

Extensor tendon repairs zone IV-VII Relative Motion Extension Regimen A three year single centre case series

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Objective

This audit proposed to monitor outcomes in using the less restrictive Relative Motion Extension (RME) orthosis regimen as an alternative to the Norwich regimen (1) post extensor tendon repair in zones proximal IV to VII.

In 2005, Howell et al. (2) introduced the RME regimen, originally known as the Immediate Controlled Active Motion, which included a wrist and RME orthosis. Limited published literature supported the RME regimen as safe with improved movement outcomes and less complications (2-6).

Methods

A prospective audit was conducted between November 2014 and December 2017 including all extensor tendon repair in zone proximal IV-VII patients managed with the RME orthosis regimen, as per the inclusion criteria (Table 1). Demographics, outcome and complication data were recorded. Rationale for wrist orthosis use was guided by our prospective data (7) and the advancing literature (Table 2).



RME Orthosis - Injured MCPJ in 10-15° relative extension to uninjured MCPJ

Table 1: RME Regimen Inclusion Criteria

- 1-3 EDC tendons (including EIP and EDM) with robust repairs
- Complex injuries - associated dorsal capsule, periosteal bone damage, soft tissue injuries, stable fracture
- Minimal oedema/ dressings allowing good RME orthosis fit

Table 2: RME Regimen Orthosis Specification

Year/Orthoses	WHO and RME Orthosis	RME Orthosis only
2014/15	All Patients	Not utilised routinely Experienced therapists trialled end 2015 (8pts)
2016	EDM involvement, zone VI & VII (6)	Zone IV and V (8)
2017	WHO added if lag developed	All patients excluding zone VII
WHFO at night was not routinely used, considered if lag developed		
EDC Extensor Digitorum Communis EIP Extensor Indicis Propius EDM, Extensor digiti minimi;; RME, relative motion extension orthosis; WHO, wrist-hand orthosis. WHFO, wrist-hand-finger orthosis MCPJ, Metacarpophalangeal Joint		



RME Orthosis with Wrist-Hand Orthosis (WHO)
WHO in 20° wrist extension

Results

- 89 patients total, 17 transferred to other hospitals
- 56 patients follow up data (16 did not attend/ lost to follow up)
- 10 female: 46 male, Age 16-77 years (mean 40 years)
- 59 fingers . Mean 1.1 (range 1 – 2) 24=IF 19=MF 9=RF 7=LF
- 70 tendons (mean 1.3 range 1-3) 54=EDC 10=EIP 6=EDM
- Zone IV: 10 V: 35 VI: 14 VII:0
- 57% in the dominant hand.
- 6 patients classified as complex including additional injuries
2 sagittal band, 2 fractures, 1 mallet injury, 1 wrist extensor.
- Mean days of injury to repair was 4.3 (range 2-12) 1 at 25 days
- Mean days from repair to therapy was 3.9 (range 0-16).
- Mean total therapist appointments were 5.5 (range 2-15)
- Mean days until therapy discharge 63 or 9 weeks (range 28-185)
- 20 patients (36%) experienced mild complications
17 scar tethering, 2 scar sensitivity, 1 scar tethering & sensitivity

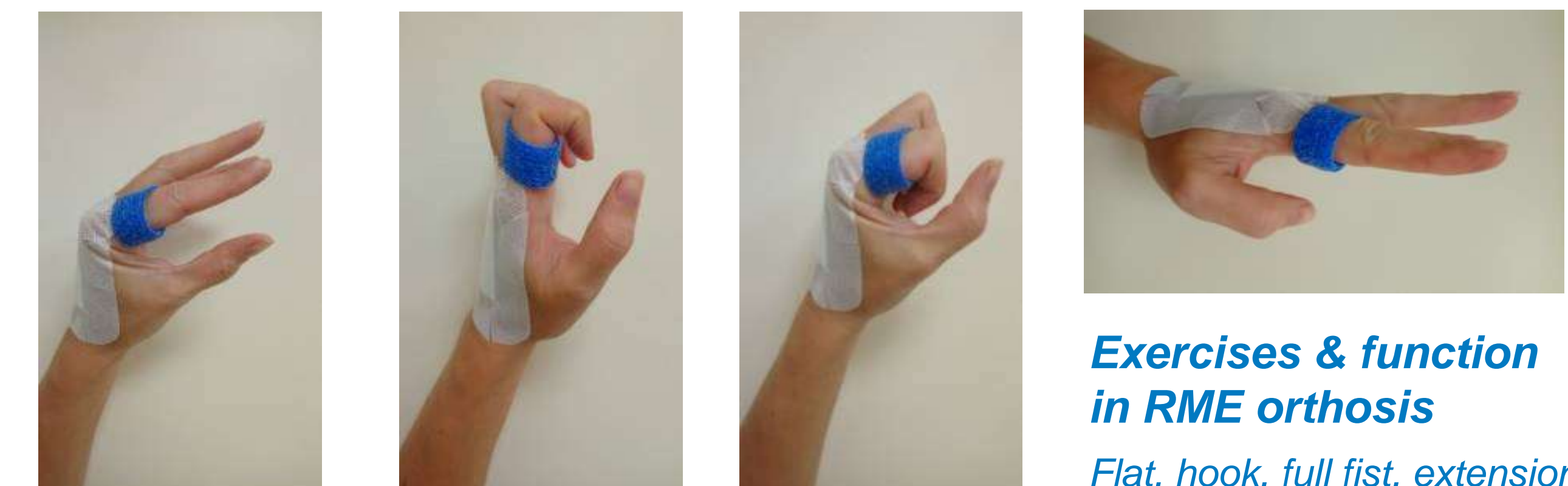
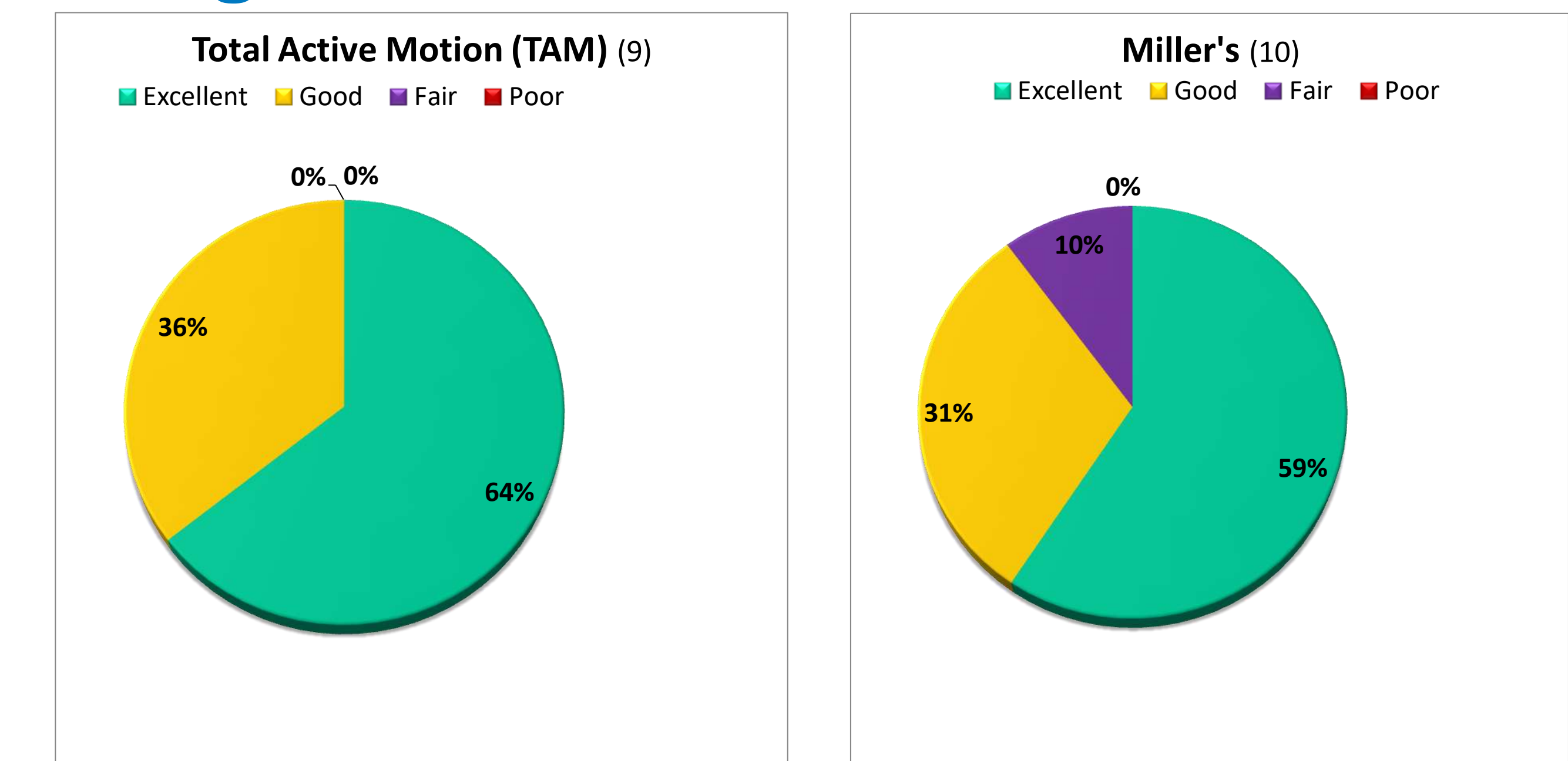


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Implications for Practice (zones proximal IV-VI)

- Safe - no rupture or secondary surgery
- Excellent/ good range of motion outcomes (regardless of complexity)
- Minimal scarring complications
- Low therapy attendances over short time period
- Supports early return to function and work (7)
- RME orthosis is low profile, low cost, straight-forward to fabricate (7)

Range of Motion Outcomes



Exercises & function
in RME orthosis
Flat, hook, full fist, extension

Conclusions

In response to our findings the RME regimen with a RME orthosis only (without a WHO routinely) is the post-operative management of choice for all extensor tendon repairs zone proximal IV-VI. This aligns with the growing evidence (11-12) and mainly with the international survey of practice (13-14). We plan to continue to audit our results and collect a wider data set, including patient-rated outcome measures. We would support a multi-centre clinical trial.

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