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Effect of Russian current on quadriceps muscle strength in subjects with primary osteoarthritis of knee: A randomized control trial

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Relevance: OA knee is one of the most common conditions leading functional disabilities seen worldwide. Clinically, it is characterized by pain, tenderness, functional limitation, crepitus, occasional effusion, swelling of the joint, weakness and atrophy of the muscles. There are different methods to manage osteoarthritis, conservatively, and/or surgically. Physiotherapy treatment, as a part of conservative management, involves reduction of pain, improvement of muscle strength and improvement of functional ability by various approaches like exercise therapy, electrotherapy and manual therapy techniques. Quadriceps muscle weakness is one of the main features seen in OA knee. Russian current stimulation has been successfully used to increase muscle strength in healthy athletes but its effect on quadriceps muscle strength in OA knee has not been studied. Hence the present study was undertaken to know the effect of Russian current stimulation on quadriceps muscle strength in patients with primary OA knee.

Purpose: The purpose of study was to determine the effects of Russian Current stimulation on quadriceps muscle strength and function of the knee in subjects with primary osteoarthritis (OA) of knee.

Participants: 30 subjects (mean age 50.25 ± 6.35 years) diagnosed with primary OA knee were recruited from Out-Patient Department of Physiotherapy of KLES Dr. Prabhakar Kore Hospital and Medical Research Centre, Belgaum.

Method: Subjects were randomly allocated into 2 groups namely Group A (n=15) who received Short Wave Diathermy (SWD) and exercises and Group B (n=15) who received SWD, exercises and Russian current stimulation for 10 days. The outcome measures were Visual Analog Scale (VAS) for pain, muscle strength by using Hand-held dynamometer, and WOMAC osteoarthritis index for functional disability.

Analysis: Within group and between groups, analysis after intervention was done to assess changes using paired t-test and unpaired t-tests.

Result: The VAS scores for group A reduced from 6.8 ± 1.49 (baseline) to 1.4 ± 0.91 (post-intervention) and for group B from 6.3 ± 1.29 (baseline) to 1 ± 1.14 (post-intervention). The WOMAC score of group A decreased from 59.7 ± 11.56 (baseline) to 24.1 ± 6.01 (post-intervention) and of group B decreased from 50.4 ± 22.30 (baseline) to 12.5 ± 7.54 (post-intervention). The muscle strength of group A increased from 7.9 ± 0.94 (baseline) to 8.6 ± 0.95 (post-intervention) and of group B it increased from 8.3 ± 0.67 (baseline) to 10.6 ± 0.89 (post-intervention). Group B showed better improvement in muscle strength and function than group A. The intra group and between group comparison was statistically significant with $p < 0.001$ for both the groups.

Conclusion: Russian current stimulation is effective in increasing quadriceps muscle strength and secondarily improving the functional ability in subjects with primary OA knee.

Implications: Russian current stimulation can be added in the management protocol of OA knee along with conventional therapy for reducing pain, increasing quadriceps muscle strength and improving function of the knee.

Biography

Anand Heggannavar is a reputed Associate Professor and faculty member at KLE University, India.

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