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Physical Growth Among Vadabalija Boys of Visakhapatnam District, Andhra Pradesh, India

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ABSTRACT A cross-sectional purposive random sample of 845 Vadabalija boys ranging in age from 1-20 years were selected to study the growth patterns on the basis of stature, body weight, upper arm circumference and triceps skinfold. The regression analysis shows that stature and body weight increase with increase in age.

Selected body measurements like stature, body weight,upper arm circumference and skinfold thickness at triceps have been accepted as some of the sensitive indicators of growth and nutritional status of an individual. Stature and body weight are the two most useful parameters to examine the mode of linear growth and development of total body mass, whereas arm circumference helps to evaluate the condition of muscle development. The skinfold thickness act as a significant index of body fat and serves as an "interpretive tool" in clinical evaluation of individuals (Jelliffe, 1966; Beaton and Bengoa, 1976).

Several studies of physical growth in rural population have observed that with the increase in age, there is a tendency for increase in all the anthropometric measurements except skinfold (Sidhu, 1969; Sidhu and Phull, 1974; Singh, 1980; Jhingon and Nath, 1985). But little attention has been paid to the fishing rural populations. Keeping this in mind, in the present study an attempt has been made to study the effect of age from 1 through 20 years on four anthropometric measurements and also to study the regression characteristics of rural fishing Vadabalija boys to study age changes.

MATERIAL AND METHODS

Vadabalija is one of the nine important fishing communities found in the North-east coastal tract of Andhra Pradesh. The total number of fishermen of the state is about 2.5 millions of which Vadabalijas constitute 18 per cent (Swamy, 1971). Data were collected, cross sectionally, on 845 Vadabalija boys from 11 villages of Bheemunipatnam and Anandapuram Mandals of Visakhapatnam district of Andhra Pradesh state during the months of January, 1986 to June 1987. The ages of the subjects range from 1 to 20 years. The exact date of birth was collected for every subject either from the concerned educational institutions or from birth records of the village panchayats. The age of each individual was calculated to three decimal places according to the decimal calendar (Tanner et al., 1966) and then classified in respective age groups.

The measurements on individuals were taken during the working hours of the schools with minimum clothing. All bilaterally represented measurements were taken on the left hand side of the subject. The measurement techniques of Martin and Saller (1957) were followed. The measurements include body weight, stature, upper arm circumference and triceps skinfold.

RESULTS AND DISCUSSION

It can be inferred from the table 1 that the mean values for all the body measurements except triceps skinfold, increase with the advancement of age (Fig. 1). The mean stature of infant at 1

year was about 60 cm. The stature doubled by 8 years, two and half times by 14 years. An increment of 15 cm. was noticed from 15-20 years (Table 1; Fig.1). The mean body weight of infant at 1 year was 5 kg., it was doubled by 5 years, thrice by 6 years, about 5 times by 10 years, and 10 times by 20 years. The mean upper arm circumference of infant at 1 year was [illegible], it was one and half times by 13 years and [illegible] bled by 20 years (Table 1, Fig. 1). Mean values of these physical traits are found to increase progressively with age. Fat fold at triceps region increase at a slow rate from age 1 with advancing ages till 4 years after which thickness shows a gradual decline up to 9 years; and then increase from 10 to 17 years, after which thickness shows a gradual decline.

As per values of regression characteristics given in figure 2, it is clear that all the values of 'r' are positive showing a direct relationship between age and different measurements except triceps skinfold. The levels of significance for each of these values are highly significant. The regression lines show the rate of change (slow or fast) in different biologial variables for a unit change in age. It is apparent from the figure 2 that among the Vadabalija boys both body weight and stature show the maximum rate change while upper arm circumference and triceps skinfold show medium rate change. The 'F' shows highly statistical significance levels for regression function as a whole.

Vadabalija boy are lighter and shorter than British boys (Tanner et al., 1966) and American children (Johnston et al., 1977). Vadabalija boys experience almost similar mean values for upper arm circumference and triceps skinfold to that of rural boys of Punjab (Sidhu and Phull, 1974). The mean values of the upper arm circumference is in close approximation to the Jat boys (10, 15 and 18 years), (Nath, 1972), rural boys of Punjab (6,8,11 to 16 years) (Sidhu and Phull, 1974), Punjabi-Hindu Khatri boys (15 to 18 years) (Singh, 1968), Punjabi boys (10 to 13, 15, 16,

Table 1: Mean and standard deviation of body measurements

Age in years	*No.*	*Stature*		*Body weight*		*Upper arm circumference*		*Triceps skinfold*	
		Mean	*S.D.*	*Mean*	*S.D.*	*Mean*	*S.D.*	*Mean*	*S.D.*
1	47	59.85	5.65	5.38	1.27	12.67	1.13	8.34	1.84
2	37	72.26	5.06	8.05	1.68	13.37	1.04	8.39	1.74
3	34	81.55	7.06	10.38	1.78	13.98	0.94	9.40	2.10
4	37	90.24	4.53	12.55	1.33	14.42	0.75	9.84	2.77
5	44	98.45	5.75	14.32	1.58	14.64	0.81	8.45	1.80
6	65	106.65	5.34	16.31	1.80	14.71	0.80	7.11	1.79
7	47	111.81	5.09	17.75	1.98	14.89	0.97	6.57	1.52
8	58	117.74	6.47	19.56	2.39	14.96	0.95	6.02	1.48
9	45	123.51	5.20	21.80	1.74	15.61	0.78	5.75	1.19
10	59	127.13	5.52	23.37	2.88	15.86	0.88	5.90	1.24
11	44	130.89	6.55	25.00	3.00	16.07	1.03	5.99	1.20
12	26	133.00	3.07	26.58	1.89	16.75	0.86	6.08	1.59
13	48	137.91	4.62	29.97	1.88	17.89	1.01	6.28	1.66
14	35	146.94	5.40	36.28	4.34	18.99	1.62	6.50	1.59
15	38	153.37	4.85	41.64	4.14	20.06	1.36	6.59	2.22
16	54	159.32	4.66	45.41	4.06	21.71	1.41	6.46	1.82
17	33	160.80	4.88	49.18	5.59	22.47	1.49	6.69	1.54
18	34	161.96	4.78	51.15	4.11	23.39	1.28	6.62	2.00
19	21	162.52	4.58	51.95	2.94	23.56	0.81	6.59	1.50
20	39	162.58	4.69	52.58	4.14	23.72	1.06	6.35	1.10

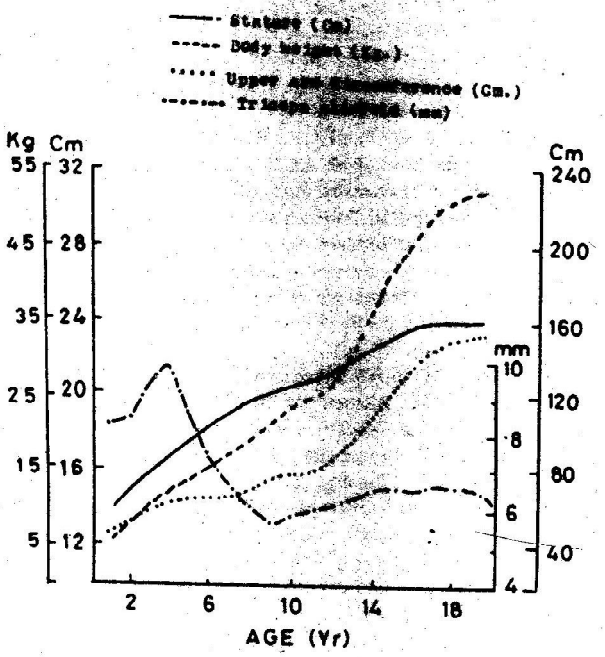

Fig. 1. Distance Curves

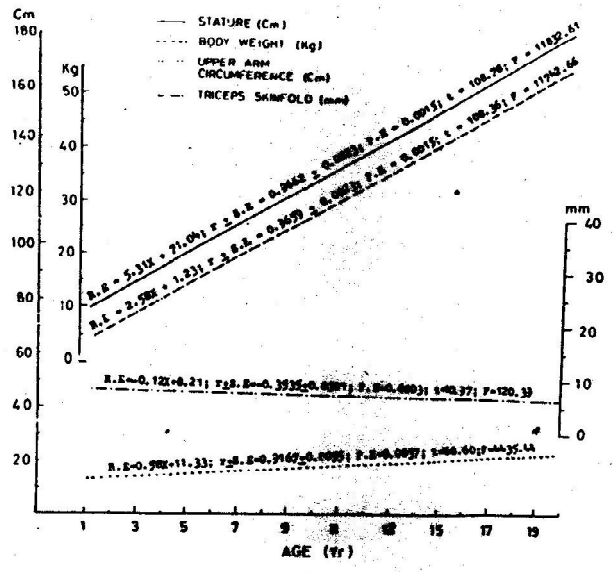

Fig. 2. Regression Lines

18 and 19 years) (Sidhu, 1969), and Assamese boys (10 and 17 years) (Das and Das, 1969-71).

Triceps skinfold of Vadabalija boys shows close similarity with Gaddi Rajput boys (except some age groups) (Singh, 1980), Punjabi boys in all age groups (except 12 and 13 years age groups) (Sidhu, 1969).

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