H102 Facial Soft Tissue Depths in Craniofacial Identification: Properties Gleaned From a Comparative Bottom-Up Approach

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After attending this presentation, attendees will learn some history of soft tissue depth studies; and learn that traditional classifications of soft tissue depth data have little emperical statistical justification and are unnecessarily unwieldy. Attendees will retain or be able to implement new simplified average soft tissue depth data values for the face which have increased statistical power and advantages of standardization (one data table for adults and two for children, as opposed to the 50+ that currently exist).

This presentation will impact the forensic community and/or humanity by discussing the current soft tissue depth data available, their philosophical underpinnings and how they are used in practice by forensic artists.

Average soft tissue depths hold a central role in the craniofacial identification techniques of superimposition and approximation. Overall, many soft tissue depth studies have been published (N>50) and large amounts of data have been collected (>153,000 individual soft tissue measurements). The traditional perception, held since the origin of soft tissue depth investigations in the typological physical anthropology of the late 1800s and early 1900s, has been that meaningful differences in depths exist between particular human groups (e.g., by sex, age, and race). However, some group differences appear to be no larger than measurement errors (e.g., 1-2mm) indicating that these differences may be of much less significance than initially thought. An over-arching, large sampled, multivariate analysis would be the crucial test required to robustly elucidate group relationships; but in its absence some insight may be gleaned from a comprehensive comparative review of the vast number of mean values that have been published.

This study reviews the existing data means using a bottom-up comparative approach examining variables such as year of study conduction, method of measurement, age (for children <18 years), so-called race, and sex. The investigation demonstrates considerable overlaps between all groups, and (while not as powerful as a multivariate analysis) suggests that little information may be lost by pooling individual group data. These simplified statistical values, with increased statistical power, are presented for adults (one table) and children (two tables).

Forensic Science, Soft Tissue Thickness, Skeletal Identification