PRINT: ISSN 0970-9274 ONLINE: 2456-6608
DOI: 10.31901/24566608.1992/03.01.16
JOURNAL OF
HUMAN ECOLOGY
J. Hum. Ecol., 2(3): 63-65 (1992)


# Physical Growth and Regression Characteristics Among Yadava Boys of Visakhapatnam District, Andhra Pradesh, India

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KEY WORDS Growth. Yadava. Anthropometry. Skinfolds. Andhra Pradesh.

ABSTRACT A cross-sectional purposive random sample of 757 Yadava boys, aged 1-20 years was collected to study the growth patterns on the basis of stature, body weight, upper arm circumference, calf circumference and skinfold thickness. The regression analysis shows that stature, body weight, upper arm circumference and calf circumference increase with increase in age.

The present study deals with six anthropometric measurements which are studied to show the effect of age from 1 through 20 years on their growth pattern and also to study the regression characteristics of rural agricultural Yadava boys to study age changes.

## MATERIAL AND METHODS

The Yadavas (Gollas) of North Coastal Andhra region is traditionally a pastoral community occasionally engaged in farming. Data were collected, cross-sectionally, on 757 Yadava boys aged 1 to 20 years, from 15 villages of Bheemunipatnam and Anandapuram *Mandals* of Visakhapatnam District of Andhra Pradesh during January 1986 to June 1987.

The exact date of birth was collected for every subject either from the concerned school registers or from birth records of the *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 individual were taken during the working hours of the school 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, calf circumference, triceps and subscapular skinfolds.

## RESULTS AND DISCUSSION

Mean values, standard deviations for all the measurements have been listed in table 1. It can be inferred from the table that the mean values for all the body measurements except skinfolds, increase with 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 3 years, thrice by 6 years, about five times by 10 years, and ten times by 20 years (Table 1; Fig. 1). The mean upper arm circumference of infant at 1 year was 12 cm. It was doubled by 20 years (Table 1; Fig. 1). The mean calf circumference of infant at 1 year was 14 cm. It was doubled by 16 years. An increment of 2 cm. was noticed from 17-20 years (Table 1; Fig. 1). Mean values of these physical traits are found to increase with advancement of age. Fat fold at triceps region increase at a slow rate from age 1 with advancing ages till 3 years. Then it decreases from 10 to 15 years; and once again in the mean values decrease through 16; and

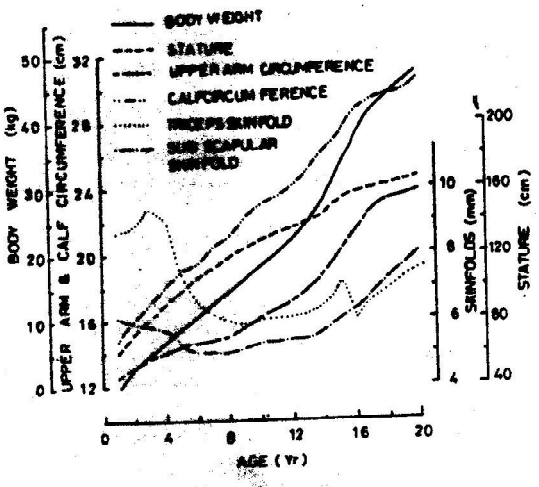


Fig.1. Distance Curves

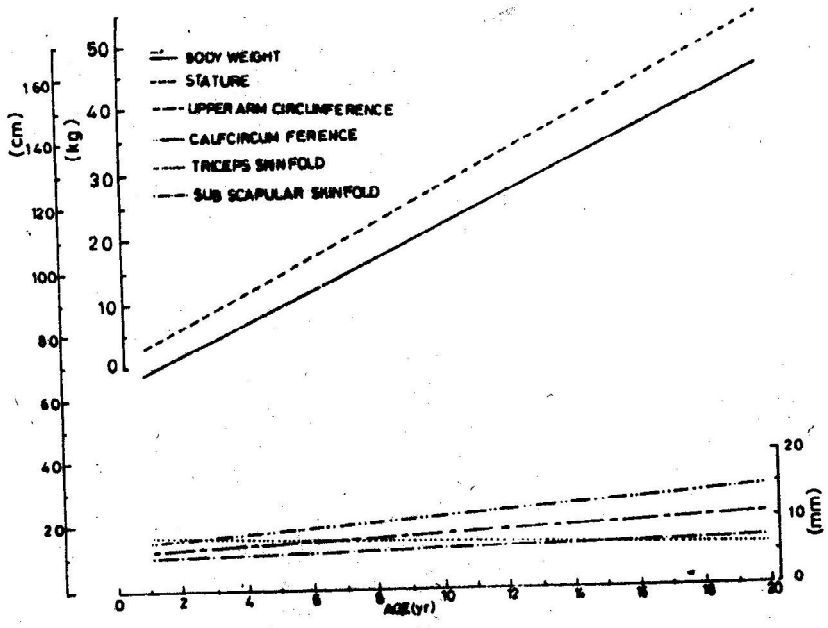


Fig.2. Regression Lines

from 17 years gradually increases through 18, 19 and finally at 20 years (Table 1; Fig. 1) The mean subscapular skinfold at 1 year was 6 mm. The mean values decreases continuously throughout 2, 3 and finally at the end of 8 years and increase since then at 20 years of age (Table 1; Fig. 1).

**Table 1: Mean, standard deviation of anthropometric variables among Yadava boys**

| | | *Stature* | | *Body weight* | | *Upper arm circumference* | | *Calf circumference* | | *Triceps skinfold* | | *Subscapular skinfold* | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Age (Yr.)* | *N* | *X (cm)* | *S.D.* | *X (cm)* | *S.D.* | *X (cm)* | *S.D.* | *X (cm)* | *S.D.* | *X (mm)* | *S.D.* | *X (cm)* | *S.D.* |
| 1 | 48 | 60.11 | 5.13 | 5.24 | 1.32 | 12.69 | 1.40 | 14.70 | 1.64 | 8.75 | 1.90 | 6.13 | 1.27 |
| 2 | 46 | 72.33 | 3.13 | 7.85 | 0.85 | 13.41 | 0.93 | 16.08 | 1.09 | 8.83 | 1.95 | 5.91 | 1.51 |
| 3 | 44 | 81.32 | 3.27 | 9.92 | 0.71 | 13.82 | 0.82 | 17.34 | 0.89 | 9.39 | 2.06 | 5.87 | 1.21 |
| 4 | 46 | 89.80 | 3.16 | 11.74 | 0.96 | 14.14 | 0.73 | 18.21 | 0.87 | 9.13 | 1.68 | 5.68 | 1.09 |
| 5 | 82 | 99.11 | 4.29 | 13.85 | 1.20 | 14.42 | 0.78 | 19.12 | 0.87 | 7.47 | 1.88 | 5.16 | 1.05 |
| 6 | 55 | 105.86 | 3.29 | 15.38 | 0.85 | 14.57 | 0.60 | 19.65 | 0.78 | 6.50 | 1.40 | 5.04 | 0.99 |
| 7 | 52 | 112.30 | 3.34 | 17.18 | 1.17 | 14.70 | 0.67 | 20.55 | 0.92 | 6.29 | 1.44 | 5.03 | 1.01 |
| 8 | 48 | 118.25 | 3.21 | 19.41 | 1.24 | 15.01 | 0.55 | 21.34 | 0.89 | 6.13 | 2.53 | 4.99 | 1.08 |
| 9 | 47 | 123.01 | 3.56 | 21.53 | 1.61 | 15.55 | 0.84 | 22.24 | 1.16 | 5.82 | 1.22 | 5.14 | 1.10 |
| 10 | 36 | 128.99 | 2.99 | 24.00 | 1.62 | 16.22 | 0.91 | 23.14 | 1.31 | 6.14 | 1.20 | 5.28 | 0.87 |
| 11 | 27 | 132.31 | 3.76 | 24.87 | 1.57 | 16.57 | 0.96 | 23.67 | 1.11 | 6.14 | 1.69 | 5.32 | 1.01 |
| 12 | 28 | 135.64 | 3.79 | 26.98 | 2.02 | 17.18 | 0.97 | 24.28 | 1.32 | 6.16 | 1.29 | 5.36 | 1.03 |
| 13 | 24 | 140.33 | 4.37 | 29.63 | 1.48 | 17.88 | 0.84 | 24.96 | 1.03 | 6.18 | 2.34 | 5.41 | 1.29 |
| 14 | 31 | 145.20 | 3.32 | 33.24 | 2.48 | 18.72 | 1.19 | 26.22 | 1.48 | 6.47 | 1.60 | 5.64 | 1.28 |
| 15 | 24 | 153.12 | 2.77 | 38.44 | 3.23 | 20.06 | 1.53 | 27.17 | 1.90 | 7.12 | 2.39 | 5.97 | 1.34 |
| 16 | 27 | 157.28 | 3.70 | 42.61 | 2.92 | 21.32 | 1.32 | 28.65 | 1.56 | 6.03 | 1.10 | 6.26 | 1.04 |
| 17 | 22 | 159.42 | 4.06 | 46.86 | 2.70 | 22.50 | 1.48 | 29.39 | 1.61 | 6.61 | 2.08 | 6.72 | 1.09 |
| 18 | 23 | 161.38 | 4.35 | 48.74 | 2.65 | 23.20 | 1.32 | 29.57 | 1.22 | 6.91 | 2.29 | 7.20 | 1.60 |
| 19 | 20 | 163.55 | 3.42 | 50.67 | 2.69 | 23.58 | 0.95 | 29.86 | 1.74 | 7.20 | 1.84 | 7.64 | 1.49 |
| 20 | 27 | 165.73 | 4.48 | 52.42 | 3.54 | 23.85 | 1.33 | 30.62 | 1.44 | 7.46 | 2.67 | 8.07 | 2.51 |

Regression values, show that all the values of "$r^2$" are positive showing a direct relationship between age and various measurements (Fig. 2). The levels of significance for each of these values are highly significant. The regression for each of these values are highly signnificant. The regression lines show the rate of change (slow or fast) in different biological variable for a unit change in age. It is inferred from the figure 2 that among the Yadava boys both body weight and stature show the maximum change. While upper arm circumference, calf circumference, triceps and subscapular skinfold show medium change.

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