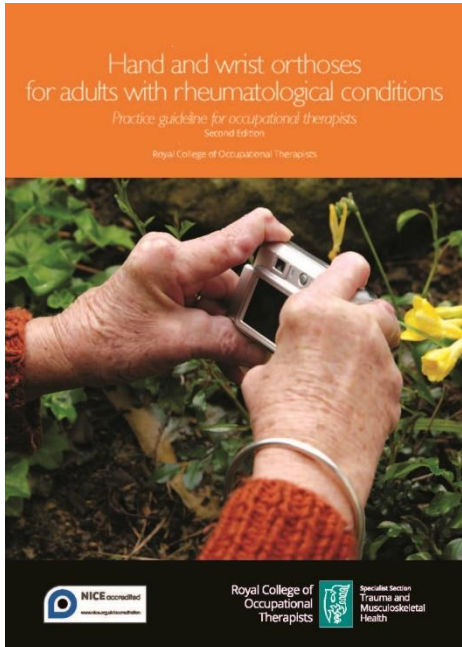


Quick reference and implementation guide



The Quick Reference and Implementation Guide provides a summary of the recommendations in the Royal College of Occupational Therapists practice guideline ***Hand and wrist orthoses for adults with rheumatological conditions – Second edition*** and includes suggestions for implementing the recommendations.

It is intended to be used by practitioners as an easily accessible reminder of the recommendations for intervention. It should ideally be used once the practitioner has read the full guideline document. This is important to ensure an appreciation and understanding of how the recommendations were developed and their context.

The full practice guideline and addendum together with implementation resources can be found on [the Royal College of Occupational Therapists website](https://www.rcot.org.uk/the-royal-college-of-occupational-therapists-website).

Introduction

The aim of this practice guideline is to provide specific evidence-based recommendations that describe the most appropriate care or action to be taken by occupational therapists working with adults who may benefit from a hand or wrist orthosis as an intervention for a rheumatological condition. Physiotherapists, hand therapists, orthotists, nurses and others who prescribe or use orthoses may also wish to refer to the guideline to inform their practice.

An orthotic intervention prescribed by an occupational therapist is usually one component of a more comprehensive joint protection and self-management programme (Hammond 2014). The recommendations are intended to be used alongside the therapist's clinical expertise in their assessment of need and implementation of interventions. The practitioner, therefore, is ultimately responsible for the interpretation of this evidence-based guideline in the context of their specific circumstances and each individual's needs.

The guideline aims to support the occupational therapist's decision-making and clinical reasoning and, being based on evidence, cannot cover all aspects of occupational therapy practice with respect to the prescription of orthoses for rheumatological conditions. It is also not intended to be a guide on assessment or orthosis fabrication.

This resource provides a quick reference to the guideline recommendations, together with tables outlining the nature of the strength and quality grading categories of the recommendations. Extracts from the full guideline document on the background to the clinical condition and an overview of the occupational therapy role are also provided. Evidence-based recommendations are, however, not intended to be taken in isolation and must be considered in conjunction with the contextual information and full guideline development methodology, described in the practice guideline document, together with current versions of professional practice documents, of which knowledge

and adherence is assumed.

Additionally, this resource provides tips for implementing the guideline's recommendations, acting as an aid to occupational therapists wishing to incorporate the knowledge and evidence base contained in the guideline into their practice.

Guideline recommendations

Synthesis of the evidence resulted in the emergence of recommendations for orthotic prescription in the context of three core areas:

- Rheumatoid arthritis: orthoses for activity and rest.
- Osteoarthritis: base of thumb orthoses.
- Optimising service user outcomes.

Additionally, an addendum to the guideline was added in October 2022 to incorporate new evidence on compression gloves.

The 44 studies from which the recommendations were developed are outlined in the full guideline in evidence tables (in Appendix 6). Recommendations are graded A (high) to D (very low) to indicate the quality of the evidence, and the scoring of 1 (strong) or 2 (conditional) indicates the strength of the recommendation – see full guideline for further details of the grading method. A total of 18.2% of the evidence was graded as high (A), 34.1% as moderate (B), 31.8% as low (C) and 15.9% as very low (D) quality. The overall grade of a recommendation is depicted in the guideline with a numerical, then alphabetical grade to reflect the strength of the recommendation and quality of the evidence (e.g. 1A – strong recommendation, high quality).

Research priorities identified during the development of the guideline are outlined in the full guideline document (RCOT 2020, p51).

Rheumatoid arthritis: orthoses for activity and rest	
Functional wrist orthoses	
1. It is recommended that a functional wrist orthosis should be prescribed for people experiencing wrist pain as a result of rheumatoid arthritis.	1A
(Ramsey et al 2014 [A]; Thiele et al 2009 [C]; Veehof et al 2008a [B]; Pagnotta et al 2005 [C]; Haskett et al 2004 [B])	
Resting/night orthoses	
2. It is suggested that where a night or resting orthosis is being considered as potentially beneficial to reduce symptoms for a person with rheumatoid arthritis, both subjective and objective measures are used for the monitoring and review of effectiveness.	2B
(Adams et al 2008 [B]; Silva et al 2008 [A])	
Orthoses for swan neck deformity	

- | | |
|---|----|
| 3. It is suggested , when considering an orthosis for swan neck deformity, that a potential positive effect on dexterity should be balanced by possible adverse effects such as pressure and paraesthesia. | 2C |
|---|----|

(Giesen et al 2010 [D]; Giesen et al 2009 [C]; Spicka et al 2009 [D]; Zijlstra et al 2004 [C])

Evidence overview

Functional wrist orthoses

The evidence for the use of functional wrist orthoses for people with rheumatoid arthritis is strong with respect to the reduction of pain, as particularly evidenced by the systematic review undertaken by Ramsey et al (2014). A decrease in pain was a consistent outcome across the studies, as measured using visual analogue scales. The reduction of symptoms, such as pain, is also a key motivator for adherence to wearing an orthosis. Risks associated with wearing a functional wrist orthosis were not specifically reported in the studies, but a potential negative impact on dexterity was highlighted.

Resting/night orthoses

The effectiveness of a resting or night-positioning orthosis is not definitive. While the outcomes from the two studies are potentially divergent in direction of benefit, it is important to note the different inclusion criteria and any variations in orthosis design and hand positioning. A positive impact on hand pain, grip and pinch strength, upper limb function and functional status was reported for participants with a mean of 9 – 10 years' disease duration, although the benefits beyond three months' use were not researched.

The evidence reviewed does not enable a specific recommendation to be made with respect to the prescription of a resting or night-positioning orthosis for people with rheumatoid arthritis. The two studies do, however, identify the importance of using subjective perspectives of individuals accessing services and objective outcome measures to monitor progress and effectiveness of any orthosis prescribed.

Orthoses for swan neck deformity

Some evidence exists to support prescription of an orthosis to improve dexterity where correctable swan neck deformity exists for people with rheumatoid arthritis. Impact on other dimensions, such as dexterity-related pain and function, is weaker. Inherent with the use of silver ring splints or Oval-8® ring orthoses is the potential for some adverse side effects, and the range of both positive and negative factors influencing choice should be considered as part of the orthotic prescription process. The recipients of an orthosis for swan neck deformity need to be carefully selected, as factors such as long-standing deformity may mean an orthosis is not tolerated.

Osteoarthritis: base of thumb orthoses

Orthoses to reduce pain and/or improve function

- | | |
|---|----|
| 4. It is recommended that an orthosis should be prescribed for people experiencing pain and/or functional difficulties with activities of daily living as a result of thumb base osteoarthritis. | 1A |
|---|----|

(Cantero-Téllez et al 2018 [B]; Vegt et al 2017 [B]; Bani et al 2014 [C]; Hamann et al

2014 [D]; Hermann et al 2014 [B]; Maddali-Bongi et al 2014 [C]; Bani et al 2013a [C]; Bani et al 2013b [A]; Becker et al 2013 [B]; Kjekken et al 2011a [A]; Kjekken et al 2011b [A]; Sillem et al 2011 [B]; Gomes Carreira et al 2010 [B]; Boustedt et al 2009 [C]; Moe et al 2009 [A]; Rannou et al 2009 [A]; Egan and Brousseau 2007 [B]; Wajon and Ada 2005 [A]; Weiss et al 2004 [C])

[New evidence 2020]

Orthoses to improve grip and pinch strength

5. **It is suggested** that an orthosis can improve the grip/pinch strength for some people with thumb base osteoarthritis. 2C

(Bani et al 2014 [C]; Hermann et al 2014 [B]; Maddali-Bongi et al 2014 [C]; Bani et al 2013a [C]; Bani et al 2013b [A]; Becker et al 2013 [B]; Sillem et al 2011 [B]; Wajon and Ada 2005 [A]; Weiss et al 2004 [C])

Evidence overview

A number of studies have been undertaken to explore the impact of orthoses on the symptoms of base of thumb osteoarthritis. The studies, while not all high quality, frequently considered pain as the primary outcome measure, with function, grip and pinch strength often as secondary outcome measures.

The evidence that orthoses have an impact on pain has been consistent in terms of direction of the outcomes, with an improvement being reported in 17 of the 19 studies described (9 of those statistically significant). Only one study identified no change in pain. The impact of an orthosis on function was considered in 13 studies, 6 of which (46%) were statistically significant in favour of an improvement in function, with one identifying no change. Risks or adverse outcomes associated with these orthoses were rarely reported in the studies. Changes in grip and pinch strength outcomes have been less consistent, with two studies identifying a decrease in grip, and statistical significance being rare for both measures.

Optimising outcomes for people who access services

Measuring outcomes

6. **It is recommended** that validated, standardised assessment and outcome measures are used pre- and post-provision of an orthosis to monitor progress and evaluate effectiveness. Measures may include assessing functional outcomes, understanding individual satisfaction and utilising Patient Reported Experience Measures (PREMs). 1A

(Duong et al 2018 [D]; Healey et al 2018 [B]; Aebischer et al 2016 [B]; Hammond et al 2016 [C]; Bertozzi et al 2015 [B]; Bani et al 2014 [C]; Hermann et al 2014 [B]; Maddali-Bongi et al 2014 [C]; Nasir et al 2014 [C]; Bani et al 2013a [C]; Bani et al 2013b [A]; Kjekken et al 2011a [A]; Sillem et al 2011 [B]; Gomes Carreira et al 2010 [B]; Boustedt et al 2009 [C]; Giesen et al 2009 [C]; Rannou et al 2009 [A]; Boer et al 2008 [C]; Silva et al 2008 [A]; Veehof et al 2008a [B]; Pagnotta et al 2005 [C]; Wajon and Ada 2005 [A]; Haskett et al 2004 [B]; Weiss et al 2004 [C]; Zijlstra et al 2004 [C])

[Statement amended and new evidence 2020]

Orthosis design and wearing regimen	
7. It is suggested that given the inconsistent evidence of a superior orthosis fabrication/design, or wearing regimen, the orthosis selected should maximise occupational performance and individual choice. (Cantero-Téllez et al 2018 [B]; Almeida et al 2017 [B]; Vegt et al 2017 [B]; Bertozzi et al 2015 [B]; Spaans et al 2015 [B]; Nasir et al 2014 [C]; Bani et al 2013b [A]; Becker et al 2013 [B]; Sillem et al 2011 [B]; Giesen et al 2009 [C]; Thiele et al 2009 [C]; Wajon and Ada 2005 [A]; Haskett et al 2004 [B]; Weiss et al 2004 [C]) [New evidence 2020]	2A
Experiences of people who access services	
8. It is recommended that to optimise adherence to wearing a prescribed orthosis, the occupational therapist should discuss with the person potential benefits and limitations; practicalities of use and comfort; provide the opportunity to try on orthoses prior to issue; and routinely arrange follow-up review of the intervention. (Tada et al 2018 [D]; Almeida et al 2017 [B]; Shankland et al 2017 [C]; Nasir et al 2014 [C]; Boer et al 2008 [C]; Gooberman-Hill et al 2013 [D]; Veehof et al 2008b [C]; Pagnotta et al 2005 [C]; McKee and Rivard 2004 [D]) [New evidence 2020]	1C

Evidence overview

Measuring outcomes

The evidence across the studies indicated that pain and function outcomes can be determined using self-reported measures such as the Visual Analogue Scale (VAS) or the Numeric Rating Scale (NRS) for pain, and the Disabilities of the Arm, Shoulder and Hand questionnaire (DASH) or the Australian/Canadian Osteoarthritis Hand Index (AUSCAN) for function. Measures can also be used to objectively determine performance for dexterity, grip and pinch strength. The combination of subjective (self-reported) and objective performance measures can provide reliable, valid and responsive information about the outcomes of orthotic intervention, and contribute to evidence of effectiveness. This would greatly increase the comparability within systematic reviews of the evidence around orthoses.

Orthosis design and wearing regimen

A wide range of prefabricated orthoses are available commercially; others are custom-made. These may be fabricated from a variety of materials, including thermoplastics, neoprene, leather and hybrid combinations. Research studies have compared a number of these orthoses, for both osteoarthritis and rheumatoid arthritis. While some orthoses showed a greater effect on pain reduction, and others were preferred by participants, there is no consistent evidence of a superior orthosis design. Furthermore, the variance of wearing regimen is particularly evident within the evidence.

Individual experiences

Research that involves the perspectives of people who access services can provide a richness

which, when taken into account, can have the potential to enhance wearing of an orthosis in practice and, as such, can improve the outcomes sought by the individual. Views expressed that were common to the studies included the importance of the support provided by the orthosis, its comfort and appearance, and ease of use, with 'perceived need' being a key driver for deciding to wear the orthosis. The range of potential issues influencing wearing of an orthosis implies that follow-up review of an orthosis is necessary to enable these to be addressed. Orthoses that are worn regularly are more likely to result in effective outcomes for those who wear them and, by association, more efficient use of occupational therapy service resources.

Compression gloves	
9. It is recommended that occupational therapists do not prescribe arthritis gloves providing pressure for hand pain, function or stiffness.	1A
(Hammond et al 2021 [A]) [New recommendation 2022]	
10. It is suggested that occupational therapists consider the perceived benefits that a loose fitting, three-quarter finger length glove might provide for warmth, comfort and support.	2A
(Hammond et al 2021 [A]) [New suggestion 2022]	

Evidence overview

The evidence for this recommendation and suggestion is one high-level randomised controlled trial with few limitations. It provided significant evidence that compression gloves should not be regularly prescribed to improve hand pain, function or stiffness as historically happened. It is based on a UK population that is relevant to the guideline and generalisable to occupational therapy practice.

Policy and service delivery context

The UK population is ageing. The number of people aged 65 or over is growing faster than the number of people under 65 in the UK. The number of people aged 65 to 85 rose by 23% to 10.6 million between 2008 and 2018. The number of people aged over 85 increased by 22.8% to 1.6 million in the same period (Office for National Statistics 2018). Looking ahead, it is predicted that in the next twenty years in England alone there will be an increase of around 49% in the 65 and older age group, equating to about 4.75 million people. The fastest growing age group is those aged over 85 where the expected increase is almost 114% or to 2.8 million people (Age UK 2017).

The impact of arthritis on individuals can be significant; it is estimated that one third of the population over 50 have some form of arthritis that is troublesome enough to interfere with everyday activities.

Service delivery must, therefore, be seen in the context of the prevalence of osteoarthritis and rheumatoid arthritis, a rising older population, an increase in those with long-term or multiple conditions, and the associated increase in need for care and support (Great Britain. Parliament

Select Committee on Public Service and Demographic Change 2013).

The National Institute for Health and Care Excellence (NICE) defines several clinical pathways, one of which is for musculoskeletal conditions. The musculoskeletal pathway identifies a number of sub-pathways, including pathways for both rheumatoid arthritis (NICE 2018) and osteoarthritis (NICE 2014).

Background to clinical condition

Osteoarthritis is the most common form of arthritis, and is normally associated with later life. Data collected by the Arthritis Research UK Primary Care Centre at Keele University identified the prevalence of consultation with a general practitioner for osteoarthritis in those aged 45 years or over in the UK as 33%. Hand and wrist consultation prevalence is estimated at 6%, representing 1.56 million people. Women aged 45–64 years are more than twice as likely as men in that age group to have consulted their general practitioner regarding hand or wrist osteoarthritis – an estimated 620,000 women aged 45–64 years in the UK (Arthritis Research UK 2013, p31).

Rheumatoid arthritis is the second most common form of arthritis, and can affect adults of any age, although 40–60 years of age is the most common for rheumatoid arthritis to develop (Scott and Bosworth 2014). The Global Burden of Disease Study estimated that over 460,000 UK adults had rheumatoid arthritis in 2017 (Institute for Health Metrics and Evaluation 2019). Rheumatoid arthritis is the most common inflammatory arthritis, with prevalence being two to three times greater in women than men (Versus Arthritis 2019).

The occupational therapy role

This practice guideline focuses on orthoses, but this is just one intervention that occupational therapists can offer individuals with rheumatological conditions involving the hand and wrist. The prescription of an orthosis should not be seen in isolation but within the context of a comprehensive assessment and individually tailored intervention plan.

Potential impact of the recommendations

Desired outcomes

- Perspectives of people who access services on the benefits of wearing an orthosis.
- Measurable effectiveness determined by benefits and outcomes which may include:
 - Reduced pain
 - Improved grip
 - Improved pinch strength
 - Improved function
 - Improved dexterity

Risk management

A comprehensive assessment:

The evidence reviewed did not indicate when it might be inappropriate to prescribe an orthosis; however, the prescription of any orthosis must be based on a comprehensive assessment, taking into account the nature of the individual's clinical condition – that is, 'the underlying disease process

and the possible associated hand impairment and functional limitations' (Bradley and Adams 2013, p203) and their occupational performance needs. The individual's general medical status may also impact on orthosis prescription: for example, a person with diabetes may have less tolerance for an orthosis due to impaired sensation or circulatory impairment. Cognitive ability should also be considered, including the person's capacity for understanding how to use the orthosis correctly and how to recognise and respond to discomfort or other indications of possible adverse effects in a timely and appropriate manner.

An orthosis as part of a comprehensive intervention programme:

The potential impact of an orthosis in the re-direction of force to other joints unconstrained within the orthosis, especially if they are also affected by the underlying pathology, must also be taken into account. Orthoses should not, therefore, be considered in isolation. A more comprehensive occupational therapy programme, including joint protection techniques and education, may be required (Bradley and Adams 2013, p192).

Appropriate orthosis assessment and fitting:

The provision and fitting of an orthosis is a specific skill which requires clinical expertise with respect to anatomy and biomechanics of the wrist and hand. To optimise user concordance and functionality, there is a need for appropriate assessment and fitting. An inappropriately selected and fitted orthosis may be ineffectual and increase the risks. Individuals who may benefit from an orthosis should therefore be referred to an appropriately trained health professional. In the context of prescribing an orthosis, factors such as skin condition, correct fitting, and environment where the orthosis will be used (particularly in relation to environmental or work hazards) all need to be part of the decision-making process.

Monitoring for side effects:

Clinical reasoning is essential to determine the balance of expected outcomes with potential risks or possible adverse effects. This is particularly important given that the nature of the evidence does not support routine provision, and non-concordance with a prescribed wearing regimen was reported in a number of the studies included in the evidence.

Adverse outcomes from orthotic prescription/use were minimal in the studies reviewed, but orthoses were not without side effects, as reported by individuals. Potential side effects should, therefore, be discussed with the individual and monitored during the period of intervention.

The person's perspectives established in one functional wrist orthosis study, for example, made reference to side effects: unpleasant feelings such as tingling, or pressure points due to tight fit (Veehof 2008b). The importance of reducing any risks was identified in the study, which stated that orthosis use should be reviewed one week after prescription to evaluate the perceived benefits and barriers to orthosis wearing, including comfort, fit and concordance.

Silver ring splints and Oval-8® orthoses may have side effects for some individuals (intolerance of the orthosis, pressure of the orthosis on bony edges, rheumatoid nodules and paraesthesia), and the risk of these should be discussed with the person and carefully assessed and monitored following orthotic prescription (Giesen et al 2010, Zijlstra et al 2004).

Other considerations:

Additional considerations which were not necessarily identified within the evidence, but should be taken into account, are the durability of an orthosis over time, and the responsibility of maintenance and replacement of an orthosis in the long term, particularly if the person is no longer being seen for review or has been discharged from the service.

Guideline implementation

In addition to the full guideline document, there are a number of implementation resources available to aid translation into practice, including a CPD resource and an audit tool. Some key tips to consider are outlined in the table below.

Key tips
1. Use the evidence available to inform prioritisation where there are service capacity issues which might make translation into practice more challenging (RCOT 2020, pp47-49).
2. Look for opportunities to promote the practice guideline with colleagues and multidisciplinary team members: include on the agenda of relevant meetings.
3. Present and discuss the evidence-based recommendations with colleagues – preferably with the multidisciplinary team. A Professional Development Resource PowerPoint is available with information already prepared and can be tailored for your local use.
4. Use the guideline audit tool to benchmark your service/practice and assist in identifying actions to progress implementation of recommendations. An audit tool is available to download and audit your service against the recommendations and kick-start an action plan.
5. Gather evidence of outcomes using standardised assessments and measures.
6. Use the guideline evidence and recommendations to support the case for occupational therapy as part of your business planning and commissioning activities.
7. Write an implementation case study to demonstrate how your service has translated the guideline recommendations into the workplace. Provide supporting performance/outcome data and service user feedback to demonstrate the difference you are making to people who access services, quality of services and cost-effectiveness.
The Royal College of Occupational Therapists and the RCOT Specialist Section – Trauma and Musculoskeletal Health would welcome your feedback on the guideline document and how you are using it in your practice/service. Please email Angie Thompson, R&D Officer, at angie.thompson@rcot.co.uk .
<u>Access the implementation tools.</u>

References

The full reference list for the evidence supporting the recommendations, together with the full evidence tables, can be found in the guideline.

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