

ORIGINAL RESEARCH COMMUNICATION

# Body-composition assessment in infancy: air-displacement plethysmography compared with a reference 4-compartment model<sup>1, 2, 3, 4</sup>

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**Background:** A better understanding of the associations of early infant nutrition and growth with adult health requires accurate assessment of body composition in infancy.

**Objective:** This study evaluated the performance of an infant-sized air-displacement plethysmograph (PEA POD Infant Body Composition System) for the measurement of body composition in infants.

**Design:** Healthy infants ( $n = 49$ ; age: 1.7–23.0 wk; weight: 2.7–7.1 kg) were examined with the PEA POD system. Reference values for percentage body fat (%BF) were obtained from a 4-compartment (4-C) body-composition model, which was based on measurements of total body water, bone mineral content, and total body potassium.

**Results:** Mean ( $\pm$ SD) reproducibility of %BF values obtained with the PEA POD system was  $0.4 \pm 1.3\%$ . Mean %BF obtained with the PEA POD system ( $16.9 \pm 6.5\%$ ) did not differ significantly from that obtained with the 4-C model ( $16.3 \pm 7.2\%$ ), and the regression between %BF for the 4-C model and that for the PEA POD system ( $R^2 = 0.73$ , SEE =  $3.7\%$ BF) did not deviate significantly from the line of identity ( $y = x$ ).

**Conclusions:** The PEA POD system provided a reliable, accurate, and immediate assessment of %BF in infants. Because of its ease of use, good precision, minimum safety concerns, and bedside accessibility, the PEA POD system is highly suitable for monitoring changes in body composition during infant growth in both the research and clinical settings.

**Key Words:** Body composition • infants • air-displacement plethysmography • 4-compartment reference model • dual-energy X-ray absorptiometry

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