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Research Article

PREDICTION OF STATURE BY RIGHT MIDDLE FINGER LENGTH OF MALES AMONG SOUTH INDIAN POPULATION

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ABSTRACT

Stature is an important parameter of personal identification there are many studies has been done along with others like age, sex, race etc of an individual. The present study is an attempt to examine the relationship between the stature and right middle finger length of 100 males of Karnataka, in South Indian Population in age ranging from 17 to 22 years. Linear and multiple regression equations formula for stature estimation were calculated.

The co-relation co-efficient between stature and right middle finger length were found to be positive and statistically highly significant ($p<0.01$). The highest co-relation co-efficient is - (+0.35). The regression formula was checked for their accuracy, applicability and reliability.

KEY WORDS: Human Anatomy; Anthropology; Stature; South Indian population.

INTRODUCTION:

Identification of individual is a prime most task for investing officer when the decapitation deceased found, at list by estimation of stature of an individual from the skeletal remains from the mutilated and amputated limbs, has obvious significance in the personal identification. Studies on the estimation of stature from them, that is skeletal remains or from the mutilated limbs, mostly of the long bones have been reported as indicated by the published work of the Pearson,[1] Trotter and Glesser[2] and steels formula[3]. The Indian perspective of the problem of stature estimation has been studied by the Thakur and Rai[4], Saxena[5], Bhatnagar et al[6], Abdel-Malek AK,[7] Prateek rastogi et al [8] Estimation of stature from hand, finger and phalangeal length has been reported (; Thakur and Rai[4]; Saxena[5] Shintaku, Furuya[9]; Tyagi et al[10]; Sharma and Kapoor[11].) To the best of our knowledge, Prateek Rastogi et al [8] and Sharma & Kapoor,[11] has reported from this aspect therefore, in present study, an attempt has been made to estimate the stature from right middle finger length measurements.

MATERIAL AND METHODS

Present study is based upon various measurements of stature, individual phalangeal length of right middle finger. Subjects that included 100 males were of age ranging from 17 to 22 years. Data was collected from the students of SSIMS & RC campus. Care has been taken for inclusion of the unrelated subjects only. Subjects were mostly having right handed preponderance. Measurement of stature was taken by a standard anthropometer and right middle finger length was taken by sliding caliper[12]. Study was carried out as per Institutional Ethical Committee clearance no 14; SSIMS&RC/FM/IEC/2009 dated 19-12-2011.

MEASUREMENTS

1. **Stature:** It was measured as vertical distance from the vertex to the heel. Measurement was taken by making the subject stand erect on a horizontal resisting plane with bare foot. Palms of hand were turned inwards and fingers horizontally pointing downwards[13]. Anthropometer was placed in straight vertical position in front of the subject with head oriented in eye-ear-eye Plane (Frankfurt Plane). The movable rod of the Anthropometer is brought in contact with vertex in the mid saggital plane.
2. **Right Middle Finger Length**: It was measured as the distance from the most proximal flexion crease of middle finger, till the projecting point on the tip of the finger. It was measured with the help of a sliding caliper[12].

RESULTS:

The results of the stature and the right middle finger length measurements of 17-22 years. Present study is evident as shown in the table-1&2 that mean stature in the males is higher as compared to that of Thakur (1985), Sharma (2001) and Prateek Rastogi (2009) have also studied the stature.

Right Middle Finger length statistics are given in the table 3. Present study is there exists statistically significant. 'P'-value < 0.01.

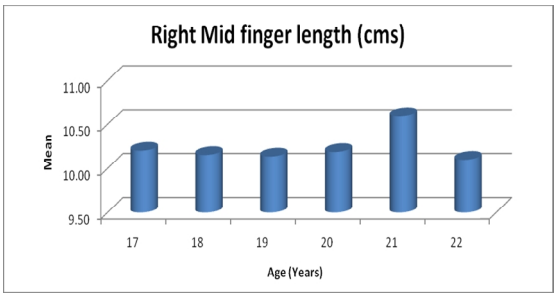
Statistical co-relation co-efficient:

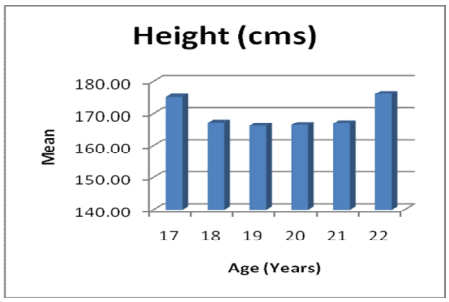
Present study is evident as shown in the table: 3 & 4, that the measurements have a positive as well as statistically significant correlation with the stature. Prateek Rastogi (2009) reported statistically significant correlation between stature and middle finger length. Shintaku and Furuya (1990) reported for Japanese women a correlation of proximal phalange and stature ranging from 0.29 to 4.31 therefore an attempt has been made to draw the regression equations to estimate stature from middle finger length

Table: 1 Measurement of subjects Age, Right Mid Finger Length and Actual Height.

Age (years)	* Right Mid Finger Length	Stature (cm)
17	10.20	175.00
18	10.15	167.21
19	10.14	166.17
20	10.19	166.46
21	10.60	167.00
22	10.10	176.00

*RMFL- Right mid finger length.





Graphical Presentation of Age in years and height in centimeters.

Table: 2 Measurements of subject Right Mid Finger Length and Mean Stature.

Right Mid Finger length (cm)	Stature (cm)
9.2-9.6	167.00
9.6-10.0	166.53
10.0-10.4	166.56
10.4-10.9	167.66

Graphical Presentation of Right Mid finger length with Height.

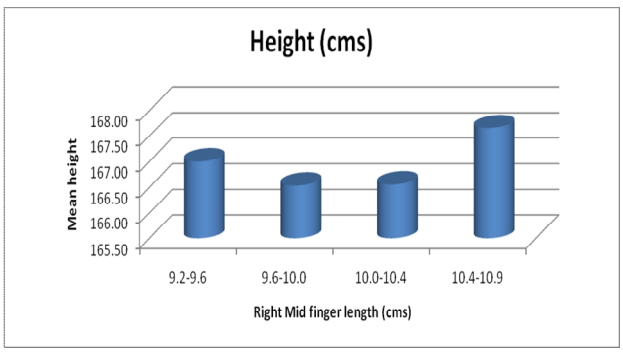


Table: 3 Descriptive statistics of subject's right mid finger length and stature for the study groups.

		Right Mid Finger Length (cm)		Stature (cm)	
Age(Years)	Number	Mean	SD	Mean	SD
17	1	10.20	-	175.00	-
18	53	10.15	0.29	167.21	4.31
19	39	10.14	0.35	166.17	5.36
20	7	10.19	0.37	166.46	6.78
21	1	10.60	-	167.00	-
22	1	10.10	-	176.00	-
Total	102	10.15	0.31	166.92	4.99

SD: Standard deviation.

Table: 4 Correlation between right mid finger length and stature.

		**Stature (cm)	
Right Mid Finger Length (cm)	Number	Mean	SD
9.2-9.6	2	167.00	4.24
9.6-10.0	30	166.53	4.56
10.0-10.4	36	166.56	5.35
10.4-10.9	34	167.66	5.14
Total	102	166.92	4.99

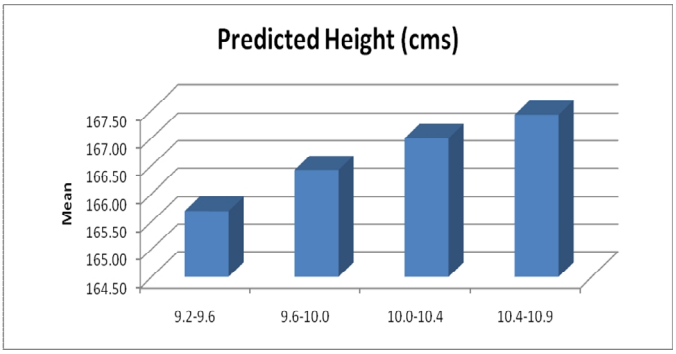
** S=stature.

Linear Regression equation for stature estimation.
S= 152.02 + 1.47 (Right Mid Finger Length)

Measurements by using regression equation for stature (S) estimation from right middle finger length.
S = 152.02+1.47 (R M F L) * R M F L –Right Middle Finger Length.

Table: 5 Predicted of Stature form given right mid finger length.

Right Mid Finger Length (cms)	Number	Predicted Stature (cm)	SD
9.2-9.6	2	165.69	0.21
9.6-10.0	30	166.42	0.17
10.0-10.4	36	167.00	0.10
10.4-10.9	34	167.42	0.16
Total	102	166.94	0.46



Right Middle finger length and medium regression equation:

The present study, regression equations have been formulated with the standard error ranging from 0.21 to 0.16 centimeters in case of the males. The standard error difference measured ranges from 4.31 to 6.78 centimeters, which again indicates that both the parameters are efficient to indicate the stature estimation. It also indicates that either of two can be used for stature estimation, which is of great significance. As references indicate that very little work has been done for estimation of stature from middle finger length reported by Shintaku and Furuya (1990). and Sharma and Kapoor (2001) and Prateek Rastogi (2009), reported estimation of stature from middle finger length and finger print length among criminals. While Shintaku and Furuya (1990) studies proximal phalange in females only, Sharma and Kapoor (2001) have studied distal phalange in males only. In present study, right middle finger length has been studied for stature estimation in male individual of south Indian population.

CONCLUSION:

Stature is a prime task for identification of an individual. 100 male subjects have been studied for their stature by right middle finger length. Statistically significant correlation is present among the stature and right middle finger length measurements. Present study (table: 5) reveals that the right middle finger length can be used to predict stature among South Indian Population. The regression equations have been derived from these measurements and concluded that stature can be estimated from actual as well as measurements of right middle finger length by the regression formulae S = 152.02 + 147 X (R M F L).

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