The Study of Segment of Human Body of Taiwanese Young People from MRI

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Abstract

Body segmental parameters (BSP) have been applied in many areas. There are forty Taiwanese young people (21.5±1.52yrs) participated in this study. MRI were obtained with a GE MRI 1.5-T scanner, metric size 512×512mm, FOV 480×480mm, TR 450~500msec, TE 8.5~10msec, thickness 10mm, T1—weighted. The MRI digital images were analyzed by medical image software. Moreover, this study is being planned to separate human body into different segments, such as "head and neck", "trunk", "upper arm", "forearm", "hand", "thigh", "shank" and "foot". We will collect the data of volume (V), mass (M), center of mass (CM), moments of inertia (I) and rotation radius (R) of each segmental. This study result illustrated mass % and center of mass % were head and neck: 8.21, 52.69, trunk: 42.28, 41.96, upper arm: 3.25, 47.16, forearm: 1.36, 40.98, hand: 0.54, 32.60, thigh: 13.50, 48.56, shank: 4.63, 41.68, foot: 1.47、47.51。The total body mass percentage was 99.99%. And, this study compared with other cadaver and vivo studies were lower in hand, forearm and trunk, but higher in head and neck. The differences may due to the human race, living style, female or male, age and fitness level of subjects. Besides, the definition of segments boundary and coordinate system were also different result with other studies. Most previous researches study used cadavers from older persons or male. They used few samples. This research can provide valuable information and help to many professionals, such as the designer of walking aid, sports facilities, rehabilitation technologists, medical doctors and sports science researches to provide valuable references.

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