

INDEPENDENCE BETWEEN BODY COMPOSITION AND FAT OXIDATION CAPACITY IN OLDER ACTIVE WOMEN OVER-60

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Introduction: The capacity to oxidize fat (FATox) is associated with mitochondrial functionality (Blasco-Lafarga et al., 2022), so this deterioration is associated with multiple metabolic pathologies (Bhatti et al. 2017), however in obesity a paradoxical phenomenon occurs, with higher FATox values being observed, possibly due to its availability of free fatty acids and a higher concentration of intramuscular triglycerides (IMTG) (Ara et al., 2011). However, there are hardly any studies that analyze the body composition in an aging population and even less in a female sample.

Objectives: This cross-sectional study aims to study the influence of body composition on fat oxidation, and which parameters most determine this oxidative capacity.

Methods: Twenty-nine women (66.13±5.62 years) performed a submaximal incremental cycling test (10W every 3'15") to the second ventilatory threshold, with gas analysis by indirect calorimetry. FATox was calculated by applying the equations of Frayn (1983), with determination of the maximum fat oxidation point (MFO). To identify the groups, a neutral band of ±1 was determined about the median (5.01g/min/kgFFM), being the low MFO group (<4 g/min/kgFFM) and the high MFO group (>6 g/min/kgFFM). Study approved by the scientific ethics committee of the University of Valencia (H105715353921).

Results: The values observed in Table 1 do not show in any of the cases significant differences between groups, only observing a potential trend in future studies towards significant differences with respect to FFM variables ($p=0.12$), however is not the case with respect to the other antropometric variables as BMI ($p=0.45$), fat mass ($p=0.48$), or muscle mass ($p=0.93$).

Table 1. Results of the study.

	Low MFO (n=15)	High MFO (n=14)	<i>p-value</i>
Age (years)	69.72 ± 6.44	64.92 ± 3.47	0.24
Body mass (kg)	63.06 ± 8.94	67.67 ± 12.02	0.29
BMI	24.64 ± 3.06	27.39 ± 3.26	0.45
Body fat (%)	36.83 ± 5.11	38.47 ± 7.08	0.48
Free fat mass (kg)	39.48 ± 5.34	43.33 ± 6.35	0.12
Muscle mass (kg)	40.47 ± 3.96	40.31 ± 4.87	0.93

Values observed in maximal fat oxidation dividing by the median. MFO, maximal fat oxidation; BMI, body mass index

Conclusions: The observed data show an independence between the values of body composition and MFO, moreover it seems this independence seems to be greater both with respect to muscle mass, and by fat mass, so it seems that this limitation would not be due so much to mitochondrial quantity at the muscle level, nor by the greater availability of fat, phenomenon, contrary to the obese population, does not occur in older women, despite the greater amount of fat and IMTG in these women (Maunder et al., 2018). However, these differences may be due to the drop in percentage of type I fiber (Blasco-Lafarga et al., 2022). This condition, unlike in older adults, seems to be preserved in the obese population, a fact that could add to the conservation of MFO values.

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