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Review

Effect of trunk-restraint training on function and compensatory trunk, shoulder and elbow patterns during post-stroke reach: a systematic review

Liza M. Pain, Ross Baker, Denyse Richardson & Anne M. R. Agur

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Abstract

Purpose: The purpose of this systematic review was to determine the effect of trunk restraint (TR) training on post-stroke compensatory trunk movements during functional reach, and to identify functional gains of TR within the context of the International Classification of Functioning, Disability and Health (ICF). Methods: Six databases were searched prior to 20 February 2013. Randomized control trials (RCTs) comparing the effects of a post-stroke reaching intervention with and without TR in the adult post-stroke population were included in this review. Data related to study inclusion/exclusion criteria, methodology, study participants and between-group outcomes ($p < 0.05$) were extracted. All outcomes were categorized according to functional domains defined

within the ICF. Results: Five RCTs met the inclusion criteria. TR groups demonstrated significant between-group differences ($p < 0.05$) for decreased compensatory trunk displacement (4/5 RCTs), increased elbow extension (3/5 RCTs) and increased shoulder flexion (2/5 RCTs). All significant between-group differences fell within the Body Structure/Function domain of the ICF. Conclusions: Trunk restraint is a simple, cost-effective technique that may help to reduce compensatory trunk/shoulder/elbow movements in the post-stroke adult population. Synthesis of study outcomes also highlights applications of TR to clinical practice and areas for further research.

Implications for Rehabilitation

- The ability to use the shoulder and elbow to perform functional reach is a primary goal in post-stroke recovery; however, compensatory trunk movements are often used to achieve the reaching goal.
- Long-term use of compensatory strategies may contribute to secondary impairments, such as learned non-use, joint contractures and pain.
- Trunk restraint enables functional reach practice, while limiting compensatory strategies in the moderately to severely impaired stroke population.

Compensatory movement | constraint induced therapy | kinematics | postural control | stroke

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Declaration of interest

The authors declare no potential conflicts of interest with respect to the authorship and/or publication of this article.

A review protocol was determined a priori by the review authors in terms of the type of study design, study population, types of interventions and outcome measures; however, a formal protocol was not registered with a registry service. The authors received no financial support for the research and/or authorship of this article.

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