A.Bronikowski1, et al, 2010_ETS Abstract

Bioelectric Activity Of Quadriceps Femoris Rehabilitation

Objective
The aim of the study was to evaluate various forms of physical activity used in rehabilitation following knee surgery with regard to the electrical activity of the quadriceps femoris muscle.

Results
The study revealed that the exercises under investigation were useful in postoperative rehabilitation following knee surgery. Isometric exercises performed with the knee in extension and possibly with resistance applied to the adductor and abductor muscles of the hip are the most effective in the early postoperative phase because they generate only minor loads.

Participants and Researchers
The study group was composed of 28 healthy adults (13 men and 15 women) aged 21 to 29 years.

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Methods
The participants were asked to perform a series of 17 successive exercises engaging the quadriceps femoris in different ways.

During the exercises, **surface electromyography** (**sEMG**) traces were obtained for the vastus lateralis (VL) and vastus medialis muscle (VM) with a **NeuroTrac ETS** device (Verity Medical). Before attaching the electrodes, the skin was degreased with alcohol and calloused epidermis was removed by intensely rubbing with a gauze pad. The electrodes were placed according to the SENIAM standards.

Signals were processed and recorded using **NeuroTrac ETS MyoPlus** software. Activity of the quadriceps femoris muscle was highest during isometric exercises performed in extension. Similar activity levels were noted during isometric exercises against resistance applied to the adductor and abductor muscles. Equally high values were obtained during open kinetic chain exercises.

The full abstract can be found at https://pubmed.ncbi.nlm.nih.gov/21273649/