



Physical Anthropology Section – 2007

H21 Accuracy of Age Estimates Using the Pubic Symphysis

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The goal of this presentation is to report the accuracy of three methods of age estimation, based on the metamorphosis of the pubic symphysis as assessed by advanced student and professional forensic anthropologists, and promotes the continual self-evaluation of extant methodologies.

This presentation will impact the forensic community and/or humanity by demonstrating the results of this study that support the usefulness of age estimates based on the pubic symphysis and should positively impact the methods of choice in the application and practice of forensic anthropology.

During the 26th Annual Meeting of the Mountain, Desert and Coastal Forensic Anthropologists (Lake Mead 24 – 26 May 2006) a workshop was held on the parameters of age assessment from the pubic symphysis. Backgrounds, samples and general rationale were presented for the methods of Todd, McKern and Stewart, Gilbert and McKern and Suchey and Brooks. The meeting participants were then divided into eight groups. Each group was given 10 pubic bones. Each individual scored each of the 10 bones by the method they were most familiar. The scoring sheet required which method or technique was used and the number of years experience working with aging techniques (5 year increments). The remainder of the scoring sheet had columns for recording the pubic symphysis identification number, age estimate (either years or phase), known age, and difference between the estimated age and the known age. Reprints of articles of the different methods were available and standard pubic symphysis casts were available for the Suchey-Brooks and the Gilbert-McKern methods. Illustrations were available for the Todd method.

The pubic bones used in this study were part of the Teixeira autopsy collection dating from 1982 and 1983. Age is known for all specimens, and sex and ancestry are known for most specimens (68.75%). At the time of collection the pubic bones were cut parallel to and 1 to 1.5 cm away from the symphysis surface. Therefore, there is little or no inferior ramus, certainly not enough to accurately assess sex. The known ages of the pubic bones for each group varies, but each set of ten pubic symphyses has the same number of samples in each decade from the second through the seventh decade. The known ages in this sample range from 17 to 82 years. Eleven females and 44 males are in the sample, but equality of sex was not considered when generating the eight sub-groups. The basic sample held a variety of recorded ancestries: Negro = 6; White = 33; Mulatto = 11; and Japanese = 5. As such, sex and ancestry distributions were neither noted nor controlled.

Summary statistics were generated from the workshop scoring sheets as reported in Tables 1 and 2. The breakdown of years of experience, the method of choice, range of error and the best single and mean estimations are presented. The mean years of experience fell in the category of less than 10 years (roughly 9.7). The mean error without regard to the method used was 11.58 years.

Table 1. Summary statistics, experience.

Experience	Number of Individuals	Method Used		
		Suchey-Brooks	Todd	McKern-Stewart
<5	25	20	4	1
<10	3	2		1
<15	3	2		1
<20	1	1		
>20	8	5	3	
Totals	40	30	7	3

Table 2. Summary statistics, data.

	Number Using Method	Mean Years Exp.	Mean Error ME	Stand. Dev. SD	Least Error (Best method Performance)
Suchey-Brooks	30	9.16	11.8	3.31	7.4
Todd	7	11.89	9.5	3.34	5.9
McKern-Stewart	3	8.75	14.3	5.95	8.3
All Methods	40	9.7	11.6	3.65	5.9



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In this test of accuracy of individuals and methods, the greatest accuracy (lowest error rate) of all participants was 5.9 years seen in two individuals. Both used the Todd method and each had 15 or more years of experience. The lowest error rate using the Suchey-Brooks method was 7.4 years, accomplished by an individual with less than 5 years experience. The best error rate using the McKern-Stewart method was 8.3 years by an individual with less than 10 years experience. An error rate in the neighborhood of 7.0 years or less is considered excellent and suggests a performance level as well as or better than, published standard errors of those who derived the methods. Mean errors much above 7.0 years should probably be mentioned when reporting age estimates based solely on observations of the pubic symphysis face. Self-testing on one or more methods would be of benefit as well.

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Skeletal Age, Pubic Symphysis, Methodologies