

## Comparisons of Body Volumes and Dimensions Using Three-Dimensional Photonic Scanning in Adult Hispanic-Americans and Caucasian-Americans

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### Abstract

#### **Background:**

We studied whether significant differences exist between Hispanic-Americans (H-A) and Caucasian-Americans (C-A) in body dimensions using a newly validated three-dimensional photonic scanner (3DPS).

#### **Methods:**

We compared two cohorts of 34 adult U.S.-based H-A (19 females) and 40 adult C-A (25 females) of similar age and body mass index (BMI, kg/m<sup>2</sup>). We measured total body volume (TBV), trunk volume (TV), and other body dimensions, including waist and hip circumferences, estimated percentage body fat (%fat), calculated TV/TBV, and waist-to-hip ratio.

#### **Results:**

For female cohorts, there were no significant differences in age, weight, height, and 3DPS-measured variables between the two ethnic cohorts. For male cohorts, C-A had greater height ( $p = 0.014$ ), but there were no significant differences in absolute or proportional volumes or dimensions between the two cohorts.

#### **Conclusions:**

Results demonstrate that, in these H-A and C-A cohorts of similar age and BMI, total and regional body volumes and dimensions, as well as their proportions, approximate each other very closely in both sexes; these variables also show similar relationships with %fat in each sex. This is in contradistinction to previous study reports using other measurement techniques.

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**Abbreviations:** (BMI) body mass index, (C-A) Caucasian-Americans, (CVD) coronary vascular disease, (H-A) Hispanic-Americans, (HC) hip circumferences, (TBV) total body volume, (TV) trunk volume

**Keywords:** body circumferences, ethnicity, ratio of trunk volume/total body volume, ratio of waist circumference/hip circumference

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