

Inter-rater Reliability of Manual Anthropometric Measurement of Students of Tertiary Institution in North-West Nigeria.

Ademola James Adeyemi

Department of Mechanical Engineering
School of Industrial Engineering
Waziri Umaru Federal Polytechnic Birnin Kebbi
Kebbi State Nigeria

Department of Mechanical Engineering
Usmanu Danfodiyo University, Sokoto
Sokoto State Nigeria

folashademola@gmail.com

Olusegun Isa Lasisi, Muyideen Abdulkadir

Department of Mechanical Engineering
Waziri Umaru Federal Polytechnic Birnin Kebbi
Kebbi State Nigeria

Paul Ojile

Department of Architectural Technology
Waziri Umaru Federal Polytechnic Birnin Kebbi
Kebbi State Nigeria

Abstract

Anthropometric data remain an essential requirement for designing safe and comfortable facilities and workstations. Anthropometric data collection using manual measuring instruments employs many measurers because they are generally slow and time-consuming. Using multiple measurers introduces the challenge of inter-rater reliability because the measurers may be selected from different professions and cadres despite the initial training for the measurement exercise. This study analyzes the inter-rater reliability of the anthropometric data measured by lecturers and students to determine if the different cadre affects the measurement's reliability. Two lecturers and two final-year students participated in the measurement test. After the initial two-day training, fifteen anthropometric dimensions for 38 students were measured using the standard anthropometric measuring instrument. The students were divided into two groups, and each group of measurer measured both groups at different sessions. A retest was conducted on 5-6 days after the first test. An average measure two-way random effect with absolute agreement at a 95% confidence interval was selected for the analysis. The results show that the vertical anthropometric dimensions such as stature, shoulder height, and sitting height have excellent inter-rater correlation coefficient (ICC) of 0.9 to 0.98. Other vertical anthropometric dimensions such as knee height, popliteal height, and eye height have ICC ranges of 0.8 to 0.9. However, dimensions that have to do with body length, such as buttock to popliteal and knee lengths, shoulder breadth, etc., have ICC values of 0.4 to 0.8. All dimensions that require a change of posture during measurement also recorded low ICC. The study shows that inter-rater reliability was affected by the availability of landmarks, posture, and participants' orientation. Therefore, if possible, professionals should measure dimensions with significant variability.

Keywords

School Ergonomics, Anthropometry, Inter-rater Correlation Coefficient, Human Factors and Nigeria

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