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## Functional scores improvement after 6-month of an exercise program for women with osteoporosis: a randomized trial

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### INTRODUCTION:

Osteoporosis (OP) is a systemic disease of the skeleton characterized by a reduced bone mass and deterioration of the micro-architecture accompanied by an increased risk of fracture with consequent pain, decreased physical and social functional capacity and quality of life (QoL). There is a consensus on the effectiveness of physical activity in preventing bone loss, falls and, consequently, fractures. However, there is no agreement on the optimal exercise program. The main aim of the study is to evaluate modifications of QoL measured with the Short Osteoporosis Quality of Life Questionnaire (ECOS-16) induced by the exercise program when administered as Online Group Training (OGT) or Individual Home Training (IHT). The second aims concern functional capability

### METHODS:

Forty women with osteoporosis were enrolled in the randomized trial. The mean age was  $67 \pm 6.6$  years old. The participants were divided into two groups: OGT and IHT. Both groups performed a specific exercise protocol for 6-month in 2-days/week 1-hour sessions. Moreover, all participants were requested to choose an additional third day of the week to perform brisk walking, cycling, or swimming for at least 30 min. The OGT was followed by a trainer through online supervision, while the IHT performed the protocol at home without supervision. The participants were assessed at the baseline and after 6-month of training. The assessed outcomes were: QoL measured through ECOS-16, fear of fall by short FES-I, aerobic capacity and endurance assessed by 6MWT, joints mobility by sit and reach and stick test, muscles force by handgrip and 30 seconds chair stand test.

### RESULTS:

Of 40 women, 30 performed the 6-month assessment (13 OGT and 17 IHT), while 10 are not yet completed the training. Following preliminary results show the analysis of the 30 women who had completed the program. ECOS-16 showed no changes at 6-month follow-up for both groups and no difference between groups. 6MWT and 30s chair stand test showed a statistically significant improvement in both groups. The distance travelled of the 6MWT changed in the OGT, from  $420 \pm 25$  m to  $457 \pm 46$  m ( $p < 0.005$ ), and from  $369 \pm 85$  m to  $415 \pm 66$  m ( $p < 0.05$ ) in the IHT. The repetition number of the 30s chair stand test changed in the OGT from  $12 \pm 3$  to  $15 \pm 3$  ( $p < 0.001$ ) and from  $12 \pm 2$  to  $13 \pm 3$  ( $p < 0.005$ ) in the IHT. Sit and reach and stick test showed not a significant improvement. FES-I, handgrip showed no changes between baseline and follow-up.

### CONCLUSION:

Despite the difficulty due to the SARS Covid-2 pandemic, the study results showed that participants had maintained the same quality of life after 6-month of training. Moreover, the functional outcomes have increased after the training without differences between the groups. These results proved the efficacy of the exercise training in both settings.

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