

Does exercise or splinting in the treatment of trigger finger reduce pain, improve range of movement, grip strength, function and return to work when compared with usual care?

Clinical Bottom Line

There is limited, poor quality evidence showing the benefit of splinting or exercise for the management of trigger finger. However, splinting is suggested when individuals wish to avoid invasive treatment and for those with mild to moderate symptoms.

Criteria for Critically appraised Topic

Population

Male and female adults 18 years plus

Intervention

- ✚ Passive and/or active exercises to maintain/improve ROM
- ✚ Bespoke splint for affected digits to reduce pain, triggering and help maintain function

Comparison

Usual care, which may include:

- ✚ NSAID's
- ✚ Steroid injection
- ✚ Physiotherapy – ultrasound, acupuncture, mobilisation
- ✚ Surgery
- ✚ Ergonomic advice

Outcomes

- ✚ Increase in function
- ✚ Increase in range of movement
- ✚ Increases in grip strength
- ✚ Reduction in pain
- ✚ Return to work
- ✚ Cost effectiveness
- ✚ Improved quality of lifestyle

Inclusions

Patients with a medical diagnosis of trigger finger (stenosing tenosynovitis)

Exclusions

- ✚ Children
- ✚ Red flags /cancer
- ✚ Previous steroid injections
- ✚ Post-operative patients

Search Terms Used

Population	Intervention	Comparison	Outcomes
Human adults Primary/secondary care Trigger finger Stenosing tenosynovitis	Passive mobilisation Passive exercises / stretches Splint Orthotics	Routine care Usual care Advice Any other treatment Steroid injection	Range of movement (ROM) Grip strength Return to work Function Reduction in pain Quality of life

Results from search in October 2010

Data Base	Number of articles found	Number of relevant articles
Cochrane Library	9	1
DARE/HTA/NHSEED	2	1
Medline	15	0
CINAHL	15	3
AMED	3	0
Embase	12	2
Web of Science	8	0
DUETS	1	1
Other databases:		
Sports discuss	3	1
CSP guidelines	1	0

Studies found to be relevant to the CAT

- **PATEL M & Bassini L (1992) Trigger fingers and thumb: when to splint, inject, or operate. The Journal of Hand Surgery, Vol 17a 1:110-113**

A one year study including 50 fingers. Participants provided with a thermoplastic splint with MCPJ at 10 -15° flexion and PIPJ free for extrinsic tendon gliding. Splint removed for hygiene only. There were variations in splint duration from 3 weeks to 12 weeks. Splinting compared with 50 receiving cortisone injection. Patients were followed up for at least a year.

Results:

Splinting was successful in 77% patients with symptoms of 6 months or less and in 44% in those with symptoms of longer than 6months. This compared to successful injection of 84% of patients with symptoms of 6 months or less and 71% in those with symptoms longer than 6 months. These figures exclude the thumb where splinting has poor outcomes (50% success).

- **Rogers J et al (1998) Functional distal interphalangeal joint splinting for trigger finger in labourers: a review and cadaver investigation. Orthopaedics, vol 21 p305-310**
- A 2 part study investigating the efficacy of functional DIPJ splinting for trigger finger involving 21 labourers and 16 fingers in 4 fresh cadavers. In part one, labourers were treated with NSAID's and full-time DIPJ splinting (taped Alumafoam to the dorsum of the digit or a Stax splint). Corticosteroid was offered if the stage of triggering was 4 or more (unlocked with active movement to locked) or persisted after 6 weeks of splinting. Average follow-up was 12 months. In part two, 4 fresh cadavers were studied to evaluate the effectiveness of DIPJ splinting on FDP

excursion again using Alumafoam and Stax splints. Tendon excursion was measured with a micrometer with manual tension on the tendon to maintain tip to palm opposition. Three repeated measurements were taken on each finger with no splint, with an Alumafoam splint and a Stax splint.

Results:

Part 1: Splinting alone treated 52% (11) of the patients, 4 patients had a recurrence of triggering, 3 of which resolved with another period of splinting. Average splint wear was 8 weeks (1 to 20 weeks). Work time was not lost through splint wear and splints were well tolerated with the alumafoam proving the most convenient and functional.

Part 2: Tendon excursion measured in 16 digits was decreased by a mean of 4,2mm with the dorsal alumafoam splint and 4.8 mm with the Stax splint – this was statistically significant although the differences between the two splints were not significant.

The study suggests that DIPJ splinting was an effective primary and adjunctive treatment for the population concerned.

- **Akhtar et al (2005) Management and referral for trigger finger /thumb. BMJ vol 331 July**
Describes a literature review from English language literature located on Medline, PubMed, and guidelines and key points suggested to aid management of trigger finger. NSAIDS, splintage, steroid injection, percutaneous finger release and surgery discussed.

Splinting aim is reduce/remove tendon excursion through A1 pulley for sufficient time to allow synovitis around the pulley to resolve. Describes Rodgers et al study (1998) and Patel & Bassini (1992) study and highlights that those with more severe disease and longer duration are less likely to benefit from splinting.

Algorithm suggested for adult patients. Splinting and NSAIDS suggested for those unwilling to consider invasive treatment. Either a DIPJ splint (Stax splint for 6 weeks) or a MCPJ splint at 15° of MCPJ flexion for 6 weeks

- **Colbourn J et al (2008) Effectiveness of splinting for treatment of trigger finger. Journal of Hand Therapy 21(4)336-43**

Study included 28 participants (excluded those with trigger thumb, more than one triggering digit, flexion contracture and previous steroid injection)

Five outcome measures identified: grip strength, stages of stenosing tenosynovitis (SST), NPRS (0-10), number of triggering events in 10 active fists and patient perceived symptom improvement (scale 1- 5).

Participants provided with a custom thermoplastic splint (MCPJ's at approx 15°, allowance for tip-to-tip prehension) at initial assessment to be worn for 24 hours for 6 weeks. If triggering continued at 6 weeks, treatment extended to 10 weeks. Participants were given an educational leaflet on trigger finger and exercise sheet demonstrating passive IPJ flexion, composite full finger flexion, extension and active hook exercises. Exercises completed 5 repetitions 3 times per day without splint.

There was no control group, small sample size with varied demographics.

Results:

Study reported significant outcome measures for SST, NPRS and the number of triggering events in 10 active fists & patients' perceived improvement.

46.4% experienced less triggering post splint wear, none had increased triggering

53.6% reported total resolution, 39% partial resolution with 7.1% reporting no change to triggering.

57% participants did not comply with splint wear i.e. continuous wear day & night. Only 37% completed exercises daily. In those with a longer duration of triggering, 14.3% resolved fully

after 10 weeks of splint wear rather than 6 weeks. There was no significant difference between those using NSAIDs and those not using NSAID's in trigger finger resolution.

- **Makkouk AH, et al (2008) Trigger finger: etiology, evaluation, and treatment. Curr Rev Musculoskeletal Med 1: 92-6**

Authors suggest (citing references) that splinting is an appropriate treatment option for those who do not want corticosteroid injections. They suggest that splinting the PIPJ at night can be effective for those with symptoms of locking in the morning. States that splinting has lower success rates in those with severe triggering or longstanding duration of symptoms.

- **Fleisch SB et al (2007) Corticosteroid injections in the treatment of trigger finger: a level I & II systematic review. Journal of the American Academy of Orthopaedic Surgeons; 15(3): 166-171. Database of Abstracts of Reviews of Effects (DARE) 2008**

CRD Summary: "The authors concluded that corticosteroid use was associated with an improvement in symptoms in 57% of patients. Limitations in the literature search, the poor quality and small number of included studies, and failure to appropriately synthesise the results mean that these findings should be interpreted with extreme caution"

- **Peters-Veluthamaningal C et al (2009) Corticosteroid injection for trigger finger in adults. Cochrane Database of Systematic Reviews 2009, Issue 1**
<http://www.mrw.interscience.wiley.com/cochrane/clcentral/articles/535/CN-0647535/frame.html>

Two RCT's identified with 63 participants. The available evidence for the effectiveness of intra-tendon sheath corticosteroid injection for trigger finger can be graded as a silver level evidence for superiority of corticosteroid injections combined with lidocaine over injections with lidocaine alone. It states that it is not clear if steroid injection is superior to splinting or surgery in either efficacy or safety and cites the need for more comparison studies between surgery and splinting.

- **Corticosteroid injections compared to splinting or surgery for trigger finger in adults, (April 2010), DUETS**

A record stating uncertainties identified in research recommendations. States that further research is needed with RCT's with adequate sample sizes, better methodology and reporting according to the CONSORT statement. It recommends more comparison studies between injection, splinting and surgery, different types and dosages of corticosteroids and different care settings.

- **Trigger finger Map of medicine (July 2011)**

http://healthguides.mapofmedicine.com/choices/map/trigger_finger2.html

Recommendations for management of mild to moderate trigger finger:

- Consider referral to occupational therapy to help the patient to use their hand following injection; splinting if necessary and appropriate.

Splinting:

- a Cochrane review in 2009 recommends that splinting may also be appropriate as a first line intervention (although not evaluated in the review); however, according to expert opinion splintage does not work for trigger finger
- rests the joint

- extends the affected finger and maintains extension
- prevents involuntary curling of fingers, eg while sleeping
- the metacarpophalangeal (MCP) joint is splinted at approximately 15° of flexion
- splinting is not thought to be as effective as corticosteroid injection or surgery

Physical therapy:

- involves gentle exercises to maintain joint mobility

References:

Akhtar S, Bradley MJ, Quinton DN et al. Management and referral for trigger finger/thumb. *BMJ* 2005; 331: 30-33.

Makkouk AH, Oetgen ME, Swigart CR et al. Trigger finger: etiology, evaluation, and treatment. *Curr Rev Musculoskelet Med* 2008; 1: 92-6.

Peters-Veluthamaningal C, van der Windt DA, Winters JC et al. Corticosteroid injection for trigger finger in adults. *Cochrane Database Syst Rev* 2009; CD005617.

Summary

There is no sound clear evidence supporting the benefits of splinting or exercise in the treatment of trigger finger, especially when compared to steroid injection. When considering the use of splints the stage and duration of triggering needs to be taken into account. Further research with good methodology, highlighting splint position and duration is required. However, the Map of Medicine for trigger finger and trigger finger/thumb algorithm described by Akhtar et al (2005) would appear appropriate to use in the management of this condition until further evidence is available.

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