

The Effectiveness of Neuro Muscular Electrical Stimulation on Hand Function in Sub Acute Stroke Survivors: A Systematic Review of Randomized Controlled Trials

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Abstract

Background: Role of Neuro Muscular Electrical Stimulation on hand function in patients with stroke has not being well established. **Objective:** To estimate the effectiveness of Neuromuscular Electrical Stimulation in improving hand function of patients with sub acute stroke. **Data Source:** Systemic search was carried out in Medline, Cochrane and Pubmed Databases from August 2018 to June 2019. **Study Selection:** Randomized controlled trials. Eligibility criteria: subjects >18 yrs suffering from haemorrhagic /ischaemic stroke within 6 months, NMES as intervention applied on affected hand using surface electrodes, outcome measures related to skeletal, muscular and functional characteristics of arm and statistical analysis of results. **Data Extraction:** Participant's characteristics, NMES parameters, and other relevant data was extracted from the articles and then tabulated. Cochrane collaboration's tool for assessing risk of bias was applied to all articles and methodological quality was assessed by PEDro scale. **Data Synthesis:** Eighty-one articles were selected through database and citation by title content, 48 articles were screened after reading the abstract. 31 full text articles were found and 15 comply with inclusion criteria. The methodological quality of the articles was assessed through PEDro scale which was between 5/10 and 8/10. Beneficial impact of NMES on muscle tone, motor function, manual dexterity and upper limb ADL's was established in level of evidence synthesis. **Limitation:** It was difficult to group studies and quantitatively evaluate outcomes due to the variance in protocols, participant features, outcome measures and NMES parameters. **Conclusion:** Randomized trials have shown beneficial impacts of electrical stimulation on the wrist and hand despite methodological constraints, implying that NMES is efficient in encouraging the impacted hand in stroke.

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Introduction

Stroke is a major health care problem and an important cause of morbidity and mortality (Gourie 2008). Among neurological disorders in adults, it is a major cause of disability which can result in highly complex clinical conditions (Wilson et al., 2016). It is third major cause of death worldwide and nine out of ten strokes occur in people over the age of 55. In India, the prevalence of stroke is