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Research article

The Effectiveness of Electromyographic Biofeedback as Part of a Meniscal Repair Rehabilitation Programme

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ABSTRACT

The objective of the study was to assess the effectiveness of using electromyographic biofeedback in the early stages of rehabilitation after meniscal repair. In this randomised, controlled, parallel group study, the evolution of patients with meniscal lesions treated by meniscal suture who received (study group, n = 33) or did not receive (control group, n = 31) electromyographic biofeedback as part of their early rehabilitation programme has been compared. A total of 64 patients with previous meniscal repair participated in the study. The patients received a baseline assessment (after 1 postoperative week) and a follow-up (after 8 postoperative weeks) consisting of surface electromyography, dynamometry of thigh muscles and the assessment of the Knee injury and Osteoarthritis Outcome Score (KOOS). The electrical potential in contraction and the speed for contraction and relaxation for all monitored muscles increased significantly in the study group ($p < 0.05$). The difference between groups in the assessed score was significant for sport and recreational function ($p < 0.05$). The strength of the thigh muscles was not significantly influenced by the introduction of electromyographic biofeedback (EMG- BFB) in the rehabilitation programme. Electromyographic biofeedback helped patients to control their muscles after meniscal repair to accomplish physical activities that require better neuromuscular coordination and control. For these reasons, one may consider electromyographic biofeedback as an important component of rehabilitation after meniscal repair.

Key words: Knee, injury, physical therapy

Key Points

- Exercises during the early phases of rehabilitation after meniscal repair are difficult to perform because of pain, oedema, and possibly a disruption in normal joint receptor activity.
- Electromyographic biofeedback is a painless, non-invasive method that can be used in muscle recovery after meniscal repair and enhances the rehabilitation process, especially related to muscular function.
- The rehabilitation programme that includes electromyographic biofeedback after meniscal repair increased the speed of muscle response to acoustic stimulation in both the initiation of contraction (onset time) and relaxation (offset time) and, also, the capacity of performing some specific physical activities after 8 weeks of rehabilitation (according to KOOS values).
- Electromyographic biofeedback is not responsible for the decrease in pain, swelling or other postoperative symptoms but it is important in order to help the patient to conduct the activities which require neuromuscular coordination and muscle control.

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