H30 A Test of the Revised Auricular Surface Aging Method on a Modern European Population

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After attending this presentation, attendees will learn more about this revised aging method and see whether it is applicable on modern populations, as previous tests employed historical collections. The results of this test are more relevant to modern forensic practice.

The presentation will impact the forensic science community by helping current forensic practitioners decide whether this is a method that they should be using as a standard assessment technique for the examination of human skeletal remains. It may also prompt further testing on modern populations from other regions of the world.

Age estimation methods for human skeletal remains attracted considerable attention during the 1980s, with old techniques being revised and new ones being developed. The method for estimating age from the auricular surface of the ilium, as developed by Lovejoy and colleagues (1985), was recently revised by Buckberry and Chamberlain (2002). One of the reasons for this revision was to render the method easier to apply. Tests on historical populations were conducted for the revised method, with mixed results. The present study tests the Buckberry and Chamberlain method on the Athens Collection. This collection consists of documented skeletons of individuals who lived in the 20th Century. Sex, age, and ancestry information was derived from death certificates. A blind study of 120 remains was carried out by using the definitions outlined in the revised method. The auricular surfaces were scored in each individual component: transverse organization, texture of surface, microporosity, macroporosity, and apical changes. Statistical analysis was carried out using SPSS statistical software package.

An independent sample t-test was performed to test for significant differences between males and females for each composite score. It was found that there were no significant differences between ages for males and females (*p-value* > 0.05). In addition, Spearman's rank correlation statistics were applied to identify relationships between each individual component as well as the derived composite score and documented ages. In all cases there was statistically significant positive correlation between features and the composite score with documented age (*p-value* < 0.01 in most cases, except for macroporosity where *p-value* < 0.05). A positive correlation means that the higher score assigned to a particular trait expression, the more frequently it was associated with older age. The same is true for the composite score (higher composite score means older age). Surface texture showed the strongest correlation among the features followed by transverse organization. As was expected, the composite score also presented a very strong correlation with age (r_s=0.756, *p-value* < 0.01). Furthermore, partial correlation coefficients between features controlling for the effects of age were calculated. It was found that the partial correlations among the features are low and mostly non-significant, confirming that the features provide independent sources of information about age. A significant correlation was found only between transverse organization and surface texture, as well as surface texture and microporosity. Some of the results echoed those of Buckberry and Chamberlain. Finally, a Spearman correlation coefficient was calculated to test the correlation between documented and estimated age. It was found that there was a significant positive correlation between documented and estimated age (r_s=0.730, DF=118, *p-value* < 0.01).

The data generated from the present study suggest that the revised auricular surface method can be reliable for age estimation on a modern European population. There may be applications for the Buckberry and Chamberlain method in bioarchaeology as well.

Forensic Anthropology, Age Estimation, Auricular Surface

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