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PHYSIQUE AND BODY COMPOSITION OF ADOLESCENT BHIL BOYS OF UDAIPUR AREA OF RAJASTHAN

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ABSTRACT

Physique characteristics and body composition of a cross-sectional sample of 160 Bhil boys, (aged 9 to 16 years) of Udaipur area of Rajasthan are described. The sample was drawn from various schools of Udaipur and surrounding areas. Physique was evaluated through somatotype analysis employing the Heath-Carter anthropometric protocol. In all, ten measurements, viz. weight, stature, bicondylar breadths of humerus and femur, flexed upper–arm and calf circumferences, and triceps, subscapular, supraspinale, and median calf skinfolds, were taken on each subject using standard instruments and techniques. The body composition was evaluated with the help of anthropometric method using four skinfolds, namely biceps, triceps, subscapualar and suprailiac skinfolds. Mean somatotype of the present sample was 1.07-2.65-5.08, which can be classified as mesomorphic ectomorph. A majority (75%) of the boys were mesomorphic ectomorph followed by balanced ectomorph (10.62%) and mesomorphic-ectomorph (8.13%). Endomorphy increased up to 10 years and decreased thereafter. Ectomorphy, in general, was found to increase with increase in age. Mean percent fat ranged from 7.37% at 9 years to 9.76% at 16 years. The mean fat mass increased from 1.56 kg at 9 years to 3.87 kg at 16 years. In general, the lean body mass (fat free mass) showed an increasing trend from 19.57 kg at 9 years to 35.58 kg at 16 years.

Key Words: Somatotype, Endomorphy, Ectomorphy, Mesomorphy, Fat mass, Fat free mass

INTRODUCTION

Adolescence is a period of several physical and biological transitions in human body. It is a period of growth and development that occurs after childhood and before adulthood, from ages 10 to 19 (WHO, 2016). The period between 10-14 years is generally considered early adolescence while that between 15-19 years late adolescence. Adolescence is a complex and dynamic process characterized by simultaneous physical, cognitive and psychological development (Rosen, 2004). One of the most visible and tangible of all of components of the adolescent development is probably puberty, which generally defines the onset of adolescence. Besides a period of attaining biological maturity, adolescence is also a phase of

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accelerated physical growth. During this period, human body also undergoes several morphological and constitutional changes. These changes can be understood through investigation of body physique and body composition.

Though the biological determinants of adolescence are universal but the duration and defining characteristics of this phase may be influenced by genetic, ethnic, environmental, cultures and socioeconomic factors. Therefore, populations may show variation in the timing, duration and tempo of physical growth and development during adolescence, which may also be reflected in their physique and body composition.

Physique is the external manifestation of growth and development. It is the composite term referring to an individual body form that is the conformation of the entire body as opposed to emphasis on specific feature (Tanner, 1953). In general term, physique refers to the shape, size and form of an individual. With the processes of growth and development characteristics of physique undergo a marked transformation. One of the methods of describing human physique is somatotyping. It has been used extensively as a research tool for describing and understanding variations in human physique (Carter and Heath, 1990).

Body composition assessment involves quantification of the amount and relative proportions of fat, muscle and bone. A two-component model of body composition divides human body into a fat component and fat-free component. As an individual grows, these two components also undergo changes during adolescent period. Body composition assessment among adolescents provides a better understanding of growth processes by describing changes in the size of body compartments, viz. fat mass and fat free mass. Several studies have been conducted on the physique and body composition of adolescent boys on different Indian populations (Singh and Sidhu, 1980; Singh and Singh, 1991; Talwar and Kaur, 1997; Gaur and Sarkar, 1998; Gaur and Kaur, 2001; Gaur and Sharma, 2004; Gaur *et al.*, 1999, 2000, 2008, 2014). However, not much is known in this connection about the Bhils of Rajasthan. The present paper, reports the somatotype characteristics and body composition of 9 to 16 years old Bhil boys of Udaipur area of Rajasthan.

MATERIALS AND METHODS

The present study is based on a cross-sectional sample of 160 adolescent Bhil boys ranging in age from 9 to 16 years. The data were collected from the following three schools of the area:

1. Rajkiya Prathmik Vidyalaya, Mehronka Gurha (Panchayat Bargaon),
2. Rajkiya Uch Madhamik Vidhalaya, Mehronka Gurha (Panchayat Bargaon) and
3. Rajkiya Uch Prathmik Vidyalaya, Wara (Panchayat Dhinkl).

The data collection work was carried out by the second author (JK). The dates of birth of the subjects were obtained from the school records. The Bhil boys were

divided into eight age groups of one year each using age group mid-points based on decimal age that was calculated following Tanner and Whitehouse (1966). The age group wise distribution of the Bhil boys is given in Table 1.

The body composition and physique analysis was carried out using the anthropometric method. Physique was evaluated with the help of Heath-Carter anthropometric somatotype analysis using the standard protocols of Carter and Heath (1990). Following ten anthropometric measurements were taken on each boy using GPM instruments: stature, weight, bi-epicondylar diameter of humerus, bi-condylar femur, flexed mid-upper arm circumference, calf circumference and triceps, subscapular, suprailiac and calf skinfolds. Endomorphy, mesomorphy and ectomorphy, the three somatotype components, were calculated for each subject using the algorithms given in Carter and Heath (1990). The mean somatotypes were plotted on a two-dimensional somatochart with the help of X and Y coordinates and a superimposed grid. The X and Y coordinates were computed for each boy from the three somatotype components as under:

X = ectomorphy- endomorphy; Y = 2(mesomorphy) - (endomorphy + ectomorphy)

The body composition of the Bhil boys was analysed using the skinfold method. Body fat was estimated from body density (D) using sum of biceps, triceps, subscapular and suprailiac skinfolds. Body density was estimated with the help of the following equations of Durnin and Rehman (1967) for adolescent boys:

$$D=1.1533-0.0643\times \log_{10} (\text{sum of biceps, triceps, subscapular and supra-illiac skinfolds})$$

Body density (D) was used in the following equation of Siri (1961) to calculate percent body fat:

$$\text{Body fat (\%)} = [(4.95/D) - 4.5] \times 100$$

Fat mass was calculated from body weight and percentage of fat as follows:

$$\text{Fat Mass (kg)} = \text{Percentage of Body Fat} \times \text{Body Weight (kg)}/100$$

Fat free mass or lean body mass was obtained by subtracting the fat mass from body weight. The data was subjected to suitable statistical analysis using the SPSS 18 statistical package.

The Study Area

The data for the present study was collected from Udaipur and surrounding areas. Udaipur is one of the 33 districts of Rajasthan State in western India with Udaipur City as its administrative headquarters. Udaipur District is bounded on the northwest by the Aravalli Range, on the north by Rajsamand District, on the east by Chittaurgarh District, on the southeast by Banswara District, on the south by Dungarpur District, and on the southwest by the state of Gujarat. It is part of the

Mewar region of Rajasthan. Udaipur City was founded by Maharana Udai Singh of the Sisodia clan of the Rajputs in 1553 who shifted his capital from the city of Chittorgarh to Udaipur. It is also known as "City of Lakes". Udaipur is situated at an altitude of 598.00 m (1,962 ft) above sea level in the southern region of Rajasthan, near the Gujrat border. The district is generally hilly with a tropical climate and is drained by several rivers namely the Sabarmati, the Banas, the Ahar, the Mahi, the Som and the Gomati. The summer temperature may touch a high of 44°C and the winter temperature may drop to 5°C.

The Bhil Tribe: The Bhils, which constitute the second largest tribe of India and Rajasthan, are mainly distributed in Rajasthan, Gujarat, Western Madhya Pradesh and Southern Maharastra. In Rajasthan, their main concentration is in Banswara, Dungarpur, Udaipur and Chittorgarh districts. The Bhils are the ancient inhabitants of the Aravallis where they largely reside even today. It is believed that they inhabited Rajasthan before the advent of Aryans. They were the rulers of Mewar, Vagad and Hadoti region of Rajsthan before the arrival of the Rajputs. The Bhils speak in Bhili and its allied dialect Vagdi in Banswara and Dungarpur. The term, 'Bhil' probably derives its name from 'bil', meaning bow, which probably refers to their original talent.

The Bhils are patrilocal who live in nuclear and monogamous families. Polygamy is very rare and has rapidly declined and replaced by monogamy, probably due to dapa (bride price). The eldest son inherits mantle authority of father. Traditional Bhil dress was *feta* (turban), *langoti* and *dhoti*. Nowadays men wear feta, tight fitting shirt, (*angarakhi*) and dhoti. Women traditionally wear *odni, kanchali* and *ghaghara*. The Bhil are fond of ornaments and tattooing. The Bhils worship *Mahadev, Dharamraj, Khakhaldev, Kalaji-Goraji, Amba Mata, Kalika Mata*, etc. Ancestor worship is also very common. They celebrate several Hindu festivals such as Holi, Diwali, Raksha Bandhan and Dusshera. The Bhil are fond of music and dances. Gavri is the popular folk cum religious dance drama among the Bhils of Mewar. The Bhil are mainly non-vegetarian. Maize and wheat are their staple food. Rice is mainly taken on festive occasions. They are much addicted to mahuva alcoholic beverage. The Bhagat Bhils are however strictly vegetarian and teetotalers.

RESULTS

Table 2 shows the age-wise mean and standard deviations of height, weight, endomorphy, mesomorphy, ectomorphy, fat mass and fat free mass of adolescent Bhil boys of Udaipur area. The mean height increases with an increase in age from a minimum of 125.70 cm at 9 years to a maximum of 160.21cm at 16 years, recording a net gain of 34.51 cm over a period of eight years. Like height, the mean weight of Bhil boys increases with increase in age from 21.33 kg at 9 years to 39.45 kg at 16 years. The boys register a net gain of 18.12 kg from 9 to 16 years, with maximum gain (8.3 kg) between 13 and 14 years. The maximum gain in mean height and weight was recorded in between 13 and 14 years, which is a period of adolescent spurt in the Bhil boys of the present sample.

Physique

As can be seen in Table 2 and Figure 1, the mean endomorphy showed an overall trend of decrease with increase in age, with some variations. The maximum mean value of mean endomorphy (1.26) was recorded at 10 years while the minimum (0.92) was noticed at 15 years. As in the case of endomorphy, the mean mesomorphy displayed an overall trend of decrease with increase in age, except from 9 to 10 years and from 15 to 16 years. The maximum value of mean mesomorphy (3.33) was registered at 10 years and the minimum (1.85) at 15 years. On the whole, with some variations at 14 and 16 years, the mean ectomorphy increased with increase in age. The maximum (6.13) and minimum (3.49) values of mean ectomorphy were registerd at 15 and 10 years, respectively. The mean somatotype of the present sample as a whole was 1.07-2.65-5.08, which can be classified as mesomorphic ectomorph.

Figure 2 shows plots of the mean somatotypes, according to age, of Bhil boys in the present sample. As can be seen in the figure, somatoplots are mainly distributed in the mesomorphic ectomorph sector of the somatochart. With increase in age, the mean somatotypes show a movement from the mesomorph-ectomorph sector to mesomorphic ectomorh and then to balanced ectomorph sectors at 15-16 years.

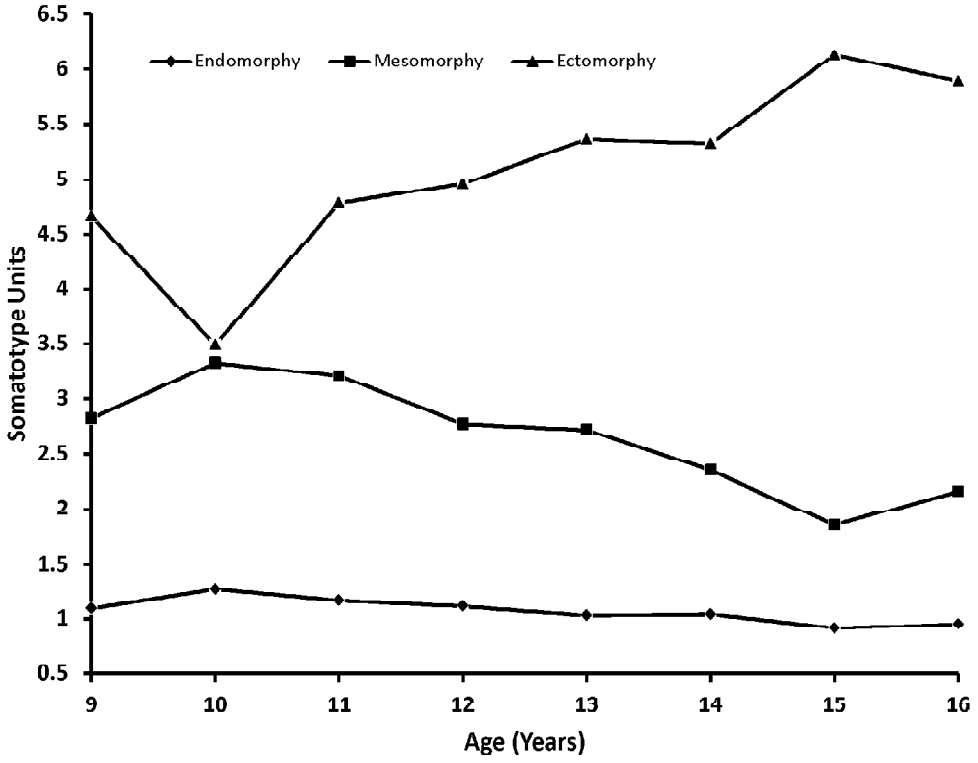

Figure 1: Distance curves of mean Endomorphy, Mesomorphy and Ectomorphy of adolescent Bhil boys of Udaipur area

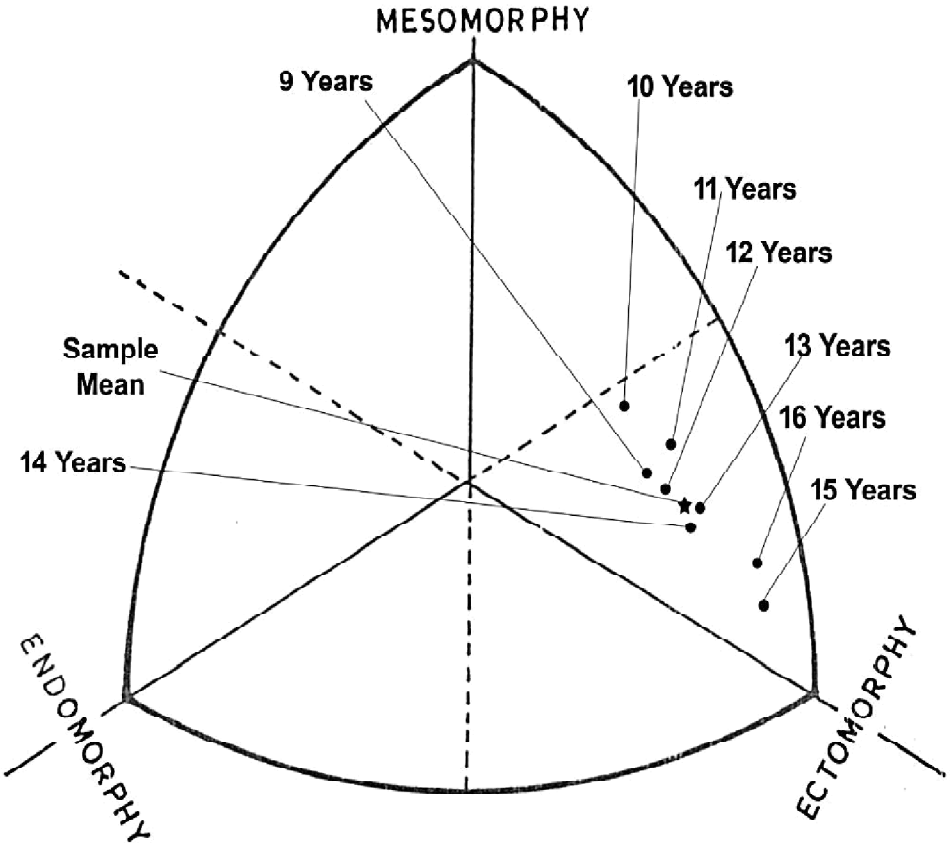

Figure 2: Somatochart showing plots of the mean somatotypes of 9 to 16 year old Bhil boys of the Udaipur area

Table 3 shows the distribution of the boys in the present sample into 13 somatotype categories of Carter and Heath (1990), on the basis of component dominance. A large majority of the boys (75%) in the present sample belong to the mesomorphic ectomorph category. The second most common category among the boys is the balanced ectomorph (10.62%) followed by the mesomorph-ectomorph (8.13%). In the sample as a whole, from 9 to 16 years, the dominant somatotype category was found to be mesomorphic ectomorph.

Body composition

The body composition of the Bhil boys was investigated using the anthropometric method employing skinfolds. Fat and fat free mass have been calculated by applying the formulae given by Durnin and Rehman (1967) and Siri (1956).

The mean values along with standard deviations for fat mass and fat free mass of adolescent Bhil boys have been given in Table 2. As can be seen in the table, the

mean values of fat mass depict an increasing trend with the advancing age, except between 10 and 11 years and between 12 and 13 years. The minimum mean value of fat mass (1.56 kg) was recorded at 9 years and maximum (3.87 kg) was witnessed at 16 years. The maximum gain of 1.14 kg of fat mass was witnessed between 13 and 14 years.

The fat free mass of adolescent Bhil boys of the present sample displays a general increasing trend with increase in age, except between 10 and 11 years. The maximum gain in fat free mass (7.16 kg) was registered between 13 and 14 years. The maximum (35.58 kg) and minimum (19.57 kg) mean values of fat free mass were recorded at 16 and 9 years, respectively. Thus, in general, with some variations, the fat mass and fat free mass showed an increasing trend with increase in age.

DISCUSSION

Figure 3 shows a plot of mean height of Bhil boys in the present sample on WHO (2007) percentiles. As is clear from the figure, the mean stature of the present sample is located below the 15th percentile of WHO data. For most part, the curve of Bhil boys is placed closer to the WHO 5th percentile line.

Figure 4 displays a comparison of mean height of the Bhil boys with Americans (NCHS, 1977), Sahariyas and Damors of Rajasthan (Bhasin and Jain, 2007), affluent Indian children (Khadilkar *et al.*, 2009), and ICMR data (1989). It is clear from Figure-4 that, as compared to the Americans (Hamill, *et al.*, 1977), affluent Indian children (Khadilkar *et al.*, 2009), ICMR data (1989) and Sahariyas of Rajasthan (Bhasin and Jain, 2007), the Bhil boys in the present sample were, in general, shorter at all ages. Bhil boys attained peak velocity between 13 and 14 years and its intensity is more as compared to others. The relatively short height of the Bhil boys in the present sample could be due to the socio-economic and genetic differences as well as inadequate nutrition.

Figure 5 shows a comparison of mean weight of the Bhil boys in the present sample with Americans (Hamill, *et al.*, 1977), Sahariyas and Damors of Rajasthan (Bhasin and Jain, 2007), affluent Indian children (Khadilkar *et al.*, 2009), and ICMR data (1989). In general, the Bhil boys in the present sample were found to be lighter as compared to the Americans (Hamill, *et al.*, 1977), affluent Indian children (Khadilkar *et al.*, 2009), and ICMR data (1989) at all ages. The lower mean weight of Bhil boys may be on account of differences in socio-economic status, dietary habits and physical activity level.

In order to have a comparative evaluation of somatotypes, the somatotype characteristics of the adolescent Bhil boys of the present sample have been compared with age-matched samples of Manus boys of New Guinea (Malcolm, 1970), Bhimtal Scheduled Caste boys (Gaur *et al.*, (2004), Chinese (Ji & Oshawa, 1996), Japanese (Chino-Japanese Cooperative Inventory Team, 1986), affluent Manipuris (Gaur *et al.*, 1999), Jats (Gakhar & Malik, 2002), Chamba Brahmins (Singh & Singh, 1991), Gujjars and Tibetans of Jammu and Kashmir (Bhasin & Singh, 1991), Gaddis (Singh

& Sidhu, 1980), Dogra Brahmins and Scheduled Castes (Singh & Bhasin, 1990) and Rajputs and Scheduled Castes of Sirmour (Gaur *et al.*, 2008).

As can be seen in Table 4 and Figure 6, the mean somatoplots of most of the Indian boys, including those of the the present sample, are positioned in the mesomorphic ectomorph sector of the somatochart. As compared to other populations, the Bhil boys are, in general, more ectomorphic, except for the Dogras and J& K Gujjars. The leaner physique of Bhils may be due to their involvement in more physical activity in the form of working in the family farms after school hours. The other reason could be their poor socioeconomic status and less nutritive diet.

The mean somatoplots of the Manus boys of New Guinea and the Chinese boys are located in the ectomorphic mesomorph sector, and those of Japanese boys in the central sector of the somatochart (Figure 6). The Indian boys are clearly, more ectomorphic and less mesomorphic than the Japanese, Manus and Chinese boys. The difference in the physique of Indian boys could be due to ethnic differences. As can be seen in Figure 6, the Manus boys of New Guinea were the most mesomorphic of all the populations under comparison. The Manus males spend much of their time in canoes fishing or building and repairing canoes (Malcolm, 1970), which are the activities that require a muscular physique. According to Malcolm (1970), the diet of the Manus people incorporates a lot of fish and sea food proteins. Thus, their greater mesomorphy could be due to ethnic, nutritional and physical activity related factors.

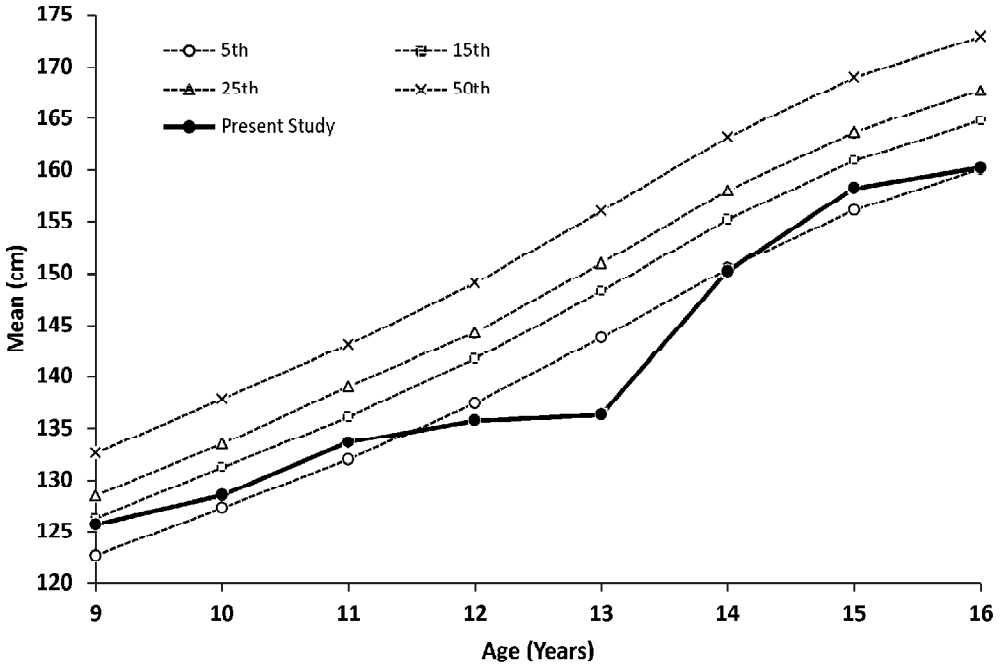

Figure 3: Plot of mean height of Bhil boys on WHO percentiles

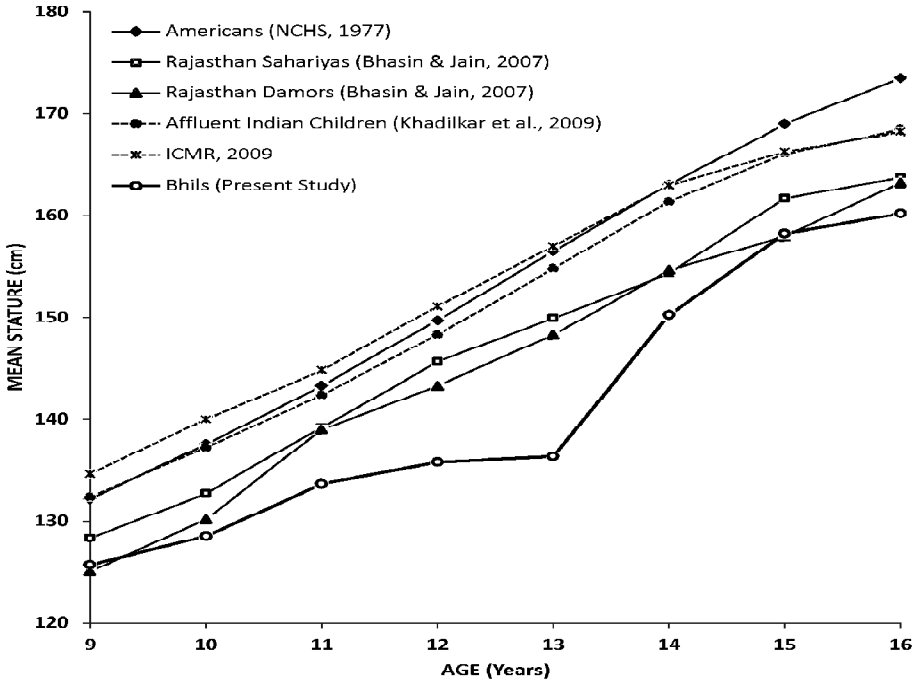

Figure 4: Comparison of mean stature of Bhil boys of Udaipur with other populations

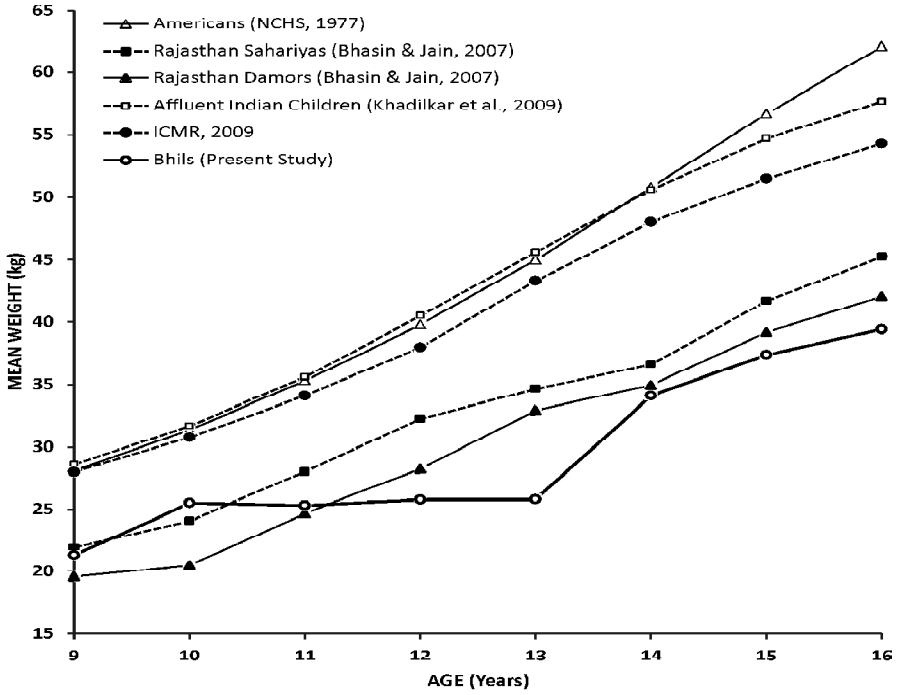

Figure 5: Comparison of mean weight of Bhil boys of Udaipur with other populations

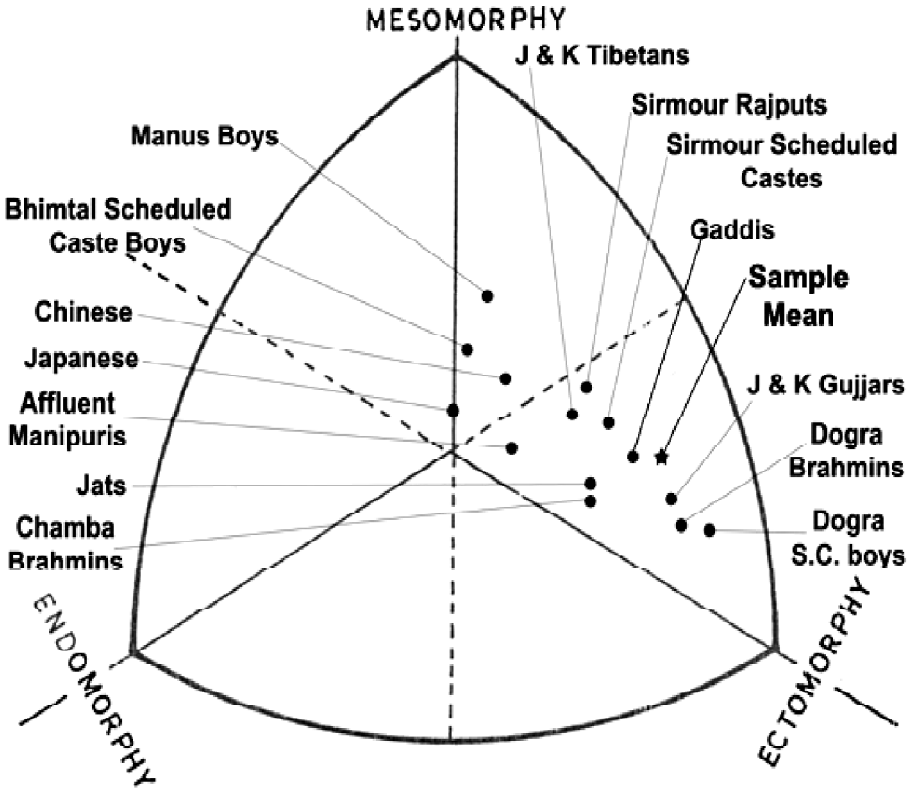

Figure 6: Somatoplots of mean somatotype of adolescent boys of different populations, along with mean somatotype of present sample of Bhil boys

Fat mass (FM) and fat free mass (FFM) are important parameters for assessing nutritional status, since they are associated with higher prevalence of excess body fat and malnutrition worldwide (Lyra *et al.*, 2012). Table-5 shows a comparison of mean values of percent body fat with the Americans (NHANES, 2012), Turkish boys (Kurtogue, 2010), Caucasians of England (McCarthy, 2006), Pune boys (Pandit, 2009) and Hong Kong Chinese boys (Sung, 2009). It is evident from the table that the Bhil boys have less body fat as compared to their counterparts from other populations. This could be due to the lower socio-economic status of the Bhil boys since most of them belong to labour class families and find it very difficult to afford calorie dense fat and protein rich foods. In addition to this, genetic differences as well as high energy expenditure among the Bhil boys in the form of greater physical activity could be responsible for the low percent body fat in the present sample of Bhil boys.

Table 1: Distribution of Bhil boys of Udaipur area in various age groups

Age Group (years)	9	10	11	12	13	14	15	16	9-16
Number of Boys	20	20	20	20	20	20	20	20	160

Table 2: Mean ± SD of Height, Weight, Endomorphy, Mesomorphy, Ectomorphy, Fat Mass and Fat Free Mass of adolescent Bhil boys, according to age

Age Group (Years)	*N*	*Height (cm)*	*Weight (kg)*	*End-omorphy*	*Meso-morphy*	*Ecto-morphy*	*Fat Mass (kg)*	*Fat Free Mass (kg)*
9	20	125.7±2.87	21.3±2.01	1.1±0.16	2.8±0.74	4.7±1.24	1.6±0.26	19.6±1.75
10	20	128.5±1.40	25.5±3.60	1.3±0.53	3.3±1.08	3.5±1.50	2.3±1.07	23.9±2.41
11	20	133.4±4.04	25.3±3.63	1.2±0.46	3.2±1.08	4.8±1.67	1.9±0.66	22.5±2.24
12	20	135.8±2.21	25.8±1.90	1.1±0.28	2.8±0.69	5.0±0.93	2.2±0.61	23.3±1.72
13	20	136.3±2.34	25.8±2.64	1.0±0.18	2.7±0.43	5.4±0.69	2.0±0.46	23.8±2.37
14	20	150.2±3.35	34.1±3.95	1.0±0.23	2.4±0.71	5.3±1.04	3.2±0.71	30.9±3.43
15	20	158.2±2.00	37.4±3.85	0.9±0.15	1.9±1.19	6.131.03	3.3±0.53	34.1±3.56
16	20	160.2±7.93	39.5±4.82	0.9±0.13	2.2±0.98	5.9±0.84	3.9±1.26	35.6±4.27
9-16	160	141.0±13.05	29.3±7.07	1.1±0.31	2.7±1.00	5.1±1.37	2.5±1.06	26.7±6.24

Table 3: Percentage distribution of adolescent Bhil boys in various somatotype categories, according to age

Sr. No.	*Age (yrs.) Category*	*9 % (N)*	*10 % (N)*	*11 % (N)*	*12 % (N)*	*13 % (N)*	*14 % (N)*	*15 % (N)*	*16 % (N)*	*9-16 % (N)*
1.	**Balanced endomorph**	0.00 (0)	0.00 (0)	0.00 (0)	0.00 (0)	0.00 (0)	0.00 (0)	0.00 (0)	0.00 (0)	0.00 (0)
2.	**Balanced mesomorph**	0.00 (0)	1.25 (2)	0.63 (1)	0.00 (0)	0.00 (0)	0.00 (0)	0.00 (0)	0.00 (0)	1.88 (3)
3.	**Balanced ectomorph**	1.25 (2)	0.63 (1)	0.00 (0)	0.00 (0)	0.00 (0)	1.25 (2)	4.38 (7)	3.13 (5)	10.62 (17)
4.	**Mesomorph-endomorph**	0.00 (0)	0.00 (0)	0.00 (0)	0.00 (0)	0.00 (0)	0.00 (0)	0.00 (0)	0.00 (0)	0.00 (0)
5.	**Mesomorph-ectomorph**	1.88 (3)	2.5 (4)	0.63 (1)	1.25 (2)	0.63 (1)	0.63 (1)	0.63 (1)	0.00 (0)	8.13 (13)
6.	**Endomorph-ectomorph**	0.00 (0)	0.00 (0)	0.00 (0)	0.00 (0)	0.00 (0)	0.00 (0)	0.00 (0)	0.00 (0)	0.00 (0)
7.	**Mesomorphic endomorph**	0.00 (0)	0.00 (0)	0.00 (0)	0.00 (0)	0.00 (0)	0.00 (0)	0.00 (0)	0.00 (0)	0.00 (0)
8.	**Ectomorphic Endomorph**	0.00 (0)	0.00 (0)	0.00 (0)	0.00 (0)	0.00 (0)	0.00 (0)	0.00 (0)	0.00 (0)	0.00 (0)
9.	**Endomorphic Mesomorph**	0.00 (0)	0.63 (1)	0.63 (1)	0.00 (0)	0.00 (0)	0.00 (0)	0.63 (1)	0.00 (0)	1.88 (3)
10.	**Ectomorphic Mesomorph**	0.63 (1)	1.88 (3)	0.00 (0)	0.00 (0)	0.00 (0)	0.00 (0)	0.00 (0)	0.00 (0)	2.50 (4)
11.	**Endomorphic Ectomorph**	0.00 (0)	0.00 (0)	0.00 (0)	0.00 (0)	0.00 (0)	0.00 (0)	0.00 (0)	0.00 (0)	0.00 (0)
12.	**Mesomorphic Ectomorph**	8.75 (14)	5.63 (9)	10.63 (17)	11.25 (18)	11.88 (19)	10.63 (17)	6.88 (11)	9.38 (15)	75.00 (120)
13.	**Central**	0.00 (0)	0.00 (0)	0.00 (0)	0.00 (0)	0.00 (0)	0.00 (0)	0.00 (0)	0.00 (0)	0.00 (0)

Table 4: Comparison of mean somatotypes of adolescent Bhil boys with age-matched samples of other populations

Mean Somatotype	*Age Range (Years)*	*Population*	*Author*
1.71-5.17-2.46	7-17	Manus Boys	Heath & Carter, 1971
2.50-3.90-3.70	10-16	Bhimtal Scheduled Caste boys	Gaur *et al.*, 2004
2.50-3.38-4.08	7-17	Urban Chinese Boys	Chino-Japanese Cooperative Inventory Team, 1986
3.08-4.04-3.18	7-17	Tokyo Japanese Boys	Chino-Japanese Cooperative Inventory Team, 1986
1.80-3.60-4.20	6-13	Affluent Manipuris	Gaur *et al.*, 1999
2.32-2.97-4.72	10-18	Jats	Gakhar & Malik, 2002
2.30-2.80-4.40	11-18	Chamba Brahmins	Singh & Singh, 1991
2.00-3.60-4.00	8-18	J & K Tibetans	Bhasin & Singh, 1991
1.60-2.90-5.10	8-18	J & K Gujjars	Bhasin & Singh, 1991
1.62-3.30-3.85	11-17	Sirmour Rajputs	Gaur *et al.*, 2008
1.51-3.02-3.74	11-17	Sirmour Scheduled Castes	Gaur *et al.*, 2008
1.90-3.5-30.60	4-20	Gaddis	Singh & Sidhu, 1980
1.60-2.80-5.40	8-18	Dogra Brahmins	Singh & Bhasin, 1990
1.50-2.80-5.40	8-18	Dogra Scheduled Caste boys	Singh & Bhasin, 1990
1.07-2.65-5.08	9-16	Bhil boys	(Present Study)

Table 5: A comparison of mean percent body fat of Bhil boys with other populations

Age Group (years)	*Americans (NHANES, 2012)*	*Turkish boys (Kurtogu, 2010)*	*Caucasians of England (McCarthy, 2006)*	*Pune boys (Pandit, 2009)*	*Hong Kong Chinese (Sung, 2009)*	*Bhils (Present Study)*
9	-	-	17.5	21.2	19.7	7.39
10	-	-	17.8	26.2	20.6	8.68
11	27.5	21.41	17.7	23.5	19.7	7.72
12	28.2	21.21	17.4	25.8	18.0	8.42
13	25.7	19.09	16.8	29.6	17.1	7.83
14	24.3	17.37	16.2	23.00	17.4	9.24
15	23.2	16.71	15.8	20.6	18.9	8.83
16	23.1	15.76	15.5	20.1	19.7	9.76

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