



Effects of electrical muscle stimulation combined with voluntary contractions after knee ligament surgery

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OBJECTIVE:

The aim of the present study is to compare the effect of electrical muscle stimulation combined with voluntary muscle contractions with a program only with voluntary muscle contractions during immobilization in casts after anterior cruciate ligament surgery.

STUDY DESIGN:

Twenty-three patients, 7 women and 16 men with a mean age of 28 yr, were randomized into two groups: an experimental group (13 patients) and a control group (10 patients). Post-operatively, the patients were immobilized for 3 wk in a full leg cast with the knee flexed at an angle of 20 degrees to 30 degrees and then in a knee cast for another 3 wk. All patients had a standard program with quadriceps muscle contractions. In addition, the experimental group received electrical stimulation of the quadriceps muscle 4 x 10 min, 3 times.wk⁻¹, at a frequency of 30 Hz. During each stimulation, the patients were requested to contract the quadriceps muscle voluntarily as well.

RESULTS:

When pre-operative measurements were compared with those at the end of the immobilization period (6 wk after the operation), a significantly larger reduction in the knee extension isometric muscle strength was found for the control group than for the experimental group. In comparisons of the data of the male subjects only, this difference was still seen to be significant. The cross-sectional area of the quadriceps muscle measured with computed tomography was significantly less reduced during the immobilization period in the experimental group than in the control group. (ABSTRACT TRUNCATED AT 250 WORDS)

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