

UNCONTROLLED ASTHMA:

ASSOCIATIONS WITH ALTERED BODY COMPOSITION, REDUCED EXERCISE CAPACITY, AND MENTAL HEALTH IMPLICATIONS

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Objective:

This study aimed to evaluate the relationship between body composition, inflammatory phenotypes, and exercise capacity in patients with uncontrolled asthma, focusing on the impact of fat and lean mass on lung function and patient-reported outcomes.

Table 2 Body Composition Indices for Patients with Asthma and Healthy Subjects

Variable	Patients with asthma	Healthy	p-value
N	56	14	
Age (yrs)	45 ± 12	47 ± 14	0.57
Female, %	58	64	0.75
Smoking status			
Non smoker, %	70	100	<0.0001
Ex-smoker, %	20	0	
Current smoker, %	10	0	
Height, cm	167.6 ± 8.9	168.4 ± 12.8	0.94
Weight, kg	80.0 ± 15.7	65.0 ± 10.8	0.0002
BMI, kg/m ²	28.5 ± 5.1	22.5 ± 2.8	<0.0001
FMI, kg/m ²	10.3 ± 3.7	5.9 ± 2.8	0.0005
BMC, g	2266 ± 408	2318 ± 148	0.57
BMC, %	2.7 ± 0.5	3.6 ± 0.5	<0.0001
Lean mass, g	50,219 ± 11,419	46,614 ± 11,527	0.21
Lean mass, %	61.8 ± 8.4	71.3 ± 9.0	0.001
Fat mass, g	28,517 ± 9188	16,039 ± 6360	<0.0001
Fat mass, %	35 ± 8	25 ± 9	0.0006
Android/gynoid ratio	1.00 ± 0.22	0.80 ± 0.13	<0.0001
VAT area	118.9 ± 63.9	50.5 ± 29.0	<0.0001
LMI, kg/m ²	17.5 ± 3.0	16.2 ± 2.3	0.059

Abbreviations: BMI: body mass index. FMI: fat mass index. BMC: bone mineral content. VAT: visceral adipose tissue. LMI: Lean/height².

Conclusion:

Uncontrolled asthma is associated with significant alterations in body composition, including increased fat mass and reduced lean mass, which impact lung function, exercise tolerance, and mental health. Eosinophilic asthma demonstrates a favorable phenotype with lower fat mass and improved exercise capacity. Interventions focusing on nutritional support and physical rehabilitation may enhance disease management and patient outcomes.

Material and Methods:

Fifty-six patients with moderate-to-severe uncontrolled asthma and 14 healthy controls were recruited. Dual-energy X-ray absorptiometry (DXA) was used to assess body composition, including fat mass, lean mass, and bone mineral content. Inflammatory phenotypes were determined using induced sputum and fractional exhaled nitric oxide (FeNO). Exercise capacity was measured via VO₂ max, and spirometry evaluated lung function. Patient-reported outcomes included asthma control (ACT), quality of life (AQLQ), and mental health (HAD).

Results:

Asthmatics exhibited higher body mass index (BMI), fat mass index (FMI), and visceral adipose tissue (VAT) compared to controls ($p < 0.0001$). Lean mass was lower in asthmatics ($p = 0.0012$) and correlated with better asthma control, reduced depression scores, and improved lung function. Eosinophilic asthma was associated with lower fat mass and superior exercise tolerance compared to non-eosinophilic asthma (VO₂ max: 20.7 vs 17.3 mL/min/kg, $p = 0.04$). Increased fat mass correlated with restrictive lung patterns and higher systemic inflammatory biomarkers (CRP and fibrinogen).

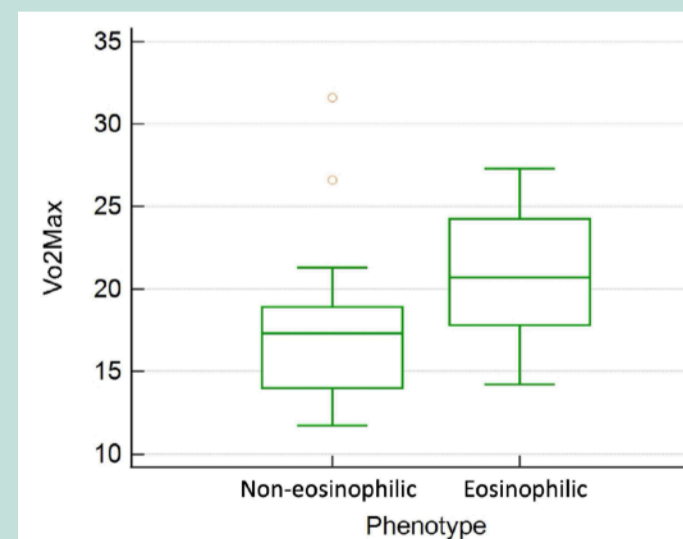


Figure 1 Maximal oxygen uptake according to inflammatory phenotype in asthma.

Reference:

Schleich F et al. Uncontrolled asthma is Associated with Increased Visceral Adipose Tissue, Decreased Bone Mineral Content, and Reduced Exercise Capacity. *J Asthma Allergy*. 2024 Dec 31;17:1369-1382.