Weight training does not promote lymphoedema in breast cancer survivors

Synopsis


**Question:** In women whose breast cancer treatment included axillary dissection, does weight training increase strength without precipitating or exacerbating arm lymphoedema?

**Design:** Randomised, controlled trial with blinded assessors.

**Setting:** University of Minnesota Recreational Centre.

**Participants:** Women 4 to 36 months after treatment for breast cancer that included axillary node dissection beyond sentinel node biopsy. Exclusion criteria included hypertension, morbidity (body mass index > 40 kg/m²), participation in a weight loss plan, and co-morbidities that prevented exercise training. Forty-six participants were randomised to an exercise training group (n = 23) or a control group receiving no intervention (n = 23).

**Interventions:**

Exercise training consisted of upper and lower limb, chest, and back exercises for one hour, twice per week, with resistance applied via machines or free weights. Upper body resistance was increased by the smallest available increment at each session if no symptoms of lymphoedema had developed. Lower body exercise commenced at one set of ten repetitions with the maximum tolerated weight, progressing to three sets by the third week. Stretching exercises were also performed. Exercise was performed in small groups with supervision for three months, followed by unsupervised exercise in pairs for a further three months. Encouragement to continue exercise sessions was provided by telephone whenever a participant failed to attend for one week. Participants in both groups were encouraged to continue any lymphoedema management being performed at baseline, and discouraged from changing dietary or other exercise habits.

**Outcomes:** Incidence of lymphoedema on the ipsilateral side as the cancer was identified in three ways: a greater arm circumference compared to the contralateral arm by at least two centimetres; symptoms (upper-limb swelling, pain or fine motor dysfunction); and self-report of lymphoedema. Severity of lymphoedema was assessed using difference in arm circumference and symptom severity. Strength was measured as the maximum weight that could be lifted once (1RM) by the upper limb (bench press) and lower limb (leg press).

**Results:** One control group participant withdrew. None of the lymphoedema measures was significantly greater in the exercise group compared to the control group. Over the six months, the exercise group improved significantly more than the control group on the bench press 1RM (by 28 kg, 95% CI 15 to 41) and on the leg press 1RM (by 12 kg, 95% CI 8 to 16).

**Conclusion:** A six-month exercise program that includes weight training improves strength without increasing lymphoedema in women after breast cancer treatment that includes axillary clearance.

[Effect sizes and 95% CIs calculated and converted to kg by the CAP Editor.]

Commentary

This is an important study for women who have undergone surgery for breast cancer. There is a strong belief that, for women following breast cancer, exercise can cause lymphoedema as well as exacerbate it. This fear has been triggered by guidelines that state that heavy lifting and other vigorous activity should be avoided to minimise the risk of developing lymphoedema. Notably, most of the guidelines are based on expert opinion. Prior to the study by Ahmed et al, research on exercise for women treated for breast cancer focused predominantly on lower-limb, aerobic exercise. Only in the past couple of years has the focus shifted to the effects of exercise on the ‘at-risk’ arm, but these studies have typically involved only a few women (eg, Lane et al 2005).

Clinicians should note the conservative approach to resistance training. Women commenced with no weight and it was increased by the smallest allowable increment only if lymphoedema was not exacerbated. In this study, outcomes were based on arm circumference measures and self-report. Clinicians and researchers need to address the measurement of lymphoedema as both continue to rely on relatively gross measures. Whilst arm circumference measurements are reliable (Megens et al 2001), bioimpedance offers greater specificity and sensitivity (Hayes et al 2006). For clinicians introducing a novel treatment, such as resistance training, use of bioimpedance would provide greater assurance of the ‘status quo’.

In conclusion, this is the first trial that is adequately powered to examine the effect of upper limb resistance training for women with lymphoedema. Following surgery to the axilla for breast cancer women should be encouraged to exercise and to use their ‘at-risk’ arm.

Sharon Kilbreath
University of Sydney, Australia

References

