



Review

Effects of rehabilitation for pain relief in patients with rheumatoid arthritis: a systematic review

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Abstract. [Purpose] The purpose of this study was to find evidence for the effectiveness of rehabilitation for pain relief in patients with rheumatoid arthritis. [Subjects and Methods] A systematic review was conducted of MEDLINE, The Cochrane Central Register of Controlled Trials (CENTRAL), and OVID, for studies published from July 2005 to July 2015. We extracted data regarding patients, intervention, comparison, and outcomes, and assessed the methodological quality of the data. [Results] Nine randomized controlled trials comparing the effects of pain relief in patients with rheumatoid arthritis were found. [Conclusion] Physical therapy and occupational therapy can reduce pain in rheumatoid arthritis.

Key words: Pain, Rehabilitation, Rheumatoid arthritis

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INTRODUCTION

Rheumatoid arthritis (RA) is a leading cause of disability in adults in the U.S.¹⁾ RA is a systemic, inflammatory condition causing pain, joint destruction and disability²⁾. Pain is a common symptom in patients with rheumatoid arthritis and it is hard for them to cope with it³⁾. There are some non-pharmacological treatments⁴⁻⁷⁾ in rheumatologic care and noticeable advances over the past decade are changing the clinical course of RA⁸⁾. Physical therapists and occupational therapists are multi-skilled professionals who treat patients with RA, and perform the role of case managers⁹⁾.

A few studies suggest some evidence in which findings can benefit both therapists and clients in rheumatology care. However until now, no study has reviewed the effectiveness of pain intervention in patients with RA. Therefore, this is the first systematic review about pain relief for patient with RA. The aim of this study was to seek evidence for the effectiveness of rehabilitation for pain relief in patients with RA, and to suggest the guidelines of roles for physical therapists and occupational therapists.

SUBJECTS AND METHODS

For this study, we searched electronic databases using a strategy Mesh-term and free-text term. Then we performed a search of MEDLINE, The Cochrane Central Register of Controlled Trials (CENTRAL), and OVID, for studies published from July 2005 to July 2015, using the keywords: occupational therapy (OT), pain, physical therapy (PT), and rheumatoid arthritis. Studies identified were evaluated based on following the inclusion criteria: (1) subjects had RA, (2) study design: randomized controlled trials (RCTs), (3) had outcomes of pain relief, and (4) full text was available. Exclusion criteria were: (1) study was not an experimental study, (2) subjects had diseases other than RA, (3) study was about the development of evaluation tools, or (4) study design was review. Hand searching of journals and reference lists of relevant articles was also conducted without regard to languages.

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Two reviewers independently evaluated the titles and abstracts for selecting articles to be included or excluded from our study. Then, we read the full text of the studies in detail. Multiple studies were considered as one trial if they described a single trial. The methodological quality of the trials was also independently assessed using the Physiotherapy Evidence-Based Database (PEDro) scale^{10, 11}), a 10-point scale that has 11 items for the assessment of internal validity and statistical information in RCTs. Trials with a PEDro score greater than 5 are considered to be of moderate to high quality¹²). A total score was determined through discussion, if there were disagreements between the two reviewers. Intervention outcomes were reported using the patient, intervention, comparison and outcome (PICO) method.

RESULTS

A total of 613 potentially relevant articles were identified based on the initial search, but 604 of them did not meet the inclusion criteria. Therefore, 9 studies^{13–21}) were identified for this analysis (Fig. 1). All the studies were RCTs and clinical trials. Four articles had a score < 6 on the PEDro scale while the others had a score ≥ 6 (Table 1).

Table 1 presents the summary of characteristics of the included studies according to the PICO method. There was a greater proportion of women than men in 8 of the studies. The kinds of OT and PT interventions used were various: exercise, cognitive behavioral therapy, education, or particular splint. In comparison, a control group was given: usual rheumatology care and conventional program, information about diagnosis or no intervention. For two studies, intervention was conducted by physical therapists and occupational therapists. Various assessment tools were used for assessing the outcomes, according to the purpose of the respective study. With the exception of two studies, there was significant improvement in the experimental group^{16, 18}). PT including various exercises, education and assistive devices and OT including cognitive behavioral therapy, education, management and splints were effective methods for pain relief in patients with RA.

DISCUSSION

This study compared the effects of rehabilitation and rheumatology care for pain relief in patients with RA. The results indicated that PT and OT interventions are effective for pain relief in people with RA. In this review, most studies indicate that OT and PT interventions are more benefits than usual rheumatology care. These results are consistent with those of previous systematic reviews^{22, 23}). Many intervention methods and assessment tool were used in this study. Categorization of RA intervention and assessment in this study is similar to the four categorizations noted by de Almeida²⁴): patient guidance and education, joint protection and energy conservation, modifying activities and environments, and assistive technologies. In a remarkable intervention, one study was carried out to determine whether comprehensive intervention promotes function in employed people¹⁷). There is limited provision of vocational rehabilitation (VR) in the rheumatology area. It is suggested that VR is effective in increasing both knowledge and confidence in rheumatology²⁵), so therapists try to involve and study this area. Another intervention, the therapy glove, decreases pain, stiffness, and swelling²⁶). It is an effective method in rehabilitation in RA. However, we exclude that intervention in our study, because it was composed of a case study and published before 2000.

Currently, people with arthritis are diagnosed early and treated aggressively, so joint deformities and activity limitations are less common²⁷). Therefore, therapists will need to focus on preventive as well as compensatory strategies for public health⁸).

Limitations of this systematic review are that we did not conduct a meta-analysis. Nevertheless, this is the first study that systematically reviewed PT and OT interventions for pain relief in patients with RA. Systematic reviews an important study design for informing practice and, can provide suggestions for OT and PT researchers who define future research agendas, and can assist administrators and decision-makers who develop evidence based policies and guidelines²⁸). An important finding in our study, PT and OT intervention have some strong evidence of improvement for population with RA. We recommend that in the future, studies involving various and better intervention methods for patients with RA should be conducted.

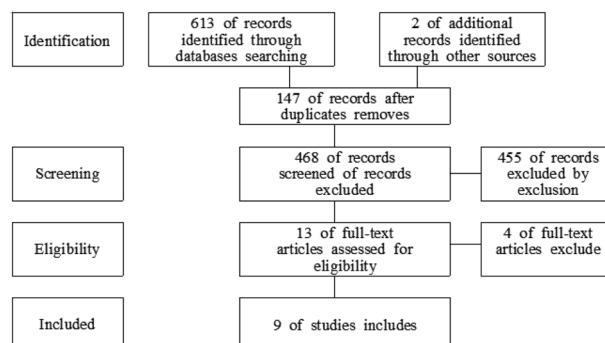


Fig. 1. Diagram on process about searching process

Table 1. Summary of characteristics of included studies

Evidence	PEDro score	Patient (IG/CG)	Intervention	Comparison	Outcome	
					Assessment	Result
Rahnama et al., 2015 ¹³⁾	5	RA N=48 Age=58.6 ± 7.8 F:M=all M DD=no mention	aerobic exercise and strengthening exercise 30 to 45 min. 3 days per wk. for 8 wks.	no intervention	VAS (pain) WOMAC (functional ability)	Pain relief and functional ability improved in exercise group.
Jahanbin et al., 2014 ¹⁴⁾	6	RA 65 (32/32) 48.6/ 48.8y all F no mention	conditioning, isotonic, isometric and aerobic exercise 45 min. 2 times per wk. for 8 wks.	received a booklet	VAS (pain) AIMS-2 (health status)	Pain relief and health status improved in exercise group.
Hewlett et al., 2011 ¹⁵⁾	5	RA 127 (62/62) 59.2y 44:18/ 49:13 14.6/ 14.2y	cognitive behavioral therapy (CBT) group: fatigue self-management 6×2 h sessions for 6 wks. Consolidation: 1 h sessions for 14 wks.	fatigue self-management: 1 h sessions	MAF (fatigue impact) VAS (pain)	Fatigue and pain relief improved in CBT group.
Breedland et al., 2011 ¹⁶⁾	5	RA 34 (19/ 15) 45.0/ 51.8y 12:7/ 12:3 9.7/ 5.9y	group based exercise and educational program 60 min. for 8 wks.	no intervention	AIMS-2 (health status) ASES (pain)	No significant differences between groups.
Macedo et al., 2009 ¹⁷⁾	7	employed RA 32 (16/16) 48.6/ 52.6y 15:1/ 15:1 11.6/ 8.4y	comprehensive occupational therapy (COT) group: education, compliance and management 30 min. -2 h of each 6-8 session for 6 mon.	usual care group: medical management and rheumatology clinic visit	COPM (function) RA WIS (work productivity) DAS 28 (disease activity) VAS (pain)	Function, work productivity, disease pain relief improved in COT group.
Adams et al., 2008 ¹⁸⁾	8	RA 112 (56/60) 59.6/ 55.2y 42:14/ 42:18 8.6/ 12.4 mon.	static resting splints group: splints+ standardized occupational therapy for 12 mon. (nightwear)	standardized OT group: JP education, hand exercises	hand deviation (deformity) MHQ (hand function) VAS (pain) grip strength	No significant differences between groups.
Hammond et al., 2008 ¹⁹⁾	6	RA 167 (86/81) 55.6/ 55.3y 57:29/ 51:30 7.2/ 7.6y	modular behavioral (MB) group: 2.5 h meeting, 4 sessions per wk. 2 h review, 1 session Module 1: behavioral JP program Module 2: initial discussion for 18 mon.	standard education program group: 2 h meeting, 5 session per wk. (information, exercise, JP, healthy diet)	RASE (psychological status) VAS (pain) HAQ (functional status)	Psychological status, pain relief and functional status improved in MB group.
Veehof et al., 2008 ²⁰⁾	7	RA 53 (17/16) 66.3/ 55.1y 71:29/ 69:31(%) 8.2/ 5.0y	prefabricated wrist working splint (splinting) group: 4 wks.	usual care group 4 wks.	VAS, DASH (pain) grip strength DASH, SODA-S (functional ability)	Pain relief, grip strength and functional ability improved in splinting group.
Li et al., 2006 ²¹⁾	4	RA 111 (63/48) 54.2/ 56.8y 55:8/ 38:10 10.6/ 13.2y	primary therapist model (PTM) group: education splints/ foot orthosis psychosocial support for 6 wks.	traditional treatment model (TTM) group: assistive devices advice for modality aids	HAQ (physical function) VAS (pain)	Physical function and pain relief improved in PTM group.

AIMS-2: Arthritis Impact Measurement Scale-2. ASES: Arthritis Self-Efficacy Scale. CG: Control Group. COPM: Canadian Occupational Performance Measure. DAS 28: Clinical evaluation consisted of disease activity score. DASH: Disabilities of the Arm Shoulder Hand questionnaire. DD: Disease Duration. F: females. HAQ: Health Assessment Questionnaire. IG: Intervention Group. JP: Joint Protection. M: Males. MAF: Multi-Dimensional Assessment of Fatigue Scale. MHQ: Michigan Hand Outcomes Questionnaire. N: Number of subjects. RA: Rheumatoid Arthritis. RA WIS: RA Work Instability Scale. RASE: RA self-efficacy. SODA-S: Sequential Occupational Dexterity Assessment short version. VAS: Visual Analog Scales. WOMAC: Western Ontario and McMaster Osteoarthritis Index

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