

## **Effect of Genetic and Environmental Factors on Body Measurements of First, Second and Third Degree of Relatives**

**Prabha Malik and Raghbir Singh**

*Department of Anthropology, University of Delhi, Delhi 110 007, India*

**KEYWORDS** Anthropometric Measurements. Household Environment. Familial Correlations. Heritability

**ABSTRACT** Two hundred and three (203) Punjabi Khatri families residing in Delhi were surveyed for 18 standardised body measurements which included linear measurements, diameters, girths, skinfolds and body weight. Only the adult members of the families were measured and their ages ranged from 17 to 58 years. In addition to nuclear family correlations, correlation coefficients for different body measurements of extended family members living in separate houses were also calculated. Adult sibling correlations of body measurements for parental and filial generations are also reported. Degree of relationship affects the magnitude of correlation between different body measurements. Correlation coefficients for all the body measurements are significant for first degree of relatives. Second degree of relatives do not show statistically significant correlations for arm length, middle finger length, bicristal diameter, arm and calf circumference and skin fold at triceps, subscapular region and calf, while among third degree of relatives, non-significant correlations have been observed for all the body measurements except for height, sitting height and bicristal diameter. Siblings of filial generation show statistically non-significant correlations for all the body measurements while parental generation sibs are showing statistically non-significant correlations for skinfolds at biceps and subscapular region and calf girth measurement. Magnitude of heritability of body measurements as estimated by mid-parent offspring regression is highest for height followed by longitudinal and transverse measurements and least values are observed for skinfold measurement.