EUROPEAN REGIONAL EXPERT MEETING ON THE PREVENTION AND MANAGEMENT OF FRAGILITY FRACTURES

The effects of a 12 week OTAGO Exercise programme on muscle strength, balance and fear of falling in a sample of community-dwelling elderly women.

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Aim. To explore the effects of an acknowledged, elderly specific exercise programme, the Otago exercise programme (OEP) on muscle strength, balance, fear of falling (FoF) among Greek healthy women 60 years old and over.

Material-Method. 51 elderly women 51 elderly women (mean age 72.87±5.83 years) from an Open Care Center for the Elderly in city, Greece agreed to participate in the study. They enrolled in a group based OEP, run twice a week for 12 weeks, under the supervision of 2 specialized in this area physiotherapists. The OEP is an evidenced-based exercise programme designed for the elderly (developed, evaluated, and disseminated in New Zealand), comprising 3 domains, muscle strengthening, balance training, and walking. The measures completed pre and post intervention included knee flexors and extensors, hand grip strength (HGS) measured with a hand held dynamometer (Saehan), balance capacity as measured with the Berg balance scale and Falls Efficacy Scale-International (FES-*I*) and walking capability measured with the Timed-Up and Go (TUG) test. Ethical approval was given by the Ethics Committee of the School of Health and Welfare of the Technological Educational Institute (TEI) of Western Greece

Photos 1,2,3. Exercises + HGS assessment

Results. Exercisers showed significant improvement in measures of HGS, balance, walking capability and FoF at the completion of the programme. Participation in the OEP resulted in statistically significant differences in TUG scores ($p<0.001$), FES-*I* score ($p=0.03$), Berg Balance Scale ($p<0.05$) and HGS ($P<0.001$). Lower Extremity strength was improved, however statistically significant differences were noted only in left knee flexion strength ($p<0.001$) and right knee extension strength ($p<0.05$).

Table 1. Participants' characteristics

Variable	Mean (SD)
Age (years)	70.69 (4.2)
Body Mass Index (kg/m^2)	27.34 (3.27)
Muscle mass (kg)	39.88 (3.93)
Body fat mass (%)	35.95 (6.05)
Falls (n)	1.65 (0.48)
Calf circumference (cm)	34.06 (2.07)
TUG (sec)	8.18 (1.36)
Flexion Right knee 90º/sec (Nm/kg)	36.5 (16.02)
Extension Right knee 90º/sec (Nm/kg)	56.17 (20.08)
Flexion Left knee 90º/sec (Nm/kg)	35.32 (12.21)
Extension Left knee 90º/sec (Nm/kg)	57.22 (18.82)
FES-*1*	29.04 (10.58)
Berg Balance Scale	33.84 (8.58)

Conclusions. Findings suggest that an organized twice-weekly, 12-week exercise programme can improve balance outcomes and FoF amongst elderly community-dwelling people. Elderly women should be encouraged to participate in community-based programs to maintain overall health and wellness and prevent future falls. Future studies should be conducted in a larger sample size and compare OEP against other recognized exercise programmes in order to further determine their benefits.

References

Shumway-Cook et al. Predicting the probability for falls in community-dwelling older adults using the Timed Up & Go Test, Physical Therapy. 2000;80(9): 896-903.

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