

## Back Pain

[J Manipulative Physiol Ther.](#) 2008 Mar;31(3):191-8

### **Comparison of 3 physical therapy modalities for acute pain in lumbar disc herniation measured by clinical evaluation and magnetic resonance imaging.**

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**OBJECTIVE:** This study measures and compares the outcome of traction, ultrasound, and low-power laser (LPL) therapies by using magnetic resonance imaging and clinical parameters in patients presenting with acute leg pain and low back pain caused by lumbar disc herniation (LDH). **METHODS:** A total of 60 patients were enrolled in this study and randomly assigned into 1 of 3 groups equally according to the therapies applied, either with traction, ultrasound, or LPL. Treatment consisted of 15 sessions over a period of 3 weeks. Magnetic resonance imaging examinations were done before and immediately after the treatment. Physical examination of the lumbar spine, severity of pain, functional disability by Roland Disability Questionnaire, and Modified Oswestry Disability Questionnaire were assessed at baseline, immediately after, and at 1 and 3 months after treatment. **RESULTS:** There were significant reductions in pain and disability scores between baseline and follow-up periods, but there was not a significant difference between the 3 treatment groups at any of the 4 interview times. There were significant reductions of size of the herniated mass on magnetic resonance imaging after treatment, but no differences between groups. **CONCLUSIONS:** This study showed that traction, ultrasound, and LPL therapies were all effective in the treatment of this group of patients with acute LDH. These results suggest that conservative measures such as traction, laser, and ultrasound treatments might have an important role in the treatment of acute LDH.

[Aust J Physiother.](#) 2007;53(3):155-60

### **In chronic low back pain, low level laser therapy combined with exercise is more beneficial than exercise alone in the long term: a randomised trial.**

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**QUESTION:** Is low level laser therapy an effective adjuvant intervention for chronic low back pain? **DESIGN:** Randomised trial with concealed allocation, blinded assessors and intention-to-treat analysis. **PARTICIPANTS:** Sixty-one patients who had low back pain for at least 12 weeks. **INTERVENTION:** One group received laser therapy alone, one received laser therapy and exercise, and the third group received placebo laser therapy and exercise. Laser therapy was performed twice a week for 6 weeks. **OUTCOME MEASURES:** Outcomes were pain severity measured using a 10-cm visual analogue scale, lumbar range of motion measured by the Schober Test and maximum active flexion, extension and lateral flexion, and disability measured with the Oswestry Disability Index on admission to the study, after 6 weeks of intervention, and after another 6 weeks of no intervention. **RESULTS:** There was no greater effect of laser therapy compared with exercise for any outcome, at either 6 or 12 weeks. There was also no greater effect of laser therapy plus exercise compared with exercise for any outcome at 6 weeks. However, in the laser therapy plus exercise group pain had reduced by 1.8 cm (95% CI 0.1 to 3.3,  $p = 0.03$ ), lumbar range of movement increased by 0.9 cm (95% CI 0.2 to 1.8,  $p < 0.01$ ) on the Schober Test and by 15 deg (95% CI 5 to 25,  $p < 0.01$ ) of active flexion, and disability reduced by 9.4 points (95% CI 2.7 to 16.0,  $p = 0.03$ ) more than in the exercise group at 12 weeks. **CONCLUSION:** In chronic low back pain low level laser therapy combined with exercise is more beneficial than exercise alone in the long term.

Lasers Surg Med. 2003;32(3):233-8.

### **Efficacy of low power laser therapy and exercise on pain and functions in chronic low back pain.**

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**BACKGROUND AND OBJECTIVES:** The aim of this study was to determine whether low power laser therapy (Gallium-Arsenide) is useful or not for the therapy of chronic low back pain (LBP).

**STUDY DESIGN/MATERIALS AND METHODS:** This study included 75 patients (laser + exercise-25, laser alone-25, and exercise alone-25) with LBP. Visual analogue scale (VAS), Schober test, flexion and lateral flexion measures, Roland Disability Questionnaire (RDQ) and Modified Oswestry Disability Questionnaire (MODQ) were used in the clinical and functional evaluations pre and post therapeutically. A physician, who was not aware of the therapy undertaken, evaluated the patients.

**RESULTS:** Significant improvements were noted in all groups with respect to all outcome parameters, except lateral flexion ( $P < 0.05$ ).

CONCLUSIONS: Low power laser therapy seemed to be an effective method in reducing pain and functional disability in the therapy of chronic LBP. Copyright 2003 Wiley-Liss, Inc.

EMLA Laser Health J 2007;2:46-67  
European Medical Laser Association (EMLA)

### **The effect of low level laser therapy on the intensity of chronic low back pain**

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Low back pains cause the unpleasant memory and important effects such as: reduction of activity, disability, job changing, irregular usage of oral and injection drugs, allocatin a perceptible fund of the family income and finally changing the mental images. The study has been done to determine the effect of low level laser therapy on the intensity of low back pack pains.

This double blind clinical trial has been done in 2004 at medical laser center of pastor-no hospital in Tehran. 30 patients with chronic low back pain (because of lumbago) in the range of 30-60 years old were randomly divided to the Case and Control groups. Both of two groups went under treatment for 3 times in a week for about 4 weeks. Applied laser in Case group was continuous red light laser and pulse infrared with Mustang system with 890 nm wavelength and 4-6 J/cm dose (energy), and was irradiated on the mentioned vertebral bodies and spinous processes. The spastic points on paravertebral areas with 0.5-1 J/cm dose, was irradiated in scan form. The trigger points with 1-2 J/cm and also the nonspastic vertebral areas with 2-4 J/cm went under irradiation. The power of continuous red light was 10 mW and pulse infrared light (GaAlAs) was 80 W. Treatment in Control group was done with off laser. Efficacy of treatment were evaluated with pain questionnaire and thermography. Data was analyzed with K square statistical test.

The Case group patients has significant symptomatic relief without any side effect. Due to the pain questionnaire and thermography, in first and second week, there wasn't any significant difference between two groups ( $P>0.05$ ) and from the third week, in regard to the pain questionnaire and thermography a significant difference between two groups was found ( $p<0.05$ ).

Based on the findings, if low level laser is irradiated on the mentioned are a with appropriate dose, wavelength and exposure time, it will be a suitable and less aggressive method without and side effect on the low back pains.

[Lik Sprava](#). 2004 Dec;(8):57-63.

## **[Complex treatment of elderly patients with pain reflectory manifestations of lumbosacral osteochondrosis and peripheral circulation disorder]**

[Article in Ukrainian]

[Macheret IeL, Dzhuzha TV.](#)

Involitional age makes difficult the treatment of pain syndromes of vertebra origin. Concomitant diseases, age stress syndrome, hormone disbalance constrain the management of the disease. Combination of laser stimulation, reflexotherapy, psychodiagnostics and psychocorrection enhances the efficiency of the treatment of pain syndromes in patients with lumbo-sacral radiculitis and peripheral circulation disorder.

[Lik Sprava.](#) 2004 Dec;(8):53-7.

## **[Electrophysiological changes in a complex treatment of lumbosacral pain syndrome in patients of different age group]**

[Article in Ukrainian]

[Sereda VH.](#)

The influence of two methods of treatment (pharmacological and combination with infrared laser puncture and manual therapy) on clinical picture, electromyographic indices in 165 patients of different age group with lumbosacral radiculitis has been studied by the author. The use of these methods in treatment of such patients is substantiated by the obtained data.

## **Relief of low back pain with low-reactive laser acupuncture techniques.**

**Kurland H D. Aku.**

1999; 27(4):24.

12 patients who had refractory low back pain problems related to spinal arthritis and complicated by herniated discs were treated with GaAs laser acupuncture. Nogier frequencies 2.82 and 146 were mainly used. Used points not indicated in abstract. Effectiveness was observed with immediate improvement in pain and muscle spasms. Elimination of pain medication and improvement in functional activities was progressive in 10 of the 12 patients. Two patients with spinal stenosis failed to maintain improvement for more than a brief period. One had surgical relief of the stenosis and then responded with relief of post-operative symptoms.

## **GaAs is effective in chronic low back pain.**

Two abstracts from Lasers Surg Med. 1998; Suppl. 10, p. 6 1)Prof. Soriano in Rosario, Argentina, performed a double blind trial with elderly people suffering from chronic low back pain. After a thorough medical examination the patients were divided into two groups. One received GaAs 4J per point and one received sham irradiation. Ten consecutive sessions were done, one every day. Pain was evaluated through a VAS scale at the beginning and at the end of the treatment period. Treatment was effective in 71% in the laser group and 36% in the sham group. The pain disappeared completely in 45% in the laser group and 15% in the sham group. During the follow up 35% of the patients in the laser group who had relieved their pain more than 60% relapsed, compared to 70% in the control group. There were no side effects. 2)Effects of low energy laser therapy on herniated lumbar discs. Gruszka M et al. Gruszka (Buenos Aires) treated 15 patients with one or more protruded lumbar disc herniations with GaAs 904 nm, with a dose of 9J on each point, 20 to 25 points on the lumbar spine and on referred radicular pain points, 3 to 5 times a week during 4 months. Pain was relieved in 100%, gait and neurological signs improved in all patients, EMGs improved and CAT scans

## **LLLT USING A DIODE LASER IN SUCCESSFUL TREATMENT OF A HERNIATED LUMBAR/SACRAL DISC, WITH MAGNETIC RESONANCE IMAGING (MRI) ASSESSMENT: A CASE REPORT**

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A 40-year-old woman presented at the Abe Orthopedic Clinic with a 2-year history of lower back pain and pain in the left hip and leg diagnosed as a ruptured disc between the 5th lumbar/1st sacral vertebrae. The condition had failed to respond to conventional treatment methods including pelvic traction, nonsteroid anti-inflammatory drugs and aural block anesthetic injections. MRI scans were made of the affected disc, showing it protruding on the left side through the aural membrane. The gallium aluminum arsenide (GaAlAs) diode laser (830 nm, 60 mW) was used in outpatient therapy. and after 7 months, the patient's condition had dramatically improved. demonstrated by motility exercises. This improvement was confirmed by further MRI scans, which showed clearly the normal condition of the previously herniated L5/S1 disc.



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### **■ Treatment of Low Back Pain**

**Kazuyoshi Zenba, the president of  
Isehara Therapeutic Institute  
PHOTO: "Treatment of Low Back Pain"**

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Low back pain is said to be a characteristic illness to human beings who started to walk in the upright position. This is caused by the poor posture, the decline of muscular strength and the fatness. In case the conventional therapy such as medical treatments or physical

therapies are not effective to a low back pain patient, the low power laser therapy is recommended to take up.

The low power laser can penetrate deep into the human body stimulates receptors of autonomous nervous system relieving the tension of sympathetic nerve and improves the blood circulation of entire body and affected part and mitigates the pain very quickly. Compared with conventional treatments, the effect of low power laser irradiation will continue for several hours and can be accumulated.

Points of irradiation are tender points or indurated parts, 20~30sec/point, 3~5 minutes in total, if possible daily irradiation is recommended or 3~4 days a week.

Recently, the radicular sciatica, which is difficult to be effected by low power laser has been found to be cured by the repetition of very short time irradiation of high power laser. Please inform me through this association for more detailed information.

( An example of laser treatment)

The name of a disease: Protruded lumbar disc

The birth day of the patient :October 10,1953, Sex: male

Development: On the following day when the patient went to dig bamboo shoots he tried to bring up a heavy goods from the floor. At that moment, he felt a strong pain at his back and became cannot move at all. He could not sleep through the night and was carried to our hospital.

Laser treatment: Lying on his side we irradiated the low power laser to tender points of his low back 10~30 seconds at each point.

Result of treatment: Soon after the first treatment, he became possible to keep sitting position and turn over while sleeping. After 4 time treatments, his pain was almost eliminated and started to drive his car.

## **Low energy laser in the treatment of low back pain**

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**ICMART '97 International Medical Acupuncture Symposium, Nicosia, Cyprus, March 26-29 1997:**

Low back pain is felt in the low lumbar, lumbosacral, or sacroiliac region. Most low back pain is related to acute ligamentous (sprain) or muscular(strain) problems, which tend to be self limited, or to the more chronic osteoarthritis or ankylosing spondylitis of the lumbar area. The aim of the study was to explore the pain-alleviating effect of low level laser in low back pain .Thirty-five patients with low back pain have been treated with helium-neon laser type "Bistra" with wavelength 630 nm, average output 15 mW and an irradiance of 250 mW/cm<sup>2</sup>. The laser was locally applied to 11 sites on and around the low back. After scanning each point was treated for 30 sec, five times weekly for a total of ten treatments. The statistical analysis showed that the laser treated patients had a significant faster pain-alleviating effect compared with the 30 patients treated with medicaments only. Subjective response have been achieved after first three treatments. Irradia laser treatment may be a valuable therapy in low back pain and low energy laser can be employed as a pain relieving method.

Arch Phys Med Rehabil. 1999 Jun;80(6):647-52.

**Laser therapy: a randomized, controlled trial of the effects of low-intensity Nd:YAG laser irradiation on musculoskeletal back pain.**

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**OBJECTIVE:** To assess the effectiveness of low-intensity laser therapy in the treatment of musculoskeletal low back pain.

**DESIGN:** A double-masked, placebo-controlled, randomized clinical trial.

**SETTING:** A physical medicine and rehabilitation clinic.

**PARTICIPANTS:** Sixty-three ambulatory men and women between the ages of 18 and 70yrs with symptomatic nonradiating low back pain of more than 30 days' duration and normal neurologic examination results.

**INTERVENTION:** Subjects were bloc randomized into two groups with a computer-generated schedule. All underwent irradiation for 90 seconds at eight symmetric points along the lumbosacral spine three times a week for 4 weeks by a masked therapist. The sole difference between the groups was that the probes of a 1.06 microm neodymium yttrium-aluminum-garnet laser emitted 542mW/cm<sup>2</sup> for the treated subjects and were inactive for the control subjects.

**MAIN OUTCOME MEASURES:** Subject's perception of benefit, level of function as assessed by the Oswestry Disability Questionnaire, and lumbar mobility.

**RESULTS:** The treated group had a time-dependent improvement in two of the three outcome measures: perception of benefit and level of function. These results were most marked at the midpoint evaluation ( $p < .005$ ,  $p < .01$ ) and end of treatment ( $p < .017$ ,  $p < .001$ ) but tended to lessen at the 1-month follow-up ( $p < .10$ ,  $p < .004$ ). Lumbar mobility did not differ between the groups at any time. All tests were two-sample t tests with unequal variances.

**CONCLUSIONS:** Treatment with low-intensity 1.06 microm laser irradiation produced a moderate reduction in pain and improvement in function in patients with musculoskeletal low back pain. Benefits, however, were limited and decreased with time. Further research is warranted.