computed in the study to find out the relationship of one variable to another and also to determine the validity, reliability, and objectivity of the tests. (5) For testing the null hypothesis for the difference between various samples means the t-Test is used at significance of .05 levels. (6) For testing the null hypothesis for the difference between sample means, the F-Test is used and also to evaluate the significance of the difference

RESULTS AND DISCUSSIONS:

(1) A gradual increase in height and weight is observed in both boys and girls (normal and deaf dumb) from 8th year to 14th year. The height and weight spurt of boys is found in the 14th year whereas it is observed in 12th year in case of girls. The proportionate growth in weight with respect to height is observed in both sexes and variables.

(2) The speed ability in which specifically the acceleration ability and locomotion ability is found increasing the most at 8th year and gradually reducing the rate of development of speed till 10th year and again increasing steadily till 14th year in normal boys. The rate of development of speed is observed unsteady in case of deaf dumb boys and girls. In case of normal girls the development of speed is steadily increasing and observed maximum at 11th and 12th years and again reducing slowly till 14th year of age.

(3) In case of normal boys the development of strength in upper extremity is observed highest at the age of 14 whereas the abdominal strength at the age of 11th years and 12th years in lower extremity at 12th year. The development of hands, abdomen and leg strength is found at 14th year of age of deaf dumb boys. The hands and legs strength development in normal girls is found to be steadily increasing from 8th to 14th year whereas the abdominal strength development is observed reducing. The deaf dumb girls have good steady increase development in hand, abdomen and legs.

(4) The steady development in metabolic rate and VO_2 max is observed from negative to positive in normal boys till 14th years. An uneven distribution of development in metabolic rate and VO_2 max is observed in deaf dumb boys and girls and normal girls. The reduction in metabolism and VO_2 max is observed after 11th till 14th year in normal and deaf dumb girls.

(5) Flexibility in shoulder joint is found positively in normal boys, deaf dumb boys and deaf dumb girls, but it is found negative in normal girls. The trunk flexibility is found unevenly reducing at all age groups and in all variables as the age is advancing from 8th to 14th year. The development of hip joint flexibility is found maximum at 8th year and in 14th year in normal boys, deaf dumb boys and girls.

The reaction ability of normal boys, girls and deaf dumb boys, is found developed from 8th to 14th year sequentially. In deaf dumb girls it is found maximum at the age of 8th year.

(6) Balancing ability has been evaluated as the most uncertain ability as it has found a very low correlation among the same subjects when tested initially and finally. But can be developed at higher age groups.

(7) The development in agility is found developing in all the age groups and in all the variables, but it is observed maximum at different ages in different variables. The difference of developmental changes in height, weight growth and development in speed, strength, endurance, flexibility and coordinative abilities when compared between normal boys with deaf dumb boys and normal girls with deaf dumb girls is found insignificant when tested for significance by T and F tests at 0.05 levels.

CONCLUSION:

The study of the scores elicited in tasks through which the motor proficiencies of boys and girls between the ages 8 and 14 years have been assessed led to the following generalization: (1) As children mature in these years, they usually evidence regular increases in the ability to do most motor tasks. (2) Boys are stronger than girls in overall strength. In most of the abilities the normal boys and girls are comparatively slightly ahead from their deaf dumb counter part. (3) Measures of flexibility in children are highly specific, and as children move from eight to fourteen years they may grow less flexible in hip joint regions and maximum flexible in shoulder joint. (4) Balancing ability seems to mature towards the fourteenth year in most children, but still no correlations between their own initial and final performance is observed. (5) Level of concentration while performing the tests is found higher deaf dumb children (girls and boys) as compared to normal children (girls and boys). (6) Some of these children, who are for the part boys and girls, are evidencing maturational lags which may disappear with time. In general, the early identification and remediation of these problems is more fruitful than assuring that children will outgrow motor ineptitude. (7) Deaf dumb children evidence certain general problems, including rejection from parents and society resulting mental depression. At the same time, when testing groups of normal and deaf dumb children it is often found that ineptitude in one type of skill will not necessarily predict in others. (8) It is observed that many agencies which are running deaf dumb schools are not taking optimum care of the students in development of physical and motor abilities.

SUGGESTIONS:

1. Numerous measurement problems have plagued attempting to evaluate the motor abilities of children. Young children are extremely variable in the manner in which they decide to perform given skills, as they often have not developed efficient work methods.
2. The problem of locating valid norms is also difficult groups of children of the same age tested by two different researchers in the same event, such as standing broad jump, will often obtain highly dissimilar average scores. It is sometimes not clearly specified whether the children on whom the norms were based were tested individually or in groups, despite the fact that the social influences on the effort that children were willing to exert are well known.
3. It is suggested that the potentially strong children in motor abilities should be encouraged to participate in specific sports accordingly.
4. Few motor abilities development and activity oriented programs will enhance the supply of oxygen to the brain resulting in the increase in number of brain cells allowing the student to concentrate and enhance in schooling activity.
5. On reviewing the research literature dealing with the various aspects of the motor development of children, one cannot help but notice that a great many more people are anxious to write about children's motor development than are willing to take the trouble to confirm or reject speculation through the collection of "hard" data. After reviewing the material that follows, some readers may be encouraged to formulate and carry out their own investigations into this interesting area of inquiry.

REFERENCES:

1. DICKERSON, R.E., "Chemical Evaluation and the Origin of Life", Scientific American (1978); 239(3): 62-78.
2. VIDAL, G., "The Oldest Eukaryotic Cells", Scientific American (1984); 250 (2) 32-41.
3. VALENTINE, J.W., "The Evolution of Multi-cellular Plant and Animals", Scientific American (1978); 239(3): 104-17.
4. LEWIN, R. "Evolutionary Theory under Fire", Science (1980); 210: 883-7.
5. LEWIN, R. "Ethiopian Stone Tools are World's Oldest", Science (1981); 211, 806-7.
6. STRINGER, C. B., "The Emergence of Modern Humans", Scientific American (1990); 264; 68-74.
7. MARK HARRIES, CLYDE WILLIAMS, WILLIOAN, D. STANISM, and LYLE, J. MICHELI: "Oxford Textbook of Sports Medicine", Oxford University Press (1996); 2-3.
8. KANDEL, E.R., "Small Systems of Neurons", Scientific American (1979); 239(3): 60-70.
9. WASHBURN, S.L., "The Evolution of Man", Scientific American (1978); 239(3) 146-54.