SOMATOTYPES AMONG THE PNAR BOYS OF MEGHALAYA

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Introduction

The human body form has been studied scientifically and extensively in the morphological, physiological and psychological context in the early physique classification (Tucker and Lessa, 1940 a,b). Now-a-days, somatotyping is one of the established methods in human biology which is widely applicable to the fields of growth, nutrition, sports activity, occupation, disease etc. (Carter and Health, 1990). Early workers advocated the stability of somatotypes throughout life, as they thought that somatotype is genetically determined follows a definite pathway (Sheldon *et.al.*, 1940, 1954, 1969). Nowadays, it has been established beyond doubt that somatotype ratings do change with age especially during adolesence (Barton and Hunt 1962, Heath and Carter 1971, Walker 1978, Zuk 1958) Recent study conducted among the Jat Sikh boys of Chandigarh shows that the somatotypes do change with age (Handa *et.al.*, 1995).

Differences in the physique between populations in different regions are of much importance because these together with geographical and other environmental factors seem to underlie the cultural differences between population of different regions.

While hundreds of publications all over the world has been appeared including India, perhaps no study has been reported on somatotypes of any tribal population of North-East India except, Gaur *et.al.*, (1999), on the somatotypes of Urban Meiteis of Imphal, Manipur and Dkhar and Pathak (2001), on the somatotypes of the Khasi and Jaintia men of Meghalaya. The present investigation

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is an attempt to describe the patterns of somatotypes of 11 to 18 years Pnar boys of Meghalaya.

Materials and Methods

This study is based on a Cross-sectional sample of 509 Pnar boys of Meghalaya ranging in ages from 11 to 18 years. The data were collected during 1995 from different schools in Jaintia Hills District. Care was taken to include only those subjects who were apparently normal and healthy. Anthropometric measurements followed standard techniques (Weiner and Lourie 1969) and somatotype ratings were based on the Heath-Carter Anthropometric Somatotype Method (Heath and Carter, 1967, De-Garay *et.al.*, 1974).

Results and Discussion

Table 1 shows that the mean somatotype of Pnar boys is 1.47-3.85-3.32 at 11 years and 2.34-4.30-2.57 at the age of 18 years. During this seven years there is an overall increase of 0.87 units in endomorphy, 0.45 unit increase in mesomorphy and 0.75 unit decrease in ectomorphy component. However, WHR is 43.67 at 11 years where as, it is 42.54 at the age of 18 years with a decrease of 1.13 from 11 to 18 years. These evidence supports that as age progresses there is a change in somatotype ratings. Statistically significant change is observed in few age groups comparisions for endomorphy and ectomorphy. However, mean somatotype of 11 year old are significantly different from 18 year old boys. The mean somatotypes of Pnar boys at all ages group lies in ectomorphy-mesomorphy sector, above the upper axis of endomorphy (Fig.1). General pathway of mean somatoplots from age 11 to 18 years indicate a shift from near upper axis of endomorphy towards near upper axis of mesomorphy, i.e., the shift takes place in the North-West direction parallel to ectomorphy axis. Mean somatoplot of age group 11, 12, 13 and 14 years tends to form one cluster while those of age 15, 16, 17 and 18 shows a tendency to form another cluster.

The present sample of Pnar boys has been compared with samples of boys of

similar age-range derived from Tibetan and Gujjar boys of Jammu and Leh District of Jammu and Kashmir (Bhasin and Singh, 1991); Bodhs and Baltis boys of Ladakh, Jammu and Kashmir (Bhasin and Singh, 1992); Gaddi Rajput boys of Chamba District of Himachal Pradesh (Singh and Sidhu, 1980). Among the population outside India, the sample has been compared with Hungarian boys (Farmosi, 1982); and boys from Ile-Ife, Nigeria (Toriola and Iqbokwe, 1985).

Table 2, reveals that the present study are generally ectomorphy-mesomorphy, where as, the Himalayan population groups including Brahmins, Rajput and Gaddis of Chamba (Himachal Pradesh), Dogra Brahmins and Gujjars and the trans Himalayan group represented by the Tibetan refugees (Jammu and Kashmir) are mesomorphic-ectomorphs. Hungarian boys are ectomorphic-mesomorphs upto 15 years followed by a change over to endomorphic-mesomorphs at 17 and 18 years.

It would seem that the higher ectomorphic rating among the Pnar boys of the present study may be due to various altitudinal factors and calorie inadequacy in their diets. High mesomorphic rating among the Pnar boys is due to their active participation in physical activities. On the other hand, various populations living in the Himalayan region, have relatively higher ectomorphic ratings of their physique with low mesomorphy (Singh, 1978).

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Table -1 : Mean Somatotype and WHR values for Pnar boys, according to age

Age group	N	Statistic	Somatotypes	WHR
11 years	64	Mean	1.47-3.85-3.32	43.67
		SD	(0.47-0.53-0.72)	(0.89)
12 years	63	Mean	1.51-3.89-3.13	43.26
		SD	(0.42-0.65-1.00)	(1.37)
13 years	65	Mean	1.49-3.86-3.25	43.46
		SD	(0.35-0.70-0.93)	(1.23)
14 years	65	Mean	1.62-3.92-3.35	43.62
		SD	(0.36-0.71-0.92)	(1.26)
15 years	65	Mean	1.92-4.09-2.95	43.60
		SD	(0.46-0.74-0.93)	(1.26)
16 years	61	Mean	1.87-4.11-2.99	43.13
		SD	(0.51-0.75-0.91)	(1.27)
17 years	61	Mean	2.02-4.23-2.72	42.94
		SD	(0.46-0.74-0.97)	(1.39)
18 years	65	Mean	2.34-4.30-2.57	42.54
		SD	(0.93-0.65-0.73)	(1.00)
11 years VS 18 years			6.66**-4.27*-5.81**	6.73*

** Significant at 0.001 and * Significant at 0.05 level of probability

Table-2. Comparison of somatotype component values for Pnar boys, at ages 11 to 18 years, with different population groups of similar age-groups.

Age group	Present Study	Bhasin & Singh (91)	Bhasin & Singh (91)	Bhasin & Singh (92)	Bhasin & Singh (92)	Bhasin & Singh (80)	Farmosi (82)	Toriola & Igbokwe (85)
Years	Pnar Boys	Tibetan (J.K.)	Gujjars	Bodhs of Ladakh	Baltis of Ladakh	Gaddi Rajput (H.P)	Hungary	Ile-Ife(Nigerian)
11	1.5-3.9-2.6	2.0-3.8-3.9	1.9-3.1-5.0	1.6-3.4-3.9	1.3-3.1-3.9	1.6-3.3-4.1	2.6-4.3-3.8	2.8-3.7-2.7
12	1.5-3.9-3.1	2.1-3.5-4.1	1.5-2.9-5.4	1.5-3.3-4.4	1.3-3.1-4.2	1.4-3.1-4.8	2.8-4.5-3.5	2.7-3.8-2.6
13	1.5-3.9-3.3	1.9-3.2-4.5	1.3-3.1-5.2	1.4-3.4-4.2	1.2-3.0-4.4	1.5-3.0-4.7	3.0-4.4-3.6	2.7-3.9-2.5
14	1.6-3.9-3.4	1.9-3.8-3.9	1.9-3.5-4.6	1.5-3.2-4.4	1.3-2.8-4.8	1.6-3.1-4.8	3.1-4.3-3.7	2.9-4.0-2.3
15	1.9-4.1-3.0	1.9-3.7-3.8	1.6-2.8-5.3	1.2-3.1-4.6	1.2-2.8-4.8	1.7-3.2-4.6	3.0-4.1-3.8	2.9-4.4-2.4
16	1.9-4.1-3.0	1.9-3.6-4.1	1.5-2.9-5.0	1.7-3.3-4.0	1.3-2.7-4.8	1.6-3.3-4.5	3.2-4.6-3.2	3.3-4.9-2.2
17	2.0-4.2-2.7	1.9-3.5-3.9	1.7-3.1-5.0	1.9-3.6-4.9	1.6-3.0-4.3	1.7-3.1-4.5	3.4-5.0-2.6	3.7-4.9-2.3
18	2.3-4.3-2.6	1.7-3.4-4.1	1.8-3.1-4.9	1.6-3.5-3.9	1.6-3.7-4.5	1.8-3.4-4.1	3.4-5.4-2.8	3.8-5.0-2.4

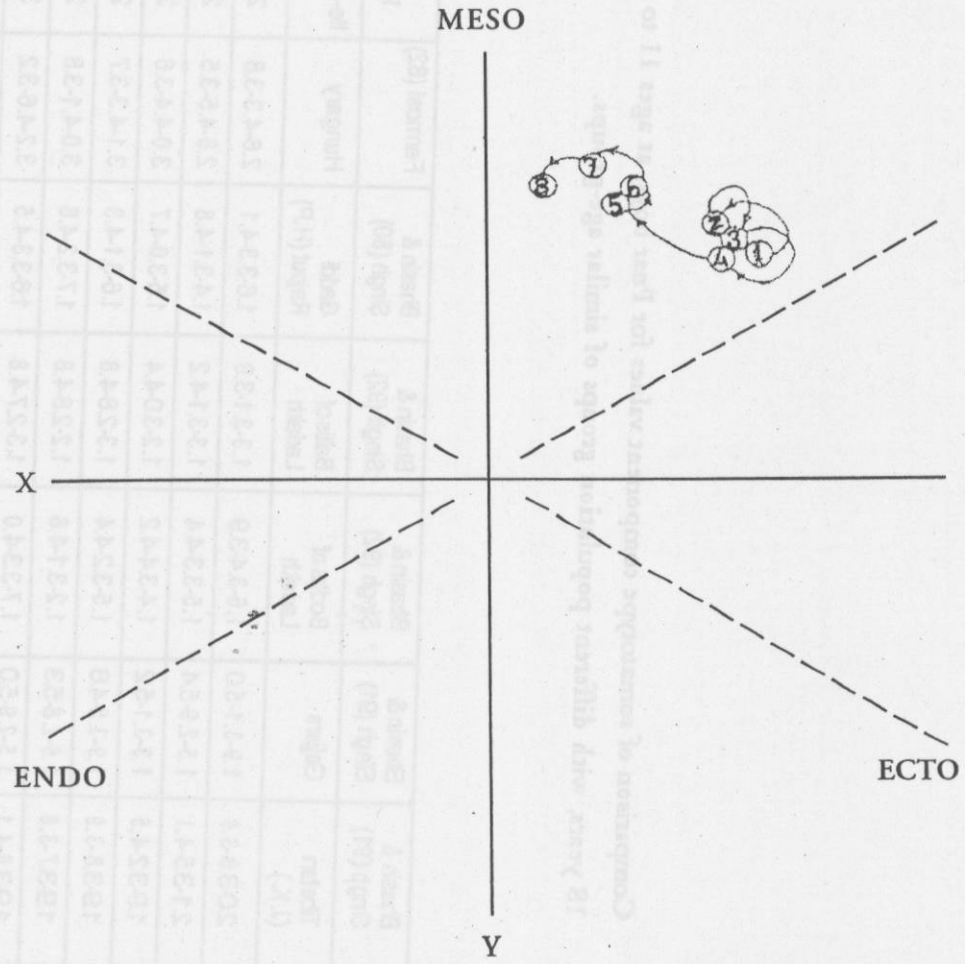

Fig. 1. General Pathway of Somatotypes of Pnar Boys from 11 years to 18 years (Number 1 to 8)