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IS EXERCISE BENEFICIAL IN PATIENTS WITH LOW BACK PAIN? - A COCHRANE REVIEW SUMMARY WITH COMMENTARY

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The aim of this commentary is to discuss from a rehabilitation perspective the Cochrane Review "Exercise therapy for chronic low back pain" (1) by Hayden JA, Ellis J, Ogilvie R, Malmivaara A and van Tulder MW[1] published by Cochrane Musculoskeletal Group. This Cochrane Corner is produced in agreement with Journal of Rehabilitation Medicine by Cochrane Rehabilitation with views* of the review summary authors in the "implications for practice" section.

Key words: back pain; exercise, benefits; Cochrane Review Summary

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BACKGROUND

Low back (LBP) is leading cause of disability worldwide independently of age group or socio-economic condition (2) In most of the cases, it is not possible to accurately identify the specific nociceptive source and most patients are defined as "non-specific" (symptoms not attributable to a well-recognizable pathology) (3). The lifetime prevalence of LBP is reported to be as high as 84%, and the prevalence of chronic low back pain is about 23%, with 11-12% of the population being disabled by low back pain. Additionally, LBP was recognized among top five causes of disability-adjusted life-years (DALYs) in the 25-49-year age group: road injuries (ranked first), HIV/AIDS (second), low back pain (fourth), headache disorders (fifth), and depressive disorders (sixth) (4-5). Conservative treatment of patients with chronic LBP includes both pharmacological and non-pharmacological approaches. The latter encompasses exercise therapy that is prescribed or planned by a health professional and include activities, postures, movements (or all) of varying designs, doses, formats, types and combinations. Exercise therapies include general physical fitness programmes (stretching, fitness, yoga), specific treatments (McKenzie therapy), aerobic exercise such as walking and strengthening of specific muscles or groups of muscles to increase core stability (6,7).

EXERCISE THERAPY FOR CHRONIC LOW BACK PAIN (HAYDEN JA, ELLIS J, OGILVIE R, MALMIVAARA A AND VAN TULDER MW. 2021)

What is the aim of this Cochrane review?

The aim of this Cochrane Review was to assess the impact of exercise treatment on pain and functional limitations in adults with chronic non-specific low back pain compared to no treatment, usual care, placebo and other conservative treatments.

WHAT WAS STUDIED IN THE COCHRANE REVIEW?

The studied population were adults with chronic non-specific low back pain for 12 weeks or longer. Patients with leg pain, symptoms or signs consistent with radiculopathy (irritation of the nerve root) were included if LBP was their main complaint. Exclusion criteria included low back pain caused by specific spinal conditions (eg. fracture, ankylosing spondylitis,

[1] This summary is based on a Cochrane Review previously published in the Cochrane Database of Systematic Reviews 2021, Issue 9, Art. No.:CD009790, DOI: 10.1002/14651858.CD009790.pub2 (see www.cochranelibrary.com for information). Cochrane Reviews are regularly updated as new evidence emerges and in response to feedback, and Cochrane Database of Systematic Reviews should be consulted for the most recent version of the review.

* *The views expressed in the summary with commentary are those of the Cochrane Corner author (different than the original Cochrane Review authors) and do not represent the Cochrane Library or Journal of Rehabilitation Medicine.*

spondyloarthritis, infection, neoplasm, or metastasis), pregnancy and studies that focussed exclusively on acute exacerbations of chronic LBP. The interventions studied were exercise treatment compared to no treatment, usual care or placebo, other conservative therapy or another exercise group. The primary outcomes were: pain intensity (measured by a pain scale) and functional limitations (measured by a back pain-specific scale). Secondary outcomes included: return to work/absenteeism, health-related quality of life, global improvement or perceived recovery and adverse events.

SEARCH METHODOLOGY AND UP-TO-DATENESS OF THE COCHRANE REVIEW?

Authors searched Cochrane Back and Neck trials register, MEDLINE, Embase, CINAHL, PsycINFO, PEDro, SPORTDiscus, and trials registries (ClinicalTrials.gov and World Health Organization International Clinical Trials Registry Platform), and citations from relevant systematic reviews to identify additional studies. The review includes data for trials identified in searches up to 27 April 2018.

WHAT ARE THE MAIN RESULTS OF THE COCHRANE REVIEW?

This review included 249 randomized controlled trials (142 studies with exercise vs non-exercise comparisons, 107 studies with exercise vs other exercise comparisons) with a total of 24,486 people whose average age was 43.7 years and 59% were women. Participants' average pain intensity at the start of the studies was 51 points on a 100-point scale (where 100 is the worst pain). They had back pain for 12 weeks to 3 years (78 studies) or longer than 3 years (72 studies). Most studies measured pain (223 studies) and disability (223 studies). Studies followed people in the short term (6 to 12 weeks; 184 studies); medium term (13 to 47 weeks; 121 studies) and long- term (48 weeks or more, 69 studies).

The review update shows the following results:

- there is moderate-certainty evidence (moderate confidence in the effect estimate, but there is a possibility that it is substiantially different) that exercise is probably more effective for treatment of chronic low back pain compared to no treatment, usual care or placebo comparisons for pain outcomes at 3 months (MD -15.2 points better, 95% CI -12.2 to 18.3 points better). The evidence was downgraded due to heterogeneity.
- there is moderate-certainty evidence that exercise probably improves functional limitation (MD -6.8 points better, 95% CI -5.3 to 8.3 points better), but this finding did not meet the prespecified threshold for minimal clinically important difference. The evidence was downgraded due to some evidence of publication bias.
- when compared to all other investigated conservative treatments, exercise treatment was found to have improved pain (MD -9.1 points better, 95% CI 5.6 to 12.6 points better) and functional limitations (MD -4.1 points better, 95% CI 2.2 to 6.0 points better). These effects did not meet the prespecified threshold for a clinically important difference.
- Subgroup analysis of pain outcomes suggested that exercise treatment is probably more effective than education alone (MD -12.2 points better, 95% CI 5.0 to 19.4 points better) or non-exercise physical therapy (MD -10.4 points better, 95% CI 5.6 to 15.2 points better) but with no differences observed for manual therapy (MD 1.0, 95% CI -3.1 to 5.1).

Data from 64 trials comparing exercise treatment to other conservative treatments found exercise to be more effective, although the effect size was small and not clinically important overall (9 points improvement in pain; 4 points improvement in functional limitations). Furthermore, comparisons with some specific other conservative treatments (e.g. electrotherapy, education alone) showed exercise treatments to have larger improvements compatible with a clinically important difference.

Adverse effects of exercise treatment were rarely reported. In studies reporting adverse events, they were mostly minor such as increased low back pain and muscle soreness).

How did the authors conclude?

According to the authors, moderate-certainty evidence showed that exercise is probably effective for the treatment of chronic low back pain compared to no treatment, usual care or placebo. The observed treatment effect for functional limitations in exercise compared to no treatment, usual care or placebo comparisons is small and did not meet the threshold for minimal clinically important difference. Authors also found exercise may improve pain (low-certainty evidence) and functional limitations outcomes (moderate-certainty evidence) compared to other conservative treatments. However, these effects were small and not clinically important. Subgroup analysis suggested that exercise treatment is probably more effective than advice or education alone, or electrotherapy, but no differences were observed when compared with manual therapy treatments.

WHAT ARE THE IMPLICATIONS OF THE COCHRANE EVIDENCE FOR PRACTICE IN REHABILITATION?

In various guidelines for non-pharmacological treatment of chronic LBP, consistent features included supervised exercises alone or in combination with back school, behavioural therapy and/or multidisciplinary treatment (8, 9). Although, the diagnostic and therapeutic recommendations are generally similar across guideline, some differences exist due to a lack of strong evidence surrounding these topics or in local health care systems. The specific implementation of these clinical guidelines remains a challenge for clinical practice and research (4). Exercise treatment was found to have improved pain and functional limitations outcomes compared to other conservative treatments, but these effects are small and not clinically important. Authors are not able to make recommendations about specific types of exercise based on the results of this review, nor on the work of others to date. However, a related publication by this team will address this topic. There is need for careful selection of comparison groups to best contribute to evidence about the effective management of chronic low back pain (10,11). Due to insufficient reporting of adverse events in included trials, authors were not able to confirm the safety or harms related to exercise treatment for chronic low back pain. Based on the available evidence, exercise is likely a good option to manage chronic low back pain. When determining if exercise is right for their patient, clinicians should take into consideration a wide range of factors including patient preference, suitability, access, and costs. Future trials should focus more on thoughtful planning and methodology (eg. measurement of baseline patient characteristics to explore treatment effect modifiers, large sample, size, good conduct and reporting), assessment of outcomes based on the proposed mechanisms of effect, assessment of the recommended core outcome set (eg. health-related quality of life, perceived effect) and systematic measurement of potential adverse events (12).

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