Treadmill exercise improves walking endurance for patients with peripheral arterial disease

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Patients with peripheral arterial disease (PAD), which can include symptoms such as pain in the legs, who participated in supervised treadmill exercise improved their walking endurance and quality of life, according to a study in the January 14 issue of *JAMA*. The treadmill exercise also improved walking performance for PAD patients without the classic symptoms of pain in the leg muscles.

Lower extremity PAD (a condition that develops when the arteries that supply blood to the legs become completely or partially blocked as a result of plaque build-up) affects 1 in 16 U.S. adults 40 years or older. Men and women with PAD have greater functional impairment and more rapid rates of functional decline than those who do not have PAD, according to background information in the article. Most patients with PAD do not have symptoms of intermittent claudication (pain in the leg muscles that comes and goes), but PAD patients without these symptoms have greater functional impairment and functional decline than those without PAD. No prior exercise interventions have been tested on PAD participants with and without symptoms of intermittent claudication. Additionally, benefits of lower extremity resistance (strength) training for PAD patients are unclear.

Mary M. McDermott, M.D., of the Northwestern University Feinberg School of Medicine, Chicago, and colleagues conducted a study to determine whether supervised treadmill exercise and lower extremity-resistance training improves functional performance and other outcomes among participants with PAD with and without intermittent claudication symptoms. The randomized controlled clinical trial included 156 patients with PAD who were randomly assigned to supervised treadmill exercise, to lower extremity resistance training, or to a control group, for six months. Patients were tested for six-minute walk performance and a short physical performance battery, as well as brachial artery flow-mediated dilation (a measurement of change in the diameter of an artery in the arm), treadmill walking performance, the Walking Impairment Questionnaire, and the 36-Item Short Form Health Survey physical functioning (SF-36 PF) score.

For the 6-minute walk, those in the supervised treadmill exercise group increased their distance from baseline by an average of about 69 feet vs. those in the control group, whose distance decreased from baseline by an average of 49 feet, for an average increase of 118 feet between groups. Participants in the resistance training group increased their distance walked by 41 feet compared with the control group. Those in the lower extremity resistance training group did not experience change in their 6-minute walk performance compared with the control group.

There were no differences in change in short physical performance battery score between the treadmill exercise and control groups or between the resistance training and the control groups at the 6-month follow-up.

Participants in the treadmill exercise group had more favorable changes in brachial arterial flow-mediated dilation than the control group, whereas changes among participants in the resistance training group were not different from the control group. Those in the treadmill exercise and the resistance training groups each had significantly greater increases in average maximum treadmill walking time at the 6-month follow-up than the control group.

The treadmill exercise group had significantly greater average improvement in their SF-36

physical functioning score and in their walking impairment distance score than the control group. The resistance training group had greater average improvement in their SF-36 physical functioning score and in their walking impairment distance and stair climbing scores than the control group.

"Based on findings reported in this trial, physicians should recommend supervised treadmill exercise programs for PAD patients, regardless of whether they have classic symptoms of intermittent claudication," the authors conclude.

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