



Electrical stimulation versus voluntary exercise in strengthening thigh musculature after anterior cruciate ligament surgery

Delitto A, Rose SJ, McKowen JM, Lehman RC, Thomas JA, Shively RA.
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Program in Physical Therapy, Washington University Medical School, St. Louis, MO.

OBJECTIVE:

Twenty patients who had undergone anterior cruciate ligament reconstructive surgery were placed randomly and independently in an Electrical Stimulation Group (n = 10) or Voluntary Exercise Group (n = 10) to compare the effectiveness of these two muscle-strengthening protocols.

STUDY DESIGN:

Patients in both groups used simultaneous contraction of quadriceps femoris and hamstring muscles during a training regimen that consisted of either voluntary exercise or electrical stimulation trials five days a week for a three-week period within the first six postoperative weeks. After patients completed the training regimen, bilateral maximal isometric measurements of gravity-corrected knee extension and flexion torque were obtained for both groups and percentages were calculated.

RESULTS:

Results showed that patients in the Electrical Stimulation Group finished the three-week training regimen with higher percentages of both extension and flexion torque when compared with patients in the Voluntary Exercise Group (extension: $t = 4.35$, p less than .05; flexion; $t = 6.64$, p less than .05).

CONCLUSION:

These results indicate that patients in an electrical stimulation regimen can achieve higher individual thigh musculature strength gains than patients in a voluntary exercise regimen when simultaneous contraction of thigh muscles is prescribed during an early phase of postoperative rehabilitation.

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