Back To Chiropractic CE Seminars

Technique for Sports Injuries of the Wrist & Elbow ~ 4 Hrs

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Marcus Strutz, DC
Back To Chiropractic CE Seminars

TECHNIQUE FOR SPORTS INJURIES OF THE WRIST AND ELBOW

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Overview of Sports Injuries of the Wrist and Elbow

The wrist and elbow are involved with practically every sport and activity in some capacity. They are used for gripping, striking, throwing, catching, holding and protection with falls.

GOLF – SOCCER – BASKETBALL – BASEBALL – FOOTBALL – CYCLING – TENNIS - VOLLEYBALL

1) Type of activity or sport that is performed – acute vs overuse

2) Age of the athlete

3) Activity level / intensity and frequency of the activity

4) Prior injuries to the wrist & elbow or to other areas

5) Athlete's mindset

6) Goals for the treatment

Factors of Wrist and Elbow Injuries

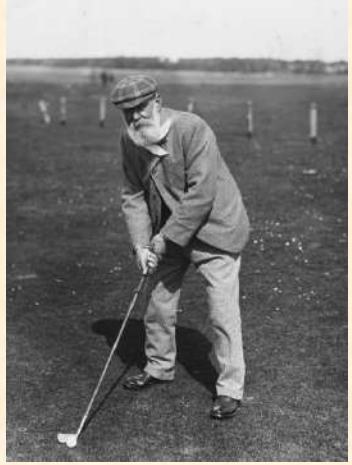
Type of injury relates to the sport

- Proper **warm-up routine** can prevent many injuries from occurring
- Every sport and activity has certain potential risks
- Contact sports pose a greater risk than
- noncontact sports - falls
- Risk for injury is greater in sports that involve catching, throwing and striking or have a potential for falls

Acute Injuries vs Overuse

- Acute injuries can occur to a healthy, well conditioned wrist & elbow
- Acute injuries need to assessed for **fractures**, **dislocations**, and **soft tissue tears**
- Overuse injuries typically begin as a slight pain that after rest and self treatment become severe and either stops or limits the athlete's ability to participate
- Overuse injuries are likely to occur with repetitive actions and very little rest periods

Age of the Athlete



- **Pre-teens and teenagers** are very susceptible to wrist & elbow injuries and pain due to effects of growth. Bones are lengthening, ligaments and tendons may not have the strength to support the demands of the activity
- **Adults** are susceptible to early degeneration and muscle imbalances that can lead to wrist and elbow weaknesses
- **Seniors** may have loss of bone density, degeneration and coordination issues that can make the wrist and elbow prone to injury

Activity Level & Frequency

- **The weekend warrior**: If your patient is participating in their sport on the weekend and is sedentary during the week, the wrist & elbow are quite vulnerable to injury
- **The over-trainer**: If your patient is participating in their activity every day, the wrist & elbow joints will not have sufficient time to recover, leaving them prone to injury
- **The high-intensity athlete**: If your patient wants to surpass their “PR” or win in competition, they increase the risk of wrist and elbow injuries
- **The professional**: If your patient is a pro-athlete, then balancing activity, training and recovery is crucial

Prior Injuries

- Affect the wrist and elbow's ability to function correctly
- Scar tissue can create inflammation
- Compensation can create imbalances with surrounding muscles which can lead to dysfunction
- Past injuries to other regions (neck, shoulder) can affect the wrist & elbow
- Prior elbow & wrist surgeries and injuries can weaken components of the wrist & elbow

Seeing the whole athlete, not just the wrist & elbow

- It is important to see the whole forest and not just the trees
- Observing your patient's posture is helpful for evaluating the elbow & wrist
- Postural misalignment will affect wrist & elbow recovery
- Postural alignment of the shoulders, scapulae, cervical and thoracic regions influence the wrist and elbow

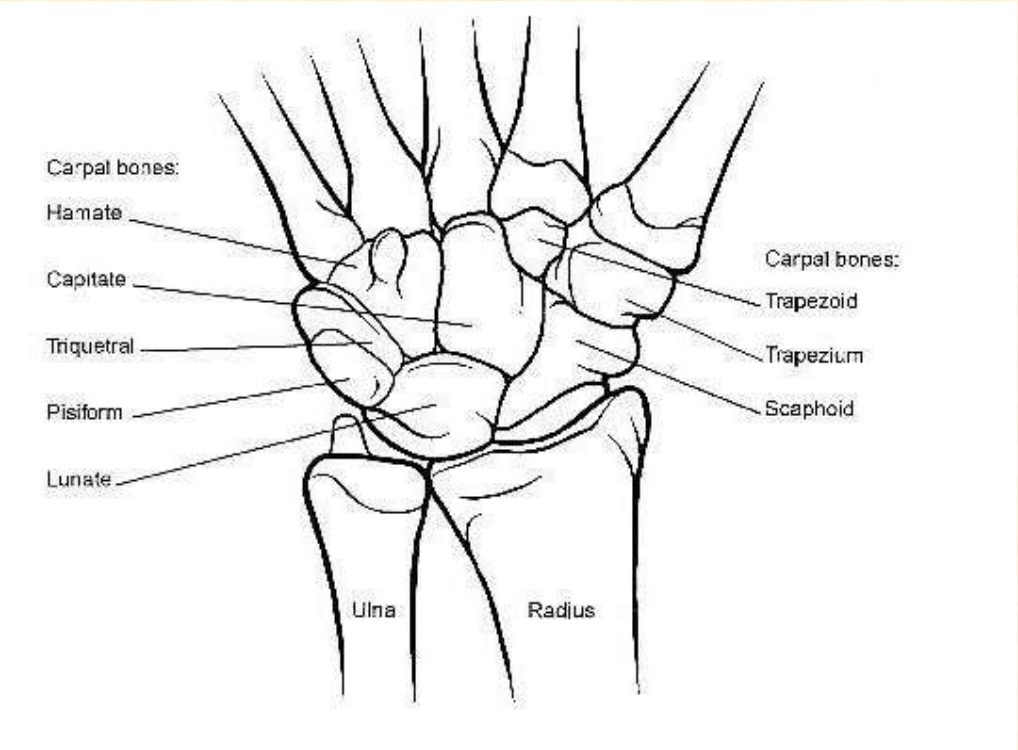
The mindset of an athlete

- An injured athlete will want to continue their sport or activity despite pain and further insult to their wrist or elbow
- They will become frustrated and feel hopeless when they cannot participate
- The treating chiropractor should redirect the injured athlete to another activity – so they can still be active, but not aggravate the injured wrist or elbow
- It is important for the athlete to feel that they are still participating in an activity
- This will facilitate their recovery

Goals

- Based on the diagnosis, discuss realistic recovery time
- Educate on the importance of rest and rehab
- Motivate for continued training in an alterative activity
- Learn about your patient's expectations with their recovery
- Support and encourage your patient through their frustration and feelings of hopelessness

Wrist Structure



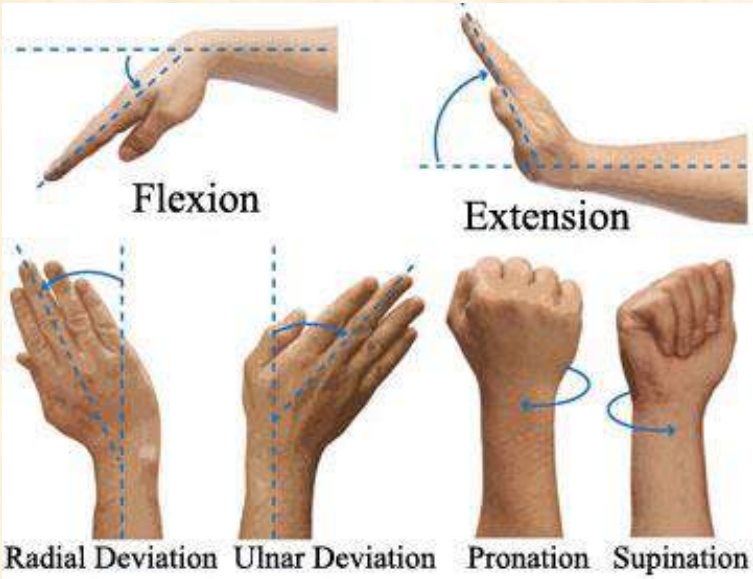
The bones of the wrist include **5 metacarpals**, **trapezoid**, **trapezium**, **scaphoid**, **lunate**, **triquetral**, **pisiform**, **capitate** & **hamate** as well as the **ulna** & **radius**

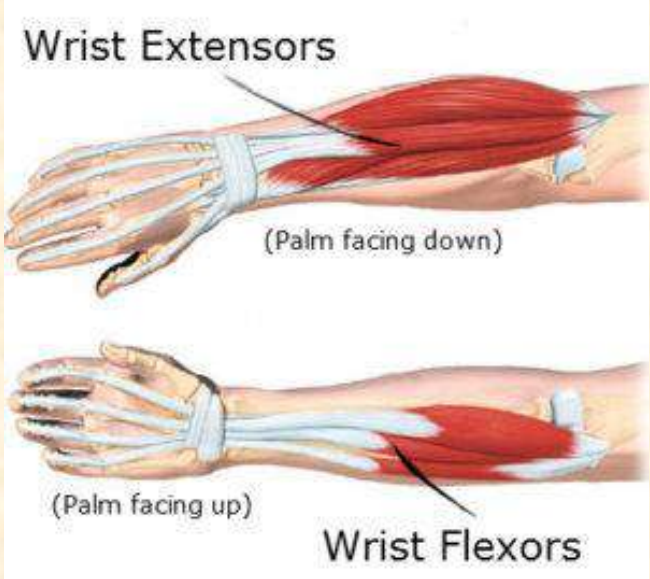
The bones are connected together by ligaments

At the ulnar side, there is the **TFCC** (triangular fibrocartilage complex) which is an important stabilizer of the wrist

The Wrist

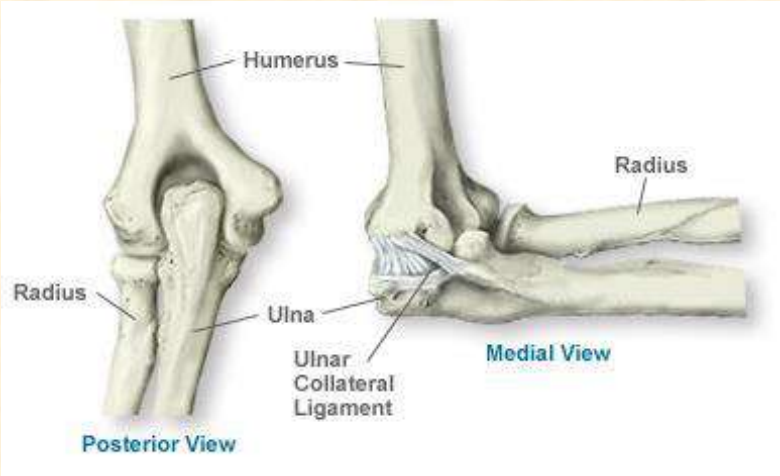
- The wrist, being made up of many bones, allows for complex movements
- The wrist is vulnerable to injuries due to the small bones and ligament connections without much muscular protection
- The wrist moves in flexion 80°, extension 70°, ulnar deviation 30° and radial deviation 20°
- The major muscles of the wrist are flexor carpi radialis / ulnaris and extensors carpi radialis / ulnaris

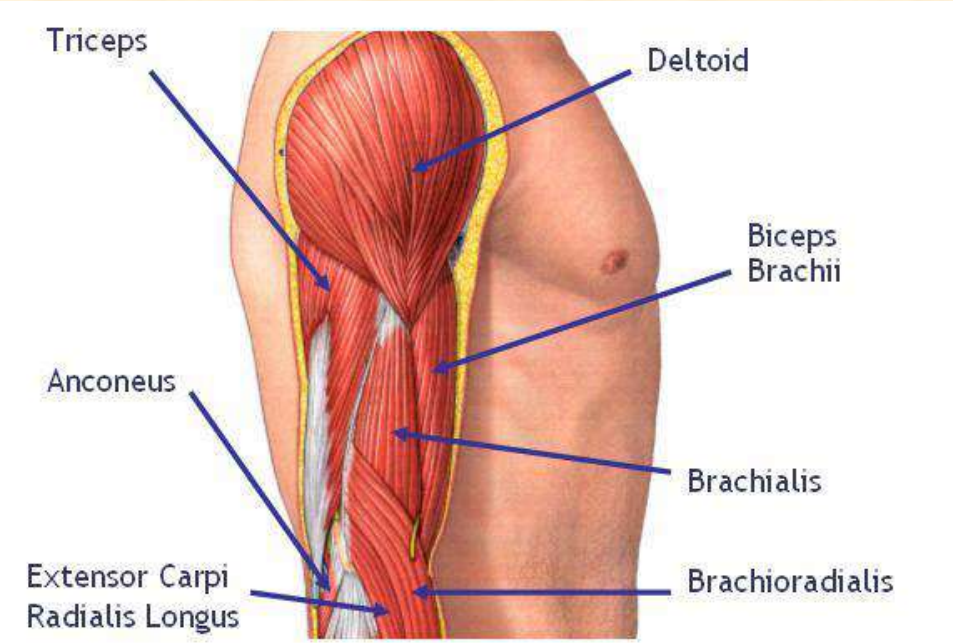




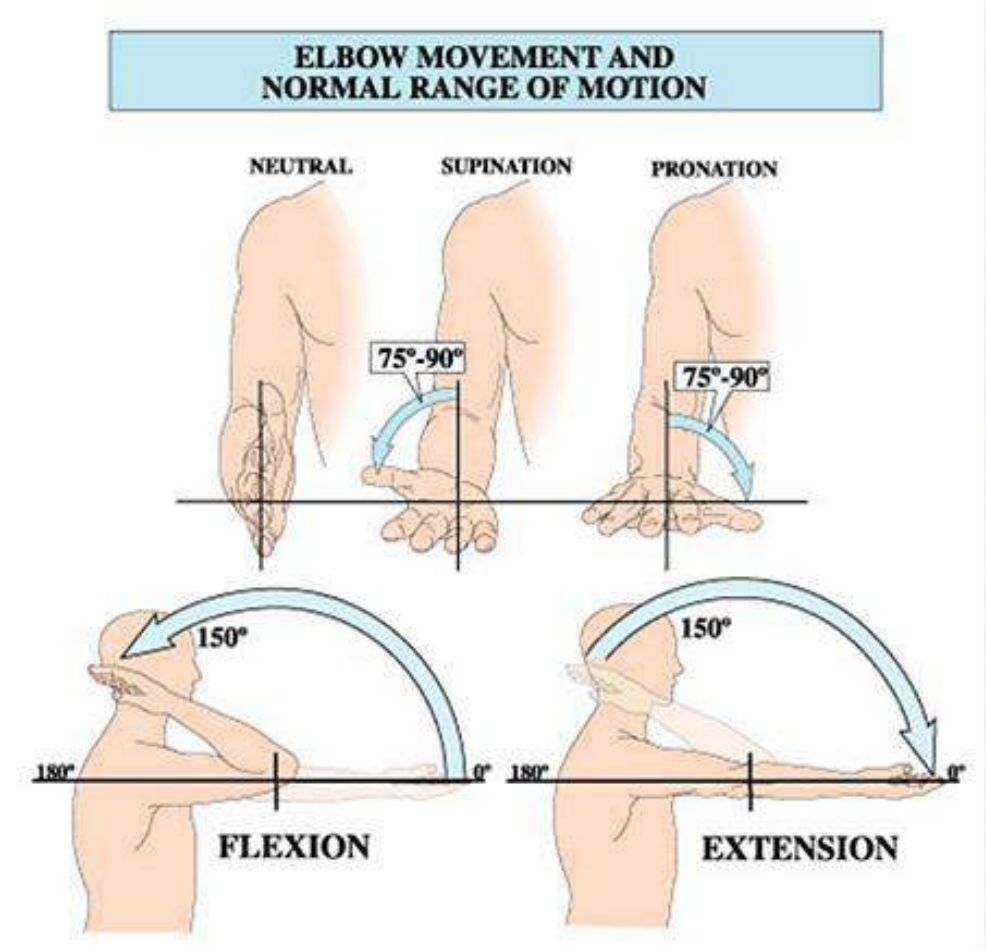
Elbow Structure

- The bones consist of the humerus, radius & ulna
- The elbow is a hinge joint and is a first-class lever with extension & a third-class lever with flexion
- Ulnar & radial collateral ligaments are important for elbow stability
- Annular ligament supports the radial head





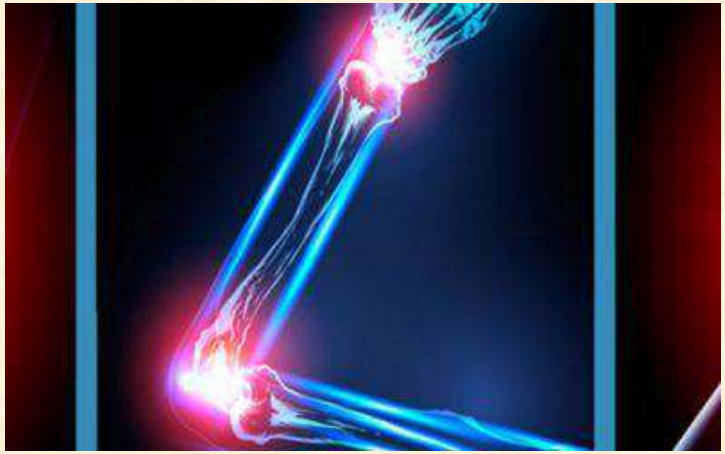
The Elbow



- The elbow moves in flexion 135°-150°, extension 0°, pronation 90° and supination 90°
- The primary muscles are biceps, triceps, brachialis & brachioradialis
- The olecranon bursa is important for flexion & extension motion

Function of the Wrist and Elbow

- The wrist & elbow perform variable movements that enable the fine motor skills of the hand
- The wrist & elbow function as lever mechanisms which increase strength for pushing, pulling and lifting
- The elbow allows for extension and flexion of the arm to reach for objects and bring them to the body
- The wrist & elbow are very versatile and can perform flexion, extension, pronation, supination, radial deviation & ulnar deviation
- The wrist & elbow are susceptible to traumatic injury from falls as they protect the body & from repetitive use causing arthritis & tendonitis



Questions

- asking the right questions -

- Taking a history requires skill and practice
- When the right questions are asked, useful information is provided
- Focus not only on the injury, but all aspects of the patient's life including social, work and family
- During the history taking, you can assess the patient's expectations regarding recovery and return to their sport

Questions of a Sports Injury
- What to Ask -

- What sport / activity doing when injured

(the actions of activity relate to the injury and recovery)

- At what time during the activity did the injury occur

(this is important to see if the patient was sufficiently warmed up or if fatigue played a role)

- Get details of the mechanism of injury (MOI)

(can tell you if there is possibly a ligament injury vs a tendon/muscle injury or both)

- Prior occurrences

(acute vs overuse)

Questions of a Sports Injury
- What to Ask -

- Ask the patient to point to the site of pain
- Have the patient describe the pain
- What aggravates and relieves the pain
- Was there any self treatment or 1st aid provided
- Has the pain increased since the onset
- Did they stop their activity or were they able to continue – and if so, what affect did the injury have on performance

(tells if the injury was severe or mild, and if they played on, that may have worsened the injury)

Questions of a Sports Injury

Important Questions

- When did the athlete begin this particular sport
- Have they been active their whole life
- Exactly how do they “warm-up” prior to activity
- Do they perform “cool-down” exercises afterwards
- Did they increase their training sessions too quickly
- Exactly what type of stretching do they perform
- What is the condition of their shoes or equipment

The right questions will provide valuable recommendations

- Answers to your questions will direct you to give advice to your athlete patient that will help them to avoid flare-ups and re-injury and speed their recovery
- The Chiropractor treating sports injuries can offer much more than just hands on help
- Advise the patient on hydration, proper functional warm-up & cool down routine
- Advice on resting, modifying training, cross-training and over-training is necessary for the athlete's health

Review of the Wrist & Elbow for Chiropractic Adjusting

- Inspection
- Palpation
- Range of motion
- Joint stability tests
- Muscle tests
- Neurologic exam
- Special tests
- Motion Palpation

Inspection of the Wrist & Elbow

- Observe standing posture
  - -antalgic position
  - -carrying angle
    - cubitus valgus – stress lateral epicondyle
    - cubitus varus - results from prior trauma
- Observe for swelling or a mass (swollen bursa)
- Observe for redness
- Observe for guarding – holding the wrist or elbow with the other hand for protection

Palpation of the Wrist & Elbow

- Bony palpation all over the lateral epicondyle, olecranon fossa, medial epicondyle, olecranon, cubital fossa and ulnar groove (for ulnar nerve)
- Bony palpation over carpal bones, ulnar styloid and radial styloid
- Check for tender sites over ligaments or tendon insertions
- Soft tissue palpation around the wrist & elbow

  -inflammation, tenderness, warmth

Range of Motion

- Active range of motion - have the patient move the wrist & elbow – noting range and pain
- Passive range of motion – the patient may be apprehensive – assure the patient that you will stop when they tell you to – note any difference of range between passive and active ranges

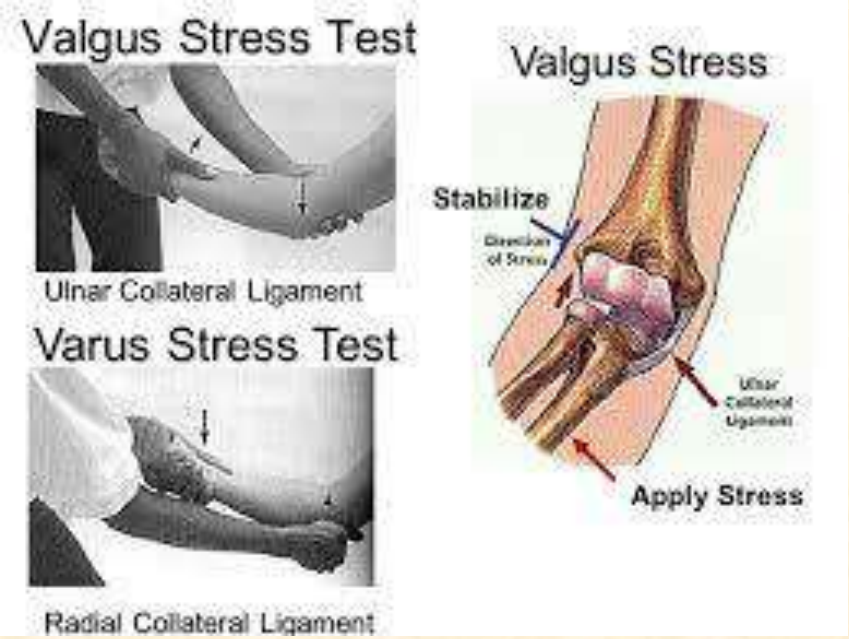
- **Wrist**: flexion 80°, extension 70°, ulnar deviation 30° and radial deviation 20°
- **Elbow**: 135°-150°, extension 0°, pronation 90° and supination 90°

Joint Stability Tests

- **Ulnar Collateral ligament**: apply medial (valgus) stress to the elbow joint- at 0° and at 30° flexion

- **Radial Collateral Ligament**: apply lateral (varus) stress to the elbow joint - at 0° and at 30° flexion

- **TFCC**: palpate and passively move the wrist into radial deviation



- **These tests check for instability and pain. If there is laxity, suspect a sprain or possible tear.**

Muscle Tests

- Resistance testing of muscles will provide useful information – if there is pain in the muscle or tendon with weakness, suspect a *muscle strain or tendonitis*

wrist extensors

wrist flexors

biceps

brachioradialis

supinator

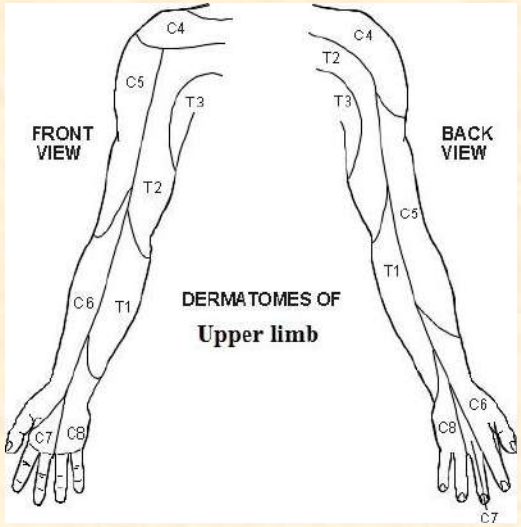
pronator

- To test a muscle, position it halfway to full in it's range – have patient hold that position against resistance

Neurologic Testing

- Biceps Reflex: checking the C5 nerve
- Brachioradialis Reflex: checking the C6 nerve
- Triceps Reflex: checking the C7 nerve

- Dermatomal testing: checking C5-T1 levels

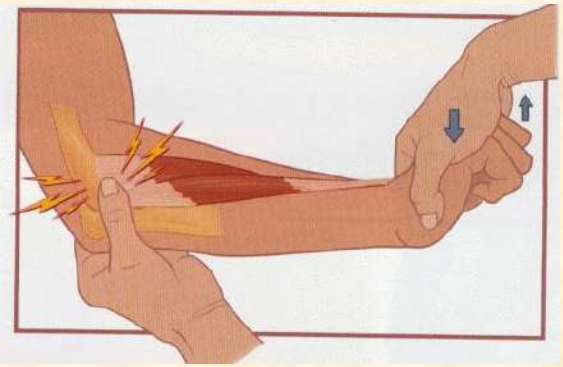


- Motor testing: C5-T1 levels

- Rule out a neurological issue

- Review history for possible gout, rheumatoid arthritis

Special Tests



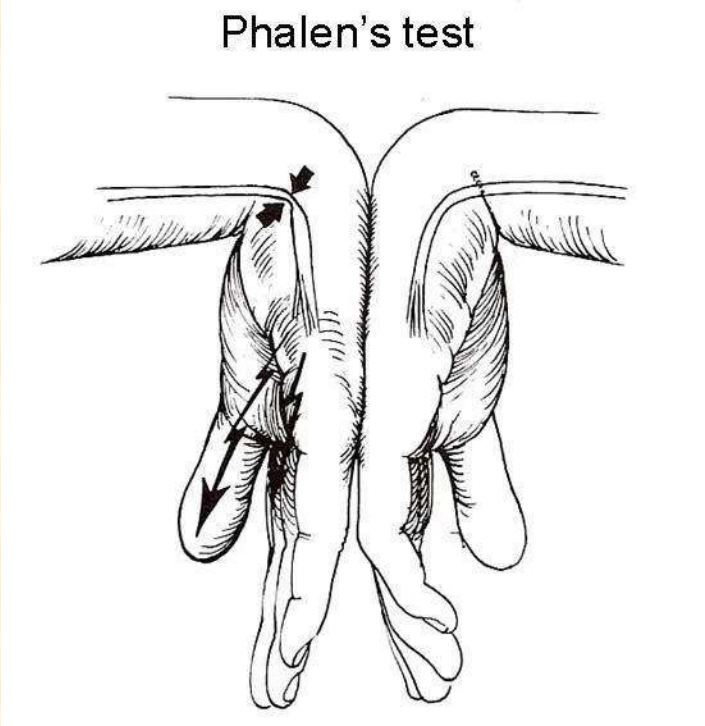
- **Functional Tests- a)** moving the wrist & elbow thru the motion of the activity **b)** performing a wall push-up or regular push-up – positive signs are pain & inability
- **Ligament Stability Tests** - **a)** assessing the elbow for ulnar & radial collateral stability – positive signs are laxity &/or pain **b)** assessing carpal bones for instability
- **Tinel's Sign Elbow**– tapping the ulnar groove – positive sign is tingling down the forearm, possible entrapment of the ulnar nerve or a neuroma
- **Cozen's Test for Tennis Elbow** – have patient make a fist & extend wrist, then have patient resist – positive test will reproduce lateral pain (see diagram)
- **Mill's Test for Tennis Elbow** – passively flex the wrist and extend the elbow - positive test is reproduction of lateral elbow pain
- **Finkelstein's Test** – have the patient make a fist with the thumb inside, then ulnar deviate – positive test produces pain at the radial side of the wrist - de Quervain's tenosynovitis (see diagram)

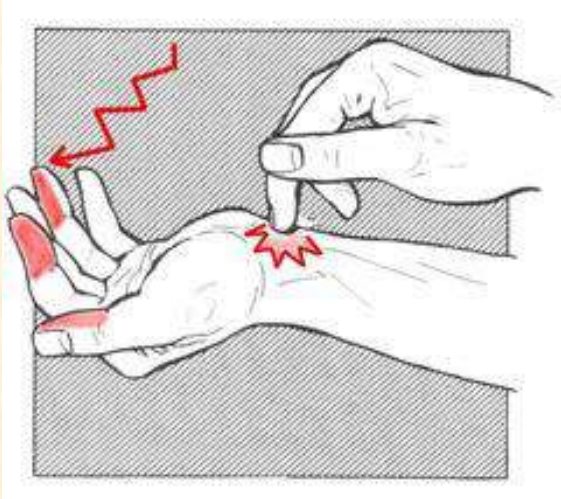
Special Tests

- **Prayer Test** – have the patient place hands together in a prayer position, after 30+ seconds the patient reports reproduction of symptoms of tingling / numbness

- **Phalen's Test** – have patient place hands in a reverse prayer position, after 30+ seconds the patient reports reproduction of symptoms of tingling / numbness

- **Tinel's Sign Wrist** – have patient slightly extend wrist while tapping over the anterior wrist, positive sign is reproduction of tingling symptoms in the hand





Motion Palpation of the Wrist & Elbow

- Wrist Flexion: assess for flexion restrictions
- Wrist Extension: assess for extension restrictions
- Wrist ulnar deviation: assess for medial motion restrictions
- Wrist radial deviation: assess for lateral motion restrictions

- Elbow Flexion: assess for flexion restriction
- Radial Head: assess for anterior or posterior radial head
- Elbow extension: assess for extension restriction

Types of Common Wrist & Elbow Injuries

- Wrist Sprain
- Elbow Sprain
- Lateral Epicondylitis (Tennis Elbow)
- Medial Epicondylitis (Golfer’s Elbow)
- Olecranon Bursitis
- Tenosynovitis (de Quervain’s)
- Carpal Tunnel Syndrome
- Ganglion Cyst
- Common Fractures – Scaphoid & Colles
- Overuse

Wrist Sprain

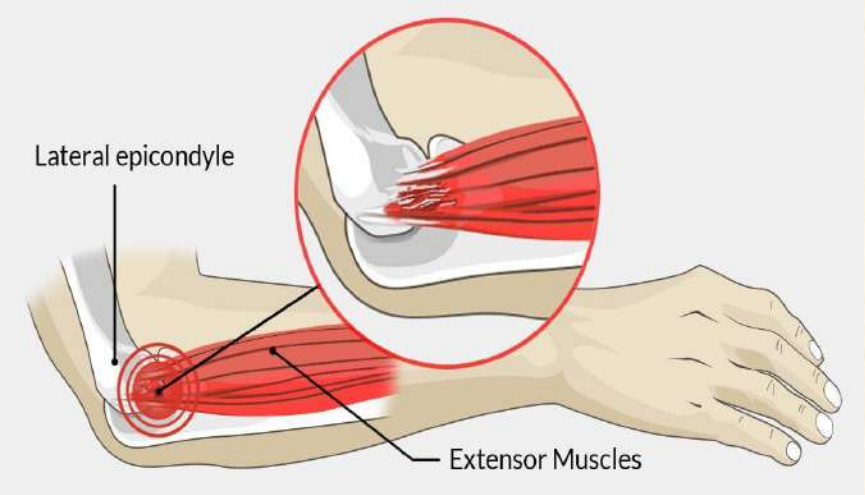
- Injury can disrupt the normal mechanics of the wrist, causing instability of the carpal bones which result in weakness, stiffness and eventually chronic pain & arthritis
-
- Sprains occur with falls, twisting, hyperflexion & hyperextension trauma
- Observe for deformity – possible fracture
- There will likely be swelling & limited ROM & grip weakness
- If the pain is at the ulnar side – evaluate the TFCC
- Always examine the Scaphoid & distal radius for tenderness – evaluate for fracture
- Evaluate for carpal & radiocarpal instability
- X-ray is the simplest & quickest to evaluate for fracture
- Evaluate the elbow & shoulder for additional injuries

Elbow Sprain

- Mechanism of injury is important to determine the injured ligaments
- Occurs from contact sports & falls
- Pain with limited AROM & PROM
- Clenched fist provokes pain
- Tenderness over the injury site
- Perform Ligament Stability Tests – assess for instability & pain

Lateral Epicondylitis (Tennis Elbow)

- Most common overuse type injury - related to wrist extension & is common in non-tennis tennis players – with repetitive gripping & improper technique / training
- Site - origin of wrist extensor muscles at the lateral epicondyle
- Pain goes away with rest, but returns with activity
- No swelling
- Negative Ligament Stability Tests
- Pain with resisted wrist extension
- Pain with resisted supination
- Positive Mill's & Cozen's Tests



Medial Epicondylitis (Golfer's Elbow)

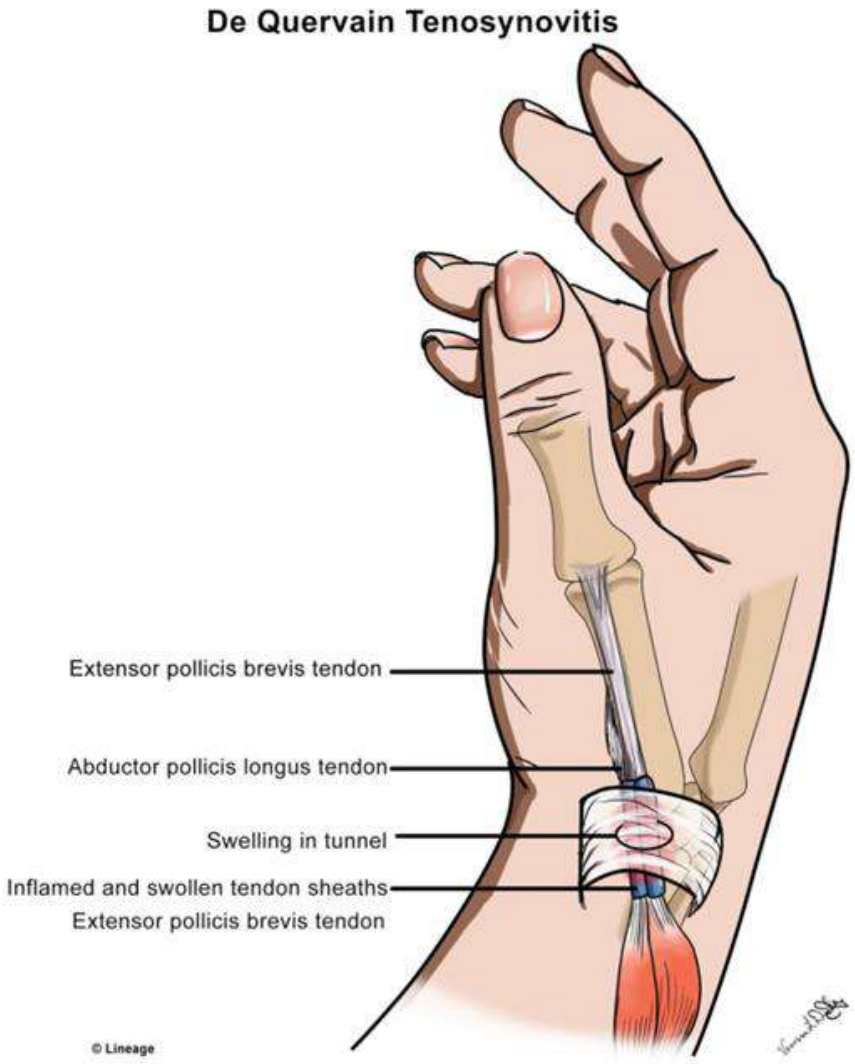
- Caused by overuse gripping & repeated valgus stresses & improper technique / training
- Pain is aggravated with activity
- Relieved by rest
- Pain over medial epicondyle
- No swelling
- Tenderness with palpation over medial epicondyle & wrist flexors
- Negative Ligament Stability Tests
- Pain with resisted wrist flexion
- Pain with resisted pronation

Olecranon Bursitis

- Caused from trauma from falls directly on posterior elbow, repetitive actions and from repetitive trauma of resting elbows on table/desk
- Tenderness olecranon bursa (posterior elbow)
- Mass of swelling behind elbow
- AROM & PROM painful with full flexion
- Negative Special Tests
- Possible referral for labs to rule of infection
- Negative Special Tests
- May require referral for aspiration / drainage

Tenosynovitis (de Quervain's)

- Tendons of the abductor pollicis longus & extensor pollicis brevis pass through a compartment - thickening of the tendons from acute or repetitive trauma affects the gliding of the tendons causing irritation

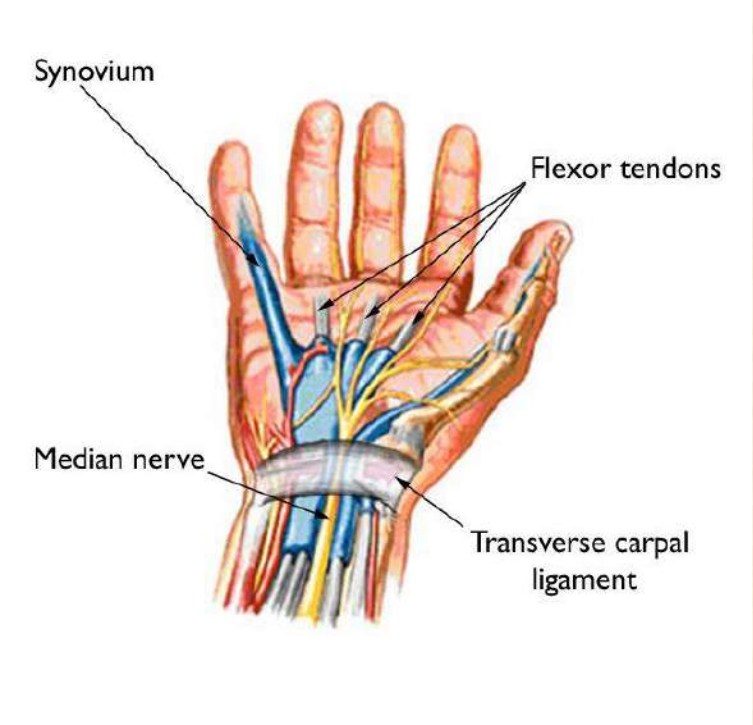


Tenosynovitis (de Quervain's)

- Caused by repetitive ulnar & radial deviation & use of the thumb
- Typically occurs in throwing (baseball) & gripping (lacrosse, hockey, tennis) sports
- Pain at thumb and radial wrist region
- Tenderness over the radial wrist muscles
- **Positive Finkelstein's Test**

Carpal Tunnel Syndrome

- Not typically a sports related injury on it's own, but can affect the athlete patient when they are both active with gripping or throwing (as in hockey, lacrosse, baseball) and performing repetitive tasks involving the wrist
- Presents with tingling / numbness in the hand along the median nerve distribution, pain, weakness with the hand
- Median nerve gets compressed under the flexor retinaculum / transverse carpal ligament
- Evaluate the LOAF muscles (Lumbricals, Opponens pollicis, Abductor pollicis brevis, Flexor pollicis brevis
- **Positive Tinel's, Phalen's & Prayer Tests**



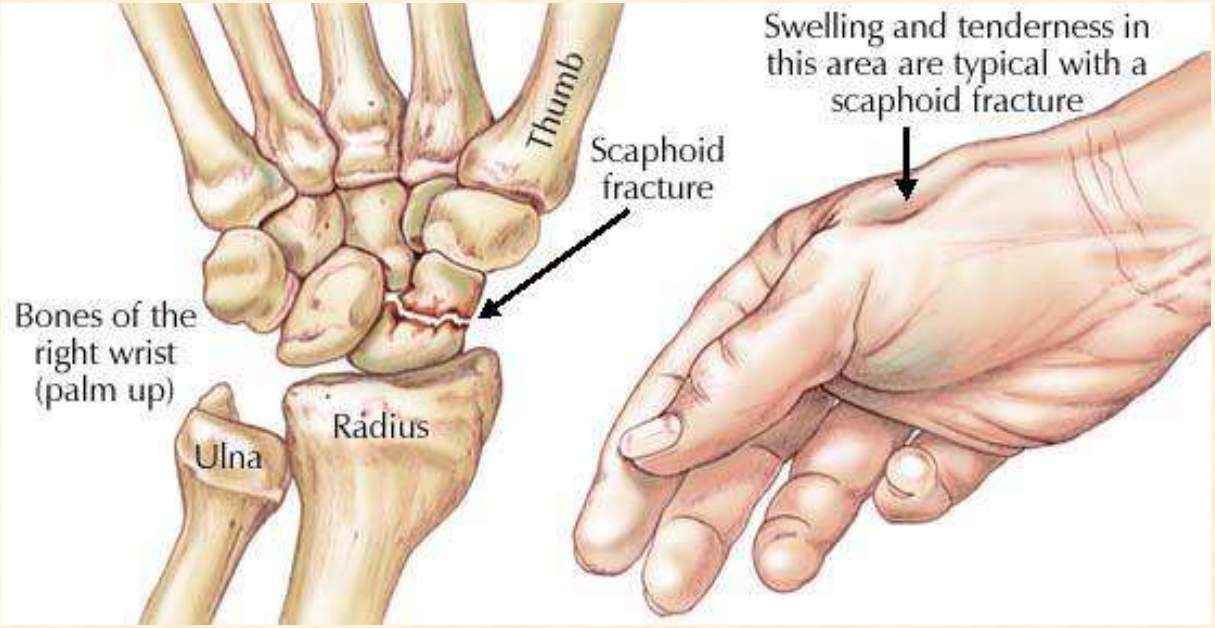
Ganglion Cyst

- Mass that appears mostly on the dorsal wrist (dorsal ganglia), but can appear on the ventral side & is usually painless
- 95% benign, but the location can affect the function of the wrist & can hamper the athlete's performance
- Likely develops from degeneration of connective tissue and cystic space formation in tendon sheath

Common Fractures

Scaphoid Fracture

- Most common type of wrist fracture
- Scaphoid is supplied with blood from the distal end to proximal end
- Vulnerable to having blood supply cut off – avascular necrosis
- Usual mechanism of injury is a fall onto the outstretched hand – causing forceful hyperextension of the wrist



Common Fractures

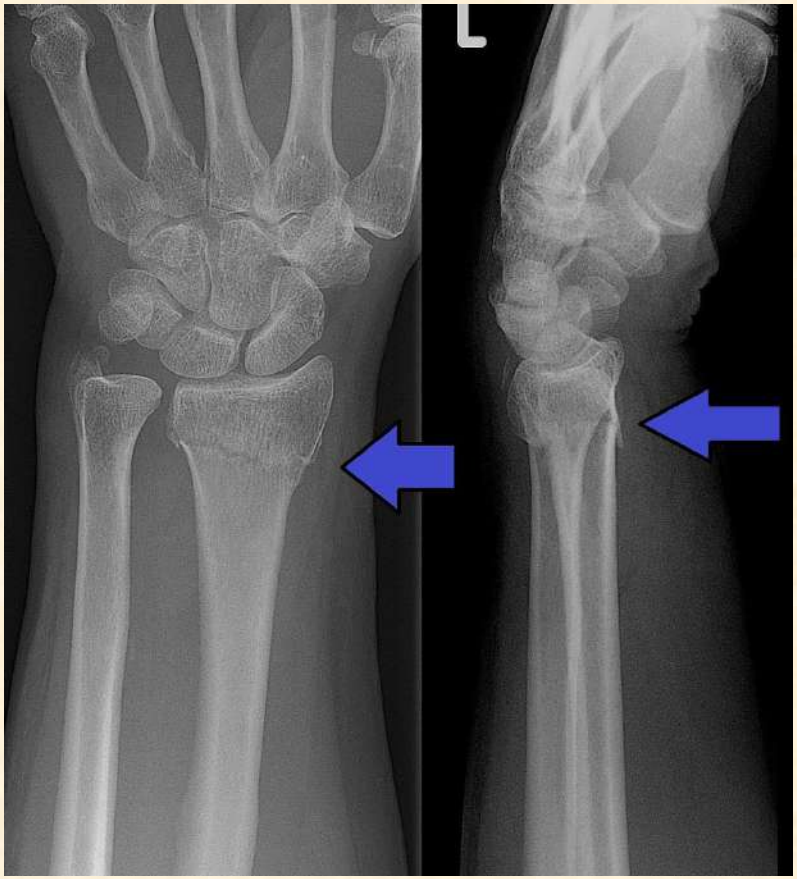
Scaphoid Fracture

- Pain at radial wrist / anatomical snuffbox with wrist or thumb movement
- Tenderness at radial wrist
- Limited AROM & PROM, swelling
- X-rays maybe be limited since it could take 2-4 weeks for a fracture to show – best to take image in ulnar deviation
- MRI is the best choice for immediate diagnosis since it is sensitive to assess bone healing and evaluate for ligamentous injuries

Common Fractures

Colles Fracture

- Most common fracture of the distal forearm
- Occurs with falls on to an outstretched hand
- Occurs with contact sports, running sports, skiing / snowboarding, cycling
- Painful, swollen wrist, marked limited AROM, guarding
- X-rays or CT scan to diagnose



Overuse Injuries of the Wrist & Elbow

- Elbow and forearm overuse injuries are common in athletes
- Repetitive elbow flexion-extension or wrist motion
- Repetitive motions can cause tendinosis & capsule strain
- History & mechanism of injury are important to correlate with the pain site & action that provokes the pain
- The pain initially is slight, more of a nuance, then becomes too painful for the athlete to continue with the activity
- Typically the pain is slight & then is triggered by an event
- Involves muscles, tendons, ligaments & nerve compression

Overuse Injuries of the Wrist & Elbow

- Commonly seen with athletic patients who enjoy the competition of sports and want to improve their performance
- They think more training is better
- They tend to increase their practice and playing times
- Even when they have a wrist or elbow injury, they do not want to stop their activity or sport

Wrist & Elbow Sports Injuries

Additional Information

- Consider multiple structures injured, not just the obvious
- X-ray or MRI – MRI is the choice to view soft tissue and also can be used for sensitive structures of the wrist & can confirm diagnosis
- Referral to orthopedist for medicine, drainage of swelling and surgical consultation will facilitate the healing process
- When treating an athlete, you need to provide treatment that will speed recovery, so immediate referral rather than waiting 2 weeks is essential for proper treatment and for meeting the expectations of your patient athlete
- Develop relationships with orthopedic physicians and MRI facilities – for possible same day referrals

Formulating a Treatment Plan

- Determine the diagnose of the injury & rule out surgical need
- Consider the patient's sport, activity level, age, recovery expectations & severity of the injury
- Discuss a realistic time frame for recovery with the patient
- Acute care to reduce inflammation & pain
- Subacute care to begin improving function
- Rehabilitation to strengthen & re-condition the athlete
- Return to sport gradually, inform patient of possible set backs

Treatment for Sports Injuries of the Wrist & Elbow

- Adjustment Techniques
- Acute
- Subacute
- Chronic
- Post-surgical
- Overuse
- Rehabilitation
- Return to play

Wrist Adjustments

Following assessment with motion palpation

Apply high-velocity, low amplitude thrust in the direction of the restriction

- **Subluxation: Wrist**
- Motion Restriction: Wrist flexion
  - Patient Position: Patient seated
  - Doctor Position: hands grasp patient's wrist, doctors thumbs on ventral wrist
  - Thrust posteriorly into flexion

- **Subluxation: Wrist**
- Motion Restriction: Wrist extension
  - Patient Position: Patient seated
  - Doctor Position: hands grasp patient's wrist, doctors thumbs on dorsal wrist
  - Thrust anteriorly into extension

Wrist Adjustments

Following assessment with motion palpation

Apply high-velocity, low amplitude thrust in the direction of the restriction

- **Subluxation: Ulnar Deviation**
- Motion Restriction: Wrist ulnar deviation
  - Patient Position: Patient seated
  - Doctor Position: hands grasp patient's wrist, doctors thumbs on dorsal wrist
  - Thrust laterally into ulnar deviation

- **Subluxation: Radial Deviation**
- Motion Restriction: Wrist radial deviation
  - Patient Position: Patient seated
  - Doctor Position: hands grasp patient's wrist, doctors thumbs on dorsal wrist
  - Thrust medially into radial deviation

Elbow Adjustments

Following assessment with motion palpation

Apply high-velocity, low amplitude thrust in the direction of the restriction

- **Subluxation: Elbow Flexion / Extension**
- Motion Restriction: Elbow flexion / extension
  - Patient Position: Patient seated
  - Doctor Position: hands grasp patient's elbow and wrist
  - Thrust into flexion or extension

- **Subluxation: Radial Head**
- Motion Restriction: radial head Anterior or Posterior
  - Patient Position: Patient seated
  - Doctor Position: hand grasp patient's wrist, thumb on radial head
  - Thrust anteriorly or posteriorly

Treatment for **Acute** Injuries

Protocol

- Soft tissue massage to the wrist & elbow musculature to increase circulation
- Pain free active and passive mobilization of the wrist & elbow
- Bracing or taping to support the injured region
- Rest the wrist & elbow from activity
- Ultrasound, EMS, laser to reduce pain & speed healing

Treatment for **Acute** Injuries

for the patient at home

- RICE (Rest, Ice, Compression, Elevation)
- AROM exercises - in the pain free range – flexion & extension of wrist or elbow - a few times per day for 30-60 seconds
- AROM exercises can be performed under water for a little added resistance

Treatment for **Acute** Injuries- Taping

- **When applying kinesio-tape, patient feedback is very important**
- **Ask if the tape is comfortable and supportive**
-
- **Apply the tape to protect and support the injured region**
- **The tape will allow the joint to still function, but will limit the motion**
-
- **Wearing the tape makes the patient more aware of the injury so they will be more careful in their ADLs**

Treatment for **Acute** Injuries- Taping

- Apply kinesio-tape along the direction of the muscle or tendon for support
- Apply the kinesio-tape around or over the joint for added stability

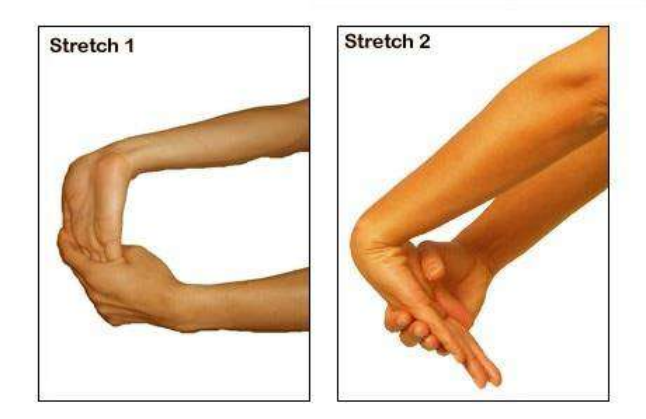
Treatment for **Subacute** Injuries

Protocol

- **Deeper soft tissue** - massage regional wrist & elbow / forearm muscles to increase circulation - blood flow is important for healing
- **Myofascial Release** for tendon / muscle injuries – apply massage of the injured muscle with either active or passive motion of the wrist & elbow joints
- **Isometric exercises** – have the patient resist against your hand for a few seconds *in various ranges* – to begin strengthening the injured tissue

Treatment for **Subacute** Injuries

- Apply passive mobilization to the wrist & elbow – pain free
- Chiropractic adjustments to the wrist & elbow of gentle joint distraction & mobilization– pain free – maybe performed at this time
- **Active Resistance ROM** – have the patient perform active ROM while you apply an opposite resistance force thru the full range
- **PNF stretching** (contract-relax)– stretch the muscle for 10 seconds, patient contracts the forearm muscle against your resistance, then apply a 30 second stretch – repeat 2-3 times for flexion and extension



- Continue with ultrasound, EMS, laser & kinesio-tape

Treatment for **Chronic** Injuries

Protocol

- If an injury has lasted longer than 3 months, it is considered to be chronic
- Chronic injuries typically will have adhesions & scar tissue which limits the function of the muscle or ligament and attracts inflammation
- **Evaluation other regions –** there is very likely another joint that is not functioning correctly that is causing the wrist & elbow to become chronically painful

Treatment for **Chronic** Injuries

- Ultrasound physiotherapy can help breakdown adhesions
- Myofascial Release to reduce scar tissue
- PNF Stretching
- Chiropractic adjustments
- Chiropractic assessment of the cervical spine and shoulder to screen for dysfunction that results in over compensation of the wrist or elbow

Treatment for the **Post-Surgical** Wrist & Elbow

After surgery the patient will be apprehensive and hesitant with using and moving their wrist or elbow

- Communicate with the orthopedic surgeon as to what surgery was performed & what they expect with the rehabilitation
- Follow the same protocol as with “acute” treatment
- As the patient progresses, advance to the “subacute” protocol
- Gradually introduce functional exercises that involve gripping, holding, pushing & pulling

Treatment for **Overuse** Injuries

Protocol

- If the patient does not want to rest from their activity, then advise them to supplement another activity that does not aggravate the wrist or elbow (stationary biking, walking, light swimming)
- Modify the activity to avoid further insult & pain –reduce frequency, duration & intensity
- Educate the patient on how they need time to repair the damaged / injured tissues

Chiropractic Adjustments - additional

- **Distraction Wrist** – with your both thumbs contact the dorsal radiocarpal joint and with your fingers contact the palm of the patient - press with thumbs as retract with fingers creating distraction of the radiocarpal joint
- **Mobilization/manipulation Elbow** – contact distal to the elbow joint and apply flexion – extension mobilization thru the physiological range adding range into the restriction beyond the physiological range as the patient tolerates
- **Radial Head mobilization/manipulation** - contact the radial head with your thumb and the wrist with your other hand - apply flexion – extension mobilization thru the physiological range adding range into the restriction beyond the physiological range as the patient tolerates

Myofascial Release

- Used for treating myofascial injuries such as tennis & golfer's elbow, tendonitis of the biceps, triceps, wrist flexors & wrist extensors
- The chiropractor will apply deep pressure along the direction of the muscle fibers at the belly or tendon regions
- This deep pressure can be administered along with the patient actively moving the joint associated with the muscle
- The deep tissue release can also be performed with the chiropractor passively moving the associated joint
- The benefits include increased circulation which promotes healing and reduction of scar tissue and adhesions

PNF (Contract-Relax Stretching)

- Used to lengthen tight muscles of the forearm
- Begins with passive stretch held at the point of discomfort for 10 seconds
- Then the athlete applies resistance pressure contracting the muscle being treated for about 10 seconds
- Then the chiropractor applies a greater stretching for about 30 seconds

Post-Adjustment Care

- Range of motion
- Strengthening
- Coordination
- Sport specific exercises

Post-Adjustment care
Range of Motion Exercises

- **Flexion - Extension** – patient will actively move the elbow or wrist thru the normal range of motion trying to gently increase the limited range to pain tolerance

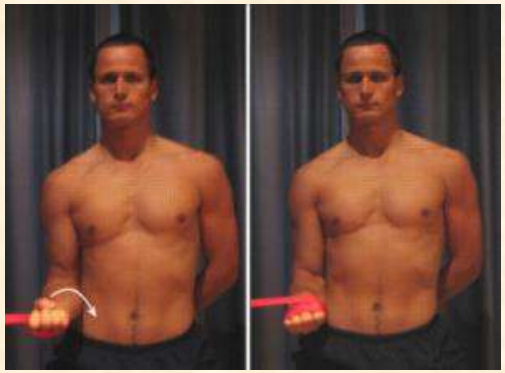
- **Assisted ROM** – chiropractor assists the patient's AROM effort with pulling or pushing the elbow or wrist into to greater range as the patient actively engages that motion

Post-Adjustment Care
Strengthening Exercises

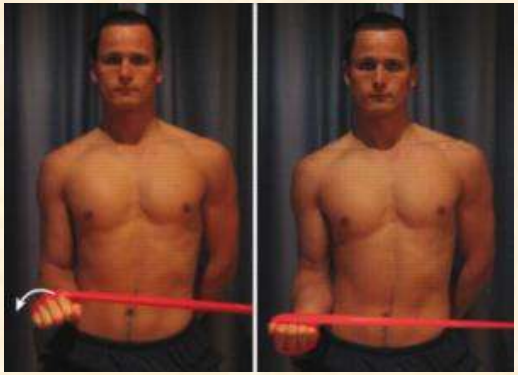
- **Open Kinetic Chain** – used to isolate a muscle group. The patient uses resistance (weights, resistance band, TRX) to perform ***flexion*** (biceps, wrist flexors) or ***extension*** (triceps, wrist extensors), ***pronation*** & ***supination*** **-** 15 reps, 2-3 sets

- Triceps with weights

Biceps with TRX



Pronation with resistance band



Supination with resistance band

Post-Adjustment Care Strengthening Exercises

- **Open Kinetic Chain Sport Specific –**
  - Medicine balls throws with both or single hand
  - Resistance band motion to mimic sport action
  - Medicine ball motion to mimic sport action
  - Grip strengthening – squeezing a foam/rubber ball or clay

Medicine ball throws

Medicine ball motion

Resistance band motion

Post-Adjustment Care
Strengthening Exercises

- **Closed Kinetic Chain** – exercises that strengthen the supporting muscles and core, begin easy
  - Push-up against the wall
  - Push-ups on the floor
  - Push-ups on a balance board or BOSU

Post-Adjustment Care

Coordination

Start off with slow actions, gradually increase speed & power

- **Throwing a ball & catching** – start with throwing with both hands & then move on to using the injured side for throwing & catching

- **Reaching to various points** – standing facing the athlete, have the athlete reach with the injured hand to touch your hand as you move it into a variety of positions – eventually increase speed & randomness of the exercise

Post-Adjustment Care

Sport Specific

Important to have the athlete practice their sport activity in a controlled environment & then gradually increase the intensity, duration and speed

- **Golf & Tennis** – practice swing without a club/racket, then practice with a light club/racket, progressing to hitting the ball, lightly at first, then stronger and longer

- **Soccer** – practice the motion of throwing in the ball, then using a soccer ball & then a medicine ball. Push-up strengthening as well is needed for contact sports

- **Football, Basketball, Baseball & Volleyball**– practice throwing, catching & striking with motion only at first then using the ball. Push-up strengthening as well for contact

Warm-up Routine

A good warm-up routine is important to prevent recurrences of Wrist & Elbow injuries and should consist of the following:

- Walking to jogging for 10 mins
- **Dynamic Stretching** – slow, exaggerated sport specific motion that induces a stretch of the region
  - **THROWING** – slow motion throwing that stretches the shoulder, biceps, wrist flexors, wrist extensors – perform 5-10 reps
  - **WRIST FLEXION / EXTENSION** – with a fist, flex & extend the wrist – perform 5-10 reps
  - **SWINGING** – either tennis or golf motion – stretch the surround muscles – perform 5-10 reps

Warm-up Routine

Hold stretches for 30 secs, repeat 2x

- **Static Stretching**

Biceps

Wrist Flexors

Triceps

Wrist Extensors

Cool-down Routine

To prevent flare-ups, post activity stretching is important

- After activity the athlete should walk & perform the dynamic stretches for about 5-10 mins
- Then static stretching of the biceps, triceps, wrist flexors & wrist extensors
- Applying ice or submerge wrist or elbow region in cold water for 5-10 mins
- About 1-2 hours after activity, the athlete should perform AROM exercises & light dynamic stretches

Return to Sport

- When the wrist or elbow region is **pain free**, **full range of motion**, **functional performance with all rehab exercises**
- Perform additional warm-up prior to practice
- Start with limited practice time
- Begin competition with limited playing time
- Important to do cool-down stretch routine

Case Discussion #1

Lateral Epicondylitis (tennis elbow) – 62YO male

- The patient presented with lateral elbow pain, just distal to the lateral epicondyle when he was golfing, shaking hands or gripping anything tightly
- He golfed 3x per week for about 2-3 hours and had been golfing regularly this way for about 5 years – he does not play tennis
- For the past 2 weeks he had to stop golfing after about 15 mins – there was pain holding the club, but much more pain when he hit the golf ball
- He iced, took ibuprofen, but the elbow pain persists
- Upon examination, there was tenderness to palpation at the lateral epicondyle & proximal wrist extensors, positive Mill's & Cozens Tests, painful & weak supination muscle test

Case Discussion #1 -Treatment -

Lateral Epicondylitis (tennis elbow) – 62YO male

- Rested patient from golfing and directed patient to other activities – swimming, stationary bike – that did not affect the elbow pain
- Administered ultrasound, EMS, myofascial release, PNF
- Kinesio-taping to support wrist extensors and lateral elbow
- Chiropractic manipulation of the elbow, wrist & radial head
- Exercised the wrist extensors, flexors, supinators & pronators
- Provided patient with resistance band for home strengthening
- Modified the grip size on clubs
- Return to golfing gradually, small hitting, less frequent golfing

Case Discussion #2

Wrist Sprain – 17YO female

- The patient presented with left wrist pain – central, dorsal
- She played volleyball on the high school team & club team
-
- She reported the she dove for the ball & landed hard on her left outstretched hand, feeling immediate pain
- She continued to play and each time she hit the ball, the pain became worse, so she had to stop within a few mins
- Upon examination, the wrist was swollen with limited motion, there was tenderness to palpation over the entire wrist
- Radiographs were negative for scaphoid & Colles fractures

Case Discussion #2 **-Treatment-**

Wrist Sprain – 17YO female

- Rested patient from volleyball
- Braced and taped wrist for support
- Applied ultrasound, EMS, myofascial release to the wrist region
- Began grip strengthening and AROM exercises
- Progressed to resistance band and weights
- Chiropractic mobilization to the wrist – distraction adjustments
- Rehabilitation with catching, throwing & bouncing/dribbling with the volleyball, then added medicine ball throws
- Practice volleyball hitting & striking easy, gradually increasing
- Returned to play when there was no longer wrist tenderness, full range of motion & no pain with hitting & blocking

Follow-up Care Chiropractic Care

- Educate your patient on the need to return for a re-evaluation at the first sign of pain return
- Active patients should have regular Chiropractic evaluations and treatment to prevent recurrences
- Educate your patient on the importance of regular rest, stretching and conditioning on their overall athletic performance

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