H104   **Univariate Sex Discrimination from the Postcranial Skeleton for a Colombian Population**

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The goal of this presentation is to present a discriminant function analysis of the postcranial elements from a new human skeletal collection of known individuals in Colombia.

This research will impact the forensic science community in the development of population standards for sex discrimination in Colombia and South America. This research may help pave the way for future courtroom validation methods.

This research explores the best univariate indicators for sex estimation using measurements of the postcranial elements. In a recent study of African Americans and European Americans from the Forensic Database, the postcranial elements that demonstrated the most effective sex discrimination were the femur, tibia, humerus and scapula (Spradley et al. 2011). The hypothesis for the current study is that the population from Bogotá, Colombia will follow a similar pattern with the femur and tibia at the knee demonstrating the highest classification rates.

The sample consists of 134 individuals (50 females, 84 males) between the ages of 19 and 93 with a mean age of 47 years. The sample is part of a new collection, the Modern Colombian skeletal collection of Colombia, from cemeteries in Bogotá, Colombia. These skeletons are curated at the National Institute of Legal Medicine and Forensic Sciences (INML y CF). The collection of known individuals includes data on age, sex, stature (as reported on identification cards) and place of birth. The collection represents remains that were either unclaimed after a four-year burial period and were collected before becoming comingled in a common grave. All individuals died in 2005. The methods include discriminant function analysis and univariate ANOVA using SPSS. Only the bones of the left side of the body were included in the analysis in order to lessen the effect of handedness and potential occupational markers, especially in the upper limb.

The results for this Colombian population indicate the same general pattern of classification effectiveness as seen in the North American sample using the univariate ANOVA and cross-validated discriminant function analysis. The humerus performs slightly better than the distal femur and proximal tibia as demonstrated in the North American sample. The percent correct classification for the postcranial elements ranges from 72.9% to 92.1%, with all of the humeral measurements correctly discriminating sex more than ninety percent of the time (*p-value* < 0.00). The highest classification rate was for the humeral head diameter (92.1%), the humeral epicondylar breadth (91.4%) and the humeral maximum length (90.7%). Only one femoral measure achieved just at 90.0% correct classification, which was the femoral midshaft transverse diameter.

In conclusion, these univariate results for the femur and tibia are very similar to the previous study by Spradley et al. (2011), but the higher discrimination in the humerus approaches some of the higher multivariate success rates achieved in the same study. This could be extremely useful for identification, as the humerus is more resistant to taphonomic properties than many of the bones. Furthermore, the ability to achieve such a high degree of success from a single bone is more efficient and thus preferable for the fast paced forensic laboratories in Colombia that see hundreds to thousands of forensic anthropology cases each year. This research will potentially play an important role in the development of population standards in Colombia and South America. This research hopes to help pave the way for courtroom validation methods not currently required in the Colombian medicolegal system, but validation methods will likely play an important role in the near future.

Sex Estimation, Postcranial Skeleton, Colombia