

Phongamwong, Chanwit, et al, 2019 Abstract

Treadmill Training With Feedback And ES For Post-stroke Gait Rehab

Objective

Stroke rehabilitation uses the motor relearning concept that require patients to perform active practice of skill-specific training and to receive feedback. Treadmill training augmented with real-time visualisation feedback and functional **electrical stimulation (ES)** may have a beneficial synergistic effect on motor recovery. This study aimed to determine the feasibility of this kind of enhanced treadmill training for gait rehabilitation among patients after stroke.

Results

The researchers concluded that it is safe and feasible to use treadmill gait training augmented with real-time visual feedback and computer-controlled functional **electrical stimulation** with patients after stroke in routine clinical practice.

Participants and Researchers

Six patients after stroke participated in the study, five males and one female with an age range from 30 to 84 years and four of them had left hemiplegia. All participants suffered from brain infarction and were at least three months after stroke.

The five researchers were from the Department of Biomedical Engineering at University of Strathclyde, Glasgow, UK: Chanwit Phongamwong, Philip Rowe, Karen Chase, Andrew Kerr, and Lindsay Millar.

Methods

All participants received up to 20 minutes of enhanced treadmill training session instead of their over-ground gait training session once or twice a week for six weeks. The number of training sessions attended ranged from five to 12. The duration of training sessions ranged from 11 to 20 minutes. Dual-channel surface electrical stimulators, the **NeuroTrac Rehab** (Verity Medical), were used for functional **electrical stimulation (ES)**. No serious adverse events were reported. The computerised functional ES to the pre-tibial muscles was able to reduce plantarflexion angle during the swing phase with statistical significance of the gait cycle.

The study was conducted at Coathill Hospital (NHS Lanarkshire) in England.

The full abstract can be found at

<https://bmcbiomedeng.biomedcentral.com/articles/10.1186/s42490-019-0020-1#:~:text=The%20evidence%20from%20this%20study,recovery%20remain%20to%20be%20determined.>