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The safety, feasibility, and efficacy of an 18-week exercise intervention for adults with primary brain cancer - the BRACE study

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Abstract

Purpose: To determine the safety, feasibility, and potential effect of an 18-week exercise intervention for adults with primary brain cancer.

Materials and methods: Eligible patients were 12-26-weeks post-radiotherapy for brain cancer. The individually-prescribed weekly exercise was ≥150-minutes of moderate-intensity exercise, including two resistance-training sessions. The intervention was deemed "safe" if exercise-related, serious adverse events (SAE) were experienced by <10% of participants, and feasible if recruitment, retention, and adherence rates were ≥75%, and ≥75% compliance rates were achieved in ≥75% of weeks. Patient-reported and objectively-measured outcomes were assessed at baseline, mid-intervention, end-intervention, and 6-month follow-up, using generalized estimating equations.

Results: Twelve participants enrolled (51 ± 19.5 years, 5 females). There were no exercise-related SAEs. The intervention was feasible (recruitment:80%, retention:92%, adherence:83%). Participants completed a median of 172.8 (min:77.5, max:560.8) minutes of physical activity per week. 17% met the compliance outcome threshold for ≥75% of the intervention. Improvements in quality of life (mean change (95% CI): 7.9 units (1.9, 13.8)), functional well-being (4.3 units (1.4, 7.2)), depression (-2.0 units (-3.8, -0.2)), activity (112.8 min (42.1, 183.4)), fitness (56.4 meters (20.4, 92.5)), balance (4.9 s (0.9, 9.0)), and lower-body strength (15.2 kg (9.3, 21.1)) were observed end-intervention.

Conclusion: Preliminary evidence support that exercise is safe and beneficial to the quality of life and functional outcomes for people with brain cancer.**Registration:** ACTRN12617001577303.

Keywords: Exercise; brain cancer; feasibility; safety; survivorship.

Plain language summary

The BRAin Cancer and Exercise (BRACE) study highlights the need for regular monitoring of disease- and treatment-related side effects which may present as barriers to exercise.Exercise prescription should be modified according to the presence and severity of disease- and treatment-related barriers.Adverse events observed, such as dizziness, highlight the importance of supervised exercise

for people with brain cancer.If supervision is not possible, then exercise modes with low risk of harm from falls are recommended (e.g., walking, machine-based resistance training).