



Splinting for individuals with Spinal Cord Injury

A Resource for Health Service Providers

WA State Spinal Injury Unit

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This information is developed to direct care staff and individuals with a spinal cord injury in the use and application of arm and hand splints. Splints are provided if upper limb strength and function is impaired following damage to the spinal cord above T1.

Key Points

- Splints are manufactured to assist individuals with reduced strength and function in their wrists and hands
- Static splints aim to maintain one particular position to allow for a specific functional activity. Functional splints may include :
 - Writing squiggly*
 - Typing splint*
 - Wrist Support*
- Resting splints are designed to be worn on a nightly basis to maintain hand position and structure. Ongoing wearing of these will improve the appearance of your hand and support the use of tenodesis[^] movement to achieve best possible hand function. These may include :
 - Spinal Resting Splint
 - Boxing glove (to be worn short periods only)
 - Palmar-Dorsal Splint
- Upper extremity splinting can be used to:
 - increase function
 - prevent deformity
 - substitute for reduced muscle power and/or joint alignment

Details on how to make the splints marked * is available to Occupational Therapists from the Specialist Spinal Occupation Therapy service at the WA State Spinal Injury Unit

[^]Tenodesis movement is used to allow an individual without active finger movement to grasp and release objects. It utilises passive tension in the tendons of the finger and thumb in relation to the wrist position to allow the individual to grasp or release an object.

What are splints?

A splint is a device made from low temperature thermoplastic material which is individually moulded and designed to assist the individual for whom it is made.

Splints can be static (fixed position) or dynamic (allow movement).

Individual splints may be prescribed and fabricated by an Occupational Therapist. Hand splinting is often combined with other treatment techniques such as stretching and strengthening for maximum effectiveness.

Splints may be prescribed for wear during the day, at night or worn to assist hand function for a particular task during the day e.g. self-catheterisation or eating.

This document describes the range of splints that can be supplied for an individual with SCI depending on their hand function, needs and priorities. Individual instruction is provided to facilitate appropriate application of the splints whilst an inpatient in the WA State Spinal Injury Unit. However as a health professional, carer or family member you can contact the Spinal Occupational Therapists if you have any queries or problems with any splint or feel that replacement maybe required ie splint is cracking or parts have broken off or come apart. Splints would usually last at least a year before replacement is indicated.

Care and Maintenance of Splints

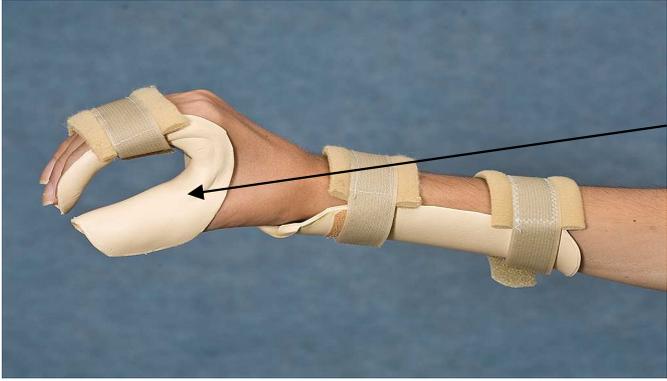
Splints should be cleaned on a regular basis, particularly if they start to look dirty or if they start to smell. This may need to be done weekly depending on the individual.

1. Clean the thermoplastic splint with soap, sponge or cloth and room temperature water (NOT HOT WATER). Do not submerge the splint in water.
2. Elastic and/or velcro strapping may be scrubbed with mild soap, water and a small brush.
3. If the splint still has odour after cleaning, try wiping it with a little toothpaste. If relining of the padding is indicated due to discolouration, smell or the padding is detaching from the splint consult an Occupational Therapist.
4. All thermoplastic materials can be damaged by heat. Do not allow splints to lie in sunlight, hot cars or on or near heaters.
5. Always store splints in a safe place without heavy objects resting on top of them.

Types of splints

All splints are designed and fitted by an Occupational Therapist to address the individual needs of the person with SCI. Some of the more commonly used types of splints and their purpose are detailed below. There are many other types of splints that may be used to address individual needs – you can discuss these with the Spinal Occupational Therapists.

Table 1: Commonly Use Splints for people with Spinal Cord Injury

Type of Splint	Purpose	Donning and Doffing
Resting Splint	<p>To keep a hand in a functional position with wrist and fingers slightly bent. To be worn at night.</p> 	<p>This splint needs to be applied by placing under the fingers and into the thumb web space. Wrist and arm should be positioned carefully. Straps should be applied gently to stop the arm from moving in splint.</p> <p>The splint is placed under the fingers and over the thumb in opposition. The wearer's hand should be pushed into splint until their thumb web-space touches the splinting material</p>
Writing Squiggly *	<p>To hold and position a pen for writing. Can also be used for a stylus for mobile phones and tablets.</p> 	<p>People can usually apply and remove this splint without assistance (using their teeth usually)</p> <p>A single loop goes over the thumb, the double loop over index and middle finger.</p> <p>When manufacturing the angle of the fingers and thumb in relation to the stylus or pen is critical, along with the length of the stylus that must protrude below the end of the finger tips.</p>
Typing Splint *	<p>To stabilize finger position to type on a computer. Replacement rubber tips can be purchased at hardware stores and held on with super-glue.</p> 	<p>Patients can usually don and doff these splints using their teeth.</p> <p>Alternate versions can be made using the finger only. Splint patterns available on request.</p> <p>Typing splints can only be used on a regular computer keyboard, for all other devices that require finger touch conductive gel tips are needed.</p>

<p>Boxing Glove</p>	<p>To be used for short periods only to maintain full flexion in fingers.</p> 	<p>Provided only to a small number of patients who have hands that are positioned with fingers in extension. To be worn a maximum of 1 hour per day. If pressure marks on palm are noted, stop wearing and discuss further options with the Occupational Therapist.</p>
<p>Wrist Support</p>	<p>This commercially available splint is designed to maintain the wrist in a neutral position. This splint will require cutting and fitting by an OT to suit personal positioning requirements.</p> 	<p>Place thumb into cut-out. Metal struts should position on either side of the wrist. Straps must be tightened firmly to maintain position. Designed differently for right and left hand. Adaptations possible to include palmar cuff and non slip material to assist with wheelchair propulsion.</p>
<p>Palmar-Dorsal Splint</p>	<p>To provide stable stretch in a hand which has increased tone in the fingers and or wrist which may lead to reduced range of movement. This splint needs to be worn regularly for extended periods.</p> 	<p>Fingers need to be placed in this splint first, allowing them to gently stretch out before finishing the process. The finger section goes onto the palm, forearm section is on the top of the arm and strap goes under the arm to provide a pivot of support. This splint is designed to fit snugly.</p> 

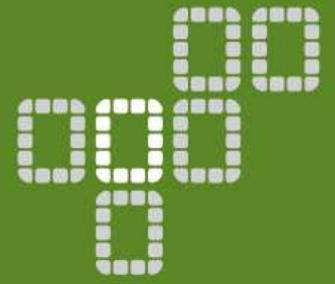
Compiled by

Nicky Hunter, Acting Senior Occupational Therapist, State Spinal Unit, Royal Perth Hospital

Contributors

- Christine Rimmer, Senior Physiotherapist State Spinal Unit, Royal Perth Hospital
- Carly Hartshorn, Clinical Nurse Consultant Spinal Urology, State Spinal Unit, Royal Perth Hospital

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