

Finally these negative results also underscore the impact of 'non-specific' cognitive factors, such as attention, which may account for the general improvement observed regardless of the type of training.

33 CHARLES

Efficacy of intensive practice on upper extremity movement in children with hemiplegia

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Impaired hand function is one of the most disabling symptoms of hemiplegic cerebral palsy (CP). Intensive practice of the involved hand may be beneficial. One method to elicit such practice is constraint-induced (CI) therapy which involves restraint of the non-involved hand and intensive practice with the involved hand. In its original form, CI therapy is not child-friendly. Furthermore, CI therapy focuses exclusively on the involved extremity, while increased functional abilities require use of both hands.

Objectives: Results of a randomized control trial of CI therapy were presented. We then tested whether the same results could be achieved with a new therapy: hand-arm bimanual intensive therapy (HABIT).

Methods: Twenty-two children (4 to 8 years of age) were randomized to an intervention group ($n=11$) or a control group ($n=11$). Children wore a sling on their non-involved upper extremity for six-hours per day, during 10 out of 12 consecutive days. They were engaged in play and functional activities that provided structured practice using the involved upper extremity. An additional six children received HABIT without a sling. Blinded evaluations occurred once before the intervention and at one week, one month, and six months post-intervention.

Results: Children in the CI therapy group demonstrated improved scores on the Jebsen-Taylor Test and subtest 8 of the Bruininks-Oseretsky Test ($p<0.05$ in both cases). Initial severity of hand impairment and testing compliance accounted for 73% of the variance in changes from pre- to post-intervention scores. Preliminary results suggest similar changes may be elicited without the restraint.

Conclusions: Results suggest that CI therapy modified to be child friendly improves movement efficiency of the involved hand in children with hemiplegic CP. However, not all children may benefit. Coordination of the two hands may be improved through intensive practice of bimanual tasks.

34 CHAVDAROV

Influence of different low temperatures on spasticity of children with cerebral palsy: a comparative study

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Objective: Cold therapy is used for children with spastic cerebral palsy (CP) as a method of myorelaxation. There are dif-

ferent points of view regarding how low the temperature has to be to achieve effective myorelaxation.

Methods: Twenty four ambulatory children with spastic diplegia aged between 5 and 14 years were studied. Cold therapy included 10 consecutive procedures with local application over the triceps surae muscle of one leg. The first group was treated with a temperature of 0°C (with ice cubes) and the second group was treated with a temperature of -10°C (with a freezing device). Treated muscles were tested clinically (the ankle's passive range of motion, reflex excitability, and Ashworth scale) and with EMG (latency and H-reflex) before treatment and at the first, third, and tenth procedure during cold applications.

Results: The second group treated within minus -10°C had better clinical results (increased passive range of motion and decreased reflex excitation) and EMG changes (increased latency and decreased H-reflex) in treated triceps surae muscles. Ashworth scale scores were similar for the two groups. No significant difference in clinical or EMG changes during consecutive procedures was observed in the two groups, but slightly more EMG changes were recorded on the 10th day by the second group.

Conclusions: Cold therapy is more effective at treating spasticity in children with CP if used at lower temperatures generated from freezing devices.

35 CHEVIGNARD

Use of constraint-induced therapy for children with hemiplegia due to acquired brain lesions

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Introduction: Constraint-induced movement therapy is effective in treating adult hemiplegia and has occasionally been used in children.¹

Objective: To study the feasibility and efficacy of this method of treatment in children.

Method: Three children (A, B, and C), aged 5 years 1 month, 5 years 2 months, and 5 years 6 months respectively, took part in a constraint-induced therapy programme. The children had right hemiplegia and predominant brachiofacial involvement, Zancolli classification 1, 2A, and 2B due to stroke, head trauma, and brain tumour which occurred 1 year, 2 years, and 9 months earlier.

Baseline evaluation consisted of the 'nine peg holes' test, box and blocks test, cone/cylinder displacement, test tower of blocks, and a neglect assessment battery.

The unaffected arm was then immobilized with a Mayo Clinic contention for 7 hours per day. Three hours of physical therapy on the affected arm was given each day, 5 days a week for 2 weeks. Baseline tests were repeated at week 4.

Results: The protocol was carried out in its entirety. Performances improved on timed tests. Qualitatively there was better control and better quality of movements.

Children B and C, who also had severe visuospatial and motor neglect in addition to right hemiplegia, showed a reduction in the number of right-sided omissions in the