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Research Article

A Study of Anthropometric Somatotype of Mentally Challenged Children in Chhattisgarh, India

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Abstract: Purpose: This study focused on evaluation of somatotype characteristics of mentally challenged children in Chhattisgarh, India. Methods & Materials: Ex-post facto design was used. Purposive Sampling method was used to select 35 trainable and educable mentally challenged children (male) without any multiple disabilities from special schools for the mentally challenged children in Raipur, Chhattisgarh. The age of the children was between 14 - 16 years. Each subject was somatotyped by the Heath- Carter Anthropometric Method. Data were analyzed with mean, standard deviation. Majority of participants have predominantly mesomorphic endomorph characteristics. Mentally challenged children in Raipur, Chhattisgarh were mesomorphic endomorph in their somatotype characteristics.

Keywords: Somatotyping, Mentallychallenged, Endomorphy, Mesomorphy, Ectomorphy.

INTRODUCTION

Human populations consist of individuals who differ widely in body shape and size. Somatotyping is a unique method for the classification of human physique which was first invented by Sheldon *et al.*¹, and later on modified by Heath and Carter². It reflects an overall outlook of the body and conveys a meaning of the totality of morphological features of the human body. The somatotype identifies a person as belonging to biological group or family³. Individual usually have elements of each type, and their composite somatotype is described in a three-figure rating system. In one system (the Heath-

Carter somatotype system) the rating are based on a number of factors, such as skin fold measurements, age, height and weight. Physique basically include the reading of body structure, body size, and body composition, fitness and performance are descriptive of the applied interaction of morphological, muscular and skill that are developed and acquired through exercise and physical training programs⁴. In one word somatotype describes the physical characteristics of the human body and allows a definition of body type through the analysis of metric characters. Somatotyping has proved to be a good descriptive and classification system for learning about relative shape and body composition and their variation in populations⁵. A large range of somatotype studies has given up much useful information about normal children's physique. But only few studies have been conducted on mentally challenged children, especially in India. Keeping this in mind an attempt has been made to study anthropometric somatotype of mentally challenged children.

MATERIAL AND METHODS

The present findings are based upon 35 male mentally challenged children. Between 14 to 16 of age, who were purposively selected from special schools for the mentally challenged children in Raipur Chhattisgarh. The sample consisted of trainable and educable mentally challenged children, without any multiple disabilities. The date of birth of each subject was provided by the respective teachers associated to them and was cross-checked from their data card. The following research instruments were used for this study Stadiometer, Weighing machine, Skinfold caliper, Measuring tape and Sliding caliper. To measure various anthropometric variables standard instruments that is weighing machine, stadiometer, skin fold caliper, sliding caliper, measuring tape were used GPM. These instruments were reliably calibrated and accurate and are being utilized by scientist in the field of anthropology and sports anthropology. In accordance with internationally accepted standards following body measurements were taken^{2, 6,7} Statistical analysis was done using MS office-Excel.

RESULTS AND DISCUSSION

Following table presents descriptive statistics of 10 anthropometric data recorded for the assessment of anthropometric somatotype. Mean value of height was 154 cm (SD 13.25 cm) and of weight was 46.9 kg (SD 15.27 kg) respectively. Descriptive statistics of other skin folds, breadths and girths measurements are shown in **Table-1**

Table-1: Descriptive statistics of anthropometric measurements of mentally challenged children.

Descriptive		Triceps	Subscapular	Supraspinale	Calf	Humerus	Femur	Arm	Calf	
Statistics	Height	Weight	SF	SF	SF	Breadth	breadth	Girth	girth	
Unit	Cm	Kg	Mm	Mm	Mm	Cm	cm	cm	cm	
Mean	154	46.9	10.96	13.25	13.64	14.5	5.88	7.58	24	29.1
Median	155	45	10.1	10.4	13	14	5.9	7.6	22	29
Mode	155	37	5.8	10	7.1	25	6.1	8.1	20	32
Sd	13.3	15.27	5.69	7.5	5.87	6.46	0.62	0.82	9.51	3.62

Table-2: Descriptive statistics for somatotype variables of mentally challenged children.

N	Statistics	Somatotype	HWR
35	\bar{x}	4.16 –3.29–2.60	43.27
	S	1.62 2.07 2.22	91.18

HWR = Height Weight Ratio ($height/\sqrt[3]{Weight}$), \bar{x} = Mean; and s = Standard DeviationF

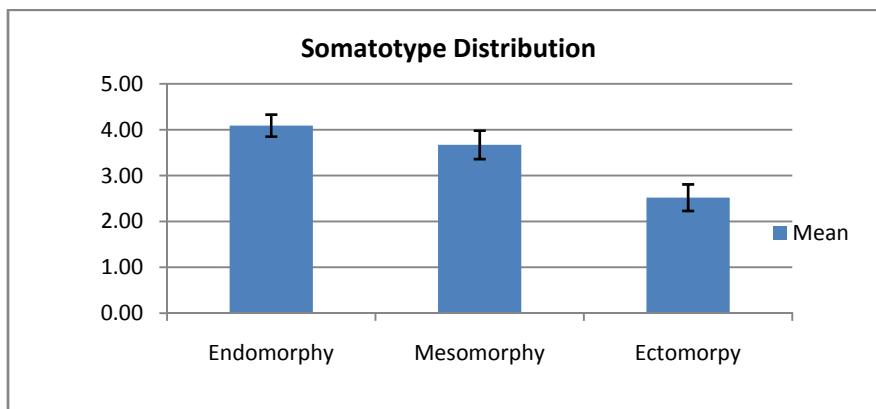
**Figure 1:** Comparison of mean and standard error of three components of Heath-Carter anthropometric somatotype calculation

Table-2 and Figure-1: Mean value of endomorphic characteristic was recorded to be 3.95. Mean value of mesomorph was 2.97 and ectomorph was 2.50. The endomorphic ratings increase with age and the maximum value for this component has been recorded as 4.05 units at 14 years⁵.

Table-3: The result shows that mentally challenged children were more endomorphic and less mesomorphic

Somatotype Category	F	%
Balanced Endomorph	1.00	2.86
Balanced Mesomorph	0.00	0.00
Balanced Ectomorph	4.00	11.43
Mesomorph-Endomorph	0.00	0.00
Mesomorph-Ectomorph	2.00	5.71
Endomorph-Ectomorph	1.00	2.86
Mesomorphic Endomorph	11.00	31.43
Ectomorph Endomorph	4.00	11.43
Endomorphic Mesomorph	1.00	2.86
Ectomorphic Mesomorph	0.00	0.00
Endomorphic ectomorph	10.00	28.57
Mesomorphic Ectomorph	1.00	2.86
Central All	0	0
Total	35.00	100

F = Frequency somatotype distribution of mentally challenged children showed 31.43 % of them belonged to mesomorphic endomorph category, 28.57 % to endomorphic ectomorph, 11.43 % balanced ectomorph, 11.43 % Ectomorph-Endomorph respectively.

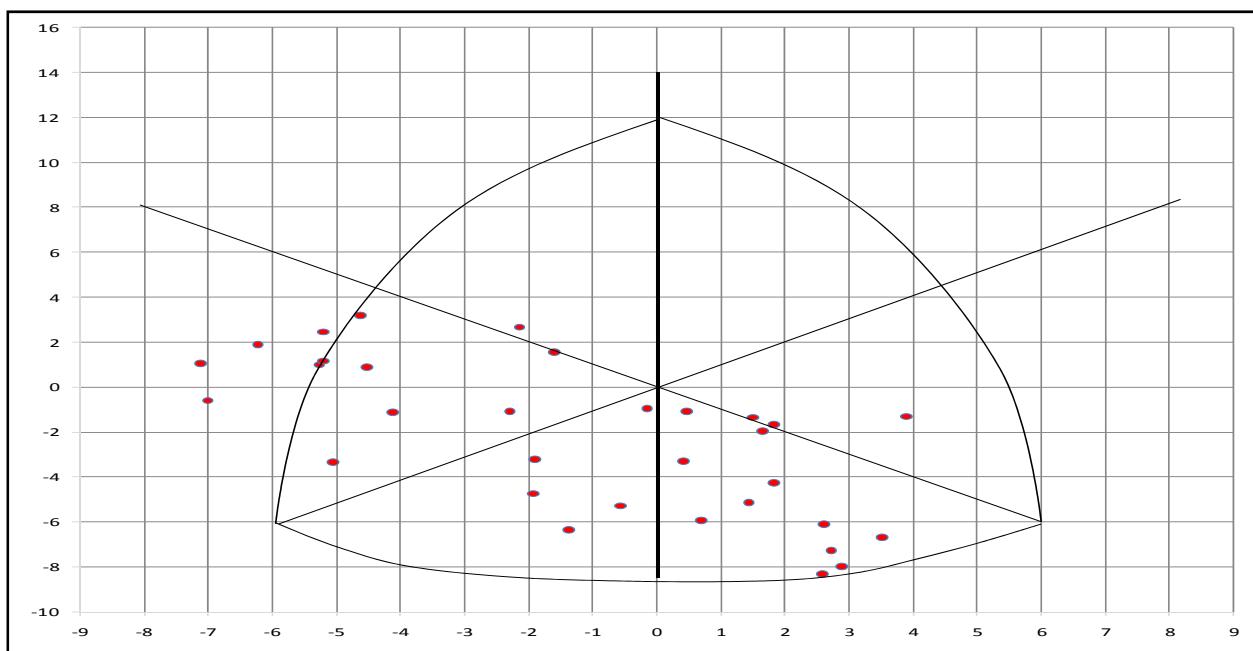


Figure 2: Somatocharts of Mentally challenged children In Figure the somatocharts of mentally challenged children shows maximum concentration in endomorph.

CONCLUSION

The **Table no. 2 Figure no. 1** shows that endomorphic component is higher. **Figure 2** shows the maximum no. of children assemblage in mesomorphic endomorph category. Which shows that children have greater endomorphic than mesomorph characteristics. The main aim of this study was to assess the somatotype characteristics of mentally challenged children in Chhattisgarh, India. Result clearly indicates that challenged children have high level of body fat and observed more % of endomorphic. Abass *et al.*⁴ in his study intellectual challenged children have higher percent body fat, overweight or excess fat and possessed more of endomorph. It is very important to mentally challenged children involve in physical activity. Because of lack of exercise and physical activity they gain more fat and unbalanced lifestyle. For that it is necessary for challenged children to involve in special physical education program to develop their fitness level. Studies have reported risk associated with excess accumulation of fat and an increase in body fat has been reported among intellectually challenged children⁸⁻¹¹.

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