

The extent of research waste in trials of exercise therapy versus usual care/no treatment for chronic lower back pain

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Background: There is increasing literature on the use of exercise therapies for lower back pain. The 2021 Cochrane review of exercise therapy for chronic lower back pain included 249 studies looking at the impact of exercise therapies on pain and function outcomes. They concluded that exercise therapy is probably more effective than no treatment or usual care for pain outcomes but did not reach their minimal clinically important difference threshold for all outcomes. We hypothesised that many of the trials included in the Cochrane review were not contributing to our knowledge and constitute research waste.

Methods: Using published data from the Cochrane review we did Trial Sequential Meta-Analyses (TSA), including all trials which compared exercise therapies to normal treatment/usual care. We performed TSAs and cumulative meta-analyses (CMAs) for both the pain and function outcomes at all durations of follow-up, mirroring the original Cochrane analyses.

Results: Seven of the eight TSAs showed statistically significant evidence for exercise therapy, consistent with the Cochrane review. In six of the TSAs the monitoring boundaries for superiority were crossed indicating that further research was non-contributory. Dates when this occurred ranged from 2000-2009. Only for the long-term follow-ups was there a possibility that further research would be contributory, as they reached significance but didn't cross the TSB. The CMAs demonstrate that when the smallest trials are excluded there is no clinically important difference between exercise therapies and usual care. There has been little change in the summary estimate mean difference and confidence intervals since 2009.

Conclusions: There has been substantial research waste in the field of exercise interventions for low back pain. Much of our research effort in this area since 2004 could have been directed to more informed research questions. It may be difficult to justify any further research comparing exercise interventions to usual care.

