Physiotherapy interventions evidence table – Joint protection education, orthoses and splinting

The following table provides a summary of level I or II evidence (according to the NHMRC evidence hierarchy) for physiotherapy-relevant interventions in RA published between January 2012 and June 2015. Interpreting the evidence can be complex. RAP-eL users should consider the following:

- There are no current studies investigating the effects of joint protection education, splinting or orthoses on early versus late rheumatoid arthritis.
- There is inconclusive evidence regarding wrist splint types and the frequency/duration of splint use during a day.
- Although orthoses may improve hallux valgus angle, there is no evidence to provide links between this objective measurement and improvements in function and pain.
- There is inconclusive/no evidence for orthoses in improving foot function, walking speed, and gait.
- It is important to note that the interventions studied are done so in isolation, so the evidence refers to the effect of the single intervention, and not the effect of a multimodal intervention.

<table>
<thead>
<tr>
<th>Physiotherapy-related intervention(s)</th>
<th>Sources of Evidence (see key below)</th>
<th>Results</th>
<th>Making Sense of the Evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual joint protection education</td>
<td>RCT SR MA CSR</td>
<td>5 x 45 minute sessions of 1:1 joint protection (JP) education (4 in 3/52 and one booster session 2 months later)</td>
<td>- Individualised prescription of joint protection techniques tailored to patient-specific goals (compared to joint protection education targeted at generic tasks) improves adherence to joint protection strategies, self-efficacy and grip strength.</td>
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<tr>
<td></td>
<td>Niedermann K et al. Scand J OT 2012 (19): 360-369</td>
<td></td>
<td>- These effects increase at 6 and 12 months post treatment indicating improved self-management.</td>
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<tr>
<td></td>
<td>[PubMed link]</td>
<td></td>
<td>- Strong evidence for joint protection education improving function in activities of daily living (ADL’s) was</td>
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</tbody>
</table>
for hand JP education +/- extra written information e.g. home exercise programme from OT

- Effect sizes increased at 6 and 12 months post intervention.
- Both groups showed improvements although individualised education was more effective at 6 and 12 months.

also found by the Cochrane Systematic Review by Steultjens et al in 2004.

<table>
<thead>
<tr>
<th>Foot orthoses and special shoes +/- orthoses</th>
<th>RCT</th>
<th>SR</th>
<th>MA</th>
<th>CSR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hennessy et al 2012; 64(3): 311-320. [link]</td>
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<td>✔</td>
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</tbody>
</table>

- No studies had good external and internal validity (Hennessy et al, 2012).
- Moderate improvements in forefoot pressures and pain were found with using orthoses.
- One study showed reduced pain with walking and stair climbing associated with wearing extra-depth shoes for 2/12. These benefits were maximised with extra-depth shoes.
- Orthoses may prevent progression of hallux valgus angle but do not improve pain or function.

- Conflicting benefits (moderate improvement versus no improvement in foot and ankle pain in patients with RA) were found by Hennessy et al (2012) and Egan et al (2010).
- Extra deep shoes may improve pain with walking and stair climbing, particularly when combined with orthoses (see Egan et al (2010) for more information).
- It may be prudent in the first instance to consider supportive footwear +/- soft over-the-counter orthotics due to the lack of conclusive evidence and high cost.

- Reductions in 1st MTPJ pain at 6/52 and 3/12 with orthoses may not be superior to supportive shoes or soft over-the-counter orthotics.

<table>
<thead>
<tr>
<th>Wrist splints</th>
<th>RCT</th>
<th>SR</th>
<th>MA</th>
<th>CSR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ramsey et al 2014</td>
<td>✓</td>
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</table>

Working wrist splints (i.e. not resting splints or post surgical splints aimed to immobilise) may:

- reduce hand pain
- improve grip strength (moderate evidence) at the expense of reducing dexterity (Ramsey et al, 2014; Steultjens et al, 2004).

Conflictingly Egan et al (2010) concluded:

- no statistically significant improvements in pain or grip strength.

There is inconclusive evidence to support the effects on function.

- Egan et al (2010) found no benefits of resting splints, however patients wearing resting splints for >2/12 preferred use to non-use of wrist splints.

Wrist splints can be considered for:

- reducing hand pain, and
- improving grip strength in patients with RA.

- It should be noted that there is likely to be a reduction in dexterity so assessment for hand splints should be made on a case by case basis depending on the functional needs of the patient

- Splinting has a trend towards being more efficacious for tasks where strength is required e.g. lifting, vacuuming and sweeping rather than where dexterity is required.

- Subjectively, patients prefer padded resting splints and using splints compared with non-use despite there being
| splints and padded splints over non-padded splints. | no evidence for resting splints improving function, pain or joint count in patients with RA. |

**Key To Evidence Sources:**
- Randomised Controlled Trial (RCT)
- Cochrane Systematic Review (CSR)
- Meta-Analysis (MA)
- Systematic Review (SR)

**List of Table Abbreviations:**
- ADL’s – Activities of Daily Living
- DAS28 – Disease activity score calculator for Rheumatoid arthritis [click here for link to PDF]
- DASH – “Disabilities of the Arm Shoulder and Hand” outcome measure
- HEP – Home Exercise Programme
- HRQ – Health Risk Questionnaire
- JP – Joint Protection
- LBP – Lower Back Pain
- OA – Osteoarthritis
- OT – Occupational Therapy
- QOL – Quality Of Life
- RA – Rheumatoid Arthritis
- RCT – Randomised Controlled Trial
- TENS – Transcutaneous Electrical Nerve Stimulation
- US - Ultrasound
- 1st MTPJ – 1st Metatarsophalangeal Joint