Exercise Therapy for Chronic Fatigue Syndrome

An updated Cochrane systematic review by Larun et. al. examined the comparative efficacy of using exercise therapy to treat chronic fatigue syndrome. Chronic fatigue syndrome, or CFS, is a diagnosis of exclusion, meaning alternate diagnoses must be rules out before diagnostic criteria for CFS are applied. The primary symptoms of CFS are severe, disabling fatigue, musculoskeletal pain, sleep disturbance, headaches, and impaired concentration and short-term memory issues. The current known prevalence of CFS among US adults in between 0.24% and 2.55%, with the range likely being due to different diagnostic criteria.

Exercise therapy is defined as “a regimen or plan of physical activity designed and prescribed [and] intended to relieve or heal a disorder.” Current approaches in exercise therapy use both aerobic exercise (walking, swimming, cycling, etc.) and anerobic exercise (resistance training, high-intensity interval training, etc.). This systematic review examined the effects of exercise therapy for adults with chronic fatigue syndrome compared with another intervention or control group on symptoms and outcomes associated with CFS, and related health wellbeing measures.

The review included randomized control trials with male and female participants over the age of 18 with a primary diagnosis of chronic fatigue syndrome who were able to participate in exercise therapy. Diagnosis of CFS in the included studies fulfilled diagnostic criteria of (1) fatigue, (2) fatigue must be medically unexplained, (3) fatigue is severe enough to disable or distress participant, and (4) the fatigue has persisted for at least six months, (1994 CDC criteria or Oxford criteria). Studies were excluded if they involved participants with co-morbid disorders that may be an alternate diagnosis for fatigue. Interventions included were aerobic and anerobic exercise therapy, and comparator interventions were passive control, or “treatment as usual,” psychological therapies, adaptive pacing therapy, and pharmacological therapy. The primary outcomes measured were fatigue and adverse effects, while secondary outcomes were pain, physical functioning, quality of life, mood disorders, sleep duration and quality, self-perceived changes in overall health, health service resource use, and dropouts.

For this review, a total of 8 RCTs with a combined 1,518 participants were analyzed. There was moderate heterogeneity across studies including type of controls or comparators, study durations (12 weeks to 26 weeks), and follow-up periods (50 weeks to 72 weeks). Continuous outcomes were reported as mean differences (MD) or standardized mean differences (SMD), and combined dichotomous outcomes were reported using risk ratios (RR). For 7 of the included studies, the intervention was aerobic exercise (walking, swimming, cycling, or dancing), and 1 was anerobic exercise. The comparison groups included passive control, relaxation or flexibility, cognitive behavioral therapy (CBT), cognitive therapy, supportive listening, adaptive pacing therapy, antidepressants, and combination treatment. Most of the studies included had low risk of selection bias, and all studies had a high risk of bias with performance and detection.

The results of this review indicated that exercise therapy probably has a positive effect on fatigue in adults with CFS compared to usual care or passive therapies, but evidence regarding adverse effects is uncertain. Exercise therapy, compared to passive control, probably reduced

fatigue at the end of treatment (SMD -0.66, 95% CI -1.01 to -0.31; 7 studies, 840 participants; moderate certainty evidence), but effect is uncertain in the long term as certainty of evidence is very low (SMD -0.62, 95% CI -1.32 to 0.07; 4 studies, 670 participants). Certainty of evidence is likewise very low regarding the risk of serious adverse reaction (RR 0.99, 95% CI 0.14 to 6.97; 1 study, 319 participants). Regarding secondary outcomes, exercise therapy may moderately improve physical functioning at the end of treatment compared to passive control. Compared to CBT, exercise therapy showed little to no difference in fatigue at the end of treatment (MD 0.20, 95% CI -1.49 to 1.89; 1 study, 298 participants; low-certainty evidence), or at long term follow-up (SMD 0.07, 95% CI −0.13 to 0.28; 2 studies, 351 participants; moderate-certainty evidence). The risk of serious adverse reactions is unknown as the certainty of evidence was very low (RR 0.67, 95% CI 0.11 to 3.96; 1 study, 321 participants). Results for secondary outcomes showed little or no difference between exercise therapy and CBT for improvement of physical functioning, sleep, and depression. Compared to adaptive pacing, exercise therapy may slightly reduce fatigue at the end of treatment (MD −2.00, 95% CI −3.57 to −0.43; scale 0 to 33; 1 study, 305 participants; low-certainty evidence) and long-term (MD −2.50, 95% CI −4.16 to −0.84; scale 0 to 33; 1 study, 307 participants; low-certainty evidence), but the risk of serious adverse reaction is uncertain (RR 0.99, 95% CI 0.14 to 6.97; 1 study, 319 participants; very low-certainty evidence). For secondary outcomes, exercise therapy may slightly improve physical functioning, depression, and sleep compared to adaptive pacing. The last set of comparisons looked at exercise therapy or exercise therapy with antidepressants vs. antidepressants alone and found overall uncertainty of results due to very low certainty of evidence, and primary outcome data only available for fatigue (MD -1.99, 95% CI -8.28 to 4.30; 1 study, 48 participants).

The results of this systematic review suggest that exercise therapy may help improve some symptoms of chronic fatigue syndrome, particularly fatigue. There were several issues with quality of evidence, namely, the inability to blind participants and clinicians in studies focusing on exercise therapy and moderate reporting bias. The authors also identified significant between-study heterogeneity regarding type and intensity of exercise, the treatment provided to participants in the control group, and large baseline differences in participants' health status. To better determine most effective type of exercise therapy for CFS, further randomized control trials should be completed using standardized diagnostic and treatment approaches.

Larun L, Brurberg KG, Odgaard-Jensen J, Price JR. Exercise therapy for chronic fatigue syndrome. Cochrane Database of Systematic Reviews 2024, Issue 12. Art. No.: CD003200. DOI: 10.1002/14651858.CD003200.pub9. Accessed 4 January 2025.