Impact of intensity of practice after stroke: Issues for consideration

G. Kwakkel
Department Rehabilitation Medicine, VU University Medical Center de Boelelaan, 1117 1081 HV Amsterdam, PO Box 7057, 1007 Amsterdam, Netherlands
E-mail address: g.kwakkel@vumc.nl

Keywords: Stroke; Intensive practice; Physical exercise

The lecture addresses four relevant issues related to the impact of intensity of practice after stroke. First, the lecture discusses from a perspective of existing literature the evidence for a dose-response relationship in stroke rehabilitation. Despite the evidence that early started intensive practice may enhance the pattern of functional recovery after stroke, in most countries patients receive an insufficient dose of therapy at working days suggesting a discrepancy between existing evidence for intensive practice, on the one hand, and, the actual amount of therapy applied in the current healthcare system which appeared more related with management decisions rather than the number of staff available. With that the question raises how we can augment intensity of exercise training after stroke, without increasing resources. Fortunately, a number of studies have shown that augmentation of task-oriented practice is possible by increasing:

- the ability to practice in groups by using patient tailored workstations (i.e. circuit class training);
- using forced use paradigms such as constrained induced movement therapy for the upper limb;
- using (electronic) devices, including robotics that allow patients to practice on their own;
- preventing poor compliance in physical and occupational treatment sessions by identifying factors that predict poor adherence.

The reported effects of stroke rehabilitation seem to be largely dependent on adequate control for therapy time in the control group in order to augment treatment contrast, as well as on the appropriate selection of patients with some potential for functional change. For example, this latter precondition in particular is critical for upper limb training, in which the increased probability of return of dexterity seems to be largely defined in the first 4 weeks post stroke. In other words, understanding the effects of intensity of practice requires knowledge about functional prognosis as well as the mechanisms underlying the non-linear recovery pattern after stroke.

http://dx.doi.org/10.1016/j.rehab.2012.07.013

Effect of repeated sessions of combined anodal tDCS and peripheral nerve stimulation on motor performance in acute stroke: A behavioural and electrophysiological study

V. Sattler*a, A. Acker b, A. Gerdelat-Mas a, N. Raposo a, J.-F. Albucher a, C. Thalamas a, I. Loubinoux b, F. Chollet b, M. Simonetta-Moreau a
a Pôle neurosciences, neurologie, CHU Purpan, place du Dr-Baylac, TSA 40031, 31059 Toulouse cedex 9, France
b Pôle neurosciences, unité neurovasculaire, CHU Purpan, Toulouse cedex 9, France
c Centre d’investigation clinique, CHU Purpan, Toulouse cedex 9, France
d Inserm U825, pavillon Baudot, CHU Purpan, Toulouse cedex 9, France
*Corresponding author.
E-mail address: virginie.sattler@gmail.com

Keywords: DCS; Stroke; Acute phase; Peripheral nerve stimulation; Rehabilitation; Cortical plasticity

Background and purpose:– Non-invasive neuromodulation such as repetitive transcranial magnetic stimulation (rTMS) or transcranial direct current stimulation (tDCS) applied over the contralesional or ipsilesional motor cortices (M1), in association with neurorehabilitation, can improve motor recovery in patients after stroke [1–3]. Most studies have been performed in the chronic phase and very few in the acute one. The purpose of this study was to assess in the acute phase of post-stroke recovery the effect of anodal direct current stimulation (tDCS) applied over the ipsilesional primary motor cortex (M1) combined with repetitive peripheral nerve stimulation (rEPNS) on the motor performance of the paretic hand.

Methods:– In this double-blind, sham-controlled study, 20 patients were enrolled within the first month after a cortical or subcortical stroke and are randomized in two parallel groups. The first group receives five consecutive daily sessions of anodal tDCS over the ipsilesional M1 in association with rEPNS of the radial