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The feasibility and clinical effects of moderate-to-high intensity exercise program for people on hemodialysis

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Objectives : Exercise has been recommended for chronic kidney disease (CKD) undergoing hemodialysis (HD). However, most exercise regimens suggested for subjects on HD are low-intensity exercise. Given the dose-response relationship of exercise benefit, we aimed to investigate the effect as well as feasibility of a moderate-to-high-intensity exercise program in people on HD.
Methods : Thirteen subjects on HD (mean age: 61.46 ± 14.36, 34 – 78 years) participated in an 8-week moderate-to-high-intensity interdialytic exercise program. The mean HD vintage was 10.23 ± 8.73 (2 - 24) years. The exercise program consisted of 90-minute, twice a week, group-based, aerobic and strength training sessions. To monitor and maintain adequate exercise intensity, real-time heart rate monitoring and the Borg Rating of Perceived Exertion were used. To evaluate the effect of the exercise program, we assessed cardiopulmonary fitness, functional strength, balance function, cognitive and psychological function, health-related quality of life, exercise behavior, body composition, bone health, and laboratory tests. Assessments were performed at T0 (baseline), T1 (immediate after the exercise intervention), and T2 (8 weeks after the intervention). Participants' level of physical activity was also investigated throughout the study period.
Results : All participants completed the exercise program without any adverse event. After the 8-week exercise program, there were significant improvements in cardiopulmonary fitness, functional strength, and balance function, some of which maintained until 8 weeks post-intervention. Subjects also showed increase in lean mass and bone mineral content and decrease in fat mass after exercise intervention.
Conclusions : A moderate-to-high-intensity group-based exercise was effective in improving physical function and body composition of people on HD. This study also suggests that a moderate-to-high-intensity aerobic and strengthening exercise program is feasible for CKD subjects undergoing HD.