



Physical Anthropology Section – 2005

H65 Test of an Alternative Method for Determining Sex in the Hip: Applications for Modern Americans

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The goal of this research is to test the success rate of a recently published method for sexing the pelvis in modern American populations.

This presentation will impact the forensic community and/or humanity by providing information on a new technique, which could be used in cases where sex determination is ambiguous.

Many techniques exist for determining sex in the skeleton based on pelvic morphology. These methods yield success rates that vary between 80-95% depending on the methodology and population. In the last decade, violent crime rates have been consistently high in south Louisiana¹. This increased crime rate has resulted in an augmented number of forensic cases in which an anthropologist has been needed to determine the sex of the individual in putrefactive or skeletal remains. An investigation of alternative techniques for sexing the pelvis may prove beneficial in identifying unknown individuals in such cases.

A recently published method for sexing the pelvis alleges a 98% success rate². This methodology is based on five “characters” of the hip, including aspects of the preauricular surface, greater sciatic notch, form of the composite arch, morphology of the inferior pelvis, and ischiopubic proportions. Using these characters, eleven possible “conditions” are observed that can be scored as male, female, or intermediate. For each character, the conditions are combined to form a composite score. Then, the sum of the composite scores is used to determine the sex of the individual. While the accuracy of this method reportedly is high, all collections used in this research are European (specifically, French and Portuguese), and one cannot assume the methodology would yield equally high success rates in other populations. Therefore, further testing, specifically on modern American collections, is necessary to ensure the technique’s applicability in the United States.

The purposes of the present study are: 1) to evaluate the success rate of the Bruzek methodology for modern American pelves using different population subgroups; 2) to compare the success rate of this method with traditional techniques³; and 3) to determine the replicability and ease of this method for other observers.

A total of 450 os coxae from individuals of known sex have been evaluated from the Donated Collection housed at the Forensic Anthropology and Computer Enhancement Services (FACES) Laboratory at Louisiana State University, the William M. Bass Donated Collection housed at the University of Tennessee, and the Robert J. Terry Anatomical Collection housed at the Smithsonian. All data were collected using macroscopic visual examination and photographic images of the os coxae.

Preliminary results from a subset of the data demonstrate that the Bruzek method correctly identified sex in 81% of the cases, with 9.5% classified as “ambiguous” and 9.5% assigned the incorrect sex. The traditional methods yielded a success rate of 86%, with the remaining 14% classified as “ambiguous.” Additionally, many aspects of the Bruzek method were difficult to replicate, which therefore increased the potential for interobserver error.

The overall applicability of the Bruzek method is questionable given these preliminary results. However, certain aspects of this methodology, such as analyzing the greater sciatic notch by dividing it into proportions, provided new ways of evaluating conventionally subjective regions of the hip. Combining such aspects with traditional methods may be useful when trying to determine sex in ambiguous or fragmentary remains.

References:

1. Bouzon H. Assessing increases in violence: an analysis of homicide cases from Orleans Parish, Louisiana. MA Thesis, 2004. Louisiana State University, Department of Geography and Anthropology.
2. Bruzek J. A method for visual determination of sex using the human hip bone. *American Journal of Physical Anthropology* 2002; 117:157-168.
3. Rogers T and Saunders S. Accuracy of sex determination using morphological traits of the human pelvis. *J Forensic Sci* 1994; 39:1047-1056.

Forensic Anthropology, Sex Determination, OS Coxae