Rehabilitation Regimens Following Surgical Repair of Extensor Tendon Injuries of the Hand—A Systematic Review of Controlled Trials

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Abstract There is no consensus on the most effective rehabilitation regimen following extensor tendon repair of the hand. This systematic review evaluates the outcomes of the various regimens. The Cochrane, MEDLINE, EMBASE, CINAHL, AMED, PEDro, OTseeker databases were searched for any prospective randomised clinical trials comparing rehabilitation regimens for acute extensor tendon injuries in adults. Five papers met the inclusion criteria. The regimens were static immobilisation, dynamic splinting and early active motion (EAM). There was no standard format of reporting. The sample size ranged from 27 to 100 patients. The duration of follow-up ranged from 8 to 24 weeks. Overall, patients' total active motion improved with time. Early mobilisation regimens (active and passive) achieve quicker recovery of motion than static immobilisation but the long-term outcome appears similar. Given the comparable outcomes between

dynamic splinting and EAM, we therefore favour EAM which is simpler and more convenient.

Keywords Extensor tendon · Immobilisation · Early active motion · Early passive motion · Dynamic splinting · Rehabilitation

Introduction

Extensor mechanisms of the hand and wrist have a complex and intricate anatomy [1, 2]. The versatility and delicate balance of finger motion can be easily impaired by injuries to the extensor tendons [3]. Following surgical repair of the extensor tendons, institution of a specific rehabilitation regimen involves consideration of the severity of injury, quality of the repair, complexity of the regimen and likely compliance of the patient with therapy. The rehabilitation regimens can be broadly divided into static immobilisation or early mobilisation [4, 5]. Historically immobilisation has been the mainstay of therapy following extensor tendon injuries as the repair site is protected from excessive motion which could threaten the repair. Greater understanding of tendon biology [6], advancements in surgical technique and evidence for early motion following flexor tendon repair [7, 8] have since prompted interest in employing the principle of early motion when treating extensor tendon injuries.

Early mobilisation regimens can be further divided into passive (dynamic) or active mobilisation [9, 10]. Passive mobilisation regimens employ dynamic splinting which allows glide of the repaired tendon, and in concept all work of digital extension is done by the elastic mechanism of the splint. A second static splint is worn outside of exercise periods. This form of management has been associated with

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complications of tendon tethering and discomfort in wearing the bulky dynamic splint, thus posing questions about patient compliance [11]. In contrast, early active motion regimens allow concentric contraction of the extensor muscle of the repaired tendon and a static splint is worn between exercises to protect the repaired tendon. Both early mobilisation regimens aim to promote earlier restoration of range of motion and potentially earlier return to work. Nevertheless, surgeons and therapists face the difficulty of finding the balance between protecting the repair site by limiting premature mobilisation and preventing tendon adhesions due to prolonged immobilisation [12, 13].

The aim of this study is to perform a systematic review of prospective randomised controlled trials (RCT) available on the outcomes and complications of various rehabilitation regimens following surgical repair of extensor tendon injuries of the hand.

Methods

Search Strategy

A literature search was performed on the following electronic databases: the Cochrane Bone, Joint and Muscle Trauma Group Specialised Register (accessed 21/5/2011), the Cochrane Central Register of Controlled Trials (in the Cochrane Library Issue 2 of 4, Apr 2011), Ovid MEDLINE (R) (1948 to May Week 2 2011), EMBASE (1902 to May 2011), CINAHL (accessed 22 May 2011), AMED (Allied and Complementary Medicine) (1985 to May 2011), PEDro - physiotherapy evidence database (<http://www.pedro.org.au>) (accessed 21 May 2011), and OTseeker - The Occupational Therapy Systematic Evaluation of Evidence Database (<http://www.otseeker.com>) (accessed 30 May 2011). The search term 'extensor tendon' was used for both PEDro and OTseeker. In MEDLINE (OVID WEB) the subject specific search strategy was combined with all three stages of the optimal trial search strategy [14]. The full search strategies for MEDLINE are shown in Appendix 1, the Cochrane Library (Wiley InterScience) in Appendix 2, EMBASE in Appendix 3, CINAHL in Appendix 4 and AMED in Appendix 5.

We searched Current Controlled Trials at www.controlled-trials.com (accessed 22 May 2011) and the UK Clinical Research Network Study Portfolio at <http://public.ukcrn.org.uk/search> (accessed 31 May 2011) for ongoing and recently completed trials. We also searched supplements of Journal of Hand Surgery (European) (1990 to May 2011: <http://jhs.sagepub.com>), proceedings of Journal of Bone and Joint Surgery British (2002 to May 2011: <http://www.jbjs.org.uk>), abstracts of Orthopaedic Trauma Association annual meetings (1996 to 2010: <http://www.hwb.org/ota/am/>), and abstracts of the American Society for Surgery of the

Hand annual meetings (2000 to 2010: <http://www.assh.org/AnnualMeeting/archive/Pages/AbstractBook.aspx>). In addition, the online archives of the following journals were searched using the term 'extensor tendon': Journal of American Academy of Orthopaedic Surgeons (October 1993 to May 2011), Journal of Plastic, Reconstructive and Aesthetic Surgery (2005 to May 2011), British Journal of Plastic Surgery (1948 to 2005) and Journal of Hand Therapy (2002 to April 2011). The bibliographies of all identified studies were screened for additional relevant studies.

Inclusion and Exclusion Criteria

Twenty-two potentially eligible citations were identified via the initial search. Full reports of the citations were then obtained and each was independently assessed (by CN, JC, DM, SM, AW) for final inclusion. We included any prospective, randomised or quasi-randomised (for example, allocation by date of birth or alternation) controlled clinical trials which compared different rehabilitation regimens for acute extensor tendon injuries of the hand. Zone I injury (Mallet finger) was excluded as this had been examined in a Cochrane review [15]. Thumb was not considered in this review due to its unique anatomy, compared to the other digits.

The methodological quality of the included trials was then independently assessed using a rating scheme covering 11 aspects of trial validity (Appendix 6). Each trial was also assigned a category of effectiveness (Appendix 7). Any disagreement was resolved by discussion and if no consensus was met, the senior author decided.

Data Extraction and Analysis

Using a data extraction form, the following information was obtained from the included studies: author, year, Verdan zone of injuries, outcome measures, method of measurement, duration of follow-up, interventions, number of subjects/hands/digits and recommendations. Extraction of results from graphs in trial reports was considered where data were not provided in the text or tables. Results were collected for the follow-up times for which these were available.

Meta-analysis was performed using RevMan analysis software (RevMan 5.1.6) of the Cochrane Collaboration.

Results

Five studies met the inclusion criteria [9, 10, 16–18]. The characteristics of the studies have been summarised in Table 1. The rehabilitation regimens studied were grouped into (1) static immobilisation; (2) dynamic splinting; and (3) early active mobilisation (EAM) (Table 2). Bulstrode et al. also studied a regimen involving immobilisation of the MCPJs but leaving the

Table 1 Summary of studies included in the systematic review

Papers	Zone of Injury	Outcome	How measured (incl timing, assessor blinding)	Notes (eg. Level of significant, subgroup)	Group A intervention	N	Group B intervention	N	Group C intervention	N	Categories of effectiveness	Recommendations
Bulstrode 2005	V – VI	1. TAM [19]	1. Goniometry at 4, 6, 8, 12 / 52	Mean and 95 % confidence intervals of TAM (1) and grip strength (kg)	0 - 4 weeks - immobilisation with palmar slab - wrist 30° ext / MCP joint ext / IP joints ext; week 4 - active mobilisation all finger joints hourly, passive extension of fingers, splint worn for protection at night and in danger; week 8 - passive and resisted flexion begun, driving allowed; 12 weeks - return to heavy work.	17 (17 injuries) (10 completed all appointments, 4 telephoned, 3 lost to follow-up)	0 - 4 weeks - immobilisation with static splint - wrist 30° ext / MCP joint ext / IP joints free. IP joint ext / flex hourly; week 4 - as per Group A	10 pts (13 injuries) (3 lost to follow-up)	0 - 4 weeks - static splint - wrist 45° ext / MCP joint 50° flex / IP joints neutral. Exercises - 4 hourly, active MCP joint ext / flex, intrinsic minus; week 4 - as per Group A	15 pts (16 injuries) 2 lost to follow-up	2	Greater total active range at 4 weeks and greater grip strength at 12 weeks in Groups B & C after simple zone V – VI extensor injuries. No difference in time spent in therapy between the groups.
Chester 2002	IV – VIII	1. TAM	2. Grip strength	p value not specified	Static splint - wrist 30° ext / MCPJ 30° flex / IPJ full ext, between exercises. Exercises: day 1, hourly x 5 - active IP joint / MCP joint ext, active intrinsic minus; day 5–7 - hourly x 10 - active MCPJ E/F (IPJ extended), active intrinsic minus; week 2 - active wrist ext / flex; week 3 - active gross composite fist; week 4–6 - discard splint except nocte, commence light activities of daily living; week 6–8 - begin grip strength exercises, return to work; week 12 - no further restrictions	30 (19 pts, 29 digits) 11 pts lost to follow-up	Day 5–7 - dynamic splint - wrist 30° ext / MCP joints neutral daytime wear, static splint nocte - wrist 30° ext / MCP joint 30° flex / IP joints neutral; x10 hourly MCPJ active flex/passive ext; active ext/flex of IPJ; week 2 - as for Group A	24 (17 pts, 29 injuries) 7 lost to follow-up	Day 1–5 - static splint, wrist 30° ext / MCP joint 45° flex / IP joint free; hourly x 10 active MCP joint ext / flex with IP joint neutral, gross composite flexion in	2	Greater range at 4/52 in Group B however no significant difference between early active and early passive motion regimens at final follow-up in simple zone V – VIII extensor tendon injuries.	
Hall 2010	V-VI	1. TAM	No blinding of assessors 1. Goniometry 3, 6, 12/52	$\alpha=0.017$ [Estimated Sd 150 of TAM] Bonferroni adjustment	0 - 3 weeks - immobilisation with static splint - wrist 40-45° ext / MCP joint 0-20° flex / IP joints neutral; week 3 - graded mobilisation	9 pts (4 pts completed, 5 injuries), 5 pts lost to follow-up at 6 weeks	Day 1–5 - dynamic splint, wrist 40-45° ext / MCP joint 0° / palmar block at 30-40° flex; hourly x 20 - active MCP joint flex, passive ext with IP joint extended; passive supervised wrist	9 pts (5 pts completed, 8 injuries), 4 pts lost to follow-up	Day 1–5 - static splint, wrist 30° ext / MCP joint 45° flex / IP joint free; hourly x 10 active MCP joint ext / flex with IP joint neutral, gross composite flexion in	9 pts (11 injuries)	4	Early active motion patients achieved greater active range of motion, less extension lag and better self-report functional scores than

Table 1 (continued)

Papers	Zone of Injury	Outcome	How measured (incl timing, assessor blinding)	Notes (eg. Level of significant, subgroup)	Group A intervention	N	Group B intervention	N	Group C intervention	N	Categories of effectiveness	Recommendations
Khandwala 2000	V-VI	2. Function	2. Self-report visual analogue scale 3, 6, 12/52	p value not specified	Day 0-2 weeks - Dynamic extension splint, with repaired tendon finger plus one on either side involved; hourly x 10 - active MCP joint flex (IP joint ext), passive MCP joint ext, free IP joint movement, no composite movement allowed; week 3 - splint continued, start composite flex, continued passive ext; week 4 - full movement allowed out of splint including light activity; week 6 - passive flex and ultrasound commenced as required; week 8 - return to driving; week 12 - return to heavy manual work	50 pts, 78 fingers	Day 0 - week 2 - all digits included in static splint, wrist 30° ext / MCP joint 45° flex / IP joints free; hourly x 10 - active ext to neutral, flex to splint; week 3 - wrist 30° ext / MCPJ 70° flex - hourly x 10 - active ext to neutral, flex to splint, intrinsic minus; week 4 - out of splint, active ext/flex; continue as per group A intervention	50 pts, 84 fingers	limits of splint; week 3 - splint adjusted to MCP joint 70° flex, active hook fist (intrinsic minus); week 5 - splint ceased, graded mobilisation programme; week 6 - as per Group A	2	Both rehabilitation regimens were highly effective, without significant statistical difference between them.	early passive motion and immobilisation protocols.
		3. Extension lag	3. Goniometry 3,6,12/52									
		4. Grip strength	4. Janar dynamometry 2/52									
Mowlavi 2005	V-VI	2. Miller's assessment of extensor tendon repairs (1942)	No blinding of assessors	p value not specified	Day 3-5 - dynamic splint, wrist 30° ext, up to 30° MCP joint flex; active flex / passive ext,	17	0 - 4 weeks immobilized with static splint, wrist 30° ext / MCP joint 15-	17		2	Dynamic splinting of simple, complete	
		1. TAM	1. goniometry 4, 6, 8/52 and 6/12									

Table 1 (continued)

Papers	Zone of injury	Outcome	How measured (incl timing, assessor blinding)	Notes (eg. Level of significant, subgroup)	Group A intervention	N	Group B intervention	N	Group C intervention	N	Categories of effectiveness	Recommendations
				free IP joint movement; week 2 - active MCP joint flex to 45°; week 4 - started active range, splint nocte only; week 6 - splint nocte only and passive range commenced as needed			20° flex / IP joints neutral; week 4 - splint reduced to nocte only; week 6 - splint ceased and passive range commenced as needed; week 8 - strengthen exercises initiated					extensor tendon lacerations in zones V-VI results in better functional outcome at 4, 6 and 8/52 compared to immobilisation.
		2. Grip strength	2. Jamar dynamometry 8/52 and 6/12 No blinding of assessors									

MCP = metacarpophalangeal

IP = interphalangeal

Ext = extension

Flex = flexion

Table 2 This table shows the overview of rehabilitation regimens studied by the various investigators. Blank cells represent regimens that were not included in that particular trial. The categorisation was based on the principle of the rehabilitation employed

Regimens	Static immobilisation	Static immobilisation (IPJ free)	Early passive motion (dynamic splinting)	Early active motion (static splinting)
Mowlawi et al.	X		X	
Hall et al.	X		X	X
Bulstrode et al.	X	X		X
Khandwala et al.			X	X
Chester et al.			X	X

IPJ Interphalangeal joint

IPJs free to mobilise [16]. This regimen was not studied by other investigators and hence could not be justifiably grouped with other studies for comparison. The results of the regimen were summarised (Table 1) but not used in further analysis.

Total Active Motion

The most consistently reported outcome measure is the total active motion (TAM) which is defined as (MCP+PIP+DIP) flexion – (MCP+PIP+DIP) extension lag [19]. Three studies [16–18] reported TAM as a continuous variable while the other two [9, 10] reported TAM as categories (excellent, good, fair and poor).

Overall TAM improved with time following extensor tendon repairs (Fig. 1).

There appeared to be a general trend of better TAM with regimens involving early mobilisation (dynamic splinting and EAM) than that of static immobilisation, up to 12 weeks following surgery. Beyond 12 weeks, the difference appeared to diminish between the two groups but this observation was limited by the paucity of data points.

Static Immobilisation Versus Dynamic Splinting

Results (means and standard deviations of TAM reported) from Hall et al. and Mowlawi et al. studies could be combined for comparison between static immobilisation and dynamic splinting (Fig. 2a and b). At 6 weeks, patients who were rehabilitated using dynamic splinting regained significantly greater TAM than those with static immobilisation ($p=0.01$ with a mean difference of 30 °). When the results at 8–12 weeks were combined, dynamic splinting group continued to achieve significantly greater TAM than static immobilisation group ($p=0.004$ with a mean difference of 23 °).

Fig. 1 This chart plots the mean TAM values at the various time points as reported by the studies using continuous variables (Bulstrode, Hall, Mowlawi)

Static Immobilisation Versus Early Active Mobilisation

Results from Hall et al. and Bulstrode et al. studies could be combined for comparison between static immobilisation and EAM (Fig. 3a and b). At 3–4 weeks, patients who were

rehabilitated using EAM regained significantly greater TAM than those with static immobilisation ($p < 0.00001$ with a mean difference of 80°). At 12 weeks, EAM group continued to achieve significantly greater TAM than static immobilisation group ($p = 0.03$ with a mean difference of 19°).

A Results at 6 weeks.

Study or Subgroup	Static		Dynamic			Weight	Mean Difference		Mean Difference
	Mean	SD	Total	Mean	SD		Total	IV, Fixed, 95% CI	IV, Fixed, 95% CI
Hall 2010	178	42	5	198	39	8	26.3%	-20.00 [-65.67, 25.67]	
Mowlawi 2005	206	53	17	239	22	17	73.7%	-33.00 [-60.28, -5.72]	
Total (95% CI)			22			25	100.0%	-29.58 [-53.00, -6.16]	
Heterogeneity: Chi² = 0.23, df = 1 (P = 0.63); I² = 0%									
Test for overall effect: Z = 2.48 (P = 0.01)									

B Results at 8–12 weeks.

Study or Subgroup	Static			Dynamic			Weight	Mean Difference	Mean Difference
	Mean	SD	Total	Mean	SD	Total		IV, Fixed, 95% CI	IV, Fixed, 95% CI
Hall 2010	240	25	5	248	22	8	35.0%	-8.00 [-34.69, 18.69]
Mowlawi 2005	216	36	17	247	20	17	65.0%	-31.00 [-50.58, -11.42]	
Total (95% CI)			22			25	100.0%	-22.96 [-38.74, -7.17]	
Heterogeneity: Chi² = 1.85, df = 1 (P = 0.17); I² = 46%									
Test for overall effect: Z = 2.85 (P = 0.004)									

Fig. 2 Static immobilisation versus dynamic splinting. **a** Results at 6 weeks. **b** Results at 8–12 weeks

A Results at 3–4 weeks.

B Results at 12 weeks.

Fig. 3 Static immobilisation versus early active mobilisation. **a** Results at 3–4 weeks. **b** Results at 12 weeks

Dynamic Splinting Versus Early Active Mobilisation

Results from Khandwala et al. and Chester et al. studies were combined. There was no statistically significant difference in the proportion of fair and poor results, according to the TAM assessment [19], between patients rehabilitated using dynamic splinting or EAM ($p=0.23$) (Fig. 4).

Grip Strength

Three studies reported grip strength [16–18]. Hall et al. found no significant difference in grip strength at 12 weeks among the three regimens studied [17]. Mowlawi et al. reported percentage of grip force measured in injured versus uninjured hands. Dynamic splinting group was found to have better grip strength than static immobilisation at 8 weeks but not at 6 months [18]. Bulstrode et al. showed their results in a bar chart and grip strength was measured in kilograms [16]. At 12 weeks postoperatively, in the static

immobilisation group, the repaired hand was significantly weaker than the uninjured hand. However such difference was not demonstrated in the EAM group.

Demand on Therapist Input

There was no difference in the median number of therapy visits, comparing dynamic splinting and EAM [10]. Over a 12-week rehabilitation, there was no significant difference in the overall time spent with the therapists regardless of the regimens (static immobilisation or EAM) adopted [16].

Complications

Only three cases of tendon re-ruptures were reported in one study with 100 subjects (3 %) [9]. Two were in the EAM group and one in dynamic splinting. In addition, there were two cases of cellulitis: one in EAM and one in dynamic splinting [10].

Fig. 4 Early active motion versus dynamic splinting

Discussion

This study reviewed the highest level of evidence available on the relative merits of the different rehabilitation regimens following surgical repair of extensor tendon injuries of the hand. It showed evidence in favour of early mobilisation regimens in achieving quicker recovery of finger motion than static immobilisation but the long-term outcome appeared to be similar. The five prospective randomised trials that formed the basis of this systematic review included only simple tendon lacerations in zones V and VI, except from Chester et al. which also included zones IV (one digit) and VII (6 digits) injuries. The numbers were too small to facilitate meaningful subgroup analysis according to Verdan zones and the conclusions of this review apply to zones V/VI injuries only.

There have been two other systematic reviews on this subject [12, 13]. Talsma et al. included four RCT (same as our inclusion apart from Hall et al.) and one retrospective comparative study. They concluded that early controlled mobilisation leads to better functional results than immobilisation early in the rehabilitation. However no differences were identified between the regimens three months postoperatively [12]. In contrast, Sameem et al. applied less stringent criteria and included 17 studies (3 RCT, 4 prospective series and 10 retrospective series) in total. Notably, studies by Khandwala et al. and Hall et al. were not included in their analysis. In spite of that, they arrived at a similar conclusion in support of dynamic splinting over static immobilisation [13].

In the present systematic review, the results from the trials were pooled according to the principle of the regimens employed. We recognised that there would be institution-related differences in the design of splintage, frequency of therapy sessions and specific instructions on exercises among the trials, even within a similarly-themed regimen. This is expected to have important implications on the practical aspects of rehabilitation and potentially on the final outcome of extensor tendon repairs but a pragmatic approach has been taken in performing this systematic review.

There is no standardisation in the reporting of TAM, which may be reported as a continuous or a categorical variable. Furthermore there is no universally accepted normal TAM value [19] hence the need of reporting it as a percentage of the normal contralateral hand. To compound the issue further, the investigators have not been consistent when using the denominator of fingers, hands or patients in their reporting. The outcome of multiple extensor tendon repairs in one hand cannot be considered as independent observations [10], as it may lead to an underestimation of within-group variability and it inflates the sample size [20]. Sauerland et al. outlined options of resolving the problems by restricting the analysis to only one measurement per

patient or by employing complex statistical modelling (generalised estimating equations) to analyse all available measurements with adjustment for data dependency [20].

Extensor tendon injuries of the hand affect a predominantly young male patient population [9]. High rate of loss of follow-up was a problem faced by many investigators [10, 17]. Therefore the reported results are expected to reflect only the experience and outcome in patients who had been compliant with the follow-up. In addition, splint wear compliance was not addressed formally in any of the included trials. The recommendations of our review thus could not be extrapolated to apply to every patient. In particular, in those patients judged to be unlikely to comply with therapy involving early mobilisation, static immobilisation still has an important role to play [11]. Although static immobilisation requires minimal therapist input in the first 4 weeks, it is important to appreciate that more input may be required subsequently [16, 18].

The available evidence would suggest that EAM and dynamic splinting are associated with comparable outcomes. It has been estimated that 15 min are required to make a resting splint (for EAM) whilst 45 min are required to make the two splints required for dynamic splinting (one static splint for night wear and one outrigger splint) [10]. While there was no difference in the median number of therapy visits between the two regimens [10], a greater level of expertise and increased length of appointment time is anticipated for patients managed with dynamic splinting regimen.

In the trial by Khandwala et al., two tendon ruptures occurred in the EAM group and one in dynamic splinting [9]. Even though the reported incidence of tendon re-rupture is low, no tendon rupture has been recorded in the static immobilisation group in a RCT setting.

The published trials have made significant contribution to our understanding of rehabilitation following extensor tendon injuries. However there were limitations in the design, sample size, standardisation of regimens and reporting of outcomes. In order to produce more robust data, we recommend that future studies report a minimum dataset to include the mean and range of patient age; gender and hand dominance; the number of patients, hands and fingers involved; the zone and extent of injuries; minimum follow-up of 6 months with interval reviews at 4, 8, 12 weeks (as the usual period for static immobilisation is 4 weeks); actual values of TAM and grip strength (means and standard deviations) in both injured and uninjured fingers/hands; function, using a validated patient-rated outcome measure; and complications particularly rates of tendon re-rupture and subsequent tenolysis.

Apart from Hall et al. who had employed a self-reported functional visual analogue scale, all trials had focussed on measurements of range of motion and grip strength only.

None had utilised a validated patient reported functional score such as Disability of Arm, Shoulder and Hand (DASH) or Patient Evaluation Measure (PEM). In addition, it would be valuable to prospectively measure the costs of therapist utilisation and the economic burden produced by time off from work due to the injuries and subsequent rehabilitation in the trial recruits.

Only Hall et al. had performed a priori sample-size estimation but their actual loss of follow-up (33 %) was greater than the 25 % predicted attrition rate. This highlights the challenge of conducting clinical study in a young, migratory patient population.

Given the similar results of dynamic splinting and EAM, as well as the simpler splint design for EAM, we recommend that future RCT on this subject compare static immobilisation and EAM in order to keep the number of trial recruits to a minimum. The standard deviations of TAM for static immobilisation and EAM were roughly 50 and 40 ° respectively [17, 18]. We consider 30 ° difference in TAM to be clinically significant for the two groups. In order to detect this difference between the two groups with 80 % power and the level of significance set at 5 %, a minimum of 36 patients are required in each group. When 33 % of attrition is taken into account, 54 patients need to be recruited into each arm of a RCT.

In conclusion, following zones V/VI extensor tendon repairs, early mobilisation regimens (active and passive) achieve quicker recovery of finger motion than static immobilisation but the long-term outcome appears to be similar. Early mobilisation is suitable for patients who require an early return to activities and those who would comply with the constraints of the rehabilitation. Given the comparable outcomes between dynamic splinting and EAM, the latter may be preferred as it does not require the same level of technical expertise and may be less cumbersome for the patient.

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