ON TREATMENT WITH LOW-INTENSITY PULSED ELECTROMAGNETIC FIELDS (PEMF)

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(Translated from Hebrew)

Millions of men and women around the world are desperately searching for solutions to their suffering due to pain and the resulting decline in functional ability. The individual suffering is immense, and the economic costs to both individuals and the healthcare system are enormous.

Degenerative changes in joints, musculoskeletal inflammation, and trauma are the primary causes of pain and functional limitation.

Current standard treatments include physical methods — manual therapy and physiotherapy combined with various technologies (ultrasound, laser, etc.) — as well as oral and intra-articular medications, and surgical interventions (joint replacement, etc.), with outcomes that do not always satisfy patients. This must be compounded by the side effects of pharmacological treatment, especially when administered over long periods.

A Growing Evidence Base

The use of pulsed electromagnetic field treatment (PEMF) has gained significant momentum in recent decades and is supported by a rich body of medical literature. It is most commonly offered as a complementary therapy alongside other treatments such as physiotherapy.

As early as **1982**, an article published in *JAMA* demonstrated the efficacy of PEMF in healing non-union fractures. In **1984**, an article in the prestigious journal *The Lancet* demonstrated the effectiveness of PEMF in patients suffering from shoulder pain due to rotator cuff damage. Publications on this topic multiplied significantly thereafter.

In **2016**, an article published in *Rheumatology* (Impact Factor 7.580) showed the effectiveness of PEMF in reducing pain in patients with knee osteoarthritis. A systematic review published in **2020** in the *Journal of Pain Research* (IF 3.133) indicated the effectiveness of PEMF in reducing pain caused by musculoskeletal conditions, including fibromyalgia.

In **2020**, another review published in *Biomedicine & Pharmacotherapy* (IF 6.529) demonstrated PEMF efficacy in patients suffering from back pain (discopathies) and tendon inflammation (tendinitis). An article published in **2019** in *Pain & Therapy* (IF 5.725) showed the effectiveness of PEMF in reducing lower back pain.

Finally, in **2020**, a comprehensive review in *Physical Therapy* (IF 3.021) indicated that PEMF treatment — whether as a standalone therapy or in combination with physiotherapy — has a positive effect on pain, stiffness, and physical function in patients suffering from degenerative changes in the knees, hands, and cervical spine.

Mechanism of Action

The mechanism of action of PEMF, while not yet fully understood, is based on stimulating the clearance of inflammatory substances and promoting the growth of cartilage cells.

The treatment has no side effects. PEMF use has received FDA approval for the following specific medical conditions:

- **1979:** FDA approved PEMF therapy for stimulating bone growth.
- **1987:** FDA approved PEMF for adjunct therapy for treating post-operative edema and pain.
- **2004:** PEMF approved as an adjunct to cervical fusion surgery.

Conclusion

There is undoubtedly a place to integrate PEMF technology in rehabilitative treatments for populations suffering from pain and functional impairment in any of the medical conditions mentioned in this review.

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