



E15 Accuracy Assessment of Korean Craniofacial Reconstructions Applying the Face Pool Comparison Method

Su-Min Kim*, National Forensic Service, 10, Ipchun-ro, Wonju-si, Gangwon-do 26460, SOUTH KOREA; and Won-Joon Lee, MD, National Forensic Service Seoul Institute, 139, Jiyang-ro, Yangcheon-gu, Seoul 08036, SOUTH KOREA

The goal of this presentation is to inform attendees how the accuracy of Craniofacial Reconstruction (CFR) can be assessed and how the reliability would be sufficient to be utilized in forensic identification.

This presentation will impact the forensic science community by demonstrating the procedure of evaluating the accuracy of CFR and the availability of CFR in the field of forensic sciences.

CFR is a method of rebuilding a living facial appearance onto a skull based on both scientific standards and artistic skill. This technique is used to recognize or identify an individual in the field of forensic sciences, especially when other forensic approaches are not possible or available. The accuracy of CFR has been of primary importance in maintaining the reliability of its applications to forensic investigation. Therefore, many studies have been conducted to evaluate the accuracy of CFRs. A number of methods are used to assess the accuracy of CFR; face pool comparison is considered to be one of the most reliable methods.¹

In this study, 3D skull images from six living Korean adult subjects were taken by computerized tomography. Six CFRs employing the skull images were produced by utilizing a 3D computerized modeling program. The completed six CFRs were divided into two groups: one group of three CFRs applied out-of-date Korean average facial skin thickness data and the other group of three CFRs applied recently studied Korean average facial skin thickness data. The recognition accuracies of the six CFRs were measured by a face pool comparison method. For accuracy assessment, six face pool sets were made that targeted for each CFR. A face pool set consisted of ten frontal facial photographs, including an actual face for the target CFR. For the accuracy survey, 167 assessors were recruited who were asked to compare the target CFR with the ten faces on the face pool, and they then determined which face should match with the CFR.

The results revealed that the CFRs using the recently studied Korean average facial skin thickness data demonstrated higher accuracy (the average hit rate of 30.74 %) than the other CFRs (the average hit rate of 22.35%) using out-of-date Korean average facial skin thickness data. Additionally, the results were compared with the results from quantitative accuracy measurements by using geometric morphometrics surface comparisons.^{2,3} The comparison demonstrated that the results from the geometric morphometrics analysis correlate positively with the results from the face pool comparison method.

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