

ADDITIONAL EXERCISES IN CARDIAC REHABILITATION IMPROVE GAIT PARAMETERS IN FRAIL PATIENTS AFTER OPEN-HEART SURGERY

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Background and Aims

Exercise-based cardiac rehabilitation (CR) is the most commonly used after open-heart surgeries (OHS)(1), these patients are more likely to have frailty syndrome(2) and have walking difficulties(3). There are no universally accepted standards for CR patients. Aim was to evaluate and compare the effects of additional exercises in CR on gait parameters in frail patients after OHS.

Methods

All 105 patients ≥ 65 years, after OHS and with frailty were invited to the study. Patients were randomly assigned to 3 different groups: control group (CG), intervention group 1 (IG-1), and intervention group 2 (IG-2). All groups received 20-day conventional CR program that included aerobic, stretching, breathing exercises 6 times/week; IG-1 additionally received multicomponent dynamic aerobic, balance and strength training (with unstable balance platforms, resistance bands and weights) 3 times/week; the IG-2, a combined computer-based program (with computer devices for gait, balance, strength training) 3 times/week. Groups were assessed 2 times: on admission and after CR. Frailty level was measured using Edmonton Frail Scale (≥ 4 score). Gait parameters were measured using Zebris program with force plate. Foot rotation, step and stride length, step width, double stance, step and stride time, cadence and gait speed were recorded.

Results

Within-group comparisons showed that significant differences were observed in all 3 groups in step, stride length, double stance phase and gait speed. Step, Stride time and cadence significantly improved results in CG and IG-2 groups, however, foot rotation significantly changed only in IG-2 group. Results showed that significant change in measuring step and stride time was found between CG and IG-1 as well as between the CG and the IG-2. Double stance significant change was observed only between the IG-1 and IG-2 groups.

Conclusion

All programs improved almost all gait parameters, however, combined computer-based program showed a greater effect on the results of gait parameters compared with other programs.

Keywords: Cardiac, rehabilitation, frailty, exercises, surgery