

Growth Characteristics of Bicondylar Femur and Wrist Breadth Among Yadava and Vadabalija Boys of Visakhapatnam Andhra Pradesh, India : A Comparative Study

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KEY WORDS Bicondylar Femur. Wrist Breadth. Yadava. Vadabalija. Andhra Pradesh.

ABSTRACT The present study, based on a cross-sectional sample of 757 Yadava and 845 Vadabalija male children in the age range of 1 to 20 years, confines to the evaluation of growth differences among Yadava and Vadabalija boys with the help of two anthropometric measurements. Analysis of the data reveal that all measurements show significant differences in some age groups among Yadava *versus* Vadabalija boys. It can be inferred that the differential growth patterns observed between these two groups may be due to genetic factor associated with socio-economic environment.

The present study deals with two anthropometric variables which are studied to show the effect of age from 1 through 20 years on growth patterns and also to study growth differences among rural, and agricultural Yadava and fishing Vadabalija boys.

MATERIAL AND METHODS

The Yadava (Golla) of North Coastal Andhra region is traditionally a pastoral community occasionally engaged in farming. Vadabalija is one of the nine important fishing communities found in the North-East Coastal tract of Andhra Pradesh. Data were collected, cross-sectionally, on 757 Yadava and 845 Vadabalija boys, aged 1 to 20 years, from 23 villages of Bheemunipatnam and Anandapuram mandals of Visakhapatnam District of Andhra Pradesh during January, 1986 to June, 1987. The age of each individual was calculated to three decimal places after Tanner et al. (1966). The bilaterally represented measurements were taken on the left hand side of the subject. The measurements of bicondylar femur and wrist breadth were taken after Weiner and Lourie (1969).

RESULTS AND DISCUSSION

Mean and standard deviation of two anthropometric variables and significant differences between Yadava *versus* Vadabalija boys have been depicted in the tables 1 and 2. It can be concluded from the tables that the mean values of these variables increase with increase in age. The mean bicondylar femur of infants at 1 year was about 3½ cm. It increased one and half times by 5 years. An increment of 2½ cm was noticed from 6 to 20 years in both the groups. The mean wrist breadth of infant at 1 year was 2½ cm, it doubled by 15 years, and then an increment of about ½ cm was observed from 16 to 20 years in both the groups. These measurements showed maximum annual increments between 1 and 2 years, and from 3 years the annual increments declined in both the groups. The adolescent growth spurt of bicondylar femur and wrist breadth of Yadava boys (14-15 years) was delayed by one year when compared with Vadabalija boys (13-14 years). Statistically significant differences were observed in some age groups *i.e.*, for bicondylar femur (3,4,5,6,10,14 and 19) and wrist breadth (5,10 and 11 years) (Tables 1 and 2).

Table 1 : Mean, standard deviation, standard errors and coefficient of variation of bicondylar femur (cm) among Yadava and Vadabalija boys

N	Yadava						Age (in years)	N	Vadabalija						t-value
	Mean±	SE	SD±	SE	CV±	SE			Mean±	SE	SD±	SE	CV±	SE	
48	3.46	0.07	0.49	0.05	14.16	1.45	1.00	47	3.48	0.07	0.48	0.05	13.79	1.42	0.20
46	3.75	0.07	0.45	0.05	12.00	1.25	2.00	37	3.88	0.06	0.36	0.04	9.28	1.08	1.46
44	4.13	0.04	0.27	0.03	6.54	0.70	3.00	34	4.33	0.09	0.50	0.05	11.55	1.40	2.11 ¹
46	4.43	0.06	0.38	0.04	8.58	0.89	4.00	37	4.69	0.08	0.46	0.05	9.81	1.14	2.76 ²
82	4.71	0.05	0.43	0.03	9.13	0.71	5.00	44	4.96	0.05	0.33	0.03	6.65	0.71	3.64 ³
55	4.95	0.06	0.42	0.04	8.48	0.81	6.00	65	5.18	0.05	0.42	0.04	8.11	0.71	2.99 ²
52	5.10	0.07	0.48	0.05	9.41	0.92	7.00	47	5.26	0.06	0.42	0.04	7.98	0.82	1.77
48	5.34	0.08	0.54	0.06	10.11	1.03	8.00	58	5.46	0.05	0.40	0.04	7.33	0.68	1.28
47	5.67	0.10	0.66	0.07	11.64	1.20	9.00	45	5.78	0.07	0.44	0.05	7.61	0.80	0.94
36	5.74	0.09	0.51	0.06	8.89	1.05	10.00	59	5.95	0.06	0.43	0.05	7.23	0.67	2.06 ¹
27	6.05	0.09	0.49	0.07	8.10	1.10	11.00	44	6.15	0.08	0.56	0.08	9.11	0.97	0.79
28	6.15	0.09	0.46	0.06	7.48	1.00	12.00	26	6.36	0.07	0.35	0.05	5.50	0.76	1.90
24	6.32	0.14	0.70	0.10	11.08	1.60	13.00	48	6.53	0.06	0.45	0.06	6.89	0.70	1.34
31	6.61	0.12	0.68	0.09	10.29	1.31	14.00	35	7.05	0.08	0.46	0.06	6.52	0.78	3.04 ²
24	7.06	0.13	0.62	0.09	8.78	1.27	15.00	38	7.35	0.08	0.50	0.07	6.80	0.78	1.93
27	7.46	0.08	0.40	0.05	5.36	0.73	16.00	54	7.60	0.08	0.59	0.08	7.76	0.75	1.26
22	7.81	0.13	0.63	0.09	8.07	1.22	17.00	33	7.91	0.10	0.57	0.09	7.21	0.89	0.60
23	8.05	0.11	0.53	0.08	6.58	0.97	18.00	34	7.92	0.08	0.47	0.07	5.93	0.72	0.95
20	8.32	0.06	0.27	0.04	3.25	0.51	19.00	21	7.93	0.09	0.41	0.06	5.17	0.80	3.61 ³
27	8.34	0.21	1.10	0.15	13.19	1.79	20.00	39	7.93	0.08	0.49	0.07	6.18	0.70	1.82

1. Significant at 5% level

2. Significant at 1% level

3. Significant at 0.1% level

Table 2 : Mean, standard deviation, standard errors and coefficient of variation of wrist breadth (cm) among Yadava and Vadabalija boys

N	Yadava						Age (in years)	N	Vadabalija						t-value
	Mean±	SE	SD±	SE	CV±	SE			Mean±	SE	SD±	SE	CV±	SE	
48	2.42	0.05	0.36	0.04	14.88	1.52	1.00	47	2.32	0.03	0.21	0.02	9.05	0.93	1.66
46	2.51	0.03	0.20	0.02	7.97	0.83	2.00	37	2.50	0.03	0.21	0.02	8.40	0.98	0.22
44	2.61	0.04	0.25	0.03	9.58	1.02	3.00	34	2.62	0.03	0.15	0.02	5.73	0.69	0.22
46	2.80	0.04	0.24	0.03	8.57	0.89	4.00	37	2.74	0.04	0.27	0.03	9.85	1.15	1.06
82	3.06	0.03	0.30	0.02	9.80	0.77	5.00	44	2.95	0.03	0.23	0.02	7.80	0.83	2.29 ¹
55	3.24	0.03	0.19	0.02	5.86	0.56	6.00	65	3.21	0.04	0.29	0.03	9.03	0.79	0.68
52	3.40	0.04	0.28	0.03	8.24	0.81	7.00	47	3.34	0.04	0.27	0.03	8.08	0.83	1.08
48	3.57	0.04	0.25	0.03	7.00	0.71	8.00	58	3.49	0.04	0.29	0.03	8.31	0.77	1.52
47	3.76	0.04	0.25	0.03	6.65	0.69	9.00	45	3.68	0.04	0.25	0.03	6.79	0.72	1.53
36	3.91	0.04	0.24	0.03	6.14	0.72	10.00	59	3.75	0.05	0.38	0.04	10.13	0.93	2.51 ¹
27	4.01	0.04	0.21	0.03	5.24	0.71	11.00	44	3.88	0.05	0.30	0.04	7.73	0.82	2.14 ¹
28	4.20	0.05	0.24	0.03	5.71	0.76	12.00	26	4.09	0.06	0.31	0.04	7.58	1.05	1.45
24	4.35	0.05	0.24	0.03	5.52	0.80	13.00	48	4.28	0.04	0.25	0.04	5.84	0.60	1.15
31	4.53	0.04	0.25	0.03	5.52	0.70	14.00	35	4.59	0.05	0.30	0.04	6.54	0.78	0.89
24	4.79	0.06	0.28	0.04	5.85	0.84	15.00	38	4.74	0.05	0.29	0.04	6.12	0.70	0.68
27	4.88	0.05	0.24	0.03	4.92	0.67	16.00	54	4.93	0.04	0.30	0.04	6.09	0.59	0.81
22	4.94	0.06	0.29	0.04	5.87	0.89	17.00	33	4.99	0.04	0.25	0.04	5.01	0.62	0.66
23	4.98	0.07	0.32	0.05	6.43	0.95	18.00	34	5.03	0.05	0.32	0.05	6.36	0.77	0.58
20	5.08	0.05	0.21	0.03	4.13	0.65	19.00	21	5.07	0.07	0.30	0.05	5.92	0.91	0.12
27	5.17	0.06	0.32	0.04	6.19	0.84	20.00	39	5.07	0.05	0.31	0.04	6.11	0.69	1.26

1. Significant at 5% level

The growth differences observed between the Yadava and Vadabaliya boys need to be explained at this juncture. The social status of both the caste groups in the prevailing Hindu caste system is low. The Vadabaliya community in particular is very poor, their occupation (fishing) is not as dignified as that of the Yadavas (agriculturists), they occupy a low position in the society, live mostly outside the villages, and are educationally backward. Both the groups are of lower income groups. The factors associated with socio-economic environment may play a role in limiting growth potential throughout the growth period. The socio-economic status of the Yadava community is considerably better than the Vadabaliya. However, owing to the occupation it is obvious that Vadabalijas have easy access to and may consume fish and other sea foods abundantly as also shown by other studies (Busi et al., 1987). This high consumption of protein rich food of Vadabalijas may have resulted in better growth.

Regarding the genetic differences, both Yadava and Vadabaliya are reproductively isolated from one another and also strictly endogamous. Raja Rajeswari (1988) in her study observed some differences between these two communities in their demographic, genetic and other characters. These inherent genetic factors affecting the velocity of growth which give the Vadabaliya boys a characteristic cross-sectional growth patterns in these vari-

ables which is quantitatively different from that observed in Yadava boys. This would be consistent with what is known of genetic factors affecting growth and development (Tanner, 1962) and comparative growth studies of different ethnic groups (Eveleth and Tanner, 1976).

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