A COMPARISON OF PELVIC AGE-ESTIMATION METHODS ON TWO MODERN IBERIAN POPULATIONS: BIOARCHAEOLOGICAL AND FORENSIC IMPLICATIONS

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Abstract

Methods of age estimation based on the pelvis are among the most frequently used in the study of human skeletal remains. Traditional methodologies, including those based on the pubic symphysis and auricular surface of the ilium, have been developed and tested on skeletal samples comprising Native American, historic British, and modern American populations. However, they have never been tested on a known-age Spanish sample. In this study, I test the applicability of several pelvic aging methodologies on the skeletal remains of two samples comprising 114 modern Iberian individuals of known age. I apply the auricular surface-based methodologies of Lovejoy et al. (1985b) and Buckberry and Chamberlain (2002) and the pubic symphyseal technique of Brooks and Suchey (1990), in addition to a new method of Bayesian age estimation based on the acetabulum, developed on a population of Iberian males (Rissech et al., 2006). I then analyze the accuracy and bias of the four methods, emphasizing their discriminatory power among older individuals.

I find that when applied to the 34 individuals of the Universitat Autònoma de Barcelona (UAB) collection, the Buckberry and Chamberlain is the overall most accurate and least biased of the three traditional pelvic aging methods; however, it is least accurate in estimating the age of young individuals (<40). When age estimates are based on males from the UAB collection, the Rissech et al. method is significantly more accurate and unbiased than any other method. When age estimates are based on more geographically distant populations, this new method still achieves high accuracy and low bias; it is the most accurate and least biased in estimating the age of old individuals (60+). Although the Lovejoy et al. and Suchey-Brooks methods rank as most inaccurate and biased overall, these methods along with Rissech et al. are similarly accurate and unbiased when estimating age in individuals younger than 60.

In 80 individuals sampled from the Universidad de Valladolid collection, Rissech et al. (using male scores from UV as a reference distribution) is the overall most accurate and least biased method. The three traditional methods of pelvic aging do not estimate age with significantly different levels of bias and accuracy. However, the Lovejoy et al. and Suchey-Brooks methods are most accurate and unbiased in estimating the age of young individuals (<40) while the Buckberry and Chamberlain method is most accurate and least biased in estimating old adult age (60+).

Finally, I draw conclusions regarding the applicability of these methods to bioarchaeology and forensic anthropology, and make suggestions for future research.