

DIAGNOSTIC ACCURACY OF BIA VERSUS DXA IN ADULT MITOCHONDRIAL DISEASE PATIENTS

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Introduction

Bioelectrical impedance analysis (BIA) is a cheaper, non-invasive alternative for DXA (Dual-energy X-ray absorptiometry) to assess body composition (BC). The validity of this double indirect technique has not been established in patients with mitochondrial disease (MD). The aim was to test the accuracy of BIA in comparison to DXA in MD patients.

Methods

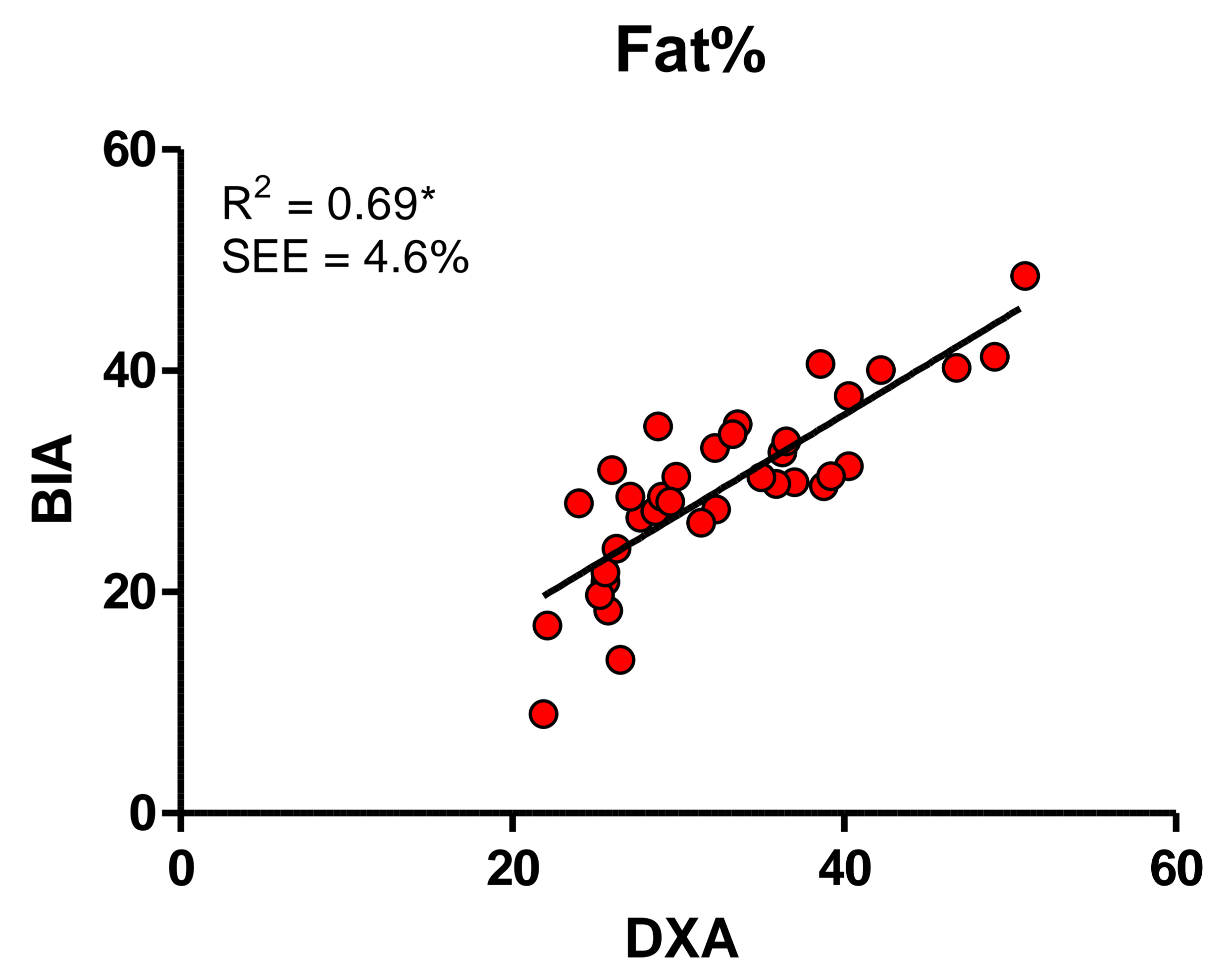
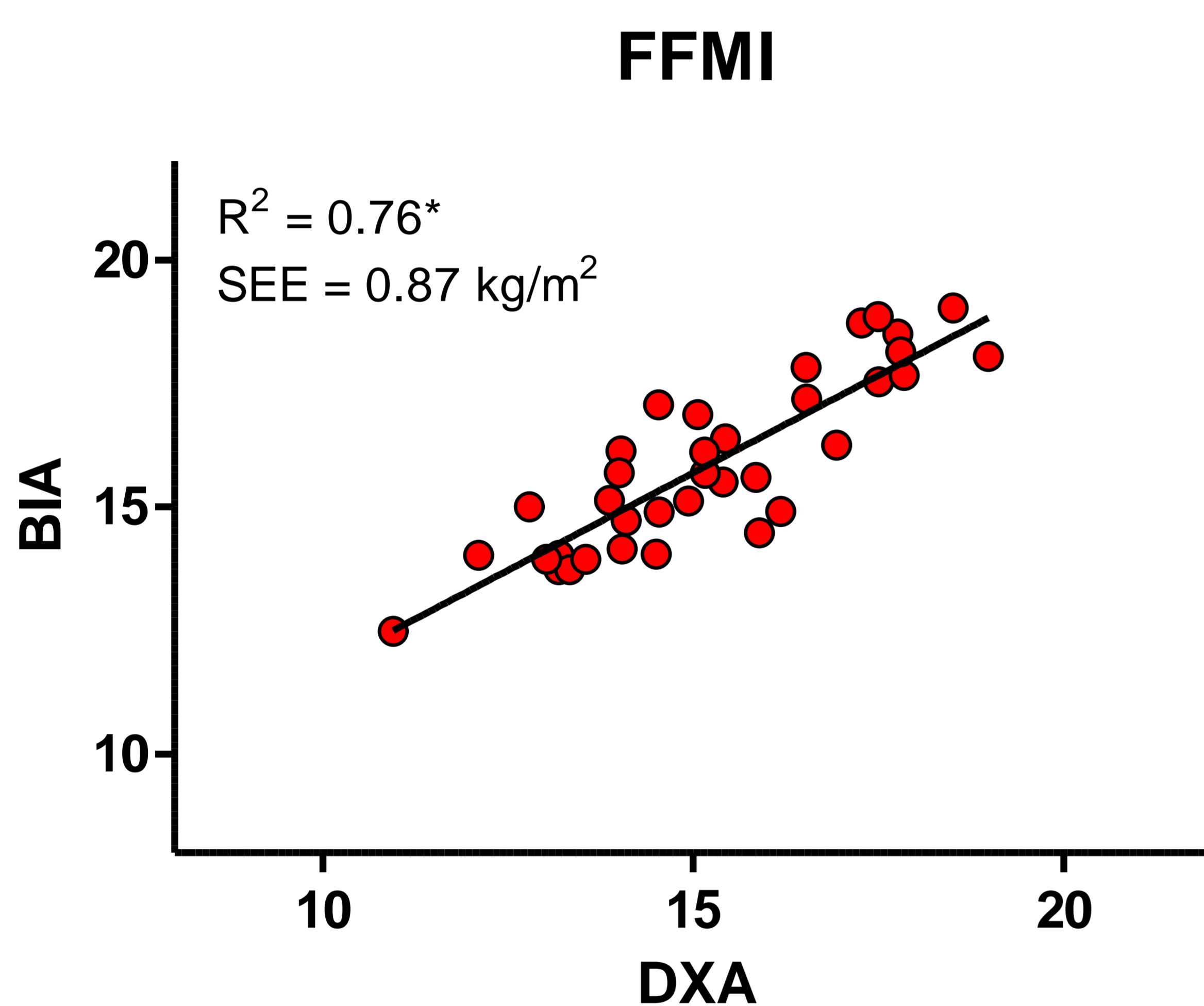
- BIA (50Hz) and DXA measurement
 - Fat Free Mass (Index) (FFM(I)) kg/m²
 - Fat percentage (%)
- Formula's FFM BIA:
 - Kyle (healthy)
 - Dey (elderly)
- Criteria malnutrition FFM I¹ ♀ < 15 and ♂ < 17 kg/m²
- Criteria obesity Fat%² ♀ > 30 and ♂ > 25 %

Results

36 MD patients (age 42 ± 12 yrs, 40% males)

Legend: * = p < 0.0001, ■ = sensitivity, ■ = specificity

FFM	R ²	SEE (kg)
Kyle healthy ³	0.97*	1.8
Kyle MD patients	0.90*	2.6
Dey MD patients	0.89*	2.4



Malnutrition		DXA		Total
		Yes	No	
BIA	Yes	17 (77%)	1 (7%)	18
	No	5 (23%)	13 (93%)	18
Total		22	14	36

Obesity		DXA		Total
		Yes	No	
BIA	Yes	19 (66%)	3 (43%)	22
	No	10 (34%)	4 (57%)	14
Total		29	7	36

Conclusion

- BIA-derived FFM, formulas of Kyle and Dey show good correlation with DXA, although less in MD patients compared to healthy subjects
 - BIA compared to DXA overestimates FFM
 - BIA sensitivity and specificity to diagnose obesity are low
- DXA remains the preferred method to assess BC in MD patients**

[1] Cederholm et al. Clin Nutr. 2015, [2] Okorodudu et al. Int J Obes. 2010, [3] Kyle et al. Nutrition. 2001