

# Review of neurodevelopmental treatment

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doi: 10.1111/dmcn.12557

**SIR**—The systematic review of interventions for children with cerebral palsy (CP) recently published by Novak et al.<sup>1</sup> warrants scrutiny. High-quality systematic reviews are tremendously valuable, especially to busy clinicians who rely on accurately summarized information to make efficient decisions regarding plans of care. However, inadequate reviews may have a negative impact on clinical decision-making and, ultimately, patient care. Readers should be made aware of specific limitations of the article so that they may make informed decisions regarding its application.

Serious concerns regarding Novak's review of treatments related to orthopedic surgery,<sup>2,3</sup> pharmacology,<sup>3</sup> and early intervention<sup>4</sup> have been published as Letters to the Editor. A critical appraisal of content related to neurodevelopmental treatment (NDT), which was discussed far more than any other intervention in the review, has not been provided. The purpose of this letter is to suggest that reporting bias and misrepresentation of data on the topic of NDT should be carefully considered before applying the recommendations of the authors.

Novak et al.<sup>1,p904</sup> stated that NDT should be discontinued based on the conclusions of previously published systematic reviews, the presence of a superior treatment option, and the burden and cost associated with NDT. The problem is that none of these points were substantiated, nor are they valid.

Novak et al. cited three systematic reviews, none of which concluded that NDT was ineffective compared to other interventions; instead, all three stated that there was not enough evidence to determine the efficacy or inefficacy of the treatment approach.<sup>5–7</sup> Multiple systematic reviews not included by Novak et al. may have had an impact on the final conclusions.<sup>8–10</sup> For example, a recent systematic review by Franki et al.<sup>8</sup> summarized the effects of 'conceptual approaches' (e.g. body weight supported treadmill training, strengthening, functional training, and NDT) on outcomes representing various levels of the World Health Organization's International Classification of Functioning, Disability and Health (ICF) in children with CP. While

significant effects of several interventions were reported at one or more levels of the ICF (i.e. body structure/function, activities, participation, personal or environmental factors), only NDT was found to have significant effects across all levels. Perhaps if Novak et al. had referenced this article, they wouldn't have concluded, 'Since no other body structure and function intervention in this review showed gains beyond the body structure and function level up into the activity level, it is hard to imagine why NDT would be the exception to this trend.'<sup>1,p904</sup>

A more thorough and accurate summary of reviews related to NDT would have reported that no determination could be made about the efficacy of NDT. Studies that included impairments as dependent variables were less likely to suggest efficacy, whereas those in which functional outcomes were measured were more likely to suggest efficacy.

Although it was not a systematic review, Novak et al. included a study<sup>11</sup> that compared motor learning coaching (MLC) to NDT. No significant differences between the outcomes of MLC and NDT were identified. However, in reference to this study, Novak et al. concluded that NDT 'should be discontinued' based on the existence of a far superior alternative.

Novak et al. also justified their recommendation based on burden and cost of therapy, stating that NDT is time-consuming and expensive for families. Since this statement was not referenced or discussed, it is not possible to evaluate its validity. Readers, however, should question this assumption as, intuitively, it has no basis.

The intent of this letter is not to sway readers toward favorable views of NDT, but rather to illustrate a problem worthy of further attention. For decades, reports regarding NDT have been fraught with bias away and toward the null. Neither the efficacy nor inefficacy of NDT has been definitively determined. Some justify the use of NDT based on other sources of evidence (i.e. clinical expertise and client/family preference); others interpret the lack of evidence as reason to abandon the theoretical approach. Neither is adequate justification. With all eyes on improving meaningful outcomes for children with CP, it is time to replace opinion with research that employs consistent operational definitions, rigorous methodology, and functional outcomes that are important to the children and their families.

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## From the Editor

I am sorry to report that Professor Kerr Graham has tendered his resignation as Orthopaedic Associate Editor of DMCN, due to his concerns over the paper ‘A systematic review of interventions for children with cerebral palsy: the state of the evidence’, by Novak and colleagues (DMCN 2013; 55: 885–910), which he had not seen before publication.

These concerns are specified in his letter, co-authored with Thomason (DMCN 2014; 56: 390–1). On behalf of

my colleagues and myself I would like to express our gratitude to Professor Graham for all his advice and help as an editorial colleague.

**PETER BAXTER**

EDITOR-IN-CHIEF

doi: 10.1111/dmcn.12587