A89   Skeletal Sex Estimation in a Modern Cuban Sample

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After attending this presentation, attendees will understand which skeletal elements and standard measurements of the cranium and postcranial skeleton are the most accurate when estimating the sex of modern Cuban individuals in a forensic anthropological context.

This presentation will impact the forensic science community by offering new techniques when analyzing skeletal remains that have the potential to be an individual from Cuba, most specifically when metrically estimating sex. This presentation will also incorporate the significance of this research with the recent political and economic changes between the United States and Cuba.

Craniometric and postcranial metric data were collected from 111 known modern Cuban individuals located at the Museo Antropológico Montane at the University of Havana in Havana, Cuba. This sample contains data from 65 male and 46 female individuals. Multivariate and univariate statistical analyses, including Discriminant Function Analyses (DFA), were conducted in SAS® 9.4 to establish classification functions and sectioning points with associated classification rates.

Out of the 27 standard cranial measurements collected with a MicroScribe® G2 digitizer, eight measurements were separated using a stepwise selection procedure to include GOL, XCB, ZYB, WFB, AUB, OBH, PAC, and MOW. Based on these eight cranial measurements, and the resulting classification function, females were correctly classified 86.05% of the time and males were correctly classified 87.50% of the time, based on the cross-validation classification rates.

Forty-one standard postcranial measurements were collected from the long bones of each individual, including the humerus, radius, ulna, femur, tibia, and fibula. The stepwise selection procedure selected 12 measurements that are the most accurate when estimating the sex of these long bones: HUMXLN, HUMEBR, RADXLN, RDH, RADAPD, RADTVD, ULNXLN, ORL, BCB, FEMEBR, TIBXLN, and TIBNFX. Based on the multivariate analyses, the humerus resulted in the highest overall cross-validation classification rate of 96.93%, followed by the radius with 92.17%. When assessing each stepwise selected measurement individually, the Humerus Epicondylar Breadth (HUMEBR) resulted in the highest cross-validation rate of 96.93%, followed by the ulna Olec-Radial Notch (ORL) with a classification rate of 90.97%. These results demonstrate a high accuracy for utilizing cranial and postcranial metric analyses with estimating the sex of the skeletal remains of Cuban individuals.

Not only will these skeletal sex estimation techniques be beneficial to forensic anthropologists in Cuba, forensic anthropologists practicing in the United States can also utilize the results of this research. According to the 2010 United States Census, the Cuban population increased by 44% in the United States from 2000 to 2010, with an increase from 1.2 to 1.8 million within those ten years.[1] In 2010, approximately 77% of Cuban individuals in the United States resided in the southeastern states, with the majority of these individuals living in Florida.[1] Therefore, forensic anthropologists conducting casework in Florida are most likely to be confronted with the need for methods derived from Cuban individuals.[2] Recent studies have demonstrated the difficulty and inaccuracy of using methods derived in the United States on Cuban individuals, primarily as a result of the differential population history Cuba has experienced since Spanish colonization took place in the late 1400s.[3,4] With the recent advent of diplomatic relations being restored between Cuba and the United States, collaborations between the two countries will begin to excel, including in the forensic science community.

Reference(s):

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Cuba, Sex Estimation, Metrics

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