

BIOIMPEDANCE ANALYSIS: A NEW APPROACH TO MEASURING RESISTANCE.

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Practical Implications:

- Tanita Professional Body Composition Analyzer's body fat measurements highly correlate with dual energy x-ray absorptiometry.
- Tanita Professional Body Composition Analyzers provide reliable estimates of body composition in adults with varying levels of athletic fitness.
- Research suggests that Tanita BIA methods may also be used to predict total body water.

ABSTRACT

Objective: Bioimpedance analysis (BIA) is gaining recognition as a technique for estimating body composition. Conventional systems now employ a tetrapolar approach in which electrodes are fastened to one of the subject's arms and legs. Body composition estimates are then usually calculated from measured resistance (R), weight, and height. The aim of the current study was to evaluate a new BIA system (TBF 105 & 305, Tanita Corp.) in which two foot-pad electrodes are combined with a precision electronic scale. No electrode connections are needed and measurement is rapid as the subject stands erect on the BIA system scale.

Design: The new system was evaluated in 101 healthy normal-weight adults of varying levels of athletic fitness.

Results: Resistance measured by the new system was highly correlated with R measured by conventional BIA ($r=0.84$, $p<0.001$). %Fat estimates by new BIA were highly correlated with %fat estimates by dual energy x-ray absorptiometry (e.g., in males $n=53$, $r=0.76$, $p<0.001$). There was also a good correlation between H^2/R and tritium dilution volume ($n=29$, $r=0.88$, $p<0.001$), suggesting total body water can also be reliably predicted by the new system. These results suggest that the new foot-pad electrode BIA system can provide reliable estimates of body composition in adults of varying levels of athletic fitness.

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