Study of the mass-inertial parameters of the human thigh based on data for bulgarian males

G. S. Nikolova

Institute of Mechanics, Bulgarian Academy of Sciences, Department of Biomechanics, Acad., G. Bonchev Str., Building 4, Sofia 1113, Bulgaria; gergana1973@gmail.com

_____________________________________________________________________________________

Abstract

The estimation of body segment parameters is important for kinetic and dynamic analysis of human motion. For studying these a precise modeling of the individual segments of the body is necessary. The aim of this work is to improve the geometric modeling of the human thigh of the Bulgarian males [1], taking into account that the segment is dissect from the torso with a plane passing through the anterior superior iliac spine at an angle of 37° degrees to the sagittal plane. In our previous study the thigh was modeled as a frustum of cone. In the current study the thigh is modeled with geometric body being a combination of a frustum of circular cone on top of which is placed a part of cylinder cut with a plane making angle of 53° with respect to its base. This second part extends from anthropometric points omphalion - iliospinale. The volume, mass, center of mass and moments of inertia of the so-modelled thigh are calculated.

Keywords: Body segment parameters, human thigh, mass-inertial characteristics