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Purpose/Hypothesis: Ischemic pain limits functioning and participation. The intervention of choice is walking progressive distances with near-maximal pain, and the reduction of pain should enhance functioning and participation with interventions. Transcutaneous electrical nerve stimulation (TENS) is an intervention to reduce the perception of pain. The purpose of this research was to evaluate published evidence to determine the effect of TENS on ischemic pain.

Number of Subjects: Systematic review of peer-reviewed literature.

Materials/Methods: The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) process was followed using selected search terms (ischemic pain and transcutaneous electrical nerve stimulation, ischemic pain and electrotherapy, peripheral vascular disease and transcutaneous electrical nerve stimulation, and peripheral vascular disease and electrotherapy) and appropriate databases (PubMed, Cochrane Collection Plus and CINAHL). 735 articles were identified and screened with inclusion and exclusion criteria resulting in 10 appropriate articles. Data was extracted from the articles, validated, organized in a data table and evaluated for themes and patterns. Critical appraisal of the quality of the research design for each article was performed by 2 members of the project who were blinded to the results. Disagreement about critical appraisal scores was resolved by consensus among the reviewers.

Results: Published reports described the application of TENS for ischemic pain due to peripheral vascular disease in the legs, angina, and Raynaud’s phenomena. TENS was found to
be effective at reducing the perception of pain among subjects with ischemia due to peripheral vascular disease, and critical appraisal revealed moderate to low strength of the evidence. TENS applied for angina appeared to reduce cardiac workload due to a vasodilation response, the effect on pain was not clearly reported, and those conclusions were based on moderate to low strength evidence. TENS applied for pain from Raynaud’s phenomenon was not effective at reducing perceived pain based on low strength evidence.

**Conclusions :** TENS may be effective at reducing pain among people with ischemic pain in the legs from peripheral vascular disease, however that conclusion is based on evidence of moderate to low strength. Additionally, intervention with TENS improved ambulation distance among subjects. For people with angina and Raynaud’s phenomenon the benefits from TENS were not evident - there is limited evidence that TENS may contribute to vasodilation, and no evidence that TENS reduces pain or improves functioning among subjects with angina or Raynaud’s phenomenon.

**Clinical Relevance :** Exercise interventions for patients with ischemic pain may benefit from the addition of TENS, and the use of TENS may improve functioning by increasing walking capacity. Weakness of the evidence indicates further research is needed to inform best clinical practices.