

BIOIMPEDANCE ANALYSIS OF BODY COMPOSITION: A NEW MEASUREMENT APPROACH.

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Practical Implications:

- For overweight individuals, Tanita BIA measurements correlate highly with DEXA, underwater weighing and tritium dilution volume methods.
- Tanita Body Composition Analyzers provide accurate results without the discomfort, expense, or expert training necessary for other methods.

ABSTRACT

Objective: The use of bioimpedance analysis in body composition analysis is widely accepted as a safe and rapid measuring tool. Estimates of body composition are calculated based on the measured resistance of the subject as the person lays supine with electrodes placed on the arm and leg. There is equivocal data, however, on the ability of conventional BIA systems to estimate body composition in overweight subjects. Recently, a new BIA instrument (TBF 105 and 305, Tanita Corp., Tokyo) was developed that provides a different approach to estimating fat free mass. This instrument employs two-foot pad electrodes with a corresponding digital scale. As the subject stands on the scale, both body weight and impedance are simultaneously measured.

Design: The study evaluated the new BIA scale in 19 healthy overweight subjects (mean BMI 30.9).

Results: The resistance measured by the BIA scale correlated well with the resistance measurements of conventional BIA (Valhalla Scientific, San Diego, CA.) (n=17, r=0.77, p<0.001). Fat and fat free mass were assessed using dual energy x-ray absorptiometry and hydrodensitometry. % Fat estimates by the BIA scale were highly correlated with % fat estimates by both DEXA (r=0.88, p<0.001) and hydrodensitometry (r=0.90, p<0.001). There was also a good correlation between Height²/R for the BIA scale and tritium dilution volume (n=14, r=0.78, p<0.001). These results suggest that the new foot-pad electrode/digital scale BIA system can reliably estimate body composition in overweight subjects.

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