

NON-INVASIVE MODALITIES FOR CHRONIC LOW BACK PAIN: HILT VS. ULTRASOUND THERAPY OUTCOMES

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Background and Aims

Chronic low back pain (CLBP), persisting for more than 12 weeks, is a prevalent condition associated with pain, muscle weakness, restricted lumbar mobility, functional limitations, and psychosocial distress. Among the non-invasive physical modalities, high-intensity laser therapy (HILT) has recently emerged as a promising intervention due to its deep tissue penetration and analgesic properties. Ultrasound therapy remains a commonly utilized standard modality. The aim of this study was to examine the effectiveness of HILT in patients with chronic low back pain. The principal aim was to compare the effects of both physical modalities, therapy with high-intensity laser versus ultrasound therapy, and to point out the eventual differences in the analgesic effect and the range of lumbar spine motion.

Methods

This prospective, monocentric, controlled clinical study aimed to evaluate and compare the therapeutic efficacy of HILT versus ultrasound therapy in patients with CLBP. A total of 140 patients were randomized into two groups: the experimental group (HILT with therapeutic exercises) and the control group (ultrasound therapy with exercises). Outcome measures included the Numeric Pain Rating Scale, Oswestry Disability Index, Schober's test, and the Beck Depression Inventory, assessed at baseline, post-treatment, and at 3- and 6-month follow-ups.

Results

The results demonstrated a statistically significant reduction in pain intensity, improvement in lumbar spine mobility, and decreased disability in the HILT group compared to the control group across all time points. Moreover, the HILT group showed greater improvement in psychological well-being, as reflected in significantly lower BDI scores at follow-ups.

Conclusion

HILT combined with therapeutic exercise appears to be a safe, effective, and sustainable treatment option for CLBP. It provides superior clinical outcomes in terms of pain relief, functional recovery, and reduction of depressive symptoms when compared to conventional ultrasound therapy.

Keywords: low, back, pain, physical, therapy