

GROWTH AND DEVELOPMENT OF MOTOR ABILITIES IN NORMAL BOYS AND THAT IN DEAF AND DUMB: A COMPARATIVE STUDY

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ABSTRACT

INTRODUCTION:

Growth and Development is a life long process. Each and every aspect of human being is subject to the process of growth and development. In sports we consider physical and physiological aspects, psychological and social aspects, and motor development aspect.

Motor development is the most important aspect of growth and development for sports and physical education. It covers the development of motor abilities, sports skills, tactical efficiency, motor performance and motor behavior.

Here the researcher has considered only one aspect i.e., 'motor ability'. Physical fitness or condition is the sum total of five motor abilities, namely Strength, Speed, Endurance, Flexibility and Coordinative abilities. These five motor abilities and their complex form are the basic prerequisites for human motor actions.

In this study problem to be investigated is the development of motor abilities among normal and that in deaf and dumb boys, after training them for a set period.

RESEARCH DESIGN AND METHODOLOGY:

- (1) A general motor ability training program is prepared and imparted for approximately one hour a day, six days a week and around ten months in one whole academic year.
- (2) The training program implemented is same for normal boys and for deaf and dumb of the age group between 10 to 12 years, to around 50 subjects (25 normal and 25 deaf and dumb).
- (3) Every day pulse rate of the boys is noted to evaluate the training load and recovery process.
- (4) Every month end, standard tests is conducted to evaluate the development of various motor abilities.

FINDINGS:

No significance difference in normal and that in deaf dumb is found in the development of motor abilities. The conditions prevailing in home, society, schools, hostels and their diet are the main factors which are mostly controlling the development of the children. The grasping ability and the ability to concentrate on the given task is found much in the deaf dumb children as there is no distraction of attention due to auditory stimulus.

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Here the researcher wants to consider single aspect and i.e., motor abilities. Physical fitness or condition is the sum total of five motor abilities; namely strength, speed, endurance, flexibility and coordinative abilities. These five motor abilities and their complex form are the basic prerequisites for human motor actions. In this study the investigation is made on the comparative development of motor abilities among normal and that in deaf and dumb children between 10 to 12 years' age group after training them for a period of one year. The researcher is in pursuit to find out if any specific compensatory qualities are found among the physically handicapped children, which will be beneficial for the development of sports performance in certain age group, also the trainability of motor abilities which is performance prerequisite.

NEED OF THE STUDY:

As the population of the normal mass is comparatively more to the deaf dumb resulting the opportunities designed are more for normal mass. But at the same time there is a society always struggling to uplift the physically handicapped and trying to give them the best and equal opportunities so that the handicapped ability should not be the hurdle in normal and natural unfolding of an individual.

Considering the inability, which has the opportunity to be converted into compensatory ability for excelling in the sports arena the researcher, felt high need to evaluate the development of motor ability among deaf dumb and compare with the normal, which is a performance prerequisite.

OBJECTIVES OF THE STUDY:

1. To study the developments of motor abilities in boys (normal and deaf dumb) between 10 to 12 years.
2. To compare the rate of development of motor abilities in boys (normal and deaf dumb) between 10 to 12 years.
3. To understand if any higher or compensatory ability among deaf dumb children is noticed when compared to the normal children.
4. To understand various parameters of motor ability in certain age group of certain physical abnormality.
5. To observe and evaluate if some established training methodology is applicable and useful for physically handicapped children.

6. To understand how the society would help its weak counterpart.

SIGNIFICANCE OF THE RESEARCH:

1. The study may also profound a training methodology and loading procedure in motor training for physically handicapped children in specific age group.
2. Evaluation of development of motor abilities may fetch platform for establishing training methodology for enhancing performance in specific sports.
3. 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:

H1: According to the researcher, there may be some compensatory physical and mental abilities with physically handicapped children.

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.

DELIMITATIONS:

1. The study is delimited to the boys.
2. The study is further delimited to the age group between 10 to 12 years.
3. The study is delimited to only deaf dumb (boys) category in physically handicapped children.
4. The study is delimited to the standard motor ability tests applicable for specific age groups and sex.
5. The study is further delimited to the school going children in both normal and deaf dumb.

LIMITATIONS:

1. Diet and rest of the children was a limitation.
2. Involvement of students during training and motor ability test was a limitation.
3. Physical, mental, weather, school, house and surrounding conditions were a limitation.
4. Organization of training and the tests was adjusted with the concerned school's time tables.

DEFINITION OF THE TERMS:

'DEVELOPMENT':

Development is a process of qualitative transformation, which brings about progressive changes towards maturity and functional improvement in the organism of human being.

'GROWTH':

Growth is a process anatomical in nature involves structural changes and quantitative to measure.

'MOTOR ABILITIES':

The abilities that are responsible for human motor actions are called motor abilities. Strength, speed, endurance, flexibility and coordinative abilities are the five motor abilities and their sum total builds physical fitness or condition. These five motor abilities and their complex form are the basic prerequisites for human motor actions³³.

Motor ability: may be defined as one's present innate and acquired ability to perform motor skills of a general and fundamental nature excluding specialized sports skills. In other words it is synonymous with general motor ability¹³.

‘NORMAL CHILD’:

Normal: Typical; usual; healthy; according to the rule or standard³⁴.

If a child is found to be disease free, exhibits proper growth and development according to the age in its physical, mental and social health and status, then he/she may be defined as a normal child.

‘DEAF AND DUMB’:

Deaf is unable to hear; hearing indistinctly; hard of hearing³⁴.

Dumb: is mute; speechless; unable to speak³⁴.

‘10 YEARS TO 12 YEARS’ (CHRONOLOGICAL AGE):

Chronological age is the number of years and days elapsed since birth³⁷.

METHODOLOGY

SAMPLE:

The samples are randomly selected from two different schools, deaf dumb school and normal boys' school. 25 subjects from each school were imparted training regularly in motor abilities for one hour, six days a week, and 10 months in a year. The subjects selected were of 10 to 12 years of age groups. Every month few tests in growth and development were administration for evaluation. 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. The initial and final development is evaluated and analyzed.

VARIABLES:

INDEPENDENT VARIABLES:

1. Normal boys.
2. Deaf dumb boys.

INTERWEAVING VARIABLES:

1. Sex: Boys
2. Age: 10 years to 12 years.
3. Criteria: Non sportsman.
4. Times: Initial and Final

DEPENDENT VARIABLES:

GROWTH:

1. Height.
2. Weight.

DEVELOPMENT OF MOTOR ABILITIES:

3. Acceleration ability.
4. Locomotion ability.
5. Upper extremity explosive strength.
6. Abdomen explosive strength.
7. Lower extremity explosive strength.
8. Metabolic rate.
9. Maximum oxygen uptake capacity (VO₂ max.)
10. Shoulder flexibility.
11. Trunk flexibility.
12. Hip joint flexibility.
13. Reaction ability.
14. Balancing ability.
15. Agility.

TOOLS AND MEANS:

1. **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.
2. **Motor ability tests:**
 - Fifty yard dash for Acceleration ability.
 - 30 meters flying start for Locomotion ability.
 - Medicine ball put for Upper extremity explosive strength.
 - Sit-ups for Abdomen explosive strength.
 - Standing vertical jump for Lower extremity explosive strength.
 - 20 meters shuttle run (Canadian fit test) for Metabolic rate.
 - 20 meters shuttle run (Canadian fit test) for Maximum oxygen uptake capacity (VO₂ max.)
 - Shoulder rotation test for Shoulder flexibility.
 - Forward bend and reach for Trunk flexibility.
 - Side split test for Hip joint flexibility.
 - Nelson's hand reaction test for Reaction ability.
 - Storks stand for Static balancing ability.
 - 6 X 10 meters shuttle run for Agility.

PROCEDURE:

The samples are randomly selected from two different schools, deaf dumb school and normal boys' school. 25 subjects from each school were imparted training regularly in motor abilities for one hour, six days a week, and 10 months in a year. The subjects selected were of 10 to 12 years of age groups. Every month few tests in growth and development were administration for evaluation. 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. The initial and final development is evaluated and analyzed.

1. The sequence of tests will not cultivate fatigue in the subjects.
2. The condition of the subject before undergoing / performing the test is normal and motivated.
3. No exertion in daily activities.
4. Proper and comfortable kit while performing the test.
5. Condition of the surface and other physical equipment required for test.
6. Sufficient time was allotted for warming-up exercises.
7. Obtained information of diet and recovery the day before from the subject.
8. Instructions regarding the performance of the specific tests are passed before the test.

In each group 25 subjects were tested in 15 variables in growth and development of motor abilities, 4 hours were allotted in two days dividing 2 hours on each day. The sequence of the tests was so organized as to avoid fatigue, which was as follows:

Day one- Warming up for 15 minutes, 50 yard dash, Medicine ball put, Shoulder rotation test, Stork stand, Standing vertical jump, Forward bend and reach, 6X10 meters shuttle run, Cooling down 10 minutes, Height, Weight.

Day two- Warming up for 15 minutes, 30 meters flying start, Side split test, Sit-ups, Nelson's hand reaction test, 20M shuttle run (Canadian fit test), Cooling down 10 minutes.

COLLECTION OF DATA:

The data is collected from the tests conducted during the 10 months of training with regular interval of one month each, but the data for evaluation is considered when they are started with training and lastly after completion of training for stipulated time.

STATISTICAL METHODS:

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.

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.

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.

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.

For testing the null hypothesis for the difference between various sample means the t-Test is used at significance of .05 levels.

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.

The obtained values of the mean, standard deviation, correlation, t-Test, and F-Test are given in the tables below followed by the graphical representation. The graphs and tables interpretation is evaluated sequentially in the growth and development along with the comparison of normal boys to deaf dumb boys and normal girls to deaf

CONCLUSION:

The study of the scores elicited in tasks through which the motor proficiencies of boys and girls between the ages 10 and 12 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. With some exceptions, there is usually a linear relationship between age and mean scores, reflecting improvement in reasonably complex tasks.
2. In most of the abilities the normal boys are comparatively slightly ahead from their deaf-dumb counterpart.
3. Measures of flexibility in children are highly specific, and as children move from 10 to 12 years they may grow less flexible in hip joint regions and maximum flexible in shoulder joint.
4. Balancing ability seems to mature towards the 12th year in most children, but still no correlations between their own initial and final performance is observed.
5. Sex differences in throwing, running, and strength task seem to become greater as maturing.
6. Level of concentration while performing the tests is found higher in deaf-dumb children (girls and boys) as compared to normal children (girls and boys).
7. Deaf-dumb children constitute an insignificant percentage of populations of so-called normal children. The children admitted to the schools evidence motor abilities that are less than adequate; reflected in the inability to move well on the playground.
8. Some of these children, who are for the part boys, 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.

9. Deaf-dumb children evidence certain general problems, including rejection from parents and society resulting mental depression. At the same time, during 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.
10. 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.

RECOMMENDATIONS:

1. To successfully modify the motor behavior of both normal and physically challenged children, one should be aware of the complexities of human development and the numerous variables that modify the development.
2. Efforts should be made to delineate the manner in which individual differences in population of children may be affected. It is possible that the child from the higher-income home or from good background may benefit more from increased exposure to motor activities than the child from the lower income home. The child from lower-income home may be improved more by exposure of verbal-linguistic tasks and exercises.
3. Increased attempts should be made to incorporate a number of sensory stimulations into programs for the profoundly retarded and physically handicapped. Tactual, auditory, visual, and kinesthetic stimulation combined in the correct task to the correct degree may aid the severely retarded adult and child to react more appropriately to objects, situations, and other stimuli.
4. Fitness is likely to improve and with it the opportunity to enjoy life more fully where activities are physically demanding; motivation is likely to be heightened where feedback is immediate and success obvious to both performer and those who watch; and a more active leisure life, more chance to enjoy life is likely where activities can be linked to those of the wider community. This gives a sample of the growing body of research which shows that handicapped children do indeed have very special needs which can be at least partially satisfied by some or all of the wealth of activities which are included under the umbrella of physical education. Those responsible for educating handicapped children who ignore this aspect of education will be depriving many of their pupils of the opportunity 'to grow and develop to a fuller stature and to live well in their world'.