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Developing Agency in Cancer Patients by Bridging Theory and Practice: a 7-Week Outdoor Group-Based 4×4 Training: A Pilot Study

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Background:

Exercise is a key component of supportive cancer care; however, access to community-based structured exercise remains limited. This pilot study examined the feasibility and psycho-emotional effects of a supervised 7-week outdoor group-based exercise on cancer patients.

Methods:

Twenty adult cancer patients (95% female; mean age 51.3 ± 9.5 years; BMI 23.9 ± 2.7 kg/m²; breast, ovarian, cervical, and other cancers) were recruited from existing outdoor exercise sessions specifically designed for cancer patients and were eligible if they had completed or were undergoing cancer treatment and had obtained appropriate medical clearance. Participants attended weekly 60-minute sessions following the 4×4 Training structure: 15-minute warm-up, 4-minute higher-intensity interval at ~85% HRmax, separated by 3-minute active recovery repeated 4 times, and a 10-minute cool-down. Psycho-emotional outcomes were assessed at baseline and week 7 using the Depression Anxiety Stress Scale (DASS-21), Swedish Core Affect Scale, and a time-perspective measure. Pre–post session affective responses were recorded using the Feeling Scale and Felt Arousal Scale.

Results:

After completion, significant reductions in psycho-emotional symptoms were observed. Median DASS-21 depression scores decreased from 0.93 to 0.29 post-intervention ($p < 0.001$). Stress scores declined from 1.79 to 1.29 ($p < 0.01$), and anxiety scores from 0.86 to 0.57 ($p < 0.01$). No significant changes were observed for core affect or time perspective. Across all sessions, participants reported significantly more positive feeling (mean increase: +1.2, $p < 0.01$) and increased arousal (mean increase: +0.9, $p < 0.01$) post-exercise. Increases in acute arousal were significantly associated with greater reductions in depression over 7 weeks ($R^2 = 0.39$, $p < 0.01$). No adverse events were reported.

Conclusions:

The outdoor 4×4 Training structure was feasible, safe, and associated with meaningful improvements in psycho-emotional health. Larger studies are warranted to evaluate scalability, enhance accessibility, and further advance natural-environment exercise as a supportive care strategy.

Keywords

Feasibility, safety, group-based, psycho-emotional.

Conflict of Interest & Ethical Approval

yes

Abstract submitters declaration

yes

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