



Implementing a Cancer Exercise Rehabilitation Program (iCARE) in Hawai'i



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INTRODUCTION

Cancer survivors face treatment-related toxicities which often lead to lifelong, chronic illnesses. Cancer patients with co-morbidities have poorer survival and have a 5-year mortality rate 6 times higher than patients unaffected by cancer.¹ Cancer patients suffer from treatment-related cardiotoxicities, metabolic dysfunction, muscle and bone loss and neuropathy. As a result, cancer patients have a reduced quality of life.

PURPOSE

To develop an effective cancer exercise rehabilitation program that improves fitness, health and quality of life in cancer patients with varied diagnoses (dx).

METHODS

16 female cancer patients referred to iCARE by their oncologist (mean age ± SD: 62±8 yrs, cancer dx: breast, brain, cervical, ovarian, tongue)

Exercise clearance received from physician

Pre-assessment

- Vitals, body weight & body fat (skinfold measurements)
- Treadmill peak O₂ consumption (VO₂ peak) & ACSM prediction equations or 6-minute walk test
- Muscular fitness: Strength (1-Repetition Maximum, 1-RM) & Endurance (chair squat test)
- Unipedal balance tests (eyes open & closed)
- Psychosocial inventories (FACT-G, BFI, Insomnia Index, food behavior)

Exercise Training

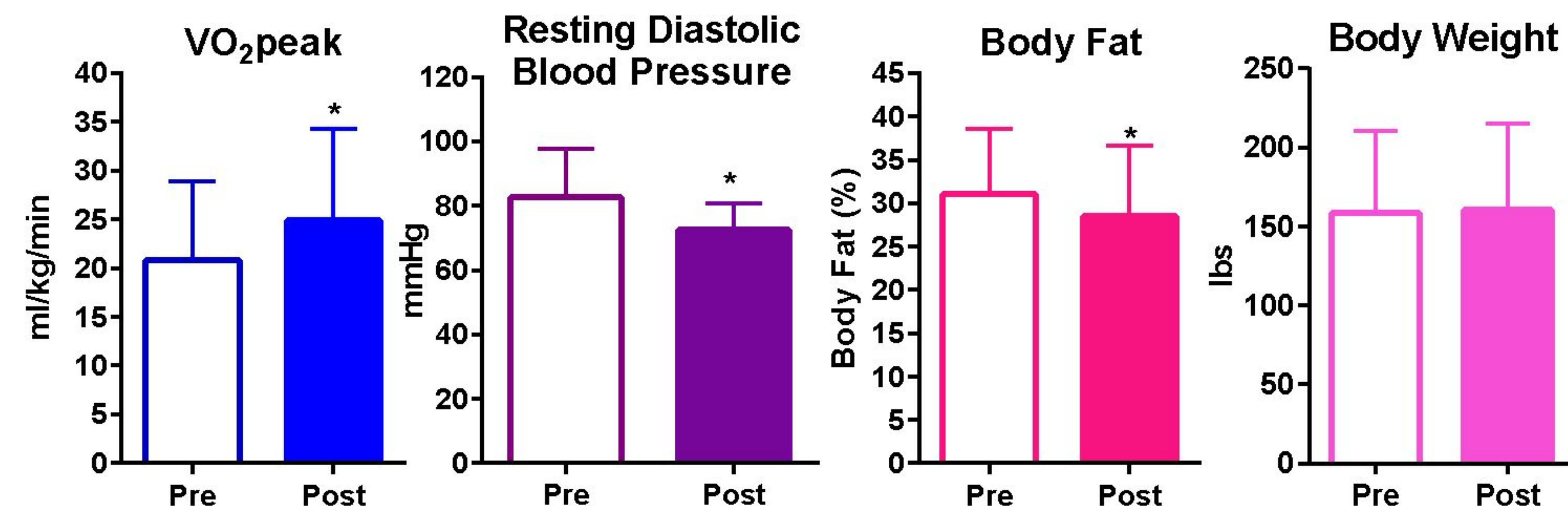
- 90-min, one-on-one personalized training (3x/wk for 12 weeks) delivered by senior-level, top-performing KRS students
- Exercise prescriptions were tailored to baseline fitness levels, goals and limitations
- Cardio (30 min), resistance/balance training (30 min), stretching (15 min) followed ACSM's (American College of Sports Medicine) exercise guidelines for cancer patients

Post-assessment (same as pre-tests)

Paired t-tests (2-tailed); p≤0.05; 15 patients completed the intervention

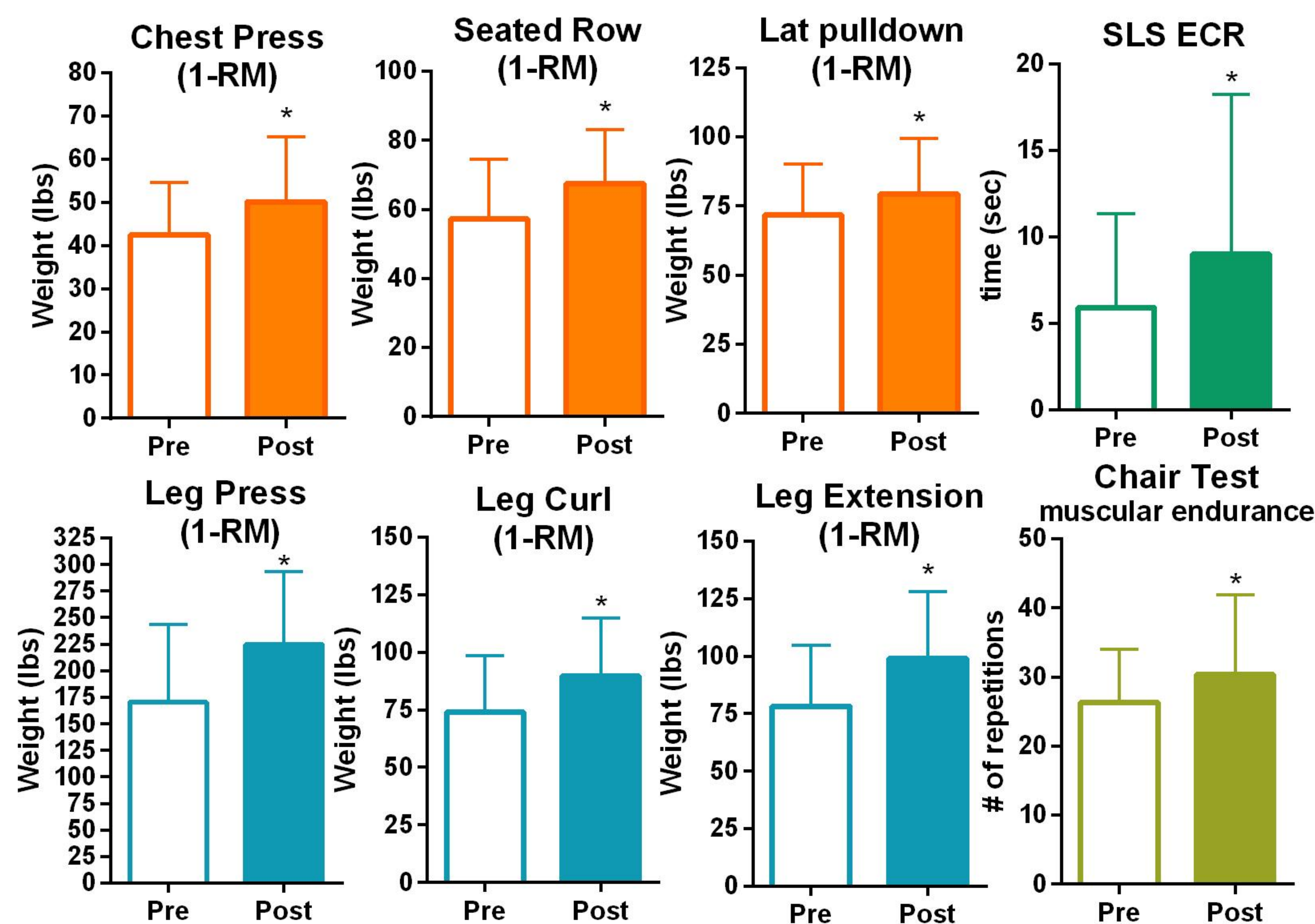
RESULTS

Improved cardiovascular fitness & body composition



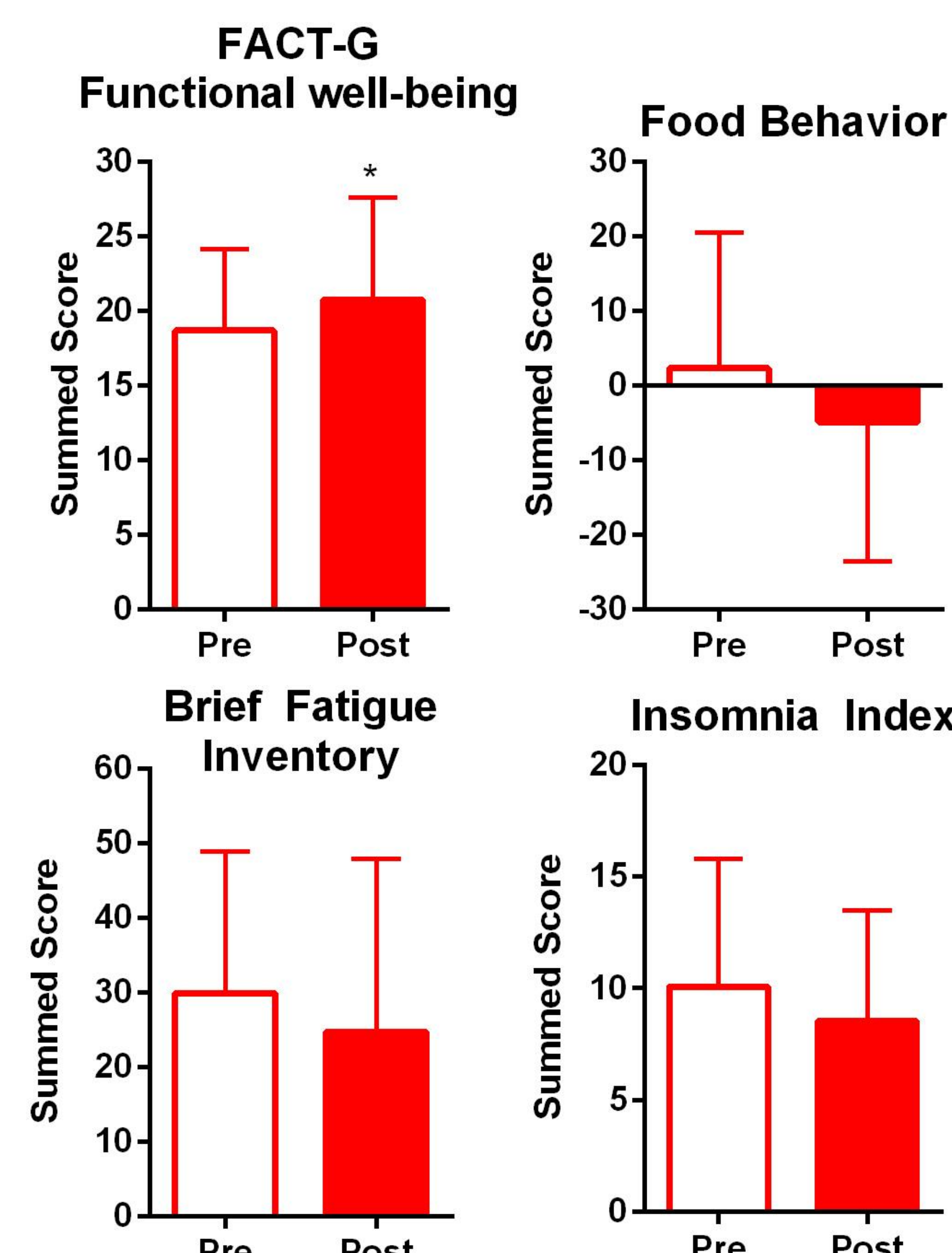
There was a 17% improvement in cardiorespiratory endurance (VO₂ peak), a 12% reduction in resting DBP and a 2% reduction in body fat; body weight was unchanged (N=15, mean ± SD, *≤0.05).

Improved muscular fitness & balance



Patients exhibited an 16% and 24% increase in upper and lower body muscular strength, respectively (N=15, mean±SD, *≤0.05). Lower body muscular endurance was increased by 15% as measured chair squat test. Exercise training also improved balance on the right foot with eyes closed as measured with a single leg stance by 53% (SLS, Eyes Closed Right).

Psychosocial Inventories



Functional Assessment of Cancer Therapy-General (FACT-G) scores indicate patients had increased contentment and enjoyment of life, and improved sleep after the 12-week exercise intervention.

Although changes in Brief Fatigue Inventory and Insomnia Index scores did not reach significance, they suggest that exercise tended to improve sleep patterns and fatigue. Likewise, a trend in the Food Behavior Scale suggests patients developed healthy eating behaviors to optimize nutrition.

DISCUSSION

The increase in VO₂ peak suggests that patients significantly reduced their all-cause mortality and cardiovascular disease risk.² The significant reduction in resting DBP further demonstrates improved cardiovascular function. Reduced body fat lowers the risk of type 2 diabetes, obesity and hypertension, indicating that the exercise intervention was effective in reducing the patients' co-morbidity risk. Increased strength and balance suggest that 12-weeks of exercise training may be effective in reducing the risk of falls. We conclude that iCARE is an effective (and free) program that improves fitness and quality of life in cancer patients of Hawai'i.

References

1. Sogaard, M. et al. (2013) Clin Epidemiol 5: 3-29.
2. Kodama, S. et al. (2009) JAMA 301: 2024-2035.

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