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A COCHRANE SYSTEMATIC REVIEW OF PHYSIOTHERAPY FOR PAIN AND DISABILITY IN ADULTS WITH COMPLEX REGIONAL PAIN SYNDROME (CRPS)

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Introduction

Complex regional pain syndrome (CRPS) is a painful and disabling condition that usually manifests in response to trauma or surgery and when it occurs is associated with significant pain and disability. It is thought to arise and persist as a consequence of a maladaptive pro-inflammatory response and disturbances in sympathetically mediated vasomotor control, together with maladaptive peripheral and central neuronal plasticity. Two subcategories of CRPS have been described in which a nerve lesion is thought to be absent (CRPS type I) or present (CRPS type II). Guidelines recommend the inclusion of physiotherapy as part of the multimodal treatment of CRPS although the optimal therapeutic approach is not known (Smart et al. 2013).

Objective

- To determine the effectiveness of physiotherapy interventions for treating the pain and disability associated with CRPS types I and II.

Methods

We searched CENTRAL (*The Cochrane Library*), MEDLINE, EMBASE, CINAHL, PsycINFO, LILACS, PEDro, Web of Science, DARE and Health Technology Assessments from inception to February 2015, unrestricted by language, for randomised controlled trials (RCTs) of physiotherapy interventions for the treatment of pain and disability of CRPS.

Inclusion criteria:

- RCTs of physiotherapy interventions;
- adult patient populations with CRPS I and II; and
- patient-centred outcomes (e.g. pain intensity and functional disability).

Two review authors independently evaluated studies, undertook risk of bias assessments and extracted all relevant data from included studies. The quality of the body of evidence for the main outcomes was rated using the GRADE approach.

Results

- The search identified 990 papers of which 744 remained after the removal of duplicates.
- 702 records were discarded on the basis that they did not meet inclusion criteria.
- Forty-two records were retrieved for full-text screening.
- Twenty-one trial reports from 18 original trials were deemed eligible for inclusion (see Figure 1).

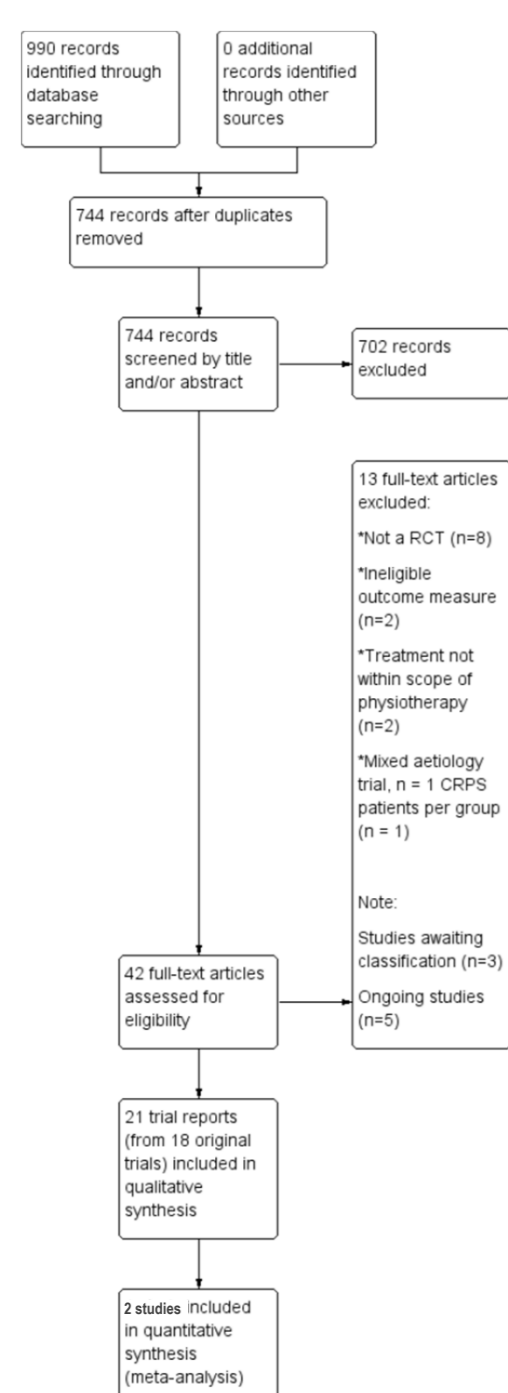


Figure 1. Study flow diagram.

The 18 trials identified (total number of participants n = 739; range: 10 to 135 per trial) tested the effectiveness of a broad range of physiotherapy-based interventions in participants with CRPS I. No clinical trials involving participants with CRPS II were found.

Overall, we found a paucity of high quality evidence concerning physiotherapy treatment for pain and disability in CRPS. 'Risk of bias' assessments were high (15 trials) or unclear (three trials) (see Figure 2) and our GRADE ratings of the quality of evidence was very low or low for all comparisons.

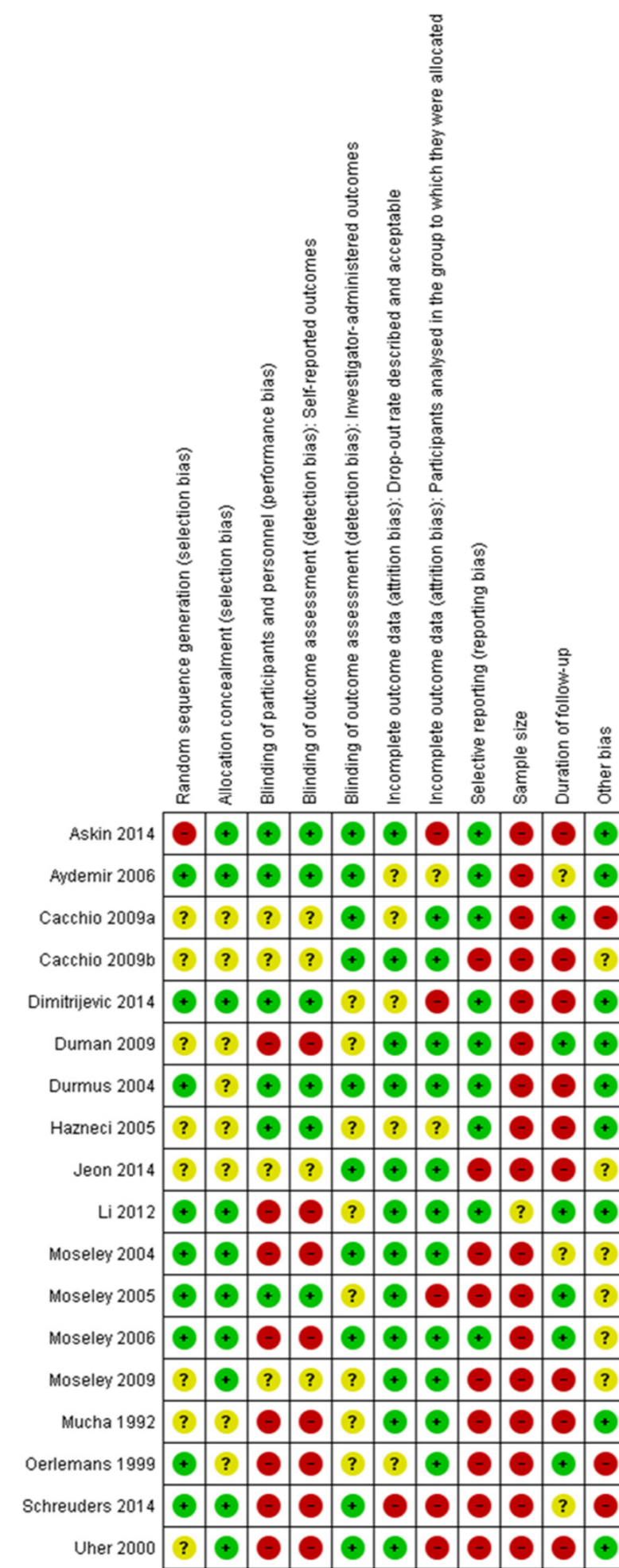


Figure 2. Summary of risk of bias of included studies.

Graded motor imagery (GMI)

There is very low quality evidence (RCT evidence: high, downgraded once for methodological limitations, once for imprecision and once for inconsistency) that GMI plus medical management may be more effective at reducing pain and improving function than conventional physiotherapy plus medical management in the treatment of CRPS I of the upper limb.

Pooling of the results from two studies (Moseley 2004; Moseley 2006) gave an immediate post-treatment effect size (weighted mean difference) of -14.45 (0-100 Pain VAS; 95% CI -23.02 to -5.87, p = 0.001, 49 participants) (see Figure 3). We were unable to obtain data from one unpublished trial which found no difference in pain and function outcomes between GMI and conventional care (physiotherapy and occupational therapy) versus usual care alone.

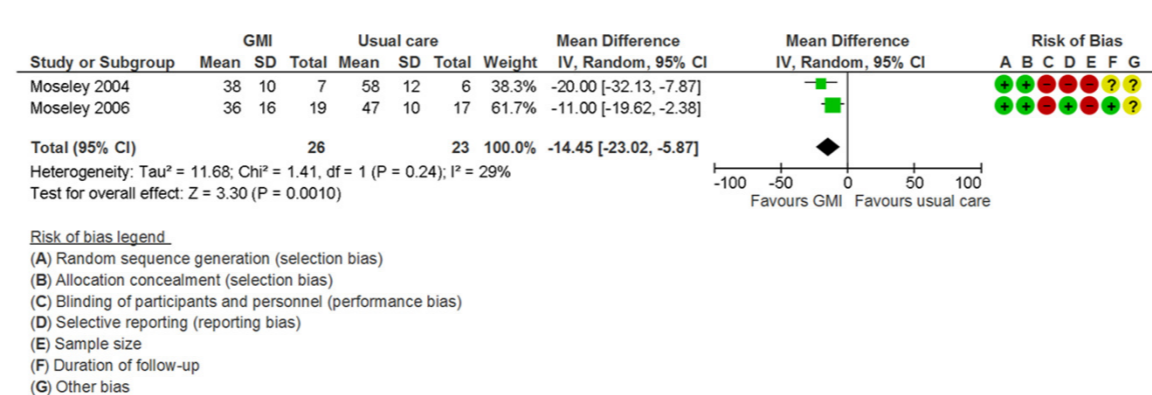


Figure 3. Effect size for graded motor imagery.

Mirror therapy

There was very low quality evidence from two trials (Cacchio 2009a; Cacchio 2009b) (RCT evidence: high, downgraded once for methodological limitations, once for imprecision, once for indirectness) that mirror therapy reduced pain and improved upper limb function in post-stroke CRPS I of the upper limb compared with covered mirror therapy.

Multi-modal physiotherapy

We found very low quality evidence from one trial (Oerlemans 1999) (RCT evidence: high, downgraded once for methodological limitations, once for imprecision and once for inconsistency) that multi-modal physiotherapy plus medical treatment may be more effective at reducing pain at short- (three months) but not long-term follow-up (12 months) compared to a control intervention of 'social work' and that physiotherapy plus medical treatment may be more effective at reducing impairment compared to 'social work' at long-term follow-up.

Manual lymphatic drainage (MLD)

There is low quality evidence (RCT evidence: high, downgraded once for methodological limitations and once for imprecision) that the addition of MLD to rehabilitation does not improve pain in CRPS I.

Electrotherapy-based modalities

There is low quality evidence (RCT evidence: high, downgraded once for imprecision and once for inconsistency) that **ultrasound to the stellate ganglion** is inferior to **TENS** for the treatment of pain in CRPS I in the very short-term.

There is low quality evidence (RCT evidence: high, downgraded once for imprecision and once for inconsistency) that **pulsed electromagnetic field therapy** is not superior to **placebo** for the treatment of pain or range of motion in CRPS I.

There is very low quality evidence (RCT evidence: high, downgraded once for methodological limitations, once for imprecision and once for inconsistency) that **low level laser therapy** does not result in a clinically important reduction in pain when compared to **interferential therapy** when added to exercise therapy.

Tactile discrimination training

There was very low quality evidence (RCT evidence: high, downgraded once for methodological limitations, once for imprecision and once for inconsistency) that tactile discrimination training does not reduce the pain associated with CRPS I at very short-term follow-up.

Discussion

Our findings suggest that GMI may provide clinically meaningful medium- and long-term improvements in both pain and disability in CRPS I, although the results from these trials were not consistent.

We found very low quality evidence from two trials that mirror therapy provides long-term clinically meaningful improvements in pain and function in CRPS I following stroke. The effectiveness of mirror therapy in broader patient populations with CRPS I (e.g. post-trauma) is not known.

On the whole, the use of electrotherapy modalities is not supported.

No clinical trials involving participants with CRPS II were found.

Overall, our review has identified an absence of any high or moderate quality evidence with which to inform or guide rehabilitation practice in adults with CRPS types I or II. From the existing body of evidence it is currently not possible to draw any accurate or firm conclusions regarding the effectiveness or safety of any of the specific physiotherapy-based interventions identified in our review.

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