

# Coalition for Safe and Effective Pain Management

## Splinting to Reduce Upper Extremity Pain

### **Treatment or Modality (approximately 400 to 500 words)**

***Description of treatment or modality offered by your profession or as a multidisciplinary effort that is a potential alternative to opioids.***

Splinting to reduce pain for those with upper extremity conditions, including osteoarthritis (OA), rheumatoid arthritis (RA) and carpal tunnel syndrome (CTS), is an intervention provided by occupational therapists that is an alternative to opioid use. Research indicates that upper extremity splinting is associated with both short-term and long-term reductions in pain (Egan & Brosseau, 2007; Aebischer, Elsig & Taeymans, 2016; Amini, 2011; Ramsey, Winder & McVeigh, 2014).

***Describe how this alternative is or can be used in Canada to reduce prevalence of opioid prescribing.***

Many Canadians with upper extremity conditions causing chronic pain and discomfort may rely on opioids for pain relief. Splinting is an intervention that can reduce pain caused by upper extremity conditions such as arthritis and carpal tunnel syndrome. Splinting of the hand, wrist and fingers (depending on the condition and location of pain) provides many benefits including joint stabilization (which can provide pain control and prevent contractures), immobilization of painful joints, prevention or correction of deformity, and maintenance of a neutral position while allowing for functional use of the hand.

Upper extremity pain can have a significant impact on an individual's ability to complete activities that they need and want to do in their daily lives. When considering splinting as an intervention to address pain, an occupational therapist will work collaboratively with an individual to determine location and frequency of pain, if certain activities exacerbate pain, and what functional limitations are caused by the pain. A comprehensive approach to understanding the impact of pain on the individual's daily life will assist an occupational therapist to choose the appropriate splint design to meet their needs. Through the recommendation and fabrication of splints, occupational therapists are able to reduce overall levels of pain. Given the conservative nature and cost-effectiveness of splinting, it is suggested that individuals be given the opportunity to use splinting as a pain reduction strategy (Egan & Brosseau, 2007), as opposed to the prescription and use of opioids.

Provision of a splint should be supplemented with other modalities by an occupational therapist or multidisciplinary team (Aebischer, Elsig & Taeymans, 2016) including (but not limited to): education on joint protection principles, education on available assistive devices, strategies for pacing activities to reduce fatigue and exacerbation of symptoms, and the recommendation of appropriate exercises.

***Describe how this treatment or modality is commonly accessed or delivered.***

Occupational therapists work in a variety of settings, including in hospitals, communities, and rehabilitation settings. Occupational therapists have the unique ability to work with individuals in a multitude of settings including in their homes, local community and workplace. An occupational therapist can complete an assessment of an individual to determine if he or she would benefit from the use of a splint. Occupational therapists can fabricate custom-made splints from thermoplastic materials, or may tailor existing pre-fabricated splints to meet an individual's specific needs. If a complex or specialized splint is required, an individual may be referred to an occupational therapist with further expertise in construction of splints, such as an occupational therapist working in a hand therapy clinic. To maximize wearing adherence, the design and wear schedule of a splint should be determined collaboratively with the individual client. Depending on the individual's condition and level of pain, the wear schedule of a splint may vary, and can include daytime and nighttime use.

### **Short Summary of Evidence (approximately 250 words)**

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*A brief summary of best evidence related to this treatment or modality, including evidence related to reducing the prevalence of opioid prescribing.*

A systematic review (Aebischer et al., 2016) examining the effectiveness of physical and occupational therapy interventions found that splinting interventions had positive effects on pain reduction in those with OA. This was supported by a second systematic review (Amini, 2011) that identified that those with OA and CTS both experienced reductions in pain using splints. Ramsey et al. (2014) identified that splints are associated with pain reduction for those with RA. Multiple studies identify that the specific splint make and design do not have a direct impact on the level of pain reduction, suggesting that the choice of splint should be tailored to client preference and adapted to the type of activity for which it will be worn (Aebischer et al., 2016; Egan & Brousseau, 2007; Amini, 2011).

Aebischer et al. (2016) identified that a multimodal approach, involving the use of splints in combination with other components, such as education or exercise programs delivered by occupational therapists or a multidisciplinary team is more effective in the treatment of patients with OA than single isolated interventions. This is well-aligned with research that suggests that multidisciplinary approaches are an effective strategy in addressing chronic pain management and reducing pain medication use (CADTH, 2011).

### **Resources**

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*A list of 1 to 5 relevant resources to support the recommendation.*

- Aebischer, B., Elsig, S., & Taeymans, J. (2016). Effectiveness of physical and occupational therapy on pain, function and quality of life in patients with trapeziometacarpal osteoarthritis – A systematic review and meta-analysis. *Hand Therapy, 21(1)*, 5-15. doi:1758998315614037.
- Amini, D. (2011). Occupational therapy interventions for work-related injuries and conditions of the forearm, wrist, and hand: A systematic review. *American Journal of Occupational Therapy, 65(1)*, 29-36.

Canadian Agency for Drugs and Technologies in Health (CADTH). (2011). Multidisciplinary Treatment Programs for Patients with Non-Malignant Pain: A Review of the Clinical Evidence, Cost-Effectiveness, and Guidelines. Retrieved from <https://www.cadth.ca/multidisciplinary-treatment-programs-patients-non-malignant-pain-review-clinical-evidence-cost>

Egan, M. Y., & Brousseau, L. (2007). Splinting for osteoarthritis of the carpometacarpal joint: a review of the evidence. *American Journal of Occupational Therapy*, 61(1), 70-78.

Ramsey, L., Winder, R. J., & McVeigh, J. G. (2014). The effectiveness of working wrist splints in adults with rheumatoid arthritis: A mixed methods systematic review. *Journal of rehabilitation medicine*, 46(6), 481-492.

Ye, L., Kalichman, L., Spittle, A., Dobson, F., & Bennell, K. (2011). Effects of rehabilitative interventions on pain, function and physical impairments in people with hand osteoarthritis: a systematic review. *Arthritis research & therapy*, 13(1), R28.

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