



Physical Anthropology Section – 2009

H88 Estimation of Age at Death From the Juvenile Scapula

Natalie Uhl, MS*, 308 North Orchard Avenue, Apartment 7, Urbana, IL 68101

After attending this presentation, attendees will understand a method for estimating age at death from the juvenile scapula.

This presentation will impact the forensic community by presenting a method for age at death estimation that can be utilized when juvenile remains are incomplete or fragmented.

Age estimation in juveniles has traditionally focused on long bone lengths, epiphyseal union, and dental development, but when presented with fragmented or partial remains, other skeletal elements must be employed. Rissech and Black (2007) included an age estimation method that uses scapular measurements as a part of a broader study on the development of the scapula in juveniles. In that study, the authors utilized nine measurements and polynomial regression to explore and explain the growth of the scapula from birth to sexual maturity in a sample of 31 juveniles drawn from the Scheuer Collection housed at the University of Dundee. In order to estimate the age-at-death of an unknown individual, the Rissech and Black study presents eight regression equations derived from inverse functions of a simple linear regression. A ninth equation utilizing the measurement "acromial width" uses the inverse of a second order polynomial regression for age estimation. Because the study sample includes individuals past the age of sexual maturity each of the nine equations falls into one of two groups. The first group of equations is for individuals before the development of secondary sexual characteristics while the second group is for older individuals. Although it may seem appropriate to consider the sex of the individual, particularly in older individuals, their study pools males and females of all ages.

The purpose of the current study is to test the applicability of the equations published by Rissech and Black (2007) for estimating age-at-death in a sample of 19th century Americans. The study sample consists of 40 individuals (19 males, 21 females) ranging from 0 to 22 years of age (mean = 9.9 years) from the Hamann-Todd Collection housed at the Cleveland Museum of Natural History in Cleveland, Ohio.

Acquisition of the nine scapular measurements was fairly straightforward, with the exception of "glenoid mass" which is difficult to measure after age 16 or 17 when the coracoid process fuses to the superior margin of the glenoid. The results of the Rissech and Black study include positive correlations between actual and estimated age that range from 0.78 to 0.91. The results from this study were comparable to their findings, with correlations ranging from 0.83 to 0.92. Bias statistics indicate each equation is underaging the individuals on average, but the low inaccuracy values indicate that the overall estimates are accurate.

The Rissech-Black method of juvenile age estimation is simple and applicable. This test indicates that their equations are highly correlated with age. While correlations are not necessarily the most appropriate way to judge the effectiveness of an aging method, highly positive correlations do indicate that the scapula can provide important information pertaining to age estimation. Long bone length, epiphyseal union, and dental development are generally the aging indicators of choice when dealing with juvenile remains, but this method offers an alternative for anthropologists when faced with fragmented or incomplete remains.

Age Estimation, Juveniles, Scapula