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[Intervention Review]

Exercise therapy for chronic fatigue syndrome

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ABSTRACT

Background

Chronic fatigue syndrome (CFS) is characterised by persistent, medically unexplained fatigue, as well as symptoms such as musculoskeletal pain, sleep disturbance, headaches and impaired concentration and short-term memory. CFS presents as a common, debilitating and serious health problem. Treatment may include physical interventions, such as exercise therapy, which was last reviewed in 2004.

Objectives

The objective of this review was to determine the effects of exercise therapy (ET) for patients with CFS as compared with any other intervention or control.

• Exercise therapy versus 'passive control' (e.g. treatment as usual, waiting-list control, relaxation, flexibility).

• Exercise therapy versus other active treatment (e.g. cognitive-behavioural therapy (CBT), cognitive treatment, supportive therapy, pacing, pharmacological therapy such as antidepressants).

• Exercise therapy in combination with other specified treatment strategies versus other specified treatment strategies (e.g. exercise combined with pharmacological treatment vs pharmacological treatment alone).

Search methods

We searched The Cochrane Collaboration Depression, Anxiety and Neurosis Controlled Trials Register (CCDANCTR), the Cochrane Central Register of Controlled Trials (CENTRAL) and SPORTDiscus up to May 2014 using a comprehensive list of free-text terms for CFS and exercise. We located unpublished or ongoing trials through the World Health Organization (WHO) International Clinical Trials Registry Platform (to May 2014). We screened reference lists of retrieved articles and contacted experts in the field for additional studies

Selection criteria

Randomised controlled trials involving adults with a primary diagnosis of CFS who were able to participate in exercise therapy. Studies had to compare exercise therapy with passive control, psychological therapies, adaptive pacing therapy or pharmacological therapy.

Data collection and analysis

Two review authors independently performed study selection, risk of bias assessments and data extraction. We combined continuous measures of outcomes using mean differences (MDs) and standardised mean differences (SMDs). We combined serious adverse reactions and drop-outs using risk ratios (RRs). We calculated an overall effect size with 95% confidence intervals (CIs) for each outcome.

Main results

We have included eight randomised controlled studies and have reported data from 1518 participants in this review. Three studies diagnosed individuals with CFS using the 1994 criteria of the Centers for Disease Control and Prevention (CDC); five used the Oxford criteria. Exercise therapy lasted from 12 to 26 weeks. Seven studies used variations of aerobic exercise therapy such as walking, swimming, cycling or dancing provided at mixed levels in terms of intensity of the aerobic exercise from very low to quite rigorous, whilst one study used anaerobic exercise. Control groups consisted of passive control (eight studies; e.g. treatment as usual, relaxation, flexibility) or CBT (two studies), cognitive therapy (one study), supportive listening (one study), pacing (one study), pharmacological treatment (one study) and combination treatment (one study). Risk of bias varied across studies, but within each study, little variation was found in the risk of bias across our primary and secondary outcome measures.

Investigators compared exercise therapy with 'passive' control in eight trials, which enrolled 971 participants. Seven studies consistently showed a reduction in fatigue following exercise therapy at end of treatment, even though the fatigue scales used different scoring systems: an 11-item scale with a scoring system of 0 to 11 points (MD -6.06, 95% CI -6.95 to -5.17; one study, 148 participants; low-quality evidence); the same 11-item scale with a scoring system of 0 to 33 points (MD -2.82, 95% CI -4.07 to -1.57; three studies, 540 participants; moderate-quality evidence); and a 14-item scale with a scoring system of 0 to 42 points (MD -6.80, 95% CI -10.31 to -3.28; three studies, 152 participants; moderate-quality evidence). Serious adverse reactions were rare in both groups (RR 0.99, 95% CI 0.14 to 6.97; one study, 319 participants; moderate-quality evidence), but sparse data made it impossible for review authors to draw conclusions. Study authors reported a positive effect of exercise therapy at end of treatment with respect to sleep (MD -1.49, 95% CI -2.95 to -0.02; two studies, 323 participants), physical functioning (MD 13.10, 95% CI 1.98 to 24.22; five studies, 725 participants) and self-perceived changes in overall health (RR 1.83, 95% CI 1.39 to 2.40; four studies, 489 participants). It was not possible for review authors to draw conclusions regarding the remaining outcomes.

Investigators compared exercise therapy with CBT in two trials (351 participants). One trial (298 participants) reported little or no difference in fatigue at end of treatment between the two groups using an 11-item scale with a scoring system of 0 to 33 points (MD 0.20, 95% CI -1.49 to 1.89). Both studies measured differences in fatigue at follow-up, but neither found differences between the two groups using an 11-item fatigue scale with a scoring system of 0 to 33 points (MD 0.30, 95% CI -1.45 to 2.05) and a nine-item Fatigue Severity Scale with a scoring system of 1 to 7 points (MD 0.40, 95% CI -0.34 to 1.14). Serious adverse reactions were rare in both groups (RR 0.67, 95% CI 0.11 to 3.96). We observed little or no difference in physical functioning, depression, anxiety and sleep, and we were not able to draw any conclusions with regard to pain, self-perceived changes in overall health, use of health service resources and drop-out rate.

With regard to other comparisons, one study (320 participants) suggested a general benefit of exercise over adaptive pacing, and another study (183 participants) a benefit of exercise over supportive listening. The available evidence was too sparse to draw conclusions about the effect of pharmaceutical interventions.

Authors' conclusions

Patients with CFS may generally benefit and feel less fatigued following exercise therapy, and no evidence suggests that exercise therapy may worsen outcomes. A positive effect with respect to sleep, physical function and self-perceived general health has been observed, but no conclusions for the outcomes of pain, quality of life, anxiety, depression, drop-out rate and health service resources were possible. The effectiveness of exercise therapy seems greater than that of pacing but similar to that of CBT. Randomised trials with low risk of bias are needed to investigate the type, duration and intensity of the most beneficial exercise intervention.

PLAIN LANGUAGE SUMMARY

Exercise as treatment for patients with chronic fatigue syndrome

Who may be interested in this review?

- People with chronic fatigue syndrome and their family and friends.
- Professionals working in specialist chronic fatigue services.
- Professionals working in therapeutic exercise.
- General practitioners.

Why is this review important?

Chronic fatigue syndrome (CFS) is sometimes called myalgic encephalomyelitis (ME). Research estimates that between 2 in 1000 and 2 in 100 adults in the USA are affected by CFS. People with CFS often have long-lasting fatigue, joint pain, headaches, sleep problems, and poor concentration and short-term memory. These symptoms cause significant disability and distress for people affected by CFS. There is no clear medical cause for CFS, so people who are affected often deal with misunderstanding of their condition from family, friends and healthcare professionals. National Institute for Health and Care Excellence (NICE) guidelines recommend exercise therapy for individuals with CFS, and a previous review of the evidence suggested that exercise therapy was a promising approach to the treatment. It is thought

that exercise therapy can help management of CFS symptoms by helping people gradually reintroduce physical activity into their daily lives.

This review is an update of a previous Cochrane review from 2004, which showed that exercise therapy was a promising treatment for adults with CFS. Since the review, additional studies investigating the effectiveness and safety of exercise therapy for patients with CFS have been published.

What questions does this review aim to answer?

• Is exercise therapy more effective than 'passive' treatments (e.g. waiting list, treatment as usual, relaxation, flexibility)?

• Is exercise therapy more effective than other 'active' therapies (e.g. cognitive-behavioural therapy (CBT), pacing, medication)?

• Is exercise therapy more effective when combined with another treatment than when given alone?

• Is exercise therapy safer than other treatments?

Which studies were included in the review?

We searched databases to find all high-quality studies of exercise therapy for CFS published up to May 2014. To be included in the review, studies had to be randomised controlled trials and include adults over 18 years of age, more than 90% of whom had a clear diagnosis of CFS. We included eight studies with a total of 1518 participants in the review. Seven studies used aerobic exercise therapy such as walking, swimming, cycling or dancing; the remaining study used non-aerobic exercise. Most studies asked participants to exercise at home, between three and five times per week, with a target duration of 5 to 15 minutes per session using different means of incrementation.

What does evidence from the review tell us?

Moderate-quality evidence showed exercise therapy was more effective at reducing fatigue compared to 'passive' treatment or no treatment. Exercise therapy had a positive effect on people's daily physical functioning, sleep and self-ratings of overall health.

One study suggests that exercise therapy was more effective than pacing strategies for reducing fatigue. However exercise therapy was no more effective than CBT.

Exercise therapy did not worsen symptoms for people with CFS. Serious side effects were rare in all groups, but limited information makes it difficult to draw firm conclusions about the safety of exercise therapy.

Evidence was not sufficient to show effects of exercise therapy on pain, use of other healthcare services, or to allow assessment of rates of drop-out from exercise therapy programmes.

What should happen next?

Researchers suggest that further studies should be carried out to discover what type of exercise is most beneficial for people affected by CFS, which intensity is best, the optimal length, as well as the most beneficial delivery method.