

“A COMPARATIVE STUDY OF DEVELOPMENT OF BALANCING ABILITY IN NORMAL AND DEAF AND DUMB GIRLS BETWEEN 8 TO 14 YEARS”

**Prof. Sagar Kulkarni, Asst. Prof., M. S. M's. College of Physical Education, Aurangabad, India.¹*

**Dr. Shatrunjay M. Kote, Ph.D., Asst. Prof. M. S. M's. College of Phy. Edu. Aurangabad, India.²*

ABSTRACT

A comparative study of development of Balancing Ability in normal and deaf and dumb girls 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 age group 25 girls were selected (25 subjects in normal girls 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 Balancing 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 Balancing Ability was noted. After the statistical treatment of data by utilizing t-test and f-test the following findings were noted: 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.

INTRODUCTION:

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 conceptions the movements' results. Effective motor movement can only result 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.

Balancing ability is the ability to maintain balance during whole body movements and to regain balance quickly after the disturbing movements. Balancing ability can be of two types: (a) Ability to maintain during stationary position or slow movements (static balance). It depends primarily on kinesthetic, tactile and to some extent on vestibular sense organs. (b) Ability to maintain or regain balance during large range movements and during rapidly changing positions of the body. It depends primarily on the functional capacity of the vestibular sense organs.

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 Balancing Ability among the deaf dumb and compare with the normal, which is a performance prerequisite.

OBJECTIVES OF THE STUDY:

1. To find out, access and analyze the developments taking in Balancing Ability among normal girls 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 coordinative 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 Balancing Ability 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 Balancing Ability may fetch platform for establishing training methodology for enhancing performance in specific sports.
5. The comparison of development of Balancing Ability will give clear picture of the positive and negative aspects of Balancing Ability, 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.

BALANCING ABILITY:

Balancing ability is the ability to maintain balance during whole body movements and to regain balance quickly after the disturbing movements. Balancing ability can be of two types: (a) Ability to maintain during stationary position or slow movements (static balance). It depends primarily on kinesthetic, tactile and to some extent on vestibular sense organs. (b) Ability to maintain or regain balance during large range movements and during rapidly changing positions of the body. It depends primarily on the functional capacity of the vestibular sense organs.

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:

* In 1973, Constantine and colleagues completed an interesting study which looked at the ability of a child to accelerate movement and to inhibit movement when asked to do so. Their subjects ranged in age from 4 to 9 years of age. They found that 'both' the ability to inhibit movement and to significantly increase movement speed was often moderately related. The ability to move faster or slower was achieved better by older children in the study. In a 1973 study carried out in Cratty's laboratory, found a significant change in a "draw slowly" measure of impulse control between the ages of 5 and 8 years, in contrast to the findings reported above by Bucky et al.

* A group of educationally retarded boys was taken for twelve weeks of judo instruction. Davis and Byrd tested the boys by means of the California Test of Personality, the Wide-Range Achievement Test and the AAHPER Special Fitness Test (i.e., a test specifically intended for use with handicapped children). Subjecting the results to statistical analysis they found that there were significant changes in total adjustment and in some measures of fitness. One particular case was of special interest. He was completely withdrawn, spoke to no one, showed no emotion and was completely uninterested in life. Before the end of the twelve-week program this boy was assisting the slower learners at judo and was at the end of the experimental period elected captain of the judo team. Davis suggests that "these gains were attributed in part to breaking the well-established repeated failure pattern".

* 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.

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 (girls) and deaf dumb subjects (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 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 development of Balancing Ability. 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 girls. (2) Deaf Dumb girls.

Independent Variables: Development of Balancing Ability (Stork Stand Test)

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.

Balancing Ability test: (1) Stork Stand Test

PROCEDURE:

The subjects were selected from different schools in normal category (girls) and deaf dumb schools (girls). In all 01 test was selected for evaluating the development of Balancing Ability of the subjects between 8 to 14 years. The test was administered with all specified and standard conditions. 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:

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.

**RESULTS OF THE COMPARISON OF THE DEVELOPMENT OF BALANCING ABILITY OF
GIRLS (NORMAL AND DEAF-DUMB) BETWEEN 8 YEARS TO 14 YEARS
(NELSON'S SCALE DROP TEST)**

Normal girls:

1. The maximum mean of development of balancing ability in normal girls was found at the age of 12th year, which is 1.04 sec and the minimum at 8th year, which is -0.12 sec. The average mean of development of balancing ability in normal girls between 8 to 14 years is found to be 0.34 sec.
2. The standard deviation of development of balancing ability in normal girls is found maximum at the age of 13th year, which is 2.84 and minimum at the age of 8th year, which is 1.39. The average standard deviation of development of balancing ability in normal girls between 8 to 14 years is found to be 2.08.
3. The correlation of development of balancing ability in normal girls between 8 to 14 years of age groups is found as low as -0.23.

Deaf-dumb girls:

1. The maximum mean of development of balancing ability in deaf-dumb girls was found at the age of 12th year, which is 1.28 sec and the minimum at 11th years, which is 0.12 sec. The average mean of development of balancing ability in deaf-dumb girls between 8 to 14 years is found to be 0.57 sec.
2. The standard deviation of development of balancing ability in deaf-dumb girls is found maximum at the age of 11 & 14th year, which is 2.83 and minimum at the age of 8th year, which is 1.68. The average standard deviation of development of balancing ability in deaf-dumb girls between 8 to 14 years is found to be 2.32.
3. The correlation of development of balancing ability in deaf-dumb girls between 8 to 14 years of age groups is found as low as 0.06.

COMPARISON OF GIRLS (Normal and deaf-dumb):

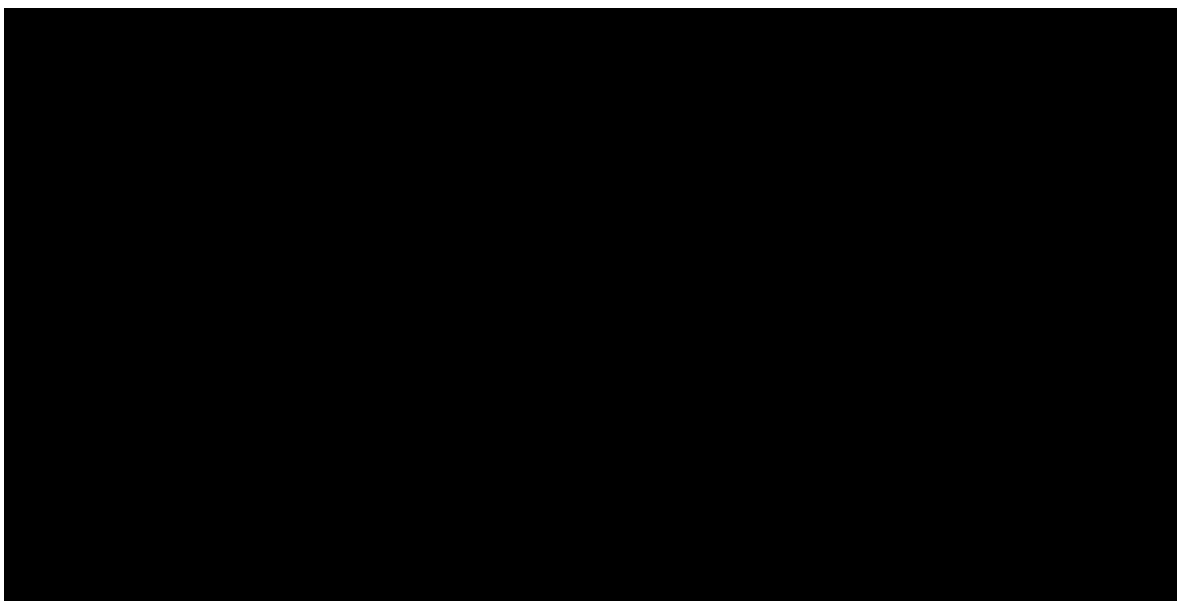
The average mean of development of balancing ability of normal girls between 8 to 14 years is 0.34 sec, which is less than 0.57 sec of the deaf-dumb girls between 8 to 14 years. The difference of mean of development of balancing ability between normal girls and that in the deaf-dumb girls is 0.23 sec, which is insignificant. The maximum mean of development of balancing ability in normal girls is found at the age of 12th year, which is 1.04 and that in the deaf-dumb girls it is at the age of 12th year, which is 1.28 sec.

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

GIRLS (NORMAL & DEAF-DUMB)	t-Test Results	F-Test Results	COMMENTS
08 NG & DDG	0.006	0.362	Insignificant
09 NG & DDG	0.440	0.792	Insignificant
10 NG & DDG	0.477	0.676	Insignificant
11 NG & DDG	0.383	0.029	insignificant
12 NG & DDG	0.353	0.597	Insignificant
13 NG & DDG	0.334	0.392	Insignificant
14 NG & DDG	0.476	0.072	insignificant

* Significant at 0.05 level.

MEAN VALUES AND COMPARISON OF THE CATEGORY OF SUBJECTS: GIRLS (N & DD)	STORK STAND INITIAL	STORK STAND FINAL	SRTORK STAND DEVELOPMENT
NORMAL GIRLS 08 YEARS	2.92	2.8	-0.12
DEAF & DUMB GIRLS 08 YEARS	3.24	4.24	1
NORMAL GIRLS 09 YEARS	3.24	3.48	0.24
DEAF & DUMB GIRLS 09 YEARS	3.4	3.72	0.32
NORMAL GIRLS 10 YEARS	3.4	3.88	0.48
DEAF & DUMB GIRLS 10 YEARS	3.6	4.12	0.52
NORMAL GIRLS 11 YEARS	3.2	3.52	0.32
DEAF & DUMB GIRLS 11 YEARS	4.16	4.28	0.12
NORMAL GIRLS 12 YEARS	3	4.04	1.04
DEAF & DUMB GIRLS 12 YEARS	4.04	5.32	1.28
NORMAL GIRLS 13 YEARS	3.84	4.04	0.2
DEAF & DUMB GIRLS 13 YEARS	4.64	5.16	0.52
NORMAL GIRLS 14 YEARS	2.92	3.2	0.28
DEAF & DUMB GIRLS 14 YEARS	4.84	5.08	0.24



REFERENCES:

1. GILBERT, J.A., "Researchers on the Mental and Physical Development of School Children," Studies from the Yale Psychological Laboratory, (1984), 40-100.
2. ELENOR, M. BIRKETT, "A Comparative Study of the Effects of the Makaton Vocabulary and a Language Stimulation Program On the Communication Abilities of Mentally Handicapped Adults," Degree of M.Litt. Department of English Language, University of Glasgow, (1984).
3. BRYANT J. CRATTY, "Perceptual and Motor Development in Infants and Children," Analysis of Selected Perceptual- Motor Programs," 34 (1979).
4. GROVES, L. "Physical Education for Slow-Learning Girls in North-East Schools with Special Reference to the Effect of Creative Dance on Behavior and Friendship Patterns amongst Adolescent ESN (M) girls," M.Ed. Thesis, Durham University, (1975).
5. KOOLS, JOSEPH, and D. TWEEDIE, "Development of Praxis in Children," Percept. Mot. Skills, 40 (1975), 11-19.
6. DAVIS, B. and BYRD, R.J., "The effects of judo on EMR boys," *Journal of Sports Medicine and Physical Fitness*, XV, Dec. (1975).
7. WERNER, PETER, "Education of Selected Movement Patterns of Pre-school Children," Perceptual Motor Skills, 39 (1974), 795-98.
8. DANEIL G. FREEDMAN, "Human Infancy, an Evolutionary Perspective," Hillsdale, N. J.: Lawrence Erlbaum Associates, Distributed via John Wiley and Sons, New York, 1974.
9. (a) CONSTANTINI A.F., D.A. CORSINI and J.E. DAVID, "Conceptual tempo, Inhibition of Movement and Acceleration of Movement in 4, 7, and 9 year-old children." Perceptual Motor Skills, 37 (1973) 779-84. (b) CRATTY B.J., et al., "A Survey of Selected Perceptual- Motor Abilities in Children, Grade K through 4th," Unpublished Monograph, Perceptual Motor Learning Laboratory, UCLA, (1973).
10. ROSENBLITH, JUDY F., "Prognostic Value of Neonatal Behavioral Tests," *Early Child Dev. And Care* 3 (1973), 31-50.
11. CRATTY B.J., "A Survey of Selected Physical Abilities in Elementary School Children," Unpublished Monograph, Perceptual- Motor Learning Laboratory, UCLA, (1973).
12. The Cheshire Education Committee's report on retarded children (1973).
13. (a) GULLIFORD, R. *Backwardness and Educational Failure*. National Foundation for Educational Research, London, 1966. (b) LUNT, I. 'Rhythm and the slow learner', *Special Education*, LXIV, 4 (1973).
14. RARICK, G. and DOBBINS, D. A., "Basic components in the motor performance of EMR children: implications for curriculum development," Research Report, University of California, Berkeley, (1973).