

Ph.D. DISSERTATION INFORMATION

The Ph.D. Dissertation title: Prevalence of Obstructive Sleep Apnea in patients with arterial hypertension and Effect of CPAP on Blood Pressure.

Specialty: Engineering Physics Code: 62520401

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SUMMARY OF NEW FINDINGS

The thesis introduced a new therapeutic method using low-level laser therapy in the treatment of low back pain due to disc herniation, knee pain due to knee spurs, and bone regeneration. Experimental studies have used low-level laser phototherapy combined with intravenous low-level laser therapy in the treatment of 424 patients with low back pain due to disc herniation and 25 patients with arthralgia knee due to bone spurs. For patients with low back pain due to disc herniation, the mean duration of treatment is (16.62 ± 0.74) days with the recovery ratio of 98.67%. After the end of treatment, the reduction of the herniated disc on the MRI image is markedly improved. For patients with knee pain due to knee spurs, the average duration of treatment for one patient is (19.60 ± 11.33) days with the recovery ratio of 96%. After the end of the treatment, the joint space was widened and no bone spurs were observed at the joint edges. For bone regeneration with low-level laser phototherapy, the influence of the two-wavelength effect has increased blood microcirculation at the fracture site, promoting the bone formation of patients in group 1 with the average treatment duration (28.64 ± 14.19) days – faster than patients in group 2 (casting only and home monitoring) – 60 days. During and after the treatment period of mentioned studies, no complications as well as harmful side effects for patients were observed.

Results of the thesis persuasively demonstrate a new method for the treatment to preserve the function of the lumbar spine and knee joints, to restore and preserve the function of limbs after fracture, as well as to optimize a new clinical treatment modality being easy to perform and having no side effects.