METABOLIC BONE DISEASES

Improving strength and balance helps prevent falls

Progressive quadriceps strength training in combination with proprioception training could help prevent falls in women with postmenopausal osteoporosis. The results of a study by Teixeira and colleagues show that such a program improves quadriceps muscle strength, balance, and quality of life, and significantly reduces the risk of falls in this population.

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In the study, sedentary women aged 55–75 years were randomly allocated to an exercise group ($n = 43$) or to a control group ($n = 42$); patients in both groups received medical therapy for osteoporosis. The twice-weekly exercise protocol consisted of a warm-up,

functional exercises aimed at improving gait, and leg extension exercises using progressively heavier loads. Adherence to the 18-week exercise program was high, with patients attending an average of 82% of the sessions.

Modest but consistent improvements were observed in overall balance, although not in static balance components of the Berg Balance Scale, following completion of the exercise program. Of note, many patients in the control group also experienced small increases in balance scores. At 18 weeks, functional mobility (measured by use of the timed ‘up and go’ test) was significantly better in the exercise group than in the control group. Dynamic strength, measured by the maximum weight a patient could lift in one repetition, was also higher in the intervention group. Those in the exercise group reported statistically and clinically significant improvements in quality of life compared with the control group.

The incidence of falls was assessed in a 6-month follow-up period, during which 16 patients in the control group (38%) reported a total of 26 falls. By contrast, five patients in the intervention group (16%) experienced a total of seven falls. The difference between the two groups in the number of falls was statistically significant ($P = 0.0064$).

Osteoporosis increases the risk of fracture as a result of a fall, but the results of this study suggest that progressively strengthening quadriceps muscles and also improving functional balance could help reduce the risk of osteoporotic fracture.

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Original article Teixeira, L. E. P. P. et al. Progressive load training for the quadriceps muscle associated with proprioception exercises for the prevention of falls in postmenopausal women with osteoporosis: a randomized clinical trial. *Osteoporos. Int.* doi:10.1007/s00198-009-1002-2