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Recommendations for Exercises in Hand Osteoarthritis: A Systematic Review Protocol of Clinical Practice Guidelines and Consensus Recommendations

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Recommendations for Exercises in Hand Osteoarthritis: A Systematic Review Protocol of Clinical Practice Guidelines

Background: Hand osteoarthritis is a prevalent condition that affects an individual's ability to carry out daily functional tasks. Individuals with hand OA often experience pain, finger joint stiffness and reduced handgrip strength, which can impact on work roles and other societal participation. There is a need to evaluate current and emerging evidence-based rehabilitation strategies that aim to lessen the burden of the disease and improve quality of life for people living with hand osteoarthritis.

Objectives: This systematic review therefore aims to: (1) comprehensively identify and critically appraise all available published guidelines on hand OA to ascertain whether hand exercises are recommended as part of the current best practice intervention for people with hand OA. (2) identify the type and dosage of exercises recommended with regards to frequency, intensity and duration and (3) provide a summary of hand exercise recommendations for the management of hand OA.

Methods: The protocol for a systematic review of clinical practice guidelines on hand OA management follows the PRISMA-P guidelines. A comprehensive search of seven published databases and 19 grey literature sources will be conducted from January 1997- December 2017. All relevant guidelines will be critically appraised with the AGREE II instrument. Extracted recommendations on hand exercise management will be categorized and descriptively synthesized based on the levels of evidence and strength of recommendations using a narrative approach.

Conclusion: This proposed systematic review seeks to establish whether hand exercises are recommended as best practice for the management hand OA. It will provide a comprehensive summary of recommendations on the type and dosage of hand exercises. This information will help develop future research questions on the clinical applicability of these exercises.

Keywords: Exercises; Guidelines; Hand osteoarthritis; Recommendations

Background

Osteoarthritis (OA) is the commonest form of arthritis and the leading cause of disability globally [33]. The hand is frequently affected with high prevalence in women and the elderly [2]. Physiologically, hand OA is characterized by structural impairments such as soft tissue swelling and bone erosion. The distal interphalangeal, proximal interphalangeal and carpometacarpal joints of the hand are most commonly affected with the wrist and metacarpophalangeal joints less often involved [19]. Individuals with this condition often experience pain, finger joint stiffness and reduced grip strength with limitations in hand function and reduced work activity [23]. Following the International Classification of Function, Disability and Health (ICF) framework [36], the impact of hand OA can be clearly identified in relation to reduced daily activity performance and restricted societal participation with associated cost to healthcare and social security [22]. The Centre for Disease Control and Prevention (CDC) highlights the need for further research to evaluate current and emerging evidence-based management interventions to aid lessen the burden of the disease and improve the quality of life for individuals living with hand OA [6].

Several rehabilitation interventions such as self-management strategies, joint protection interventions, education programmes, low impact physical activity and muscle strength training exercises are reported as effective in managing general symptomatic OA [6, 8, 10]. Amongst these, substantial evidence supports the recommendation of exercises [18], as reported in a high quality systematic review of clinical practice guidelines which concluded that exercise was one of the key recommendations supporting the physical management of OA [24]. Despite the acknowledged benefits of exercise, agreement is lacking on its benefits for people with hand OA [25, 28, 30]. Whilst some authors have criticised exercise for having minimal or

no improvement effect on hand muscle strength and range of motion [29], others report moderate to high effectiveness in improving pain, daily activity performance and grip strength [16]. In an attempt to address this controversy, a recent Cochrane review, which aimed to evaluate the harms and benefits of exercises in hand OA, concluded that exercises are beneficial for improving hand pain, finger joint stiffness and hand function and cause no adverse effects [30]. The Cochrane review also highlighted the lack of consensus among researchers on the type and the content of exercise interventions most beneficial to this patient population. Currently, there is no clear indication or agreement of an optimal exercise intervention effective for people with hand OA. Therefore, a robust structured evidence synthesis focused on the content and delivery of optimal exercise interventions is timely and warranted.

Following an evidence-based perspective, such enquiries can only be made from credible sources that have considered and synthesized findings from the best available evidence, expect opinions and patient preferences. From the literature, clinical practice guidelines, which from here on will be referred to as guidelines, are recognized as the only valuable sources for synthesized evidence [11, 12]. Guidelines are written statements developed systematically with the aim of assisting clinicians and patients decide on the optimal health care for a specific clinical circumstance [35] and are the appropriate evidenced-based information source to aid health professionals in their clinical decision making [34]. A number of systematic reviews of guidelines on OA are available but none has specifically focussed on providing a summary of recommendations on exercise management in hand OA [24, 28, 32].

The overall aim of the proposed systematic review is to identify available clinical practice guidelines and consensus recommendations on hand exercise interventions in hand OA management. The specific aims are to:

(1) Comprehensively identify, critically appraise and synthesize all available published guidelines on hand OA to ascertain whether exercises are recommended as part of the current best practice intervention

(2) Identify the type and dosage of hand exercises recommended for the management of hand OA with regards to frequency, intensity and duration

(3) Provide a summary of definitive recommendations for hand exercises for the management of hand OA.

Methods

Methodology

This review protocol used an explicit systematic review approach to data identification, selection, analysis and synthesis of evidence to meet evidence-based standards in conducting systematic reviews [1, 7, 17]. The PRISMA-P checklist was used [27]. Details of the protocol were registered on PROSPERO and can be accessed at https://www.crd.york.ac.uk/PROSPERO/display_record.php?RecordID=86440.

Eligibility Criteria

As shown in Table 1, this proposed systematic review will consider guidelines relating to male and female adults with hand OA. Inclusion criteria are guidelines, evidence-based recommendations or consensus statements on any exercise intervention targeted at the hand, hand OA management and generalized OA or arthritic condition management that include specific hand content. If the guidelines have subsequent updates, only the current versions will be included since the present reviewers believe newer versions supersede the older ones. The following will be excluded: guidelines and booklets for patients, health information leaflets and overviews, duplicate guidelines, multiple guideline publications and those published in languages other than

English. The use of these explicit a priori inclusion and exclusion criteria aims to enhance the reliability of the study selection process, reduce the possibility of publication bias and improve the methodological rigour of the intended review consistent with current literature [7, 17].

Table 1: Inclusion and exclusion

	Inclusion criteria	Exclusion criteria
Population	1. Adults (aged 18yrs and over) with hand OA 2. Both male and female	1. Rheumatoid arthritis or inflammatory arthritis 2. Children with hand OA
Intervention	Any exercise intervention targeted at the hand or the upper limb	-Other interventions e.g. electrical stimulation, continuous passive motion
Comparator	Other physical management of hand OA [24]	
Outcome	1. Quality of Guidelines 2. Strength of guideline recommendations	
Study type	1. Clinical Practice Guidelines 2. Consensus statements 3. Evidence-based recommendations, summaries or reports 4. Best Clinical Practice 5. Guidelines published as books	1. Patient information booklets 2. Health information leaflets 3. Guideline for patients, duplicate guidelines, editorials, etc. 4.Overviews

Information Sources

The reviewers aim to identify all relevant and available guidelines that meet the pre-specified inclusion criteria. Both published and grey literature sources will be searched.

Published databases

AMED, CINAHL, Cochrane Library, MEDLINE, PEDro, Web of Science and Joana Briggs Institute (JBI) database of systematic reviews and implementation reports will be searched from January 1997 to December 2017.

Grey Literature sources

Established data sources reported to index guidelines or health policy papers and websites of organizations known to develop clinical guidelines or recommendations will be included.

The established data sources to be searched are;

(4) Epistemonikos

(5) Evidence for Policy and Practice Information Centre (EPPI-centre)

(6) National electronic library for health

(7) National Guideline Clearing House

(8) NICE Evidence search

(9) TRIP clinical search engine

The following organizational websites will be searched;

(1) African League of Associations for Rheumatology

(2) Agency for healthcare Research and Quality

(3) AGREE collaboration

(4) American College of Rheumatology

(5) Arthritis Research UK

(6) Canadian Institute of Health Research

(7) Chinese Guideline Clearing House

(8) EULAR

(9) Guidelines International Network

(10) Kings Fund

(11) OARSI

(12) SIGN

(13) World Health Organization

Search strategy

The Cochrane Library, The JBI institute and Prospero were searched prior to the commencement of the systematic review process as recommended by the Centre for review and dissemination [7]. This search was performed to avoid duplication of potential review evidence and to ensure that no current systematic review exists on this specific review topic. This systematic review aims to identify all available clinical practice guideline recommendations on exercise interventions for the management of hand osteoarthritis. To achieve this, the comprehensive 3-step search approach recommended by the Joana Briggs Institute will be followed with the aim of finding both published and grey unpublished literature relevant to this review [1]. Components of the PICO framework [20] were developed and agreed among the present reviewers. These components were: Population (Hand Osteoarthritis), Intervention (Hand exercises), Comparator (physical management strategies other than exercise [24]) and Outcome (Clinical Practice guidelines). These search terms were further revised, database specific controlled keywords added and an initial search strategy was developed in consultation with a librarian (PS) following expert recommendation [3, 13]. An initial limited search of CINAHL was undertaken using the identified keywords and subject headings (Appendix 1). This preliminary search was performed: (1) to scope and ascertain the existing literature for quantity, quality and available records relevant to the review question; (2) analyse the text words contained in the titles, abstracts and index terms used to describe the available records to identify additional word variants for the main search; and (3) pilot the search strategy developed. With further advice from the librarian, this search strategy was refined to develop a more focussed and comprehensive strategy to be used later in the main review as recommended in literature [3, 7]. Additionally, two identified grey literature sources; Guidelines International

Network and TRIP medical database were also searched to further explore the availability of guidelines. Summary of the preliminary search results are shown in Appendix 2. Using the refined search strategy developed, the second and main literature search of this review will be conducted across all selected databases and grey literature sources. Records published in English language between January 1997 and December 2017 will be applied as limiters.

It is reported that electronic database searches may miss significant records as other search methods like citation checking, reference tracking and hand searching are essential search strategies reported to yield additional relevant literature [13, 26, 31]. For this reason, a third and final search of citations and reference list of all included guidelines will be conducted to achieve a more comprehensive search.

Study Records

Data management

Bibliographic references will be managed in an Endnote library with additional soft and hard copies kept as backups consistent with literature [3, 21].

Study Selection

The first reviewer (BS) will conduct all database searches, manage the records identified with Endnote and screen for initial eligibility. All titles and abstracts will be screened against the broad inclusion and exclusion criteria by BS and MS. Full text articles will be screen against the detailed inclusion and exclusion criteria independently by BS and MS. Any disagreements will be resolved through discussion arbitrated by JA.

Data Collection process

Once the full text eligibility of the identified guidelines has been determined, the relevant data will be extracted and recorded onto a pre-defined data extraction form designed for the purposes of this review (Appendix 3). To maximize the reliability of this form, it will be piloted on one of the included guidelines to ensure that all essential information relevant to the review question are collected as recommended in the literature [7]. Data extraction will be performed by BS and verified independently by MS and JA for consistency, accuracy and completeness. Any disagreements encountered during this process will be resolved through dialog.

Outcomes and Prioritisation

The primary outcome of this review will be "quality of guidelines" which will be derived from the critical appraisal of included guidelines using the AGREE II instrument. The secondary outcome will be reported as "strength of guideline recommendation". This grading criteria will be developed following the review of the scope and structure of those guidelines included.

Risk of Bias (Quality) assessment

The AGREE II instrument will be used for quality assessment of all guidelines included due to its sound validity and reliability properties [5]. This tool will be used following the approach adopted by other guideline reviewers [15, 28] and as proposed by the tool developers [4]. BS and MS will perform the quality appraisal of all identified guidelines independently. Any disagreements that may arise will be arbitrated through discussion among all three reviewers.

Data Analysis and synthesis

In line with good practice, extracted data will be presented in tables and figures and conclusions drawn in relation to the specific review aims [9]. All recommendations on hand exercise management will be categorized and descriptively synthesized based on the levels of evidence and strength of recommendations using a narrative approach. Due to the variability in formulating and reporting recommendation statements by guideline developers, recommendations based on other criteria such as effect size and preponderance of evidence will be synthesized using their underlying levels of evidence. The present reviewers will use the approach employed in a recent review to formulate this systematic reviews' recommendations [14].

Conclusion

This proposed systematic review seeks to answer the question of whether hand exercises are recommended as best practice for hand OA management. It will provide a comprehensive summary on the type and dosage of exercises recommended with regards to frequency, intensity and duration. It will also provide a summary of hand exercise recommendations for the management of hand OA. This information will help develop future research questions on the clinical applicability of these exercises.

List of Abbreviations

AGREE	Appraisal of Guidelines, Research and Evaluation
AMED	Allied and Complimentary Medicine Database
CINAHL	Cumulative Index to Nursing and Allied Health Literature
CRD	Centre for reviews and dissemination
EULAR	European League Against Rheumatism
GIN	Guidelines International Network
MEDLINE	Medical Literature Analysis and Retrieval System Online
NGC	National guideline clearing house
NICE	National Institute for Health and Care Excellence
OARSI	Osteoarthritis Research Society International

PEDro	Physiotherapy Evidence Database
PRISMA-P	Preferred Reporting Items for Systematic Review and Meta-Analysis-Protocols
SIGN	Scottish Intercollegiate Guidelines Network

Disclosure statement

Reviewers report no conflict of interest

Ethics

This review did not require ethical approval since it is a review of already published papers.

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Appendices

Appendix 1. Preliminary CINAHL search strategy

#	Query
S1	clinical practice guidelines
S2	(MM "Practice Guidelines")
S3	protocol
S4	"clinical protocols"
S5	"health protocols"
S6	manual
S7	(MM "Health Information Networks") OR "information leaflets"
S8	(MH "Decision Support Systems, Clinical") OR (MH "Clinical Exemplars") OR (MH "Practice Patterns") OR "clinical pathways"
S9	(MH "Hospital Policies") OR "health policies"
S10	S1 OR S2 OR S3 OR S4 OR S5 OR S6 OR S7 OR S8 OR S9
S11	(MH "Osteoarthritis+") OR "osteoarthritis" OR (MH "Osteoarthritis, Wrist")
S12	osteoarthritis
S13	arthritis
S14	S11 OR S12 OR S13
S15	(MH "Hand") OR "hand" OR (MH "Hand Joints") OR (MH "Finger Joint")
S16	hand
S17	S15 OR S16
S18	S14 AND S17
S19	S10 AND S18 Limiters - Published Date: 19970101-20171231; English Language

Appendix 2. Summary of preliminary search results

Source Search Date	Search terms	Records retrieved	Relevant records
CINAHL(Ebsco Host) (19-12-17)	Appendix 1	119	6
TRIP Medical Database (12-12-2017)	Clinical guidelines AND "hand osteoarthritis"	32	3
Guidelines international Network: (11-12-17)	1.Hand osteoarthritis 2. Hand AND Osteoarthritis	1 0	1 0

Appendix 3. Data extraction form

<table>
<tr><th colspan="4">Guideline demographics</th></tr>
<tr><td colspan="2">Review ID:</td><td colspan="2">Reviewer:</td></tr>
<tr><td colspan="4">Guideline title:</td></tr>
<tr><td colspan="2">1st Author &Year of publication</td><td colspan="2"></td></tr>
<tr><td colspan="2">Country of origin/Geographical location</td><td colspan="2"></td></tr>
<tr><td colspan="2">Development organization</td><td colspan="2"></td></tr>
<tr><th colspan="4">Guideline Critical appraisal</th></tr>
<tr><td colspan="2">Overall quality of guideline</td><td colspan="2"></td></tr>
<tr><td colspan="2" rowspan="6">Overall guideline assessment</td><td colspan="2">Recommendation for use</td></tr>
<tr><td>Yes</td><td>Yes, with modifications</td><td>No</td></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td colspan="3">Include in review</td></tr>
<tr><td colspan="2">Yes</td><td>No</td></tr>
<tr><td colspan="2"></td><td></td></tr>
<tr><th colspan="4">Guideline content</th></tr>
<tr><td colspan="2">Purpose of Guideline</td><td colspan="2"></td></tr>
<tr><td colspan="2" rowspan="2">Are exercises recommended</td><td>Yes</td><td>No</td></tr>
<tr><td></td><td></td></tr>
<tr><td colspan="2">Exercise Recommendation</td><td colspan="2"></td></tr>
<tr><td colspan="2">Strength of recommendation</td><td colspan="2"></td></tr>
<tr><td colspan="2">Level of evidence</td><td colspan="2"></td></tr>
<tr><td rowspan="2"></td><td>Frequency</td><td colspan="2"></td></tr>
<tr><td>Intensity</td><td colspan="2"></td></tr>
</table>

Content of Exercise recommended	Type	
	Time	
Adverse effects of exercises		