



### H49 Metric vs. Non-Metric: Accuracy in Sex Assessment Using the Greater Sciatic Notch

Erin B. Waxenbaum, PhD\*, 1810 Hinman Ave, Evanston, IL 60208; and Katya G. Siddall, Northwestern Univ, Dept of Anthropology, 1810 Hinman Ave, Evanston, IL 60208

After attending this presentation, attendees will understand the effects of chosen methodology on sex assessment of the human pelvis. This presentation provides an analysis of whether metric or non-metric analysis of the Greater Sciatic Notch (GSN) provides greater accuracy in determining sex. Attendees will observe the results of comparisons between the predicted sex through non-metric assessment following Buikstra and Ubelaker and metric evaluation using the GSN index.<sup>1</sup>

This presentation will impact the forensic science community by explaining how, ideally, multiple morphological features are used in assessing sex in skeletonized remains. However, in forensic contexts this is not always possible. These results highlight that neither the traditional visual assessment of sex using the GSN nor the metric method employing the GSN ratio is perfect. Nonetheless, the combination of both methods generates the greatest accuracy in this sample. The importance of these results is in highlighting the accuracy of varying methods of assessing sex through the GSN of the os coxa. This area is robust and frequently survives both archaeological and forensic contexts. The results of this research provide an invaluable addition to physical anthropology with practical applications for archaeological analysis and forensic casework.

Human skeletal pelvic dimorphism, specifically the sciatic notch, has long been a topic of discussion in physical and forensic anthropology. Historically, the "tools of the trade" for assessing sex in the pelvis have focused on visual, nonmetric methods, which are often conducted without an ecogeographically specific standard for comparison. In addition, nonmetric methods make use of relatively ambiguous descriptors for assessment including "broad," "comparatively open," and "shallow" for females and "narrow," "deep," or "J-shaped" to indicate male. As for metric analysis, Walker notes that "although many attempts have been made to describe sex differences in the sciatic notch using measurements, these metrical sexing techniques have not been widely adopted."<sup>2</sup> Despite Walker's comments, many researchers have repeatedly found that metric analysis of the pelvis, specifically the sciatic notch, provides a greater and more accurate sex assessment. This investigation empirically tests these contrasting hypotheses.

The population examined included segments of the Terry Black (n=99) anatomical collection (all remains included in this analysis are housed at the National Museum of Natural History, Smithsonian Institution). Individuals were sampled from both sexes: 50 female, 49 male. All nonmetric and metric evaluations for the sex of each individual were completed by the first author. Metric assessment was made through measurement of the GSN index; the ratio of the posterior chord of the GSN divided by the maximum width of the GSN. Nonmetric assessment was evaluated following Buikstra's and Ubelaker's five-stage system generally employed in physical and forensic anthropology.<sup>1</sup> It was then determined whether metric and nonmetric assessments agreed or were in conflict. These results were compared to the known sex of the individual to determine whether there was agreement between the methods and if not, which method is more accurate.

The present research found that 77% of the sample was assigned the correct sex using the nonmetric method alone and 81% of the sample correctly sexed through the metric method employing the GSN ratio; however, when the two methods were combined, 92% of the total sample was sexed correctly.

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#### References:

1. Buikstra JE, Ubelaker DH, editors. Standards for data collection from human skeletal remains: proceedings of a seminar at the Field Museum of Natural History. Fayetteville: Arkansas Archaeological Survey Research Series No. 44, 1994.
2. Walker P. Greater sciatic notch morphology: sex, age and population differences. *Am J Phys Anthropol* 2005;127:385-91.

#### Sciatic Notch, Sex Assessment, Metric Analysis