

# Verbesserung der Armfunktion mit EMG-getriggelter Elektrostimulation bei Patienten mit CVI, Teil 1 + 2

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English abstracts

Part 1:

Does physiotherapy improve arm function in patients with a stroke? Many therapists are rather negative concerning the effectiveness of therapy. Nevertheless studies, most of them performed during the last 5 – 10 years, show positive results. In this systematic review we discuss randomised clinical trials investigating task-oriented therapy, constraint induced therapy and electrical stimulation to improve arm function. The conclusions from this review are:

- It is not true that only patient with beginning arm and wrist function benefit. Especially severely disabled patients appear to take great advantage from treatment.
- Arm control can be improved by task oriented treatment constraint induced therapy and electrical stimulation.
- Improvement of motor control does not automatically improve ADL function.
- Improvements are greater with increasing treatment intensity.
- Long term effects are rare: in most studies the difference in favour of the more intensively treated patients is not maintained during a 1 year follow up period.
- Intensive treatment can decrease length of stay in a rehabilitation clinic.

Part 2:

## Main Problem:

The restoration of arm function constitutes a challenge in the rehabilitation of patients with a stroke. Randomised controlled studies indicate that especially constraint induced and task oriented therapy improve motor control and activities of the arm in daily living. Whether EMG-triggered electrical stimulation is effective remains unclear and is investigated in this study.

Methods: We performed a randomised clinical trial in 17 patients with a first stroke at least 6 weeks, mentioning the reduction of arm related disability as a primary goal. Comorbidity and major cognitive impairments led to exclusion. Patients in the experimental group received 15 hours of additional treatment consisting of task-oriented therapy supported with EMG triggered electrical stimulation. Randomisation was performed in strata according to severity of motor impairment and duration since stroke.

## Results:

The reduction of arm related disability as measured with the individual goal attainment was significantly greater in the experimental group ( $p = 0.003$ ). Motor control of the hand also improved ( $p = 0.016$ ). The correlation between the improvement in arm related disability and motor control of the arm and hand was weak.

Conclusions: An additional task oriented treatment supported with EMG triggered electrical stimulation of 15 hours duration improves motor control and reduces arm related disability. Long-term effects were not investigated. These results are in accordance with other studies, summarized in the previous issue of "FISIO Active", showing a dose effect relationship. Intensive therapy appears essential for effective rehabilitation.