Effects of low-intensity pulsed ultrasound on recovery of physical impairments, functional performance and quality of life after total knee arthroplasty Protocol for a quasi-experimental study

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Abstract

Introduction: The presence of significant pain and swelling during the acute stage following total knee arthroplasty (TKA) may limit the patients' ability to cooperate in intensive physiotherapy interventions. Low-intensity pulsed ultrasound is one of the modalities that can be used for acute pain and swelling management. However, only one study investigated the effect of this modality in patients with TKA. There is limited documentation of the effects of combining low-intensity pulsed ultrasound in TKA rehabilitation in the recovery of physical impairments and how these influence the recovery of function after TKA. Therefore, this study is proposed with the aim to evaluate the effects of low-intensity pulsed ultrasound as an adjunct to conventional physiotherapy on the recovery of physical impairments, functional performance and quality of life after TKA surgery.

Methods: This is an assessor-blinded quasi-experimental study comparing two approaches of physiotherapy, namely pulsed ultrasound-added physiotherapy and conventional physiotherapy. Total number of participants with TKA required for this study will be calculated based on the result of a pilot study. Participants will be alternately allocated into either pulsed ultrasound-added physiotherapy group (low-intensity pulsed ultrasound and conventional physiotherapy) or control group (conventional physiotherapy). Pulsed ultrasound-added physiotherapy group will receive low-intensity pulsed ultrasound starting at post-operative day 2 (4-5 times for the first-week after surgery and 2-3 times a week for a further 2 weeks). Both groups will receive conventional physiotherapy 4 to 5 times for the first-week after surgery and 2 to 3 times a week for a further 11 weeks. This procedure and process will be tested and established in a pilot study. Primary outcomes of interest are pain level, swelling, active range of knee motion, and quadriceps strength. The secondary outcomes are functional performance and quality of life.

Discussion: This study will fill the gaps in knowledge relating the benefits of including low-intensity pulsed ultrasound into conventional physiotherapy for patients with TKA.

Keywords

Author Keywords: low-intensity pulsed ultrasound; physiotherapy; total knee arthroplasty
KeyWords Plus: WALK TEST; PAIN; RELIABILITY; OSTEOARTHRITIS; REPLACEMENT; CRYOTHERAPY; STRENGTH; VALIDITY; THERAPY; TRIAL

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