

A Study on the Development of Epicondylar & Biepicondylar among the Deaf-Dumb and Normal Children between 8 to 14 Years

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Abstract

A Study of body composition profiles of the deaf-dumb and normal children between age group of 8 to 14 years were taken and their developmental process in Epicondylar and Biepicondylar width is analyzed. Around 25 samples were considered in all the 28 age categories from different places of Maharashtra. The mean, Standard deviation and the correlation between pre-test, post-test and difference between them was calculated, and it was found that there is no significant change of difference observed between the deaf-dumb and normal development in Epicondylar and Biepicondylar width among the deaf-dumb boys and normal boys and similarly deaf-dumb girls and normal girls.

Introduction:

The three major structural components of the human body include muscle, fat and bone. Because there are marked gender differences in body composition, a convenient basis for evaluation and comparison is to employ the concept proposed by Behnke of the reference man and reference woman. The theoretical model is based on the average physical dimensions obtained from detailed measurements of thousands of individuals from large-scale anthropometric survey. The reference man is taller, heavier, his skeleton weighs more, and he has a larger muscle mass and lower total fat content than the reference female.

Growth and development is a lifelong 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 aspects. Physical and physiological development is the most important aspect of growth and development for sports and physical education. It covers the development of height, weight, sitting height, various muscle girths, diameter of bones at different joints, fat percentage which are directly or indirectly related to motor abilities, sports skills, tactical efficiencies, motor performance and motor behavior, which are again the prerequisites of sports performance.

Here the researcher wants to consider single aspect and i.e., bone width at elbow and knee joint. An accurate appraisal of body composition provides an important basis to formulate an intelligent program of total fitness. The frequently used standard – the Height and Weight tables – is of limited value in evaluating physique, since it is well established that over-weight and over-fat are not synonymous. The researcher is in pursuit to find out if any specific physical qualities are found among the normal and physically handicapped children, which will be beneficial for the development of sports performance in certain age group, also the trainability of sports abilities.

OBJECTIVES OF THE STUDY:

- (1) To find out, access and analyze the developments taking in **Epicondylar & Biepicondylar** among normal children and that of deaf dumb at particular age group.
- (2) To understand if any higher or compensatory ability in body composition among deaf dumb children is noticed when compared to the normal children.
- (3) To understand various parameters of development of body structure in certain age group of certain physical abnormality.

DELIMITATIONS:

1. The study is delimited to both boys and girls.
2. The study is further delimited to the age group between 08 to 14 years.
3. The study is delimited to deaf-dumb (Boys & Girls) category in physically challenged children.
4. The study is delimited to the body composition 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. Physical, mental, weather, school, house and surrounding conditions were a limitation.
3. Organization of the tests was adjusted with the concerned school's time tables.

METHODOLOGY

SAMPLE:

The samples of this study are randomly selected from different schools with their date of birth lying between 1993 and 1999 in normal (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 approximately on each group of 30 subjects. In all, 700 subjects were considered for obtaining the difference between growth and development and are 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 were administered individually under standard conditions applicable for specific tests and the time period required between two tests is amply considered.

III.2 – VARIABLES:

DEPENDENT VARIABLES:

1. Normal boys.
2. Deaf-dumb boys.

INTERWEAVING VARIABLES:

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

INDEPENDENT VARIABLES:

GROWTH OF:

1. Epicondylar
2. Bipicondylar

TOOLS AND MEANS:

Rod Compass and Venire Calipers

MEANS USED:

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. **Elbow and Knee width tests:**
 - * Epicondylar
 - * Bipicondylar

PROCEDURE:

Elbow-to-Elbow Breadth: Subject sits erect, his upper arms hanging at his sides, his forearms extended horizontally, and the elbows resting lightly against the body. Using the rod compass, measure from behind the maximum horizontal distance across the lateral points on the lateral epicondyles of the humerus.

Bipicondylar Femur Breadth: subject sits erect with knees bent at right angles, feet together, medial epicondyles of femora in firm apposition. Using the rod compass, measure the distance between lateral epicondyles (lateral projections of knees)

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.

Results and Discussions:

Normal boys 8 years

STATISTICS	Epicondylar - Initial	Epicondylar – Final	Epicondylar - Difference	Biepicondylar – initial	Biepicondylar – Final	Biepicondylar - Difference
MEAN	4.688	4.892	0.204	7.032	7.26	0.228
S.D.	0.321	0.281	0.171	0.228	0.251	0.117
CORREL	0.845			0.884		

Deaf-dumb boys 8 years

STATISTICS	Epicondylar - Initial	Epicondylar – Final	Epicondylar - Difference	Biepicondylar – initial	Biepicondylar – Final	Biepicondylar - Difference
MEAN	4.616	4.768	0.152	7.092	7.356	0.264
S.D.	0.439	0.454	0.058	0.340	0.361	0.111
CORREL	0.991			0.951		

Normal boys 9 years

STATISTICS	Epicondylar - Initial	Epicondylar – Final	Epicondylar - Difference	Biepicondylar – initial	Biepicondylar – Final	Biepicondylar - Difference
MEAN	4.996	5.16	0.164	7.084	7.376	0.292
S.D.	0.392	0.398	0.048	0.543	0.555	0.111
CORREL	0.992			0.979		

Deaf-dumb boys 9 years

STATISTICS	Epicondylar - Initial	Epicondylar – Final	Epicondylar - Difference	Biepicondylar – initial	Biepicondylar – Final	Biepicondylar - Difference
MEAN	4.652	4.804	0.152	6.988	7.236	0.248
S.D.	0.393	0.410	0.050	0.438	0.510	0.119
CORREL	0.992			0.979		

Normal boys 10 years

STATISTICS	Epicondylar - Initial	Epicondylar – Final	Epicondylar - Difference	Biepicondylar – initial	Biepicondylar – Final	Biepicondylar - Difference
MEAN	5.116	5.272	0.156	7.212	7.5	0.288
S.D.	0.310	0.299	0.104	0.303	0.302	0.123
CORREL	0.942			0.916		

Deaf-dumb boys 10 years

STATISTICS	Epicondylar - Initial	Epicondylar – Final	Epicondylar - Difference	Biepicondylar – initial	Biepicondylar – Final	Biepicondylar - Difference
MEAN	4.916	5.112	0.196	7.532	7.816	0.284
S.D.	0.306	0.329	0.067	0.390	0.400	0.074
CORREL	0.980			0.982		

Normal boys 11 years

STATISTICS	Epicondylar - Initial	Epicondylar – Final	Epicondylar - Difference	Biepicondylar – initial	Biepicondylar – Final	Biepicondylar - Difference
MEAN	4.888	5.084	0.196	7.468	7.812	0.344

S.D.	0.376	0.447	0.151	0.502	0.465	0.208
CORREL	0.947			0.910		

Deaf-dumb boys 11 years

STATISTICS	Epicondylar - Initial	Epicondylar – Final	Epicondylar - Difference	Biepicondylar – initial	Biepicondylar – Final	Biepicondylar - Difference
MEAN	5.272	5.5	0.228	7.56	7.912	0.352
S.D.	0.434	0.385	0.162	0.494	0.444	0.175
CORREL	0.928			0.935		

Normal boys 12 years

STATISTICS	Epicondylar - Initial	Epicondylar – Final	Epicondylar - Difference	Biepicondylar – initial	Biepicondylar – Final	Biepicondylar - Difference
MEAN	5.352	5.524	0.172	7.32	7.636	0.316
S.D.	0.302	0.291	0.045	0.412	0.422	0.08
CORREL	0.988			0.981		

Deaf-dumb boys 12 years

STATISTICS	Epicondylar - Initial	Epicondylar – Final	Epicondylar - Difference	Biepicondylar – initial	Biepicondylar – Final	Biepicondylar - Difference
MEAN	5.452	5.612	0.16	7.652	7.884	0.232
S.D.	0.391	0.399	0.057	0.334	0.370	0.085
CORREL	0.989			0.975		

Normal boys 13 years

STATISTICS	Epicondylar - Initial	Epicondylar – Final	Epicondylar - Difference	Biepicondylar – initial	Biepicondylar – Final	Biepicondylar - Difference
MEAN	5.628	5.848	0.22	8.136	8.452	0.316
S.D.	0.364	0.366	0.040	0.507	0.572	0.106
CORREL	0.993			0.987		

Deaf-dumb boys 13 years

STATISTICS	Epicondylar - Initial	Epicondylar – Final	Epicondylar - Difference	Biepicondylar – initial	Biepicondylar – Final	Biepicondylar - Difference
MEAN	5.464	5.664	0.2	8.036	8.296	0.26
S.D.	0.275	0.251	0.132	0.500	0.537	0.091
CORREL	0.877			0.987		

Normal boys 14 years

STATISTICS	Epicondylar - Initial	Epicondylar – Final	Epicondylar - Difference	Biepicondylar – initial	Biepicondylar – Final	Biepicondylar - Difference
MEAN	5.832	6.044	0.212	8.16	8.492	0.332
S.D.	0.347	0.352	0.033	0.267	0.294	0.074
CORREL	0.995			0.968		

Deaf-dumb boys 14 years

STATISTICS	Epicondylar - Initial	Epicondylar – Final	Epicondylar - Difference	Biepicondylar – initial	Biepicondylar – Final	Biepicondylar - Difference
MEAN	5.708	5.876	0.168	8.012	8.264	0.252
S.D.	0.248	0.243	0.047	0.509	0.499	0.082
CORREL	0.981			0.986		

Normal girls 8 years

STATISTICS	Epicondylar - Initial	Epicondylar – Final	Epicondylar - Difference	Biepicondylar – initial	Biepicondylar – Final	Biepicondylar - Difference
MEAN	4.42	4.54	0.12	6.456	6.6	0.144

S.D.	0.270	0.290	0.076	0.309	0.314	0.065
CORREL	0.965			0.978		

Deaf-dumb girls 8 years

STATISTICS	Epicondylar - Initial	Epicondylar – Final	Epicondylar - Difference	Biepicondylar – initial	Biepicondylar – Final	Biepicondylar - Difference
MEAN	4.644	4.78	0.136	6.988	7.144	0.156
S.D.	0.391	0.379	0.063	0.457	0.285	0.419
CORREL	0.986			0.440		

Normal girls 9 years

STATISTICS	Epicondylar - Initial	Epicondylar – Final	Epicondylar - Difference	Biepicondylar – initial	Biepicondylar – Final	Biepicondylar - Difference
MEAN	4.808	4.976	0.168	6.676	6.888	0.212
S.D.	0.412	0.424	0.062	0.283	0.307	0.083
CORREL	0.989			0.963		

Deaf-dumb girls 9 years

STATISTICS	Epicondylar - Initial	Epicondylar – Final	Epicondylar - Difference	Biepicondylar – initial	Biepicondylar – Final	Biepicondylar - Difference
MEAN	4.52	4.684	0.164	6.72	7.008	0.288
S.D.	0.236	0.246	0.048	0.342	0.352	0.123
CORREL	0.980			0.937		

Normal girls 10 years

STATISTICS	Epicondylar - Initial	Epicondylar – Final	Epicondylar - Difference	Biepicondylar – initial	Biepicondylar – Final	Biepicondylar - Difference
MEAN	4.776	4.948	0.172	6.536	6.744	0.208
S.D.	0.266	0.272	0.102	0.322	0.287	0.170
CORREL	0.928			0.849		

Deaf-dumb girls 10 years

STATISTICS	Epicondylar - Initial	Epicondylar – Final	Epicondylar - Difference	Biepicondylar – initial	Biepicondylar – Final	Biepicondylar - Difference
MEAN	4.568	4.74	0.172	6.884	7.16	0.276
S.D.	0.242	0.236	0.084	0.221	0.191	0.092
CORREL	0.938			0.909		

Normal girls 11 years

STATISTICS	Epicondylar - Initial	Epicondylar – Final	Epicondylar - Difference	Biepicondylar – initial	Biepicondylar – Final	Biepicondylar - Difference
MEAN	5.16	5.416	0.256	6.956	7.532	0.576
S.D.	0.241	0.456	0.47	0.377	2.009	1.963
CORREL	0.206			0.212		

Deaf-dumb girls 11 years

STATISTICS	Epicondylar - Initial	Epicondylar – Final	Epicondylar - Difference	Biepicondylar – initial	Biepicondylar – Final	Biepicondylar - Difference
MEAN	4.952	5.128	0.176	7.348	7.696	0.348
S.D.	0.202	0.222	0.077	0.462	0.503	0.122
CORREL	0.937			0.971		

Normal girls 12 years

STATISTICS	Epicondylar - Initial	Epicondylar – Final	Epicondylar - Difference	Biepicondylar – initial	Biepicondylar – Final	Biepicondylar - Difference
MEAN	5.384	5.58	0.196	6.996	7.276	0.28

S.D.	0.239	0.25	0.035	0.551	0.5621	0.076
CORREL	0.990			0.990		

Deaf-dumb girls 12 years

STATISTICS	Epicondylar - Initial	Epicondylar – Final	Epicondylar - Difference	Biepicondylar – initial	Biepicondylar – Final	Biepicondylar - Difference
MEAN	4.98	5.152	0.172	7.572	7.856	0.284
S.D.	0.281	0.269	0.045	0.328	0.325	0.102
CORRELATION	0.987			0.950		

Normal girls 13 years

STATISTICS	Epicondylar - Initial	Epicondylar – Final	Epicondylar - Difference	Biepicondylar – initial	Biepicondylar – Final	Biepicondylar - Difference
MEAN	5.408	5.6	0.192	7.264	7.604	0.34
S.D.	0.29	0.292	0.049	0.622	0.642	0.095
CORREL	0.985			0.989		

Deaf-dumb girls 13 years

STATISTICS	Epicondylar - Initial	Epicondylar – Final	Epicondylar - Difference	Biepicondylar – initial	Biepicondylar – Final	Biepicondylar - Difference
MEAN	5.108	5.292	0.184	7.336	7.612	0.276
S.D.	0.230	0.244	0.047	0.381	0.374	0.105
CORREL	0.981			0.961		

Normal girls 14 years

STATISTICS	Epicondylar - Initial	Epicondylar – Final	Epicondylar - Difference	Biepicondylar – initial	Biepicondylar – Final	Biepicondylar - Difference
MEAN	5.484	5.684	0.2	7.152	7.512	0.36
S.D.	0.310	0.317	0.028	0.575	0.589	0.070
CORREL	0.995			0.992		

Deaf-dumb girls 14 years

STATISTICS	Epicondylar - Initial	Epicondylar – Final	Epicondylar - Difference	Biepicondylar – initial	Biepicondylar – Final	Biepicondylar - Difference
MEAN	5.544	5.328	-0.216	7.488	7.784	0.296
S.D.	1.986	0.257	2.018	0.200	0.219	0.097
CORREL	-0.061			0.895		

CONCLUSION:

From the above tables it is concluded that there is no notable significance in the development of Epicondylar and Biepicondylar among normal and deaf-dumb children from 8 to 14 years in girls and boys section.

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