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## Title

### ***Biometrics of the Hand's Middle Finger to Determine Stature in Chilean University Students; [Biometría del Dedo Medio de la Mano para Determinar Estatura en Estudiantes Universitarios Chilenos]***

## Abstract

Biometrics and forensic osteology play a significant role in human identification, as the morphological uniqueness of every individual enables the differentiation and recognition of skeletal remains. Through meticulous analysis of human remains, it is possible to determine key demographic attributes such as stature, a significant parameter in the forensic identification process. This information is of practical relevance for the identification of individuals in contexts such as disasters, vehicular accidents, terrorist attacks, armed conflicts, and forensic investigations. The objective of this study was to determine the correlation between the hand's middle finger length and stature in a group of Chilean students. A total of 211 students of both sexes from La Araucanía region, Chile, participated in the study. After obtaining informed consent to participate voluntarily in the study, each individual underwent a general anthropometric examination, followed by a specific assessment of the length of the middle finger (MFL) of both hands. The results of the multiple linear regression analysis indicated a significant prediction of stature using the length of the right (R-MFL) and left (L-MFL) middle fingers,  $F(2, 207) = 79.80$ ,  $p < 0.001$ . The equations for estimating stature based on the length of the middle fingers are as follows: for R-MFL,  $\text{Stature} = 91.265 + (8.092 \times \text{R-MFL})$ , and for L-MFL,  $\text{Stature} = 83.967 + (8.889 \times \text{L-MF})$ . Based on these results, it was found that the length of the middle finger of both hands is predictive of stature. © 2024, Universidad de la Frontera. All rights reserved.

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adult; anthropometry; army; Article; biological activity; biometry; body height; body remains; convenience sample; correlation analysis; correlation coefficient; criminalistics; cross-sectional study; demographics; disaster; female; finger length; forensic identification; human; human experiment; male; metacarpophalangeal joint; middle finger; morphology; multiple linear regression analysis; nationality; osteology; predictive value; sample size; skeletal muscle; terrorism; traffic accident; university student

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chilean individuals, *Int. J. Morphol*, 30, 2, pp. 599-606, (2012); Cardoso H. F., Pereira V., Rios L., Chronology of fusion of the primary and secondary ossification centers in the human sacrum and age estimation in child and adolescent skeletons, *Am. J. Phys. Anthropol*, 153, 2, pp. 214-225, (2014); Cohen J., *Statistical Power Analysis for the Behavioral Sciences*, (2013); Diab N. F., Tawfik W. T., Middle Finger Length: a predictor of stature and gender in a sample of Egyptian medical students-Faculty of Medicine-Ain Shams University, *Ain Shams J. Forensic Med. Clin. Toxicol*, 40, pp. 52-58, (2023); Haque A., Singh A. K., Kumari R., Kumari M., Alam J., Raj P., Akhtar J., Estimation of stature from the measurement of hand and foot in the population of Nalanda district of Bihar, *Int. J. Acad. Med. Pharm*, 5, 1, pp. 724-729, (2023); Síntesis de resultados Censo 2017: Región de La Araucanía, (2019); Khan F., Vaswani V. R., Pramod K. L., Badiadka K. K., Estimation of stature from middle finger among college students in Mangalore, *Int. J. Recent Trends Sci. Technol*, 18, 3, pp. 384-387, (2016); Koulapur V., Sekhar B. C., Porwal R., Ali K., Honnungar R. S., Pujar S. S., Estimation of stature from middle finger length, *Int. J. Forensic Med. Toxicol. Sci*, 2, 1, pp. 8-12, (2017); Mittal M., Gupta P., Kalra S., Bantwal G., Garg M. K., Short stature: understanding the stature of ethnicity in height determination, *Indian J. Endocrinol. Metab*, 25, 5, pp. 381-388, (2021); Sheuer L., Application of osteology to forensic medicine, *Clin. Anat*, 15, 4, pp. 297-312, (2002); Computer Software. Jamovi, Version 2.2, (2021); Tomaszewski K. A., Henry B. M., Ramakrishnan P. K., Roy J., Vikse J., Loukas M., Tubbs R. S., Walocha J. A., Development of the Anatomical Quality Assurance (AQUA) Checklist: Guidelines for reporting original anatomical studies, *Clin. Anat*, 30, 1, pp. 14-20, (2017); Waghmare S. S., Pawar V. G., Kachare R. V., Utility of middle finger length in stature estimation among Maharashtra students at S. R. T. R. Government Medical College, Ambajogai, Dist. Beed, in Maharashtra, India, *Int. J. Forensic Med. Toxicol. Sci*, 4, 2, pp. 34-38, (2019)

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