Constraint-induced movement therapy for the upper paretic limb in acute or sub-acute stroke: a systematic review.

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Abstract

Constraint-induced movement therapy is a commonly used intervention to improve upper limb function after stroke. However, the effectiveness of constraint-induced movement therapy and its optimal dosage during acute or sub-acute stroke is still under debate. To examine the literature on the effects of constraint-induced movement therapy in acute or sub-acute stroke. A literature search was performed to identify randomized, controlled trials; studies with the same outcome measure were pooled by calculating the mean difference. Separate quantitative analyses for high-intensity and low-intensity constraint-induced movement therapy were applied when possible. Five randomized, controlled trials were included, comprising 106 participants. The meta-analysis demonstrated significant mean differences in favor of constraint-induced movement therapy for the Fugl-Meyer arm, the Action Research Arm Test, the Motor Activity Log, Quality of Movement and the Grooved Pegboard Test. Nonsignificant mean difference in favor of constraint-induced movement therapy were found for the Motor Activity Log, Amount of Use. Separate analyses for high-intensity and low-intensity constraint-induced movement therapy resulted in significant favorable mean differences for low-intensity constraint-induced movement therapy for all outcome measures, in contrast to high-intensity constraint-induced movement therapy. This meta-analysis demonstrates a trend toward positive effects of high-intensity and low-intensity constraint-induced movement therapy in acute or sub-acute stroke, but also suggests that low-intensity constraint-induced movement therapy may be more beneficial during this period than high-intensity constraint-induced movement therapy. However, these results were based on a small number of studies. Therefore, more trials are needed applying different doses of therapy early after stroke and a better understanding is needed about the different time windows in which underlying mechanisms of recovery operate.