Knee extensor muscles' torque during isometric exercises and russian electrical stimulation following a knee ligament injury

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Abstract

Voluntary isometric exercise (VOL) and neuromuscular electrical stimulation (NMES) are both methods of static muscle strength and girth training. They are applied in strength training programs to healthy muscle as well as for muscle function recovery under certain orthopaedic conditions. Both methods are used to retard muscle atrophy and strength loss resulting from post injury knee immobilization (Eriksson & Häggmark, 1979; Ingemann-Hansen & Halkjær-Kristensen, 1985; Johnson, 1988; Wigerstad-Lossing, Tromby, Jonsson, Morelli, Peterson, & Rentröm, 1988). NMES can elicit twitch or tetanic muscle contractions, determined by current pulse frequency. During tetanic stimulation, the main features of training regimes are: 1) on/off cycle (or duty cycle), made up of the time of contraction plus rest time; 2) the number of contractions; 3) the intensity of contractions (determined by the current amplitude and/or the subject's tolerance).

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