

# Kinesio Tape vs Neuromuscular Stimulation for Conservative Treatment of Hemiplegic Shoulder: A Randomized Controlled Trial

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## Abstract:

This study aimed to compare the effects of kinesiotaping and neuromuscular electric stimulation (NMES) on pain, and motor activity and function in patients with upper extremity hemiplegia. A total of 67 outpatients who acquired ischemic stroke with the upper extremity involvement were enrolled in the study. The patients were randomly assigned to an NMES group a kinesiotape implementation group and a control group in addition to the physiotherapy. Treatment duration was 4 weeks. Motor Activity Log- 28, Fugl-Meyer Sensorimotor Assessment Scale (FM), and visual analog scale (VAS) were used for the assessment. A significant improvement in FM (taping group,  $p \leq 0.001$ , NMES,  $p \leq 0.001$ , control group,  $p \leq 0.001$ ) and motor activity scores was found in all groups. Although this effect was superior in function for the taping group ( $p = 0.027$ ). A significant decrease was found in the pain intensity both at rest (taping group:  $P \leq 0.007$ ; NMES:  $P \leq 0.014$ ) and with activity for the taping and NMES groups (taping:  $p \leq 0.010$ ; NMES:  $p \leq 0.016$ ). Whereas no significant decrease was found in the control group either at the rest or with activity ( $p = 0.054$  for both). No reverse effect was reported. Data suggested that all the treatment options were effective on motor activity and pain but the kinesiotaping seemed to have a superior effect on function activity ( $p = 0.054$  for both). No reverse effect was reported. Data suggested that all the treatment options were effective on motor activity and pain but the kinesiotaping seemed to have a superior effect on function.

**Keywords:** NMES, FM and Sensorimotor

## Methods:

Thirty one first-time stroke survivors 58.06% females were recruited and randomly assigned to only one group Control ( $n = 10$ ), KT ( $n = 11$ ), or NMES ( $n = 10$ ). Ten of all the participants were lost during follow-up because of death or a second stroke. The control group underwent conventional treatment with careful shoulder handling and daily mobilizations. This approach was combined with KT or NMES over deltoid muscles in the KT and NMES groups respectively.

Measurements were taken at base line, and at weeks 1, 2, 3, 4, 12, and 24 post-stroke. Data collected included self-perceived shoulder pain disability Barthel Index and Berg scale, and upper limb function Action Research Arm test.

## Results:

In all groups shoulder pain did not appear during the first month ( $p < 0.001$ ) but it has been increased afterwards. In between the groups analysis all groups similarly improved disability and function, and no significant differences were observed for any measure ( $p > 0.05$ ).

## Conclusion:

The combination of KT or NMES with conventional treatment is no superior to the conventional treatment alone to prevent the hemiplegic shoulder pain.