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 biopsy. Exclusion criteria included hypertension, morbid obesity (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.

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References

The effect of 300 mW, 830 nm laser on chronic neck pain

Synopsis


**Question:** Does 300 mW, 830 nm low-level laser therapy (LLLT) improve pain, disability and quality of life in people with chronic neck pain? **Design:** Randomised controlled trial. **Setting:** Primary care (medical centre of 17 general practitioners). **Participants:** Ninety subjects with chronic neck pain (mean duration 15.1 ± 12.6 years). **Interventions:** The intervention group received twice-weekly treatments of LLLT (830 nm, 300 mW, at a power density of 0.67 W/cm²) applied to tender points in the neck, for 7 weeks. The control group received sham laser treatment. **Outcomes:** The primary outcome was pain intensity (10 cm VAS scale). Other outcomes were quality of life (Short Form-36, consisting of a Physical Component Summary and a Mental Component Summary, each scored from 0 to 100); perceived disability (Northwick Park Neck Pain Questionnaire, NPNPQ, measured on a scale of 0 to 36); neck pain intensity and interference with living (Neck Pain and Disability Scale, NPAD, measured on a scale of 0 to 100); pain (Short-Form McGill Pain Questionnaire, MPQ) and a participant rating of global assessment (self-assessed improvement, SAI, expressed as percentage change). Outcomes were measured 1 month after completion of the treatment (approximately 12 weeks from baseline). **Results:** The between-group difference in VAS pain score at 12 weeks was –3.0 cm (95% CI –2.1 to –3.8). Measured on the McGillVAS Pain Scale, the reduction in pain intensity was –2.2 cm (95% CI –0.9 to –3.5). Self-assessed improvement (SAI) scores favoured the active LLLT group, with between group differences of 41% (95% CI 27.7 to 55.8). The NPAD disability score was reduced by a mean of –12.1 (95% CI –19.3 to –4.8). The mean change in NPNPQ score was –3.0 (95% CI –5.0 to –9.0). Negligible changes (3% to 5%) were reported in the SF-36 and MPQ (sensory and affective) scores. **Conclusion:** LLLT, as implemented in this study, was effective in providing pain relief for patients with chronic neck pain.

Commentary 1

As stated by the authors of this paper, neck pain is a highly prevalent condition that incurs significant economic and personal costs. Evidence for the efficacy of physical treatment interventions is not strong and studies investigating such interventions are needed urgently.

This randomised, placebo-controlled trial investigated the effect of low level laser therapy (LLLT) on pain, disability, and quality of life in patients with chronic neck pain. The results demonstrated 300 mW, 800 nm LLLT to be effective in reducing pain measured on a VAS scale. There was also improvement on secondary outcomes of disability and superior self-perceived global improvement compared to placebo. The results of this study would appear to be clinically relevant with changes on both the pain and disability measures exceeding documented minimal clinically important differences (Hagg et al 2003, Leak et al 1994). However it should be noted that the follow-up was three months post baseline assessment and longer term effects are unknown.

The LLLT was delivered to palpably allodynic areas of the cervical and thoracic regions twice-weekly for seven days. With calls for more multimodal approaches to management, it may be difficult for most physiotherapists to reconcile such a monomodal treatment approach. It would, therefore, be interesting to determine the possible additive effect of LLLT to other interventions, for example exercise therapy.

Based on previous animal studies, the authors propose some interesting hypotheses for potential mechanisms underlying their findings, including the reduction of peripheral nociceptive input to the dorsal horn and subsequent pain modulation in the CNS. The authors acknowledge that investigation of subgroups of neck pain rather than ‘lumping’ together people with a variety of underlying mechanisms may be a future approach. This would seem especially prudent for neck pain where subgroups have been identified based on presentations indicative of varying pain processing mechanisms. This includes a group of neck pain patients, with apparent augmented central pain processing changes, which shows recalcitrance to physiotherapy interventions (Scott et al 2005). The effect of LLLT in this patient group would be an interesting investigation.

Overall this study indicates that LLLT is useful in decreasing pain and disability of chronic neck pain, in the medium term. Further studies are warranted to explore more long term effects, additive effects with other interventions, and differential effects in identified neck pain sub-groups.

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References

Commentary 2

A between-group difference of 3 points on a 10 point pain scale is an enormous effect and rarely seen in trials evaluating physical treatment for spinal pain. Clinicians reading this result may be tempted to apply laser to their patients. One difficulty is that other laser trials have produced the opposite result with laser no better than a sham. Advocates of laser explain these contradictions as arising from the use of different doses of laser but they may equally have arisen from differences in trial design.

A key design feature is blinding. Trials with inadequate blinding tend to show a greater effect of intervention (Schulz et al 1995). In the Chow trial the method of blinding was not robust. The two laser units were labelled A and B with only one emitting a laser beam. The authors reported that they achieved blinding by requiring therapist and patients to don protective goggles during treatment. While this method of blinding is better than simply asking people to close their eyes or look away, the potential for unblinding is obvious. Importantly the trial did not assess patient blinding beyond the first treatment and never assessed therapist blinding, so the extent of this potential problem is unclear.

Until this result is replicated in larger trials with more robust blinding I would advise caution with regard to the use of laser in the treatment of chronic neck pain. There are other treatment options for this condition that have more convincing support from clinical trials.

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Reference
The presence of four simple history features can diagnose migraine accurately

Synopsis


Question: Can the clinical assessment distinguish patients with migraine from those with other types of headache?

Methods: Systematic review of diagnosis studies. Data sources: The MEDLINE database was searched for the years 1966 to November 2005. This was supplemented by citation tracking and inspection of bibliographies of texts. Study selection and assessment: Two authors independently assessed study eligibility, study quality, and extracted data. Studies were eligible for inclusion if they assessed diagnostic accuracy of history and physical examination tests, alone or in combination, and the reference standard was the diagnosis of a migraine-type headache made by a neurologist following the International Headache Society criteria. Outcomes: Diagnostic accuracy was expressed as likelihood ratios (LR) with 95% CI. Main results: Four eligible studies were located, two studying patients referred to headache specialists and two studying primary care patients. The two specialist studies were of very low methodological quality and there were concerns about data analysis and adequacy of the reference standard. The first primary care study was of high quality and evaluated a screening tool comprising five criteria: Pulsatile quality, duration 4–72 h, Unilateral location, Nausea/vomiting, Disabling intensity (mnemonic = POUND). The presence of four or more features provided a LR of 24 (95% CI 1.5 to 388) in diagnosing definite or possible migraine and a LR of 5.8 (95% CI 2.7 to 12) for a diagnosis of definite migraine. Including the features photophobia, phonophobia, and exacerbation with the five POUND criteria algorithm did not improve diagnostic accuracy. The other primary care study was of fair quality and found that the presence of two or more of the features: disabling headache, nausea, and sensitivity to light, gave a LR+ of 3.2 (95% CI 2.7 to 3.9) and LR− of 0.25 (95% CI 0.22 to 0.28). Conclusions: A screening tool comprising five criteria: Pulsatile quality, duration 4–72 h, Unilateral location, Nausea/vomiting, Disabling intensity, remembered using the mnemonic ‘POUND’, can accurately diagnose migraine.

Commentary

As primary contact practitioners physiotherapists should be able to diagnose migraine accurately so they can direct the patient towards appropriate management. Primary headaches such as migraine, cluster headache, and tension-type headache are diagnosed by identification of symptom complexes as detailed in the International Headache Society criteria (IHS 2004). Appropriate management of migraine usually addresses central and/or peripheral mechanisms of this headache type. Prescription medications have been shown to be effective for relieving the acute migraine attack (McCrory and Gray 2003) and for prevention of attacks (Chronicle and Mulleners 2004). Manual therapy to address musculoskeletal impairments that may be present may also be effective in preventing attacks (Bronfort et al 2004).

Detsky et al contend that the IHS criteria for migraine without aura are too cumbersome and present their POUND mnemonic as a simpler clinical alternative. The reported likelihood ratio (LR) of 24 means that a positive test is 24 times more likely in a headache patient with migraine than in someone without migraine. The clinical utility of this tool can be shown by calculating the probability that a patient who fulfils the criteria has migraine. To do this it is first necessary for the clinician to estimate the pre-test probability that the headache is due to migraine. It has been reported that 14% of patients presenting to physiotherapy practices for treatment of their headaches have migraine (Quin and Niere 2001). From this, it can be calculated that

References

In addition to usual care, pelvic floor exercises commenced preoperatively reduce incontinence after prostatectomy

Synopsis


**Question:** In men receiving usual post-operative care for radical prostatectomy, do additional pelvic floor exercises commenced preoperatively and continued postoperatively reduce incontinence? **Design:** Randomised controlled trial with blinded assessors. **Setting:** Tertiary medical centre and private urology clinics in the USA. **Participants:** Men scheduled for elective radical prostatectomy. Exclusion criteria were prior prostatectomy, more than two episodes of incontinence in the previous six months, and impaired mental state. One hundred and twenty-five men were randomised to an intervention group (n = 63) or a control group (n = 62), from which six and seven men, respectively, were withdrawn because their surgery was cancelled. **Interventions:** The intervention group received one session of biofeedback-assisted training in pelvic floor muscle control and instructions in a daily pelvic floor regimen. The regimen included three sessions of 15 pelvic floor muscle contractions, each held for up to ten seconds with two to ten seconds rest, and interruption or slowing of the urinary stream during voiding once per day. These men were encouraged to follow the regimen daily until the surgery and were reminded at catheter removal to resume the daily regimen. The control group received no preoperative intervention, brief verbal instructions after catheter removal to interrupt the urinary stream during voiding once daily, plus whatever instructions were given by the surgeon as part of usual care. **Outcomes:** The primary outcome was time to continence, assessed by one-day bladder diaries completed weekly and a seven-day bladder diary completed at six weeks, three months, and six months. Continence was defined as no leakage reported on three consecutive one-day diaries or on one seven-day diary. Questionnaires about severity of incontinence, pad use, return to work, and quality of life were also completed at six weeks, three months, and six months. **Results:** At the six-month assessment, survival analysis showed significantly faster return to continence in the intervention group, median time to continence 3.5 months versus > 6 months, p = 0.04. Other benefits at six months included significant reductions in severe incontinence (Odds Ratio (OR) 0.29, 95% CI 0.09 to 0.94); pad use (OR 0.44, 95% CI 0.24 to 0.99); and incontinence with coughing (OR 0.29, 95% CI 0.13 to 0.66), sneezing (OR 0.38, 95% CI 0.17 to 0.86), and standing up from lying (OR 0.36, 95% CI 0.13 to 0.94). Quality of life, incontinence impact, and return to work and usual activities did not differ significantly between groups. **Conclusion:** For men undergoing radical prostatectomy with usual postoperative care, additional biofeedback-assisted training in pelvic floor muscle control and pre- and postoperative pelvic floor exercises reduce postoperative incontinence. 

[Odds ratios and 95% CIs calculated by the CAP Editor.]

Commentary

This study by Burgio and colleagues makes a substantial contribution to the treatment of male incontinence after radical prostatectomy. The occurrence of incontinence especially in the early recovery period after surgery can be very difficult for patients to accept. Research into interventions that shorten this incontinence period should be encouraged. Hunter et al (2004) conducted a systematic review of pelvic floor muscle training for incontinence after prostatectomy. The review included no studies that investigated the efficacy of preoperative pelvic floor muscle training for male incontinence.

This article describes the positive results of a pre- and postoperative pelvic floor exercise program in a large group of male incontinent patients (n = 125) even 6 months after surgery. The methodological quality of this study is high, achieving a PEDro score of 7/10. Allocation was not concealed and blinding of therapists and patients was not possible. Positive aspects of the design were that a power calculation was performed and that assessment of incontinence was based on different measurements.

The pre-operative treatment was limited to one session. From a clinical perspective, one session can improve awareness but cannot give a training effect. Use of the term behavioral training for the study intervention is not recommended by the international continence society. Behavioral training includes pelvic floor muscle training but also lifestyle interventions and voiding regimes, which were not part of the intervention. The study cannot answer whether biofeedback is necessary because two treatment modalities, pelvic floor muscle exercises and biofeedback, were offered.

From this study we can conclude that pre- and postoperative pelvic floor muscle exercises and biofeedback should be a part of the treatment of patients who undergo radical prostatectomy. Urologists should be made aware of these results so that they can refer these patients to physiotherapists.

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Reference

Spinal manipulation and exercise was better than ultrasound and exercise for patients with chronic low back pain

Synopsis


Question: What are the short-and long-term effects of spinal manipulation in patients with chronic low back pain?

Design: Randomised controlled trial. Setting: Outpatient physiotherapy department in UK. Participants: 120 people, aged 18–55, with non-specific low back pain of greater than 3 months duration. Participants were excluded if they had a history of prior treatment including manipulation, chiropractic, osteopathy, and ultrasound, or were receiving disability benefit as a result of LBP. Interventions: Both groups were given a written set of exercises, chosen by the physiotherapist for each individual. In addition, one group received high velocity thrust manipulation in side-lying (on average four sessions) and the other group received therapeutic ultrasound (1 MHz, continuous pattern, on a visual analogue scale, 0–100 mm), functional disability (Oswestry questionnaire, 0–100%), lumbar movements (modified Schober’s test), and muscle endurance (measured by surface electromyography) were measured before treatment, at the end of treatment program, and 6 months after randomisation. Results: Participants in the manipulation/exercise group demonstrated a significantly greater reduction in pain intensity (mean between-group difference 16.4, 95% CI 6.1 to 26.8) and functional disability (mean-between group difference 7.8, 95% CI 2.4 to 13.2), as well as improved lumbar flexion (mean-between group difference 9.4 mm, 95% CI 5.5 to 13.4) and extension (mean-between-group difference 3.4 mm, 95% CI 1.0 to 5.8) (p < 0.01 in all instances). After six months the manipulation/exercise group still demonstrated greater benefit than those in the ultrasound/exercise group for pain (mean between-group difference 15.1, 95% CI 7.55 to 22.64) and disability (mean between-group difference 5.2, 95% CI 2.63 to 7.81). Data for Month 6 are provided by the author because numbers reported in Table 3 in the published paper are incorrect. Conclusion: Manipulation and exercise showed greater improvement compared to ultrasound and exercise for participants with chronic low back pain, both at the end of treatment and at six months follow-up.

Commentary

In spite of a large number of pathological conditions being capable of causing low back pain (LBP), a definitive diagnosis is not possible in up to 85% of cases. As a result there is considerable uncertainty in the treatment of this group of patients. Recently, several high quality trials have shown that single physiotherapy treatments (as distinct from combination therapy) may have no benefit over the natural history in patients with acute non-specific LBP. Furthermore, a number of studies have shown little or no difference between various physiotherapy treatments for acute, sub-acute, or chronic cases. Mohseni-Bandpeii et al have undertaken this randomised controlled trial comparing manipulation and exercise with ultrasound and exercise for chronic low back patients. The reason for choosing these modalities was that several studies have suggested that manipulation is superior to other treatments for acute LBP, but its efficacy for chronic low back pain is still controversial. Ultrasound on the other hand is still one of the most commonly used modalities in UK for treatment of LBP patients. In the present study it was found that both groups improved, but with a significant difference in favour of the manipulation/exercise group. The findings of the study are intriguing as they are in clear contrast to the conclusions of a recent systematic review (Assendelft et al 2003) which concludes that spinal manipulative therapy is only one of several options of only modest effectiveness for people with low back pain, and truly effective therapy for such patients remains elusive. On the other hand, combination therapy involving manipulation and exercise has been demonstrated to be superior to single interventions (UK BEAM 2004). Clinically, multimodal treatment makes a lot of sense, considering that long-lasting LBP often is multifactorial. The exercises used in combination with spinal manipulation or ultrasound are not described in detail in this paper, which could have been very informative. However the exercises were prescribed in writing and chosen appropriately by the treating therapist, according to the individual’s condition. This is in line with recommendations for exercises in chronic back pain patients (Hayden et al 2005).

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References