

# USE OF THE LEG-TO-LEG BIOELECTRICAL IMPEDANCE METHOD IN ASSESSING BODY COMPOSITION CHANGE IN OBESE WOMEN

**Authors: Alan C. Utter, David C. Nieman, Angela N. Ward, Diane E. Butterworth**  
**Human Performance Lab, Appalachian State University, Boone, North Carolina.**

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## Practical Implications:

- Tanita BIA gave similar results as underwater weighing when estimating the fat-free mass (FFM) of obese and non-obese females.
- BIA gave similar results as underwater weighing when estimating the change in fat mass (FM) through diet alone or when combined with exercise.

## ABSTRACT

**Objective:** This study had two objectives: to determine the validity of the leg-to-leg bioelectrical impedance (BIA) system in 1) estimating body composition in obese and non-obese women cross-sectionally, and 2) assessing changes in body composition in obese females in response to 12 weeks of energy restriction and /or exercise training.

**Design:** Subjects included 98 moderately obese females (43.2±0.6% fat, 45.0±1.1 years) and 27 non-obese controls (24.0±1.5% fat, 43.5±2.5 years). Obese subjects were randomly divided into one of four groups, with fat-free mass (FFM), fat mass (FM) and percent body fat estimated pre and post-12 weeks intervention from BIA and underwater weighing. The four groups were diet only (D) (4.19-5.44 MJ/day),

exercise only (E) (five 45 min. sessions/week at 78.5±0.5% maximum heart rate), both exercise and diet (ED) and controls (C) (no diet or exercise).

**Results:** No difference was found between underwater weighing and BIA in estimating the FFM of obese and non-obese females (all subjects combined,  $r=0.78$ ,  $P<0.001$ ,  $SEE=3.7\text{kg}$ ), or in estimating decreases in FM during 12 weeks of energy restriction and/or exercise among obese subjects [ $F(3.85)=1.45$ ,  $P=0.233$ ].

**Conclusion:** The leg-to-leg bioelectrical impedance system accurately assessed FFM in both obese and non-obese females, and changes in FM through diet alone or when combined with exercise.

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2625 S. Clearbrook Dr.,  
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Fax: +1-847-640-9261  
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E-mail: [4health@interaccess.com](mailto:4health@interaccess.com)

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**TANITA Corporation of Japan**

14-2, 1-Chome, Maeno-Cho,  
Itabashi-Ku Tokyo, Japan 174-8630  
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Dresdener Strasse 25,  
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**TANITA UK LTD.**

The Barn, Philpots Close, Yiewsley,  
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**TANITA International**

The Barn, Philpots Close, Yiewsley,  
West Drayton, Middlesex, Great Britain, UB7 7RY  
Phone: +44-1895-438588 Fax: +44-1895-438522