Splints or orthoses are externally applied devices used to modify the structural or functional characteristics of the neuro-musculoskeletal system. Splints can be classified as static or dynamic.

Static splints (often referred to as resting splints) aim to provide joint support, stabilisation or protection. Static splints are not recommended for increasing range of movement, as their aim is to immobilise not mobilise joints.

Dynamic splints are designed to increase or restore movement through provision of external assistance for weak musculature or through the use of traction. There is some evidence available to guide therapists using dynamic splinting in adults who have had a stroke (Hye-seon et al, 2012; Lannin et al, 2016).

The routine use of splints to reduce contracture or risk of contracture is not recommended - that is, not all patients with stroke will require splinting and not all patients who have had a stroke will benefit from splinting. Splinting should be as an individualised intervention that targets specific impairments and is linked to individualised goals.

### National Stroke Foundation Guidelines

<table>
<thead>
<tr>
<th>7.4 Contracture</th>
<th>GRADE</th>
<th>GPP</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Conventional therapy (i.e. early tailored interventions) should be provided for stroke survivors at risk of or who have developed contracture.</td>
<td>B</td>
<td></td>
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<tr>
<td>b) For stroke survivors at risk of or who have developed contractures and are undergoing comprehensive rehabilitation, the routine use of splints or prolonged positioning of muscles in a lengthened position is NOT recommended.</td>
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<tr>
<th>7.3 Spasticity</th>
<th>GRADE</th>
<th>GPP</th>
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<tbody>
<tr>
<td>a) Interventions to decrease spasticity other than an early comprehensive therapy program should NOT be routinely provided for people who have mild to moderate spasticity (i.e. spasticity that does not interfere with activity or personal care):</td>
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<tr>
<td>b) In stroke survivors who have persistent moderate to severe spasticity (i.e. spasticity that interferes with activity of personal care):</td>
<td>B</td>
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<tr>
<td>• botulinum toxin A should be trialled in conjunction with rehabilitation therapy which includes setting clear goals</td>
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</table>

Research published since the 2010 Guidelines suggests that resting splints (individually designed for hypertonicity), worn for up to 3 months, may have an effect reducing hypertonicity and spasticity in patients with evidence of spasticity who do not have existing contracture (Copley et al, 2013).

When considering spasticity management, the benefits of botulinum-toxin may be enhanced by electrical stimulation, night splints or taping (National Stroke Guidelines, 2010, p. 99).

Use of a dynamic splint has been demonstrated to effectively reduce spasticity (National Stroke Guidelines, 2010, p. 99). Studies published subsequent to the Guidelines also support feasibility and efficacy of using a dynamic splint such as the SaeroFlex™ – in both the acute/sub-acute context (Lannin et al, 2016) and in patients with chronic stroke (1-4 years post-stroke: Hye-seon et al, 2012)
Figure 7.1 (from Copley & Kuipers, 2014) is useful for translating evidence from splinting studies into practice. Each study is represented by a red dot, placed on a time continuum from the acute through to chronic phase post-stroke. Patients included in acute and sub-acute studies have less spasticity than patients in the three chronic phase studies. Results of the chronic phase studies show a reduction in spasticity following splint wearing which contrasts to the studies conducted in acute and sub-acute phases.
WHAT RESOURCES DO I NEED?

- Access to specialised equipment for thermoplastic splint fabrication
- Appendix 7A. Common splint designs, patterns & fabrication instructions (Copley & Kuipers, 2014)
- Hire or purchase of dynamic splint e.g. SaeboFlex™

INTENSITY OF DYNAMIC/ FUNCTIONAL RETRAINING

- The application of therapeutic modalities (including splinting) should occur within the context of preparing patients for motor control functional relearning tasks and occupation.

- Functional retraining whilst wearing dynamic splints such as the SaeboFlex™ have demonstrated efficacy based on 4 weeks of training for 1 hour per day, 5 times per week. Tasks completed during the daily training sessions focused on moving an object (soft ball) in various planes of movement whilst in standing.

SPLINTING RECEIVES A RED LIGHT

Splinting receives a red light based on the evidence available at the time of the 2010 National Stroke Guidelines. Research published subsequently may contribute to re-evaluation of this recommendation, particularly with regards to management of spasticity.

CONSIDERATIONS

- Splinting should be considered an individualised intervention and not a routine intervention
- Specific patient factors such as chronicity of impairment, severity of impairment and presence of spasticity and hypertonicity need to be considered as part of the clinical reasoning process

ADDITIONAL RESOURCES


