

Exercise effects on lean body mass, muscle strength and physical function in patients with metastatic breast cancer



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PROBLEM

Low levels of lean body mass, muscle strength and physical performance are associated with increased treatment-related toxicity and poorer treatment outcomes in patients with cancer. Exercise can mitigate poor skeletal muscle-related outcomes during cancer treatment, however evidence in patients with metastatic breast cancer (mBC) is lacking.

A secondary aim of the PREFERABLE - EFFECT study was to investigate the effects of a structured exercise program on body composition, muscle strength and functional performance in patients with mBC.

METHODS

Study design: multinational RCT (Fig 1).

Study population: patients with mBC, life expectancy ≥ 6 months, ECOG ≤ 2 , without unstable bone metastases.

Outcome measurements at baseline, 3- and 6-months: Regional and whole body lean mass and fat mass (DXA, n=66), muscle strength (handgrip strength and hypothetical 1-repetition maximum leg strength, n=126), functional performance (5-times sit-to-stand test and Short-form Fullerton Advanced Balance scale, SF-FAB).

RESULTS

Exercise increased whole body lean mass at 3 months (effect size=0.14) and **appendicular skeletal muscle mass** at 3 months (effect size=0.19) and 6 months (effect size=0.15) compared to control.

Exercise increased lower body strength at 3 and 6 months compared to control.

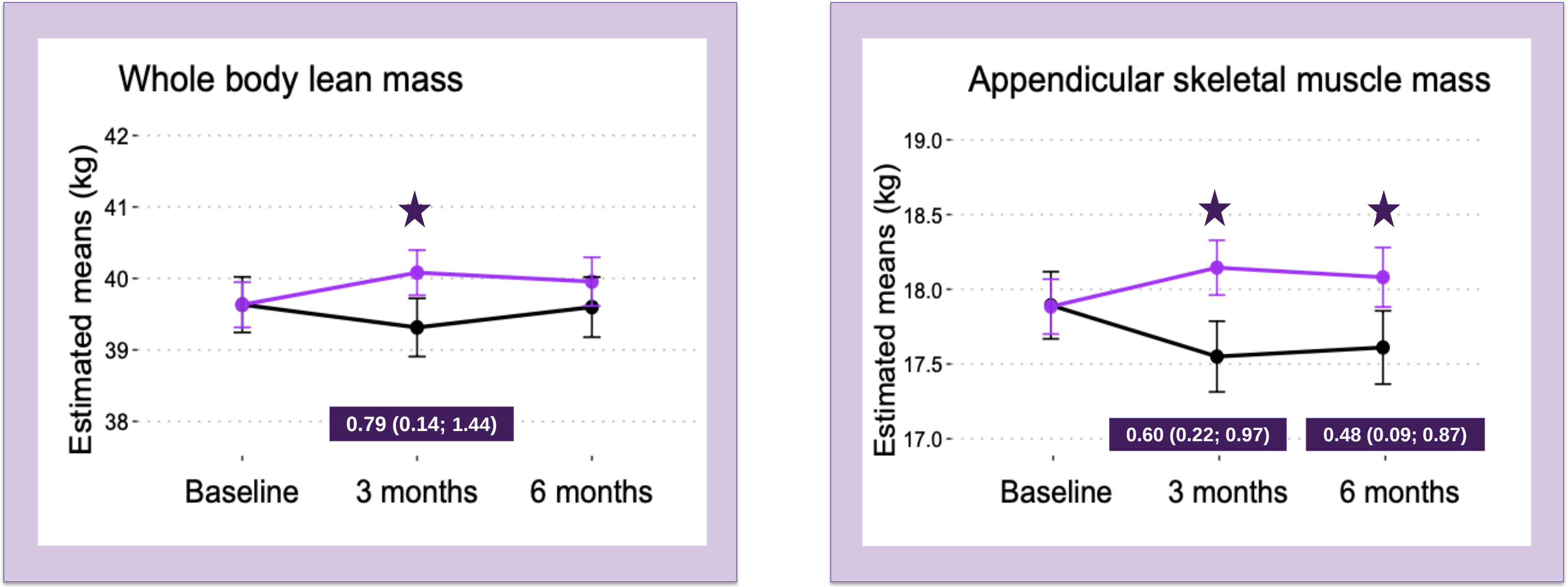
Exercise improved functional performance, including balance, compared to control.

No significant between-group differences were observed for handgrip strength and fat mass.

Exercise effects on lean body mass, muscle strength and functional performance

Changes from baseline to 3 and 6 months were compared between groups using adjusted linear mixed models for repeated measures.

- ★ Significant between-group differences
- ◆ Intervention Group
- Control Group



Outcome		Mean between-group difference (95% CI)	Effect Size
Hypothetical 1-RM (kg)	3 months	18.32 (7.58, 29.06) **	0.44
	6 months	34.22 (23.00, 45.45) **	0.83
5-times Sit-to-Stand (s)	3 months	-0.52 (-1.10, 0.06)	0.14
	6 months	-1.53 (-2.11, -0.94) **	0.41
SF-FAB	3 months	0.44 (0.12, 0.76) **	0.19
	6 months	0.74 (0.41, 1.1) **	0.31

SUMMARY



Figure 1. Design of the PREFERABLE-EFFECT study.

CONCLUSION

This large multinational study demonstrates that supervised exercise improves lean body mass, muscle strength and physical performance in patients with mBC. There is growing recognition that lean body mass plays a pivotal role in treatment tolerance, prognosis and overall health in patients with cancer. **Based on these findings, supervised aerobic and resistance exercise should be recommended to patients with mBC.**

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