Exercise training improves cardiopulmonary function and quality of life in postmenopausal breast cancer survivors

Synopsis


**Question:** Does exercise training improve cardiopulmonary function and quality of life in postmenopausal breast cancer survivors?  
**Design:** Randomised controlled trial.  
**Setting:** Specialised cancer institute  
**Patients:** Postmenopausal women who met the following inclusion criteria: history confirmed early stage breast cancer with no evidence of recurrent or progressive disease; completed surgery, radiotherapy, and/or chemotherapy with or without current hormone therapy use; normal body mass index and subcutaneous sum of skinfolds, all measured at baseline and post-intervention, ie after 15 weeks follow-up.  
**Interventions:** The exercise group received exercise training on bicycle ergometers with a training intensity that corresponded to approximately 70% to 75% of maximal oxygen consumption. There were three sessions a week for a period of 15 weeks and the exercise intensity increased systematically from 15 minutes in the first three weeks to 35 minutes in the last three weeks. The control group did not exercise.  
**Outcomes:** These consisted of cardiopulmonary fitness outcomes as measured with a bicycle test, quality of life as assessed by the Functional Assessment of Cancer Therapy-Breast Scale, and body composition (body weight, body mass index and subcutaneous sum of skinfolds, all assessed at baseline and post-intervention, ie after 15 weeks follow-up).  

**Main results:** The exercise group completed 98.4% of the exercise sessions. The mean difference in peak oxygen consumption was 0.29 L/min in favour of the exercise group (95% CI = 0.18 to 0.40; p < 0.01). The mean difference in improvement in quality of life was 8.8 points, which was in favour of the exercise group (95% CI = 3.6 to 14.0; p < 0.01). No statistically significant inter-group differences were found for measures of body composition.  

**Conclusion:** Exercise training had beneficial effects on cardiopulmonary function and quality of life in postmenopausal breast cancer survivors.

Commentary

When discussing quality of life in breast cancer patients, one should realize that they generally have levels of functioning and quality of life that are as good as, or better than, those of healthy, age-matched women (Dorval et al 1998, Ganz et al 1998). However, this does not necessarily make redundant any intervention aimed at improving quality of life and physical functioning, as is demonstrated by the study of Courneya et al.

As was also stressed by the authors themselves and in an editorial comment, the study has some limitations. These are the low recruitment rate, the small sample size and a short exercise intervention with no long-term follow-up. In addition, the intensity of the offered training seems rather high for patients who are not really used to exercise. This might be one of the reasons for the large proportion of patients who did not reply to the recruitment letter. Rehabilitation needs may differ substantially between patients. It might be worthwhile to see if less intensive exercise programs such as swimming, outdoor walking or cycling have similar effects on quality of life and give rise to fewer recruitment problems.

The authors noted one possible detrimental effect: in the exercise group there was a trend towards a higher incidence of lymphoedema. Until further data become available, it seems advisable to exclude high risk patients, such as the ones who have undergone full axillary dissection in combination with radiotherapy (Ververs et al 2001).

The study by Courneya and colleagues is a substantial contribution to the sparse evidence that professionally supervised physical exercise programs can have a beneficial effect on physical health and quality of life of breast cancer patients. Future research should focus on more readily accessible exercise interventions of long duration matched to the preferences of the patients, to increase the recruitment rate and minimise adherence problems. Future studies should also be based on larger patient numbers to enable sub-group analyses, should include a cost-effectiveness analysis and have longer follow-up to see if it is possible to achieve a lasting change in lifestyle.

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References

Controlled endurance or strength training of the neck muscles decreases pain and disability in women with chronic neck pain

Synopsis


Question: Does intensive isometric neck strength training or lighter endurance training of neck muscles reduce pain and disability in women with chronic neck pain? Design: Randomised controlled trial. Setting: Rehabilitation centre in Finland. Patients: Female office workers, with constant or frequently occurring, nonspecific neck pain for more than six months, recruited from occupational health services. Interventions: Patients were assigned to either of two training groups or to a control group, with 60 in each group. The two training groups started with a 12 day institutional program at the rehabilitation centre, consisting of dynamic exercises for the shoulders and upper extremities and a common multimodal rehabilitation program. The endurance training group performed dynamic neck exercises, which included lifting the head up from the supine and prone positions. The strength training group performed high-intensity isometric neck strengthening and stabilisation exercises with an elastic band. Both groups were thereafter encouraged to exercise regularly three times a week at home. Exercise intensity and technique were checked at follow-up visits at two and six months. The control group spent three days at the rehabilitation centre and performed recreational activities in addition to the tests. The participants were advised to perform aerobic exercise three times a week for a half hour. They were not encouraged to perform any exercises to improve muscle strength.

Results: At the 12 month follow-up, neck pain was reduced by 61% and 69% in the endurance and strength training groups respectively, compared with 27% in the control group ($p < 0.001$). Neck disability was reduced by 36% and 43% in the endurance and strength training groups respectively, compared with 13% in the control group ($p < 0.001$). Range of motion and isometric neck strength had also improved statistically significantly in both training groups compared with the control group, and more so for the strength training group than the endurance training group.

Conclusion: Strength and endurance training initiated with a 12-day institutional program followed by advice to exercise regularly at home were effective methods for decreasing pain and disability in women with chronic neck pain.

Commentary

Trials on “what works” in the field of physical rehabilitation are welcome among practitioners, especially when presenting such uplifting results as the present study of Ylinen and colleagues. The trial is elegantly designed and the authors have described the interventions comprehensively enough to be replicated in practice. Practitioners will know, of course, that they cannot expect equal success in their own practices, where a good proportion of the patients are afflicted with co-morbidity, motivation for work and rehabilitation varies extensively, and most of us would never make 98.3% of our patients stick to their exercise regime. (How did they do it?) However, the study shows that the exercise interventions as described in the report can work under circumstances equal to the trial, which is a necessary (though not sufficient) prerequisite for such interventions to actually work in a real world setting.

The interventions tested are too complex to be considered a pure comparison of isometric strength exercises, lighter endurance training and a control. Both intervention groups received potentially effective co-interventions by means of a multimodal rehabilitation program as well as actual physical therapy. Nevertheless, the trial results are both interesting and useful for practitioners in the field. It shows that a rehabilitation package including strength training plus a multimodal rehabilitation program plus four sessions of physical therapy can effectively reduce pain and disability for female patients with neck pain compared with a control group. A corresponding package including endurance training instead of strength exercises was also effective, though slightly less so. Contrary to the authors’ conclusions, however, the trial results do not constitute evidence on the superiority of these methods to aerobic/stretching exercises. A comparison of these training methods would have required yet another experimental group receiving an intervention comprising an aerobic/stretching exercise regime plus a rehabilitation package corresponding to the comparison groups. As it is, the control group is just a control group, and cannot be considered as a comparable experimental group receiving aerobic/stretching exercises under otherwise equal circumstances.

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Parental education does not reduce morbidity in pre-school children with asthma

Synopsis


Question: Does delivery of an education package and written guided self-management plan to parents of pre-school children with asthma, and with a recent inpatient admission for troublesome asthma or wheeze, reduce morbidity over the next 12 months? Design: Prospective, randomised, partially blinded, controlled trial. Setting: Two UK children's hospitals. Patients: Eligible patients were aged between 18 months and five years at time of admission to hospital wards, or attendance at emergency department, with primary diagnosis of acute severe asthma on at least one previous occasion. Two hundred children were randomly assigned to control (N = 101) or intervention (N = 99) groups. Successful follow-up over 12 months for control and intervention groups respectively was 89.1% and 87.9%. Interventions: Intervention group (children and parents) received general educational booklet about asthma in pre-school children, written guided self-management plan, 2 x 20 min structured one-to-one education sessions by specialist respiratory nurse. Control group received usual care (a range of medical and nursing approaches). Outcomes: Primary outcomes were GP consultation rates, hospital re-admissions, attendances at casualty or emergency departments (ED). Secondary outcomes were parent-perceived level of child's disability due to asthma (Index of Perceived Symptoms in Asthmatic Children), parent quality of life (Pediatric Asthma Caregiver's Quality of Life Questionnaire), symptom diaries completed for four weeks prior to follow-up at 3, 6 and 12 months. Caregiver's knowledge of asthma questionnaire administered at first follow-up, to assess information retained from educational sessions and written material. Results: No differences were found between control and intervention groups in any of the primary measures of outcome over the 12 months. For example, the between-group mean difference (95% CI) for GP consultations per subject per year was 0.26 (-1.34 to 0.81). The proportion of children attending an ED was 0.17 in the intervention group versus 0.19 in the control group; absolute risk reduction (95% CI) = 0.02 (-0.09 to 0.13). Conclusion: A targeted education program for parents of pre-school children with asthma made no difference to health service use by the child, or to quality of life measures of child or parent.

Commentary

Understanding of early childhood asthma has improved since Martinez et al (1995) published data from their birth cohort study, showing that early childhood asthma/wheeze constituted more than one cause and condition. Viruses are the most common provocateurs for acute wheeze in young children. A review (McKean and Ducharme 2000) confirmed that, for young children with “episodic viral wheeze”, inhaled corticosteroids (a mainstay of traditional preventative therapy) have little benefit.

It is in this context that the Stevens et al (2002) study needs to be considered. While this study suggests that there is little point in educating parents of young children with asthma/wheeze, several issues deserve consideration. Firstly, both research settings are teaching hospitals, thus the “usual” intervention is potentially already information rich, and the specific intervention may add little. The finding of no knowledge difference between groups supports this. Note should also be made that simple measurement of asthma knowledge may not be achievable (Ho et al 2003) and Stevens et al (2002) did not take baseline knowledge measurements. Secondly, as most patients had mild and infrequent symptoms, it would be unreasonable to expect a difference between symptom scores for the two groups. Thirdly, it is unlikely that only one disorder is present (Martinez et al 1995), therefore it is not surprising that intervention and education strategies showed no effect (McKean and Ducharme 2000). This explains the apparent conundrum that educational programs in older children and adults have shown positive benefit, because in these age groups there are well documented positive therapeutic strategies.

For an intervention and education program to be effective for young children with acute asthma/wheeze, there has to be a positive therapeutic evidence base, targeted if possible to wheezing types, and educational tools developed on the basis of this evidence.

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References


* NNT calculated by reviewer based upon original data in paper.
An interdisciplinary and multifactorial prevention program reduces falls in older people in residential care

Synopsis


**Question:** Does a multifactorial, interdisciplinary program in residential care facilities reduce falls and fall-related injuries in older people? **Design:** Cluster randomised controlled non-blinded trial. **Setting:** Nine residential care facilities in Sweden. **Patients:** Four hundred and thirty-nine eligible patients (37 non-participants), leaving 402 consenting residents older than 65 years. Random allocation to intervention or control group was by care facility. Two hundred and eight residents entered the study as controls (5.8% drop-out, further 14.8% loss to follow-up), and 194 residents entered the intervention group (3.1% drop-out, further 16.5% loss to follow-up). **Interventions:** The control group received usual care. The intervention group undertook a multidisciplinary program comprising general and individually tailored strategies. General strategies included educating and supporting staff, modifying the environment, having post-fall problem-solving conferences. Individually tailored interventions were provided for residents screened at study entry as having high risk of falling (N = 89) and residents who fell during the intervention period (N = 19). Individual strategies included exercise programs, supplying and repairing mobility aids, reviewing drug regimens, providing hip protectors. **Outcomes:** Primary outcomes were the number of residents sustaining a fall, number and type of falls per resident and the time to occurrence of first fall. Secondary outcome was the number of fall-related injuries. In the statistical analysis, adjustments were made for baseline group differences in fall risk factors eg delirium, gender, age, falls history. **Results:** Over the 34 week follow-up, 44% of the intervention group fell compared with 56% in the control group; odds ratio (OR) for falling for the intervention compared with the control = 0.62 (95% CI 0.42 to 0.91), adjusted OR = 0.49 (95% CI 0.37 to 0.65). Falls incidence per 1000 person-days was 6.7 for intervention and 8.3 for control groups; adjusted incidence rate 0.60 (95% CI 0.50 to 0.73). In the intervention group 26% sustained multiple falls, compared with 33% of the control group adjusted OR = 0.56 (95% CI 0.38 to 0.89). The time to first fall was significantly longer for the intervention group than the control (adjusted hazard ratio 0.66 (95% CI 0.54 to 0.79)). **Conclusion:** The intervention program significantly reduced all falls outcome measures for elderly people in residential care facilities.

Commentary

This clinical trial used a multifaceted intervention program to decrease falls and fall-related injury in nursing home residents. Components of the program that could be implemented by physiotherapists include education of staff, hazard modification, exercise targeting strength and balance, and provision of hip protectors.

There is existing Level 1 evidence of efficacy for components of the program. Hip protectors may decrease the incidence of fall-related hip fracture in the elderly (including nursing home residents), but this effect only occurs when the hip protectors are actually worn (Parker et al 2003). The most recent update of the Cochrane falls prevention systematic review concludes that muscle strengthening and balance exercise, home hazard assessment and modification, and multifaceted interventions reduce the risk of falling in community dwelling older people (Gillespie et al 2003).

The trial by Jensen and colleagues extends this evidence to nursing home residents, a group with a higher risk of falls than the elderly living at home. The size of the treatment effect was clinically worthwhile, with the number of nursing home residents needed to be treated with the multifaceted program to prevent one resident from falling being eight. The results are also clinically worthwhile for the secondary outcome of fall-related injuries (number needed to treat with the multifaceted program to prevent one resident from having a hip fracture was 22). It is difficult to translate the exercise program into practice, however, because the article contains very little information about the types of exercise used.

One challenge that will be encountered by physiotherapists working in nursing homes is compliance. For treatment to be effective, residents need to undertake regular moderate to high intensity training that challenges their capacity, and must wear hip protectors continuously.

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**References**