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Effect of class IV laser therapy and Pilates exercises on bone density and pain in primary osteoporosis: a randomised controlled trial

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Abstract

Background/aims

Osteoporosis is a systemic disorder characterised by a decrease in bone quality and density. This causes the bones to become weak and unable to withstand mild stresses, and the associated pain is made worse with activities. The aim of this study was to investigate the effect of class IV laser therapy and Pilates exercises on bone mineral density and pain in patients with primary osteoporosis.

Methods

A total of 60 patients with osteoporosis (40 women and 20 men) participated in this study. Their age ranged between 40 and 60 years. They were allocated randomly to three groups: Group A (n=20) received multiwave locked system laser therapy, group B (n=20) patients received Pilates exercises and group C (n=20) received multiwave locked system laser therapy and Pilates exercises. The treatment programme took place three times a week for 8 weeks. Bone mineral density of the lumbar spine (L1–L4) was measured by dual-energy X-ray absorptiometry and pain intensity during activities was measured by using the Numeric Pain Rating Scale. Evaluation of lumbar bone mineral density and pain intensity were performed before and after 8 weeks.

Results

The statistical analysis of this study revealed there was a significant increase of T-scores post-treatment compared to pre-treatment within group A (P=0.0001; P<0.05), group B (P=0.0001; P<0.05), and group C (P=0.0001), with improvement percentages of 19.59, 34.69 and 50.66% respectively. There was a decrease of pain intensity during activities post-treatment compared to pre-treatment within group A (P=0.0001; P<0.05), group B (P=0.0001; P<0.05) and group C (P=0.0001), with improvement percentages of 41.28, 54.39 and 70.09% respectively.

Conclusions

Class IV laser therapy and Pilates exercises are useful therapeutic modalities to increase bone mineral density and decrease pain in patients with osteoporosis, but combining them is more effective than using them separately.