Abstract

A sample of 204 innominates were examined to assess the accuracy and reliability of the three non-metric traits described by Phenice (1969) and revised by Klales et al. (2012) on a modern sample of Anglo-Americans and Afro-Americans. In addition, the bilateral stability of the three non-metric traits was assessed to determine if asymmetrical expression of the traits compromises significantly the classification accuracy of the revised method, since a prior study found that application of Phenice's original technique yielded low classification accuracy when applied to the right innominate. Klales and colleagues claimed that expansion of the classification system from a dichotomous present/absent scale into five character states and incorporation of logistic regression based on posterior probabilities vastly improves the accuracy rates for correct sex identification over the original method. Validity of the Klales and colleagues method has not been tested by an external observer on a modern sample of Anglo-Americans and African-Americans. The current study tests the reliability and validity of Klales et al.'s (2012) technique for both the left and right innominate.

Validity was tested on a stratified random sample of innominates from the William Bass Skeletal Collection housed at the University of Tennessee, Knoxville. Intra- and inter- observer agreement was evaluated for Klales and colleagues' method. Intra-observer and inter-observer agreement was statistically evaluated with Cohen's weighted kappa and the intra-class correlation coefficient. A series of Wilcoxon matched-pairs signed-ranks tests were used to evaluate statistical differences in the trait scores between the left and right innominates.

Results show that the Klales et al. (2012) technique yields moderate to high levels of intra- and inter-observer agreement and yields correct sex identifications among individuals of known-sex in 93.6% of cases when all three traits are combined. Accuracy of correct sex identification was further increased to 99% by re-calibrating the logistical regression equation to fit the sample obtained from the William Bass Skeletal Collection. A Wilcoxon matched-pairs signed-ranks test revealed a statistically significant difference in trait scores of the ventral arc; however, this difference does not compromise the accuracy of the method for correct identification of sex in known-sex individuals.