A120 Comparing Decomposition Assessments From Digital Images to In Situ Observations

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After attending this presentation, attendees will learn that the final assessment of the degree of decomposition of a human corpse is not significantly different when the observations of the degree of decomposition are made from digital images of the body taken *in situ* versus when the observations are made directly against the body *in situ*.

This presentation will impact the forensic science community by demonstrating that observation of human decomposition from digital images is a sufficient, and sometimes necessary, method for assessing human decomposition and that the degree of decomposition observed in digital images is not statistically different than that observed on the corpse *in situ*.

In the course of normal events in forensic anthropology, it occasionally becomes necessary to make assessments of the level of human decomposition based on the observation of digital images, instead of the corpse *in situ*. Whether this be for consultation with law enforcement after the deceased has been interred, or for empirical data collection protocols, the question of the degree of agreement between assessments made using these two distinct methods has not yet been addressed in forensic anthropology.

Sixteen participants scored 59 observation packets including digital images using the Total Body Score (TBS) system originally described by Megyesi et al.[1] The participants included both sexes and ranged in education (undergraduate to PhD) and experience (<six months to ten+ years). The packets used 13 human cadavers in different stages of decomposition (Postmortem Interval (PMI) 2 days-186 days) from three outdoor human decomposition research facilities. All observers were recruited for this study from existing human decomposition research facilities and had at least some experience using the TBS method for quantifying decomposition. Observers were provided the scoring tables from Megyesi et al.'s publication and instructed to follow only those descriptions, disregarding any modifications in use by individual facilities and to return categorical scores for each bodily area (head/neck, trunk, and limbs), as well as overall TBS scores. When decomposition fit into more than one category or spanned multiple categories, observers recorded both categories and averaged the contribution to TBS, as instructed by the original publication. Data were collated and the TBS recorded by the project participant was compared to the TBS recorded by the on-site observer at the decomposition research facility the subject was donated to using paired-samples *t*-tests with Bonferroni correction (α=0.003125) (Statistical Package for the Social Sciences (SPSS) v. 22.0).

The average absolute difference in TBS between the on-site and digital image observations ranged from 0.03 to 2.28, with 12 of 16 observers having an average difference in TBS of less than one point. Of the 16 comparisons made, only two cases (12.5% of total sample) demonstrated statistically significant differences between the TBS score recorded by the on-site observer and that recorded by the project participant based on observation of digital images ($p \leq 0.001$). In both cases, the observer of the digital images was an undergraduate student with less than one year of experience assessing decomposition using the Total Body Score method.

Given these findings, it is suggested that observations of human decomposition based on digital images can be substituted for observations based on actual observation of the corpse *in situ* when necessary, as there is generally good agreement between the evaluation of the degree of decomposition using both methods. The one caveat to this statement is that when the observer has little experience (i.e., less than one year), it is best to make this substitution with caution.

This study was conducted with the approval of the Southern Illinois University Human Subjects Review Committee.

Reference(s):

1. Megyesi M.S., Haskell N.H., Nawrocki S.P. Using accumulated degree days to estimate the postmortem interval from decomposed human remains. J Forensic Sci 2005;50(3):1-9.

Forensic Anthropology, Data Validation, Digital Images

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