A review of the benefits of whole body exercise during and after treatment for breast cancer

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CRD summary
This review concluded that there is some evidence that exercise is beneficial and safe for a variety of breast cancer patients. However, the methodological quality of studies underpinning this conclusion was poor and any such association is not supported by the available evidence.

Authors' objectives
To review the benefits of whole body exercise during and after treatment for breast cancer.

Searching
MEDLINE, EMBASE, CINAHL, British Nursing Index and the Cochrane Library were searched from 1985 to the end of 2004; the search terms were reported. In addition, relevant journals were handsearched and the reference lists from retrieved articles were reviewed, but ‘grey’ literature was not sought. Articles not written in the English language in peer-reviewed journals were excluded.

Study selection
Study designs of evaluations included in the review
Empirical studies were eligible for inclusion; no further criteria were specified.

Specific interventions included in the review
Studies comparing either physical exercise or aerobic exercise with no exercise were eligible for inclusion. The exercise regimens evaluated included cycle ergometer, treadmill, outdoor walking, structured aerobic programmes and aerobic activities.

Participants included in the review
The eligible patient population was defined as breast cancer patients after surgery, or those during or after chemotherapy or radiotherapy. Studies primarily concerned with patients with lymphoedema were excluded. Patients at all stages of breast cancer, during or after chemotherapy or radiotherapy, and post-surgery, were enrolled across the included studies.

Outcomes assessed in the review
Studies reporting quality of life, fatigue, mood and mental states, body image, self-esteem, strength, functional status, fitness and cardiopulmonary status were eligible for inclusion.

How were decisions on the relevance of primary studies made?
The author did not state how relevant studies were selected for the review, or how many reviewers performed the selection.

Assessment of study quality
Quality assessment criteria included reporting of the research question and inclusion criteria, randomisation, comparability of groups, the use of a power calculation, blinding, representativeness of the sample, duration of follow-up and drop-out rates. It was unclear how the quality assessment was conducted.

Data extraction
The data were tabulated in a matrix form. The percentage increase or decrease, or whether a significant increase or decrease was observed in an outcome, was extracted.

Methods of synthesis
How were the studies combined?
A narrative synthesis of the studies was provided, grouped by exercise interventions during and after cancer treatment.
How were differences between studies investigated?
Differences in study characteristics were presented in a table and discussed in the text.

Results of the review
Thirty studies were included: 9 randomised controlled trials (n=667), 8 quasi-randomised studies (n=269), 3 case-controlled studies (n=298), 6 before-and-after designs (n=306), 1 cross-sectional study (n=335) and 3 case studies/series (n=110).

Nine of the experimental studies recruited fewer than 20 participants. The appraisal for methodological quality illustrated that many studies were considered to have limited internal and external validity; studies had small sample sizes, were often not randomised and failed to incorporate blinding. The more recent studies were found to be more robust than earlier ones.

Several studies reported beneficial effects during cancer treatment, particularly in reducing fatigue, of moderate exercise on an exercise bicycle, walking for 20 to 30 minutes at least three times a week, or structured exercise programmes (through treadmills, aerobic equipment and strength training).

A relationship between exercise and improved quality of life after cancer treatment was demonstrated in 7 studies. Improvements in cardiopulmonary function, strength, sleep, self-esteem and weight, depression, anxiety and tiredness were also reported in one study, and weight, nausea, fatigue and functional ability reported in another.

Authors’ conclusions
Exercise would appear to be beneficial and safe for a variety of breast cancer patients. However, the studies undertaken so far have lacked the empirical robustness to support this association.

CRD commentary
The review addressed a clear question, with exclusion criteria clearly stated. The author undertook a comprehensive search for published literature, but unpublished studies were not sought, thereby increasing the potential for publication bias. The inclusion of only English language publications might have resulted in the introduction of language bias. The studies included in the review comprised a number with small sample sizes, and many had limited internal and external validity. The reporting of the review methodology was poor and it is unclear whether attempts were made to reduce error and bias during the review process. The use of a narrative synthesis seems appropriate given the clinical heterogeneity of the included studies and the nature of the evidence. Study quality was assessed against quality assessment criteria, but the inclusion of poor-quality studies and the tentative nature of the implied associations ensure uncertainty regarding the robustness of any stated findings. The author’s conclusion, that the studies included in the review are not of sufficient quality from which to draw firm conclusions, seem appropriate.

Implications of the review for practice and research
Practice: The author stated that health professionals should be aware of the evidence surrounding the benefits of exercise and encourage patients to increase physical activity.

Research: Further studies, with greater levels of methodological quality, are required to support evidence for the benefits of exercise in breast cancer patients, particularly in patient subgroups (elderly, advanced cancer, disadvantaged). These studies need to be explicit about sample size determination within a randomised controlled trial design and should address issues of blinding to reduce potential bias.

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