

Skeletal Muscle Mitochondrial Respiration and Exercise Intolerance in Patients With Heart Failure With Preserved Ejection Fraction

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Table. Skeletal muscle mitochondrial respirometry

Parameter	Oxygen consumption rate, mean (SE), pmol/s ⁻¹ /mg muscle						
	Patients with HFpEF (n = 27)	HCs (n = 45)	P value ^a	P value ^b	P value ^c	P value ^d	P value ^e
Complex I respiration	10.7 (3.8)	28.2 (8.0)	<.001	<.001	<.001	<.001	<.001
Complexes I and II respiration	15.9 (5.4)	40.1 (11.8)	<.001	<.001	<.001	<.001	<.001
Maximal capacity	24.4 (9.4)	61.4 (13.7)	<.001	<.001	<.001	<.001	<.001

Abbreviations: HFpEF, heart failure with preserved ejection fraction; HC, healthy control.

^a Unadjusted.

^b Adjusted for sex.

^c Adjusted for age.

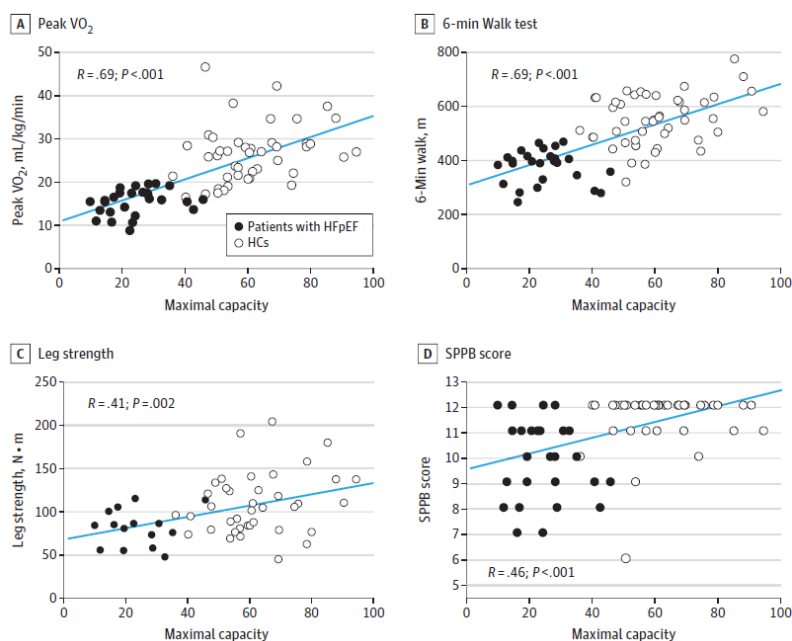
^d Adjusted for body mass index.

^e Adjusted for sex, age, and body mass index.

Patients with heart failure with preserved ejection fraction presented lower N- and NS-linked respiration and lower electron transfer capacity of the convergent NS-pathway than healthy controls.

Figure. Associations of maximal capacity with exercise capacity and physical ability. The blue line indicates the simple linear regression line. HC indicates healthy control; HFpEF, heart failure with preserved ejection fraction; peak VO₂, peak exercise oxygen consumption; SPPB, Short Physical Performance Battery.

Abnormalities in skeletal muscle mitochondrial function were associated with multiple measures of severe exercise intolerance in patients with HFpEF, compared to HCs, and represent potential therapeutic targets by both pharmacological interventions and behavioral interventions (e.g., diet and exercise).



Reference: Scandalis L, Kitzman DW, Nicklas BJ, Lyles M, Brubaker P, Nelson MB, Gordon M, Stone J, Bergstrom J, Neuffer PD, Gnaiger E, Molina AJA (2023) Skeletal muscle mitochondrial respiration and exercise intolerance in patients with heart failure with preserved ejection fraction. <https://doi.org/10.1001/jamacardio.2023.0957>

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