

Rehabilitation of Triangular Fibrocartilage Complex Injuries

The triangular fibrocartilage complex (TFCC) is a ligamentous structure situated on the ulnar side of the wrist that plays an important role in distal radio-ulnar joint (DRUJ) stability, dispersion of ulnar-sided wrist forces, and proprioceptive feedback.¹⁻³ Following injury, clinical presentation may vary between clients, with some common symptoms including decreased range of motion (ROM), decreased grip strength, increased ulnar-sided wrist pain (USWP), and/or impaired proprioceptive function.³ Common mechanisms of injury associated with TFCC injury varies from low-energy repetitive overuse, to high-energy forced twisting or impaction of the wrist or forearm.⁴ Furthermore, injury severity can also vary between clients, from relatively minor disruption to the peripheral structures, to complete tearing of the foveal fibres leading to DRUJ instability.⁵ When considering rehabilitation goals for this injury it is important to consider these factors, which can be difficult and sometimes confusing.

This article proceeds the content covered in the November 2021 IFSSH-Ezine edition #44, which discussed TFCC anatomy and assessment. All rehabilitation suggestions are for educational

purposes only; please consult with senior health professionals prior to practice changes or implementation. As there is no consensus in the current literature, specific treatment interventions will not be the focus of this article.⁶ Rather, several rehabilitation factors will be discussed that may be considered when choosing interventions that align with your workplace or region of practice.

Some important factors to consider when determining TFCC rehabilitation includes DRUJ stability, and time between injury and clinical presentation for treatment. Relative to the uninjured wrist, the DRUJ may present as 'stable' or 'unstable', with an unstable DRUJ suggesting involvement of the foveal fibres.^{7,8} TFCC injuries may also be 'acute' or 'chronic', with acute injuries previously defined as 'up to three-months post injury', and chronic injuries '6-months or longer'.⁷ While intervention within these time frames may be acceptable when considering TFCC injuries, early assessment and intervention is recommended.

Acute-stable TFCC injuries may involve the articular disc and/or superficial ligaments, commonly without involvement of the deep foveal insertion.

This injury may present as significant USWP and/or proprioceptive dysfunction, with or without ROM impairment. Acute-stable TFCC injuries commonly respond well to therapeutic intervention, with a focus towards minimising USWP, maintaining proprioceptive function, and a timely return to activities of daily living (ADL).

Intervention options may include intermittent use of an orthosis or brace (Figure 1) to reduce or manage USWP, functional support taping, activity modification, or proprioceptive exercises.^{4,9,10} Progression towards heavier functional use or strength-based activities may be gradual and should be attempted as tolerated. Surgeon opinion may be indicated if symptoms persist, or rehabilitation goals are not being achieved as expected.^{4,9}



Figure 1: Static forearm-based volar wrist immobilisation orthosis. Image provided by Active Hand and Upper Limb Therapy, Gold Coast, Queensland, Australia. (<http://activehandtherapy.com.au/>)

Acute-unstable TFCC injuries may involve both superficial and deep (foveal) structures. This injury may present with a positive ballottement test when clinically assessed, significant USWP and difficulty with ROM, particularly supination.⁷ In this instance, restoring DRUJ stability should be a priority for rehabilitation, achieved by conservative or surgical intervention. Temporary immobilisation in an orthosis which limits wrist motion and forearm rotation may be indicated to achieve this, such as a 'Sugartong splint' (Figure 2).



Figure 2: Static above elbow wrist and forearm immobilisation orthosis, or 'Sugartong splint'. Image provided by Active Hand and Upper Limb Therapy, Gold Coast, Queensland, Australia. (<http://activehandtherapy.com.au/>)

Proprioceptive exercises may be considered during the immobilisation period, such as isometric Extensor Carpi Ulnaris or Pronator Quadratus exercises, without compromising the goals for immobilisation.¹⁰ Alternatively, surgical intervention may be indicated to restore DRUJ stability.

Once restored, gradual and graded wrist and forearm ROM exercises may be commenced as tolerated. Light functional use should follow, with progression towards heavier functional use or strength-based activities commenced once permitted by senior health professionals.

Chronic-stable and chronic-unstable TFCC injuries may present with degenerative changes to the TFCC structures. Both may present with persistent and/or increasing USWP, impaired grip strength or ROM, difficulty completing common ADL, and may have a history of wrist trauma such as distal radius fracture.¹¹ In the author's experience, chronic-stable injuries are common in athletes and industry workers, while chronic-unstable injuries are more common in an elderly population with a positive ballottement test as noted above.

Rehabilitation goals should focus towards decreasing USWP to facilitate a return to meaningful activities. Interventions may include activity adaptation, functional support braces or taping (Figure 3), and/or proprioceptive exercises. Surgeon opinion may be required if USWP or other notable symptoms persist. Debridement or DRUJ reconstruction procedures are reported in the literature to have positive outcomes.^{12,13}

It is hoped that this article will assist health professionals when considering a rehabilitation approach for TFCC injuries. This article is intended for educational purposes, to fuel meaningful discussion among member of the rehabilitation team, rather than prescribe specific opinion-based interventions.

It is also hoped that this article becomes the catalyst for future research into this much needed topic of interest.



Figure 3: Functional support taping of the wrist for sports activities. Image provided by Active Hand and Upper Limb Therapy, Gold Coast, Queensland, Australia. (<http://activehan>

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