

The Relationship Between Anthropometry and Hand Grip Strength Among Elderly Malaysians

M.S. Nurul Shahida^{a, b}, M.D. Siti Zawiah^a, K. Case^c

^a Department of Mechanical Engineering, Faculty of Engineering, University of Malaya, Lembah Pantai, 50603 Lembah Pantai, Kuala Lumpur, Malaysia

^b Faculty of Mechanical Engineering, Universiti Malaysia Pahang, 26600 Pekan, Pahang, Malaysia

^c Wolfson School of Mechanical and Manufacturing Engineering, Loughborough University, Leicestershire, LE11 3TU, UK

ABSTRACT

It is known that the ageing process will result in a decrease in anthropometric dimensions as well as loss of hand grip strength, which is natural among elderly people. Previous studies have shown that the decrease in anthropometric dimensions may influence hand grip strength of elderly people. Hence, this paper seeks to determine the relationship between anthropometric dimensions and hand grip strength among elderly Malaysians. A total of 112 elderly subjects aged 60 years and above residing in Petaling Jaya, Selangor, are recruited in this study. The subjects comprise 56 males (age range 60–79 years, mean: 66.88, SD: 5.35) and 56 females (age range: 60–82 years, mean: 66.98, SD: 5.16). In this study, 38 anthropometric dimensions are measured, along with hand grip strength. The anthropometric dimensions are measured using a professional standard anthropometry set whereas hand grip strength (in Newtons) is measured using a dynamometer. The mean values, standard deviations and percentiles are determined and the data are analysed by correlation analysis. The results show that there is a significant correlation between the following anthropometric dimensions (stature, sitting hip breadth, wrist circumference, hand circumference and heel ankle circumference) and hand grip strength. These findings of this study are indeed useful for product designers to design and develop ergonomic hand-held products for elderly Malaysians.

KEYWORDS: Anthropometry; Hand grip strength; Ergonomics; Elderly Malaysians

DOI: [10.1016/j.ergon.2015.09.006](https://doi.org/10.1016/j.ergon.2015.09.006)