

人體足部體積之量測與估算

呂柏昇, 林靜華

工業管理學系

管理學院

kate@chu.edu.tw

摘要

Foot volume is one of the important human physical characteristics in anthropometry measurements. It is widely applied in biomechanics and as an assessor of prognosis for some clinical treatments. Foot volume was commonly measured by water volumetry, dissecting corpses, reaction force plate, and etc. Advanced techniques, e.g. CAT (computerized axial tomography) scan or MRI (magnetic resonance imaging) provide the results more precise and accurate while requiring extensive equipment, enormous costs, time-consuming or invasive measuring. With the maturation of 3D image processing technologies, 3D laser scanning has been becoming the main method of anthropometry measuring. 3D body scanner takes image of the subject's surface shape into numerous 3D coordinate points, provides the results with adequate precision and accuracy, measuring fast and non-invasively. This study aimed at measuring human foot volume by software technologies using 3D scanning foot data; and establishing estimation model with prediction variables of foot length, foot width, foot height or foot circumferences by regression analysis. Besides, the relation of

foot volume and stature height, adiposity or other characteristics of human body was tested statistically.

關鍵字：3D anthropometry, human body segments, foot volume, regression analysis