

# **“A COMPARATIVE STUDY OF DEVELOPMENT OF SPEED ABILITIES IN NORMAL AND DEAF AND DUMB BOYS BETWEEN 8 TO 14 YEARS”**

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## **ABSTRACT**

A comparative study of development of speed abilities in normal and deaf and dumb boys between 8 to 14 years is administered on around 350 students of different schools who were taking formal education. Out of 350 students 175 were selected from normal category and 175 from physically challenged i.e., deaf and dumb category. In each 25 boys were selected (25 subjects in normal boys and in each age group i.e., 8, 9, 10, 11, 12, 13 & 14 years totaling to 175; 25 subjects in deaf and dumb in each age group i.e., 8, 9, 10, 11, 12, 13 & 14 years totaling to 175). These subjects were tested initially in acceleration ability and locomotion ability and the same subjects were exposed to the same tests after exactly one year without any formal sports training and the development in their speed abilities was noted. After the statistical treatment of data by utilizing t-test and f-test the following findings were noted: The speed ability in which specifically the acceleration ability and locomotion ability is found increasing the most at 8<sup>th</sup> year and gradually reducing the rate of development of speed till 10<sup>th</sup> year and again increasing steadily till 14<sup>th</sup> year in normal boys. The rate of development of speed is observed unsteady in case of deaf dumb boys.

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## **INTRUDUCTION:**

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.

A comprehensive list of components of motor ability for performance of various physical activities (including sports) include muscular strength, muscular endurance, muscular power, cardiovascular endurance (alternatively also known as cardiopulmonary endurance), agility, speed, balance, flexibility, reaction time, coordination (eye-foot coordination, eye-hand coordination, whole-body coordination). In addition, traits like simple motor response, reflexes, sensory input and awareness of space and tempo (characteristic speed and rhythm of movement) are also considered important in motor performance- ability especially during the early years of body development.

Speed, like strength and endurance is a conditional ability. It has a complex nature as it depends to a considerable extent on the central nervous system, because we can

influence the functioning of central nervous system only to a very limited extent, therefore, speed performances cannot be improved to a considerable extent as in the case of strength and endurance. Speed ability primarily signifies the ability to execute motor movements with high speed. These movements may be cyclic or acyclic in nature. Theiss and Schnabel (1987) define “it is the performance prerequisite to do motor actions under given conditions (movement task, external factors, individual prerequisites) in minimum of time”. From general point of view we can have five types of speed abilities: reactions ability, acceleration ability, locomotion ability, movement speed, and speed endurance.

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 and dumb and bring them to equal stature with normal is the basic aim of the researcher.

### **NEED OF THE STUDY:**

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 challenged 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 speed ability among the deaf dumb and compare with the normal, which is a performance prerequisite.

### **OBJECTIVES OF THE STUDY:**

1. To find out, assess and analyze the developments taking in speed abilities among normal boys 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 speed ability in certain age group of certain physical abnormality.
4. To understand scientific base for methods of training physically challenged children.
5. To understand how the society would help its weak counterpart.

### **SIGNIFICANCE OF THE STUDY:**

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 speed training for physically challenged children in specific age group.

3. Results may also be helped to enhance sports terminology communication skills with physically challenged children.
4. Evaluation of development of speed abilities may fetch platform for establishing training methodology for enhancing performance in specific sports.
5. The comparison of development of speed abilities will give clear picture of the positive and negative aspects of speed abilities, which in turn ensure the proper training.

### **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.

#### **SPEED:**

Speed is the performance prerequisite to do motor actions under given conditions (movement task, external factors, individual prerequisites) in minimum of time.

#### **NORMAL CHILD:**

Normal: typical; usual; healthy; according to the rule or standard. 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 hearing.

Dumb: is mute; speechless; unable to speak.

#### **8 TO 14 YEARS (CHRONOLOGICAL AGE):**

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

### **REVIEW OF RELATED LITERATURE:**

\* From 1920 to 1930, one of the conclusions Piaget drew from watching his children grow was the conviction that thought sprang from actions, and not from other sources such as language.

\* Newell C. Kephart was a clinical psychologist who, in several books, a series of 19 one-hour films, and several articles, has outlined a theory proposing that motor learning is the basis of all learning.

\* Studies summarized by Bloom have pointed out the difficulty of predicting later intelligence by evaluating the perceptual-motor attributes of young children.

\* Bayley, who in 1968 published a longitudinal study of 54 individuals from birth to 36 years of age, has found that an infant's abilities can be factored into six separate attributes by the age of 5 months; visual following, social responsiveness, perceptual interest, manual dexterities vocalizations, and object relations.

- \* Rutherford found that although the boys had motorically gained significantly, the girls had not. Kephart's rather carefully designed methods of motor training of neurologically impaired youngsters should prove of value when attempting to improve motor functions.
- \* Delacto's theory is based on a view of neural function which suggests that specific "layers" of the brain mediate discrete motor functions.
- \* Minerva selected one from each group (identical twins and fraternal twins) and gave them a six month period of motor training involving a variety of tasks. Minerva concluded that the more complex tasks are modifiable through training, but the more basic locomotors functions are not.
- \* In a 1972 study, based upon the observations of over 700 children over a seventeen year period, Emma Pikler adds further data to the controversy concerning whether or not various kinds of early environmental conditions will elicit marked changes in motor development.
- \* Werner recent data indicated that with consistent and sophisticated teaching, some kinds of motor competencies may be accelerated during early childhood.
- \* A study by Walters, present evidence that the child who engages in prolonged and vigorous pre-birth movements can be counted upon to be advanced motorically during the first few years of life.
- \* Hartman found that the hurdle jump scores when compared to other standard measures of motor ability then in use, such as the vertical jump, the standing broad jump, the baseball distance throw and the 35 yard dash, yielded 'rs' ranging from 0.4 to 0.56. Other investigators correlated the scores lead to more extensive investigations with an even wider variety of tests similar to those carried out with adult males.
- \* In 1940 Aileen Carpenter, using the Johnson test together with other measures, evaluated the abilities of 530 children and found that three separate factors emerged.
- \* In 1941 Carpenter investigated various measures of speed in children and found that again three separate factors were isolated. Running speed tests were related but were independent of tests in which strength was evaluated.

## **METHODOLOGY:**

### **SAMPLE:**

The samples of this study is randomly selected from different schools with their date of birth lying between 1999 to 1993 in normal subjects (boys) and deaf dumb subjects (boys). 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  $\pm 5$ . 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 350 subjects were tested initially and the same 350 subjects were tested finally after one academic year (12 months). The tests were conducted for two days for four hours on each group of 25 subjects approximately. In all 350 subjects were considered for obtaining the difference between development is evaluated by subtracting the initial test 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

test in speed 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:**

**Dependent Variables:** (1) Normal boys. (2) Deaf Dumb boys.

**Independent Variables:** Development of speed abilities: (1) Acceleration; (2) Locomotion.

**Inter-weaning Variable:** Age groups (8, 9, 10, 11, 12, 13 & 14)

### **TOOLS AND MEANS:**

The research scholar has used some of the selected speed ability tests which are applicable to the selected age group and samples and are universally accepted and established standard tests for assessing development of motor abilities.

**Speed ability tests:** (1) 50 yard dash for acceleration ability. (2) 30 meters flying start for locomotion ability.

### **PROCEDURE:**

The subjects were selected from different schools in normal category (boys) and deaf dumb schools (boys). In all 02 testes were selected for evaluating the development of speed 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 conditions of the subjects were observed normal and motivated to take part in the tests. An introductory talk regarding the initial day's workout is assessed for confirmation of tirelessness and recovered state.

### **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.

(1) 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 development.

(2) For testing the hypothesis for the difference between various sample means the t test is used at significance of .05 levels.

(3) For testing the hypothesis for the difference between various sample means the f test is used at significance of .05 levels.

## **RESULTS AND DISCUSSIONS:**

The speed ability in which specifically the acceleration ability and locomotion ability is found increasing the most at 8<sup>th</sup> year and gradually reducing the rate of development of speed till 10<sup>th</sup> year and again increasing steadily till 14<sup>th</sup> year in normal boys. The rate of development of speed is observed unsteady in case of deaf dumb boys.

### **RESULTS OF THE COMPARISON OF THE DEVELOPMENT OF ACCELERATION (SPEED) OF BOYS (NORMAL AND DEAF-DUMB) BETWEEN 8 YEARS TO 14 YEARS (50 YARD DASH)**

#### **Normal boys:**

1. The maximum mean of development of acceleration ability in normal boys was found at the age of 8th year, which is -0.52sec and the minimum at 9th year, which is -0.19sec. The average mean of development of acceleration ability in normal boys between 8 to 14 years is found to be -0.31sec.
2. The standard deviation of development of acceleration ability in normal boys is found maximum at the age of 12th year, which is 0.28 and minimum at the age of 9th year, which is 0.09. The average standard deviation of development of acceleration ability in normal boys between 8 to 14 years is found to be 0.18.
3. The correlation of development of acceleration ability in normal boys between 8 years to 14 years of age groups is found as high as 0.94.

#### **Deaf-dumb boys:**

1. The maximum mean of development of acceleration ability in deaf-dumb boys was found at the age of 14th year, which is -0.42sec and the minimum at 8th year, which is -0.22sec. The average mean of development of acceleration ability in deaf-dumb boys between 8 to 14 years is found to be -0.32sec.
2. The standard deviation of development of acceleration ability in deaf-dumb boys is found maximum at the age of 10th year, which is 0.30 and minimum at the age of 12th year, which is 0.20. The average standard deviation of development of acceleration ability in deaf-dumb boys between 8 to 14 years is found to be 0.23.
3. The correlation of development of acceleration ability in deaf-dumb boys between 8 to 14 years of age groups is found as high as 0.82.

#### **COMPARISON OF BOYS (Normal and deaf-dumb):**

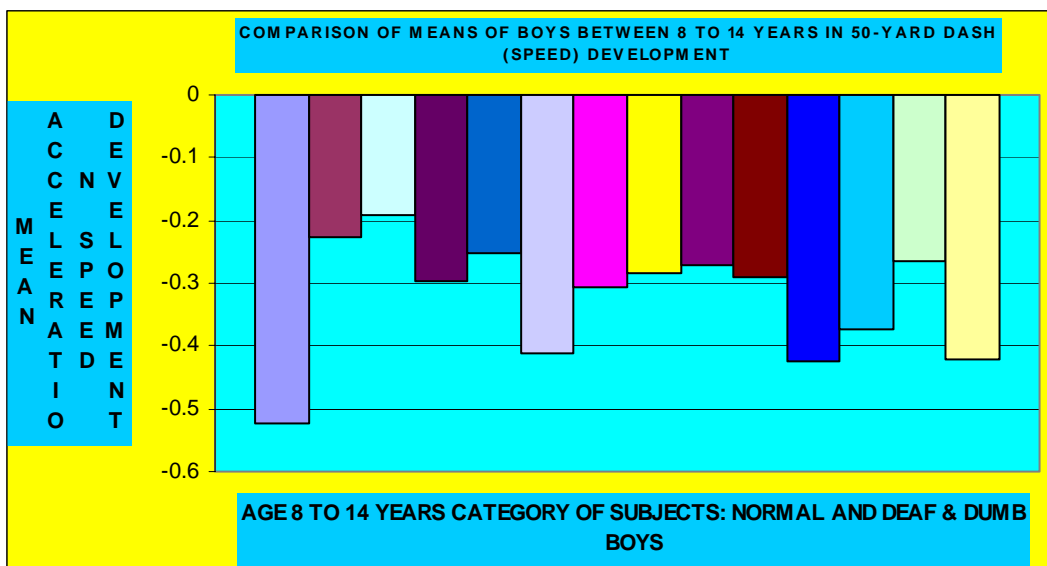
The average mean of development of acceleration ability of normal boys between 8 to 14 years is -0.31sec, which is more than -0.32sec of the deaf-dumb boys between 8 to 14 years. The difference of mean of development of acceleration ability between normal boys and the deaf-dumb boys between 8 to 14 years is -0.01sec, which is insignificant. The maximum mean of development of acceleration ability in normal boys is found at the age of 8th year, which is -0.52sec and that in the deaf-dumb boys it is at the age of 14th year, which is -0.42sec.

**Table: evaluation of significance of development in acceleration ability in normal and deaf-dumb (boys) by using t-test and F-test.**

BOYS (NORMAL & DEAF-DUMB)	t-Test Results	F-Test Results	COMMENTS
08 NB & DDB	0.103	0.968	Insignificant
09 NB & DDB	0.048	0.79	Insignificant
10 NB & DDB	0.022	0.220	Insignificant
11 NB & DDB	0.357	0.424	insignificant
12 NB & DDB	0.377	0.141	Insignificant
13 NB & DDB	0.205	0.132	Insignificant
14 NB & DDB	0.001	0.063	insignificant

\* Significant at 0.05 level

MEAN VALUES AND COMPARISON OF THE CATEGORY OF SUBJECTS: BOYS (N & DD)	50-YARD DASH INITIAL	50-YARD DASH FINAL	50-YARD DASH DEVELOPMENT
NORMAL BOYS 08 YEARS	9.4868	8.962	-0.5248
DEAF & DUMB BOYS 08 YEARS	9.6964	9.48625	-0.2276
NORMAL BOYS 09 YEARS	8.9168	8.7248	-0.192
DEAF & DUMB BOYS 09 YEARS	9.9396	9.6424	-0.2972
NORMAL BOYS 10 YEARS	8.6372	8.3864	-0.2508
DEAF & DUMB BOYS 10 YEARS	9.5716	9.1612	-0.4104
NORMAL BOYS 11 YEARS	9.096	8.7884	-0.3076
DEAF & DUMB BOYS 11 YEARS	9.6776	9.392	-0.2856
NORMAL BOYS 12 YEARS	7.9364	7.6664	-0.27
DEAF & DUMB BOYS 12 YEARS	9.5512	9.2592	-0.292
NORMAL BOYS 13 YEARS	8.2288	7.8052	-0.4236
DEAF & DUMB BOYS 13 YEARS	9.09	8.716	-0.374
NORMAL BOYS 14 YEARS	7.6096	7.3444	-0.2652
DEAF & DUMB BOYS 14 YEARS	8.7348	8.3124	-0.4224



**RESULTS OF THE COMPARISON OF THE DEVELOPMENT OF LOCOMOTION ABILITY  
(SPEED) OF BOYS NORMAL AND DEAF-DUMB)  
BETWEEN 8 TO 14 YEARS (30METERS FLYING START)**

**Normal boys:**

1. The maximum mean of development of locomotion ability in normal boys was found at the age of 8th year, which is -.036sec and the minimum at 9th year, which is -0.21sec. The average mean of development of locomotion ability in normal boys between 8 to 14 years is found to be -0.26sec.
2. The standard deviation of development of locomotion ability in normal boys is found maximum at the age of 8th year, which is -0.041 and minimum at the age of 11th year, which is -0.002. The average standard deviation of development of locomotion ability in normal boys between 8 to 14 years is found to be 0.0002.
3. The correlation of development of locomotion ability in normal boys between 8 years to 14 years of age groups is found as high as 0.93.

**Deaf-dumb boys:**

1. The maximum mean of development of locomotion ability in deaf-dumb boys was found at the age of 14th year, which is -0.26sec and the minimum at 11th year, which is -0.02sec. The average mean of development of locomotion ability in deaf-dumb boys between 8 to 14 years is found to be -0.015sec.
2. The standard deviation of development of locomotion ability in deaf-dumb boys is found maximum at the age of 11th year, which is 0.42 and minimum at the age of 14th year, which is 0.004. The average standard deviation of development of locomotion ability in deaf-dumb boys between 8 to 14 years is found to be 0.07.
3. The correlation of development of locomotion ability in deaf-dumb boys between 8 to 14 years of age groups is found as high as 0.92.

**COMPARISON OF BOYS (Normal and deaf-dumb):**

The average mean of development of locomotion ability of normal boys between 8 to 14 years is -0.26sec, which is less than -0.15sec of the deaf-dumb boys between 8 to 14 years. The difference of mean of development of locomotion ability between normal boys and the deaf-dumb boys between 8 to 14 years is -0.11sec, which is insignificant. The maximum mean of development of locomotion ability in normal boys is found at the age of 8th year, which is -0.36sec and that in the deaf-dumb boys it is at the age of 14th year, which is -0.26sec.

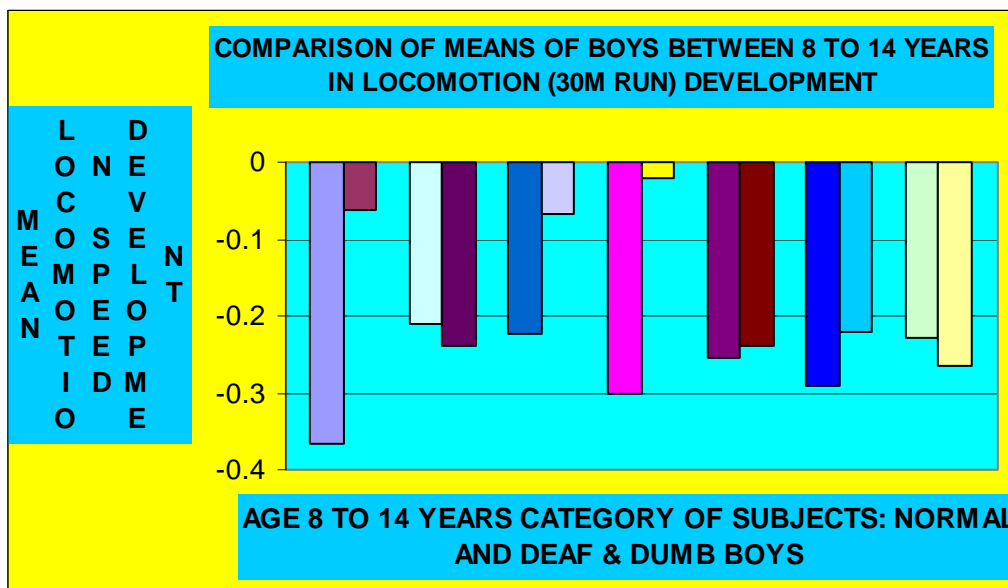


**Table:** evaluation of significance of development in locomotion ability in normal and deaf-dumb (boys) by using t-test and F-test.

BOYS (NORMAL & DEAF-DUMB)	t-Test Results	F-Test Results	COMMENTS
08 NB & DDB	0.253	0.016	Insignificant
09 NB & DDB	0.305	0.126	Insignificant
10 NB & DDB	0.012	0.296	Insignificant
11 NB & DDB	0.157	0.66	insignificant
12 NB & DDB	0.302	0.479	Insignificant
13 NB & DDB	0.103	0.009	Insignificant
14 NB & DDB	0.109	0.914	insignificant

\* Significant at 0.05 level

MEAN VALUES AND COMPARISON OF THE CATEGORY OF SUBJECTS: BOYS (N & DD)	30 M RUN INITIAL	30 M RUN FINAL	30 M RUN DEVELOPMENT
NORMAL BOYS 08 YEARS	5.5232	5.1568	-0.3664
DEAF & DUMB BOYS 08 YEARS	6.1864	6.124	-0.0624
NORMAL BOYS 09 YEARS	5.882	5.6712	-0.2108
DEAF & DUMB BOYS 09 YEARS	6.0128	5.774	-0.2388
NORMAL BOYS 10 YEARS	5.5108	5.288	-0.2228
DEAF & DUMB BOYS 10 YEARS	5.67	5.6036	-0.0664
NORMAL BOYS 11 YEARS	5.6468	5.346	-0.3008
DEAF & DUMB BOYS 11 YEARS	5.4804	5.4592	-0.0212
NORMAL BOYS 12 YEARS	5.4256	5.172	-0.2536
DEAF & DUMB BOYS 12 YEARS	5.2856	5.0456	-0.24
NORMAL BOYS 13 YEARS	5.1308	4.8408	-0.29
DEAF & DUMB BOYS 13 YEARS	5.1636	4.9436	-0.22
NORMAL BOYS 14 YEARS	4.6948	4.4672	-0.2276
DEAF & DUMB BOYS 14 YEARS	5.2348	4.9696	-0.2652



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