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Long-Term Effect of Pulsed Nd-YAG Laser Combined with Exercise on Bone Mineral Density in Men with Osteopenia or Osteoporosis: 1 Year of Follow-Up.

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Abstract

BACKGROUND: A pulsed Nd-YAG laser is an effective physiotherapy modality used as a class IV high-intensity laser therapy (HILT).

PURPOSE: The aim of this study is to investigate the efficacy of HILT alone or combined with exercise (HILT+EX) on bone mineral density (BMD) after 24 weeks and at 1 year of follow-up in men with osteopenia or osteoporosis.

METHODS: One hundred men with osteopenia or osteoporosis (mean age, 53.78 [2.89] years; weight, 80.56 [7.33] kg; height 175 [5.30] cm) participated in the study. The T-scores were ≤ -1.5 . Patients were randomly assigned to four groups: HILT+EX (group I), placebo laser plus exercise (PL+EX; group II), HILT alone (HILT; group III), and PL (group IV). HILT was applied to the lower back and hip regions. Aerobic, weight-bearing, flexibility, strengthening, and balance exercises were performed three times per week for 24 weeks. The measured outcomes were BMD of the L₂-L₄ spine and total hip. Measurements were taken before and after 24 weeks and at 1 year of follow-up.

RESULTS: Lumbar and total hip BMD significantly increased post-treatment in the HILT+EX and PL+EX groups, but insignificantly in the HILT and PL groups. HILT+EX showed a significantly greater effect than PL+EX did on lumbar BMD, with no significant difference in total hip BMD, after 24 weeks and at follow-up.

CONCLUSIONS: Although HILT alone did not effectively increase lumbar and total hip BMD, HILT combined with exercise was more effective than exercise alone at increasing lumbar BMD after 24 weeks of treatment, with effects lasting up to 1 year.

KEYWORDS: bone mineral density; exercises; osteopenia; osteoporosis; pulsed Nd-YAG laser

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