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.

Physiotherapy-related intervention(s)	Sources of Evidence (see key below)	Results	Making Sense of the Evidence
Individual joint protection education	RCT: ✓ / SR / MA / CSR Niedermann K et al. Scand J OT 2012 (19): 360-369 [PubMed link] RCT / SR / MA / CSR: ✓ Steultjens et al (2004) OT for RA. [link]	• 5 x 45 minute sessions of 1:1 joint protection (JP) education (4 in 3/52 and one booster session 2 months later) • Individualised JP education gave larger improvements in adherence, self-efficacy and grip strength than the conventional JP education group (generic joint protection and RA written and oral information, demonstration and supervision of kitchen tasks	- 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. - These effects increase at 6 and 12 months post treatment indicating improved self-management. - Strong evidence for joint protection education improving function in activities of daily living (ADL's) was

		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.
Foot orthoses and special shoes +/- orthoses	RCT: SR ✓ Hennessy et al 2012; 64(3): 311-320. [link] RCT: CSR ✓ Egan et al (2010) Splints and Orthoses for treating RA [link] RCT: CSR ✓ Hawke et al (2008) Custom-made orthoses for the treatment of foot pain [link]	• 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

		• Hawke et al (2008) found some reduction in rear-foot pain at 3/12 with nil maintained at 3/12. • 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.	associated with custom orthoses.
Wrist splints	<table><tr><th>RCT</th><th>SR</th><th>MA</th><th>CSR</th></tr><tr><td></td><td>✓</td><td></td><td></td></tr></table> Ramsey et al 2014 ; J Rehabil Med; 46(6): 481-492. [link] <table><tr><th>RCT</th><th>SR</th><th>MA</th><th>CSR</th></tr><tr><td></td><td></td><td></td><td>✓</td></tr></table> Steultjens et al (2004) OT for RA. [link] <table><tr><th>RCT</th><th>SR</th><th>MA</th><th>CSR</th></tr><tr><td></td><td></td><td></td><td>✓</td></tr></table> Egan et al (2010) Splints and orthoses for treating RA [link]	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 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, vaccuming 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