A113   A Method of Sex Determination From the Scapula in Modern American Forensics

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After attending this presentation, attendees will understand the need for alternative skeletal sexing methodologies and that sexually dimorphic characteristics can be temporally and/or ethnically specific. In addition, attendees will learn that these changing characteristics can also affect discriminant function accuracies over time.

This presentation will impact the forensic science community by offering a new discriminant function method for determining the sex of human skeletal remains from the scapula, thereby allowing construction of a biological profile in which more commonly used skeletal elements (e.g., skull and pelvis) are unavailable.

One of the major goals of the forensic anthropologist is to describe an individual's biological profile, which includes at the minimum sex, stature, age at death, and race.[1] When describing the biological profile, sex determination is completed first because other traits such as stature and age at death can be related to sex.[2] Determining the sex first when building the biological profile is not only important in helping determine other aspects of the profile, but it reduces by half the number of possible unknown individuals needed for comparison.[3] This is especially helpful since the biological profile created by forensic anthropologists is a tool to define as small a group of possible matching individuals as possible from a large group of possible victims and missing persons.[4]

Human skeletal remains are often found fragmented or incomplete. In these situations, postcranial elements such as the scapula are utilized in sex determination and identification methods. A previous study had found that a discriminant function using measurements of the scapula was applicable to a late 19th-early, 20th-century American population. The objectives of this study were to explore if the previous function was still applicable to a more modern American population, if a new, more accurate function could be developed, and if there were any ethnic subgroupings occurring in the United States that could be identified.

This study utilized data from the Forensic Data Bank collected by the University of Tennessee; the previous function was tested and a new discriminant function was developed. The results indicate that both functions can be applied to a modern American population. The previous function achieved an accuracy of 92.4% and the function from this presentation achieved an accuracy of 92.1%. Also, tests were performed to determine if significant ethnic subgroupings were occurring in the study's population data. There were not any significant differences found in the scapular measurements between the White, Hispanic, and Black subgroupings.

Reference(s):

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2. Dabbs G.R., Moore-Jansen P.H. A method for estimating sex using metric analysis of the scapula. *J Forensic Sci* 2010;55(1):149-52.
3. Scholtz Y., Steyn M., Pretorius E. A geometric morphometric study into the sexual dimorphism of the human scapula. *HOMO - J Comp Hum Biol* 2010;61(4):253-70.
4. Kimmerle E.H., Jantz R.L., Konigsberg L.W., Baraybar J.P. Skeletal estimation and identification in American and East European populations. *J Forensic Sci* 2008;53(3):524-32.

Sex Determination, Scapula, Data Bank