

# **Back To Chiropractic CE Seminars**

## **Hx & Exam Sports Injuries:**

### **Extremities Elbow, Wrist & Knee ~ 4 Hours**

**Welcome to Back To Chiropractic Online CE exams:**

**This course counts toward your California Board of Chiropractic Examiners CE.  
(also accepted in other states, check our website or with your Chiropractic State Board)**

**The California Board requires that you complete all of your CE hours BEFORE  
the end of your Birthday month. We recommend that you send your chiropractic  
license renewal form and fee in early to avoid any issues.**

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## **Exam Process: Read all instructions before starting!**

- 1. You must register/pay first. If you haven't, please return to: [backtochiropractic.net](http://backtochiropractic.net)**
- 2. Open a new window or a new internet tab & drag it so it's side-by-side next to this page.**
- 3. On the new window or new tab you just opened, go to: [backtochiropractic.net](http://backtochiropractic.net) website.**
- 4. Go directly to the Online section. DON'T register again.**
- 5. Click on the Exam for the course you want to take. No passwords needed.**
- 6. Follow the Exam instructions.**
- 7. Upon passing exam, you'll be able to immediately download your certificate, and it'll also be emailed to you. If you don't pass, you must repeat the exam.**

**Please retain the certificate for 5 years. DON'T send it to the state board.**

**If you get audited and lose your records, I'll have a copy.**

**I'm always a phone call away... 707.972.0047 or email: [marcusstrutzdc@gmail.com](mailto:marcusstrutzdc@gmail.com)**

**Marcus Strutz, DC**

**Back To Chiropractic CE Seminars**



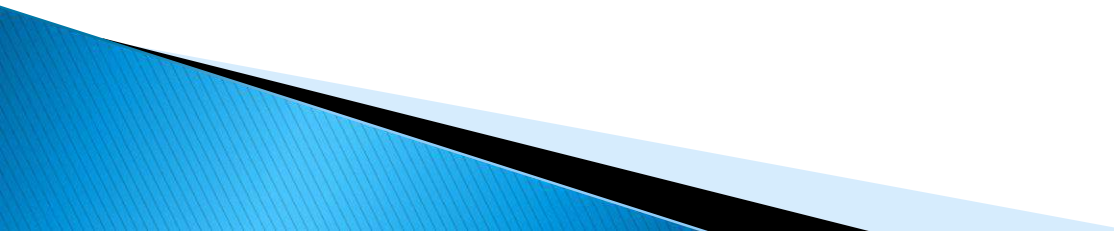
# History and Examination

## Part 1: Wrist and Elbow

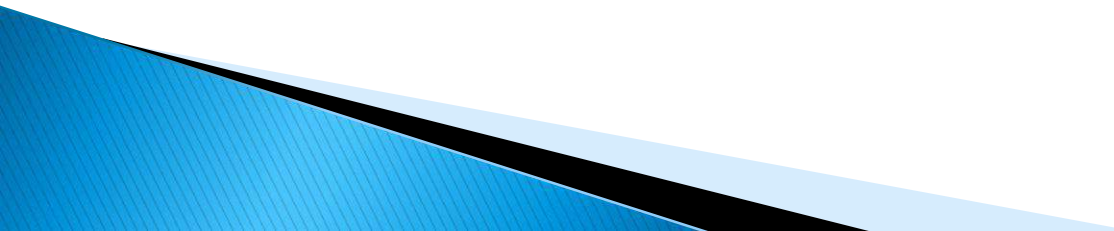


Instructor: Dr. Richard D. Belsky, DC, CCSP

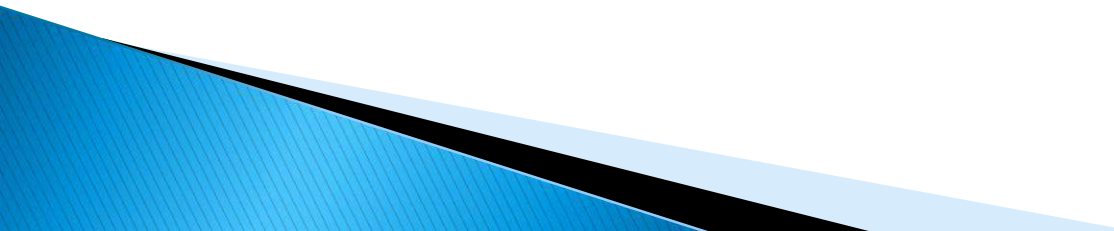
# Course Objectives

- ▶ The course will instruct the chiropractor to perform a thorough consultation and examination of the wrist & elbow to properly diagnose common wrist & elbow conditions.
  - ▶ The course will focus on the logical thought process of history taking, physical examination procedures and accurate documentation.
  - ▶ The chiropractor will gain an understanding of how to ask pertinent questions to determine a diagnosis as well as performing a detailed wrist and elbow examination.
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# Course Objectives

- ▶ The chiropractor will also gain improved knowledge of recognizing when and where to refer the patient.
  - ▶ A discussion of the doctor–patient relationship, documentation and informed consent will also be covered.
- 

# History & Examination of the Wrist and Elbow

- ▶ Doctor–Patient Relationship
  - ▶ Patient Mind–Set
  - ▶ Consultation / Patient History
  - ▶ Examination of the Wrist and Elbow
  - ▶ Conclusions from History & Examination
  - ▶ Referral for imaging / orthopedic consult
  - ▶ Documentation
- 

# Doctor–Patient Relationship

- ▶ Greeting & Introduction
- ▶ Establish a relaxed atmosphere
- ▶ Explain the Initial Office Visit
- ▶ Informed Consent



# Greeting & Introduction

- ▶ Staff should greet and welcome and acknowledge patient immediately (even if on telephone)
- ▶ Be sure to have a clean, well organized reception area with enough seating



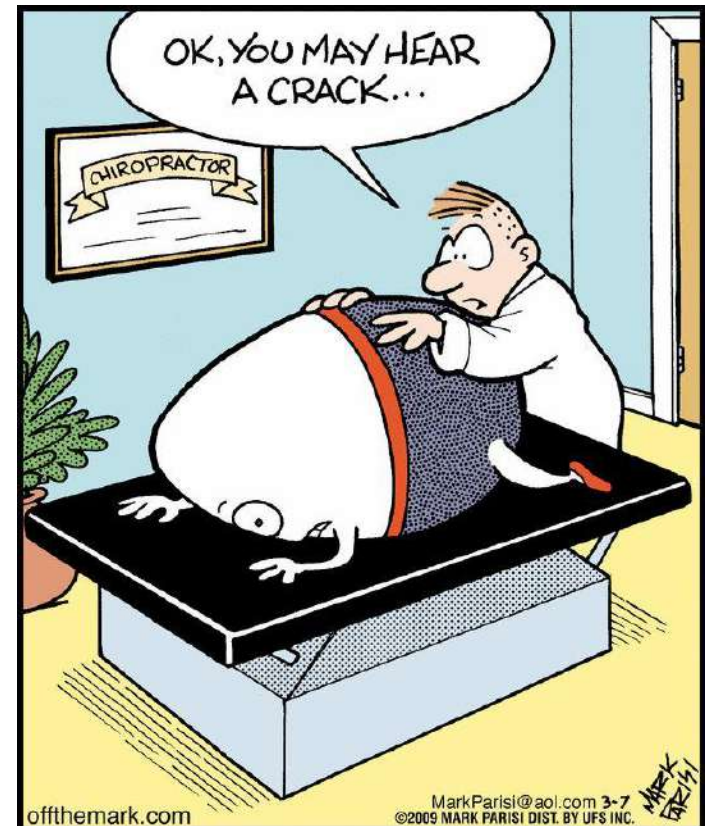
# Greeting & Introduction

- ▶ Be on time, do not make the new patient wait
- ▶ Review all the paperwork & initial each page
- ▶ Introduce yourself, acknowledge that you read over all the paperwork & ask the patient to tell you about their pain / problem

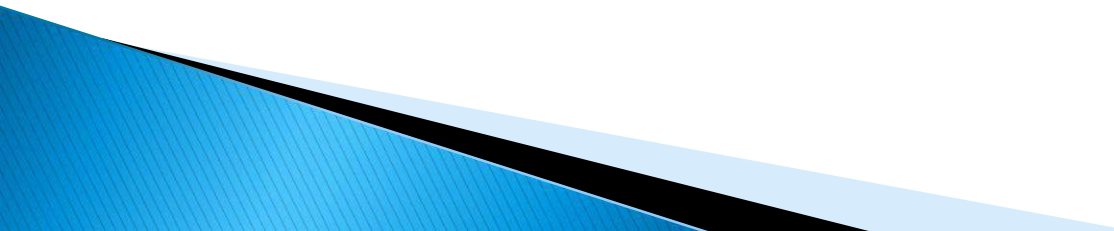


# Establish a relaxed atmosphere

- ▶ Tell the patient about your practice and your experience with their injury, condition and pain
- ▶ Briefly explain what is going to take place during this initial office visit

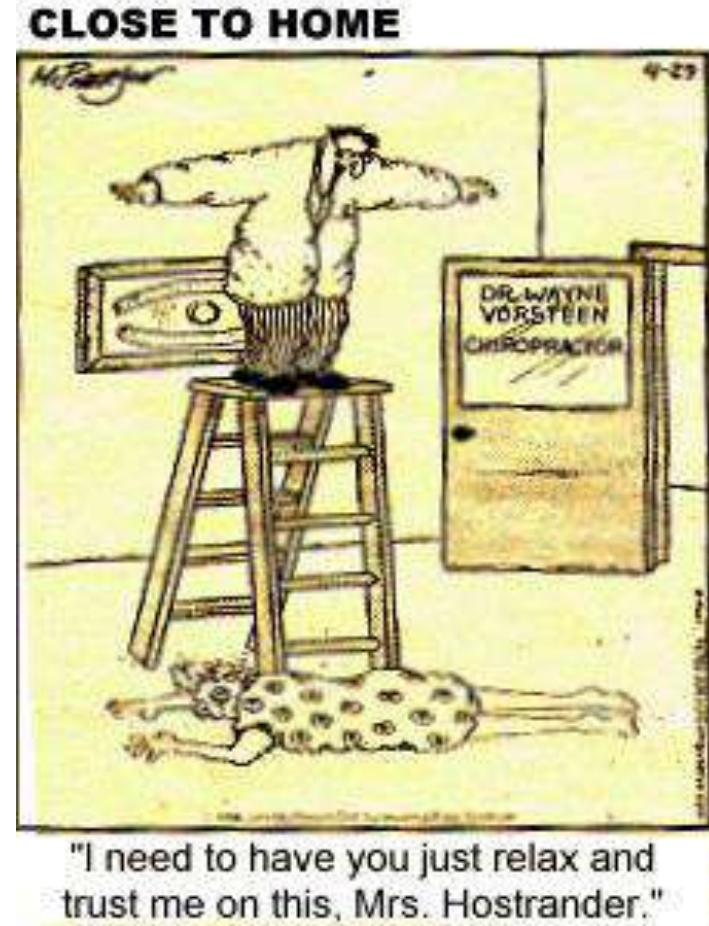


# Establish a relaxed atmosphere

- ▶ Make sure they are comfortable – either sitting, standing or laying
  - ▶ Be sure to ask if this is their first time to visit a chiropractor
  - ▶ If it is not, then ask them about their prior experiences and treatment
- 

# Establish a relaxed atmosphere

- ▶ Listen to what the patient tells you about their previous chiropractic experience
- ▶ If your practice is different than the patient's prior chiropractic care, then briefly explain how your method can help them
- ▶ This will help you to meet their expectations

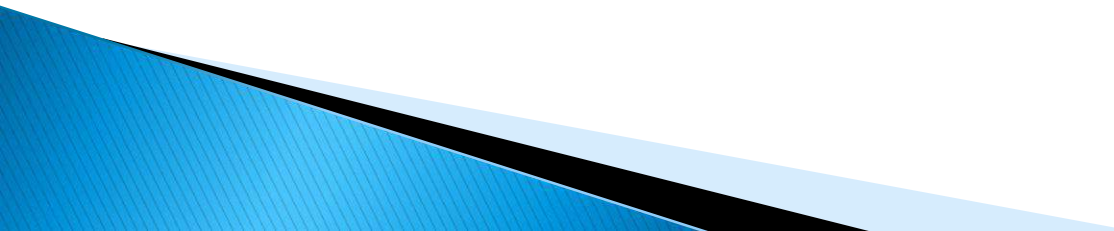


# Explain the Initial Office Visit

- ▶ If the patient had no previous chiropractic care, then you will need to explain what chiropractic care is and how it will help
- ▶ Prepare a brief explanation of the benefits of chiropractic care – more explanation later
- ▶ Include a brief discussion about wellness care and prevention as well as pain reduction



# Informed Consent

- ▶ Before continuing with the medical history, you should obtain **informed consent** from the patient
  - ▶ You should review with them what they had signed in the paperwork & explain that as with all medical care, the patient needs to be informed of the associated risks involved
  - ▶ **Informed Consent** – permission granted in the knowledge of the possible consequences, typically that which is given by a patient to a doctor for treatment with full knowledge of the possible risks and benefits
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# Informed Consent

## §319.1. Informed Consent – California Rules and Regulations

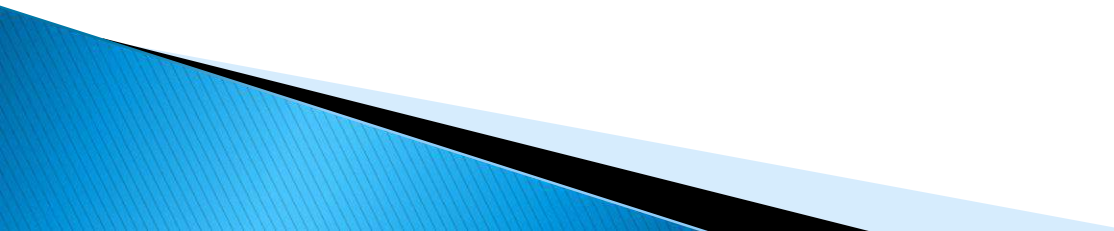
- ▶ A licensed doctor of chiropractic shall **verbally and in writing** inform each patient of the material risks of proposed care. “Material” shall be defined as a procedure inherently involving known risk of serious bodily harm. The chiropractor shall obtain the patient's written informed consent prior to initiating clinical care. The signed written consent shall become part of the patient's record.

# The Patient Mindset

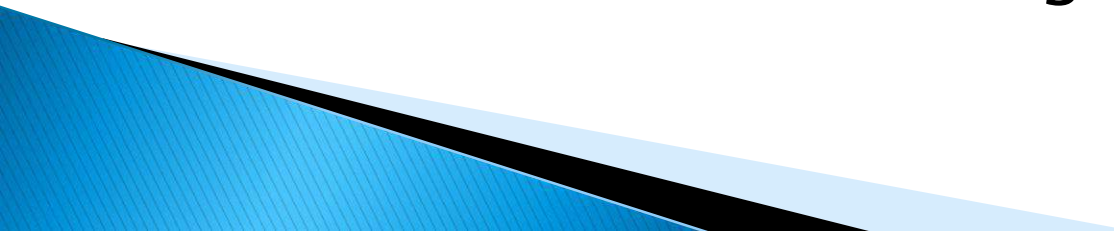
- ▶ Fear
- ▶ Depression
- ▶ Anxiety
- ▶ Expectations
- ▶ Understanding the mindset of your patient will help you to facilitate their recovery



# The Patient Mindset

- ▶ The patient will present to you with a problem that they need to have resolved
  - ▶ This problem may be new or may have been persisting for months
  - ▶ This problem may also be associated with fear, depression, anxiety and expectations
- 

# The Patient Mindset – Fear

- ▶ Patients are afraid of the unknown
  - ▶ They typically will think of the worst case scenario
  - ▶ They worry if they will be pain free again and if they can return to their activity, work or sport
  - ▶ The fear of the unknown amplifies the pain
  - ▶ If they are in a lot of pain, they are afraid that the treatment will cause them greater pain
- 

# The Patient Mindset – Depression



- ▶ The patient may also be upset when they can not participate in their activity, sport or job
- ▶ If the problem has been persisting for over a month, the patient may feel hopeless
- ▶ They may have seen other doctors who were not able to help them

# The Patient Mindset – Anxiety

- ▶ The patient may be worry about provoking or aggravating the pain
- ▶ They may be afraid that the pain will increase
- ▶ The patient may avoid all activity

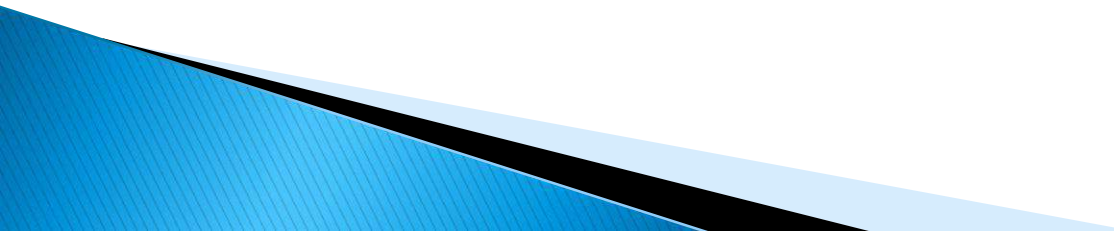


# The Patient Mindset – Expectations

- ▶ Patients may not know what to expect
- ▶ Patients may present with unreasonable expectations
  - They may expect to be “fixed” immediately, after one adjustment
  - They may expect to return to playing their sport after one or two treatments

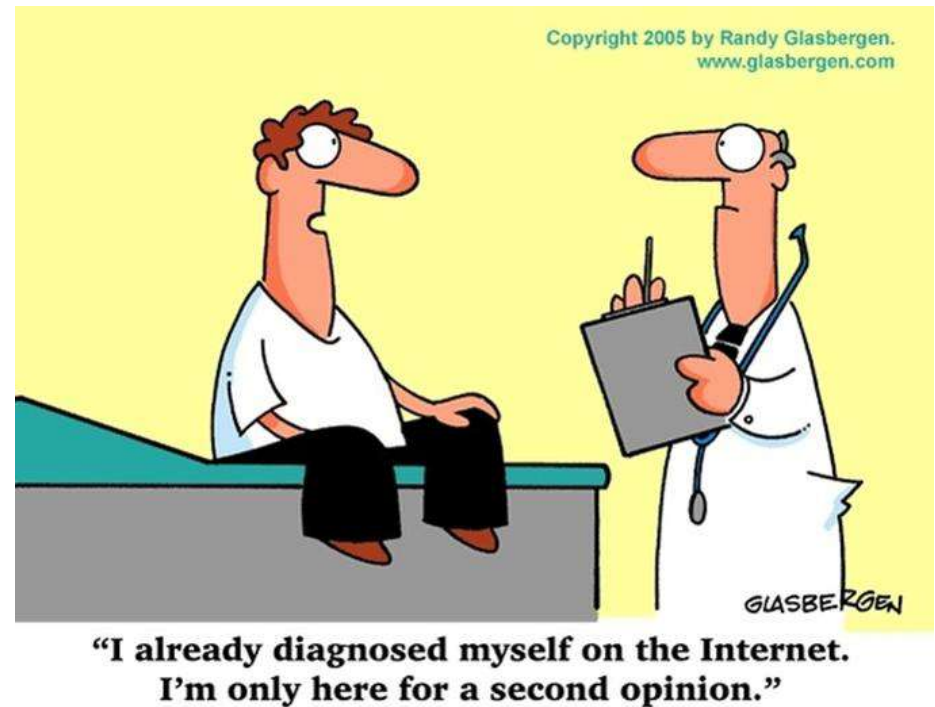


# The Patient Mindset

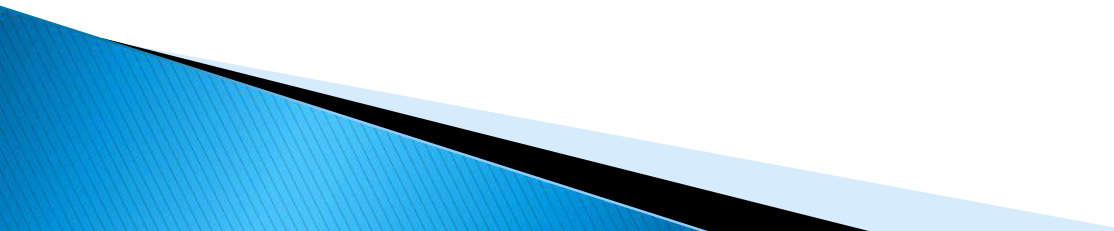
- ▶ Help the patient to feel at ease
    - Introduce yourself & provide a brief explanation of how chiropractic care can help to improve function, speed healing/recovery and benefit health
    - Tell them about what is going to take place during the initial visit and what treatment will be administered
    - Assure them that you will refer them to the proper practitioner if they do not respond to your treatment
- 

# The Patient Mindset

- ▶ Patients may present demanding a certain treatment, self-diagnosing their condition and telling you that they do not need an examination
- ▶ Patients may present quiet and not know how to describe their pain/condition/injury
- ▶ Patients may tell you way too much information



# The Patient Mindset

- ▶ Listen and re-direct the patient during the past history, guiding them to what is relevant
  - ▶ Syphon through the history for pertinent information
  - ▶ Direct the patient to stay on topic
  - ▶ Help to ease their fear, depression and anxiety by listening to their history and acknowledge that you will help them with your treatment or with a referral to the right practitioner
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# Seeing the whole patient...not just the wrist & elbow



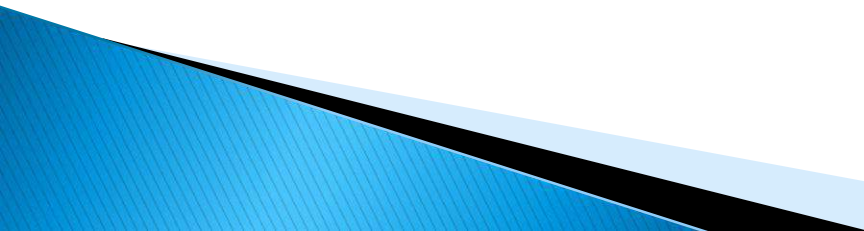
- ▶ It is important to see the whole forest and not just the trees
  - Observing your patient's posture may have helpful insight about the elbow & wrist
  - Postural misalignment will affect wrist & elbow recovery
  - Postural alignment of the shoulders, scapulae, cervical and thoracic regions influence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

# History Taking



- ▶ When you hear hoof-beats, think horses not zebras
  - Use logical thinking when listening to the patient's history and don't focus on rare conditions until common conditions have been ruled out
- ▶ Logical thinking –during the patient's history
  - The process in which one uses reasoning consistently to come to a conclusion. Problems or situations that involve logical thinking call for structure, for relationships between facts, and for chains of reasoning that make sense

# History Taking for the Wrist and Elbow

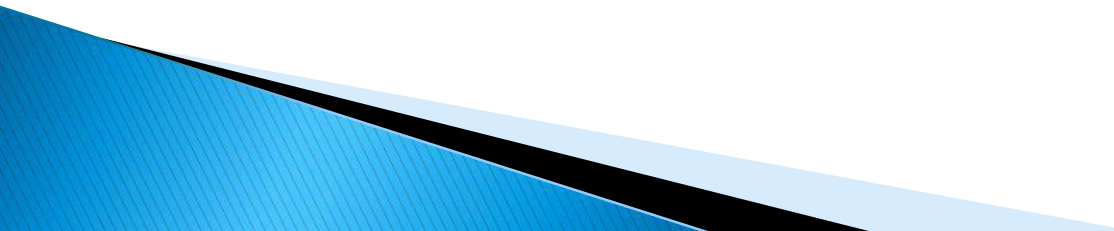
- ▶ Good history taking for wrist and elbow pain can lead you to making the correct diagnosis
  - ▶ Taking a good history for wrist and elbow pain, you should consider:
    - age
    - activity level
    - body morphology
    - previous wrist or elbow injuries / surgeries
    - gender
- 

# History Taking for the Wrist & Elbow – *Factors*

- ▶ **Age** – teens who are in a growth spurt are more prone to tendonitis & seniors may have osteoarthritis & degeneration
- ▶ **Activity** – repetitive motions, racket / stick / bat sports and throwing sports contribute to tendon & ligament injuries

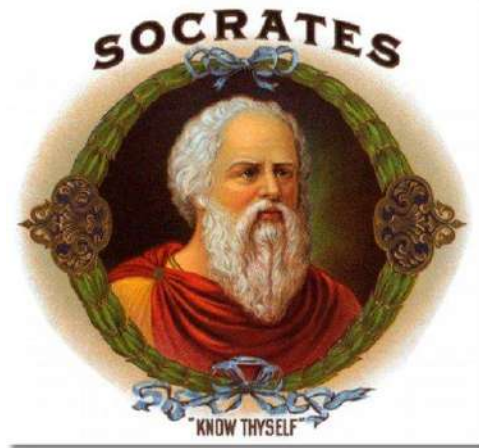


# History Taking for the Wrist & Elbow – *Factors*

- ▶ Work ergonomics – jobs with repetitive actions increase the risk of injury
  - ▶ Previous injuries/surgeries – aggravation of prior injury or a compensatory injury
  - ▶ Gender – bone density decreases in older females
- 

# History Taking – S.O.C.R.A.T.E.S.

- ▶ S – site – Where is the pain?
- ▶ O – onset – When did the pain start?
- ▶ C – character – What is the pain like?
- ▶ R – radiation – Does the pain radiate?
- ▶ A – alleviating – What reduces the symptoms?
- ▶ T – timing – Does the pain follow any pattern?
- ▶ E – exacerbating – What aggravates the pain?
- ▶ S – severity / social– How bad is the pain?



# History Taking for the WRIST & ELBOW – Site

- ▶ Ask the patient to point to the pain site
  - Dorsal wrist
  - Ventral wrist
  - Cubital fossa
  - Olecranon
  - Medial wrist/elbow
  - Lateral wrist/elbow
  - Dorsal forearm
  - Ventral forearm



# History Taking for the WRIST & ELBOW –Onset

- ▶ When did the pain / symptoms start?
  - After or during activity?
    - Tendonitis vs sprain/strain
    - Overuse injury
- ▶ Is the pain a result of an accident?
  - What is the mechanism of injury?
    - Trauma –think fracture, ligament tear, muscle tear
  - What exactly happened during the accident / injury?
- ▶ Did the pain come on gradually?
  - Tendonitis, repetitive stress injury, arthritis
- ▶ Was the pain or symptoms previously present?
  - Recurrence of an old injury

# History Taking for the WRIST & ELBOW – Character

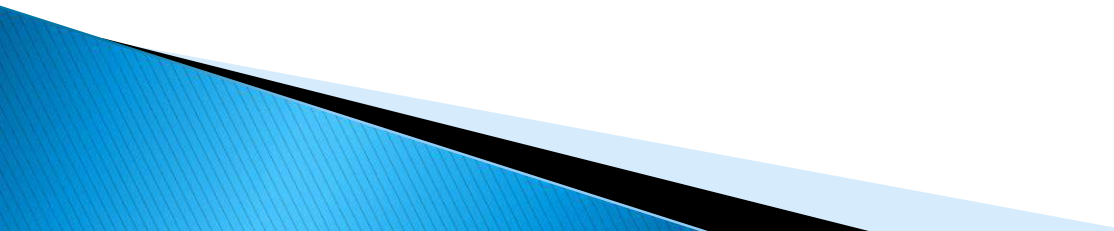
- ▶ Describe the pain – ask the patient to describe the pain – if they have trouble, you can give them some words of description:
  - Sharp
  - Dull
  - Burning
  - Tight
  - Stabbing
  - Cramping
  - Numb
  - Tingling



# History Taking for the WRIST & ELBOW – Radiation

- ▶ Does the pain stay localized or does it radiate?
  - ▶ Where does the symptoms radiate?
  - ▶ Along a dermatome pathway?
    - Possible nerve injury / compression
  - ▶ Diffuse, general radiation?
    - Possible muscle injury
  - ▶ Is the radiation is **neuropathic** – along a nerve pathway (dermatome) that may represent nerve compression
  - ▶ Is the radiation following a **muscular pain pattern** – from a trigger point in the muscle
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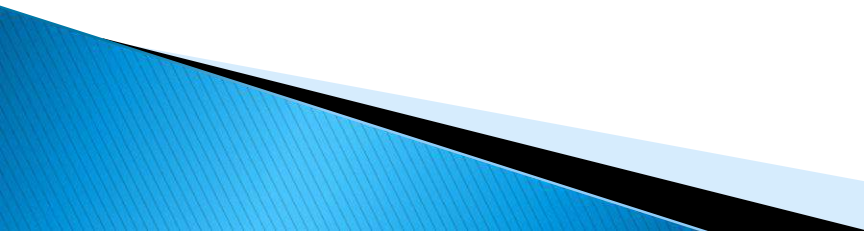
# History Taking for the WRIST & ELBOW – **Alleviating**

- ▶ What reduces the symptoms?
  - ▶ Which medications help?
    - NSAIDs reduce inflammation
  - ▶ What positions or movements help?
    - Help to determine cartilage, tendon or ligament injury
  - ▶ Is there pain / symptoms at night or at rest?
    - Possible fracture
  - ▶ Are there any associating symptoms?
- 

# History Taking for the WRIST & ELBOW –Timing

- ▶ When does the pain come on?
  - Does it follow a pattern?
- ▶ Is the pain :
  - **Acute** – onset less than 3 months
  - **Chronic** – onset greater than 3 months
- ▶ Is the pain:
  - Constant – present 100%
  - Frequent – present 75%
  - Intermittent – present 50%
  - Occasional – present 25%

# History Taking for the WRIST & ELBOW–Exacerbating

- ▶ What makes the pain worse?
  - ▶ Which positions/motions/activities provoke pain?
    - Cartilage and ligament injuries will limit motion
    - Pain thru the full range suggests tendon injury
    - Certain positions may elicit the pain/symptoms
  - ▶ How long into doing an activity until the pain starts?
    - Tendonitis can have a delayed onset in the activity
    - Sprain will hurt immediately in the activity
  - ▶ Is this activity necessary or important?
    - Can the patient stop this activity to allow time to heal
- 

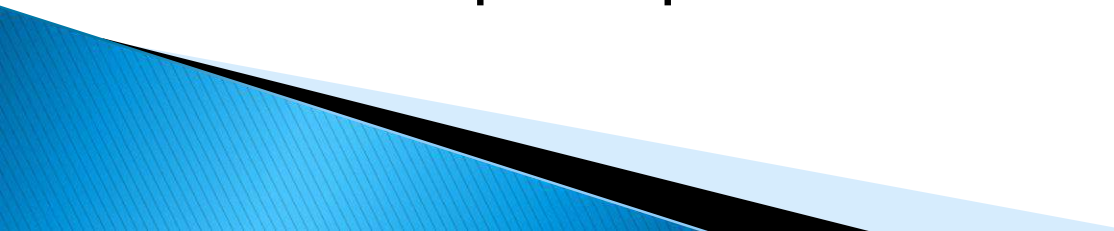
# History Taking for the WRIST & ELBOW – Severity

- ▶ How severe is the pain?
- ▶ Patients may **over or under state** their pain level – so the practitioner should also rate the pain

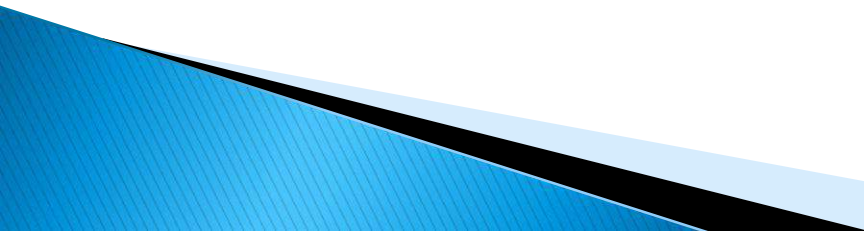


- ▶ Use the pain analog scale 0–10
  - Have the patient to rate their pain where 0 is no pain & 10 is maximal severe pain
  - The practitioner should rate and describe the pain

# History Taking for the WRIST & ELBOW– Social

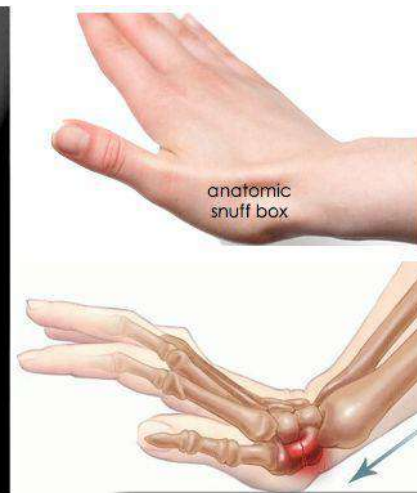
- ▶ It is also good practice to gather additional information aside from the wrist/elbow condition
  - ▶ Social factors include:
    - Marriage/single/children
    - Living arrangement
    - Dietary habits
    - Smoking/alcohol/illicit drug use
  - ▶ Understanding this information may benefit you to further help the patient
- 

# History Taking for the WRIST & ELBOW – Mechanism of Injury

- ▶ The specific mechanism of injury can help to determine the precise structures injured
  - ▶ Sudden onset:
    - Gripping/twisting: **wrist/elbow sprain/strain, tendonitis**
    - Impact from falling: **fracture, sprain/strain, tendonitis**
  - ▶ Gradual onset:
    - Overuse / Repetitive trauma: **carpal tunnel syndrome, osteoarthritis, degenerative joint disease, tendonitis, bursitis**
- 

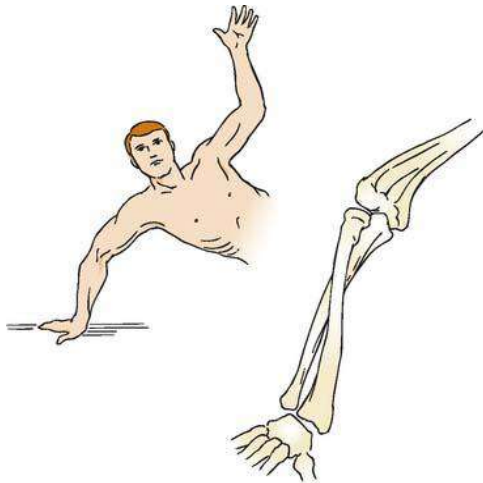
# Mechanism of Injury: Sudden onset Wrist Fractures

- ▶ Colle's fracture – fall with wrist in extension
- ▶ Smith fracture – fall with wrist in flexion
- ▶ Scaphoid fracture – fall onto outstretched hand



# Mechanism of Injury: Sudden onset Elbow Fractures

- ▶ Radial neck/head Fracture – fall onto the outstretched arm with a valgus stress or flexed elbow
- ▶ Olecranon Fracture – fall or direct trauma to the elbow



Radial neck/head fx

## Anatomy

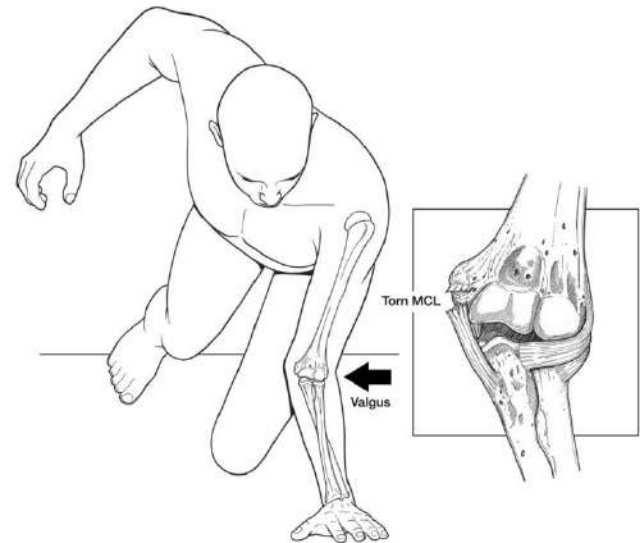
- The subcutaneous position of olecranon makes it vulnerable to direct trauma.



Olecranon fx

# Mechanism of Injury: Sudden onset Sprains/Dislocations

- ▶ Falls: The position of the wrist or elbow during impact will determine which structures are injured – sprained or dislocated
  - Carpal Ligaments
  - Triangular Fibrocartilage Complex
  - Medial or Lateral Collateral Ligaments of the elbow
  - Radial head dislocation
  - Elbow dislocation



# Mechanism of Injury: Sudden onset Tendonitis

## ► Gripping activities

- Tennis
- Baseball
- Field hockey
- Hockey
- Racquetball
- Lacrosse
- Hammering
- Utilizing tools



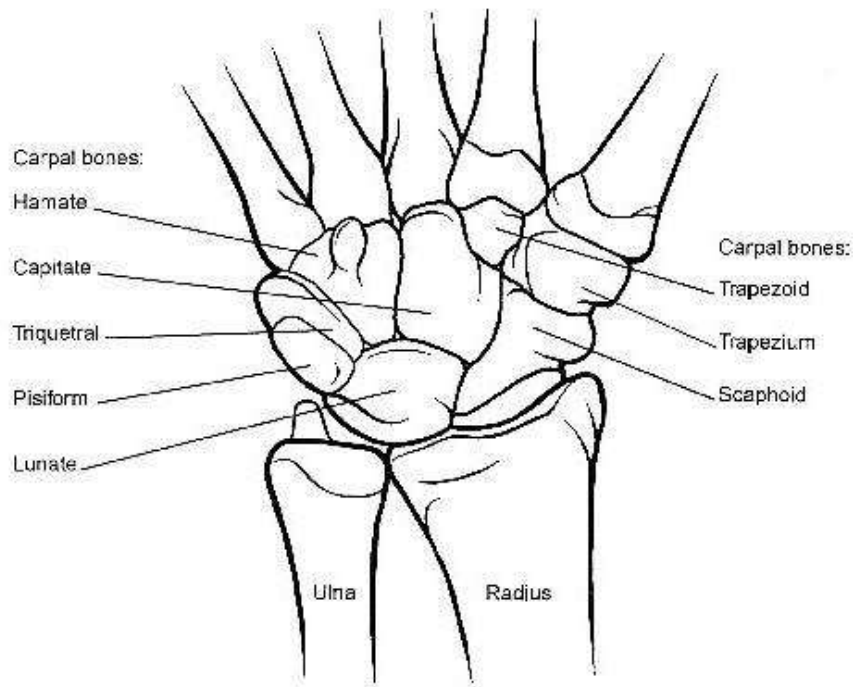
# Mechanism of Injury: Gradual onset Tendonitis

## ► Overuse / Repetitive Trauma

- Typing
- Using the mouse
- Working with hand tools
- Lifting, carrying, holding
- Sweeping / cleaning
- Unilateral sports motions
- Arthritis / DJD



# Anatomy of the Wrist

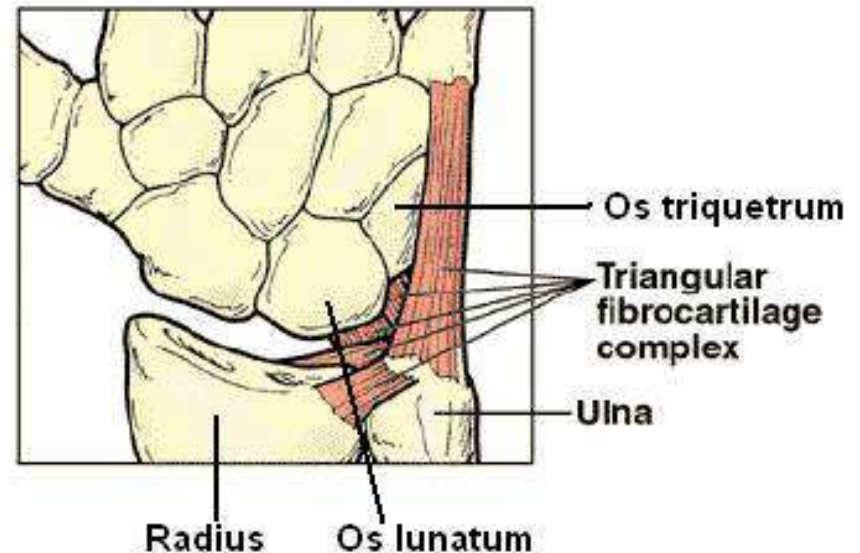


The bones of the wrist:

- ▷ 5 metacarpals
- ▷ Trapezoid
- ▷ Trapezium
- ▷ Scaphoid
- ▷ Lunate
- ▷ Triquetrum
- ▷ Pisiform
- ▷ Capitate
- ▷ Hamate
- ▷ Ulna & Radius

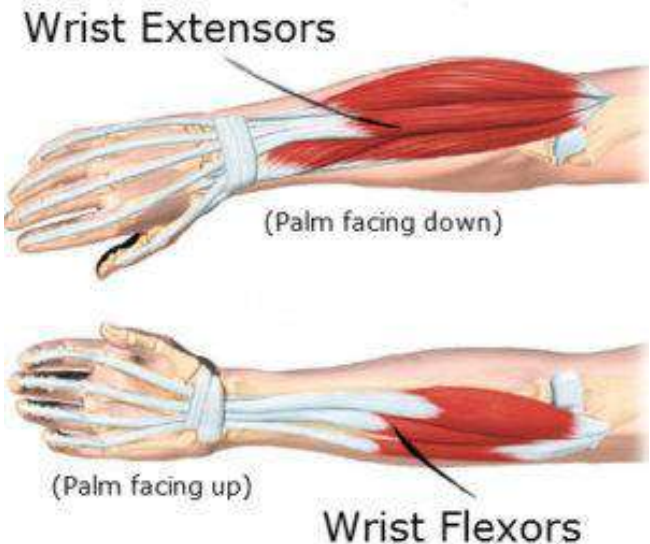
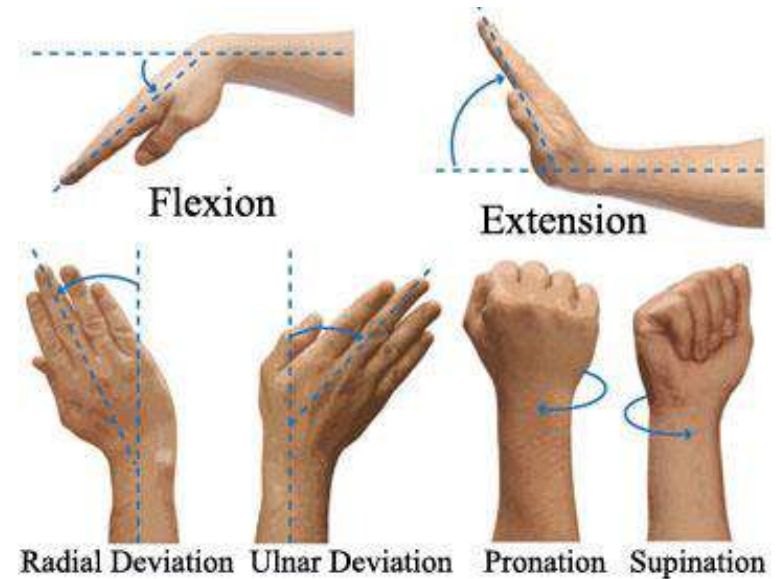
# Anatomy of the Wrist

- ▶ 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



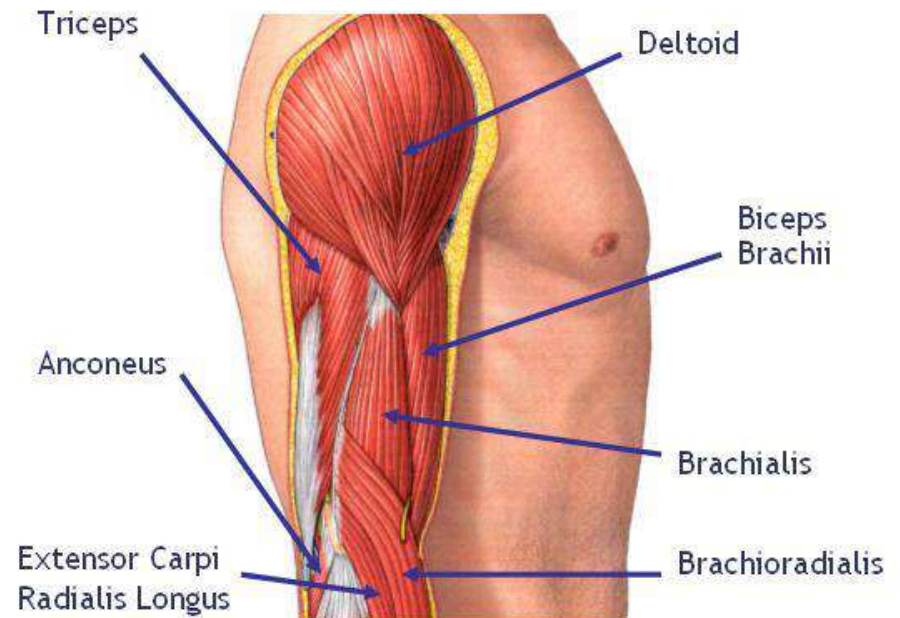
# Anatomy of the Wrist

- ▶ 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  $80^\circ$ , extension  $70^\circ$ , ulnar deviation  $30^\circ$  and radial deviation  $20^\circ$
- ▶ The major muscles of the wrist are flexor carpi radialis / ulnaris and extensors carpi radialis / ulnaris

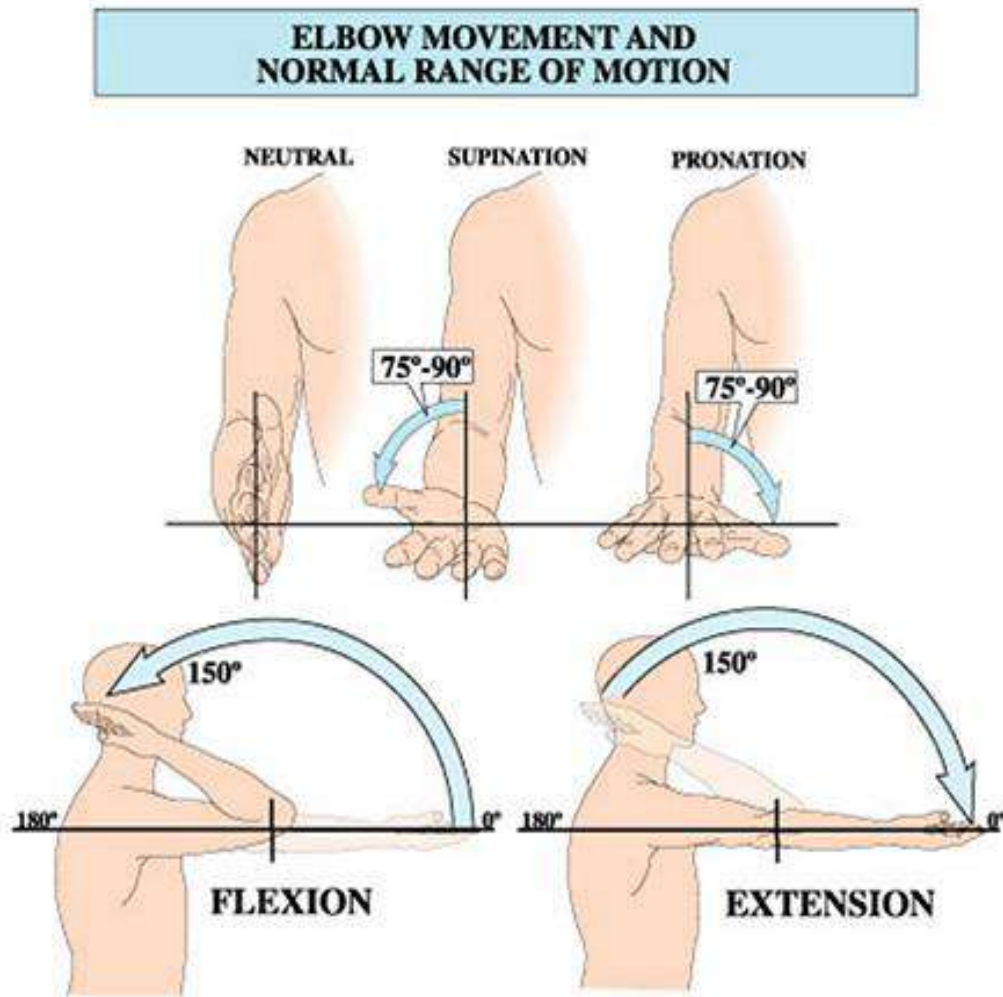


# Anatomy of the Elbow

- ▶ 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



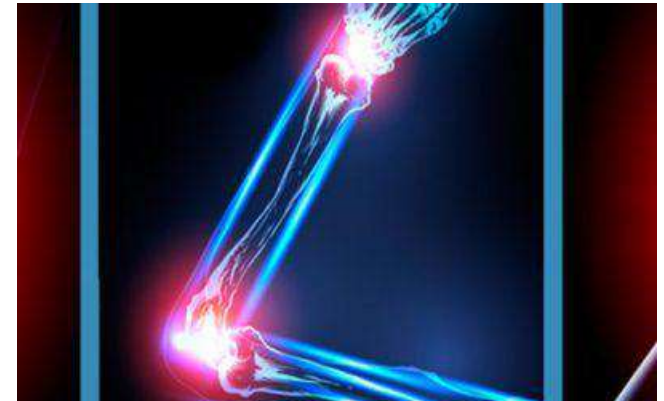
# Anatomy of the Elbow



- ▶ The elbow moves in flexion  $135^{\circ}$ – $150^{\circ}$ , extension  $0^{\circ}$ , pronation  $90^{\circ}$  and supination  $90^{\circ}$
- ▶ 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



# Examination of the Wrist & Elbow

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

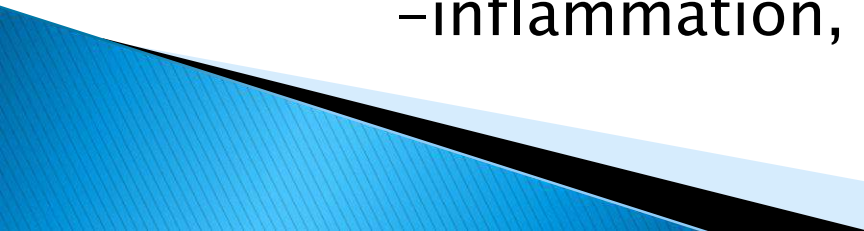


# Inspection of the Wrist & Elbow



- ▶ 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  $80^{\circ}$ , extension  $70^{\circ}$ , ulnar deviation  $30^{\circ}$  and radial deviation  $20^{\circ}$
- ▶ **Elbow:**  $135^{\circ}$ – $150^{\circ}$ , extension  $0^{\circ}$ , pronation & supination  $90^{\circ}$

# 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.**

Valgus Stress Test



Ulnar Collateral Ligament

Varus Stress Test



Radial Collateral Ligament

Valgus Stress



# 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

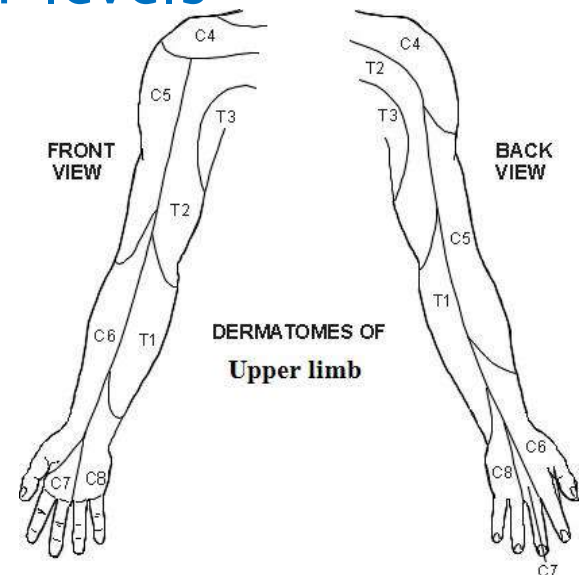


pronator

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

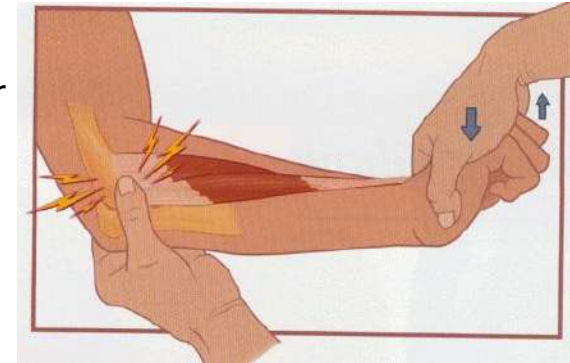
# Neurologic Testing

- ▶ 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

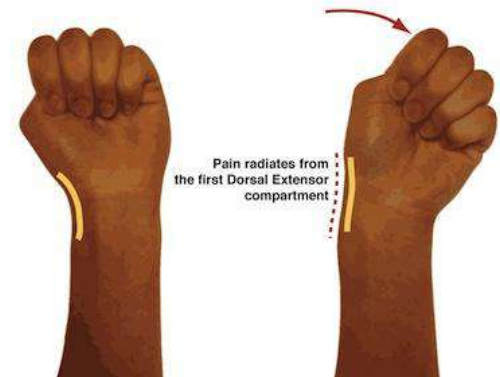


# Special Tests

- ▶ **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)



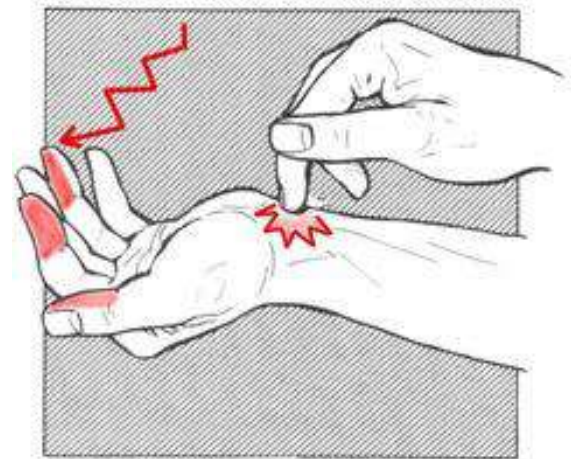
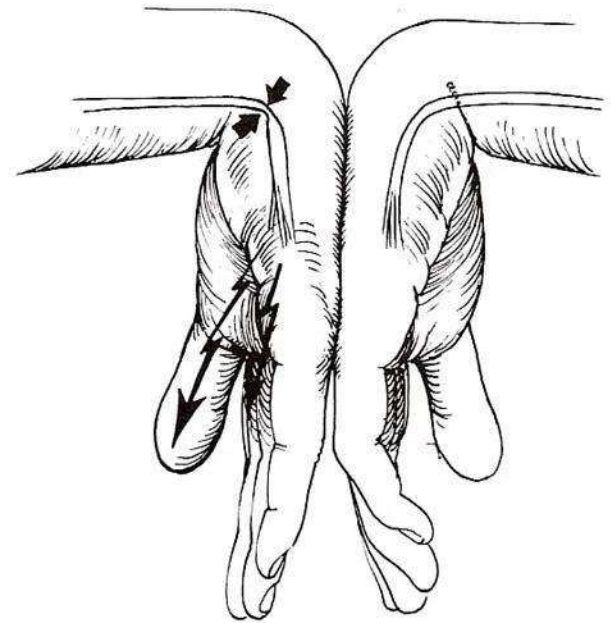
The Finkelstein Test



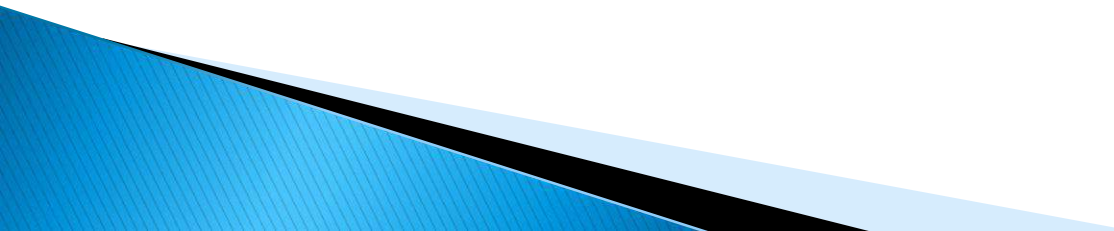
# Special Tests

- ▶ **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

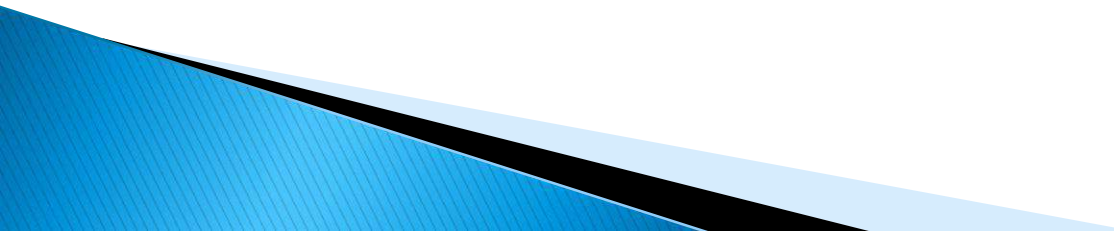
Phalen's test



# Formulating a DIAGNOSIS

- ▶ Utilize all of S.O.C.R.A.T.E.S.
  - ▶ Consider the following factors:
    - Age
    - Activity level
    - Prior occurrence
    - Mechanism of injury
  - ▶ Combine history information with exam results
- 

# Conclusions from History & Exam: SITE

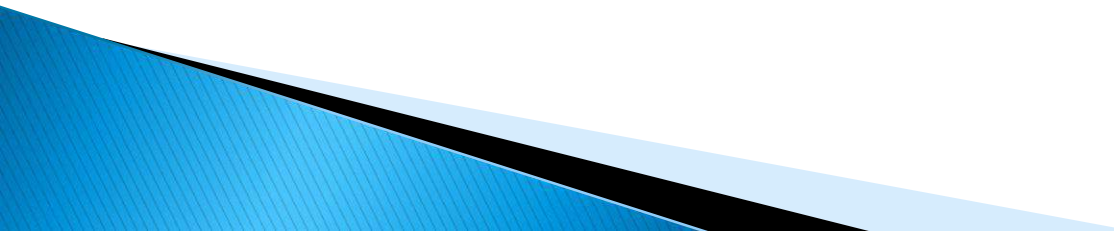
- ▶ Medial wrist: TFCC sprain
  - ▶ Lateral wrist: Tenosynovitis, sprain
  - ▶ Anterior wrist: Carpal Tunnel Syndrome, strain
  - ▶ Posterior wrist: Sprain / strain, tendonitis
  - ▶ Medial elbow: Sprain, ulnar impingement, golfer's elbow
  - ▶ Lateral elbow: Sprain, tennis elbow
  - ▶ Olecranon: Bursitis, fracture
  - ▶ Cubital fossa: biceps strain, tendonitis
- 

# Conclusions from History & Exam: ONSET

- ▶ Immediate pain
  - an acute strain or sprain
- ▶ On going, persistent pain
  - overuse, tendonitis, bursitis
- ▶ Mechanism of injury
  - How the injury occurred
  - How the pain developed
  - Details are important



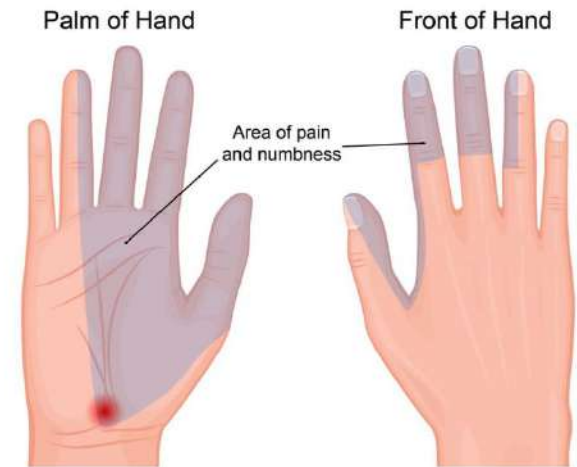
# Conclusions from History & Exam: CHARACTER

- ▶ **Sharp:** muscle, tendon, ligament tear
  - ▶ **Dull:** tendonitis, strain
  - ▶ **Burning:** muscle, tendon tear
  - ▶ **Tight:** muscle strain, ligament sprain
  - ▶ **Stabbing:** muscle, ligament, nerve entrapment
  - ▶ **Cramping:** muscle injury
  - ▶ **Numb:** possible nerve injury / entrapment
  - ▶ **Tingling:** possible nerve injury / entrapment
- 

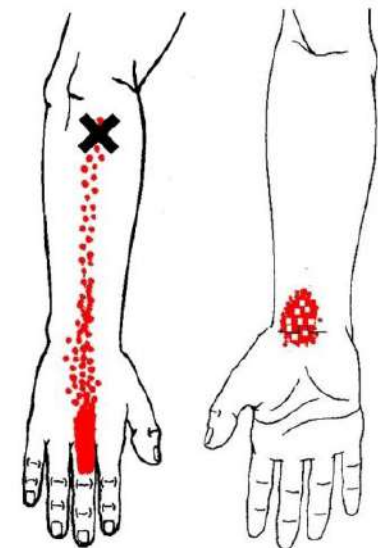
# Conclusions from History & Exam:

## RADIATION

- ▶ **Radiating elbow pain:** tennis/golfer's elbow tendonitis
- ▶ **Radiation elbow (neuropathic):** Ulnar nerve entrapment at ulnar groove; Radial nerve entrapment
- ▶ **Radiation wrist (neuropathic):** Median nerve entrapment at carpal tunnel
- ▶ **Radiation along a muscular pain pattern:** from a trigger point in the muscle
- ▶ **Diffuse radiation:** muscle/tendon/ligament injury; degeneration/arthritis flare up

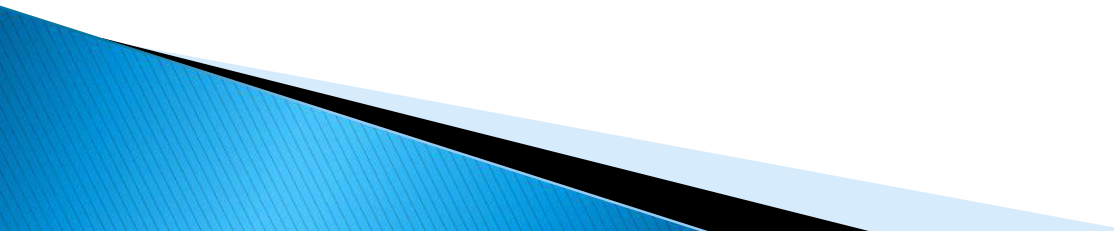


Carpal Tunnel



Trigger point

# Conclusions from History & Exam: ALLEVIATING

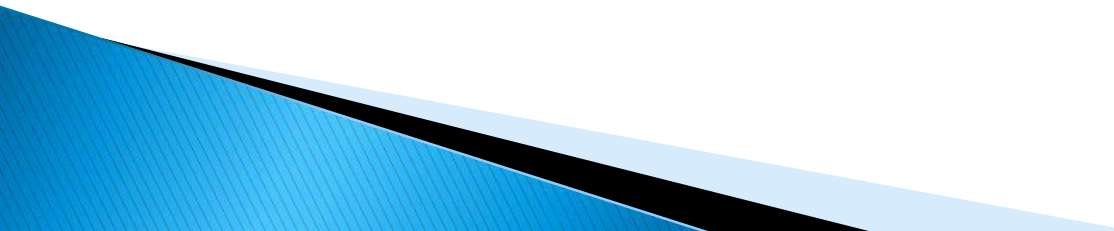
- ▶ If NSAIDs help the pain, then there is likely inflammation from an injury or a recurrence
  - ▶ If the patient wants to maintain a certain pain free position of the wrist or elbow, then consider ligament injury or fracture
  - ▶ If resting from activity reduces the pain, consider tendonitis or bursitis
  - ▶ If there is minimal relief from medications, night pain, tenderness to palpation & significant pain with motion, consider fracture
- 

# Conclusions from History & Exam:

## TIMING

- ▶ Acute pain – occurring less than 3 months
  - Tendonitis
  - Sprains / strains
  - Ligament tears
- ▶ Chronic pain – occurring more than 3 months
  - Arthritis / degeneration joint disease
  - Ligament tears – slight
  - Overuse tendonitis

# Conclusions from History & Exam: EXACERBATING

- ▶ Pain thru the full range: tendonitis
  - ▶ Pain with palpation: muscle strain, tendonitis, bursitis
  - ▶ Pain with resistance testing: muscle strain, tendonitis
  - ▶ Pain/symptoms performing provoking activity: tendonitis, strain, bursitis, nerve entrapment
- 

# Conclusions from History & Exam:

## SEVERITY

- ▶ Inability to move wrist/elbow: fracture; ligament injury; severe sprain
  - ▶ Kids / young adults tend to overstate the pain
  - ▶ Strains, sprains and severe tendonitis/bursitis will stop or markedly limit a patient from performing their sport / exercise / activity
  - ▶ Nerve symptoms will limit the patient's ability to perform their work / exercise / sport activities
- 

# Conclusions from History & Exam

- ▶ Integrate the history with exam findings
  - Trauma + mechanism of injury + exam findings:
    - **CONSIDER:** sprain, strain, tendonitis, fracture
  - Gradual onset + mechanism + exam findings:
    - **CONSIDER:** tendonitis, arthritis, carpal tunnel syndrome, De Quervain's tenosynovitis, bursitis
  - Repetitive trauma + mechanism + exam findings:
    - **CONSIDER:** carpal tunnel syndrome, tendonitis, golfers elbow, tennis elbow, olecranon bursitis

# Conclusions from History & Exam

## ▶ Mechanism of Injury

- Will provide information as to which structure of wrist or elbow may be injured or damaged
- Structure determines function
- When there is a deficit with the structure, then there will be a deficit with the function

**Structure  
determines  
function!**

# Conclusions from History & Exam

- ▶ Referral to an orthopedist
  - Severe pain
  - Inability to use hand or move wrist or elbow
  - Moderate to severe swelling
    - For evaluation and pain/anti-inflammation medication
- ▶ Age
  - Adults & seniors may have degenerative joint issues

# Conclusions from History & Exam

## ▶ Activity level

- Determining the extent of a wrist or elbow condition may relate to the activity level of the patient
  - Activities of daily living (ADLs) that involve repetitive motion
  - Repetitive motions with sports & exercise
    - may result in a more severe injury or condition
    - Degenerative joint disease maybe more advanced
    - Tendonitis / strains maybe more severe

## ▶ Prior occurrence

- Recurrent injuries may have underlying tissue damage
- Imaging with x-ray or MRI is recommended

# Formulating a DIAGNOSIS

- ▶ Combine the information from the history with the clinical exam findings
- ▶ Re-evaluation on follow up visits and adjust the diagnosis if necessary
- ▶ Base the diagnosis on the history, presenting signs & symptoms and objective examination results



# Formulating a DIAGNOSIS

## ► When to utilize imaging:

- Trauma
- Prior occurrence
- Chronic pain
- Non-traumatic pain



# Formulating a DIAGNOSIS

## ▶ X-ray or MRI

- X-ray is preferred for evaluating arthritis / degenerative joint disease and fractures
  - X-ray will show bone quality, osteophytes and joint space
- MRI is best to evaluate soft-tissue injuries, cartilage and ligamentous disruption
  - MRI can show edema, cartilage tears (TFCC), ligament tears as well as fractures and bone lesions

# Formulating a DIAGNOSIS X-rays

- ▶ X-rays of the WRIST recommendations by the Official Disability Guidelines (Forearm, Wrist and Hand 2018):
  - initial exam
  - suspect acute scaphoid fracture
  - suspect distal radioulnar joint subluxation
  - suspect hook of the hamate fracture
  - suspect metacarpal fracture or dislocation
  - suspect phalangeal fracture or dislocation
  - suspect gamekeeper injury (thumb MCP ulnar collateral ligament injury)
- ▶ Chronic wrist pain, first study with or without prior injury, no specific area of pain specified

# Formulating a DIAGNOSIS X-rays

- ▶ **X-rays of the Elbow recommendations by the Official Disability Guidelines (Elbow 2018):**
  - Radiographs are required before other imaging studies and may be diagnostic for:
    - osteochondral fracture
    - osteochondritis dissecans
    - osteocartilaginous intra-articular body

# Formulating a DIAGNOSIS

## MRI

- ▶ **MRI of the WRIST recommendations by the Official Disability Guidelines (Forearm, Wrist and Hand 2018) :**
  - Acute hand or wrist trauma suspect:
    - acute distal radius fracture
    - acute scaphoid fracture with normal radiographs
    - suspect gamekeeper injury (thumb MCP ulnar collateral ligament injury)
  - Chronic wrist pain with plain films normal suspect:
    - soft tissue tumor
  - Chronic wrist pain – may be diagnostic for triangular fibrocartilage complex (TFCC), ligament tears, occult fractures & avascular neurosis

# Formulating a DIAGNOSIS MRI

## ▶ MRI of the ELBOW recommendations by the Official Disability Guidelines (Elbow 2018) :

- **Elbow pain (acute) with plain films non–diagnostic suspect:**
  - biceps tendon tear
  - bursitis
  
- **Chronic elbow pain with plain films non–diagnostic suspect:**
  - intra–articular osteocartilaginous body
  - occult injury
  - unstable osteochondral injury
  - nerve entrapment
  - mass
  - chronic epicondylitis
  - collateral ligament tear

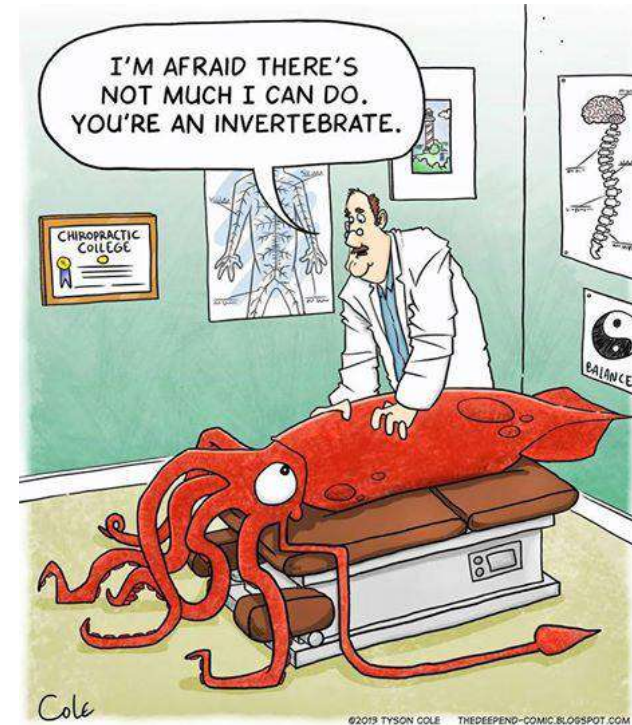
# Referral for MRI

- ▶ Severe pain with inflammation
- ▶ Non-diagnostic plain films
- ▶ Suspect fracture or ligament tear
- ▶ Marked limited & painful range of motion
- ▶ Positive joint stability & cartilage tests
- ▶ Follow **Official Disability Guidelines** recommendations



# Referral for orthopedic consultation is recommended:

- ▶ Severe pain
- ▶ Patient shows great concern
- ▶ Moderate to severe swelling
- ▶ Limited ability to perform activities (ADLs)
- ▶ Limited ability to perform work duties
- ▶ Markedly positive with joint stability & special tests
- ▶ Patient reports instability with using wrist or elbow
- ▶ MRI shows tears of ligaments, cartilage or tendons



# Referral for orthopedic consultation

- ▶ Establish a relationship with several different orthopedic groups / physicians
- ▶ Research on the internet and with the state board about the physician's credibility
  - Go to the **medical board website** to do a license search
  - For California:  
[http://www.mbc.ca.gov/Breeze/License\\_Verification.aspx](http://www.mbc.ca.gov/Breeze/License_Verification.aspx)

# Referral for orthopedic consultation

- ▶ Call their office to set up a meeting
  - Some offices may hesitate to schedule a meeting due to the physician's busy schedule or to avoid a sales person
  - State that you are want to refer your patients there for consultations /examinations
  - State that you would like a brief encounter
- ▶ Once you have met, then it will be easier to set up a follow-up meeting
  - The relationship may lead to the orthopedist referring patients to you

# Referral vs Chiropractic summary

- ▶ MRI and orthopedic referral decision based on:
  - severity of pain
  - inability to perform activities of daily living (ADLs) or work duties
  - examination findings of:
    - instability
    - positive special tests
    - marked limitation of range
- ▶ Discuss the decision of referral with the patient & document that discussion
- ▶ Proceed with the appropriate chiropractic care, but upon each visit evaluate the progress
- ▶ If the patient is not responding, then follow thru with either a MRI or orthopedic referral

# Documentation

- ▶ **California Rules and Regulations regarding records** – Each licensed chiropractor is required to maintain all active and inactive chiropractic patient records for five years from the date of the doctor's last treatment of the patient unless state or federal laws require a longer period of retention



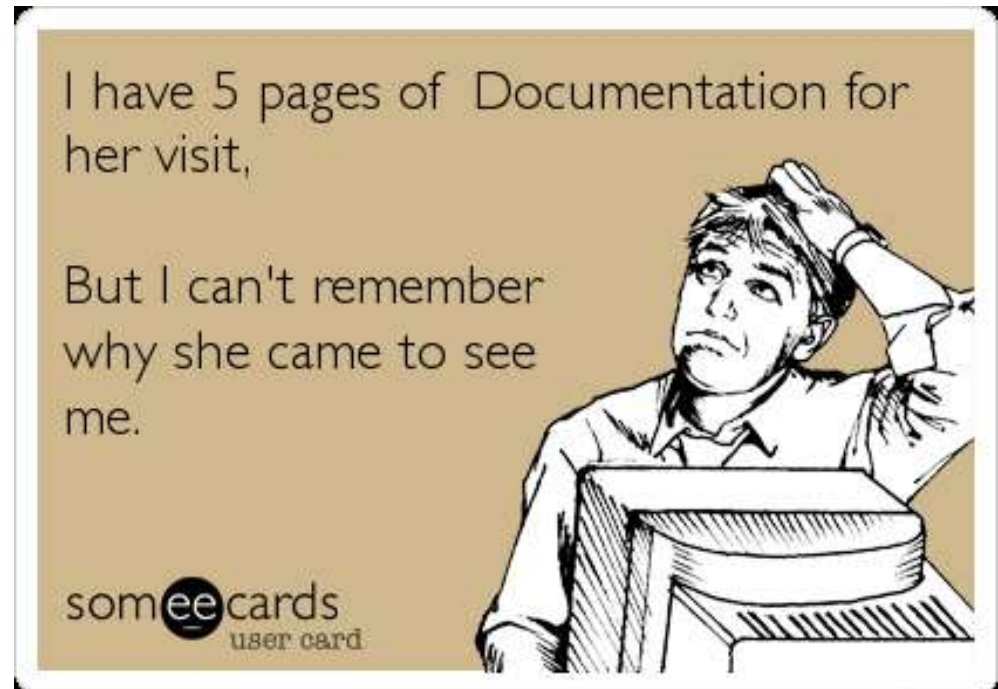
# Documentation

- ▶ Documenting the history in the form of S.O.C.R.A.T.E.S.
- ▶ Document exam findings with emphasis on positive or abnormal results
- ▶ Stay consistent with your forms so you can evaluate for improvement on follow up visits



# Documentation

- ▶ Keep your initial examination notes **simple**
  - Note the facts that relate to the injury/condition
  - Stick to S.O.C.R.A.T.E.S.
  - Note abnormal/positive examination findings
  - Note your rationale for the diagnosis
  - Note that informed consent was discussed



# Documentation – Informed Consent

- ▶ It is recommended that you record a statement such as this on the initial paperwork
  - “I did discuss and inform the patient about the risks and complications that could arise regarding their condition, diagnosis and the proposed chiropractic treatment. Alternative treatments were also discussed. The patient gave me their verbal consent to initiate treatment. There is also an informed consent form signed by the patient in their file.”

# Documentation

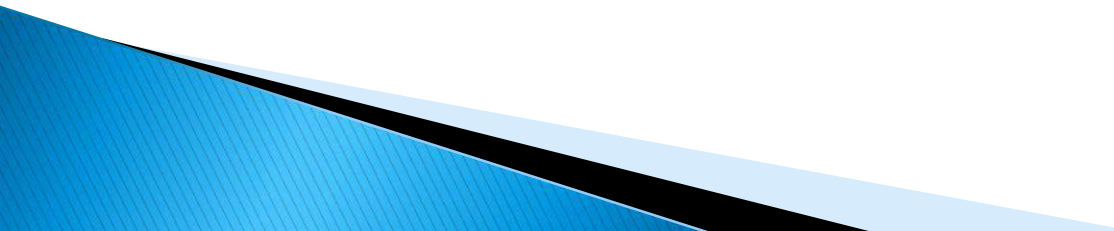
- ▶ Note your rationale for determining the diagnosis
  - A brief statement of clinical findings that correlates to the diagnosis
- ▶ Note your rationale for the treatment plan
  - A brief statement that summarizes short term goals and long term goals
  - The expected frequency and duration of care
  - Your expectations of the patient to the proposed care

# Importance of the History and Examination

- ▶ Establish a rapport with the patient
- ▶ Allows you to find a way to help the patient heal and return to their exercise, sport and regular activities
- ▶ Allows you to develop a treatment plan



# Importance of the History and Examination

- ▶ Formulating an accurate diagnosis to establish a treatment plan
    - Asking the right questions
    - Listening to the patient
    - Understanding the mechanism of injury
    - Correct interpretation of exam findings
    - Utilizing x-ray or MRI imaging
    - Integrating the history with the examination
- 

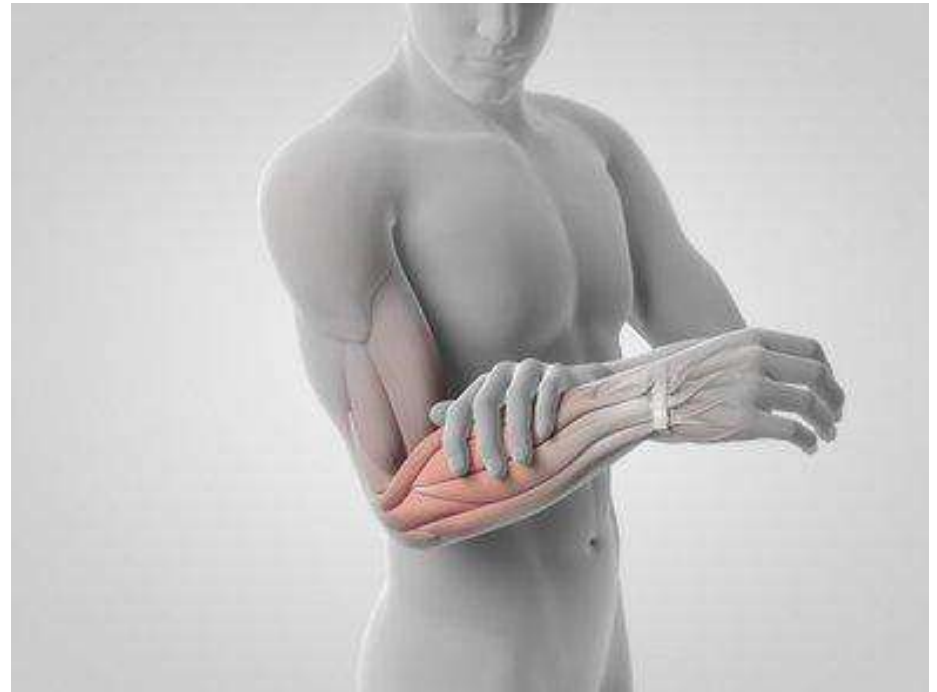
# Importance of the History and Examination

- ▶ A good history with proper interpretation of examination findings will lead to an accurate diagnosis
- ▶ An accurate diagnosis will facilitate the recovery of the patient
- ▶ The patient will be able to return to their activity, exercise or sport

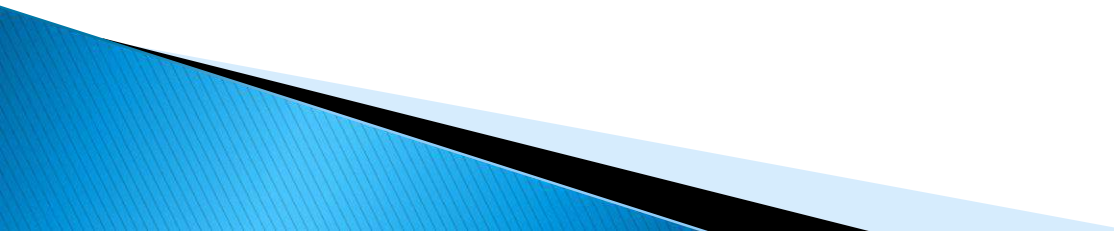


# Case Example

- ▶ 62 year old male presents with lateral elbow pain
- ▶ Go thru S.O.C.R.A.T.E.S.



# Case Example

- ▶ Site: He points to his left lateral elbow and forearm regions.
  - ▶ Onset: The pain comes on when he golfs. He is right hand dominant and golfs righty.
  - ▶ Character: Sharp, achy, intense pain.
  - ▶ Radiation: It stays at the lateral left elbow region.
- 

# Case Example

- ▶ Alleviating: Stop golfing, Ibuprofen, ice, rest.
  - ▶ Timing: It starts after about 5 to 10 swings and then by the 20th swing the pain is severe and sometimes has to stop golfing. This has been occurring for the past month. Never had this before.
  - ▶ Exacerbating: Golfing, picking things up, holding pots/pans when cooking, grabbing things.
  - ▶ Severity: Intense pain, has to stop golfing sometimes.
  - ▶ Social: Plays golf 2–3x per week for the past 5 years. Plays with friends and really enjoys the friendly competition.
- 

# Case Example

## ▶ Examination:

- No swelling
- Pain with palpation to left lateral epicondyle & forearm
- Normal range of motion of the wrist, but painful flexion
- Normal range of motion of the elbow
- Normal stability tests
- Painful & weak wrist extensor resistance testing
- Painful & weak supinator resistance testing
- Normal neuro findings
- Positive Cozen's and Mill's tests

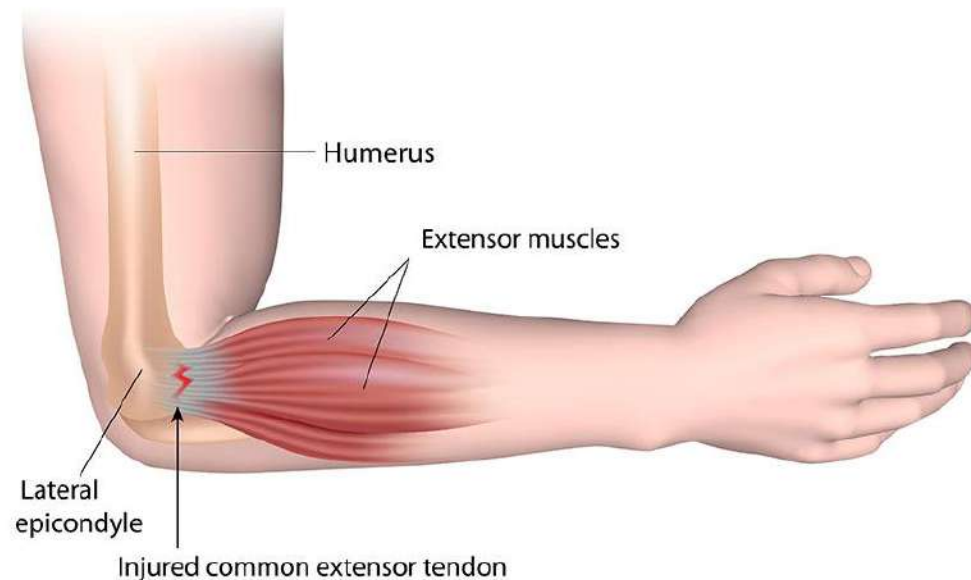
X-rays are not recommended

Exam & history show no need for MRI or orthopedic referral



# Case Example

## ▶ Lateral Epicondylitis (Tennis Elbow)



Golfer's elbow affects the medial epicondyle region of the dominant side with golfing. In this case, the non-dominant side was affected at the lateral elbow. So, even though the patient was a golfer, he had tennis elbow.

# Thank you for completing

## Part 1: History and Examination of the Wrist and Elbow



▶ Dr. Richard D. Belsky, DC, CCSP



**...and now we continue...**

## **Part 2:**

# **History and Examination of the Knee...**

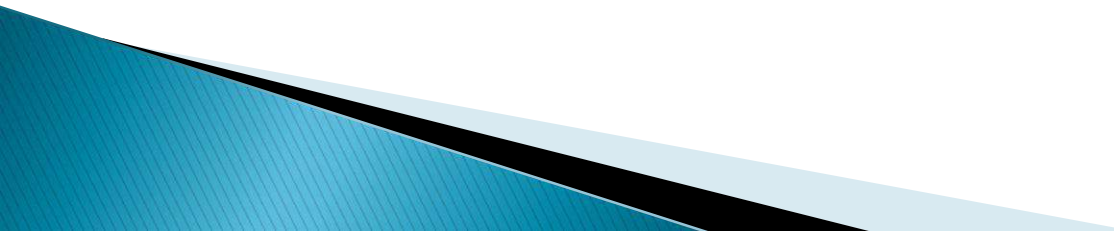
# History and Examination

## Part 2: Knee



Instructor: Dr. Richard D. Belsky, DC, CCSP

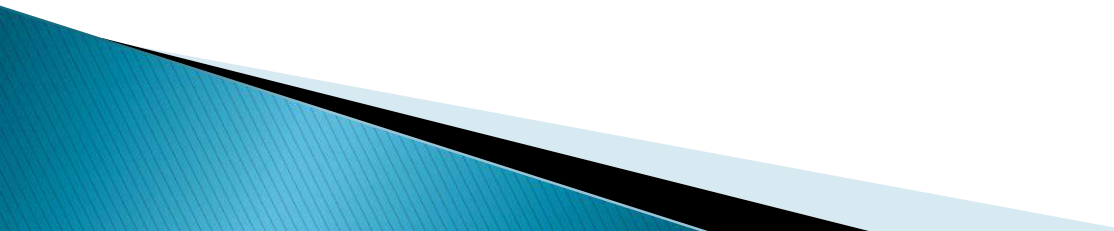
# Course Objectives

- ▶ The course will instruct the chiropractor to perform a thorough consultation and examination of the knee to properly diagnose common knee conditions.
  - ▶ The course will focus on the logical thought process of history taking, physical examination procedures and accurate documentation.
  - ▶ The chiropractor will gain an understanding of how to ask pertinent questions to determine a diagnosis as well as performing a detailed knee examination.
- 

# Course Objectives

- ▶ The chiropractor will also gain improved knowledge of recognizing when and where to refer the patient.
- ▶ A discussion of the doctor–patient relationship, documentation and informed consent will also be covered.

# History & Examination of the Knee

- ▶ Doctor–Patient Relationship
  - ▶ Patient Mind–Set
  - ▶ Consultation / Patient History
  - ▶ Examination of the Knee
  - ▶ Conclusions from History & Examination
  - ▶ Referral for imaging / orthopedic consult
  - ▶ Documentation
- 

# Doctor–Patient Relationship

- ▶ Greeting & Introduction
- ▶ Establish a relaxed atmosphere
- ▶ Explain the Initial Office Visit
- ▶ Informed Consent



# Greeting & Introduction

- ▶ Staff should greet and welcome and acknowledge patient immediately (even if on telephone)
- ▶ Be sure to have a clean, well organized reception area with enough seating



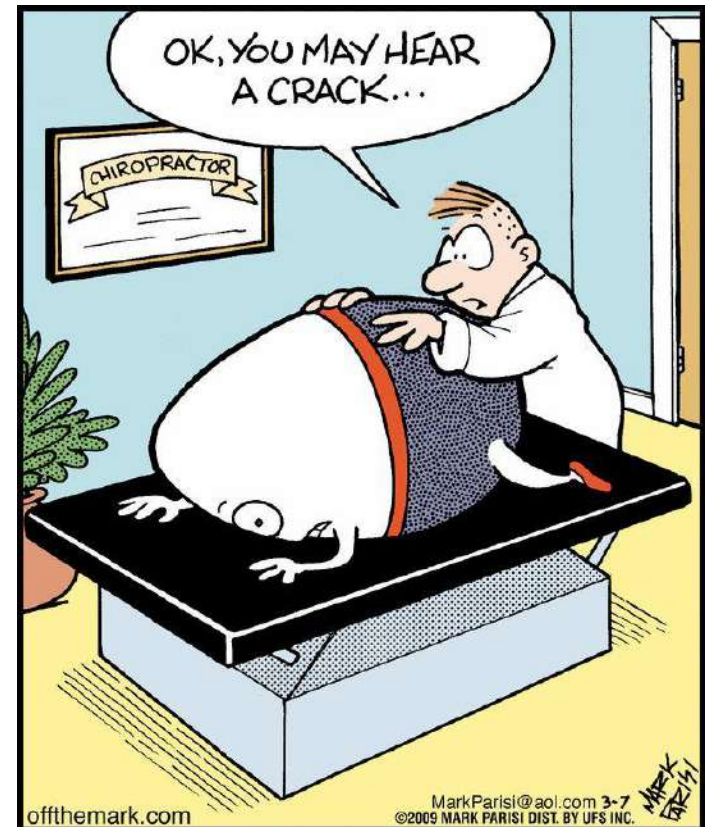
# Greeting & Introduction

- ▶ Be on time, do not make the new patient wait
- ▶ Review all the paperwork & initial each page
- ▶ Introduce yourself, acknowledge that you read over all the paperwork & ask the patient to tell you about their pain / problem

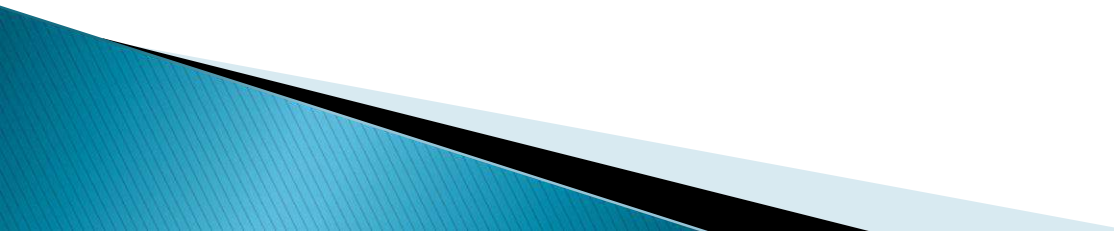


# Establish a relaxed atmosphere

- ▶ Tell the patient about your practice and your experience with their injury, condition and pain
- ▶ Briefly explain what is going to take place during this initial office visit



# Establish a relaxed atmosphere

- ▶ Make sure they are comfortable – either sitting, standing or laying
  - ▶ Be sure to ask if this is their first time to visit a chiropractor
  - ▶ If it is not, then ask them about their prior experiences and treatment
- 

# Establish a relaxed atmosphere

- ▶ Listen to what the patient tells you about their previous chiropractic experience
- ▶ If your practice is different than the patient's prior chiropractic care, then briefly explain how your method can help them
- ▶ This will help you to meet their expectations



# Explain the Initial Office Visit

- ▶ If the patient had no previous chiropractic care, then you will need to explain what chiropractic care is and how it will help
- ▶ Prepare a brief explanation of the benefits of chiropractic care – more explanation later
- ▶ Include a brief discussion about wellness care and prevention as well as pain reduction



# Informed Consent

- ▶ Before continuing with the medical history, you should obtain **informed consent** from the patient
- ▶ You should review with them what they had signed in the paperwork & explain that as with all medical care, the patient needs to be informed of the associated risks involved
- ▶ **Informed Consent** – permission granted in the knowledge of the possible consequences, typically that which is given by a patient to a doctor for treatment with full knowledge of the possible risks and benefits

# Informed Consent

## §319.1. Informed Consent – California Rules and Regulations

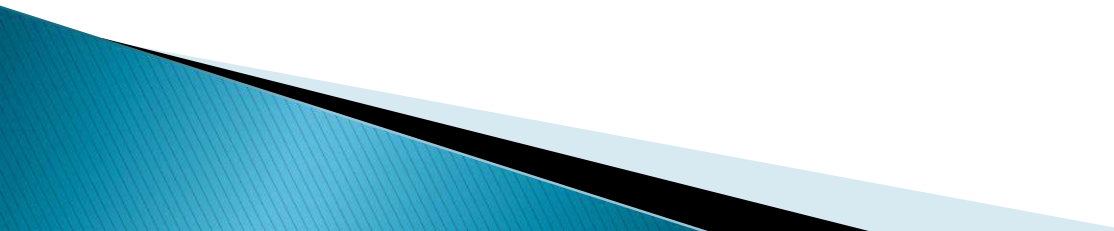
- ▶ A licensed doctor of chiropractic shall **verbally and in writing** inform each patient of the material risks of proposed care. “Material” shall be defined as a procedure inherently involving known risk of serious bodily harm. The chiropractor shall obtain the patient's written informed consent prior to initiating clinical care. The signed written consent shall become part of the patient's record.

# The Patient Mindset

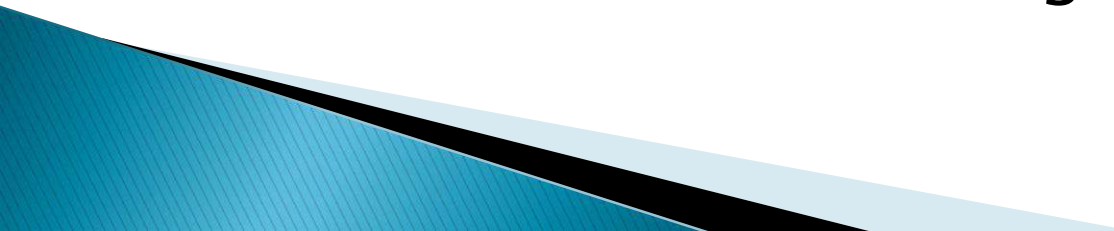
- ▶ Fear
- ▶ Depression
- ▶ Anxiety
- ▶ Expectations
- ▶ Understanding the mindset of your patient will help you to facilitate their recovery



# The Patient Mindset

- ▶ The patient will present to you with a problem that they need to have resolved
  - ▶ This problem may be new or may have been persisting for months
  - ▶ This problem may also be associated with fear, depression, anxiety and expectations
- 

# The Patient Mindset – Fear

- ▶ Patients are afraid of the unknown
  - ▶ They typically will think of the worst case scenario
  - ▶ They worry if they will be pain free again and if they can return to their activity, work or sport
  - ▶ The fear of the unknown amplifies the pain
  - ▶ If they are in a lot of pain, they are afraid that the treatment will cause them greater pain
- 

# The Patient Mindset – Depression



- ▶ The patient may also be upset when they can not participate in their activity, sport or job
- ▶ If the problem has been persisting for over a month, the patient may feel hopeless
- ▶ They may have seen other doctors who were not able to help them

# The Patient Mindset – Anxiety

- ▶ The patient may be worry about provoking or aggravating the pain
- ▶ They may be afraid that the pain will increase
- ▶ The patient may avoid all activity

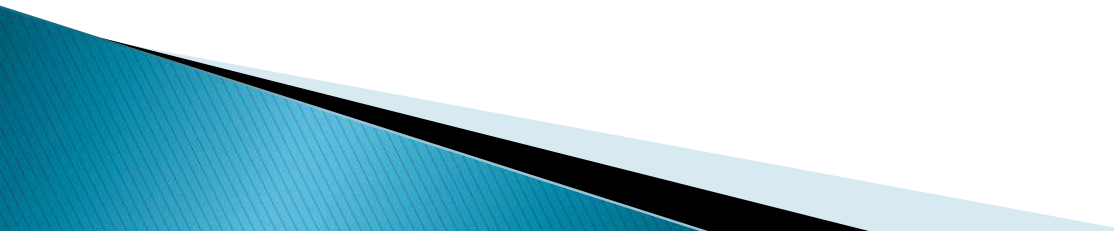


# The Patient Mindset – Expectations

- ▶ Patients may not know what to expect
- ▶ Patients may present with unreasonable expectations
  - They may expect to be “fixed” immediately, after one adjustment
  - They may expect to return to playing their sport after one or two treatments

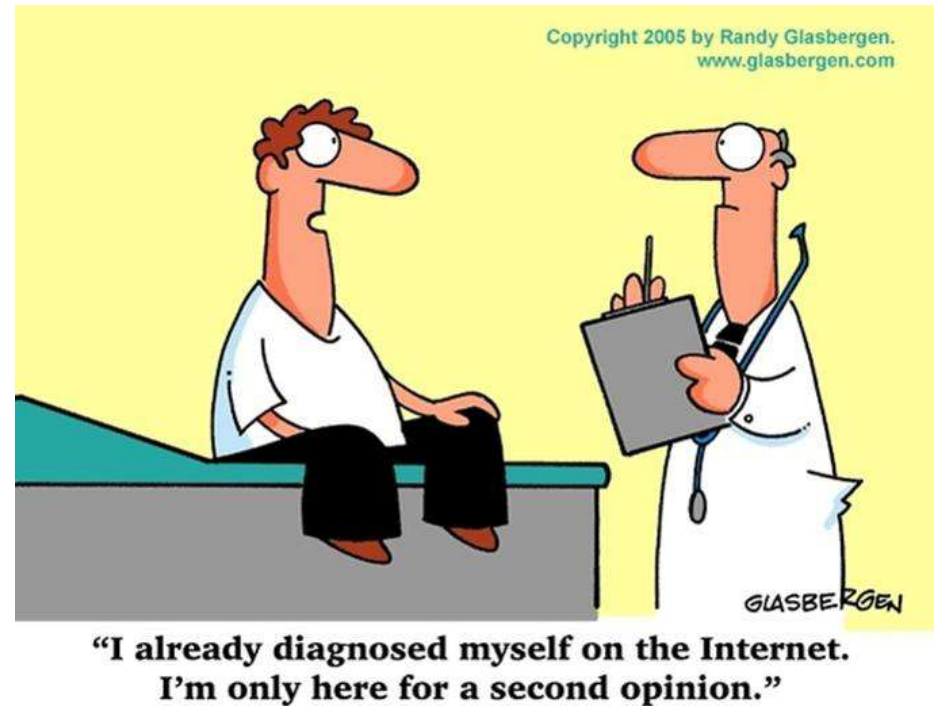


# The Patient Mindset

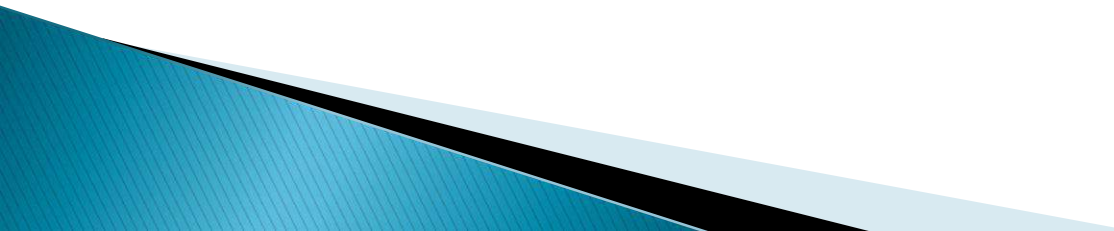
- ▶ Help the patient to feel at ease
    - Introduce yourself & provide a brief explanation of how chiropractic care can help to improve function, speed healing/recovery and benefit health
    - Tell them about what is going to take place during the initial visit and what treatment will be administered
    - Assure them that you will refer them to the proper practitioner if they do not respond to your treatment
- 

# The Patient Mindset

- ▶ Patients may present demanding a certain treatment, self-diagnosing their condition and telling you that they do not need an examination
- ▶ Patients may present quiet and not know how to describe their pain/condition/injury
- ▶ Patients may tell you way too much information



# The Patient Mindset

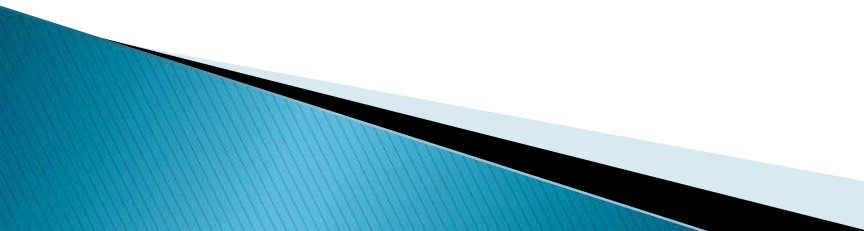
- ▶ Listen and re-direct the patient during the past history, guiding them to what is relevant
  - ▶ Syphon through the history for pertinent information
  - ▶ Direct the patient to stay on topic
  - ▶ Help to ease their fear, depression and anxiety by listening to their history and acknowledge that you will help them with your treatment or with a referral to the right practitioner
- 

# History Taking



- ▶ When you hear hoof-beats, think horses not zebras
  - Use logical thinking when listening to the patient's history and don't focus on rare conditions until common conditions have been ruled out
- ▶ Logical thinking –during the patient's history
  - The process in which one uses reasoning consistently to come to a conclusion. Problems or situations that involve logical thinking call for structure, for relationships between facts, and for chains of reasoning that make sense

# History Taking for the KNEE

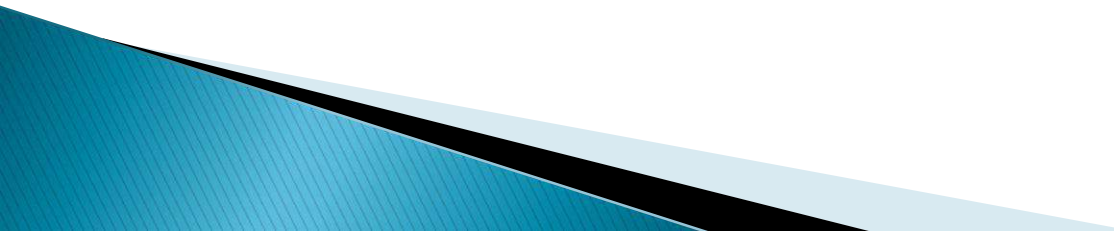
- ▶ Good history taking for knee pain can lead you to making the correct diagnosis
  - ▶ Taking a good history for knee pain, consider:
    - age
    - activity level
    - body morphology
    - previous knee injuries / surgeries
    - gender
- 

# History Taking for the KNEE – Factors

- ▶ **Age** – teens who are in a growth spurt are more prone to tendonitis & seniors may have osteoarthritis & degeneration
- ▶ **Activity** – repetitive motions, running, sports contribute to tendon & ligament injuries

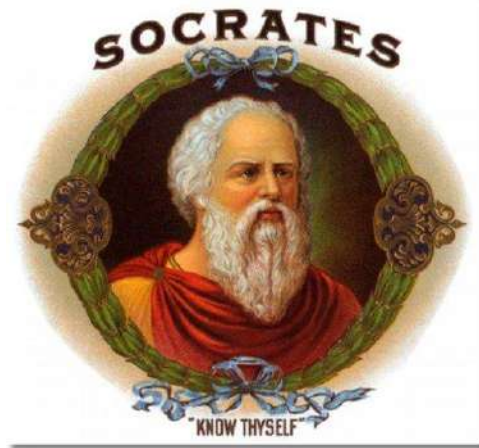


# History Taking for the KNEE – Factors

- ▶ Body morphology – well developed/obese patients are prone to degenerative changes
  - ▶ Previous injuries/surgeries – aggravation of prior injury or a compensatory injury
  - ▶ Gender – bone density decreases in older females
- 

# History Taking – S.O.C.R.A.T.E.S.

- ▶ S – site – Where is the pain?
- ▶ O – onset – When did the pain start?
- ▶ C – character – What is the pain like?
- ▶ R – radiation – Does the pain radiate?
- ▶ A – alleviating – What reduces the symptoms?
- ▶ T – timing – Does the pain follow any pattern?
- ▶ E – exacerbating – What aggravates the pain?
- ▶ S – severity / social– How bad is the pain?



# History Taking for the KNEE – Site

- ▶ Ask the patient to point to the pain site
  - Patella
  - Patella tendon
  - Tibial tuberosity
  - Popliteal fossa
  - Medial aspect
  - Lateral aspect
  - Inside / diffuse pain
  - Quads
  - Hamstrings
  - Calf



# History Taking for the KNEE –Onset

- ▶ When did the pain / symptoms start?
  - After or during activity?
    - Tendonitis vs sprain/strain
    - Overuse injury
- ▶ Is the pain a result of an accident?
  - What is the mechanism of injury?
    - Trauma –think fracture, ligament tear, muscle tear
  - What exactly happened during the accident / injury?
- ▶ Did the pain come on gradually?
  - Tendonitis, repetitive stress injury, arthritis
- ▶ Was the pain or symptoms previously present?
  - Recurrence of an old injury

# History Taking for the KNEE – Character

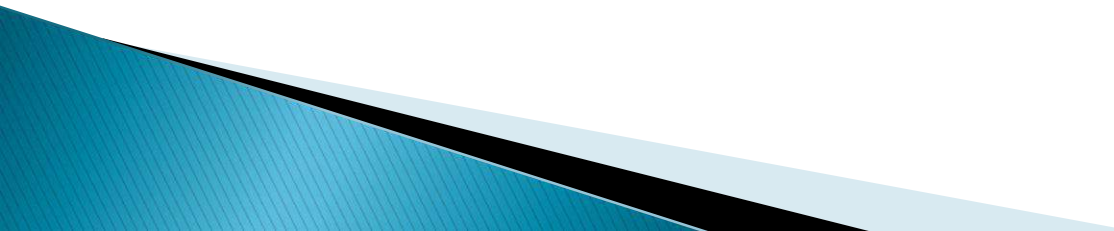
- ▶ Describe the pain – ask the patient to describe the pain – if they have trouble, you can give them some words of description:
  - Sharp
  - Dull
  - Burning
  - Tight
  - Stabbing
  - Cramping
  - Numb
  - Tingling



# History Taking for the KNEE – Radiation

- ▶ Does the pain stay localized or does it radiate?
  - ▶ Where does the symptoms radiate?
  - ▶ Along a dermatome pathway?
    - Possible nerve injury
  - ▶ Diffuse, general radiation?
    - Possible muscle injury
  - ▶ Is the radiation is **neuropathic** – along a nerve pathway (dermatome) that may represent nerve compression
  - ▶ Is the radiation following a **muscular pain pattern** – from a trigger point in the muscle
- 

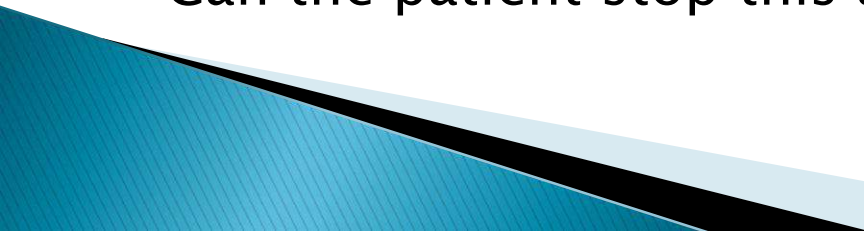
# History Taking for the KNEE – Alleviating

- ▶ What reduces the symptoms?
  - ▶ Which medications help?
    - NSAIDs reduce inflammation
  - ▶ What positions or movements help?
    - Help to determine cartilage or ligament injury
  - ▶ Is there pain / symptoms at night or at rest?
    - Possible fracture
  - ▶ Are there any associating symptoms?
- 

# History Taking for the KNEE – Timing

- ▶ When does the pain come on?
    - Does it follow a pattern?
  - ▶ Is the pain :
    - **Acute** – onset less than 3 months
    - **Chronic** – onset greater than 3 months
  - ▶ Is the pain:
    - Constant – present 100%
    - Frequent – present 75%
    - Intermittent – present 50%
    - Occasional – present 25%
- 

# History Taking for the KNEE– Exacerbating

- ▶ What makes the pain worse?
  - ▶ Which actions/motions/activities provoke pain?
    - Cartilage and ligament injuries will limit motion
    - Pain thru the full range suggests tendon injury
  - ▶ How long into doing an activity until the pain starts?
    - Tendonitis can have a delayed onset in the activity
    - Sprain will hurt immediately in the activity
  - ▶ Is this activity necessary or important?
    - Can the patient stop this activity to allow time to heal
- 

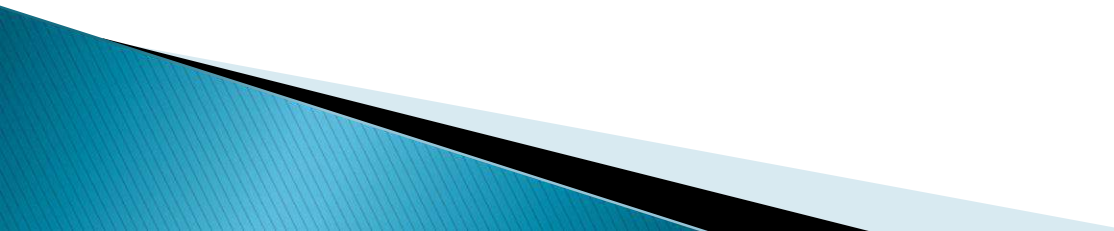
# History Taking for the KNEE– Severity

- ▶ How severe is the pain?
- ▶ Patients may **over or under state** their pain level – so the practitioner should also rate the pain



- ▶ Use the pain analog scale 0–10
  - Have the patient to rate their pain where 0 is no pain & 10 is maximal severe pain
  - The practitioner should rate and describe the pain

# History Taking for the KNEE– Social

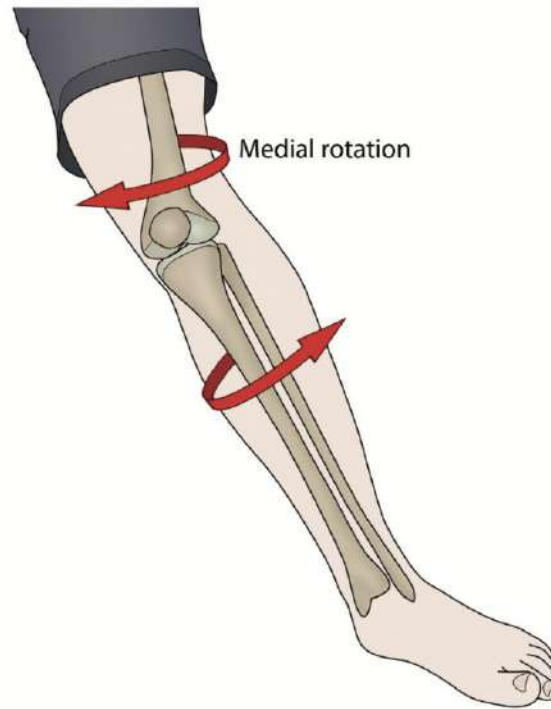
- ▶ It is also good practice to gather additional information other than the knee injury/condition
  - ▶ Social factors include:
    - Marriage/single/children
    - Living arrangement
    - Dietary habits
    - Smoking/alcohol/drug use
  - ▶ Understanding this information may benefit you to further help the patient
- 

# History Taking for the KNEE – Mechanism of Injury

- ▶ Gradual onset: Jumper's knee (patella tendonitis), Runner's knee (chondromalacia), osteoarthritis/degenerative joint disease
- ▶ Sudden onset:
  - Twisting: meniscus, ACL or MCL tear/sprain
  - Impact:
    - From front: ACL
    - From lateral: MCL (possible meniscus involvement)
    - From medial: LCL
    - Bent knee: PCL

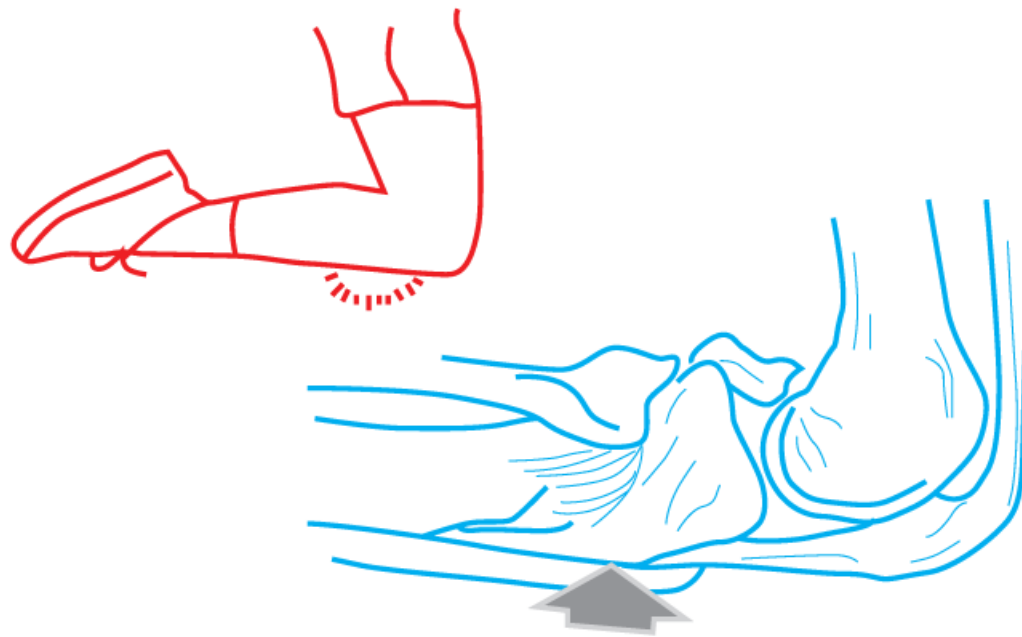
# Mechanism of Injury: ACL

Figure 1: Diagram demonstrating the common mechanism of ACL injury



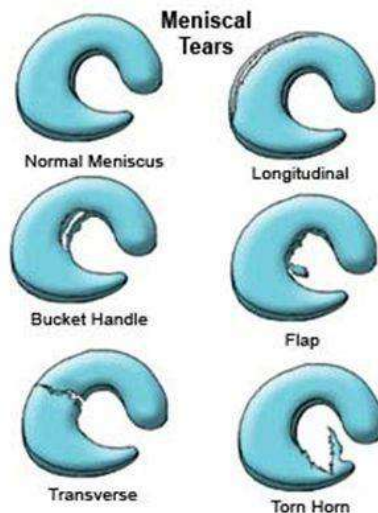
The knee is flexed and rotated inwards (medially) to the hip and ankle and the knee goes over the ankle to the point of no return.

# Mechanism of Injury: PCL



# Mechanism of Injury: Meniscus

## Meniscus Injury Signs/Symptoms



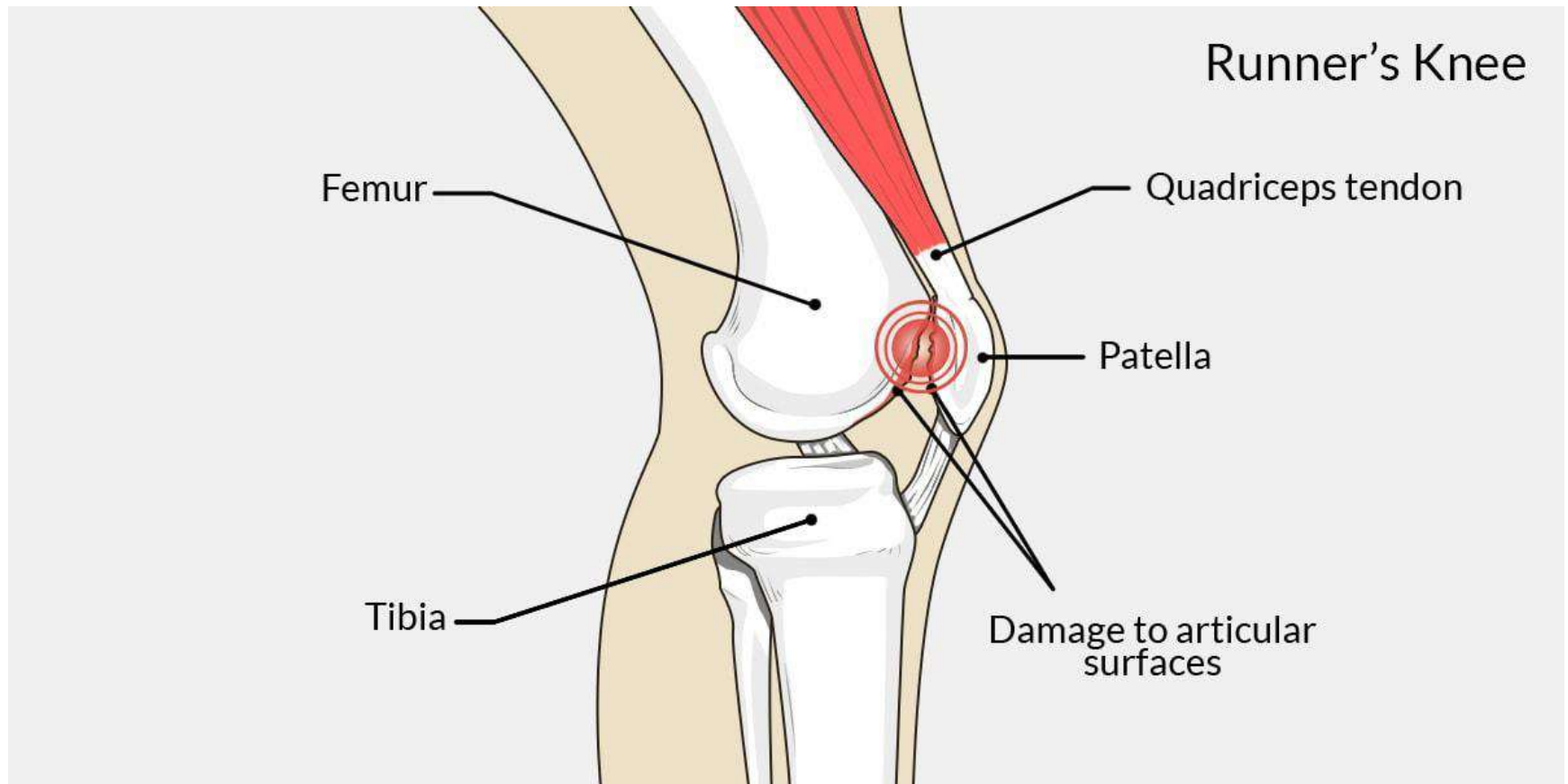
- Mechanism of injury
  - Twisting
  - Squatting
  - Changes in position
- Dependent on:
  - Size of the tear
  - Location of the tear
  - If another knee injury is associated



# Mechanism of Injury: LCL

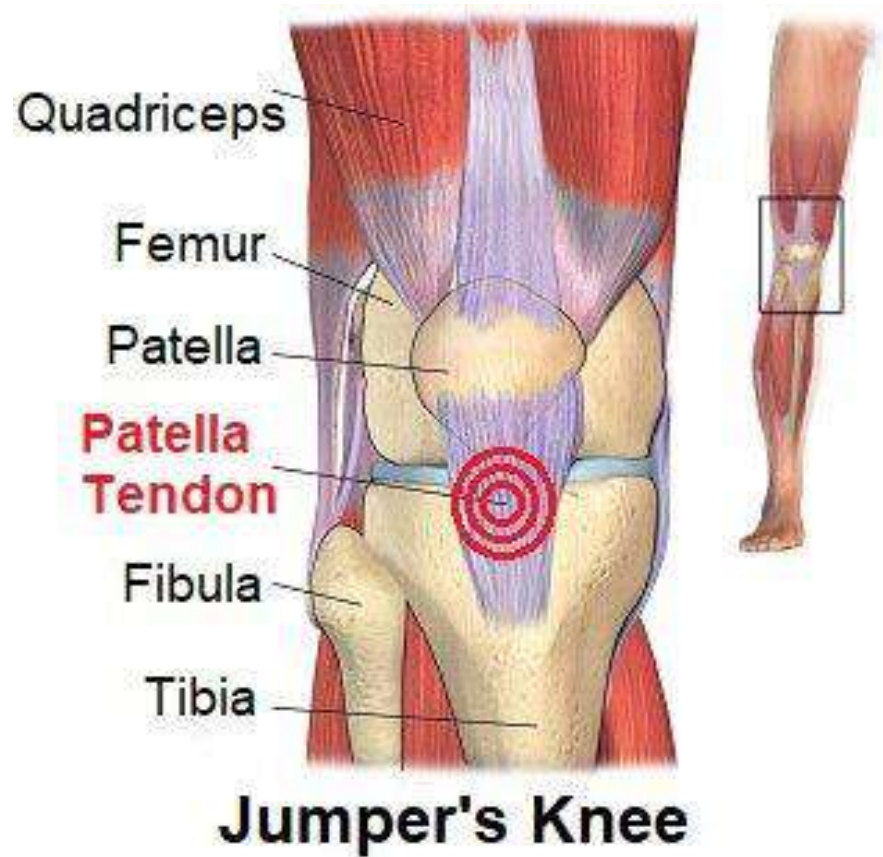


# Mechanism of Injury: Runner's Knee



# Mechanism of Injury:

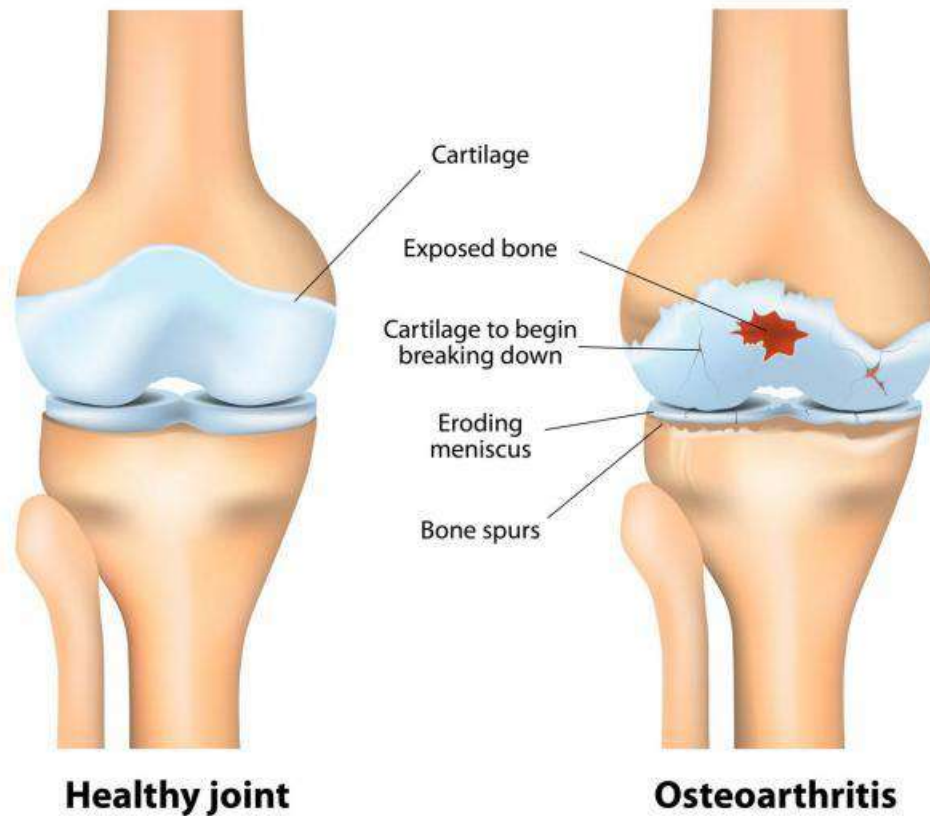
## Jumper's Knee



# Mechanism of Injury:

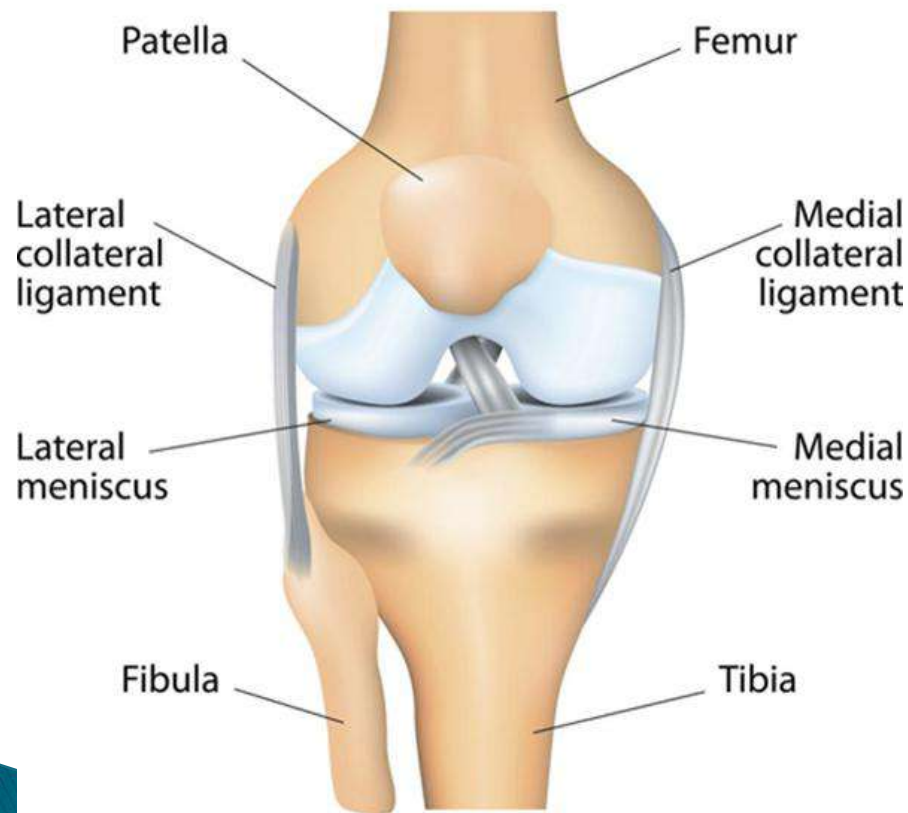
## Degenerative joint disease

### **OSTEOARTHRITIS**



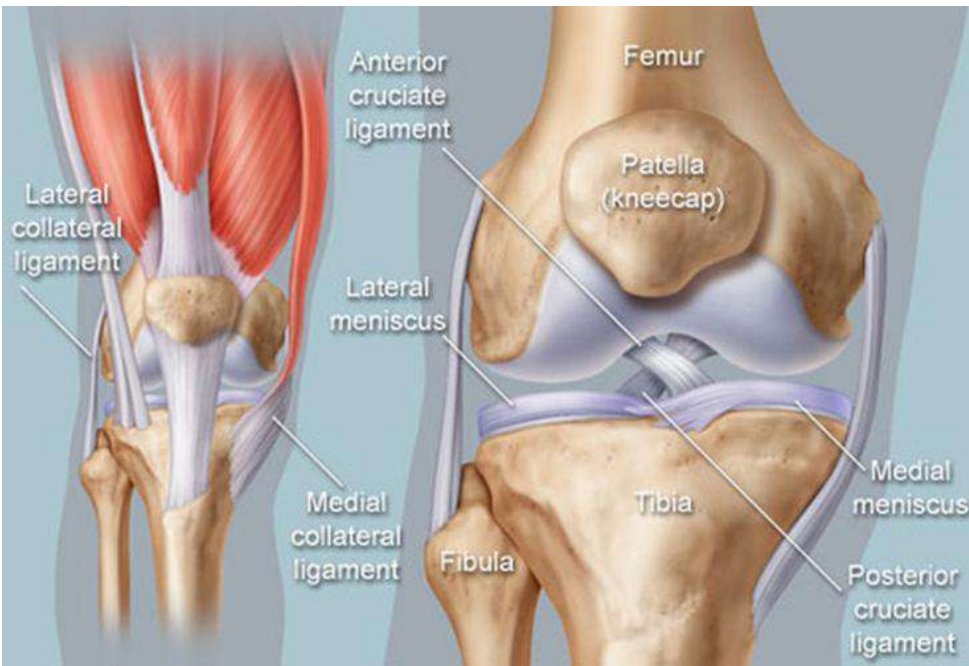
# Anatomy of the Knee

## THE HUMAN KNEE



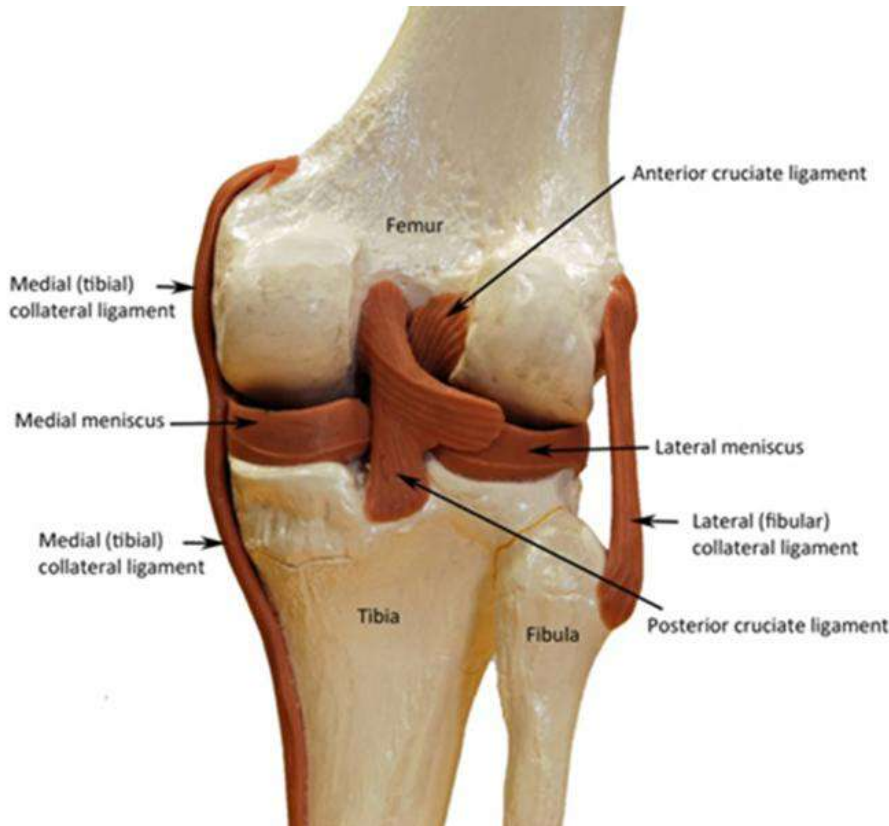
- ▶ The knee consists of the femur, tibia, patella and fibula
- ▶ The main muscle groups associated are the hamstring, quadriceps and calves
- ▶ VMO (vastus medialis oblique) part of the quadriceps – important for correct tracking of the patella
- ▶ The knee can flex, extend and rotate
- ▶ The patella increases the mechanical advantage of the quadriceps

# Anatomy of the Knee



- ▶ The ACL (anterior cruciate ligament) supports anterior glide and prevents hyperextension
- ▶ The PCL (posterior cruciate ligament) support posterior glide
- ▶ The MCL (medial collateral ligament) and LCL (lateral collateral ligament) support Valgus and Varus stress
- ▶ The meniscus cushions the femur on the tibia
- ▶ The patella tendon supports the patella

# Function of the Knee



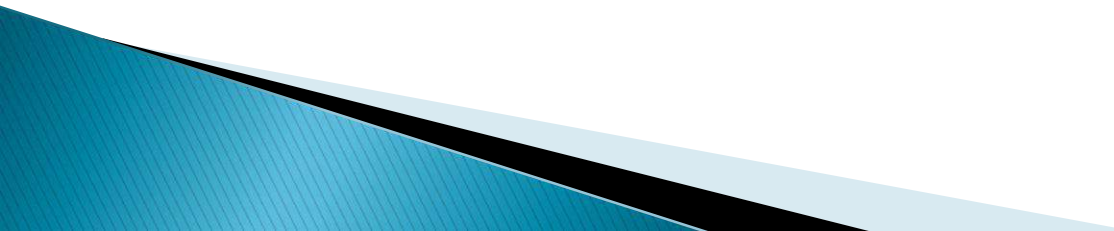
- ▶ The knee is the largest joint in the body
- ▶ The knee is a modified synovial hinge joint
- ▶ The knee primarily performs flexion and extension
- ▶ The patella increases the mechanical advantage
- ▶ Range of motion is 130° flexion, 0° extension and 10° internal and external rotation
- ▶ It is susceptible to traumatic injury since it is at the end of two long bones and is not protected by fat or muscle

# Examination of the Knee

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



# Inspection of Knee

- ▶ Observe standing posture
    - antalgic position
    - valgus vs varus or recurvatum
    - redness
    - swelling / bruising
    - position of patella
  - ▶ Observe gait for limping or guarding
  - ▶ Observe how the patient positions their knees
- 

# Palpation of the Knee

- ▶ Bony palpation all around the knee joint & patella
  - tender sites over ligaments or tendon insertions
- ▶ Soft tissue palpation around the knee
  - inflammation, tenderness, warmth

# Range of Motion



- ▶ Have the patient squat or lunge
- ▶ Active range of motion – have the patient move the knee – 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
- ▶ Flexion –  $130^{\circ}$ , Extension –  $0^{\circ}$ , Internal & External Rotation –  $10^{\circ}$

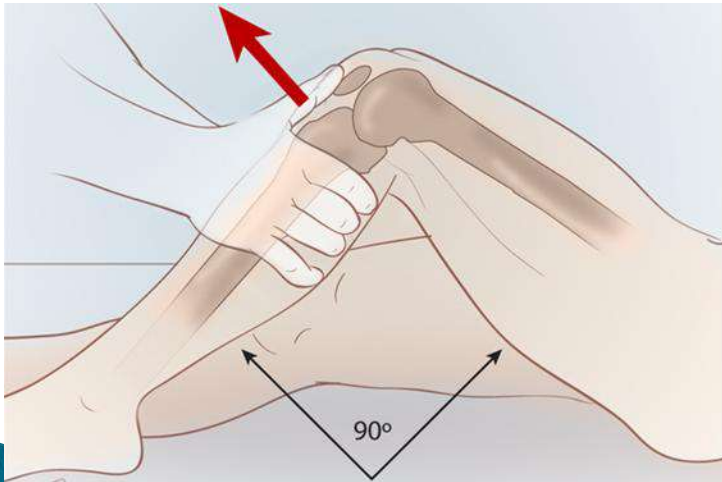
# Joint Stability Tests

- ▶ Medial Collateral ligament: apply medial (valgus) stress to the knee joint– at 0° and at 30° flexion
- ▶ Lateral Collateral Ligament: apply lateral (varus) stress to the knee joint – at 0° and at 30° flexion
- ▶ These tests check for instability and pain. If there is laxity, suspect a sprain or possible tear.
- ▶ The medial collateral ligament attaches with the meniscus – which then may also be injured.

# Joint Stability Tests

- ▶ Anterior Cruciate Ligament (ACL):

Draw Test – with the knee flexed to  $90^\circ$  and the foot flat on the table, stabilize the foot & contact the superior, posterior tibia and pull the tibia towards you.



Positive test– if the tibia slides forward

Check the uninjured knee to what is “normal glide” for the patient

# Joint Stability Tests

## ▶ Posterior Cruciate Ligament (PCL):

Posterior Draw Test – with the knee flexed to 90° and the foot flat on the table, stabilize the foot & contact the superior, anterior tibia and push the tibia posteriorly

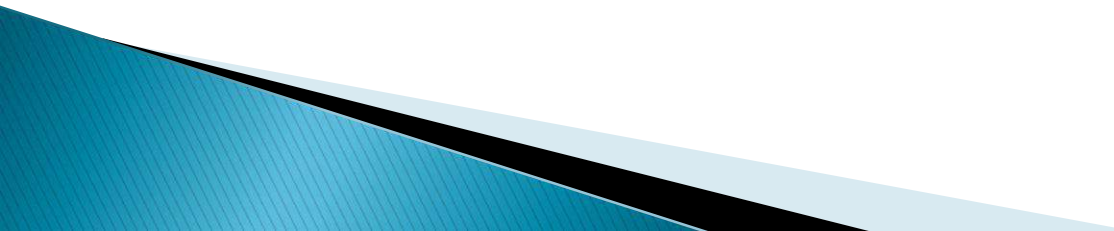


Posterior drawer sign (PCL)

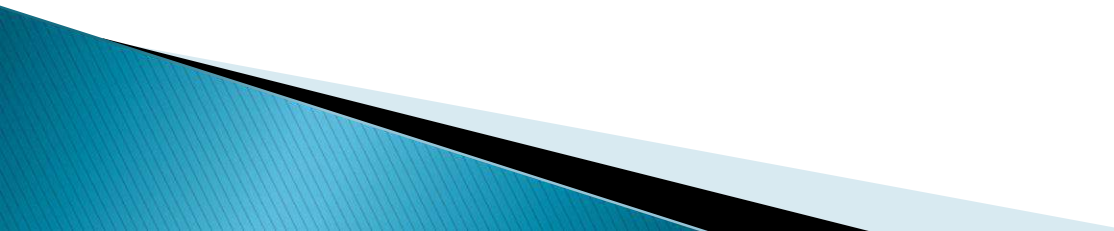
Positive test: If the tibial slides back, posteriorly

Check the other knee for a reference of the motion

# Muscle Tests

- ▶ Resistance testing of muscles will provide useful information
  - ▶ For the knee – it is necessary to test the hamstrings, quadriceps, IT Band, adductors, popliteus & calf
  - ▶ To test a muscle, position it halfway thru it's range & gradually add pressure against the resistance of the patient
  - ▶ Pain in the muscle or tendon upon resistance testing often means that the injury involves the muscle or tendon
- 

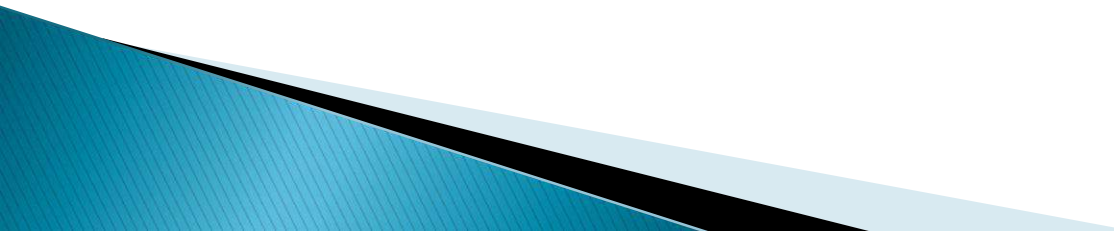
# Neurologic Testing

- ▶ Patella Reflex: checking the L4 nerve
  - ▶ Dermatomal testing: checking L3, L4 and L5 levels
  - ▶ Motor testing: L3–L5 levels
  - ▶ Rule out a neurological issue
  - ▶ Review history for possible gout, rheumatoid arthritis
- 

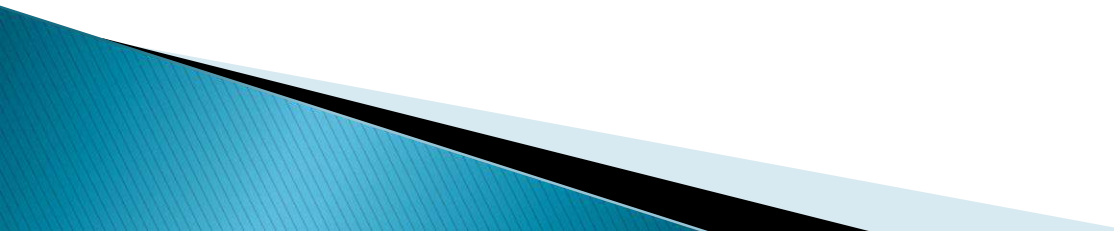
# Special Tests

- ▶ **Functional Tests**– squatting or forward lunge to assess meniscus and patellofemoral joint – positive signs are pain & inability
- ▶ **McMurray's Test** – assessing torn meniscus – positive signs are clicking &/or pain,
- ▶ **Apley's Distraction & Compression Tests** – torn meniscus– positive signs are pain
- ▶ **Bounce Home Test** – torn meniscus – positive signs are not able to fully extend knee or rubbery resistance to end feel
- ▶ **Patella Grind** – assesses under surface of patella– positive signs are pain & a crepitus feel
- ▶ **Apprehension Test for Patella** – assesses if the patella is prone to lateral dislocation, tracking disorder & patellofemoral dysfunction

# Formulating a DIAGNOSIS

- ▶ Utilize all of S.O.C.R.A.T.E.S.
  - ▶ Consider the following factors:
    - Age
    - Activity level
    - Prior occurrence
    - Mechanism of injury
  - ▶ Combine history information with exam results
- 

# Conclusions from History & Exam: SITE

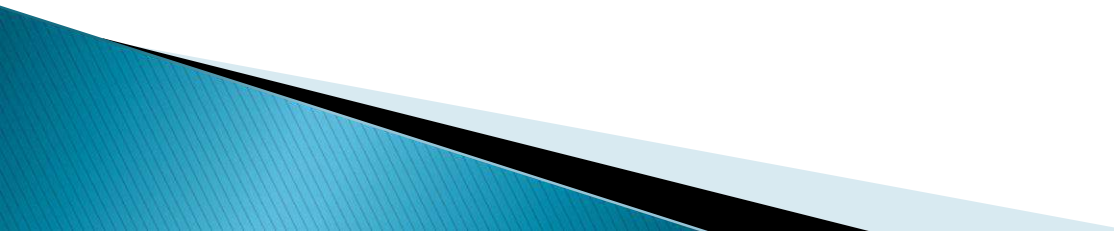
- ▶ Patella: tendonitis, chondromalacia (Runner's knee)
  - ▶ Patella tendon: Runner's or Jumper's Knee
  - ▶ Tibial tuberosity: Osgood–Schlatter's disease
  - ▶ Popliteal fossa: strain, Baker's cyst, DJD
  - ▶ Medial aspect: MCL sprain
  - ▶ Lateral aspect: LCL sprain, IT band tendonitis
  - ▶ Inside / diffuse pain: ACL, PCL sprain, meniscus
  - ▶ Quads, Hamstrings, Calf: strain, contusion
- 

# Conclusions from History & Exam: ONSET

- ▶ Immediate pain
  - an acute strain or tear
- ▶ On going, persistent pain
  - overuse, tendonitis, meniscus
- ▶ Mechanism of injury
  - How the injury occurred
  - How the pain developed
  - Details are important



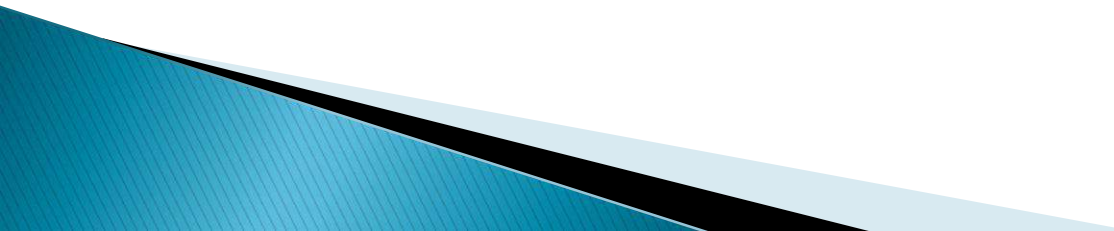
# Conclusions from History & Exam: CHARACTER

- ▶ **Sharp:** muscle, cartilage, ligament tear
  - ▶ **Dull:** tendonitis, strain
  - ▶ **Burning:** muscle, tendon tear
  - ▶ **Tight:** muscle strain, ligament or cartilage tear
  - ▶ **Stabbing:** muscle, ligament, cartilage injury
  - ▶ **Cramping:** muscle injury
  - ▶ **Numb:** possible nerve injury
  - ▶ **Tingling:** possible nerve injury
- 

# Conclusions from History & Exam: RADIATION

- ▶ **Radiating knee pain:** nerve, muscular, ligament, meniscus injury
  - ▶ **Radiation (neuropathic):** along a nerve pathway (dermatome) that may represent nerve compression
  - ▶ **Radiation following a muscular pain pattern:** from a trigger point in the muscle
  - ▶ **Diffuse radiation:** possible meniscus or ligament injury or degeneration/arthritis flare up
- 

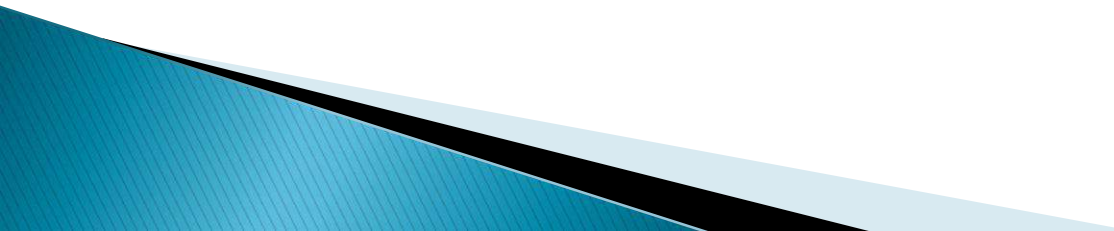
# Conclusions from History & Exam: ALLEVIATING

- ▶ If NSAIDs help the pain, then there is likely inflammation from an injury or a recurrence
  - ▶ If the patient wants to maintain a certain pain free position (either bent or straight), then consider meniscus or ligament injury
  - ▶ If there is minimal relief from medications or positions consider fracture
- 

# Conclusions from History & Exam: TIMING

- ▶ Acute pain – occurring less than 3 months
  - Tendonitis
  - Sprains / strains
  - Meniscus / ligament tears
- ▶ Chronic pain – occurring more than 3 months
  - Arthritis / degeneration joint disease
  - Meniscus / ligament tears
  - Overuse tendonitis

# Conclusions from History & Exam: EXACERBATING

- ▶ Meniscus/cartilage and ligament injuries will limit motion
    - Patient avoids bending: possible meniscus tear
    - Patient avoids straightening: possible ACL / PCL tear
  - ▶ Pain thru the full range: tendon injury
  - ▶ Pain with palpation: muscle/tendon injury
  - ▶ Pain with resistance testing: muscle injury
  - ▶ Weight bearing pain: cartilage, ligament injury
  - ▶ Inability to squat: cartilage, ligament injury
- 

# Conclusions from History & Exam: SEVERITY

- ▶ Inability to walk/weight bear: meniscus / ligament injury
  - ▶ Kids / young adults tend to overstate the pain
  - ▶ Meniscus and ligament injuries will stop the patient from performing their sport / exercise
  - ▶ Tendon and muscle pain will limit the patient's ability to perform their exercise or sport
- 

# Conclusions from History & Exam

- ▶ Integrate the history with exam findings
  - Trauma + mechanism of injury + exam findings:
    - **CONSIDER:** ACL tear, PCL tear, meniscus tear, strain, MCL sprain, LCL sprain, runner's knee, jumper's knee
  - Gradual onset + mechanism + exam findings:
    - **CONSIDER:** tendonitis, arthritis, runner's knee (chondromalacia), jumper's knee, muscle strain
  - Repetitive trauma + mechanism + exam findings:
    - **CONSIDER:** ACL sprain/tear, meniscus tear, arthritis, chondromalacia, jumper's knee, tendonitis

# Conclusions from History & Exam

## ▶ Mechanism of Injury

- Will provide information as to which structure of knee may be injured or damaged
- Structure determines function
- When there is a deficit with the structure, then there will be a deficit with the function

**Structure  
determines  
function!**

# Conclusions from History & Exam

- ▶ Referral to an orthopedist
  - Severe pain
  - Inability to walk or weight bear
  - Moderate swelling
    - For evaluation and pain/anti-inflammation medication
- ▶ Age
  - Adults & seniors may have degenerative joint issues

# Conclusions from History & Exam

## ▶ Activity level

- Determining the extent of a knee condition may relate to the activity level of the patient
  - Moderate to intense activity may result in a more severe injury / condition
    - Degenerative joint disease maybe more advanced
    - Cartilage/ligament injury maybe greater
    - Tendonitis / strains maybe more severe

## ▶ Prior occurrence

- Recurrent injuries may have underlying tissue damage
- Imaging with x-ray or MRI is recommended

# Formulating a DIAGNOSIS

- ▶ Combine the information from the history with the clinical exam findings
- ▶ Re-evaluation on follow up visits and adjust the diagnosis if necessary
- ▶ Base the diagnosis on the history, presenting signs and symptoms and objective examination results

# Formulating a DIAGNOSIS

- ▶ When to utilize imaging
  - Trauma
  - Prior occurrence
  - Chronic pain
  - Non-traumatic pain



# Formulating a DIAGNOSIS

## ▶ X-ray or MRI

- X-ray is preferred for evaluating arthritis / degenerative joint disease and fractures
  - X-ray will show bone quality, osteophytes and joint space
- MRI is best to evaluate soft-tissue injuries (meniscal, chondral surface injuries, and ligamentous disruption)
  - MRI can show edema, cartilage tears, ligament tears as well as fractures and bone lesions

# Formulating a DIAGNOSIS

- ▶ **MRI of the knee recommendations by the Official Disability Guidelines (Knee and Leg 2018) :**
    - Acute trauma to the knee
    - Nontraumatic knee pain in child or adolescent with normal x-rays with **patellofemoral (anterior) symptoms**
    - Nontraumatic knee pain in child or adult with normal x-rays with **non-patellofemoral symptoms**
    - Nontraumatic knee pain in adult with normal x-rays if internal derangement is suspected.
- 

# Formulating a DIAGNOSIS

- ▶ **X-rays of the knee recommendations by the Official Disability Guidelines** (knee and Leg 2018):
  - Acute trauma to the knee, fall or twisting injury, with one or more of following: focal tenderness, effusion, inability to bear weight.
  - Acute trauma to the knee, injury to knee  $\geq 2$  days ago, mechanism unknown. Focal patellar tenderness, effusion, able to walk.

# Formulating a DIAGNOSIS

- ▶ **X-rays of the knee recommendations by the Official Disability Guidelines** (Knee and Leg 2018): (continued)
  - Nontraumatic knee pain, child or adolescent: non-patellofemoral symptoms.
  - Nontraumatic knee pain, child or adult: patellofemoral (anterior) symptoms.
  - Nontraumatic knee pain, adult: nontrauma, nontumor, nonlocalized pain.

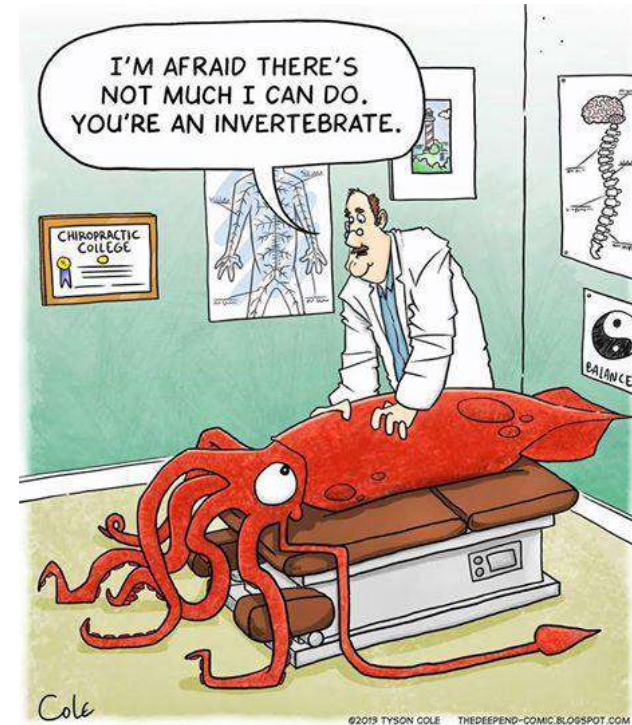
# Referral for MRI

- ▶ Severe pain with inflammation
- ▶ Limping or painful gait
- ▶ Inability to squat
- ▶ Marked limited & painful range of motion
- ▶ Positive joint stability & cartilage tests
- ▶ Can follow **Official Disability Guidelines** recommendations



# Referral for orthopedic consultation is recommended:

- ▶ Severe pain
- ▶ Patient shows great concern
- ▶ Moderate to severe swelling
- ▶ Limping, painful to walk without support
- ▶ Moderate to severe pain upon weight bearing
- ▶ Markedly positive with joint stability & cartilage tests
- ▶ Patient reports instability with walking
- ▶ MRI shows tears of ligaments, cartilage or tendons



# Referral for orthopedic consultation

- ▶ Establish a relationship with several different orthopedic groups / physicians
- ▶ Research on the internet and with the state board about the physician's credibility
  - Go to the **medical board website** to do a license search
  - For California:  
[http://www.mbc.ca.gov/Breeze/License\\_Verification.aspx](http://www.mbc.ca.gov/Breeze/License_Verification.aspx)

# Referral for orthopedic consultation

- ▶ Call their office to set up a meeting
  - Some offices may hesitate to schedule a meeting due to the physician's busy schedule or to avoid a sales person
  - State that you are want to refer your patients there for consultations /examinations
  - State that you would like a brief encounter
- ▶ Once you have met, then it will be easier to set up a follow up meeting
  - The relationship may lead to the orthopedist referring patients to you

# Referral vs Chiropractic summary

- ▶ MRI and orthopedic referral decision based on severity of pain, inability to bear weight and examination findings of instability, positive cartilage tests and marked limitation of range.
  - ▶ Discuss the decision of referral with the patient
  - ▶ Proceed with the appropriate chiropractic care, but upon each visit evaluate the progress
  - ▶ If the patient is not responding, then follow thru with either a MRI or orthopedic referral
- 

# Documentation

- ▶ **California Rules and Regulations regarding records** – Each licensed chiropractor is required to maintain all active and inactive chiropractic patient records for five years from the date of the doctor's last treatment of the patient unless state or federal laws require a longer period of retention



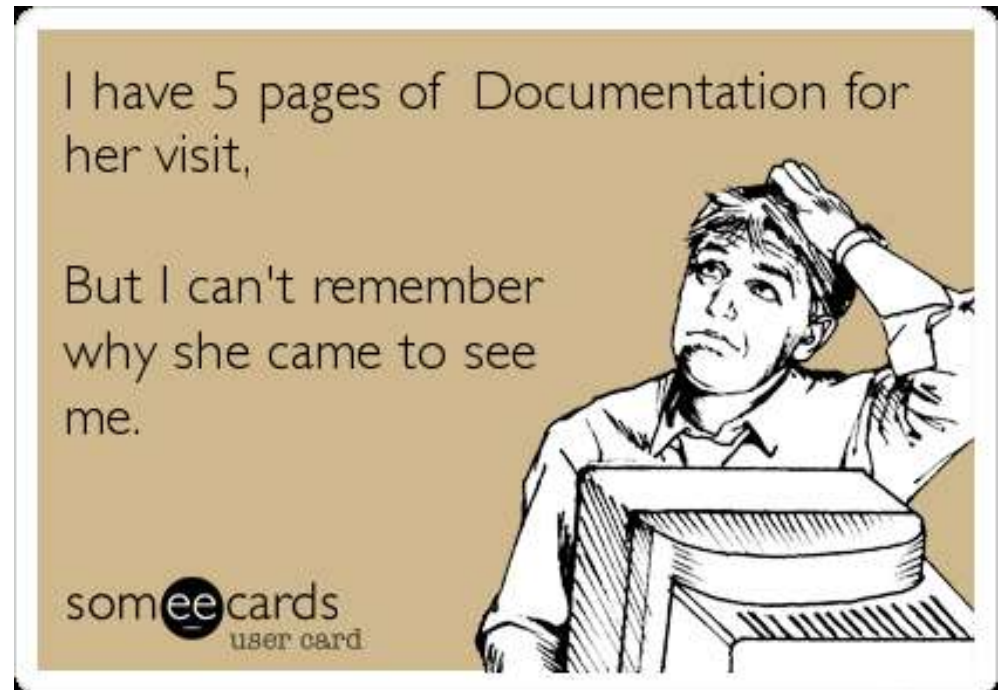
# Documentation

- ▶ Documenting the history in the form of S.O.C.R.A.T.E.S.
- ▶ Document exam findings with emphasis on positive or abnormal results
- ▶ Stay consistent with your forms so you can evaluate for improvement on follow up visits



# Documentation

- ▶ Keep your initial examination notes **simple**
  - Note the facts that relate to the injury/condition
  - Stick to S.O.C.R.A.T.E.S.
  - Note abnormal/positive examination findings
  - Note your rationale for the diagnosis
  - Note that informed consent was discussed



# Documentation – Informed Consent

- ▶ It is recommended that you record a statement such as this on the initial paperwork
  - I did discuss and inform the patient about the risks and complications that could arise regarding their condition, diagnosis and the proposed chiropractic treatment. Alternative treatments were also discussed. The patient gave me their verbal consent to initiate treatment. There is also an informed consent form signed by the patient in their file.

# Documentation

- ▶ Note your rationale for determining the diagnosis
  - A brief statement of clinical findings that correlates to the diagnosis
- ▶ Note your rationale for the treatment plan
  - A brief statement that summarizes short term goals and long term goals
  - The expected frequency and duration of care

# Importance of the History and Examination

- ▶ Establish a rapport with the patient
- ▶ Allows you to find a way to help the patient heal and return to their exercise, sport and regular activities
- ▶ Allows you to develop a treatment plan



# Importance of the History and Examination

- ▶ Formulating an accurate diagnosis to establish a treatment plan
  - Asking the right questions
  - Listening to the patient
  - Understanding the mechanism of injury
  - Correct interpretation of exam findings
  - Utilizing x-ray or MRI imaging
  - Integrating the history with the examination

# Importance of the History and Examination

- ▶ A good history with proper interpretation of examination findings will lead to an accurate diagnosis
- ▶ An accurate diagnosis will facilitate the recovery of the patient
- ▶ The patient will be able to return to their activity, exercise or sport



# Case Example

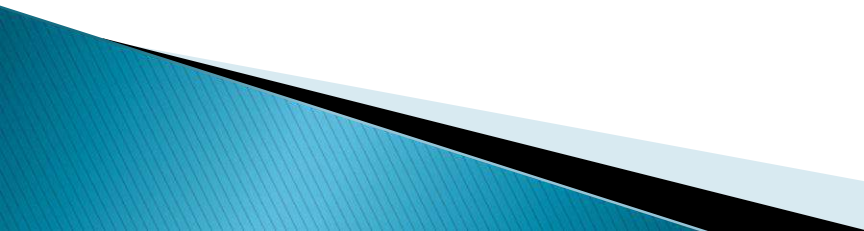
- ▶ 36 year old female presents with right sided knee pain
- ▶ Go thru S.O.C.R.A.T.E.S.



# Case Example

- ▶ Site: she points to the patella tendon
  - ▶ Onset: comes on while running; never had this before, hurts more going downhill; runs 5 days per week for about 5 miles and has just started running about 6 months ago
  - ▶ Character: sharp, achy
  - ▶ Radiation: it stays at the front of the knee
- 

# Case Example

- ▶ Alleviating: stop running, Ibuprofen, ice
  - ▶ Timing: pain comes on about 10 mins into the run and gets worse; has to stop running
  - ▶ Exacerbating: running, walking downstairs
  - ▶ Severity: intense pain, has to stop running
  - ▶ Social: no prior knee injuries, slightly overweight and started to run for exercise and to get fit;
- 

# Case Example

## ▶ Examination:

- No swelling
- Pain with palpation to patella tendon
- Normal range of motion
- Pain at full squat position
- Normal stability and special tests
- Pain at the patella tendon with resistance testing of quads
- Normal neuro findings

X-ray may be performed

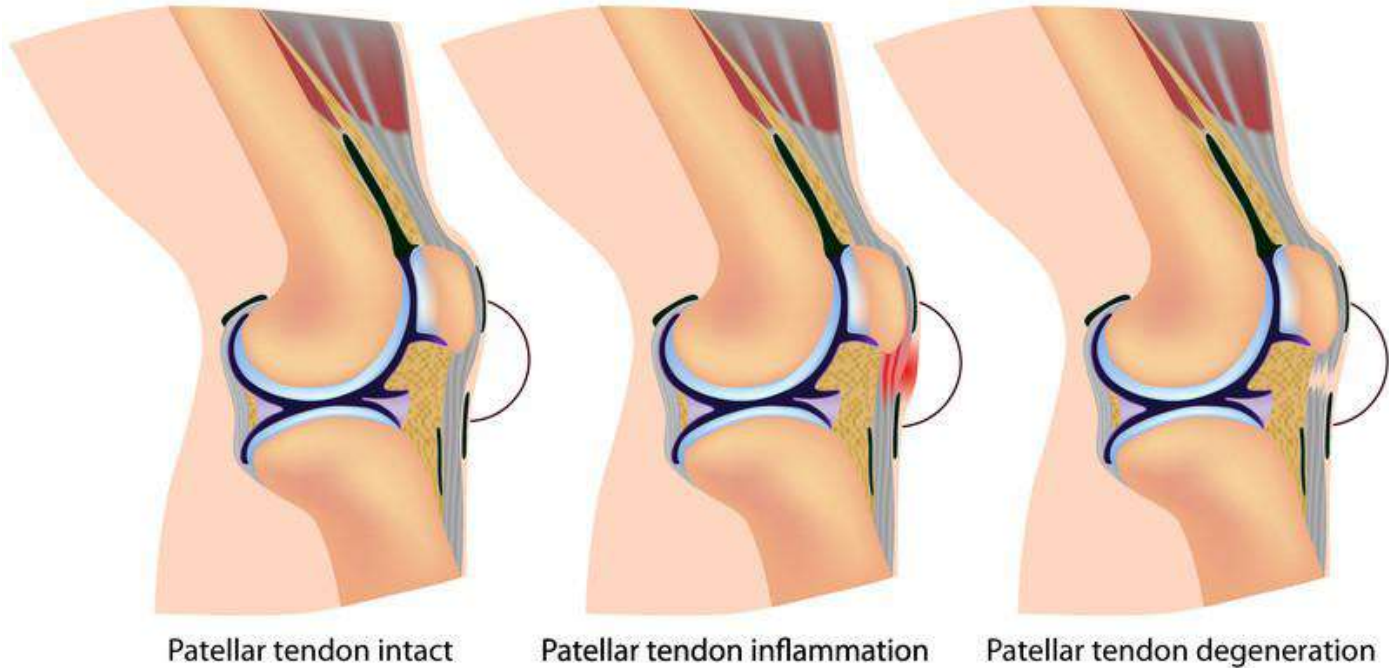
Exam & history show no need for MRI or orthopedic referral



# Case Example

- ▶ Patella tendonitis (Jumper's Knee)

Knee injury - Jumper's knee



# Thank you for completing Part 2:

## History and Examination of the Knee

- ▶ Thank you for participating in this course!



- ▶ Dr. Richard D. Belsky, DC, CCSP

Thanks for taking CE Seminars with Back To Chiropractic. 😊  
I hope you enjoyed the course. Please feel free to provide feedback.

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