



EVALUATION OF ANTHROPOMETRIC MEASUREMENTS AT DIFFERENT ACQUISITION ANGLES IN 3D ANTHROPOMETRY

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BACKGROUND - In the context of 2D photography, any deviation from the ideal position of the head, such as yaw, roll, or pitch errors, introduces unreliability into the photographic outcome. In 3D photography, it was assumed that three-dimensional computer reconstruction would allow for the correction of the head position, thereby overcoming the aforementioned problem. However, this is limited by the fact that a head positioning error results in certain anthropometric points becoming less visible to the cameras, particularly in areas opposite to the direction of rotation.

AIM - In the present study, the authors investigated the problem by measuring the reliability of 17 anthropometric points in the case of roll, pitch and yaw of the head.



Fig. 1 Face Shape 3D MaxiLine, Bari

METHODS - Using a demographic pencil, 17 frequently used anthropometric points (Fig. 2) were marked on the face of a young adult woman (26 years old). A three-dimensional photographic system (Fig. 1, Face Shape 3D MaxiLine, Bari) was employed to capture an image of the face in natural head position.

Subsequently, additional images were captured with varying degrees of head roll, pitch, and yaw. The points marked on the skin were then identified and recorded in the software (Viewbox, dHAL Software, 6 Menandrou Street, Kifissia 14561, Greece) on each image; linear distances between these points were then measured using the same software. (Fig. 2). The linear distances taken in natural head position were then compared with those taken with different degrees of roll, pitch and yaw.

RESULTS AND CONCLUSIONS - This study confirms the presence of areas of non-equivalence ($p < 0.05$) when comparing the frontal and lateral regions of the face at various angles. A discrepancy up to 10 degrees in the positioning of the patient's head did not yield statistically significant differences. Beyond this value, the most paramedian points were found to be unreliable. The authors thus advise that caution should be exercised in the positioning of the subject's head, notably when measurements involving paramedian points are to be undertaken.

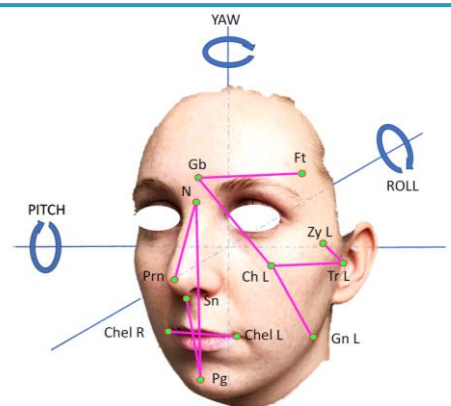


Fig. 2 Anthropometric points

5 median points:

Glabella (Gb), Nasion (N), Pronasale (Prn), Subnasale (Sn) and Pogonion (Pg);

6 bilateral points:

Frontotemporalis (Ft r/l), Zygion (Zy r/l), Tragion (Tr r/l), Gonion (Gn r/l), Cheek (Ch r/l), Cheilion (Chel r/l)

