This section features a recent systematic review that is indexed on PEDro, the Physiotherapy Evidence Database (http://www.pedro.org.au). PEDro is a free, web-based database of evidence relevant to physiotherapy.

Walking exercise for chronic musculoskeletal pain (PEDro synthesis)

▸ **O'Connor SR**, Tully MA, Ryan B, *et al*. Walking exercise for chronic musculoskeletal pain: systematic review and meta-analysis. *Arch Phys Med Rehabil* 2015;**96**:724–34.

BACKGROUND

Chronic musculoskeletal pain (CMP) is a major cause of morbidity.[1] Aerobic exercise is recommended for people with CMP to reduce pain and increase functional status.[2 3] Walking is associated with a low risk of musculoskeletal injury,[4] is safe for previously sedentary individuals[5] and improves cardiovascular comorbidities.[6–8]

AIM

The aim of this systematic review was to examine the effects of walking interventions on pain and self-reported function in adults with CMP.

SEARCHES AND INCLUSION CRITERIA

Six databases were searched (MEDLINE, Cochrane, CINAHL, PsychINFO, Sport Discus and PEDro) using a combination of terms including 'walking', 'aerobic exercise', 'musculoskeletal pain', 'low back pain', 'arthritis' and 'fibromyalgia'. Eligible studies were randomised controlled trials (RCTs) or quasi-RCTs including adults with a diagnosis of chronic low back pain, osteoarthritis or fibromyalgia syndrome.

INTERVENTION

Studies including land-based or treadmill-based walking interventions were considered eligible. Studies were required to include as comparator a non-exercise or non-walking exercise control.

MAIN OUTCOMES

Primary outcomes were pain and self-reported function.

STATISTICAL METHODS

Internal and external validity of included studies was rated as 'good', 'fair', or 'poor', using predefined criteria (US Preventive Services Task Force (USPSTF) method). Studies were considered clinically homogeneous based on similarities in patient demographic characteristics and intervention methods. Statistical heterogeneity was analysed using the χ^2 test and I^2 test statistics. Random-effects models for inverse variance were adopted to calculate the pooled mean difference (MD) and 95% CI. Duration of follow-up was categorised as short term (≤8 weeks), medium term (2–12 months), or long term (>12 months).

RESULTS

Literature searches retrieved 2760 records. Of these, 26 studies met the inclusion criteria for this review. Seventeen studies were suitable for meta-analysis. In most studies (73%), walking programmes were supervised, such as in a hospital clinic or gymnasium. Among home-based programmes, three studies used pedometers to assist with walking goals and three others used time-based walking-goals. Mean duration of follow-up assessment was 1.8±0.4 months for studies with short-term outcomes, 4.9±1.9 months for studies with medium-term outcomes and 18.4±7.6 months for studies with long-term outcomes.

Five studies met all criteria for internal validity and nine studies met all criteria for external validity, and were rated as 'good'. Fifteen studies were rated as 'fair' for internal validity and seventeen were rated as 'fair' for external validity. The remaining five studies were rated as 'poor' for internal validity. The interventions in 10 studies (38%) met all the American College of Sports Medicine guidelines for the quantity and quality of aerobic exercise.

Meta-analysis revealed that, in comparison with non-exercise or non-walking exercise control, walking interventions significantly decreased pain at short term (MD=−5.31; 95% CI −8.06 to −2.56) and medium term (MD=−7.92; 95% CI −12.37 to −3.48), but no effect for long term was observed (MD=−2.22; 95% CI −6.03 to 1.59). For self-reported function, significant differences for all time points favouring walking interventions (short-term MD= −6.47; 95% CI −12.00 to −0.95; medium-term MD=−9.31; 95% CI −14.00 to −4.61; and long-term MD= −5.22; 95% CI −7.21 to −3.23) were found. Sensitivity analyses excluding studies in which walking was combined with a cointervention did not alter overall results.

CONSIDERATIONS/LIMITATIONS

Methodological limitations include lack of randomisation (two studies were quasi-RCTs), failure to conceal allocation and inadequate methods for dealing with missing data. The overall evidence was based on studies of 'fair' methodological quality according to USPSTF.

The heterogeneity of control interventions might have influenced the pooled effect sizes found in this review. The authors adopted a pragmatic approach by combining different types of comparators, such as education, usual care and strengthening exercises. Including active comparators, such as strengthening exercises, might have attenuated the estimated effects associated with walking interventions. Future reviews should attempt to estimate the effect of walking interventions separately from either non-intervention control groups or non-exercise interventions on pain and function outcomes. This information may assist clinicians make treatment recommendations.

A range of walking programmes included in this review showed beneficial effects on pain and self-reported function among individuals with chronic musculoskeletal pain. However, at present, it is unclear whether specific characteristics of walking programmes, such as supervised programmes, home-based programmes or programmes using electronic feedback devices, are associated with greater effects sizes. Future studies investigating the influence of these characteristics on clinical outcomes are warranted.

CLINICAL IMPLICATIONS

This meta-analysis suggests that, in individuals with chronic musculoskeletal pain, walking interventions may improve pain at short and medium-term follow-up, and improve self-reported function at short, medium and long-term follow-up.

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