



THE SPORTSPERSON'S SHOULDER




Bikram Karmakar



A close-up of teal-colored fabric, possibly a jacket or shirt, with visible stitching and a strap.

CONTENTS

- 
- A blurred background image of a basketball player in a dark jersey with yellow and red trim, looking down with his hands clasped.
- Mechanics of the shoulder
 - Instability
 - Rehabilitation
 - Return to function
 - Chronic Pain

SHOULDER MOVEMENT



1. CNS



2. Muscle contraction



3. Restraints

RESTRAINTS --> STABILITY

STATIC

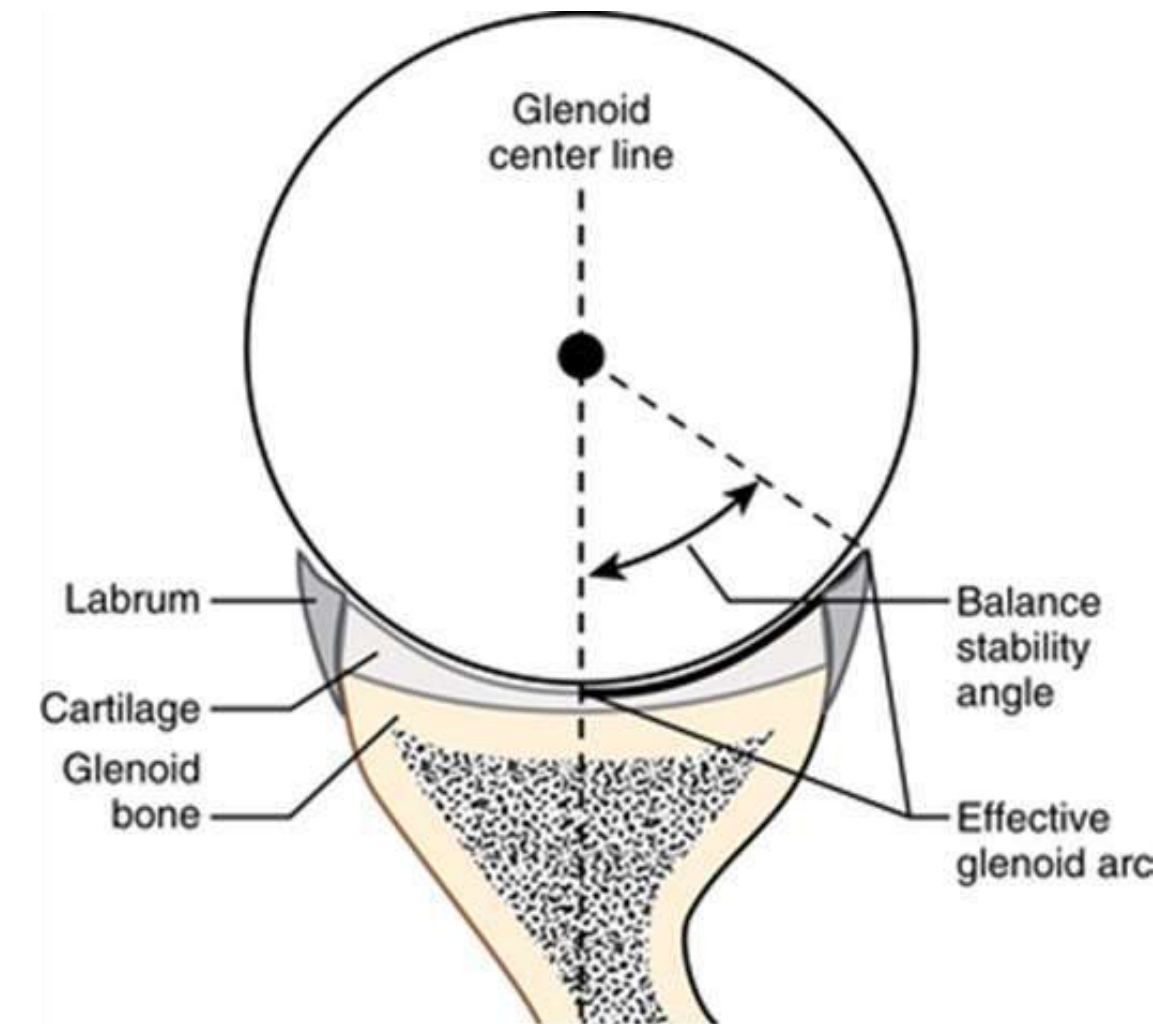
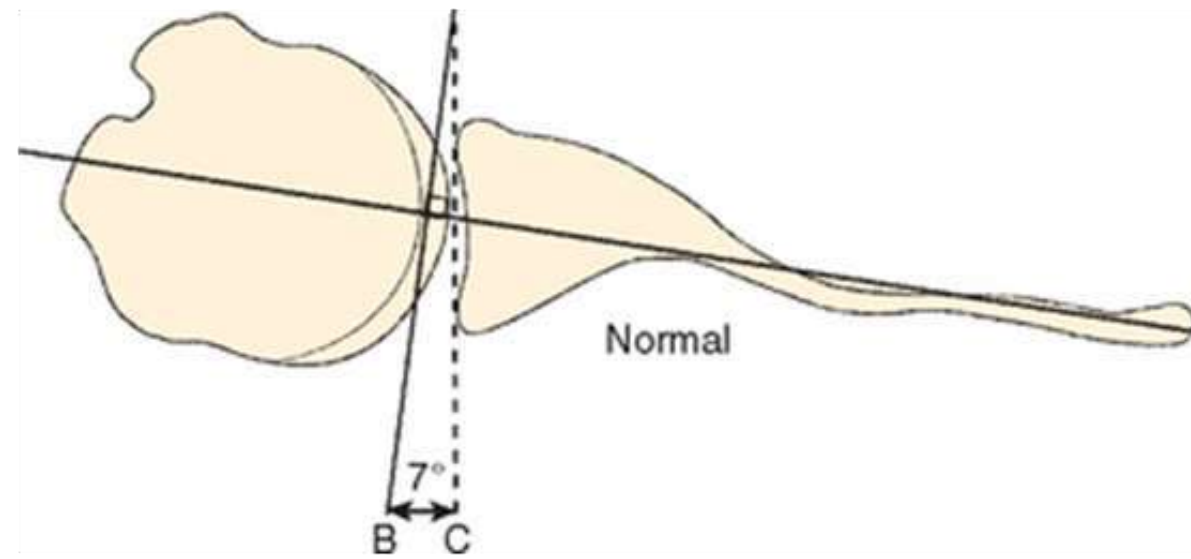
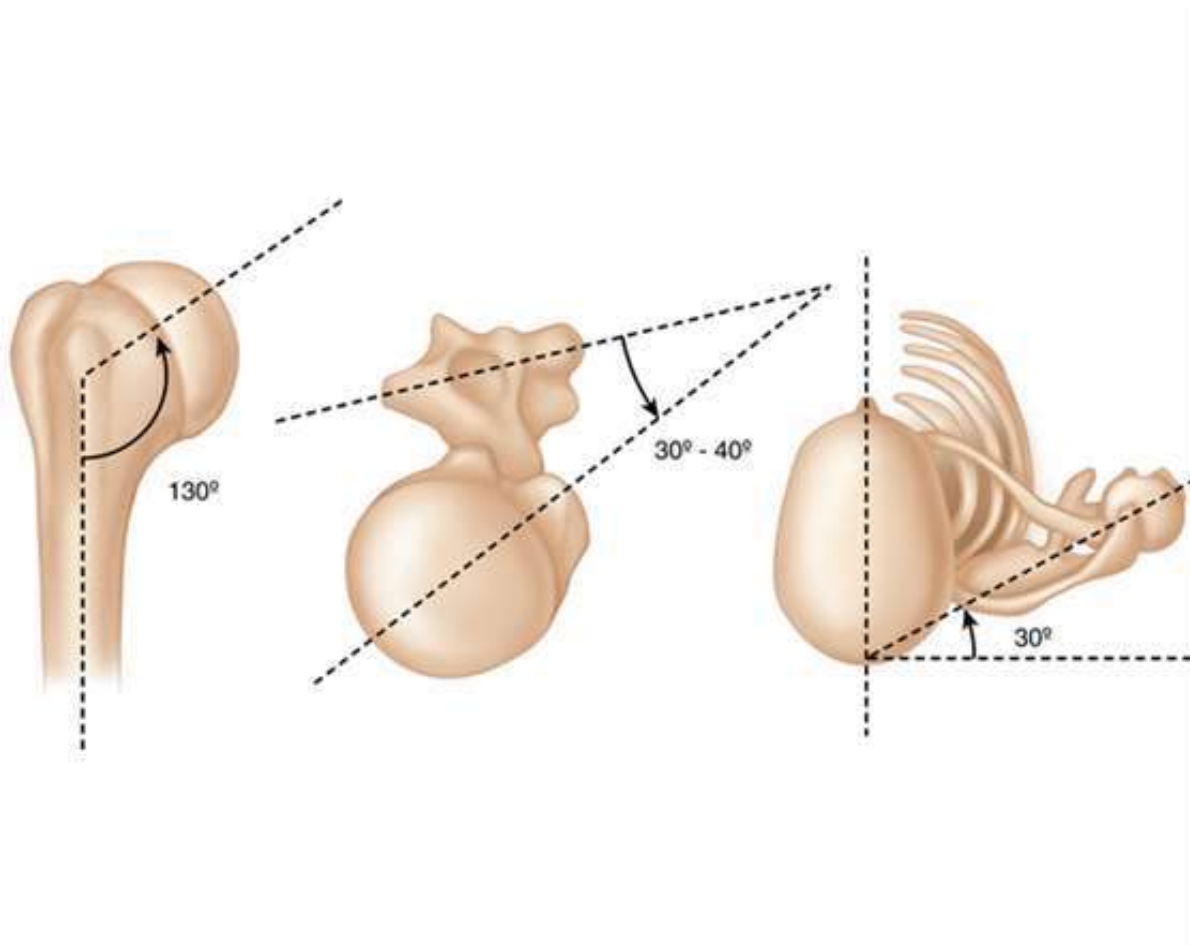


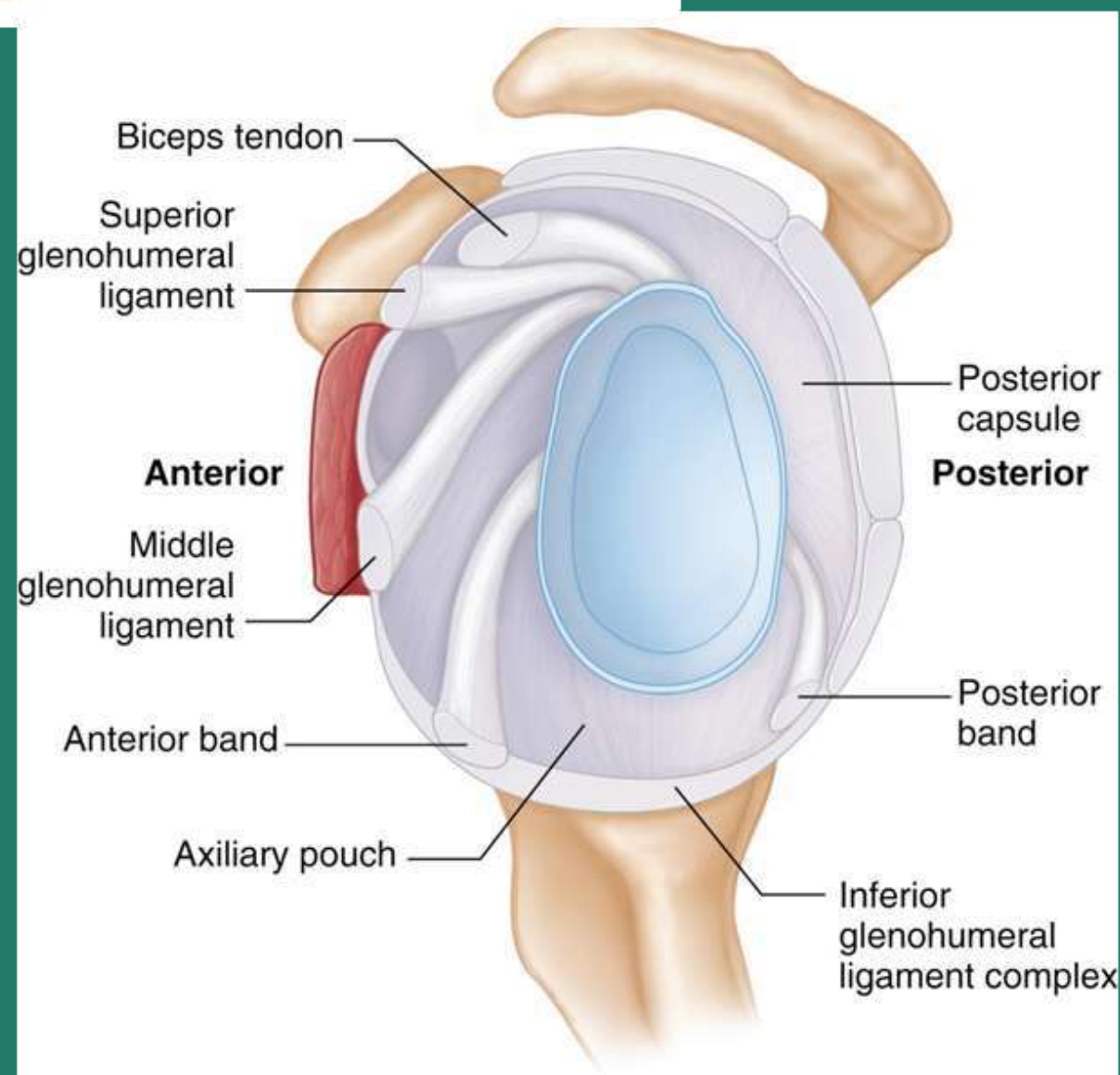
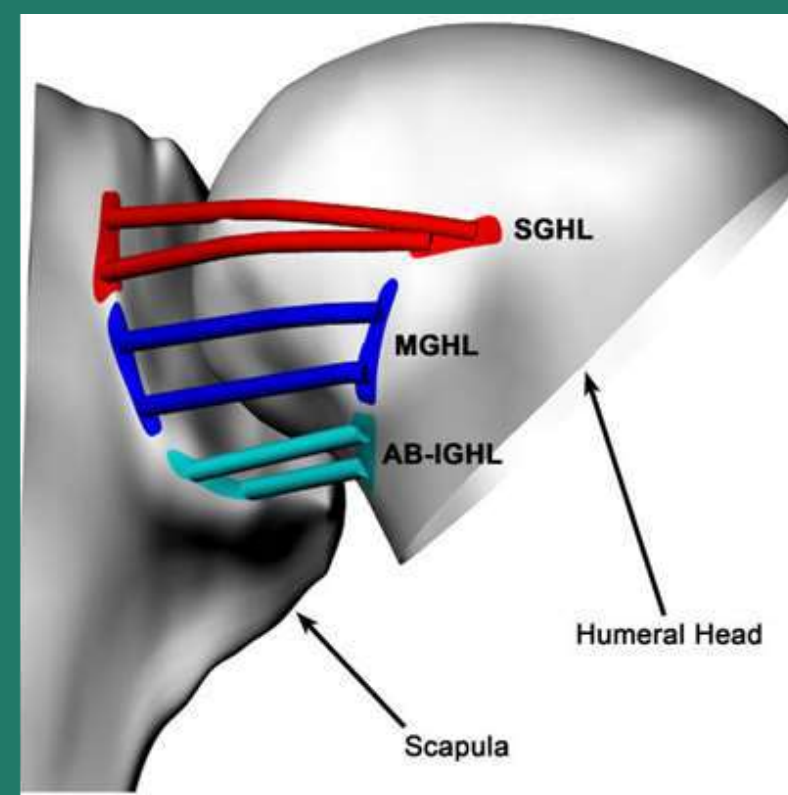
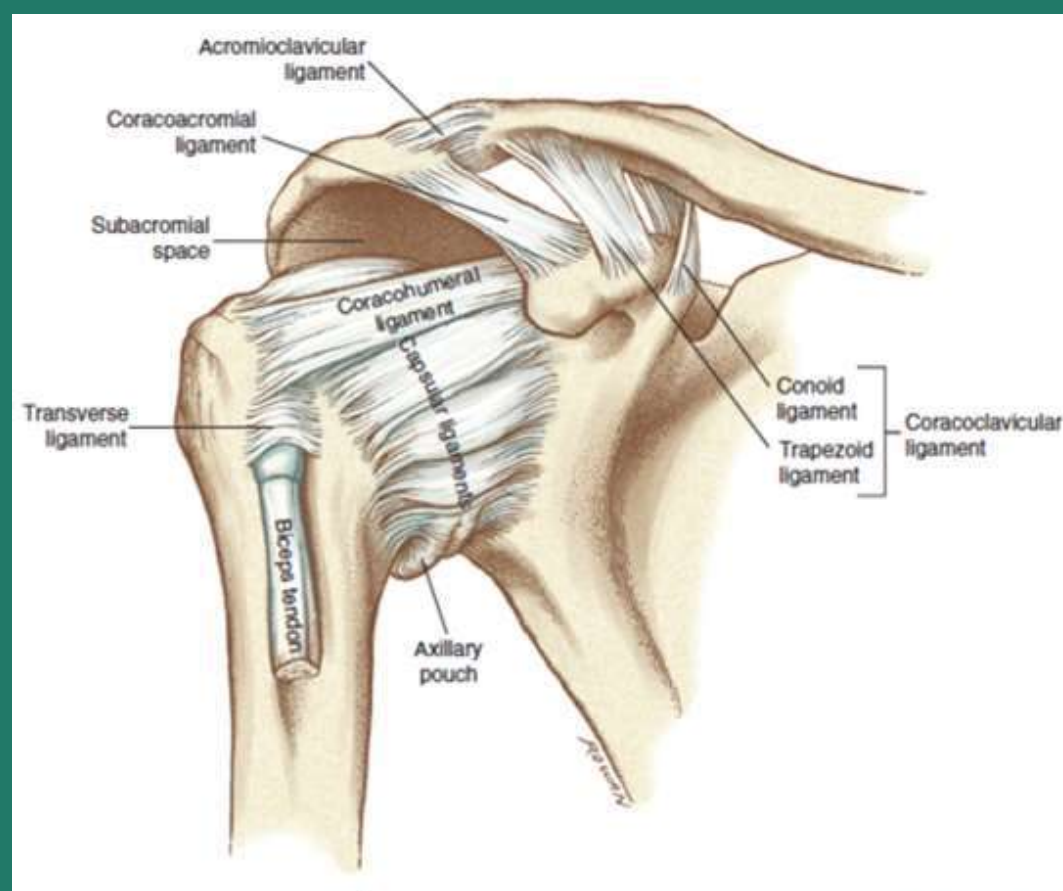
DYNAMIC



STATIC

Bone/Joint
Labrum
Capsule
Glenohumeral ligaments





Coraco-Acromial ligament – stabilises humeral head to anterior and inferior translation

SGHL – tight in flexion, extension, adduction and external rotation (limit posterior and inferior displacement)

MGHL – tight in external rotation and abduction up to 45° (limit anterior translation)

IGHL – stabilises against abduction (in internal rotation posterior band tight, in external rotation anterior band tight)



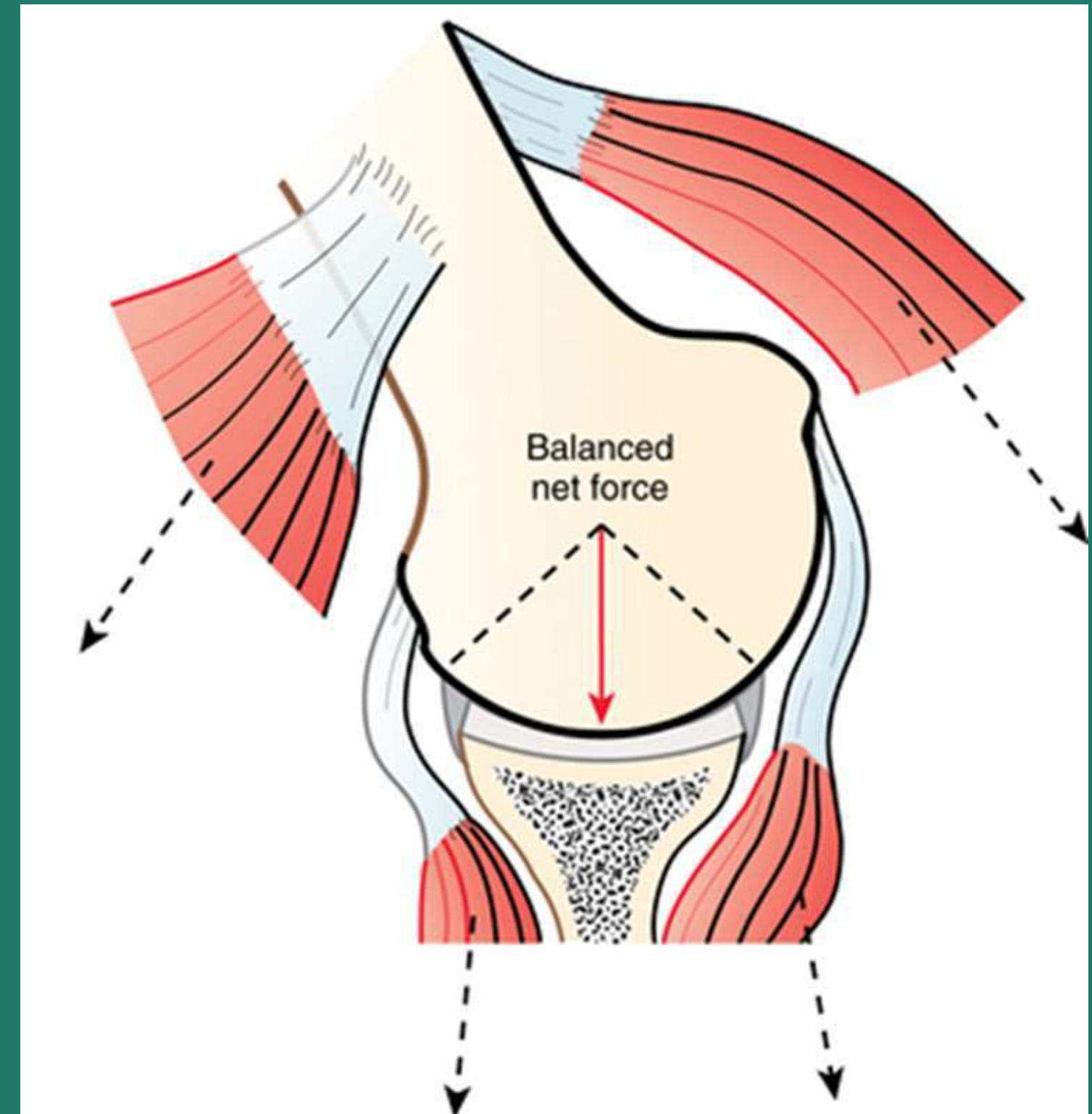
ESPN  CLE **18**  BOS **10** 1ST 5:25 08
PLAYOFFS EAST 1ST ROUND - CLE LEADS 3-0

NBA EAST NBA WEST MLB ABC



ROTATOR CUFF

Muscle	Force Generation
Subscapularis	54%
Supraspinatus	14%
Infraspinatus	22%
Teres Minor	10%





PERISCAPULAR MUSCLES

Scapular stabilisers

- Levator scapulae
- Pec minor
- Rhomboid major
- Rhomboid minor
- Serratus anterior
- Trapezius

Scapulohumeral muscles

- Biceps brachi (long and short)
- Triceps brachii long head
- Coracobrachial muscle
- Lattissimus dorsi
- Teres major

SPORTS MEDICINE ROLE

1

Understand the pathogenesis of the injury

2

Help patient do physiotherapy better!

3

Recognise when conservative treatment is not enough



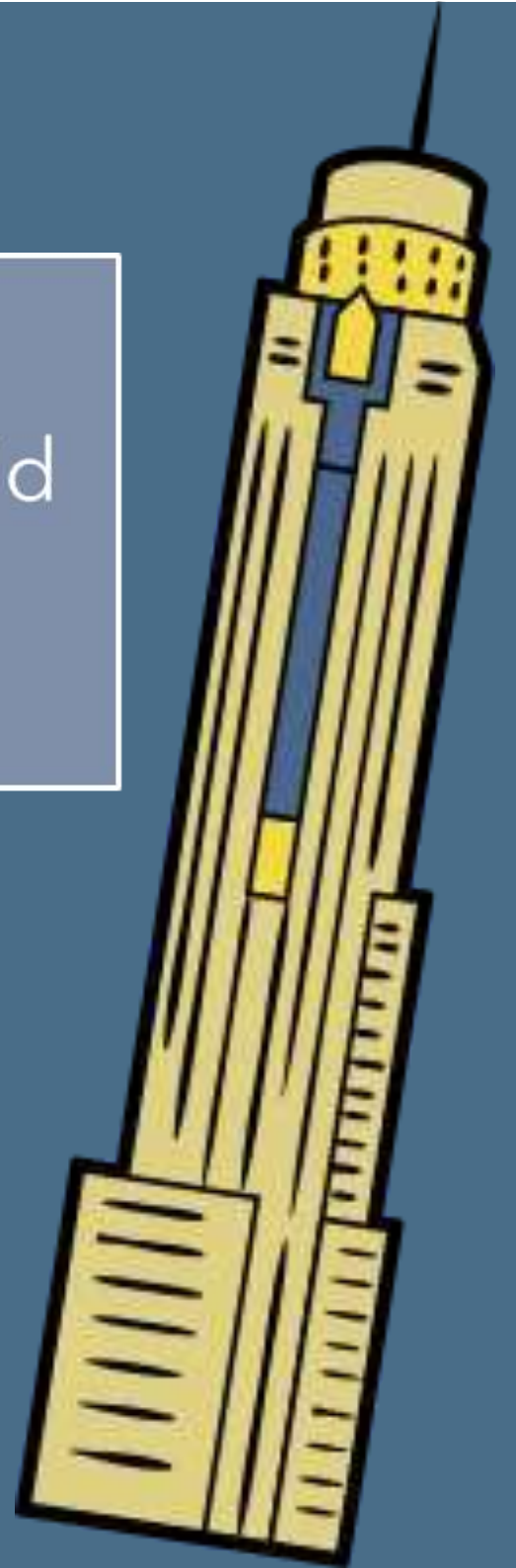
INSTABILITY - STRUCTURAL

Labral lesion (e.g.
Bankhart)

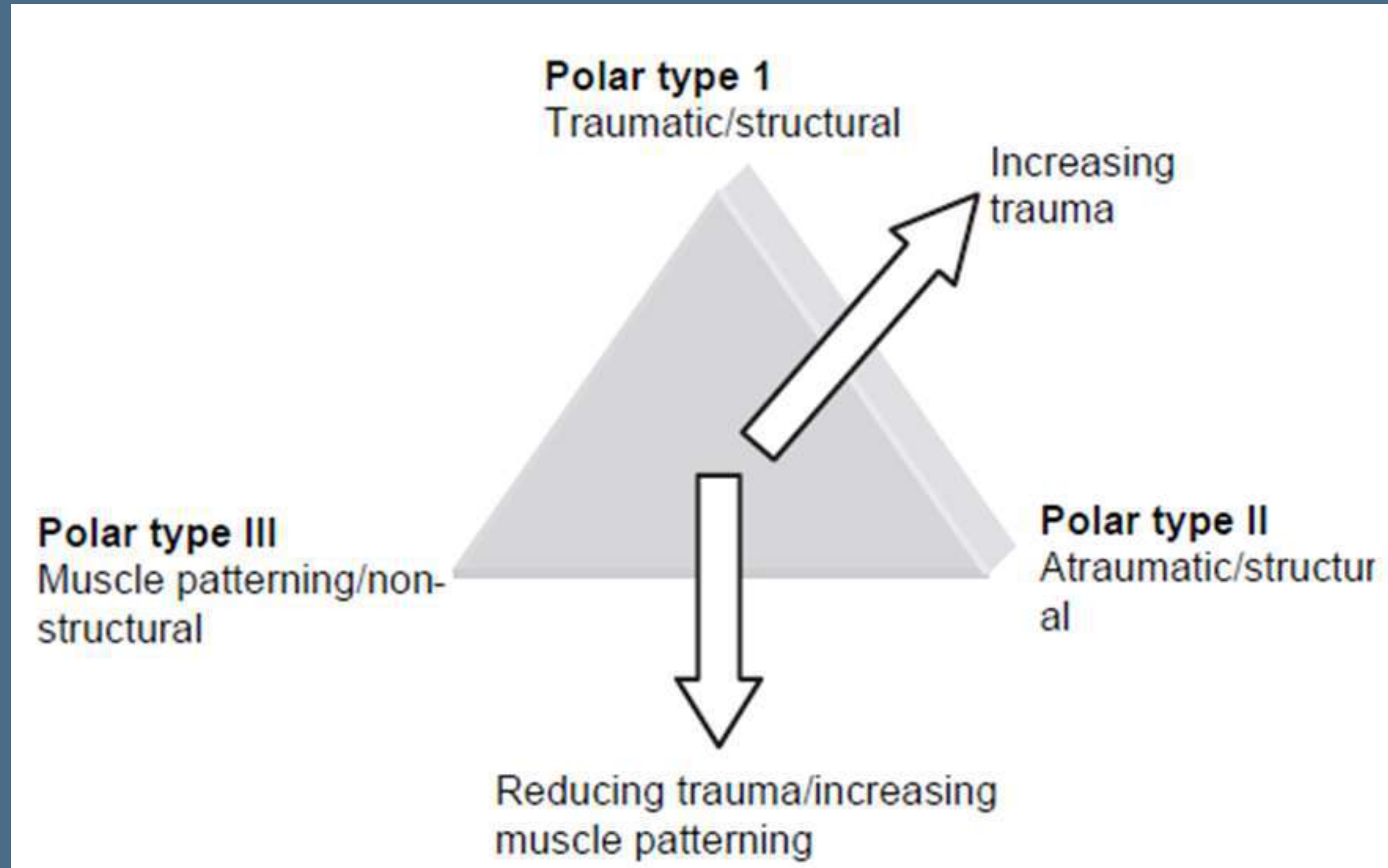
Deformity of the
Capsule and Inferior
glenohumeral
ligament

Humeral or glenoid
bone defects

Rotator cuff injury



APPROACHING THE PATIENT WITH INSTABILITY



PHYSICAL THERAPY



1. Restraints - injury to static capsule/ligament elements



2. Muscle contraction - altered control and function that facilitates joint incongruity



1. CNS - **alteration of** afferent signals from capsule/Impaired proprioception --> delayed or uncoordinated muscle response

PRIMARY TREATMENT GOAL - COMPENSATE FOR INJURED STATIC STRUCTURES

REHABILITATION



01

1. Manage pain and apprehension

02

2. Scapular control and strength

03

3. Rotator cuff control strength

04

4. Adjuncts

EARLY SURGICAL REFERRAL

Absolute	Relative
>50% rotator cuff injury	>2 dislocations in a season
Glenoid bone defect >25%	Overhead or throwing athletes
Humeral head defect >25%	Contact sports particularly season end
Irreducible dislocation	Age <20
Failed rehab - what rehab did they do?	
Persistent instability with specific skills	



RETURN TO SPORT/FUNCTION



Evaluate health
status



Evaluate
Participation
Risk



Identify
modifiable
factors



Most athletes return
to sport

Symmetric ROM +
Strength

Sport specific
exercises without
pain or limitation

Bracing - avoid
extreme abduction
and external rotation
→ subjective

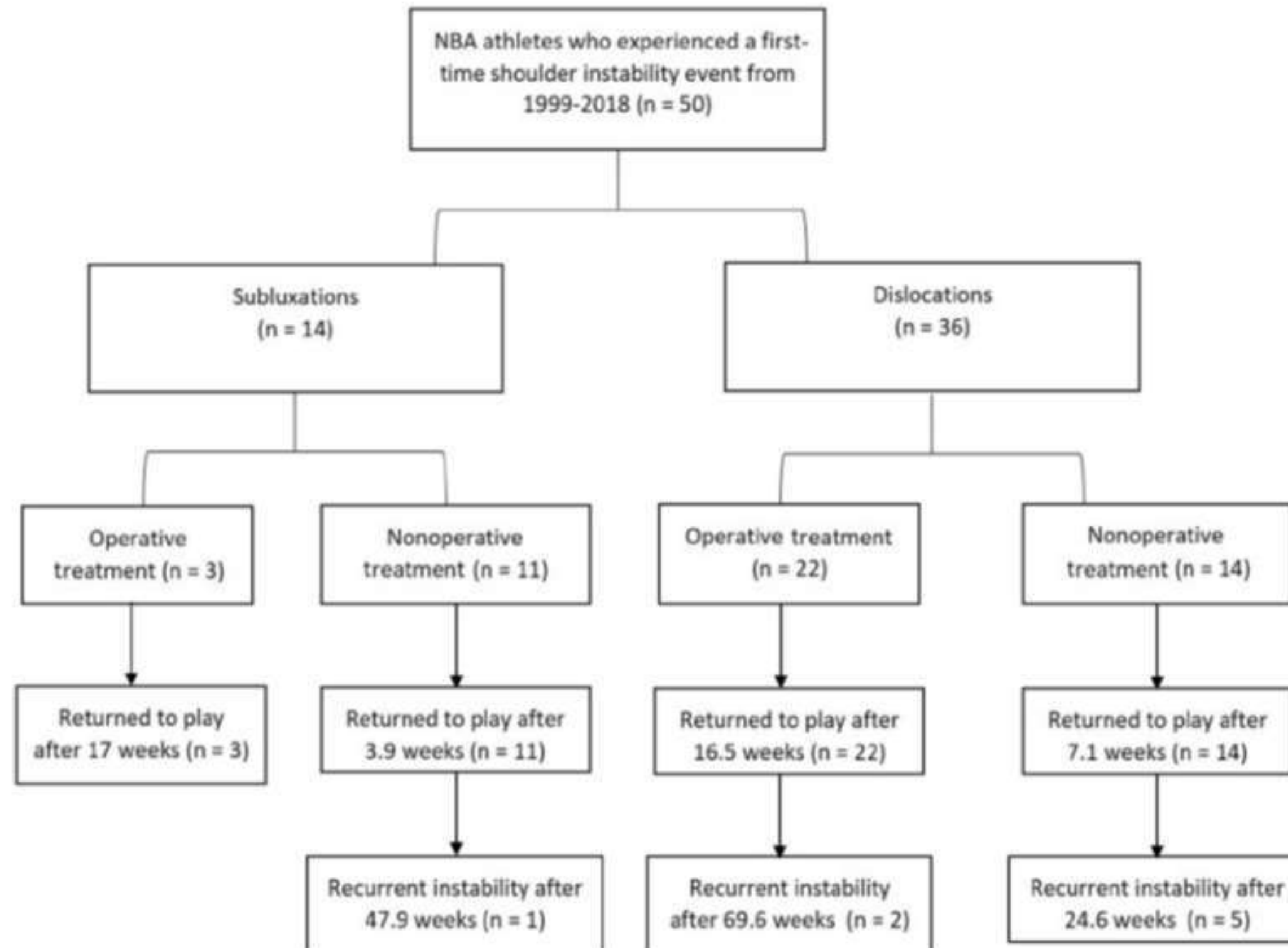


Figure 1 Overview of shoulder instability occurrence and treatment in the NBA, 1999-2018. *NBA*, National Basketball Association.



BUT IT STILL
HURTS...

- *Confirm diagnosis*
- *Psychosocial factors*
- *Red flags*

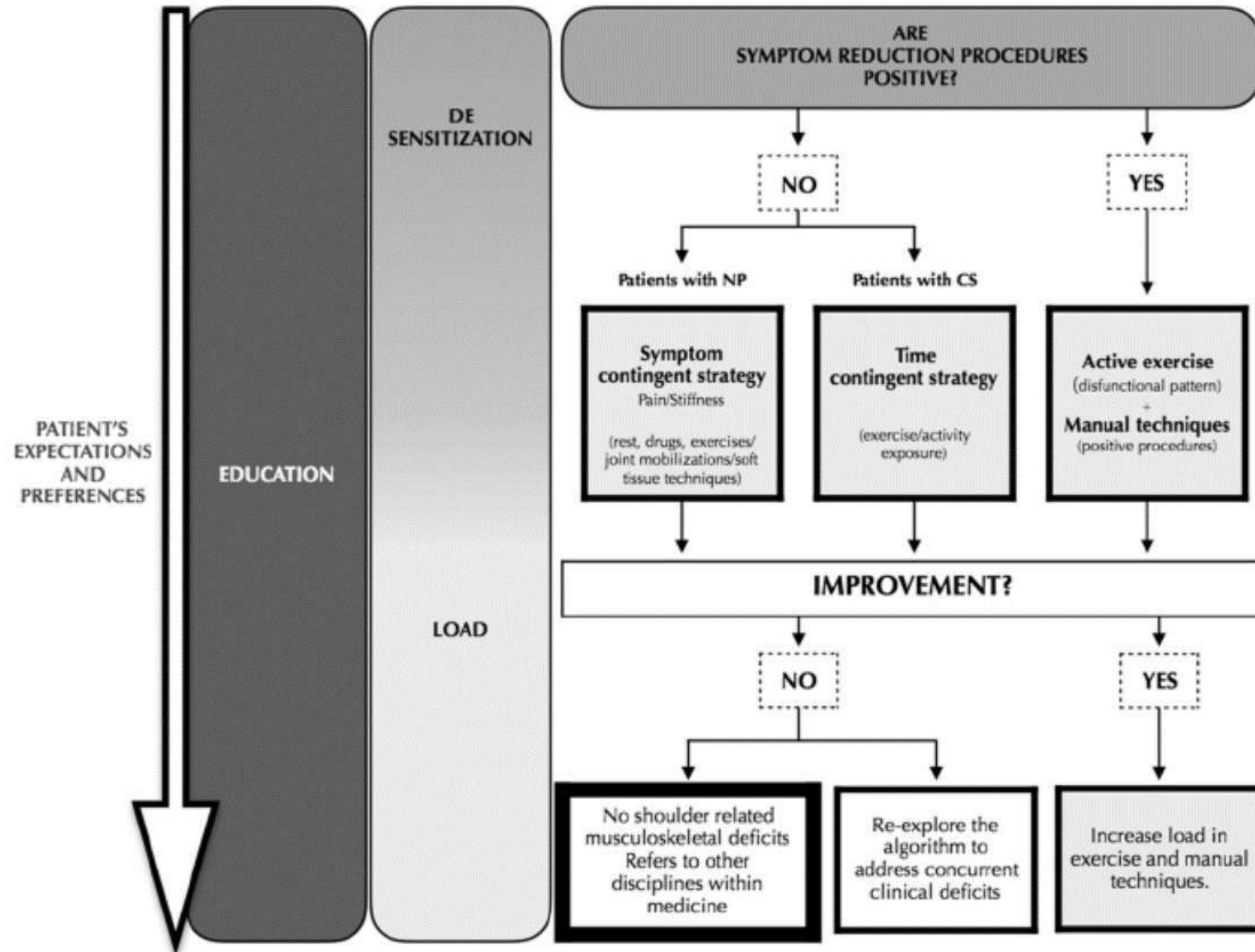
Table 1. History Findings and Associated Shoulder Disorders

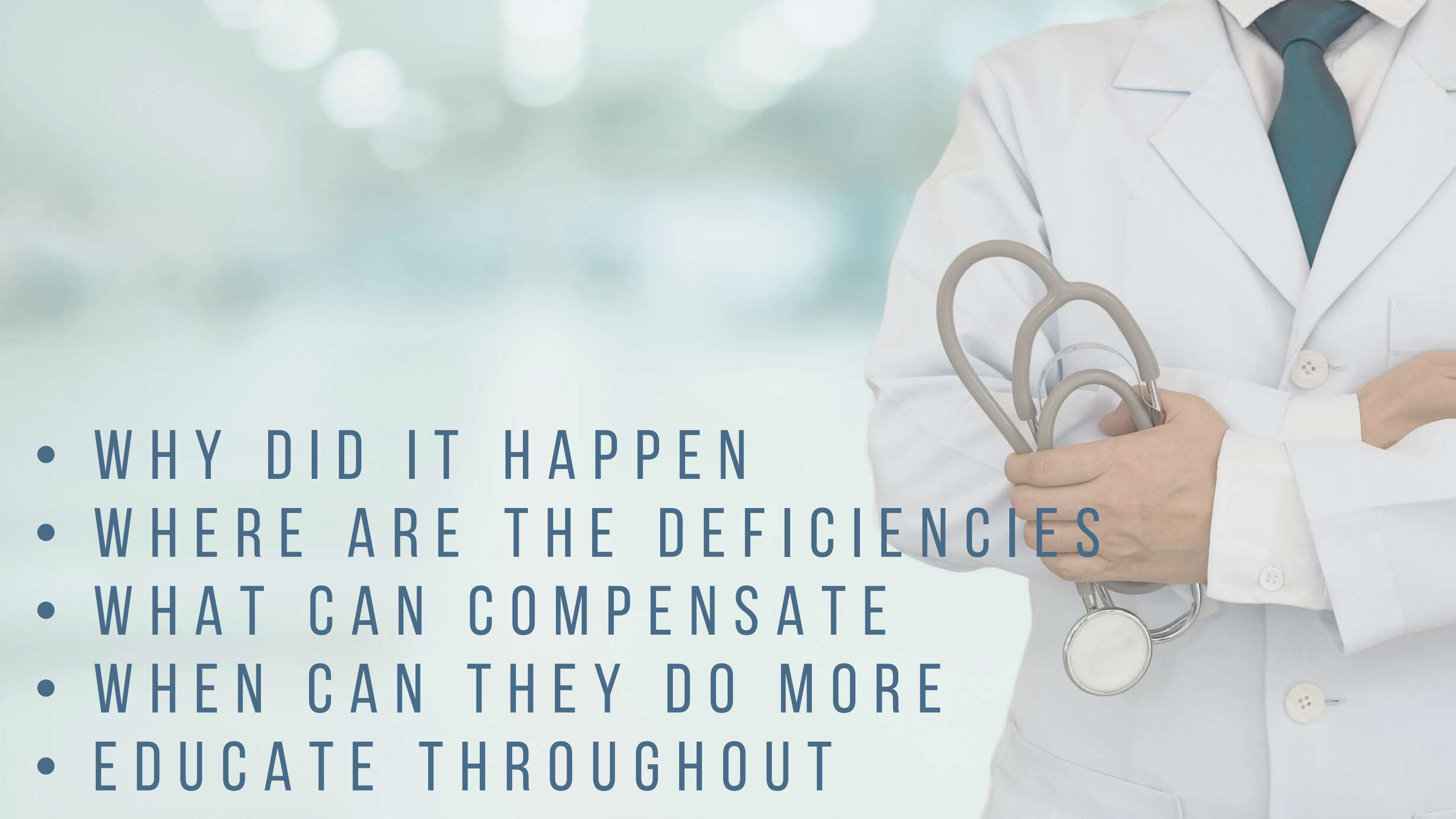
<i>History</i>	<i>Associated condition</i>
Age ^{5,6,7}	If younger than 40 years: instability, rotator cuff tendinopathy If older than 40 years: rotator cuff tears, adhesive capsulitis, glenohumeral osteoarthritis
Diabetes or thyroid disorders ^{8,9}	Adhesive capsulitis
History of trauma ¹⁰	If younger than 40 years: shoulder dislocation/subluxation If older than 40 years: rotator cuff tears
Loss of range of motion	Adhesive capsulitis, glenohumeral osteoarthritis
Night pain ¹⁰	Rotator cuff disorders, adhesive capsulitis
Numbness, tingling, pain radiating past elbow	Cervical etiology
Pain location	Anterior-superior shoulder pain associated with acromioclavicular joint pathology Diffuse shoulder pain in deltoid region associated with rotator cuff disorders, adhesive capsulitis, or glenohumeral osteoarthritis
Pain with overhead activity ¹⁰	Rotator cuff disorders
Sports participation ¹¹	Shoulder instability associated with overhead sports (e.g., baseball, softball, tennis), and collision sports (e.g., football, hockey) Acromioclavicular joint pathology associated with weight lifting
Weakness	Rotator cuff disorders, glenohumeral osteoarthritis

<i>Diagnosis</i>	<i>Findings consistent with diagnosis</i>	<i>Findings inconsistent with diagnosis</i>	<i>Imaging</i>
Acromioclavicular joint osteoarthritis	Pain at acromioclavicular joint; positive cross-body adduction test; may have history of trauma	No pain with palpation at acromioclavicular joint; negative cross-body adduction	Radiography shows osteoarthritis at acromioclavicular joint, some evidence of acromioclavicular separation
Adhesive capsulitis	Age older than 40 years; decreased active and passive range of motion; history of diabetes or thyroid disease	Full passive range of motion; no pain with movements	Radiography usually normal
Glenohumeral instability	Age usually younger than 40 years; history of subluxation or dislocation, or generalized ligamentous laxity; positive apprehension test	Negative apprehension test	Radiography usually normal
Glenohumeral osteoarthritis	Age older than 50 years; progressive pain; crepitus with range of motion	Age younger than 50 years; normal radiography	Radiography shows narrowing of joint space, spurring, and osteophytes
Rotator cuff pathology	Age usually older than 40 years; pain with overhead activity; night pain; weakness; positive Hawkins' impingement test; and rotator cuff weakness	No pain with overhead activities; no arm pain; no weakness with lift-off, external rotation, or empty-can tests	Radiography may show humeral head sclerosis or cyst, loss of acromial-humeral interval; acromial spur

TRIAGE

NON-SPECIFIC SHOULDER PAIN



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- A doctor in a white lab coat and a dark teal tie is holding a grey stethoscope. The background is a soft, out-of-focus light blue and white bokeh. On the left side, there is a list of five bullet points in a dark blue, sans-serif font.
- WHY DID IT HAPPEN
 - WHERE ARE THE DEFICIENCIES
 - WHAT CAN COMPENSATE
 - WHEN CAN THEY DO MORE
 - EDUCATE THROUGHOUT