

Online Personal Training in Patients With Marfan Syndrome: A Randomized Controlled Study of Its Impact on Quality of Life and Physical Capacity.

BACKGROUND: Marfan syndrome (MFS) is a genetic disorder affecting the vascular and musculoskeletal systems. Limited knowledge exists regarding the exercise benefits for this population. This study aimed to explore the impact of a structured exercise program on the quality of life (QoL) and physical capabilities of patients with MFS.

METHODS AND RESULTS: This was a randomized, controlled, parallel-group trial. Patients with MFS were randomized in a 1:1 ratio to either a training group or a control group. The trial included a 3-month online supervised training program. Seventy patients with MFS were compared with healthy subjects. They were randomized into a training group (MFS-T) and a control group (MFS-C). The training consisted of 2 supervised online sessions weekly for 3 months. The primary outcome was QoL, assessed using the Medical Outcomes Study Short-Form 36 questionnaire. Baseline QoL in all dimensions was lower in patients with MFS. Their peak oxygen uptake was 25% lower, and muscle elasticity was diminished compared with healthy subjects. Postintervention, significant improvements were observed in the MFS-T group relative to the MFS-C group: QoL ($+20.2 \pm 14.3$ versus $+0.7 \pm 0.5$), peak oxygen uptake ($+34\%$ versus $+14\%$), muscle elasticity index (11.5 ± 8.2 versus $+1.2 \pm 1.7$), reduced blood pressures during isometric squats (systolic -19 ± 30 versus 0 ± 6 ; diastolic -27 ± 39 versus $+2 \pm 15$), and reduced pulse wave velocity at rest (-1.20 ± 1.89 versus -0.40 ± 1.61) and postexercise (-0.42 ± 0.45 versus $+0.08 \pm 0.48$). The aortic diameter remained stable in both groups (MFS-T -0.19 ± 1.1 versus MFS-C $+0.11 \pm 0.78$). After training, QoL remained lower in MFS-T than in healthy subjects, but peak oxygen uptake, pulse wave velocity at rest, and postexercise were similar to those of healthy subjects.

CONCLUSIONS: The 3-month online training program significantly enhanced QoL and cardiovascular/muscular metrics in patients with MFS without affecting aortic root diameter, suggesting its potential as part of a management strategy for MFS.