



March 3rd to 6th Euganean Thermae and Padua, Italy

PADUA DAYS ON MUSCLE AND MOBILITY MEDICINE 2026

ABSTRACT N. 094

EUROPEAN MEDICAL THERMALISM AND THE WORLD FEDERATION OF HYDROTHERAPY AND CLIMATOTHERAPY (FEMTEC)

THE EFFICACY OF MAGNETIC STIMULATION IN PATIENTS WITH COXARTHROSIS

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Osteoarthritis is a degenerative joint disease characterized by the progressive breakdown of articular cartilage, deformation of the joint surfaces, and consequent loss of joint function. Recent studies indicate that it affects 15-20% of the global population, with an incidence rate of up to 8.2 per 100,000 people. Numerous conservative treatment modalities exist for osteoarthritis, including various physiotherapeutic methods. One of the most promising techniques is the application of medium-intensity magnetic stimulation within a range of 100 to 700 mT. Our aim was to study the effect of a comprehensive rehabilitation program utilizing medium-intensity magnetic stimulation on muscle strength levels in patients with coxarthrosis. A pilot study included 40 patients with coxarthrosis (CA). The mean age of the participants was 56.12 ± 4.9 years, and the mean disease duration was 8.67 ± 1.14 years. The patients were divided into two groups. The comparison group (Group 1, $n=20$) received standard therapy, which consisted of group therapeutic exercises, laser therapy applied to the hip joint area, and electrical stimulation of the thigh muscles. The main study group (Group 2, $n=20$) received the standard treatment supplemented with magnetic stimulation procedures using the "Exotherapy" apparatus. Muscle strength parameters were evaluated for all

patients. The average force (in Newtons, N) of the hip flexor and extensor muscles, as well as total work and speed characteristics, were measured using the "CON-TREX" robotic biomechanical diagnostic system with biofeedback, manufactured by Physiomed, Germany. Following a course of 10 medical interventions, patients in the main group demonstrated more significant positive dynamics on the VAS scale and an increase in the range of motion of the hip joint. According to isokinetic dynamometry data, patients in the main group showed a statistically significant positive trend in the values of maximum lower limb extension, maximum extension strength, average extension strength, average strength over 0.20 seconds, and peak torque ($p<0.05$). In the comparison group, only an improvement in the indicators of average extension strength and average strength over 0.20 seconds was observed, indicating the lower effectiveness of the standard rehabilitation course. No reliable positive dynamics in other strength indicators of the lower limb muscles were noted. Thus, supplementing the standard rehabilitation program for patients with CA with the magnetic stimulation technique makes it possible to reliably improve the condition of the lower limb muscles, which is of great importance in this pathology.

Keywords: *coxarthrosis, magnetic stimulation, medical rehabilitation, isokinetic dynamometry*



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Figure 1. “Exotherapy” stimulation device