

Can upper limb osteometric parameters distinguish populations?

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South Africa is a country of diverse populations consisting of the indigenous Blacks, Whites (individuals of European descent) and mixed ethnic groups (descendants of Whites, Blacks and Khoisan people), among others. These groups have different physical features. As such, we queried whether upper limbs bones would have different dimensions in these 3 populations. A total of 1175 paired dry humeri and ulnae from 596 skeletonized individuals were analyzed. Limbs of both sides were included for 579 individuals, whereas 17 individuals had only a single side present. These bones are from three South African groups; 126 Whites, 232 Mixed ethnicity and 238 Blacks housed at the University of the Witwatersrand, Raymond A Dart Human Skeletal Collection. The following measurements were taken from the humerus: head circumference, shaft circumference at the 25th, 50th and 75th percentile marks of the humerus length, epicondylar breadth and humerus length. From the ulnar, the olecranon process length, coronoid process length, trochlear notch depth, olecranon-coronoid distance and ulnar length. A discriminant function analysis was conducted to determine the upper limb skeletal parameters that contribute to population variation. The structure matrix showed that both the humeral and ulna variables made major contributions to population variability. However, the olecranon fossa depth and the humeral head circumference contributed the most to population variability. The model correctly classified 78.9% of the individuals as White, 68% as Mixed and 79% as Black. Therefore, this study forms a basis for future research that may have forensic anthropological applications in these population groupings.

Biography

Robert Ndou obtained his PhD from the University of the Witwatersrand where he is a Lecturer. His research focuses on the skeletal system and makes use of the Raymond A Dart Skeletal Collection housed at the University of the Witwatersrand. One of his research interest areas is human variation with respect to the skeletal system and its forensic anthropological applications.

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