BIOIMPEDANCE ANALYSIS: IMPROVED PHENOTYPING WITH WHOLE-BODY ANALYSIS

Pietrobelli A*, Rubiano F*, Jones Jr. A*, Heymsfield SB*

*Pediatric Unit, Verona University Medical School, Italy.
^Obesity Research Center, St. Luke's Roosevelt Hospital, Columbia University, New York, USA 10025.
Presented at the 12th European Congress on Obesity May 2003
Research printed by permission. ©2003 by A Pietrobelli

Practical Implications:
The 8-electrode Bioimpedance analysis (BIA) is superior to the 4-electrode foot-to-foot BIA for %fat estimation and also offers a new opportunity of evaluating skeletal muscle mass (SM) in research and clinical settings.

ABSTRACT

Objective: Bioimpedance analysis (BIA) is a potential field and clinical method for evaluating %fat and skeletal muscle mass (SM). A new system has 8 (2 on each hand and foot) rather than 4 (2 on each foot) contact electrodes allowing for rapid "whole-body" and regional body composition evaluation.

Results: There was a high correlation between %fat by 8-electrode BIA vs. DXA [y = 0.88x + 1.99, R2 = 0.89; p<0.001] that exceeded the corresponding association with 4-electrode BIA [y = 0.98x - 3.6, R2 = 0.86; p<0.001]. The correlation between 8-electrode predicted and DXA ALST was strong and highly significant [y = 0.98x + 1.35, R2 = 0.94, p<0.001].

Design: This study evaluated the BC-418 8-electrode and TBF-310 4-electrode BIA systems (Tanita Corp., Tokyo). Subjects were 13 males and females, ages 10-64 yrs. BIA was evaluated on each subject and compared to reference estimates of %fat and appendicular lean soft tissue (ALST [kg]; a measure of extremity SM), by dual-energy x-ray absorptiometry (DXA; Lunar DPX, Madison, WI).