

METHODOLOGICAL INSIGHTS INTO THE ESTIMATION OF THE MINIMUM NUMBER OF INDIVIDUALS FROM UPPER LIMB BONES IN THE 16TH-CENTURY CE MASS GRAVE 3 AT THE MOHACS NATIONAL MEMORIAL SITE

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Background: Estimating the minimum number of individuals (MNI) is a key challenge in the analysis of commingled burials. Although landmark- and zonation-based methods are widely used, their effectiveness depends on skeletal preservation and requires ongoing evaluation. Our team at the University of Szeged is investigating mass grave 3 (MGN3) at the Mohacs National Memorial Site, associated with the Battle of Mohacs (1526). The grave contains the partially commingled remains of approximately 300 individuals, including skeletons, isolated bones, and thousands of fragments, offering a unique opportunity to assess MNI estimation methods in a complex assemblage.

Objective: As part of a broader research project, our objective is to provide a methodological basis for MNI determination as accurately as possible. To achieve this the landmark- and zonation-based methods were applied simultaneously and systematically to the upper limb bones of various skeletal units, including complete skeletons and isolated bone fragments from MGN3.

Results: Our results demonstrate that both methods perform well when applied to compact and relatively small skeletal elements. However, bones more susceptible to fragmentation proved considerably more problematic, necessitating modifications to the existing scoring systems. Specifically, additional landmarks were introduced, and the original zonation system was adapted. The scapula provides a representative example. Several hundred scapular fragments were examined, revealing fracture patterns that frequently left identifiable and sided fragments unscorable using the original zonation scheme. To address this limitation, the zonation system was modified accordingly, substantially increasing the number of scorable elements and improving MNI estimation.

Conclusion: Although MNI estimation is a key component of mass grave analysis, the state of skeletal preservation strongly influences method performance. Our findings demonstrate that adapting and refining standard MNI methods is essential for maximizing their applicability and accuracy in highly fragmented assemblages.

Keywords: Mohacs battle; Commingled skeletal remains; Minimum number of individuals; Biological anthropology.

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