

Abstract Submitted
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**The Influence of Segmental Impedance Analysis in Predicting
Validity of Consumer Grade Bioelectrical Impedance Analysis Devices**

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lege — Consumer grade bioelectric impedance analysis (BIA) instruments measure
the body's impedance at 50 kHz, and yield a quick estimate of percent body fat. The
frequency dependence of the impedance gives more information about the current
pathway and the response of different tissues. This study explores the impedance re-
sponse of human tissue at a range of frequencies from 0.2 - 102 kHz using a four probe
method and probe locations standard for segmental BIA research of the arm. The
data at 50 kHz, for a 21 year old healthy Caucasian male (resistance of $180\Omega \pm 10$
and reactance of $33\Omega \pm 2$) is in agreement with previously reported values [1]. The
frequency dependence is not consistent with simple circuit models commonly used
in evaluating BIA data, and repeatability of measurements is problematic. This
research will contribute to a better understanding of the inherent difficulties in es-
timating body fat using consumer grade BIA devices.

[1] Chumlea, William C., Richard N. Baumgartner, and Alex F. Roche. "Specific re-
sistivity used to estimate fat-free mass from segmental body measures of bioelectrical
impedance." *Am J Clin Nutr* 48 (1998): 7-15.

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