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Physiotherapy Treatment Approaches for Stroke

Alex Pollock, PhD, MCSP; Gillian D. Baer, BSc, MCSP;
Peter Langhorne, PhD, MRCP; Valerie M. Pomeroy, PhD, MCSP

There are several different approaches to physiotherapy treatment after stroke. These can broadly be divided into approaches that are based on neurophysiological, motor learning, or orthopaedic principles. Some physiotherapists base their treatment on a single approach, whereas others use a mixture of components from a number of different approaches. The practical application of these approaches can result in substantial differences in patient treatment. At present, the Bobath Approach, based on neurophysiological principles, probably remains the most widely used approach in the Western world.¹⁻⁵ However, there is a lack of convincing evidence to support any specific physiotherapy treatment approach.^{3,6} This systematic review aims to assess the effects of physiotherapy treatment if it is based on orthopaedic, motor learning, or neurophysiological principles, or on a mixture of these treatment principles.

Methods

We searched the Cochrane Stroke Group Trials Register (last searched May 2005), the Cochrane Central Register of Controlled Trials (CENTRAL) (The Cochrane Library Issue 2, 2005), MEDLINE (1966 to May 2005), EMBASE (1980 to May 2005), and CINAHL (1982 to May 2005). We contacted experts and researchers with an interest in stroke rehabilitation.

We considered randomized or quasi-randomized controlled trials of physiotherapy treatment approaches aimed at promoting the recovery of postural control and lower limb function in adult participants with a clinical diagnosis of stroke. Outcomes included measures of disability (global dependency scales or functional independence scales) and motor impairment (relating to postural control or lower limb function). Two review authors independently categorized the identified trials according to the inclusion and exclusion criteria, documented their methodological quality, and extracted the data.

Results

Twenty trials (1087 participants) were included in the review, 5 of which were included in 2 comparisons. Eight trials compared a neurophysiological approach (which was "Bobath" in all trials) with another approach; 8 compared a motor

learning approach with another approach; and 8 compared a mixed approach with another approach.

A statistically significant result was found in the comparison of a mixed approach with a no treatment or placebo control for the recovery of functional independence ($P=0.03$; Figure). Data from 5 trials (427 participants) demonstrated that a mixed approach was significantly more favorable than no treatment or a placebo control in the recovery of functional independence (SMD 0.94, 95% CI 0.08 to 1.80). Functional independence was assessed using Fugl-Meyer lower limb score, Rivermead Mobility Index and Functional Independence Measure (FIM).

A further statistically significant result was found in the comparison of a mixed approach with an orthopaedic approach for the recovery of muscle strength ($P=0.04$), but this was based on data from only 1 trial which had a number of methodological limitations. No other significant results were found.

Discussion

The data analyzed in this review provide evidence that a mixed physiotherapy approach is significantly favorable to no treatment or placebo intervention in the recovery of functional independence after stroke. This significant effect arguably demonstrates that any physiotherapy is better than none. There is no evidence of any one physiotherapy treatment approach being more effective than any other treatment approach for the recovery of disability or impairment (postural control or lower limb function) after a stroke.

The lack of difference for outcomes between various physiotherapy treatment approaches must be considered in the light of several methodological limitations encountered during the systematic review. It is not possible to discuss the methodological limitations within this brief summary; full details are available within the published Cochrane Review.⁷

Implications for Practice

There is insufficient evidence to provide a definitive answer to which treatment approach physiotherapists should use to

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From the Academic Section of Geriatric Medicine (A.P., P.L.), Glasgow Royal Infirmary, UK; Queen Margaret University (G.D.B.), Edinburgh, UK; and University of East Anglia (V.M.P.), UK.

Correspondence to Alex Pollock, Academic Section of Geriatric Medicine, Glasgow Royal Infirmary, University Block, Room 34, Level 2, Glasgow, G31 2ER UK. E-mail alex@strokerehab.fsnet.co.uk

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Review: Physiotherapy treatment approaches for the recovery of postural control and lower limb function following stroke
 Comparison: 03 Mixed vs other approaches
 Outcome: 02 Functional Independence scale

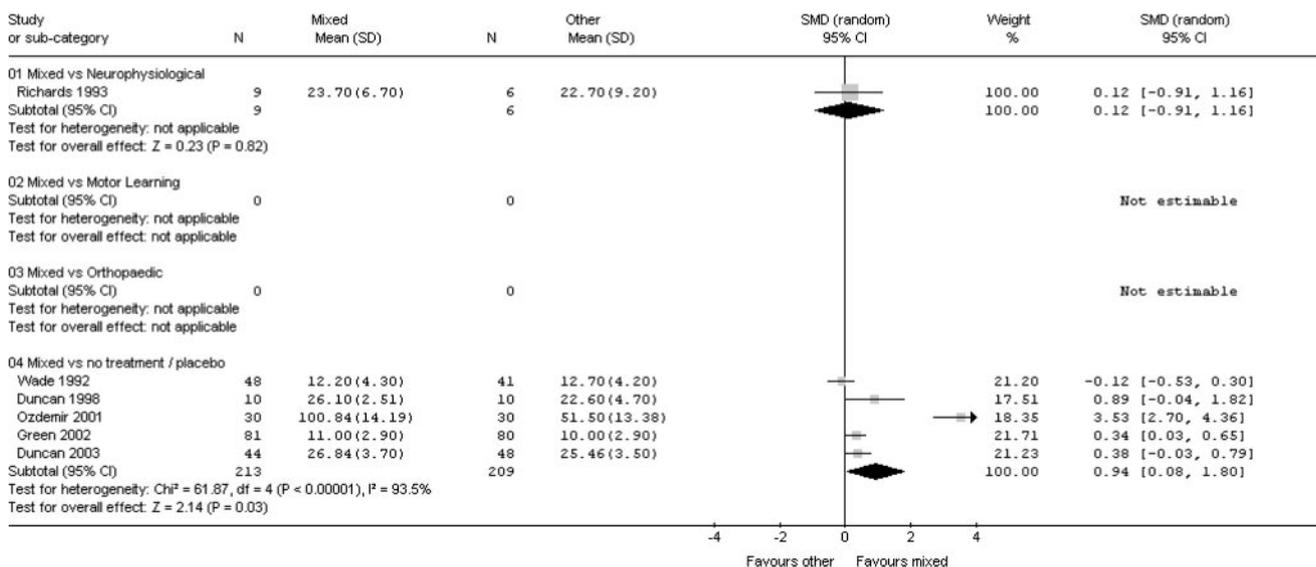


Figure. Results of trials comparing mixed approaches with other approaches. Functional independence scale. SMD indicates standardized mean difference; CI, confidence interval; SD, standard deviation. For full references to trials see published Cochrane review.⁷

promote the recovery of disability or impairment (postural control or lower limb function). However, there is limited evidence that physiotherapy using a mix of components from different approaches may be more beneficial than no treatment or placebo control for the recovery of functional independence after stroke. This evidence provides a sound scientific rationale for physiotherapists to use a selection of treatments, regardless from which treatment approach, if any, they are derived.

Implications for Research

We recommend that future research should concentrate on investigating the effectiveness of clearly described individual techniques and task-specific treatments, regardless of their historical or philosophical origin.

Disclosures

None.

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