



# Brazilian Journal of Physical Therapy

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## ORIGINAL RESEARCH

### Effect of pulsed electromagnetic field on nonspecific low back pain patients: a randomized controlled trial

Ahmed Mohamed Elshawi<sup>a</sup>, Hamada Ahmed Hamada<sup>b,\*</sup>, Dalia Mosaad<sup>c</sup>, Ibrahim Mohammed A. Ragab<sup>d</sup>, Ghada Mohamed Koura<sup>a,e</sup>, Saud Mashi Alrawaili<sup>f</sup>

<sup>a</sup> Department of Physical Therapy for Musculoskeletal Disorders and its Surgery, Faculty of Physical Therapy, Cairo University, Cairo, Egypt

<sup>b</sup> Department of Biomechanics, Faculty of Physical Therapy, Cairo University, Cairo, Egypt

<sup>c</sup> Department of Basic Science, Faculty of Physical Therapy, Cairo University, Cairo, Egypt

<sup>d</sup> Department of Physical Therapy for Musculoskeletal Disorders and its Surgery, Faculty of Physical Therapy, Beni-Suef University, Beni-Suef, Egypt

<sup>e</sup> Department of Medical Rehabilitation, Faculty of Applied Sciences, King Khalid University, Abha, Saudi Arabia

<sup>f</sup> Department of Physical Therapy and Health Rehabilitation, College of Applied Medical Sciences, Prince Sattam, Bin Abdulaziz University, Al-Kharj, Saudi Arabia

Received 13 January 2018; received in revised form 31 July 2018; accepted 6 August 2018

#### KEYWORDS

Non-specific low back pain;  
Pulsed electromagnetic field;  
Conventional physical therapy program

#### Abstract

**Background:** Further research on pulsed electromagnetic field (PEMF) effects on the different conditions of low back pain was warranted due to lack of studies in this area.

**Objectives:** To investigate the effects of pulsed electromagnetic field therapy with 50 Hz frequency, with low intensity of 20 Gauss compared to conventional non-invasive treatment modalities in patients with chronic non-specific low back pain.

**Methods: Design** – A prospective, randomized, patient-blinded, controlled trial. **Setting** – The study was conducted at Outpatient Physiotherapy Clinic in Cairo, Egypt. The study was conducted between May 2015 and September 2016. **Participants** – Fifty participants with non-specific low back pain enrolled into experimental and control groups. **Interventions** – The experimental group received the Conventional physical therapy Protocol as well as magnetic field, while the control group received the same Conventional physical therapy and sham electromagnetic field. Both groups received 12 sessions over 4 weeks' period. **Outcome measures** – Primary outcome measures was pain intensity while the secondary outcome measures were disability and lumbar range of motion – ROM. There were no adverse events occurred during the study.

**Results:** Fifty participants with non-specific low back pain (control group  $n = 25$ ; experimental group  $n = 25$ ) were randomized. There were significant between-group differences in pain scores (mean difference – MD 1.52; 95%CI –0.34 to 3.35), function disability (MD 8.14; 95%CI 6.5 to

\* Corresponding author at: Lecturer of Biomechanics, Faculty of Physical Therapy, Cairo University, Cairo, Egypt.  
E-mail: [Hamada.Ahmed@pt.cu.edu.eg](mailto:Hamada.Ahmed@pt.cu.edu.eg) (H.A. Hamada).

<https://doi.org/10.1016/j.bjpt.2018.08.004>

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Please cite this article in press as: Elshawi AM, et al. Effect of pulsed electromagnetic field on nonspecific low back pain patients: a randomized controlled trial. *Braz J Phys Ther.* 2018, <https://doi.org/10.1016/j.bjpt.2018.08.004>



9.96), Range of Motion (ROM) of lumbar flexion (MD  $-1.27$ ; 95%CI  $-1.09$  to  $-1.45$ ), ROM of lumbar extension (MD  $-1.1$ ; 95%CI  $-0.97$  to  $-1.23$ ), ROM of lumbar right side bending (MD  $8.2$ ; 95%CI  $6.56$  to  $9.84$ ) and ROM of lumbar left side bending (MD  $10.4$ ; 95%CI  $8.81$  to  $11.99$ ) in favour of the experimental group.

*Conclusion:* Adding pulsed electromagnetic field to Conventional physical therapy Protocol yields superior clinical improvement in pain, functional disability, and lumbar ROM in patients with non-specific low back pain than Conventional physical therapy alone.

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