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## Walking vs. Other Exercise for Chronic Low Back Pain – Systematic Review & Meta-Analysis

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Vanti C, Andreatta S, Borghi S, et al.

### ABSTRACT

**INTRODUCTION:** *Walking is commonly recommended to relieve pain and improve function in chronic low back pain. The purpose of this study was to conduct a systematic review and meta-analysis of randomized controlled trials concerning the effectiveness of walking interventions compared to other physical exercise on pain, disability, quality of life and fear-avoidance, in chronic low back pain.*

**METHODS:** *Randomized controlled trials investigating the effects of walking alone compared to exercise and to exercise with added walking on adults with chronic low back pain were identified using the MEDLINE, Cumulative Index to Nursing and Allied Health Literature (CINAHL), Physiotherapy Evidence Database (PEDro), Cochrane Central Register of Controlled Trials (CENTRAL), PsychINFO, and SPORT Discus™ databases. Two reviewers independently selected the studies and extracted the results. Study quality was assessed using the PEDro scale and the clinical relevance of each outcome measure was evaluated.*

**RESULTS:** *Meta-analysis of five randomized controlled trials meeting inclusion criteria was performed. The effectiveness of walking and exercise at short-, mid-, and long-term follow-ups appeared statistically similar. Adding walking to exercise did not induce any further statistical improvement, at short-term.*

**CONCLUSION:** *Pain, disability, quality of life and fear-avoidance similarly improve by walking or exercise in chronic low back pain. Walking may be considered as an alternative to other physical activity. Further studies with larger samples, different walking dosages, and different walking types should be conducted. Implications for Rehabilitation Walking is commonly recommended as an activity in chronic low back pain. Pain, disability, and fear-avoidance similarly improve by walking or exercise. Adding walking to exercise does not induce greater improvement in the short-term. Walking may be a less-expensive alternative to physical exercise in chronic low back pain.*

## ANALYSIS

Reviewed by Dr. Ceara Higgins

### **Author's Affiliations**

University of Bologna, Italy; Neuro-Rehabilitation Hospital of Trento, Italy; George Mason University, Fairfax, VI, USA.

### **Background Information**

Low back pain (LBP) is a significant cause of activity limitation and absence from work and has been associated with high levels of economic burden (1). While 90% of patients return to pre-injury activities within two months, the remaining 10% are at a high risk for developing chronic pain and disability (2). Current guidelines for the management of chronic low back pain (CLBP) suggest staying as active as possible and even increasing levels of physical activity (4), as reduced mobility can cause significant decreases in quality of life and overall health status (3).

Walking can increase cardio-respiratory capacity, maximum oxygen uptake, and endurance with a low risk of injury (5). As well, it is simple, accessible, and free! This review aimed to provide an up-to-date, specific systematic review and meta-analysis in order to determine the effectiveness of walking compared to other forms of physical exercise on pain, disability, quality of life, and fear-avoidance in patients with CLBP.

### **Pertinent Results:**

Five studies were selected, and their data pooled via quantitative synthesis for meta-analysis. The studies included a total of 329 subjects, with an average age of 43 years. 31 participants reported adverse effects, including 14 with the flu or other medical conditions, 2 allergic reactions, 1 road traffic collision (!), 1 lateral ankle sprain, 6 reporting increased pain in the lower limbs, and 7 reporting increased LBP.

#### *Walking vs. Exercise*

Two studies assessed pain in the short term (within 3 months after the intervention), mid-term (3-6 months), and long-term (6-12 months) (9, 10). In all cases, the overall effect size of walking (compared to exercise) was small and not significant (yet, both treatments were helpful). Three studies assessed disability in the short term (9-11), and two studies assessed disability in the mid- and long-term (9, 10). Again, in all cases, the overall comparative effect size was very small and not significant (again, both interventions were effective). Two studies (9, 10) assessed disability in the mid- and long-term, finding very small and non-significant overall effect sizes; and two studies (10, 11) assessed short-term fear avoidance

also finding the overall effect size of walking to be very small and not significant compared to other exercise.

#### *Combined Walking & Exercise vs. Exercise Alone:*

Two studies (12, 13) assessed pain and disability in the short-term and found small and insignificant overall effect sizes when comparing these interventions.

### **CLINICAL APPLICATION & CONCLUSIONS**

For patients with chronic low back pain, walking was found to be equally as effective as intensive exercise on all chosen outcome measures at short-, mid-, and long-term follow up. Similar effects were seen in pain and disability when walking was added to exercise. A reduction was seen in pain, disability, and fear avoidance beliefs, and an improvement was seen in perceived quality of life with both walking alone, walking combined with exercise, and exercise alone. There was a slight superiority in results for recovery of function with walking alone, and for reduction of fear-avoidance beliefs with exercise alone.

It is possible that studies with larger sample sizes or more intense training programs may provide different conclusions. All of the selected studies utilized standardized walking and exercise dosages, thus it is possible that some participants were under- or over-dosed. Results were not significantly different when considering different numbers of sessions or type of walking.

While walking was not shown to have a greater effect than other physical exercise, it is known to induce positive changes on metabolism and improve psychological status (6). As well, walking programs have been shown to have similar levels of patient satisfaction as exercise and a high level of patient adherence (11). Finally, as walking programs carry lower costs than supervised exercise or physical therapy treatments (11), it can still be valuable in the treatment of individuals with CLBP.

### **STUDY METHODS**

The authors searched multiple databases from their inception to December 31st, 2016, with additional articles found through a manual search of the reference lists of relevant literature reviews. Two reviewers independently assessed title and abstracts and then full-text of relevant articles for inclusion and exclusion criteria as outlined below. Any disagreement was resolved through discussion or by another author as needed.

### *Inclusion Criteria:*

- Published randomized controlled trials (RCTs) with active controls or comparison groups including walking versus exercise and walking plus exercise versus exercise alone
- Studies including symptomatic adults (18 years of age or older) with a diagnosis of CLBP (pain for more than 3 months) (7)
- Studies including walking as a therapeutic intervention for CLBP or walking associated with any other form of exercise program
- Studies utilizing outcome measures for: 1) pain, including the Visual Analog Scale (VAS), a Numerical Pain Rating Scale (NRS), or other scoring measure for LBP; 2) disability, when the instrument used measured the impact of LBP on activities of daily living beyond work and leisure time activities; 3) lumbar function, including the Patient-Specific Function Scale (PSFS); 4) quality of life using the EQ-5 D scale; and 5) movement avoidance using the Fear-Avoidance Beliefs Questionnaire-Physical Activity Subscale (FABQ-PA)

### *Exclusion Criteria:*

- Quasi- and non-RCTs
- Studies including individuals with pain arising from scoliosis, tumors, or other known pathologies
- Two authors extracted the relevant data with a third author consulted in cases of disagreement. Two authors also judged the methodological quality of the studies using the PEDro scale (8). Two physical therapists assessed the selected studies for clinical relevance using the minimal clinically important difference (MCID) for each outcome based upon the literature.

## **STUDY STRENGTHS/WEAKNESSES**

### Weaknesses:

- Clinical relevance of the changes were judged to be poor as only a few outcomes in a few studies reached the selected MCIDs.
- Included studies utilized different walking dosages and types, so the influence of these parameters cannot be assessed.

- It is possible that the selected studies may have underplayed, or not accounted for, confounding variables such as cardiac or respiratory conditions, weight-bearing abilities, and patient preferences, any of which may have affected the results.
- This review did not consider other outcome measures such as walking speed, muscular strength, or aerobic capacity which may have been impacted by the interventions and could be pertinent to individuals with CLBP.

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