Comparison of dual-energy X-ray absorptiometry, air displacement plethysmography and bioelectrical impedance analysis for the assessment of body composition in morbidly obese women.

G. Bedogni, F. Agosti, A. De Col, N. Marazzi, A. Tagliaferri, A. Sartorio

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Background/Objectives: We evaluated the agreement of air displacement plethysmography (ADP) and bioelectrical impedance analysis (BIA) with dual-energy X-ray absorptiometry (DXA) for the assessment of percent fat mass (%FM) in morbidly obese women.

Subjects/Methods: Fifty-seven women aged 19-55 years and with a body mass index (BMI) ranging from 37.3 to 55.2 kg/m^2 were studied. Values of %FM were obtained directly from ADP and DXA, whereas for BIA we estimated fat-free mass (FFM) from an equation for morbidly obese subjects and calculated %FM as (weight - FFM)/weight.

Results: The mean (s.d.) difference between ADP and DXA for the assessment of %FM was - 2.4% (3.3%) with limits of agreement (LOA) from - 8.8% to 4.1%. The mean (s.d.) difference between BIA and DXA for the assessment of %FM was 1.7% (3.3%) with LOA from - 4.9% to 8.2%.

Conclusion: ADP-DXA and BIA-DXA are not interchangeable methods for the assessment of body composition in morbidly obese women.