NAT Master Class
The Shoulder Workshop

NAT®
Niel Asher Technique

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Learning Together – One Shoulder at a Time!

SHOULDER & HIP PAIN PART MASTERCLASS

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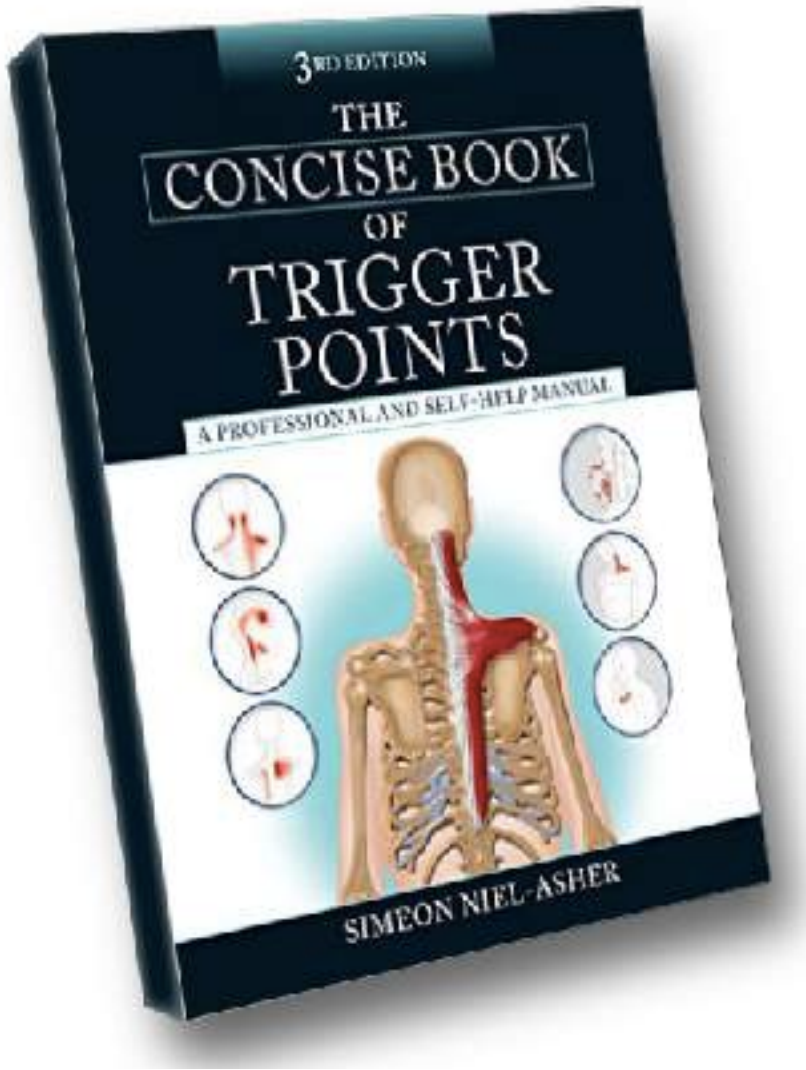
Introduction

- **Do You Like Treating Shoulders?**
- About you?
- About Me?
- Evidence based approach
- **TAKE HOME** - We are just as good as or better than surgeons



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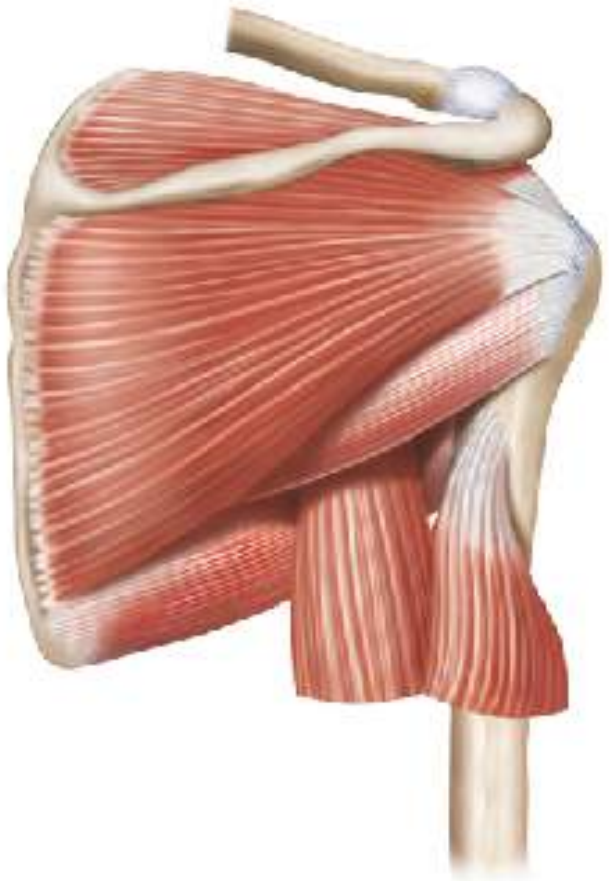
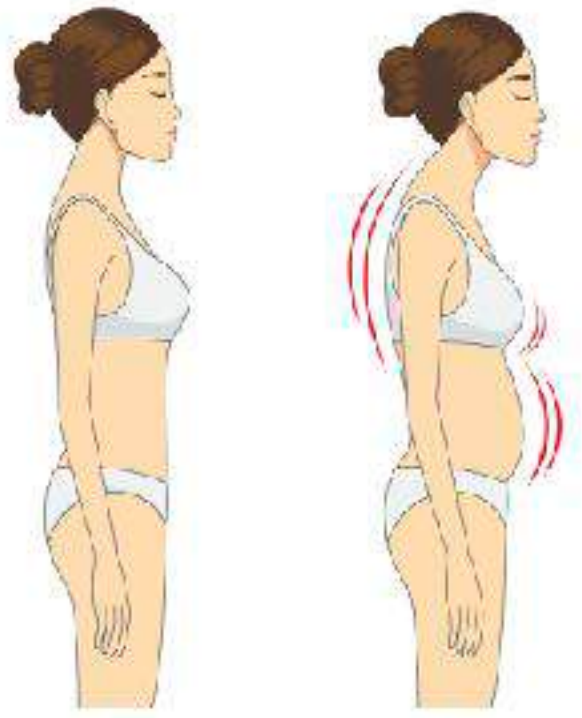
FSS – AC – Duplay's, 50's shoulder, Shoulder-wrist-hand

- **An Enigma wrapped in a mystery**
  - Why non dominant?, why Woman > Men, why self limiting?, Why does it never return ipsilateral?
- **Etiology etc.**
  - Painful, Emotional Overlay
- **NAT**
  - Deliberate ST Algorithm
  - LHB & Subscapularis
- **Real life case**
  - Examine – reverse antagonism – A/P/L
  - Measure
  - Photograph/video
  - Getting dressed
- **New Model-Paradigm - NLP**



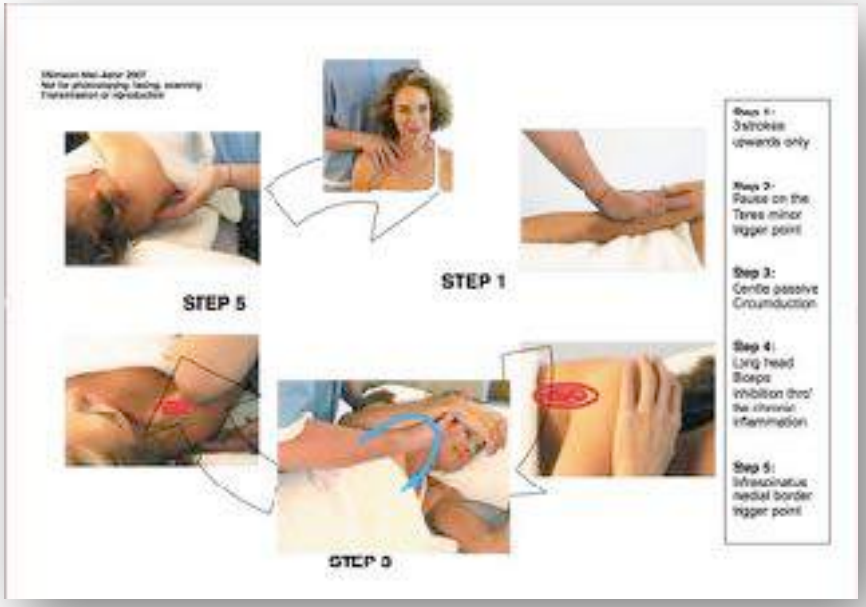
Patient x

- Age 40-70?
- History
- Who Made Diagnosis/Tests?
- Previous Treatments?
- Side?
- Night Pain?
- ROM Passive (Goniometer)
- Examine Rest of Body
- Diagnosis Phase + A/P/L?
- Getting Dressed



WHATS THE BIG IDEA?

- What just happened?
  - Euphoria



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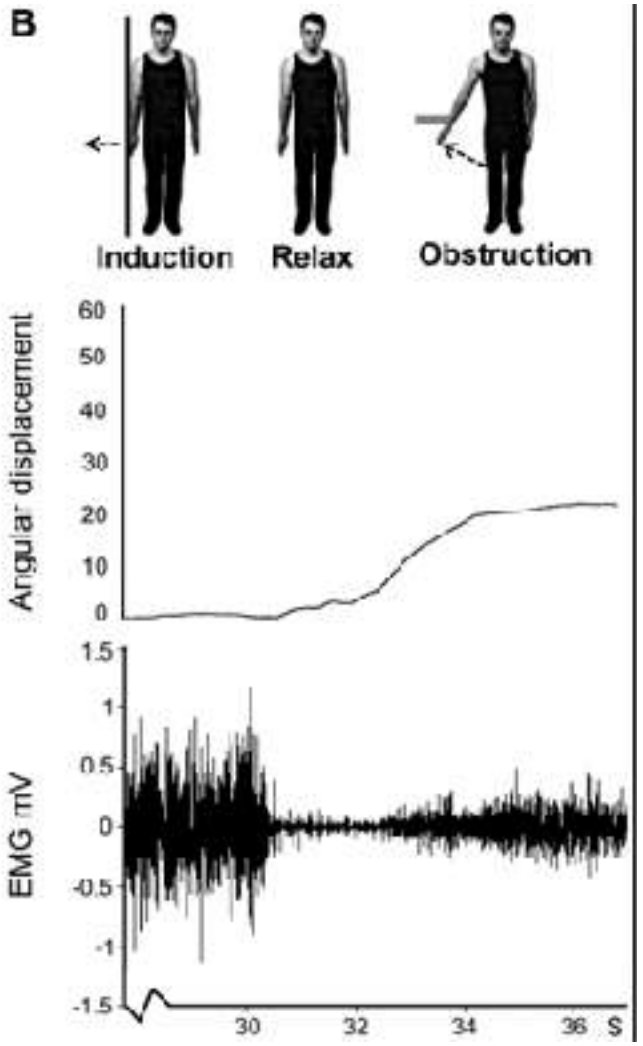
Why is this so exciting?

- FSS/AC – enigma wrapped in a mystery!
- What are the mechanisms at play?
- Algorithm sequence?
- Using Trigger points as nociceptive inputs.
- Central sensitization
- Spinal reflex Reflex responses - Kohnstamm
- ANS – Parasympathetic
- An ‘ancient’ **holding pattern** around acute injury?
- Lessons for other peripheral joints



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What Are We Covering?

DAY 1

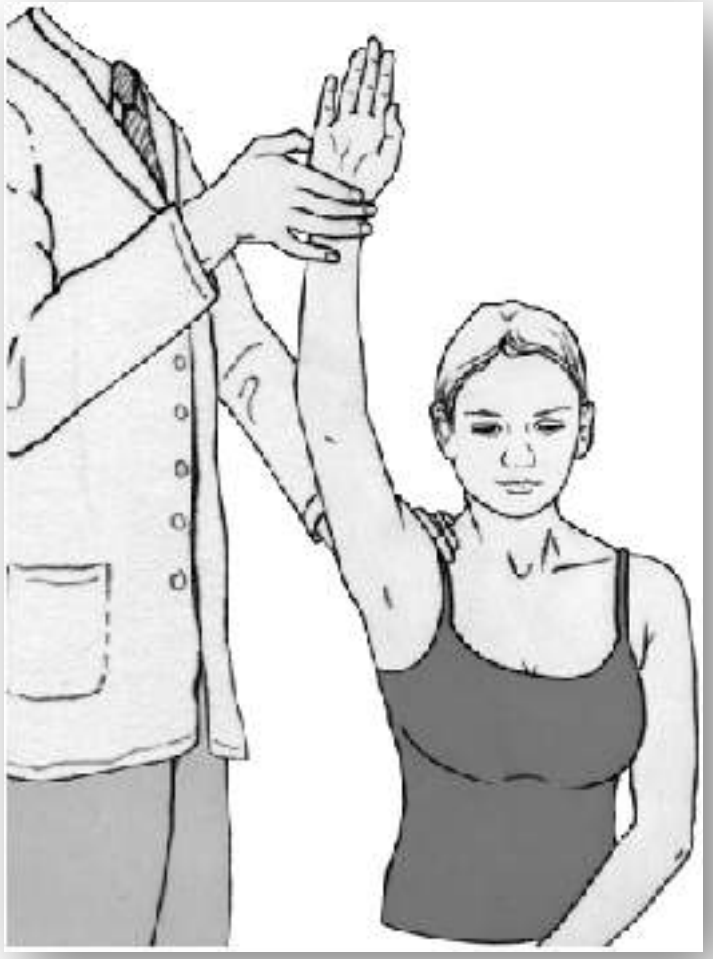
- **All about Shoulder Pain**
- **All about Frozen Shoulders (FSS)**
- **All about Trigger Points**
- **All About NAT**
- **Modifications**
  - FSS Modifications
  - All About CRPS
  - All About the ACJ

DAY 2

- **Review of Day 1**
- **All About the Rotator Cuff**
- **Modifications**
  - All About SPS
  - All About the ACJ
- **All About the Hip & NAT**
- **It's All About Practice**

The Three Main Problems

- Rotator Cuff 70%
- SPS 10-65% depending on definition
- **Frozen Shoulder Syndrome (Adhesive Capsulitis) 3-5% - So why focus on it?**
- Other 5-8%



Shoulder Pain Facts

Shoulder Prevalence Facts

- **Shoulder pain is the 2nd to 3rd most common musculoskeletal complaint**
- **30-60% people will experience shoulder pain at some point in their life**
- **Incidence increases with age**
- **Associated with a high morbidity rate**
- **40-54% ongoing symptoms for 1-3 years**
- **70% in FSS**

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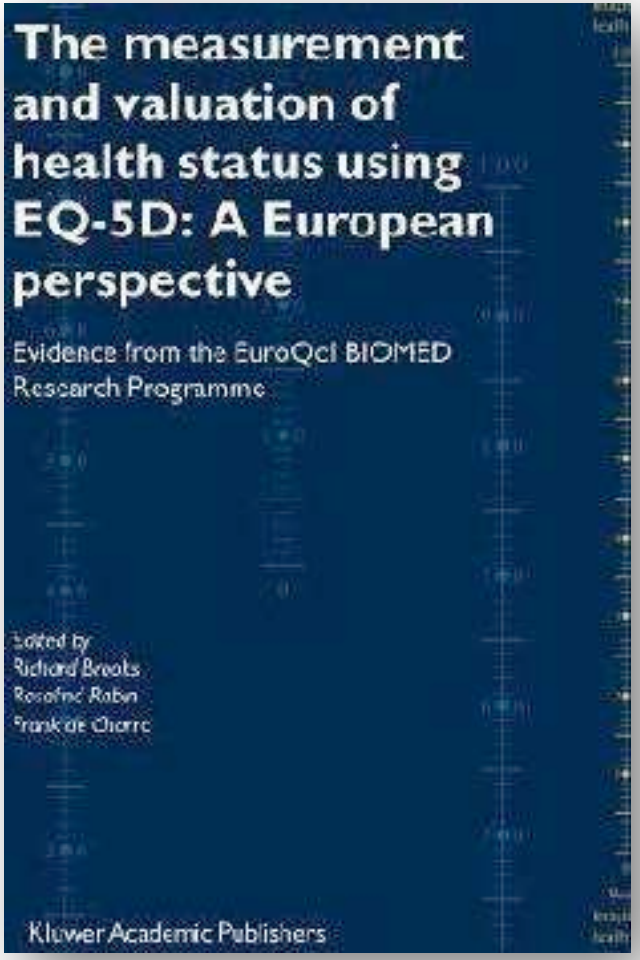
Impact on QOL

- **‘Quality of life’ scores (EQ5D) comparable to complicated diabetes, heart disease and chronic liver failure**
- **‘Often come to us with the wrong diagnosis**
- **No evidence to support sub-acromial decompression’ evidence based from studies at 6 months, 1,2,3 & 5 years.**
- **Overuse of surgery is a huge problem**



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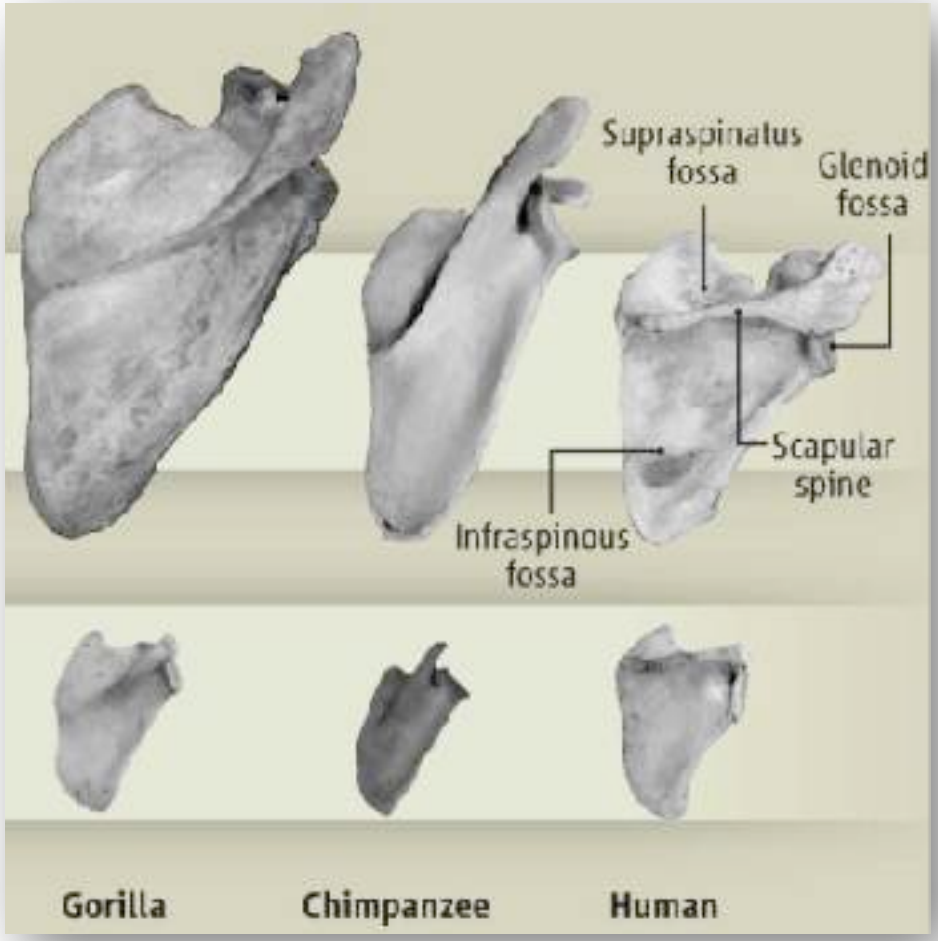
Why?

- **Live longer**
- **Lack of metabolic activity**
- **‘Under-loading’ then overuse**
- **Occupational**
- **Sports**
- **Lifestyle factors**

Shoulder function

- **Evolutionary changes**
  - Changes in visual field to upright
  - Comparative scapula evolution
    - changes in clavicle shape
    - changes in G/H alignment
  - Mechanical compromise of the sub acromial space
  - Human shoulder is great up to 90 degrees
  - Shoulders and Hips



Job

- **Elevated position**
- **Same job for over 10 years.**
  - Car mechanics,
  - House painters,
  - Machinists,
- **100% = RC or Severe Shoulder Pathology**

Sport

- **Swimmers**
- **Basketball**
- **Baseball**
- **Volleyball**
- **Tennis**
- **Javelin**
- **Shotput**
- **Etc.…**

Girish et al 2011 Ultrasound of the shoulder. Asymptomatic findings in men. *American journal or Roentgenology*

51 asymptomatic men aged 40-70

US scans 25 right shoulder, 26 left shoulder

Findings:

① **Sub acromial bursal thickenings = 78%**

② **Acromioclavicular joint degen = 65%**

③ **Supraspinatus tendinosis = 39%**

④ **Subscapularis tendinosis = 25%**

⑤ **Partial thickness tear SS = 22%**

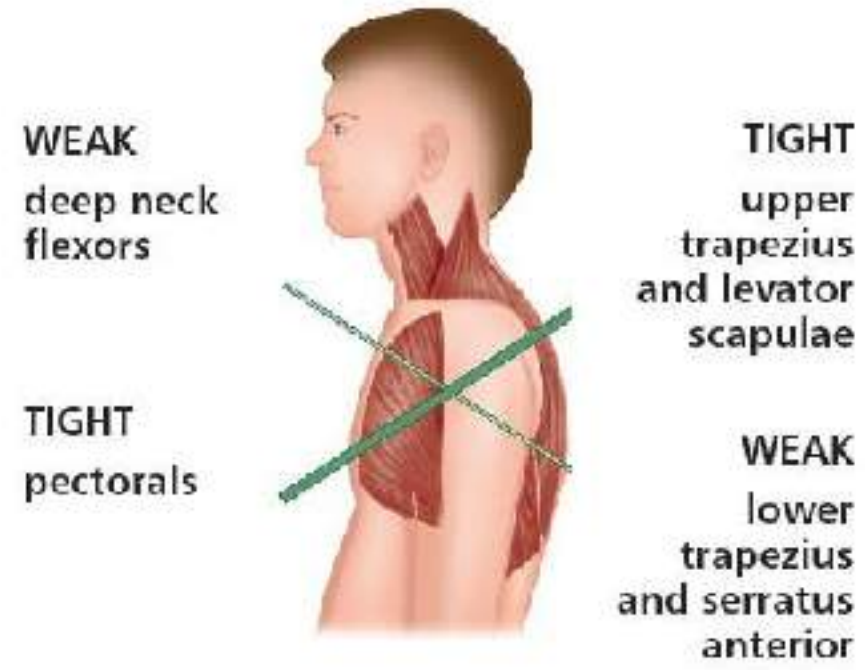
⑥ **Posterior glenoid labral anomoly = 14%**

Other Factors

Context
Matters

Posture - Gravity

- **“Postural abnormality represented an independent predictor of both symptomatic and asymptomatic rotator cuff tears.”**
- **”The literature substantiates that imbalances in the glenohumeral and scapulothoracic musculature are present in patients with subacromial impingement.”**
- **Head forward posturing and scapular protraction have both been associated with subacromial impingement (Greenfield et al. 1995, Warner et al. 1992).**



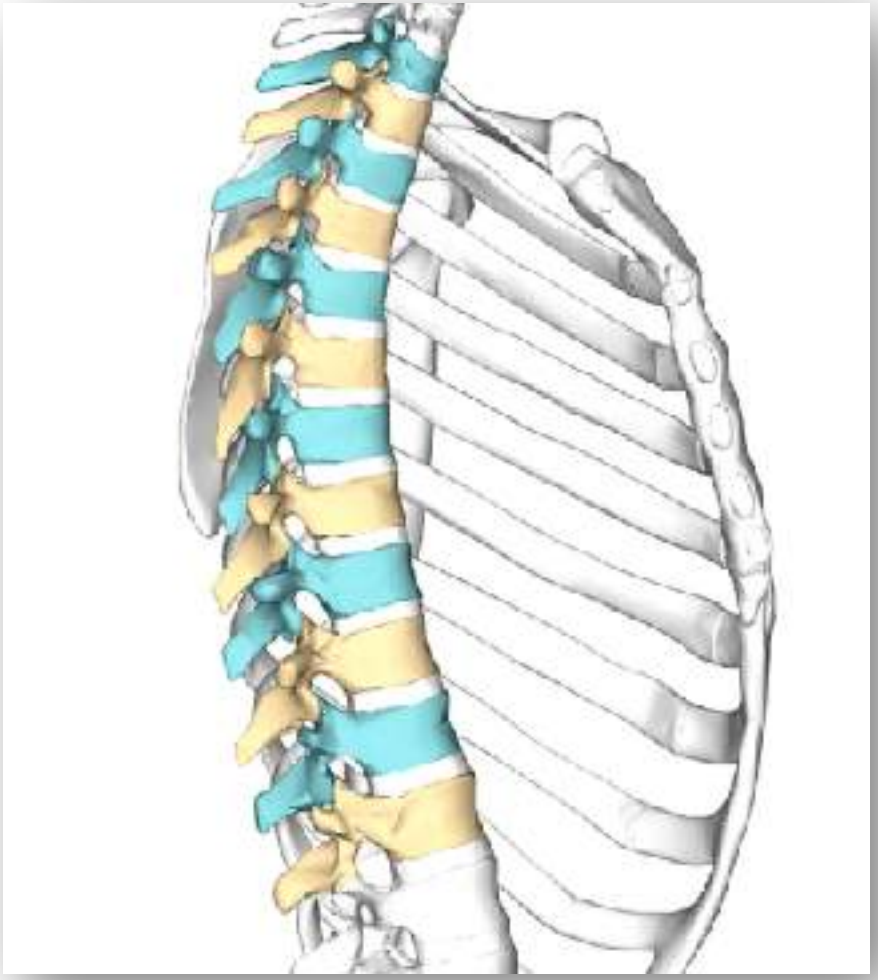
Posture and the role of the thoracic spine

- **Remember the Thoracic spine!**

“Postural abnormality represented an independent predictor of both symptomatic and asymptomatic rotator cuff tears. These results may help define preventive measures for rotator cuff tears and in designing rehabilitation therapies for shoulder disease.”

”The literature substantiates that imbalances in the glenohumeral and scapulothoracic musculature are present in patients with subacromial impingement.”

- M van Eijsden-Besseling et al 1993 Differences in posture and postural disorders between music and medical students Med Probl Perf Art, 8 (1993), pp. 110–114 Steinmetz A et al 2008
- Shoulder Pain and Holding Position of the Violin – Medical Problems of Performing Artists: 23(2)79
- SHOULDER MUSCLE IMBALANCE AND SUBACROMIAL IMPINGEMENT SYNDROME IN OVERHEAD ATHLETES - Int J Sports Phys Ther. 2011 Mar; 6(1): 51–58.



Energy transfer

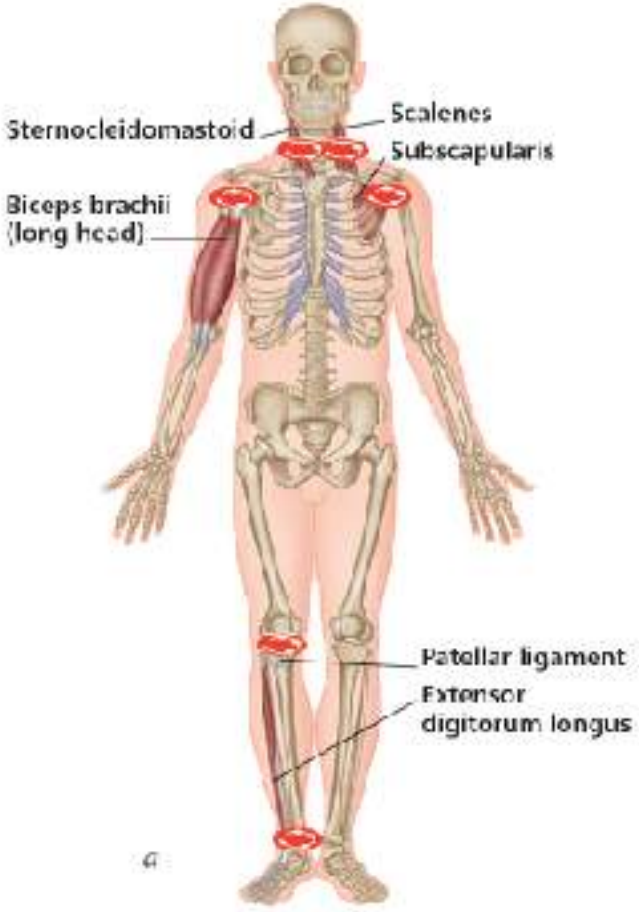
- **Tennis serve** **(Kibler 1995)**
  - **Leg/Trunk 54%**
  - **Shoulder 21%**
  - Elbow 15%
  - Wrist 10%

- **Pitching** **(Kibler and Chandler 1995, Seroyer et al 2010, Sciascia and Cromwell 2012)**
  - 24% energy decrease from hip and trunk requires a 34% increase at shoulder to deliver the same amount of force
  - Hip and trunk extension facilitates scapula retraction. Hip and trunk flexion facilitates scapula protraction

Kinematics and linking bio-dynamics

M.M. Posterior Oblique Link

Super Trigger Points



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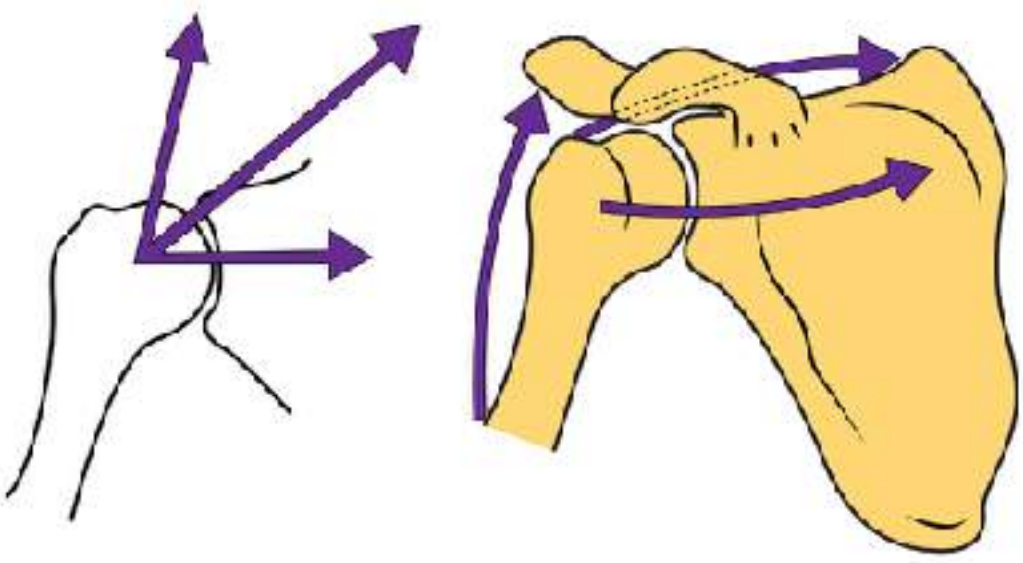
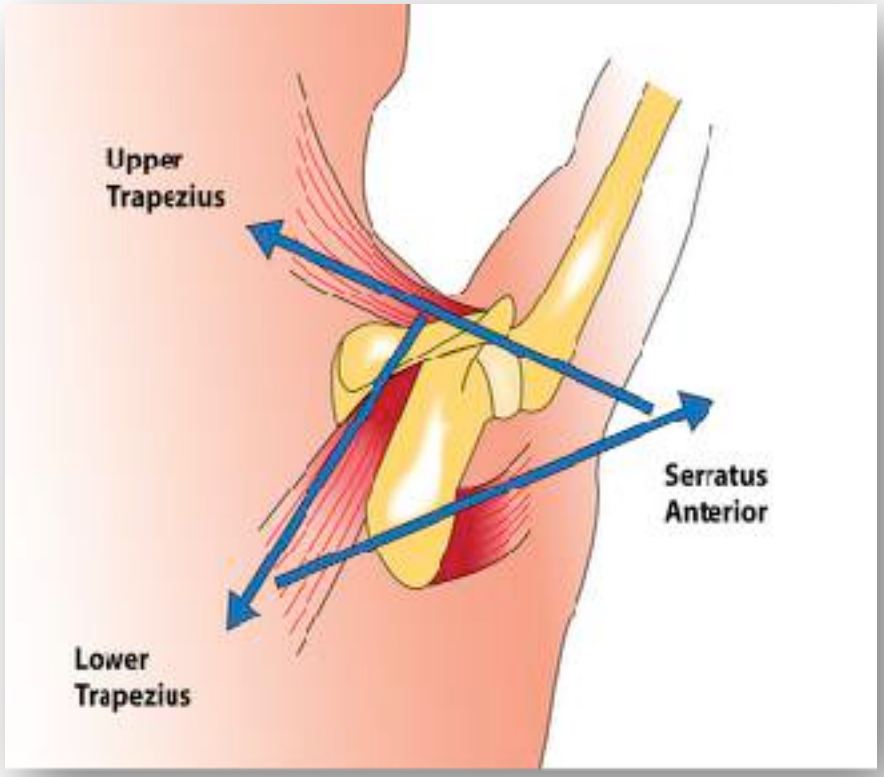
Shoulder Function - Bio-Dynamics/Kinematics

- **Passive Stability**
  - Capsule/ligaments
  - Joint volume
  - Adhesion/cohesion
- **Dynamic Stability**
  - Concavity compression (et al 1993)
  - LHB
  - Normal dynamics
    - Scapulothoracic
    - Glenohumeral



Shoulder Functional Relationships and Scapula Sliding

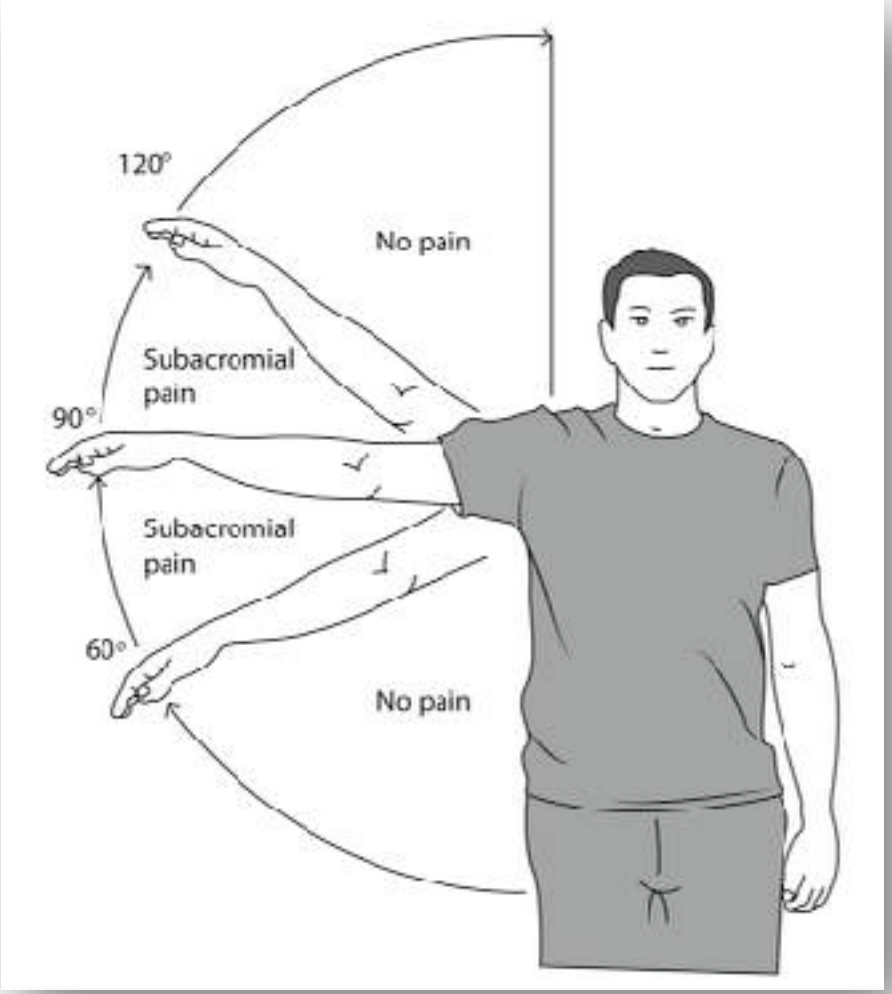
- 26 muscles act upon or across the shoulder joint
- Dynamic structure with multiple movement plains
- Complex functional relationships in three dimensions
- Sliding – Upper & Lower Trap VS Serratus Anterior
- Kinematics relationships alter in different positions



The Scapulohumeral Rhythm

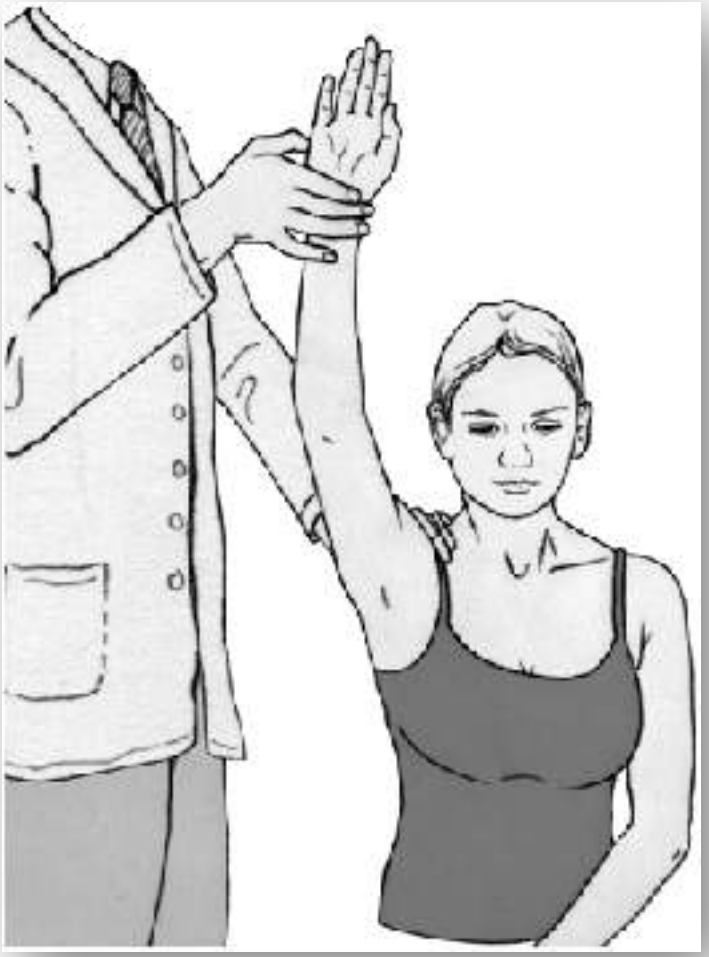
Codman EA: The Shoulder; Boston: G.Miller et al,1934

- Introduced in the 1930's by Codman
- Relationship of scapula and the humerus.
- Elevate the GH joint the ST articulation follows at a 2:1 ratio.
- The GH joint contributes 100°to 120°of flexion and 90°to 120° of abduction.
- The combination of scapular and humeral movement results in a maximum range of elevation of 150°to 180°.
- Check Flexion too!



The main presenting problems

- Rotator Cuff 70%
- SPS 10%
- **Frozen Shoulder Syndrome (Adhesive Capsulitis) 3-5%**
- Other 5-8%



Shoulder Pain – Differential Diagnosis

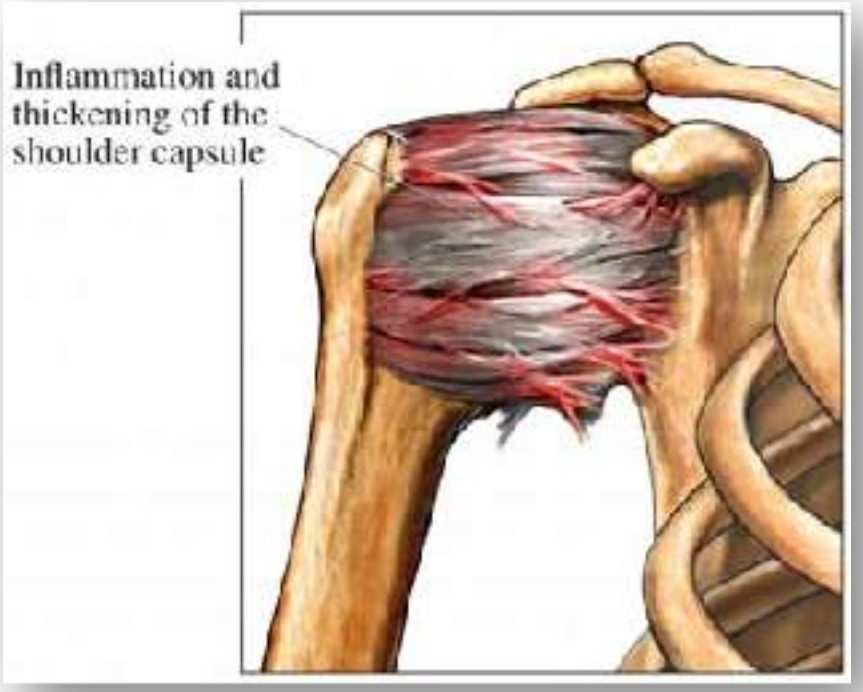
Murnhagan JP (1998)

CONGENITAL	Clavicle (collar bone) malformation
DEGENERATIVE	Cervical issues, arthritis/disc C5/6/7, shoulder arthritis, bursitis, Labral tear or SLAP lesion
FUNCTIONAL	Acromioclavicular joint, Impingement, biceps tendonitis, Adhesive Capsulitis (frozen shoulder), Myocardial infarction (heart attack), Long thoracic nerve injury (winging scapula).
INFECTIVE	Tuberculosis, Osteomalacia, Osteopmyelitis, Abscess, Shingles, Organ disease pressing on the diaphragm.
METABOLIC	Hormonal: Hyperparathyroidism, pituitary disease related, Inflammatory arthritis (HLAB27 - <0.3%), Psoriatic Artropathy, Inflammatory bowel disease, Polymyalgia Rheumatica
NEOPLASTIC	Primary soft tissue (rhabdomyoscarcoma) or secondary metastases
RETICULO-ENDOTHELIAL	Neuropathy: e.g., Mononeuropathy monoplex, Systemic Lupus (SLE) - Erythematosis, Multiple myeloma, Brown Tumor, Pagets disease
TRAUMATIC	Fractures of shoulder or collar bone, impingement, brachial plexopathy, suprascapula nerve impingement (spinoglenoid notch),

The frozen shoulder

“An enigma wrapped in a mystery”! What is a frozen shoulder?

- 2-5% of the general population
- 10-20% in diabetics
- Female > Male (60:40) (Baslund 1990)
- Age 40 and 60 years of age (Grubbs 1993)
- The **non-dominant** arm is more likely to be involved
- 12-16% bilateral

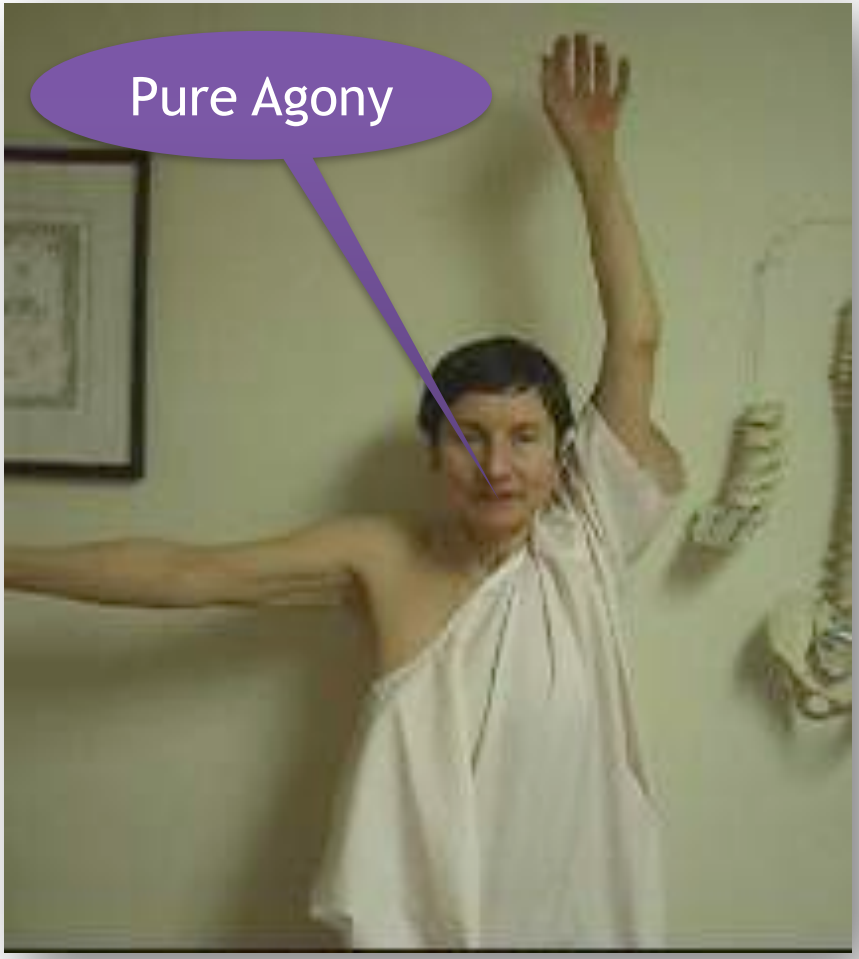


Aetiology

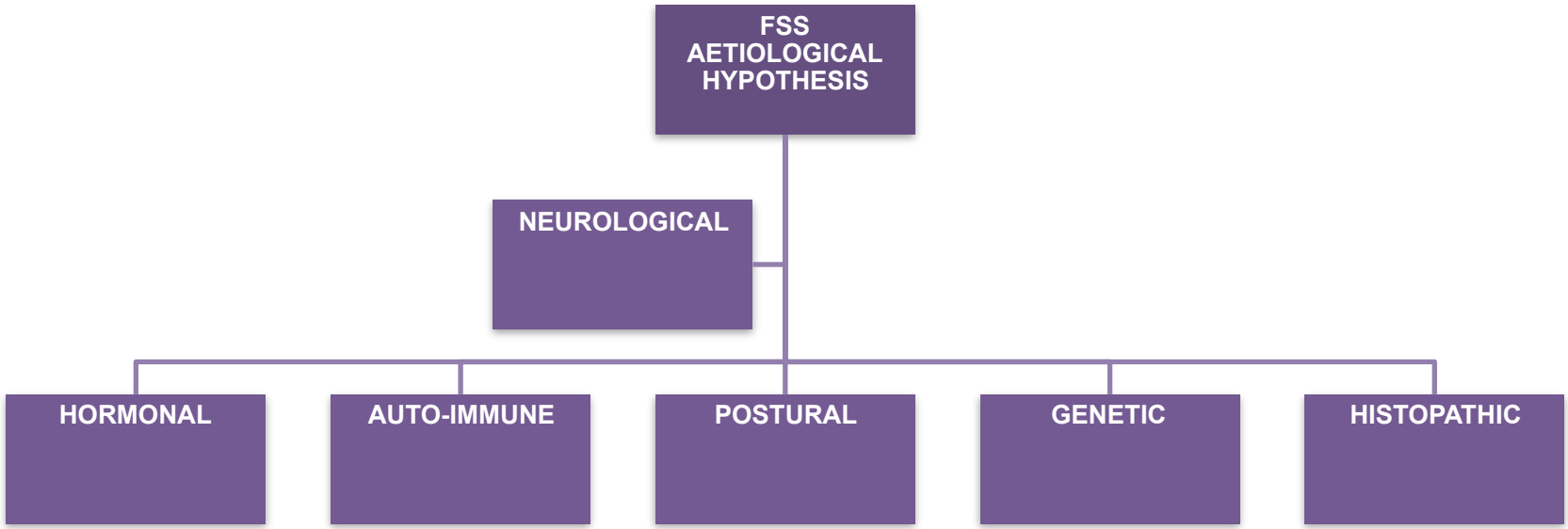
- **Primary or idiopathic frozen shoulder - (NAR)**
- **Idiopathic associated with underlying pathology**
- **Other factors have been implicated in the aetiology**
- **Secondary frozen shoulder**
  - *Intrinsic* - include rotator cuff tears or tendinopathy
  - *extrinsic* - **post traumatic** such as fracture, (shoulder) surgery or a fall on an outstretched arm
  - Surgery
  - Fracture
  - Mastectomy

Definition *and*

restricted active and passive motion



Aetiology - III



Risk factors

- Ageing Posture - especially round-shouldered
- Shoulder intensive sports
- Repetitive manual occupation
- Diabetes - types I and II
- Trauma
- Immobilisation / splinting
- Fracture
- Surgery

Natural History – 30 Month Average

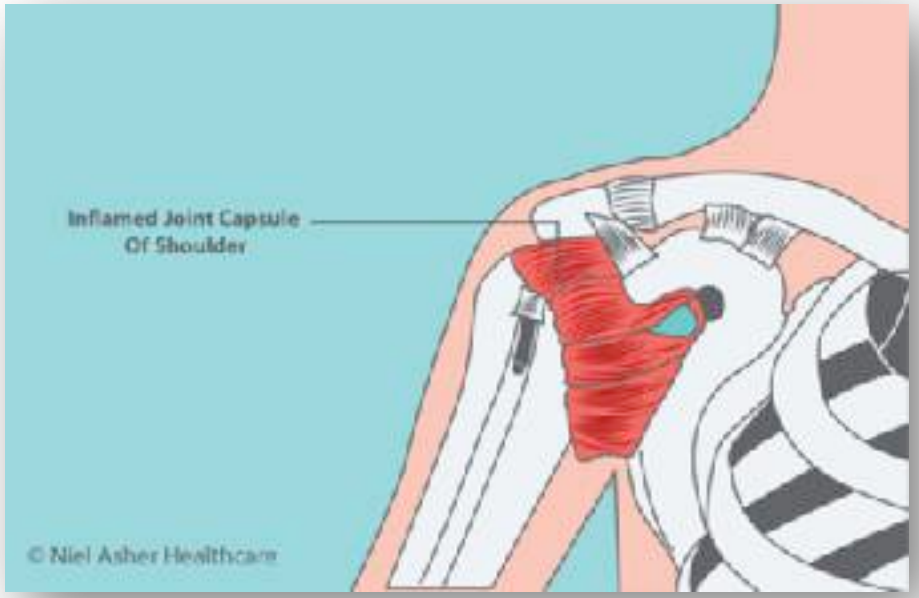
Pain or Stiffness Dominant?

Pre-phase I (1-4 weeks)

Freezing (1-8 months)

Frozen (9-16 months)

Thawing (12-40 months)



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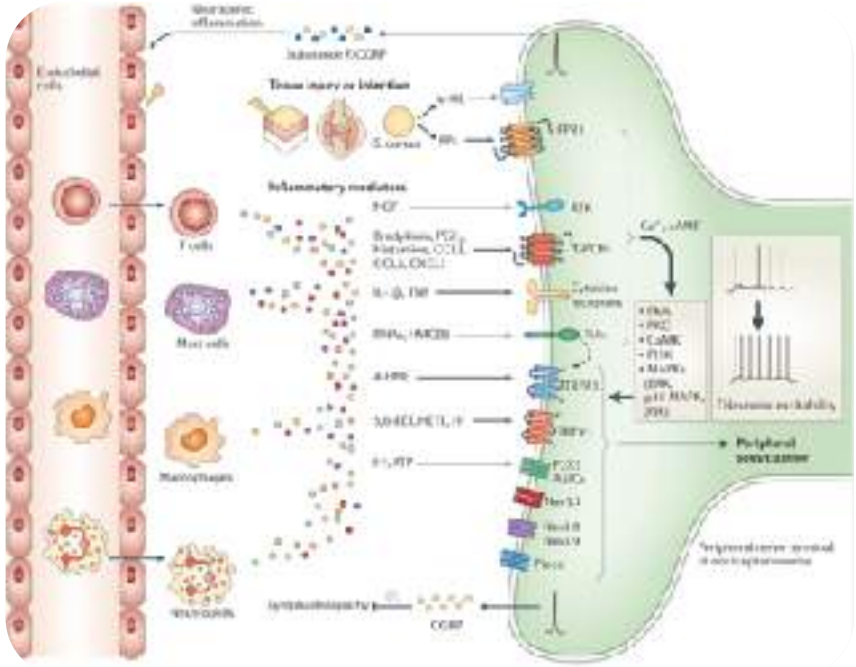
Freezing

Frozen

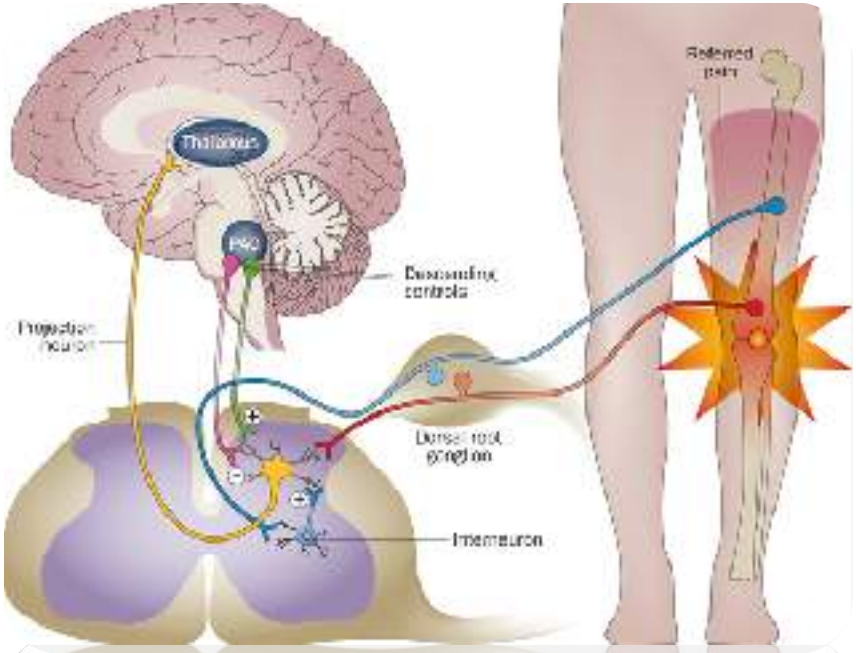
Thawing

Sensitization – Increasing the burden of nociceptive input

Peripheral – 2 to 5 segments



Central - Windup



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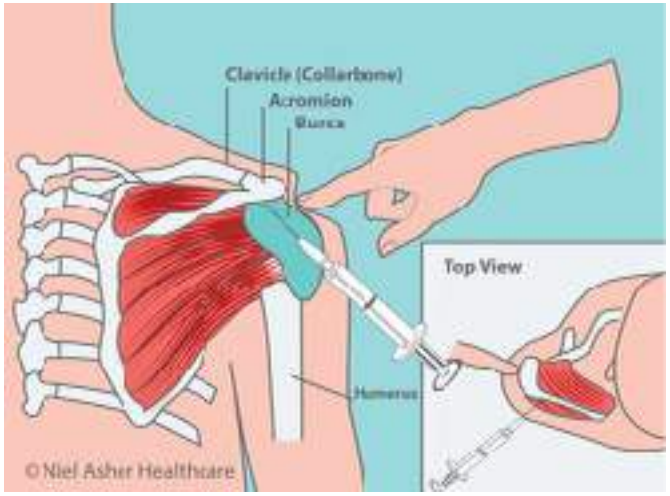
Treatment Options

- Wait and see
- PT directed rehab
- MD directed rehab
- Oral corticosteroids
- Steroid injections
- Capsular distension
- Long lever MUA
- Arthroscopic release
- Translational MUA



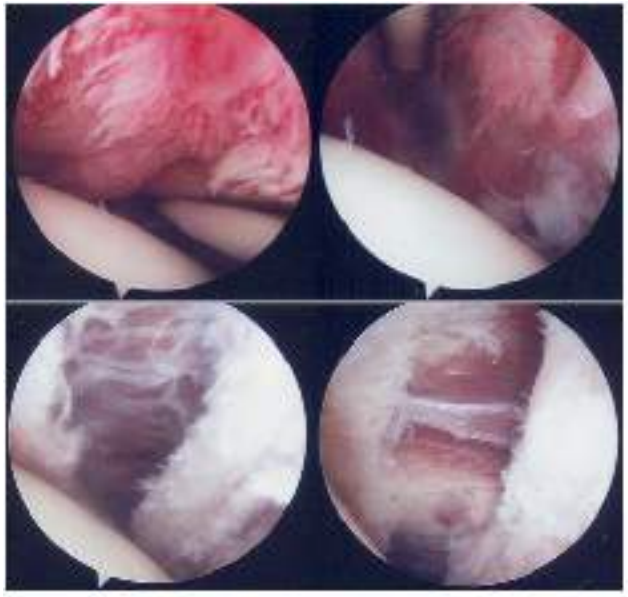


Figure 2 Arthroscopic release for adhesive capsulitis

Scaption – lets warm up!

Scaption = Scapular Plane Elevation

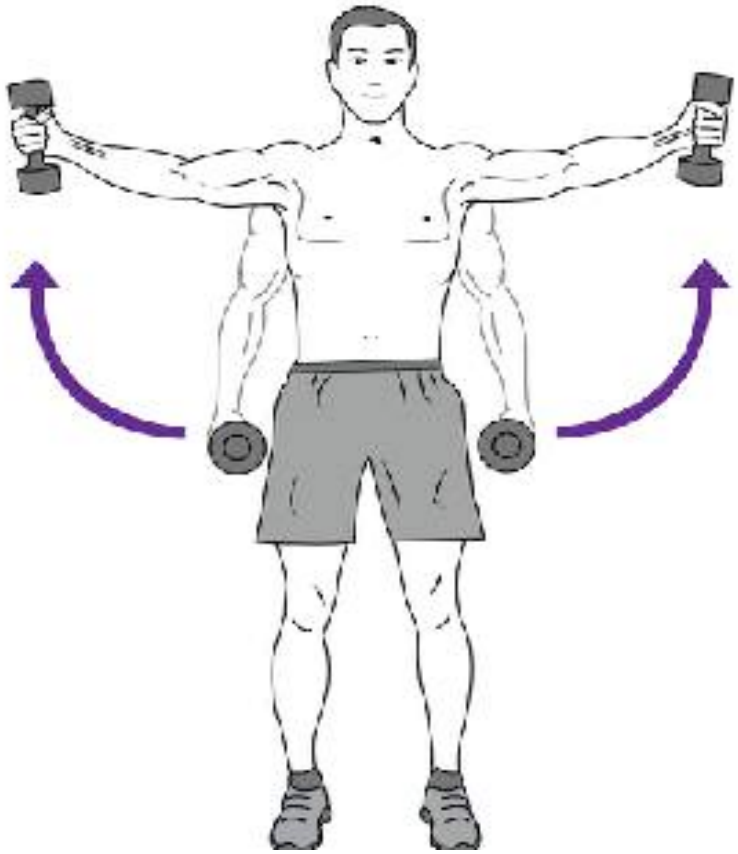
1991 American Journal of Sports Medicine.

It's widely used in sports training, occupational therapy, and physical therapy.

Pure abduction brings the ball and socket onto the acromial arch causing pain. Scaption is a much safer and less painful way to exercise.

Can be internal, external or neutral rotation.

Scapula elevation approximately 30 degrees of flexion

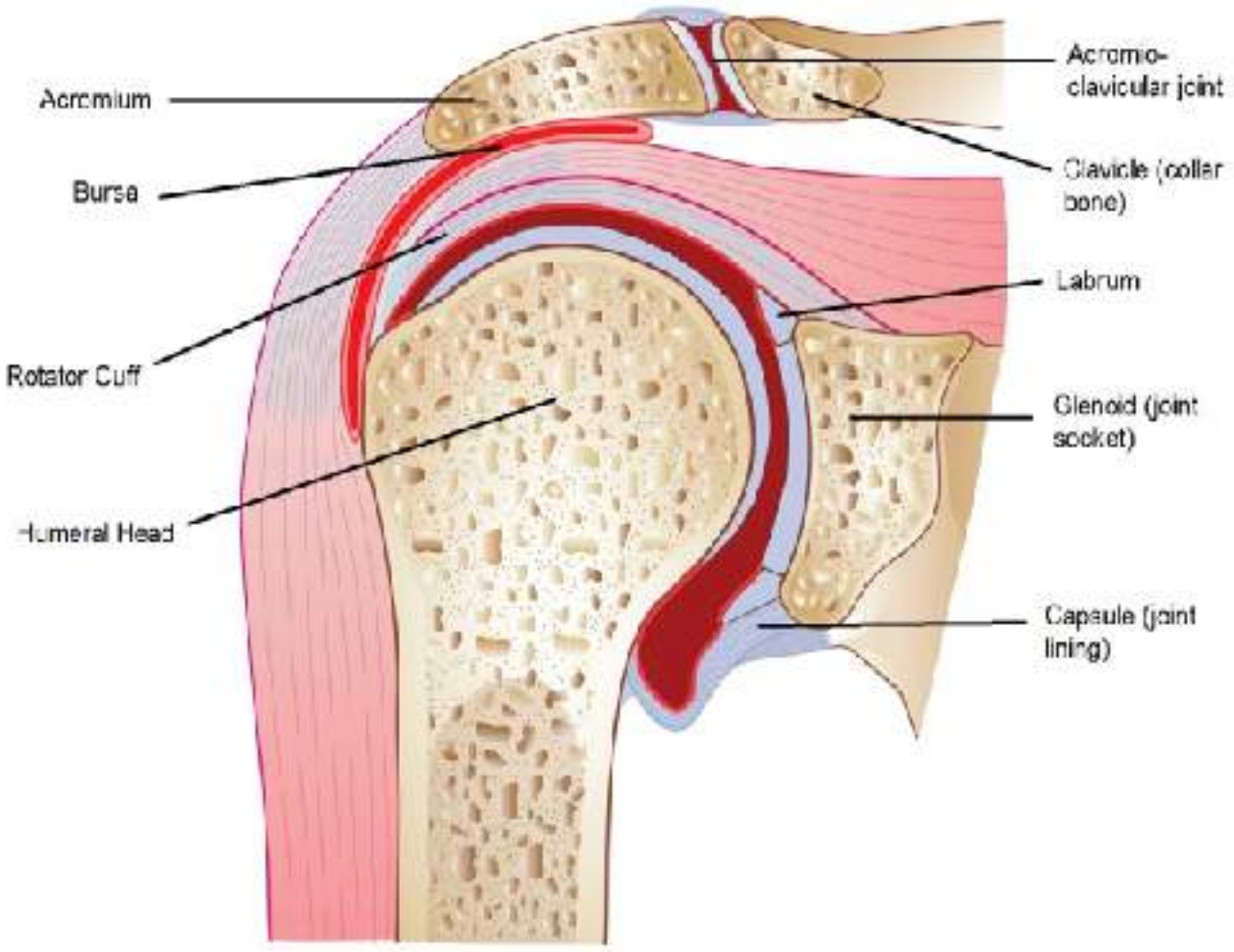


Progressive loss of ROM

In Descending order of severity (Roy et al 2007):

- External rotation
- Abduction
- Flexion

What's Happening Inside the Shoulder?

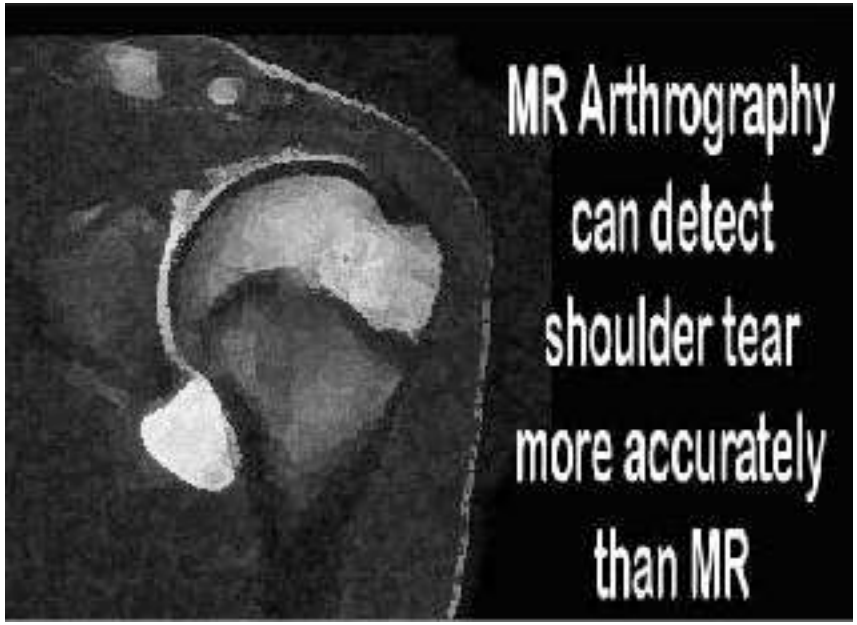


Diagnostic findings

have not essential for

diagnosis and are primarily of use in ruling out other underlying pathology such

Consistent findings on MRI arthrography of patients with adhesive



Pathophysiology - Overview

Synovitis

Reactive Tendinopathy
- Acute and Chronic
- Granulomatous changes

Biceps – LHB Sheath granulomatous pathology

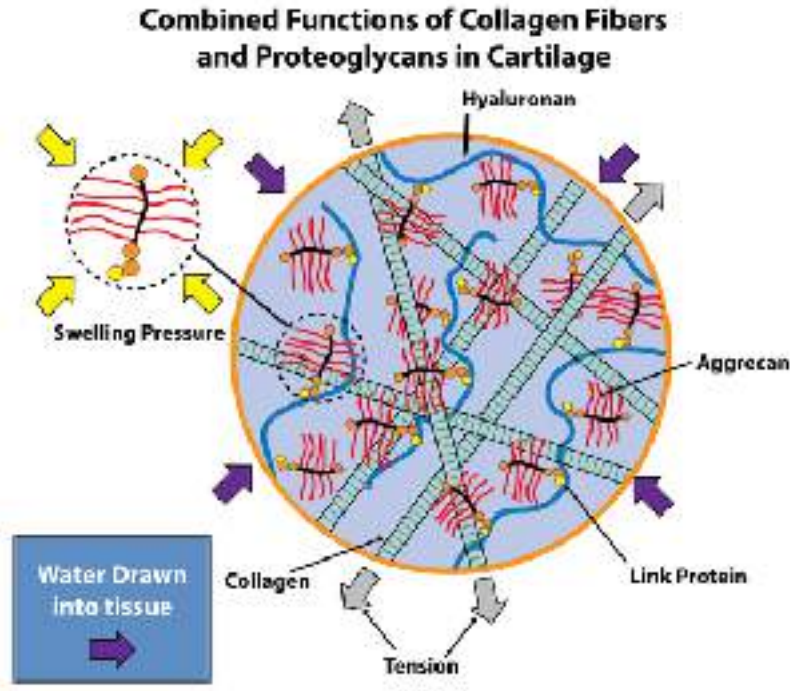
Rotator Interval pathology

Bursitis

Capsulitis/Capsulopathy – only 5% demonstrate an adhesion

Corracohumeral Ligament Thickening

Peripheral and Central Sensitization



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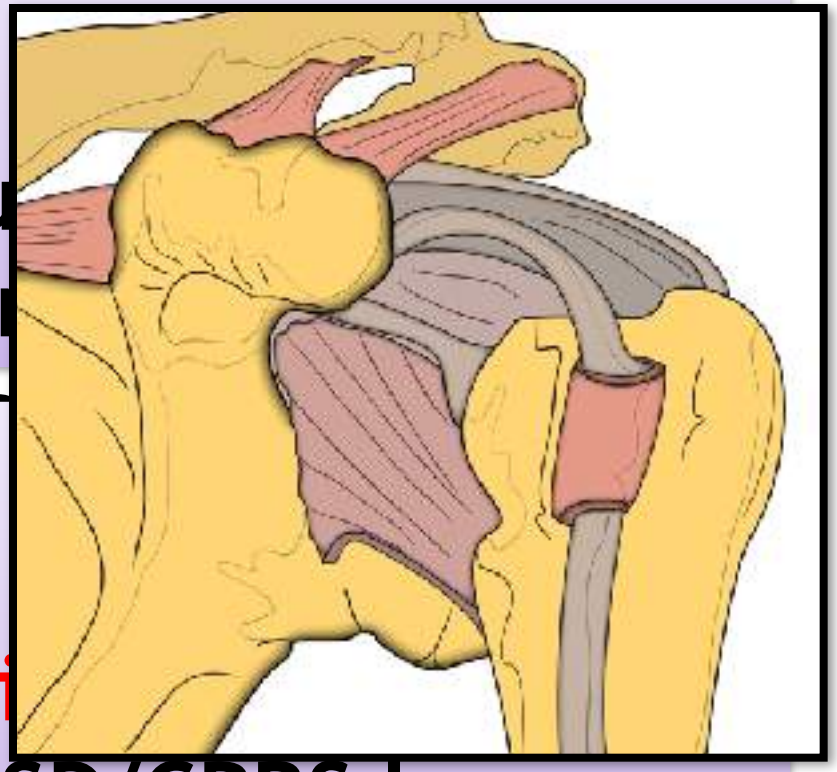
Pathophysiology

Changes in

- Synovium - only 5%
- LHB - granulomatou
- Coracohumeral liga
- Rotator cuff interv

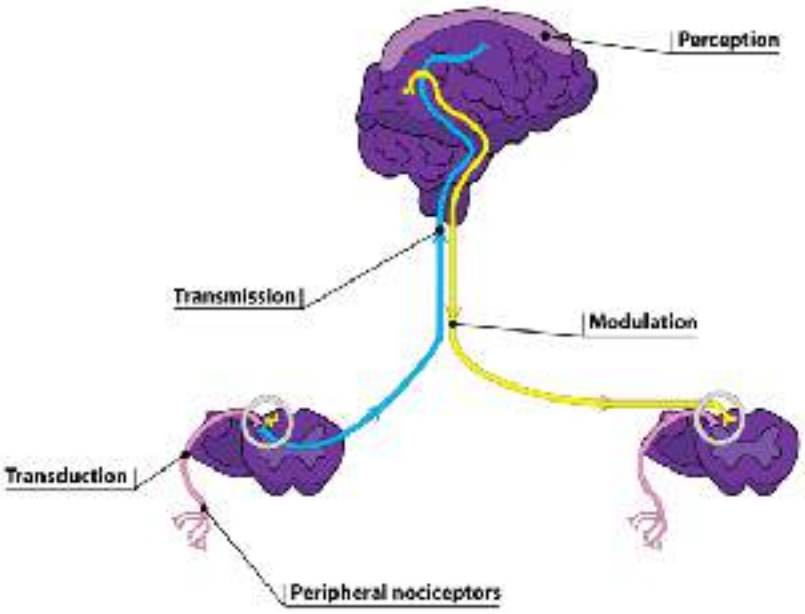


Contracture

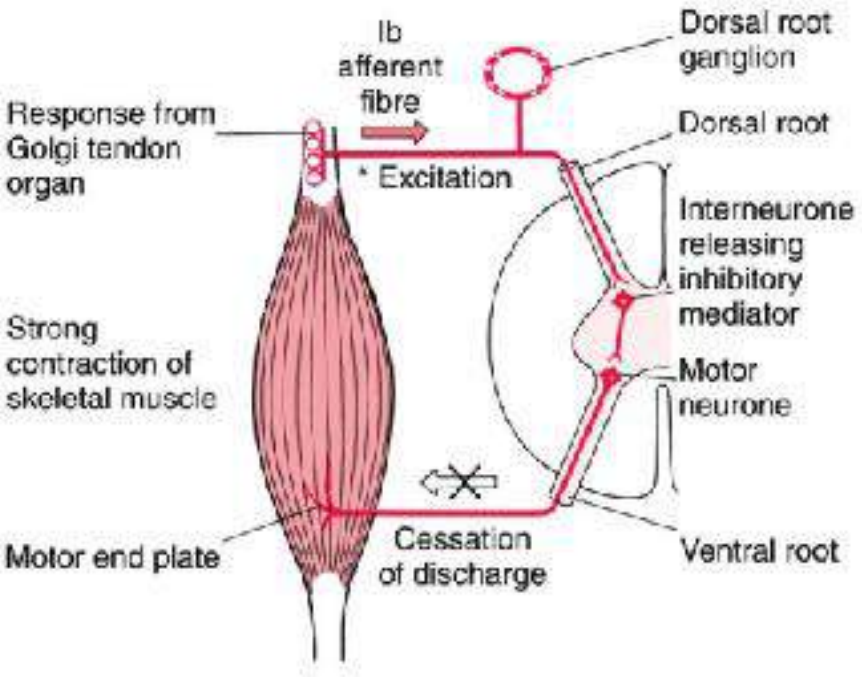
- Capsular pattern
- Neurologically medi
- Connections with RSD/CPRS I

Time For Some Neurology

Central



Peripheral



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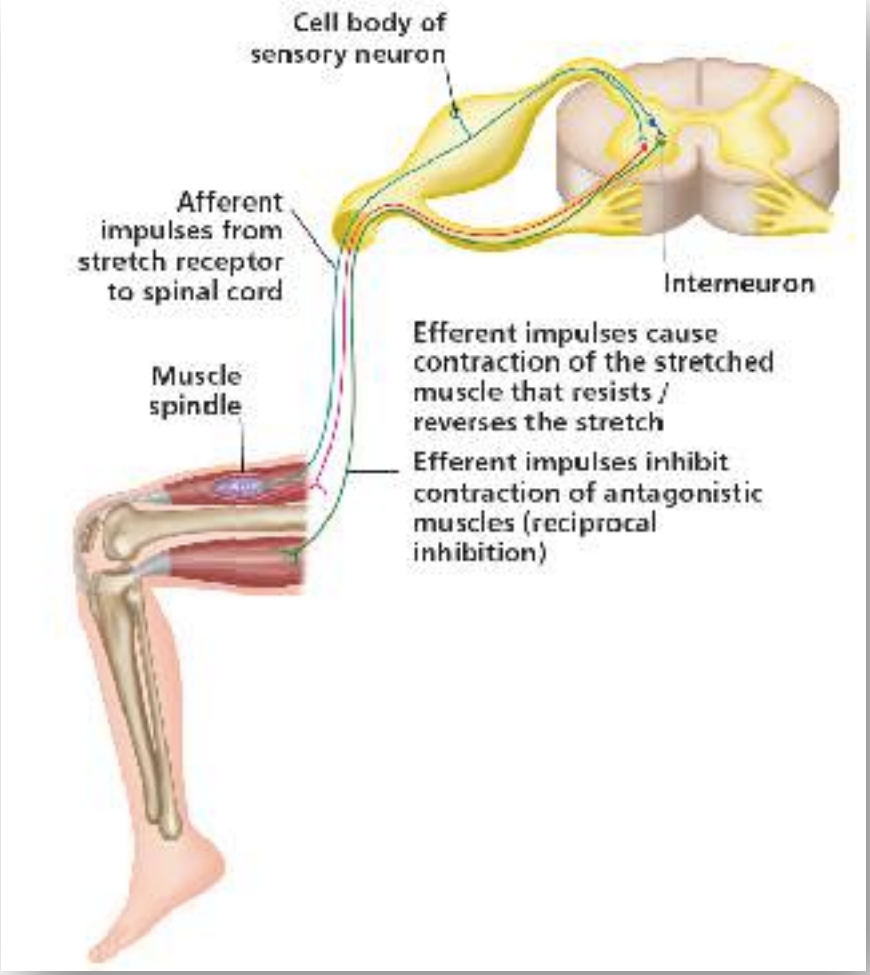
Lets Look at Some Neurology

Sherrington's Law

Law of reciprocal innervation states that:

When a muscle contracts, its direct antagonist relaxes to an equal extent allowing smooth movement.



Peripheral Spinal Reflex – R/I

Important reflex and has a major role in the control of voluntary movement.

"Automatic" process when muscles on one side of a joint relax to accommodate contraction on the other side of that joint.

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Voluntary Termination – The Kohnstamm maneuver

- Sustained isometric voluntary effort of Deltoid followed by involuntary contraction in the same muscle that can last for > 30 seconds
- Functional negative motor command
- Actual different to expected
- **Peripheral** and **Central** contribution
- Hidden involuntary force – **tonogenic**
- May affect “muscle history”
- ? Plays a role in maintaining body posture
- **Hip and Shoulder?**

Holding Pattern

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Orthopaedic Intervention

Hemiplegia – Default posture Cyriax Decerbration