Arms, Wrists, Hands, and Fingers

Climbing Related Upper Body Injuries

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Clinical Investigation

Rock-Climbing Injuries in Yosemite National Park

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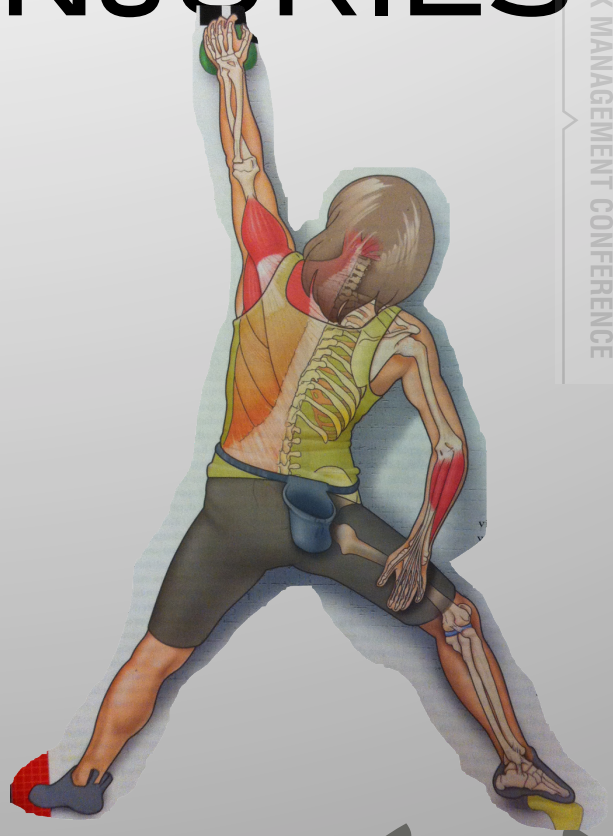
TABLE 2.—*Injuries by Body Region*

Body Region	All Injuries No.	All Injuries %	Single Most Severe Injury No.	Single Most Severe Injury %
Skin/subcutaneous	227	50	65	30
Lower extremity				
Femur	7	2	5	2
Knee	10	2	8	4
Tibia/fibula	15	3	9	4
Ankle	81	18	66	30
Foot	14	3	10	5
	127	28	98	45
Upper extremity				
Shoulder	4	1	2	1
Forearm	6	1	3	1
Wrist	8	2	4	2
Hand	11	3	8	4
	29	6	17	8



WRMC | NOLS OUTWARD BOUND SCA

WILDERNESS RISK MANAGEMENT CONFERENCE

VERTICAL MEDICINE RESOURCES

Climbing Related Upper Body Injuries

Clin J Sport Med. 1996 Jul;6(3):196-203.

Elbow, forearm, wrist, and hand injuries among sport rock climbers.

Holtzhausen LM, Noakes TD.

Department of Anatomy and Cell Biology, University of Cape Town Medical School, Observatory, South Africa.

Abstract

OBJECTIVES: Sport rock climbing with its repetitive high-torque movements in gaining the ascent of a rock face or wall, often in steep overhanging positions, is associated with a unique distribution and form of upper limb injuries. In this article, we review the biomechanical aspects of sport rock climbing and the types of injuries commonly encountered in the forearm, wrist, and hand regions of elite sport rock climbers. Because elbow, forearm, wrist, and hand injuries predominate, **representing 62% of the total injuries encountered, these anatomical areas have been selected for review.**

DATA SOURCES: The predominant source of data are the published work of Bollen et al. The remaining sources were obtained through electronic search of the Medline and Current Contents Databases (last searched May 1995). German and French articles were included in the search criteria.

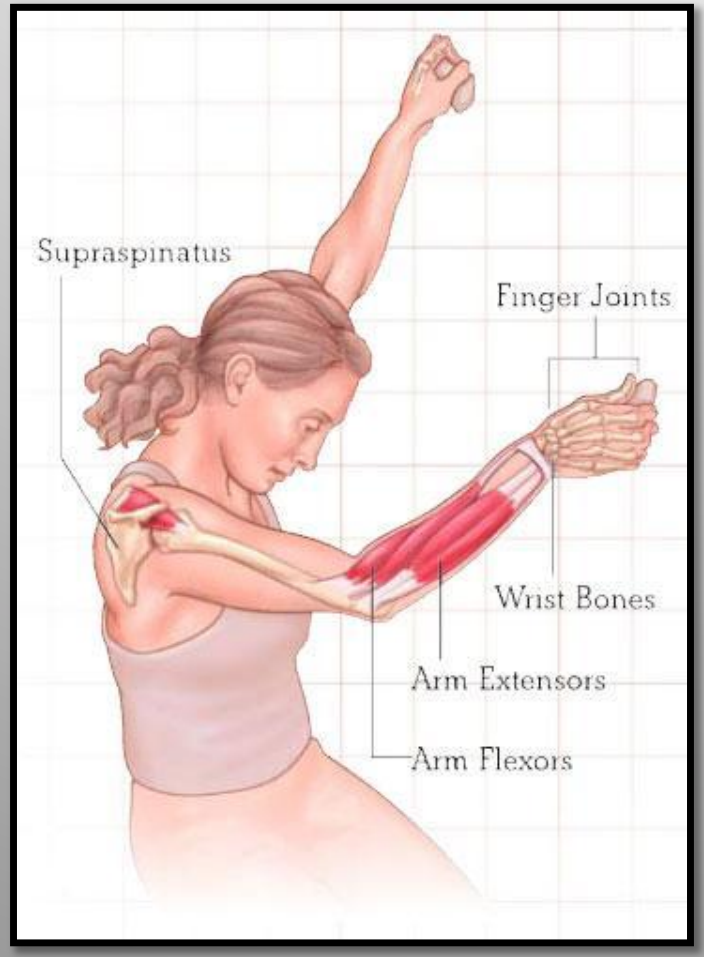
STUDY SELECTION: Only studies dealing with acute soft tissue and overuse injuries amongst sport rock climbers were selected.

DATA EXTRACTION: Data were extracted directly from the sourced articles.

DATA SYNTHESIS: The following injuries have been described in detail with regard to their presentation, diagnosis, treatment, and prevention amongst sport rock climbers: medial epicondylitis, brachialis tendonitis, biceps brachii tendonitis, ulnar collateral ligament sprain of the elbow, carpal tunnel syndrome, digital flexor tendon pulley sheath tears, interphalangeal joint effusions, fixed flexion deformities of the interphalangeal joints, and collateral ligament tears of the interphalangeal joints.

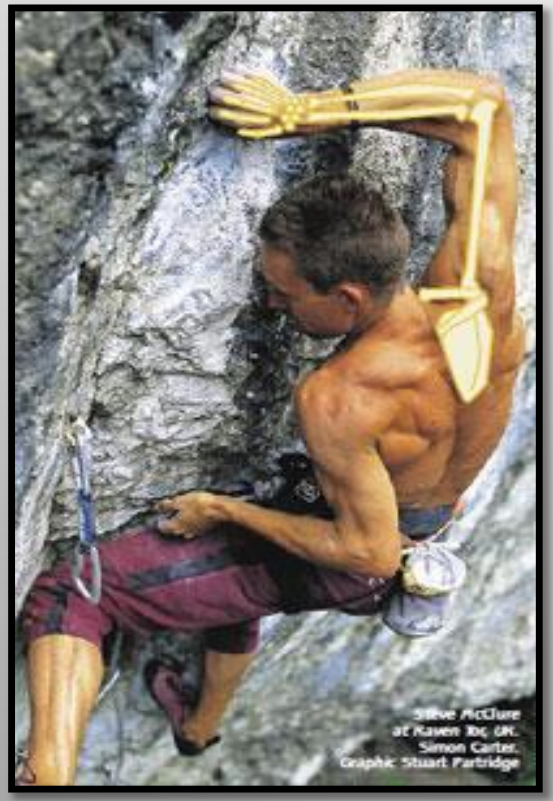
CONCLUSION: Many of the injuries are specific to the handhold types used by the rock climber. Accurate diagnosis and effective treatment of these unique injuries will be facilitated by a wider understanding of the biomechanical aspects of rock climbing and an awareness of the patterns and incidence of injuries in this sport.

Climbing Related Upper Body Injuries

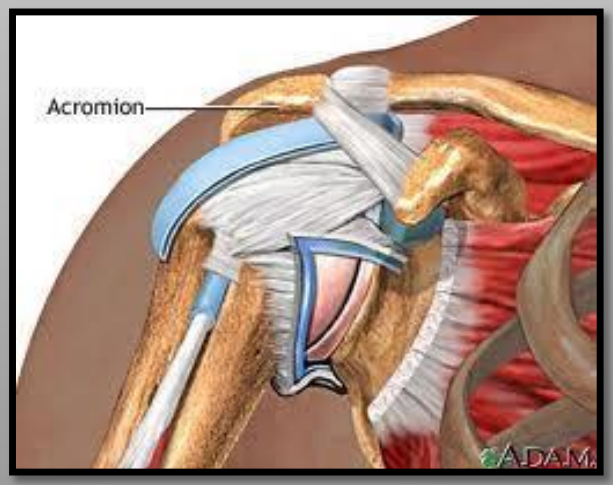


- Shoulder Impingement
- Elbow Strains
- Wrist and Hand Injuries

Shoulder Injuries



- Shoulder Impingement
- Shoulder Instability
- Rotator Cuff Tear
- Biceps Tendonitis
- Nerve Palsy



Shoulder Impingement

- Exacerbated by:
  - Overhead activity
  - Cross body adduction

Shoulder Impingement

Best Therapy: AVOIDANCE!

- RICE
- Physical Therapy
- Diagnostic and Therapeutic Injections
- Surgery

Differential Diagnosis:

- Rotator Cuff tear
- Labral derangement/Instability
- Suprascapular nerve palsy
- Cervical root

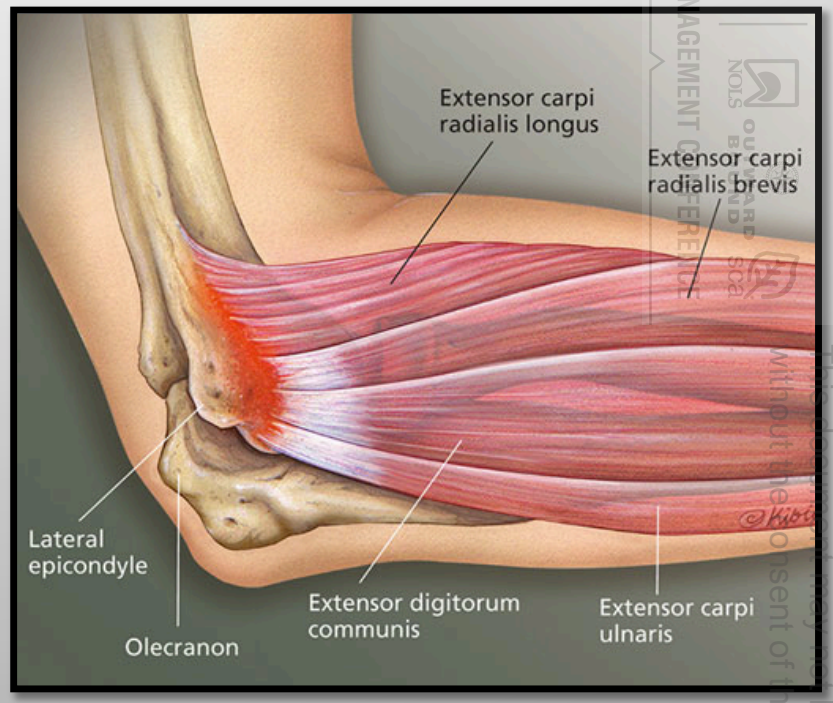
Elbow Strains

Medial Epicondylitis

Lateral Epicondylitis

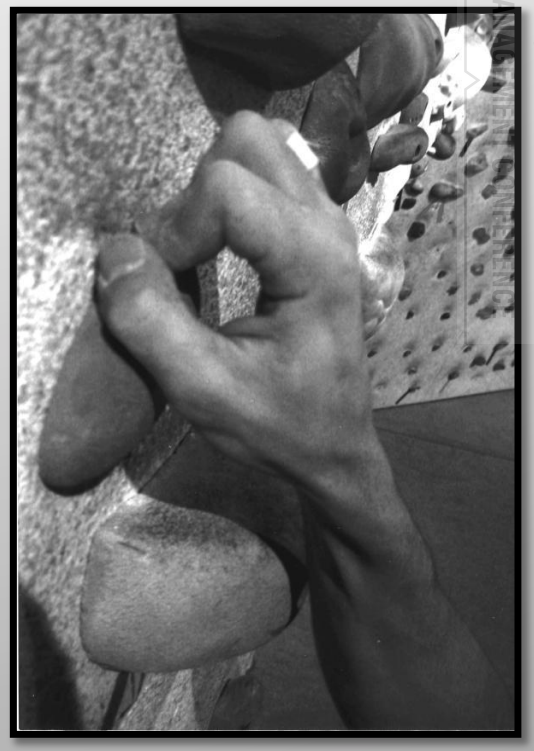
Elbow Strains

Definition: An overuse injury affecting the flexor-pronator origin, often from chronic overload or the sudden increase in activity.



Medial Epicondylitis

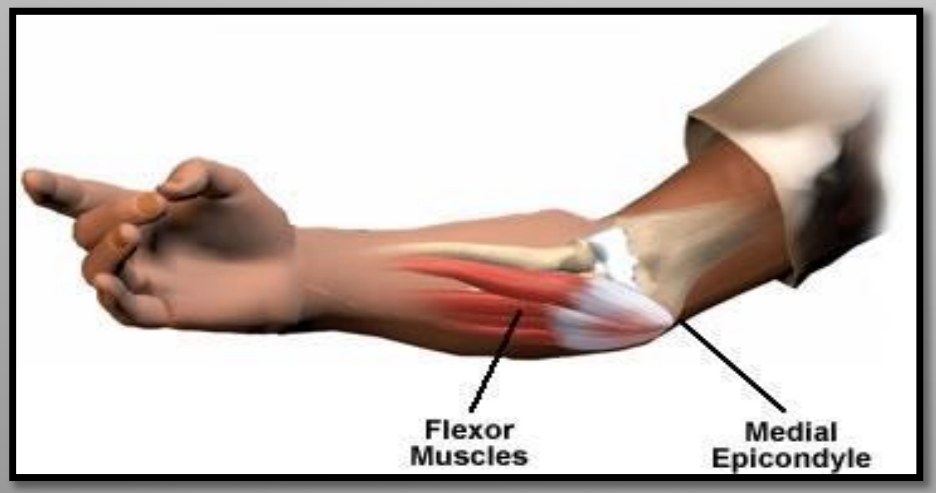
- Less Common than Lateral except for climbers…
- 'Crimpology' – the biomechanics of crimping handholds predisposes climbers to injury.
- Flexor Carpi Ulnaris



Medial Epicondylitis

Flexor Carpi Ulnaris

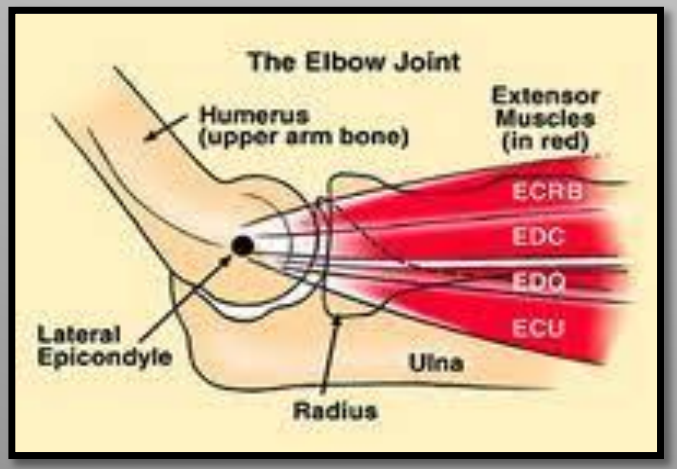
Strained and Inflamed



VERTICAL MEDICINE RESOURCES

Lateral Epicondylitis

Predominantly "Industrial Athletes" over Sport Specific Athletes *(only 50% of tennis players have occurrence)*



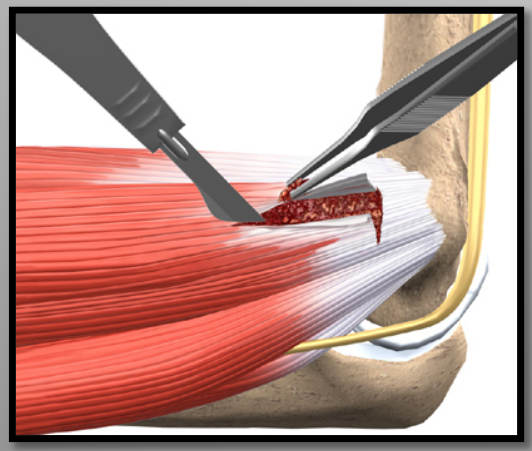
Lateral Epicondylitis

- Associated with heavy gripping activities.
- Less common for climbers…except for technical ice climbing.

VERTICAL MEDICINE RESOURCES

Treatment of Epicondylitis

- RICE
- Manual Therapy (i.e. deep tissue massage)
- PT and alternative therapy
- Stretching
- Pre-season conditioning
- NSAIDS
- Injections
- Surgery



Treatment of Epicondylitis

Training Recommendations for Epicondylitis

Start slow in early season

Avoid Excessive Crimping of Handholds

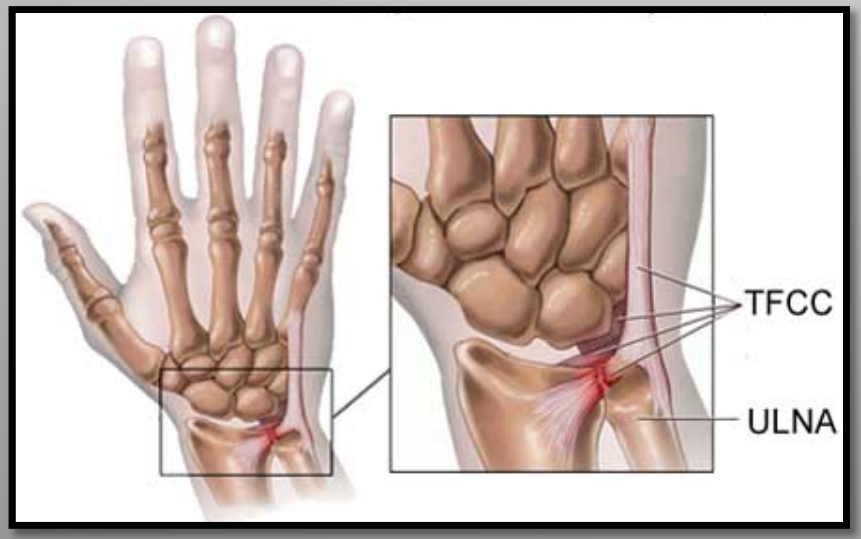
Ice Climbers use leashes with Ice Tools

Wrist Injuries

- Carpal Tunnel Syndrome
- Dupuytren's Contractures
- DeQuervain's Tenosynovitis
- Ganglion Cyst
- TFCC Tear

Triangular-fibrocartilage complex Tear (TFCC)

- Major ligamentous stabilizer of DRUJ and ulna carpus.
- Cushions the ulna carpus and provides rotational stability.



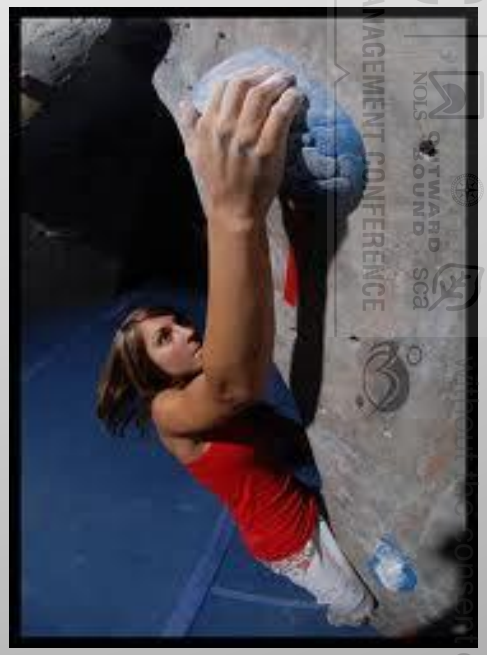
Triangular-fibrocartilage complex Tear (TFCC)

- Symptoms:
  - Ulna sided wrist pain
  - Painful wrist 'clicking/catching'
  - Pain with ROM or weight bearing
  - Wrist weakness
  - Grip weakness

VERTICAL MEDICINE RESOURCES

Triangular-fibrocartilage complex Tear (TFCC)

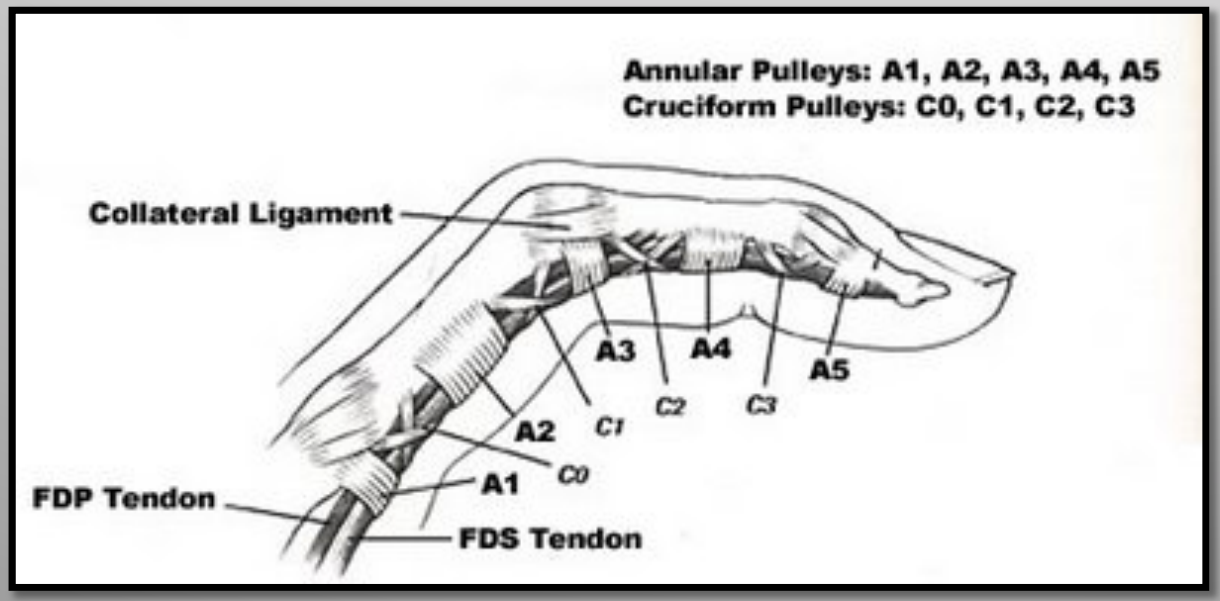
- Treatment:
  - Prevention!
  - Variation in climbing technique
  - Consistent training regimens
  - Rest Painful wrists!



VERTICAL MEDICINE RESOURCES

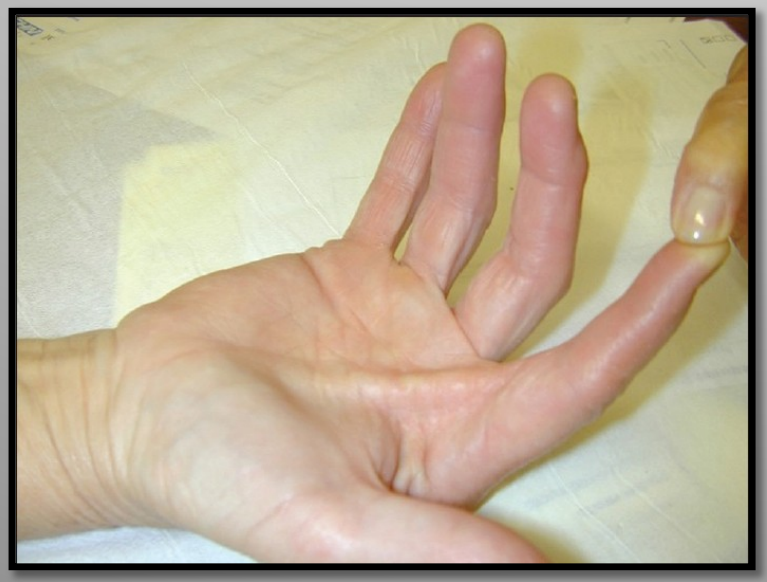
Finger Injuries

- Pulley Ruptures – A2
- Trigger Fingers and Thumb
- Ganglion Cyst



A2 Pulley Ruptures AKA Climber's Finger

- Around 40% of professional climbers will suffer a partial or complete pulley rupture during their careers.
- 'Bowstringing' may or may not be present (indicative of a complete rupture)



VERTICAL MEDICINE RESOURCES

A2 Pulley Ruptures AKA Climber's Finger

Complete rupture is often described as a 'Popping' sound or feeling with immediate pain/loss of grip

DO NOT CLIMB THROUGH THIS INJURY!

TAPING IS MINIMALLY EFFECTIVE!

SEEK PROFESSIONAL ASSISTANCE TO DEVELOP A REHABILITATION PLAN!

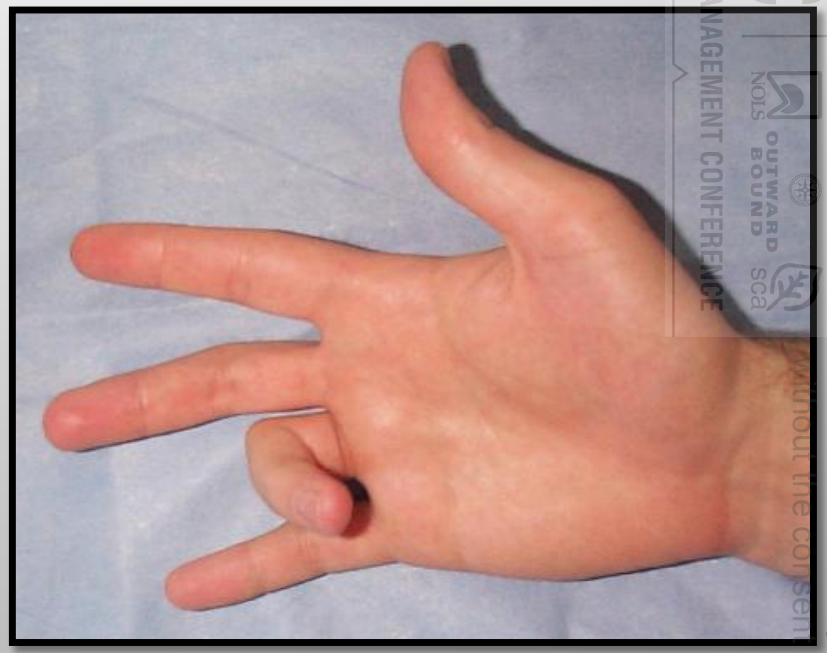
Trigger Finger

(stenosing flexor tenosynovitis)

Causes Include:

Prolonged Stressful Repetitive Grasping (aka rock climbing/ ice climbing)

this leads to inflamed tenosynovium--> scarring and fibrosis at sheath



Symptoms:

Finger may be swollen or have tender nodule, or bump, over/before/after region of A1 pulley

The finger also may be locked in a flexed (bent) position

VERTICAL MEDICINE RESOURCES

Trigger Finger Treatment

- RICE
- NSAIDS (Ibuprofen, Naproxen)
- Blocking splint for night time use
- Corticosteroid injection to tendon sheath
- Surgery (A1 Pulley release)