Different physical treatment modalities for lymphoedema developing after axillary lymph node dissection for breast cancer: a review
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CRD summary
This review concluded that combined physical therapy was effective in the treatment of lymphoedema, but that the effectiveness of its different components remained uncertain; further research is required. Given the limited evidence available and potential for reporting bias, the authors’ conclusions regarding combined physical therapy should be interpreted with caution, but their recommendation for further research seems appropriate.

Authors’ objectives
To assess the effects of different physical treatments on lymphoedema in patients who have undergone axillary lymph node dissection for breast cancer.

Searching
PubMed, CINAHL, EMBASE, PEDro and the Cochrane Library databases were searched for peer-reviewed articles in English, French and Dutch, with no date restrictions. Search terms were reported.

Study selection
Randomised controlled trials (RCTs), pseudo-RCTs, and non-randomised experimental trials that assessed the effectiveness of combined physical therapy and its different components (specifically, intermittent pneumatic compression and arm elevation) in the treatment of patients with arm lymphoedema, were eligible for inclusion. For most patients, lymphoedema developed after axillary dissection for breast cancer.

The outcomes of interest were arm volume, shoulder mobility, muscle strength, subjective symptoms, tissue elasticity, skinfold thickness, and quality of life.

Included studies were mainly of patients with unilateral oedema after breast cancer. Inclusion and exclusion criteria for oedema and treatment length varied between studies. Treatment duration and frequency varied between studies, including home programmes or group therapy that included bandages, exercise, skin care, massage, physiotherapy, lymphatic drainage, and compression sleeves. Included studies predominantly assessed oedema volume. Other outcomes included mobility, tissue resistance, and quality of life. Outcome measurements were taken before treatment and between 10 days and 24 weeks after start of treatment.

The authors did not state how many reviewers selected studies for inclusion.

Assessment of study quality
The quality of RCTs and pseudo-RCTs was assessed according to the PEDro scale, which included criteria on randomisation, allocation concealment, baseline comparability, blinding, follow-up, and intention-to-treat analyses. The maximum score was 10.

The authors did not state how many reviewers performed the validity assessment.

Data extraction
It appeared that the percentage change in outcomes from baseline to post-treatment, and levels of significance were extracted for individual studies.

The authors did not state how many reviewers performed the data extraction.

Methods of synthesis
Data were presented as a narrative synthesis by treatment type, and by treatment component for combined physical therapy.

**Results of the review**
Fifteen studies were included in the review (n=656; range 14 to 80): 10 RCTs, one pseudo-RCT, and four non-randomised trials. The 11 studies assessed for quality scored between 2 and 7, with four scoring 6 or 7 out of 10.

**Combined physical therapy** (one RCT, one non-randomised trial): The RCT showed that patients receiving combined physical therapy given by an experienced physical therapist resulted in greater reductions in arm oedema compared with patients performing a standard physiotherapy program at home (p<0.05). The non-randomised trial showed that combined physical therapy was most effective at reducing oedema volume at the beginning of treatment, but this became less over time.

**Manual lymphatic drainage** (three RCTs, one pseudo-RCT): The findings were inconsistent, with the two high quality studies suggesting that manual lymphatic drainage did not significantly improve oedema when added to bandaging and skin care, or to wearing a compression sleeve and receiving information. In contrast, one lower quality RCT showed borderline significant reductions in oedema (p=0.053) and significant improvements in emotional functioning, dyspnoea and sleep disturbances in the specialist manual lymphatic drainage group compared with simplified lymphatic drainage performed by the patient. The pseudo-RCT found a statistically significantly higher reduction in lymphoedema after three weeks in the manual lymphatic drainage group compared with the group that received only multi-layer bandage, but the difference was not statistically significant when measured after two weeks.

**Exercises** (one RCT, one non-randomised trial): The low quality RCT and non-randomised trial showed contradictory findings.

**Intermittent pneumatic compression** (three RCTs, two non-randomised trials): Two moderate quality RCTs showed that intermittent pneumatic compression significantly reduced lymphoedema in the short term, but this did not persist in the long term. Another RCT showed no statistically significant difference between intermittent pneumatic compression and manual lymphatic drainage. Other findings were reported in the review.

**Multi-layer bandaging**: One RCT showed that bandaging was more effective than hosiery

**Compression sleeves**: One RCT showed that compression sleeves did not significantly reduce lymphoedema.

No controlled studies were found to assess the effectiveness of skin care or elevation.

**Authors’ conclusions**
Combined physical therapy was effective in the treatment of lymphoedema, but the effectiveness of its different components remained uncertain. Further research is required.

**CRD commentary**
The review question and supporting inclusion criteria were clearly defined. A number of electronic databases were searched, but as this was restricted to published articles in certain languages, potentially relevant articles may have been missed. The authors did not state whether each stage of the review was undertaken in duplicate, which meant that reviewer error and bias could not be ruled out.

The authors assessed study validity using previously published criteria, but the quality of studies was generally poor. A narrative synthesis was appropriate, but the synthesis was limited by the evidence available, with only a small number of studies with small sample sizes were included.

Given the limited evidence available and potential for reporting bias, the authors’ conclusions regarding combined physical therapy should be interpreted with caution, although their recommendation for further research appears appropriate.
Implications of the review for practice and research

Practice: The authors did not state any implications for practice.

Research: The authors stated that further high quality research is needed to investigate the effects of the different components, to include sufficient patients, analyses of arm symptoms and quality of life, and analyses of subgroups of patients with lymphoedema.

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