AL HADDAD, Mustafa et al, 2021 Abstract

Comparing The Efficiency Of Exercise, EMS, EMG-BF And RR In Hemiplegic Patients

Objective
This study compared the efficiency of exercise**, electrical muscle stimulation** (**EMS**), **electromyographic biofeedback** (**EMG-BF)** and robotic rehabilitation (RR) in tibialis anterior muscle activation of hemiplegic patients to investigate the functional changes provided by these applications.

Results
The researchers found that there were positive effects of three different treatment methods on ROM, NMMT force measurements and EMG-BF, walking time, and spasticity. Also, the three treatment modalities contributed to recovery level of hemiplegic patients in different levels.

Participants and Researchers
Thirty hemiplegic patients aged between 40 and 86 years were evaluated. The patients were divided into three groups by a random method. The first group received 30 sessions of classic physical therapy and rehabilitation (CPTR), the second group received 30 sessions of CPTR and **electrical muscle stimulation** (**EMS**)with 15 sessions of robotic rehabilitation and the third group received 30 sessions of CPTR and **EMS** with 15 sessions of **EMG-BF**. The effects of three different treatment programs on patients' functions were investigated and the results were compared with each other.

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Methods
The exercises consisted of gait training, stretching exercises to agonist muscles, strengthening exercises to antagonist muscles and balance-coordination exercises. **Electrical muscle stimulation** was implemented to the third group 15 times with the **NeuroTrac MYOPlus** device (Verity Medical) and **EMG-BF** also with the **NeuroTrac MYOPlus**, the device having two channel EMG as well as four channels of **neuromuscular electrical stimulation** (**NMES**) and two channel EMG triggered stimulation on four channels.

Combined NMES, therapeutic exercises, stretching, strength training, robotic rehabilitation, and EMG biofeedback (EMGBF) used for the treatment of spasticity or stroke rehabilitation are to provide and help sensorimotor recovery.

The full abstract can be found at
https://dergipark.org.tr/tr/download/article-file/1307824.