

Original Research

Home use of transcutaneous electrical nerve stimulation (TENS) for knee pain management in individuals with knee osteoarthritis (OA): A randomized controlled trial.

Adriana Menezes Degani, PT PhD MS^{1,2}, Elizabeth Joy Huff Willis, SDPT³, Annabelle Rose Burke, SDPT³, Jessica Wilson, MSHS PA-C⁴, Patrícia Driusso, PT PhD MS⁵, Alessandro Danna-dos-Santos, PT PhD MS^{1,3}, Daryl Lawson, PT MPT DSc^{1,3}

1 Laboratory for Advancements in Rehabilitation Sciences (LARS), Department of Physical Therapy, Western Michigan University, Kalamazoo, MI, USA

2 Resiliency Center for Families and Children, College of Health and Human Services, Western Michigan University, Kalamazoo, MI, USA

3 Department of Physical Therapy, Western Michigan University, Kalamazoo, MI, USA

4 Physician Assistant Department, Western Michigan University, Kalamazoo, MI, USA

5 Department of Physical Therapy, Federal University of São Carlos, São Carlos, SP, Brazil

Purpose: The use of transcutaneous electrical nerve stimulation (TENS) to reduce knee pain due to knee osteoarthritis (OA) remains unclear. This study investigated the effects of a home-based protocol using TENS to manage knee pain in individuals with OA.

Methods: Thirty-six individuals were randomly assigned to either use an active or inactive (sham) TENS (Omron Focus™ TENS Therapy for Knee), which was placed inferior to the symptomatic patella for 30 minutes under non-resting conditions, once a day, for four weeks. Participants used the visual analogue scale (VAS) to self-record their knee pain level before and immediately after using the TENS daily.

Results: Knee pain decrease was significant after four weeks of TENS treatment. Pain decrease was also significant and clinically meaningful immediately after TENS on the first day of treatment for 55.6% of participants, on the last day of treatment for 72.2% of participants), and throughout the intervention period in 52.6% of 504 active TENS applications. No significant difference in pain level was observed for the sham group compared to before and after each session and whole treatment. There was an effect of treatment (TENS vs SHAM) on the changes in knee pain.

Conclusions: The results provided evidence for the use of a TENS device and the home-based protocol proposed by this study. Therefore, knee pain due to knee OA can be managed at home using a TENS device under clinical guidance at a time convenient for the patient and without interrupting their daily life activities.

Keywords: osteoarthritis, knee pain, TENS (transcutaneous electrical nerve stimulation), pain management, biophysical agents

Corresponding Author:

Dr Adriana M Degani

Laboratory for Advancements in
Rehabilitation Sciences (LARS)

Department of Physical Therapy,
Western Michigan University

1903 W Michigan Ave

Kalamazoo, MI 49008

e-mail: adriana.degani@wmich.edu

Copyright JCEWM 2024