

Systematic Review of Nondrug, Nonsurgical Treatment of Shoulder Conditions

Cheryl Hawk, DC, PhD,^a Amy L. Minkalis, DC, MS,^b Raheleh Khorsan, MA,^c Clinton J. Daniels, DC, MS,^d Dennis Homack, DC, MS,^e Jordan A. Gliedt, DC,^f Julie A. Hartman, DC, MS,^b and Shireesh Bhalerao, DC, MCR^g

ABSTRACT

Objective: The purpose of this review was to evaluate the effectiveness of conservative nondrug, nonsurgical interventions, either alone or in combination, for conditions of the shoulder.

Methods: The review was conducted from March 2016 to November 2016 in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA), and was registered with PROSPERO. Eligibility criteria included randomized controlled trials (RCTs), systematic reviews, or meta-analyses studying adult patients with a shoulder diagnosis. Interventions qualified if they did not involve prescription medication or surgical procedures, although these could be used in the comparison group or groups. At least 2 independent reviewers assessed the quality of each study using the Scottish Intercollegiate Guidelines Network checklists. Shoulder conditions addressed were shoulder impingement syndrome (SIS), rotator cuff-associated disorders (RCs), adhesive capsulitis (AC), and nonspecific shoulder pain.

Results: Twenty-five systematic reviews and 44 RCTs met inclusion criteria. Low- to moderate-quality evidence supported the use of manual therapies for all 4 shoulder conditions. Exercise, particularly combined with physical therapy protocols, was beneficial for SIS and AC. For SIS, moderate evidence supported several passive modalities. For RC, physical therapy protocols were found beneficial but not superior to surgery in the long term. Moderate evidence supported extracorporeal shockwave therapy for calcific tendinitis RC. Low-level laser was the only modality for which there was moderate evidence supporting its use for all 4 conditions.

Conclusion: The findings of this literature review may help inform practitioners who use conservative methods (eg, doctors of chiropractic, physical therapists, and other manual therapists) regarding the levels of evidence for modalities used for common shoulder conditions. (*J Manipulative Physiol Ther* 2017;40:293-319)

Key Indexing Terms: *Manual Therapy; Shoulder; Spinal Manipulation; Chiropractic; Conservative Treatment*

INTRODUCTION

Painful conditions of the shoulder are the third leading musculoskeletal complaint in primary care, with a point

prevalence as high as 26%.¹ Two-thirds (67%) of adults experience shoulder pain at some time in their life,² and prevalence is highest in middle age (40-65 years).³ Chronic shoulder pain characterizes a substantial subset of those with shoulder conditions because only 50% of patients recover within 6 months of onset.²

Disorders of the rotator cuff, including shoulder impingement syndrome (SIS), are among the most common causes of shoulder pain.⁴ Other conditions include those that are unspecified and adhesive capsulitis (AC).^{5,6} Primary treatment options considered in usual care typically consist of analgesics or exercises and progress to secondary and tertiary options of steroid injections or surgery if necessary.^{7,8} Compared with more conservative treatments, surgery is likely more costly and risky.⁴ The utilization of arthroscopic interventions for the shoulder has quickly increased in recent decades, with an estimated complication rate of 4.8%-10.6%.⁹ Additionally, there are some negative effects of glucocorticoid injections on cellular characteristics and

^a Texas Chiropractic College, Pasadena, TX.

^b Palmer Center for Chiropractic Research, Palmer College of Chiropractic, Davenport, IA.

^c Department of Planning, Policy and Design, University of California, Irvine, CA.

^d VA Puget Sound Health Care System, Tacoma, WA.

^e New York Chiropractic College, Seneca Falls, NY.

^f Logan University College of Chiropractic, Chesterfield, MO.

^g University of Western States, Portland, OR.

Corresponding author: Cheryl Hawk, DC, PhD. Tel.: +1 971 806 7302. (e-mail: cherylkhawk@gmail.com).

Paper submitted January 6, 2017; in revised form April 3, 2017; accepted April 7, 2017.

0161-4754

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<http://dx.doi.org/10.1016/j.jmpt.2017.04.001>

mechanical properties of tendons, especially when used for long-term treatment.¹⁰

Patients pursuing treatment for shoulder pain seek care from manual therapy (MT) providers such as physical therapists, chiropractic practitioners, and others who use conservative interventions such as mobilization and manipulation. A study conducted in the Netherlands reported that shoulder complaints constituted 9.8% of physical therapy (PT) patients,¹¹ and in a survey of chiropractic practice in Australia, 12% of patients presented with shoulder pain.¹²

Reviews of MTs (eg, manipulation and mobilization) and multimodal treatments have found favorable effects supporting their use for the management of shoulder conditions.¹³⁻¹⁷ However, clinical trials studying these treatments are inconsistently conducted, tend to have low to moderate levels of scientific rigor, and infrequently collect long-term outcomes. Therefore, evidence is still inconclusive regarding the appropriate use of many MTs for shoulder conditions. Furthermore, evidence is inconclusive regarding other nondrug, nonsurgical interventions that are commonly combined and employed in multimodal management in clinical practice.^{13,14} The purpose of this review was to evaluate the evidence for conservative nondrug, nonsurgical interventions, either alone or in combination, for conditions of the shoulder.

METHODS

The systematic review was performed from March 2016 to November 2016. Its purpose was to answer the following question: What is the effectiveness of nondrug, nonsurgical interventions, either alone or in combination, for conditions of the shoulder? The review was conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA), and was registered with PROSPERO (No. 42016046341).

Literature Search Parameters

We developed a search strategy in collaboration with a health sciences librarian. The following items were considered in developing the strategy.

Participants/Population and Setting. We included adult (age ≥ 18 years) patients in ambulatory care settings who were eligible for the included trials and had diagnoses of conditions of the shoulder. Studies including only acute cases (< 4 weeks' duration) were excluded. No restrictions were placed on age, but mean ages were recorded.

Interventions. A nondrug, nonsurgical intervention had to be used in at least 1 of the study groups. This could be any combination of treatments, as long as no medications or surgical procedures were a formal part of the intervention.

Comparators. There were no restrictions on composition of the comparison group. Active treatments, placebos or shams, wait list, and no treatment were all included.

Outcomes. We included only pain and function/disability assessed by valid and reliable patient-based outcome measures. When other outcomes were reported, we excluded them from the data extraction tables. We included studies whether or not they reported on occurrence of adverse events, but noted adverse events in those that did.

Eligibility Criteria

The eligibility criteria for articles in the search are listed in Figure 1.

Search Strategy

The following databases were included in the search: PubMed, Index to Chiropractic Literature, Cochrane Database of Systematic Reviews, and Cumulative Index of Nursing and Allied Health Literature (CINAHL). A health sciences librarian worked with the investigators to develop the search strategies for each database; details of these are provided as appendices. Search terms related to a broad spectrum of shoulder diagnoses and any nondrug, nonsurgical interventions that serve as management strategies of these conditions were included. The terms were tailored for use in each database along with filters for systematic reviews and controlled trials. Titles and abstracts were screened independently by at least 2 reviewers for eligibility. Disagreements on eligibility were resolved by discussion. To attempt to address possible publication bias, we searched the US National Institutes of Health database (<https://clinicaltrials.gov/>) for trials that were conducted with no published results. This approach reflects methodology included in the updated guideline for systematic reviews published by the Cochrane Back and Neck Group.¹⁸

An additional strategy was to use reference tracking on the systematic reviews identified in the search. We did not extract data from the systematic reviews themselves. The randomized controlled trials (RCTs) identified by this method were added to RCTs identified through the formal literature search. For the complete search strategies for all included databases, please see Appendix A (available online only).

Evaluation of Risk of Bias

We evaluated articles using modified versions of the Scottish Intercollegiate Guideline Network (SIGN) checklists (<http://www.sign.ac.uk/methodology/checklists.html>) for systematic reviews/meta-analyses (both of these are abbreviated as "SRs") and RCTs. In the SIGN checklists, each article is scored as "high quality, low risk of bias," "acceptable quality, moderate risk of bias," "low quality, high risk of bias," or "unacceptable" quality, which resulted in rejection. We defined each level based on