

# Soft Splinting for the Older Adult with CMC Osteoarthritis: (and the Therapist with Limited Sewing Skills)



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Osteoarthritis affects more than 20 million Americans and is the most common joint disorder throughout the world (Helmick, *et al.*, 2008). It occurs more frequently in older adult women than men over the age of 50 (Lawrence, *et al.*, 2008). Osteoarthritis is often called the wear and tear disease but research demonstrates that the breakdown in the articular cartilage is due to mechanical, biochemical, and cellular factors (Felson, 1998). The carpometacarpal (CMC) joint of the thumb is commonly affected and as the disease progresses the CMC may partially displace off the trapezium. This can progress to an adduction deformity of the first metacarpal and metacarpal phalangeal joint hyperextension. This deformity can become more pronounced and painful during pinch activities and has been categorized as a type III deformity (Terrono, *et al.*, 2002).

Splinting the CMC joint has been found to be helpful in providing joint stability and decreasing pain during activities of daily living in patients who have deformities that are passively correctable (Callinan *et al.* 1996, Weiss *et al.* 2004). The study by Weiss found that a prefabricated neoprene splint provided greater pain relief and allowed improved function. Splints can assist in placing the joints in a position opposite the developing deformity. In the case of a type III deformity, this would include gentle pressure on the base of the metacarpal joint to assist in seating it on the trapezium, gentle metacarpal abduction, and MP joint flexion.

Many therapists with limited sewing skills prefer pre-fabricated neoprene splints for ease of application. Custom neoprene splinting can be completed without sewing skills, with the use of iron-on tape and iron-on Velcro, to bond seams and provide Velcro attachments. In this cost conscious

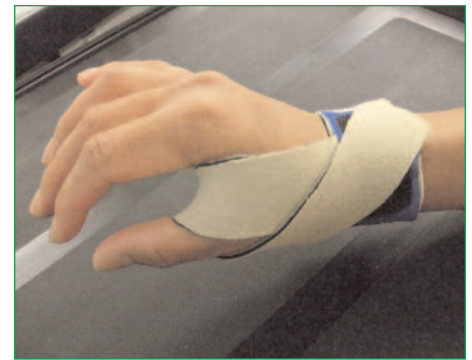


**Figure 1: Iron-on tape allows the therapist to bond seams and secure Velcro attachments without sewing.**



**Figure 2. Care must be taken to avoid getting the iron-on tape glue on areas of the splint that will receive the Velcro hook. This glue impedes the hook and neoprene plush bond. Protect the plush material with foil when ironing the tape in place.**

health care environment the therapist continuously searches for economical materials, time saving techniques, and evaluates prefabricated versus custom splinting options. Neoprene with loop backing (to accept Velcro hook) can be less expensive when purchased in bulk from suppliers (see Perfectex below). Iron-on tape (available from North Coast Medical and Perfectex) allows the therapist with limited sewing skills to fabricate custom neoprene splints (J. Armstrong, personal communication, March 20, 2008). Some examples of custom neoprene splints for CMC arthritis are illustrated. The main body of the splint and the positioning strap may be made out of neoprene with plush backing that accepts Velcro hook. Iron-on



**Figure 3: A simple strap splint to provide CMC joint stability and metacarpal abduction. Iron-on Velcro hook supplies the attachment point for the strap.**



**Figure 4: Another strap splint that provides CMC joint stability and metacarpal abduction. This splint provides reinforcement of the Velcro hook attachment with the iron-on tape at one end of the strap and secures to the neoprene plush material at the base. Note that correct strap positioning provides gentle pressure into thumb metacarpal (CMC joint) abduction, not MP joint lateral deviation.**

tape can secure the Velcro hook to the neoprene strap, as well as to the neoprene base of the splint (Fig 4-6). This iron-on tape assists with proper strap application by keeping one end of the strap in the correct position. The iron-on tape also prevents the possible loss of Velcro hook by securing it in place on the base of the splint. Care must be taken to avoid getting the iron-on tape glue on areas of the splint that will receive the Velcro hook. This glue impedes the Velcro hook and neoprene plush bond. This can be avoided by protecting the plush material with foil when ironing the tape in place (figure 2). The splints in figures 3 and 4 are a simple strap designs for mild deformities that gently abducts the

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metacarpal and helps to seat the CMC joint. The splints in figure 5 and 6 provide a secure broad base for the abduction straps when additional support is needed.

Iron-on tape helps the therapist with limited sewing skills to fabricate custom neoprene splints for the older adult with OA. Suppliers are available for obtaining neoprene in bulk, which can reduce the price of the materials for these splints. These techniques can be applied to other custom soft splints. Even the non-sewing therapist can make custom neoprene splints with these techniques.

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**Figure 5.** This neoprene splint provides a secure base for the abduction strap when additional support is needed.



**Figure 6.** The iron-on tape secures the straps and Velcro for the splint in figure 5.

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