Efficacy of intensive versus nonintensive physiotherapy in children with cerebral palsy: a meta-analysis

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CRD summary
This review concluded that intensive conventional therapy could improve the functional motor outcome for children with cerebral palsy, but the effect size seemed to be modest and the evidence was limited. The authors' conclusions reflect the evidence presented, but their reliability may be affected by the limited reporting of trial quality, variation in the included trials, and small samples.

Authors' objectives
To compare the efficacy of intensive versus non-intensive rehabilitation for children with cerebral palsy.

Searching
MEDLINE and EMBASE were searched for studies published in English, from January 1996 to July 2007. Search terms were reported. References of relevant articles were examined.

Study selection
Randomised controlled trials (RCTs) that compared intensive versus non-intensive rehabilitative therapy for children (one to 18 years old) with cerebral palsy, were eligible. Trials that included therapies that were not generally considered to be conventional, such as constraint or taping, were excluded. The outcome of interest was the baseline change in the Gross Motor Function Measure (GMFM).

Most of the included trials were conducted in the UK; one was conducted in Greece. Where reported, the mean age of participants ranged from 19.75 to 86 months. Conventional therapy was physiotherapy or neurodevelopmental therapy. The regime varied between trials. Where reported, the trials included children with cerebral palsy of a severity of level I to V.

Two reviewers selected trials for inclusion. Disagreements were resolved by discussion.

Assessment of study quality
The authors did not state that they assessed trial quality, but two reviewers extracted information on the adequacy of randomisation and allocation concealment, the potential for selection bias, and the level of masking.

Data extraction
The data were extracted to calculate the mean difference in the GMFM, with 95% confidence interval. Two reviewers independently extracted the data; disagreements were resolved through discussion. Trial authors were contacted for any missing data.

Methods of synthesis
The data were pooled to calculate weighted mean differences and their 95% confidence intervals. Both fixed-effect and random-effects models were used. I² was used to assess heterogeneity.

Funnel plots were used to examine the presence of small-study effects. Meta-regressions were undertaken for different ages (<two years, and at least two years) and treatment durations (<60 days, and at least 60 days).

Results of the review
Four RCTs were included in the review (226 children). Allocation concealment and blinding was adequate for all RCTs. Follow-up varied between trials.

The meta-analysis showed that the GMFM change was higher with intensive treatment than with non-intensive treatment (MD 1.32, 95% CI 0.55 to 2.10; I²=0).
The authors reported that the effects of intensive therapy tended to be stronger for children under two years old (MD 5), but this was not statistically significant (95% CI -0.45 to 10.45). For children at least two years old, the difference was small, but significant (MD 1.25, 95% CI 0.47 to 2.03).

There was no significant difference between the two groups when the treatment lasted for less than 60 days; whereas there was a significant difference in favour of intensive therapy when it lasted for at least 60 days (MD 1.42, 95% CI 0.55 to 2.30).

There was no evidence of publication bias.

**Authors' conclusions**
In children with cerebral palsy, intensive conventional therapy could improve functional motor outcome, but the effect size seemed to be modest and the evidence was limited.

**CRD commentary**
The review question and inclusion criteria were clear. Relevant sources were searched, but unpublished trials and trials in languages other than English were not sought, so relevant trials may have been missed. No evidence of publication bias was found, but funnel plots for less than 10 trials are not meaningful, so publication bias cannot be fully ruled out.

The authors did not fully assess trial quality and only reported allocation concealment and blinding; this makes it difficult to assess the overall quality of the trials. Appropriate methods were used to pool the data and assess heterogeneity. Most of the evaluations were conducted immediately after treatment, so the long-term effects are unclear. The authors stated that the clinical significance of the difference in the GMFM was unclear.

The authors' conclusions reflect the evidence presented, but their reliability may be affected by the limited reporting of the quality of the trials, variation in the included trials, and small samples.

**Implications of the review for practice and research**
*Practice:* The authors did not state any implications for practice.

*Research:* The authors stated that research should use different outcome scales for intensive conventional therapy in addition to the GMFM, for example, measures of daily life, functional activities, and participation.

**Funding**
Not stated.

**Bibliographic details**

**PubMedID**
19910797

**DOI**
10.1097/MRR.0b013e328332f617

**Indexing Status**
Subject indexing assigned by NLM

**MeSH**
Adolescent; Age Factors; Cerebral Palsy /rehabilitation; Child; Child, Preschool; Humans; Infant; Motor Skills; Physical Therapy Modalities; Randomized Controlled Trials as Topic; Treatment Outcome

**AccessionNumber**
12010005502
Date bibliographic record published
23/02/2011

Date abstract record published
04/04/2014

Record Status
This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.