Tai Chi may be safe though ineffective for rheumatoid arthritis

Synopsis


**Question** Is Tai Chi effective and safe as a treatment for people with rheumatoid arthritis (RA)? **Design** Systematic review of randomised controlled trials (RCT) or controlled trials (CCT). **Setting/population** Ambulatory adults with a diagnosis of RA. **Interventions** Exercise programs with Tai Chi instruction or incorporating principles of Tai Chi philosophy. Control groups received no therapy, sham therapy, or another type of therapy. **Outcomes** Outcome measures from OMERACT 1993 and safety assessed as withdrawals. **Results** Three RCTs and one CCT including 206 participants were included in the review. On a scale from 0 (worst) to 5 (best) the methodological quality of the studies were assessed as 0 in three studies and 1 in one study. Tai Chi-based exercise programs had no clinically important or statistically significant effect on most outcomes of disease activity, which included activities of daily living, patient global overall rating, tenderness or number of swollen joints (WMD 2.45 joints, 95% CI –0.45 to 5.36). For range of motion, Tai Chi participants had statistically significant and clinically important improvements in ankle plantar flexion (WMD 24.00 degrees, 95% CI 3.34 to 44.66). There were statistically greater withdrawals from the control groups than from the Tai Chi groups (RR 0.97, 95% CI 0.19 to 0.72). One study found that compared to people who participated in traditional ROM exercise/rest programs those in a Tai Chi dance program reported a significantly higher level of participation in and enjoyment of exercise both immediately and four months after completion of the Tai Chi program. **Conclusion** The results suggest Tai Chi does not exacerbate symptoms of rheumatoid arthritis. In addition, Tai Chi has statistically significant benefits on lower extremity range of motion, in particular ankle range of motion, for people with RA. However, four studies of low methodological quality do not provide strong evidence and the results should be interpreted with caution.

Commentary

Rheumatoid arthritis (RA) is a chronic, inflammatory and systemic disease that mainly affects the musculoskeletal system. The disease commonly causes fatigue, pain, joint destruction, and decreased physical performance. Beneficial effects of regular exercise programs for patients with RA are well documented and The American College of Rheumatology recommends strengthening and aerobic conditioning regimens in its guidelines for the management of RA.

Tai Chi combines slow and gentle movements, both isometric and isotonic, with deep diaphragmatic breathing and relaxation while maintaining good posture. It involves stepping with full weight on both lower extremities, while bending knees. Tai Chi is approximately equivalent to walking 6 km/h and produces an average increase in heart rate of 50%.

Tai Chi has been shown to improve balance and prevent falls (Gillespie et al 2001), increase flexibility (Lan et al 1996), and improve physical function (Wu et al 2002). It is a frequently prescribed exercise for arthritis sufferers in China, but little is documented in English about possible beneficial effects in RA.

This review concludes that Tai Chi is a safe form of exercise for patients with RA. In daily clinical practice physiotherapists need a variety of safe exercise options in order to increase the patient’s adherence in exercise. The fact that patients reported enjoyment with Tai Chi may improve their motivation for regular exercise.

Reduced balance and fear of falling is reported as limiting factors for RA patients (Noren et al 2001). To our knowledge, none of the included studies used balance, fear of falling, or postural control as outcome measures. Studies have shown that Tai Chi improves balance and prevent falls in older adults with osteoarthritis (Song et al 2003). Further studies are needed to investigate if this is the case for RA patients.

We support the authors’ suggestions for further studies regarding patient-reported pain and quality of life after Tai Chi programs. To capture the patients’ experience and impression with Tai Chi, qualitative studies may be needed. This review supports and encourages physiotherapists to consider Tai Chi as a safe alternative form of exercise, and thus expand their scope of practice for RA patients.

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References


Spinal fusion slightly more effective than intensive rehabilitation for chronic low back pain

Synopsis


Questions Is spinal fusion more effective than intensive rehabilitation in improving disability, walking tolerance, quality of life and psychological distress for patients with chronic low back pain? How frequently do complications occur with the two treatments? Design Single blind multicentre randomised controlled trial with intention to treat analysis. Setting 15 UK orthopaedic and rehabilitation centres. Patients 349 participants aged 18–55 years, with chronic low back pain lasting at least one year, who were considered candidates for spinal fusion were randomly assigned to either lumbar spine fusion (176 participants of whom 139 received it) or intensive rehabilitation program based on cognitive behavioural therapy principles (173 participants of whom 151 received it). Interventions The technique for the spinal stabilisation surgery was left to the surgeon’s discretion. The intensive rehabilitation program consisted of a daily outpatient program of exercise and education five days per week for three continuous weeks. Outcomes Outcomes were measured at baseline, 6, 12, and 24 months. Disability was measured using the Oswestry disability index (range 0–100), walking tolerance with the shuttle walking test, quality of life with the SF-36, and distress with the DRAM. The primary outcomes were disability and walking tolerance at two year follow-up. Results 81% of patients were followed up at 2 years. At 2 years the surgery group had slightly greater improvement in disability: group mean and 95% CI = 4.1 (0.1 to 8.1). All other improvements in outcomes were not clinically or statistically significantly different between groups. Intraoperative complications occurred in 19 surgical cases, no complications were noted in the rehabilitation group. Conclusion Spinal fusion is slightly more effective than intensive rehabilitation for improving disability in people with chronic low back pain who are candidates for spinal fusion. Complications occurred in 14% receiving surgery and 0% of those receiving intensive rehabilitation.

Commentary

This paper reports the results of a landmark study, as it is a large and well conducted trial which fills an important gap in the literature. It randomised 349 chronic low back pain patients to spinal stabilisation surgery or intensive rehabilitation (of about 75 hours) led by a physiotherapist with input from a clinical psychologist. Few trials have been carried out to evaluate spinal fusion. One Swedish trial (n = 222) compared three different surgical approaches with physiotherapy. They reported that surgery was more effective than physiotherapy but it appears that an intensive rehabilitation approach was not used (Fritzell 2002).

Fairbank et al (2005) followed up patients for 2 years with a drop out of only 19% and used intention to treat analysis. However, 28% of patients in the rehabilitation arm of the study had surgery by follow up. Twenty-two percent of those in the surgical arm of the study had rehabilitation. It took nearly 6 years to recruit patients to the study from 15 centres around the UK.

Spinal fusion surgery is associated with high rates of complications and is very expensive (Deyo 2004). There are great geographical variations in its use. About 20% of patients who see an orthopaedic surgeon or neurosurgeon in the US end up having surgery, compared with 3% in the UK. The US rate of spinal surgery is more than twice the Australian rate and about five times the UK rate (Cherkin 1994).

Fairbank et al (2005) found marginally statistically significant results in favour of the surgical group. However, they wisely concluded that the difference in outcome was not sufficient and the associated risks were too high to recommend stabilisation surgery for patients with chronic low back pain. This is consistent with the recommendations of the European Guidelines for chronic low back pain (European Guidelines 2004).

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References
Intensive rehabilitation may be more cost effective than surgical stabilisation for chronic low back pain

Synopsis

Question From the perspectives of health providers and chronic low back pain patients, is surgical stabilisation (spinal fusion) cost effective when compared with intensive rehabilitation? Design Economic evaluation alongside a pragmatic randomised controlled trial. Setting 15 UK orthopaedic and rehabilitation centres. Patients and interventions 349 participants aged 18–55 years, with chronic low back pain lasting at least one year, who were considered candidates for spinal fusion, were randomly assigned to either lumbar spine fusion (176 participants of whom 139 received it) or an intensive rehabilitation program based on cognitive behavioural therapy principles (173 participants of whom 151 received it). The difference reflects 38 patients allocated to rehabilitation who chose surgery, and seven surgery patients who chose rehabilitation then surgery. Outcomes Costs related to back pain, incurred by patients and National Health Service over the 24 months of the study, return to paid employment, total hours worked, and EuroQol EQ-5D to calculate quality adjusted life years (QALYs). Results Mean total cost per patient was £7830 (SD £5202) in the surgery group, compared with £4526 (SD £4155) for the rehabilitation group (significant difference in favour of rehabilitation £3304 (95% CI £2317–£4291). There was no significant difference between groups in QALYs 0.07 (–0.02 to 0.16). Incremental cost effectiveness ratio was £48,588 per QALY gained (–£279,883 to £372,406). Conclusion Spinal stabilisation surgery appears to be less cost effective than rehabilitation programs based on cognitive behavioural therapy over a two year follow-up period. Further follow-up is required to track the number of rehabilitation patients who require surgery.

Commentary
The paper presents a cost-utility analysis accompanying a randomised clinical trial comparing two patient management strategies for chronic back pain: surgical stabilisation versus intensive rehabilitation.

The results overall are that surgery costs £7830 (including cost to the NHS and private costs, but not including the value of time lost from work) and provides health benefits of 1.004 Quality Adjusted Life Years (QALYs) over 2 years. Intensive rehabilitation costs £4526 and provides health benefits of 0.936 QALYs. Therefore the difference in cost is £3304 (95% CI £2319 to £4291) and in health benefit is 0.068 QALYs (–0.02 to 0.156). The authors conclude that the cost effectiveness ratio (3304/0.068) is 49 000 and surgery is therefore unlikely to be cost effective using thresholds currently used by the National Institute for Clinical Excellence (the health technology assessment body for England and Wales), given a fixed overall budget for healthcare and the need to make decisions about alternative uses of use limited resources.

The trial and analysis appear well conducted. However, there are some further issues:

Not all patients in the rehabilitation group completed their course of treatment. The report does not say whether these patients were more likely to be missing, or consider possible reasons for non-compliance.

There is a difference in baseline health-related quality of life (HRQoL) between the treatment groups. The analysis adjusts for this using regression, assuming that the increase in HRQoL over 2 years is unrelated to baseline HRQoL. It may be that patients with lower baseline HRQoL respond differently to treatment than patients with higher HRQoL.

A relatively high proportion of patients in this trial crossover to the alternative treatment, or have neither treatment. The authors argue that this is a strength of the study, in the sense that it reflects routine practice. However, this also makes it difficult to assess what management strategies are being compared. For example, should surgery be offered if intensive rehabilitation fails?

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