Inaugural Alumni Weekend 2026

APRIL 10 & 11, 2026

Charlston Southern University
Doctor of Physical Therapy
Inaugural Alumni Weekend
April 10 and 11, 2026

Saturday Session 1:00 – 3:30
Topic: Rotator Cuff Repair

Disclosures

There are no financial disclosures at it pertains to this presentation.

Consulting work for Rangemaster

The opinions expressed in this presentation are solely from the presenter and not of MCG, ASSET, Department of Defense, or Augusta University.

Handouts

Joshua.E.Pniewski@gmail.com

Timing is Everything!

1:00-1:50

- *Relationships*
- *Cuff Repair Vid*
- *Epidemiology and Tears*
- *DDR*

2:00-2:50

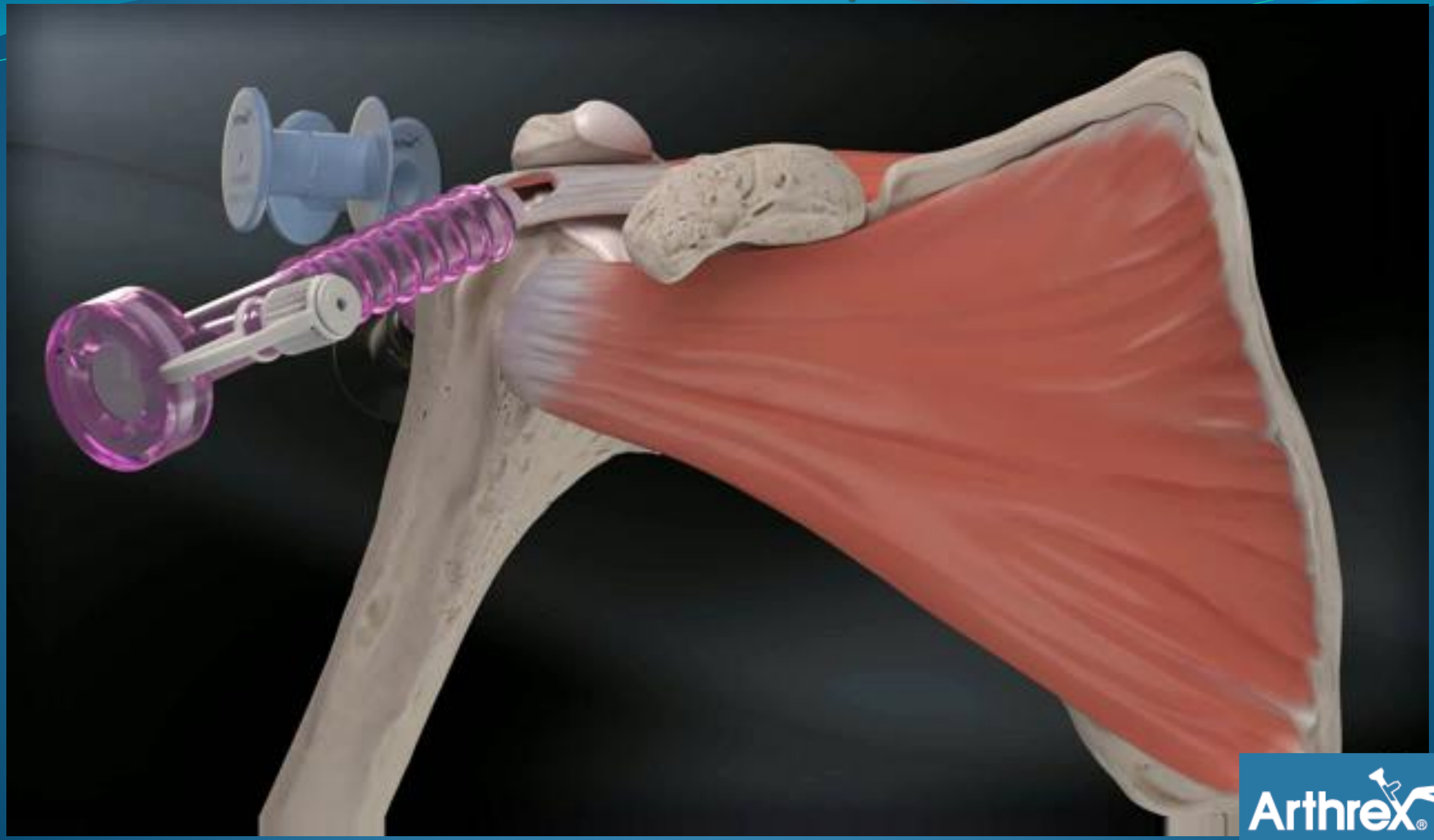
- *Post Op Stages*
- *Sling Management*
- *PROM*
- *CC Flex/ER*
- *Stage Breakdown (1,2, and 3)*

3:00-3:30

- *PT Timing/Frequency*
- *Therex Applications (101, 201, and 301)*

Additional Therex

Traditional RTC Repairs



Epidemiology of RTC Tears

Tashjian Review (Clinical Sports Medicine 2012, 31:589-604)

- Most Common cause of disability related to the shoulder
- Hypovascularized in nature
- Nicotine, Hypercholesterolemia, Diabetes, etc.
- 65yr old 40% have asymptomatic tears (Partial/full)
- Preservation of GHJ kinematics and RTC force couples can keep tear asymptomatic
- No Spontaneous healing

Epidemiology of RTC Tears

Tashjian Review (Clinical Sports Medicine 2012, 31:589-604)
Indications and Timing for Surgical Repair

Box 1
Treatment algorithm for rotator cuff disease

- Group I—initial nonoperative treatment
  - Tendonitis
  - Partial-thickness tears (except maybe larger bursal-sided tears)
  - Maybe small (<1 cm) full-thickness tears
- Group II—consider early surgical repair
  - All acute tears full-thickness (except maybe small [<1 cm] tears)
  - All chronic full-thickness tears in a young (<65) age group (except maybe small [<1 cm] tears)
- Group III—initial nonoperative treatment
  - All chronic full-thickness tears in an older (>65 or 70) age group
  - Irreparable tears (based on tear size, retraction, muscle quality, and migration)

Epidemiology of RTC Tears

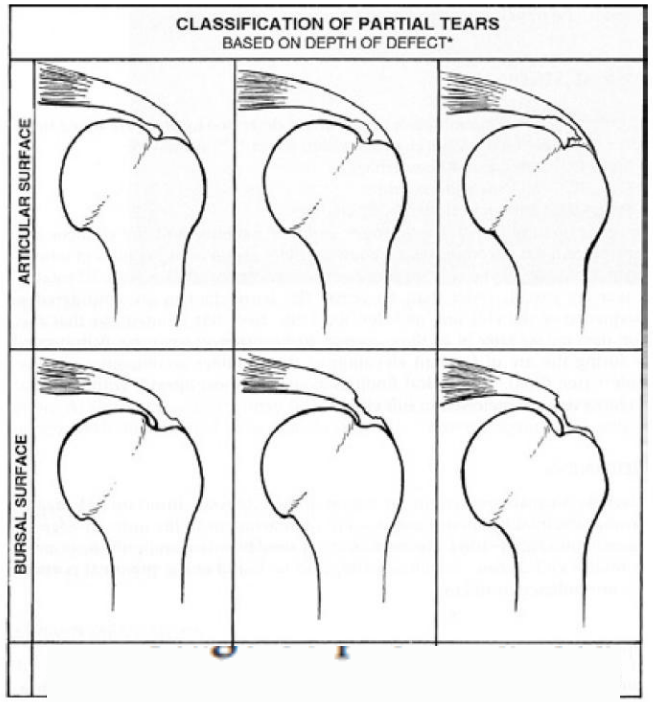


Fig. 11. Topography of tears

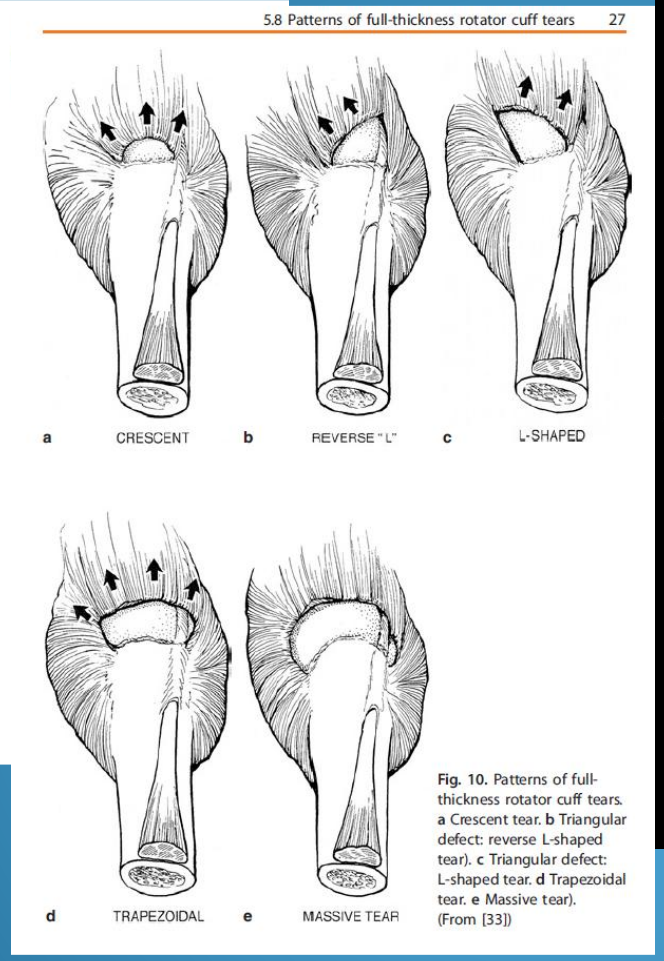
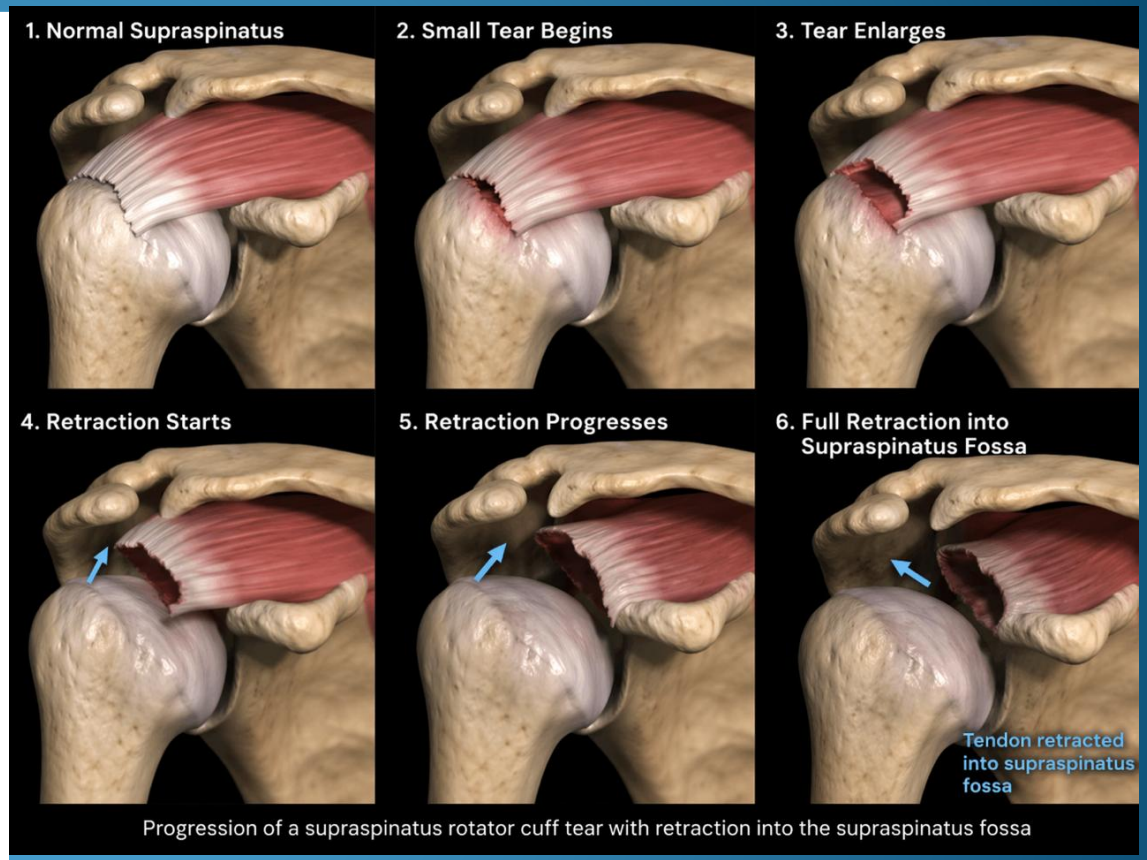


Fig. 10. Patterns of full-thickness rotator cuff tears. **a** Crescent tear. **b** Triangular defect: reverse L-shaped tear). **c** Triangular defect: L-shaped tear. **d** Trapezoidal tear. **e** Massive tear). (From [33])



Dynamic Digital Radiography (DDR)

What is DDR?

an advanced imaging technology that captures a rapid series of low-dose, high-speed digital X-ray images to create a "cine" or movie, allowing clinicians to visualize anatomical structures in motion

Clinical Applications:

Primarily used in orthopedics to analyze joint stability and soft tissue interaction (e.g., in the spine or extremities) and in pulmonology to evaluate diaphragmatic movement, respiratory flow, and lung ventilation.

Key Benefits:

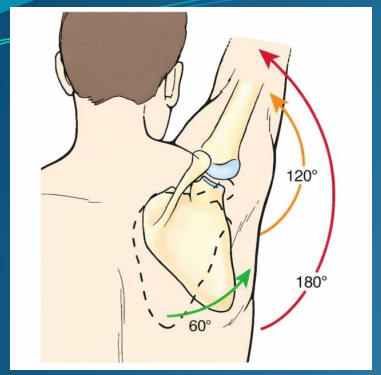
Lower Radiation

Functional Imaging

Efficient and Accessible

Scapular Assessment

Dynamic Digital Radiography (DDR)



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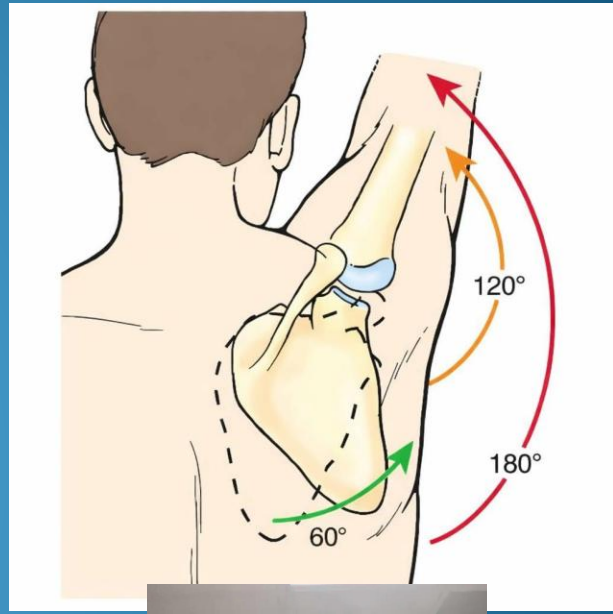

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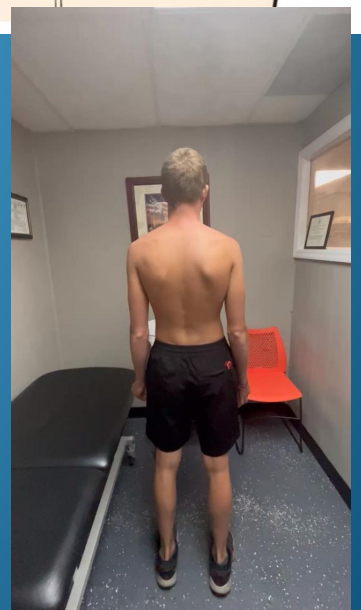

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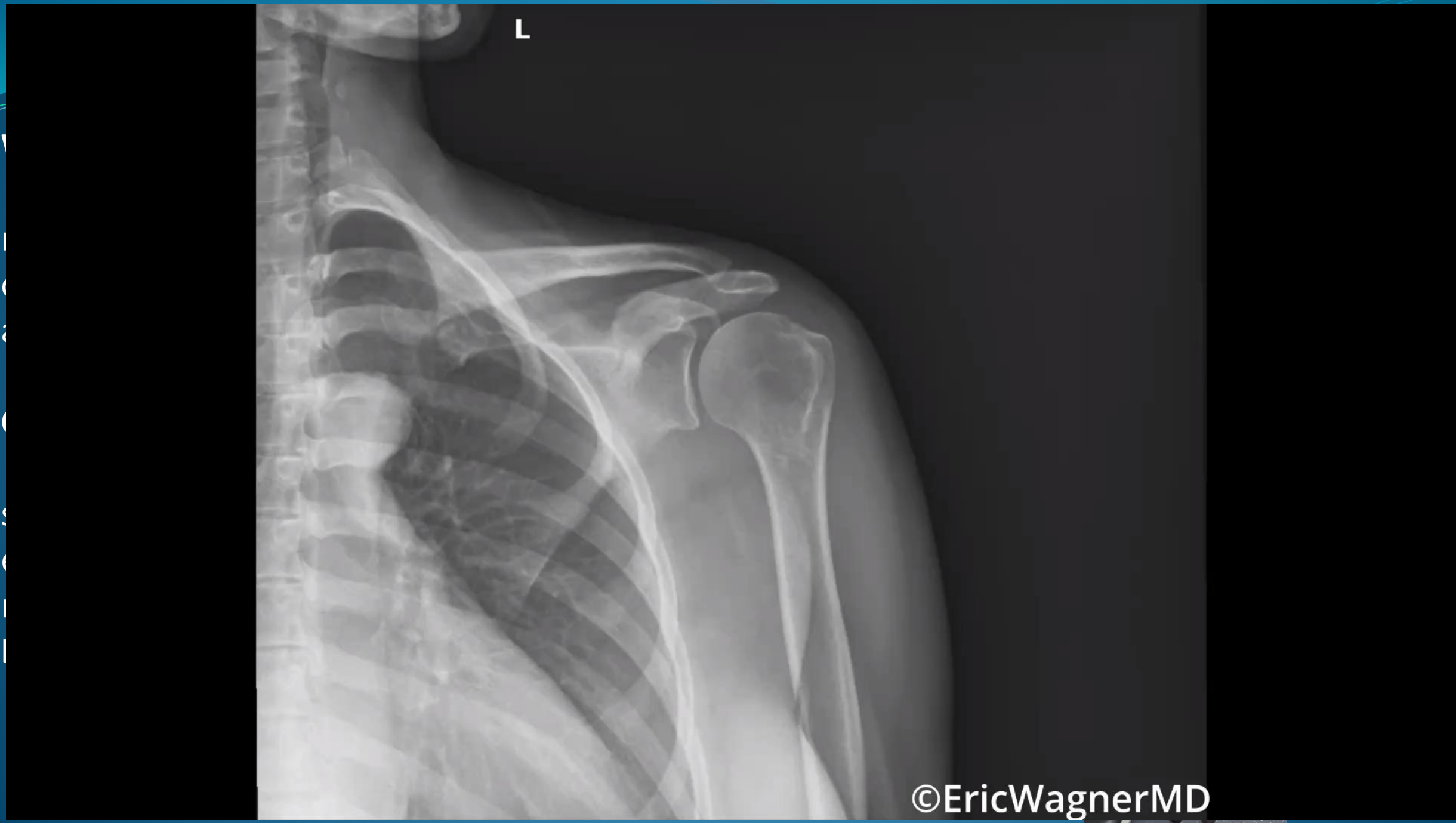
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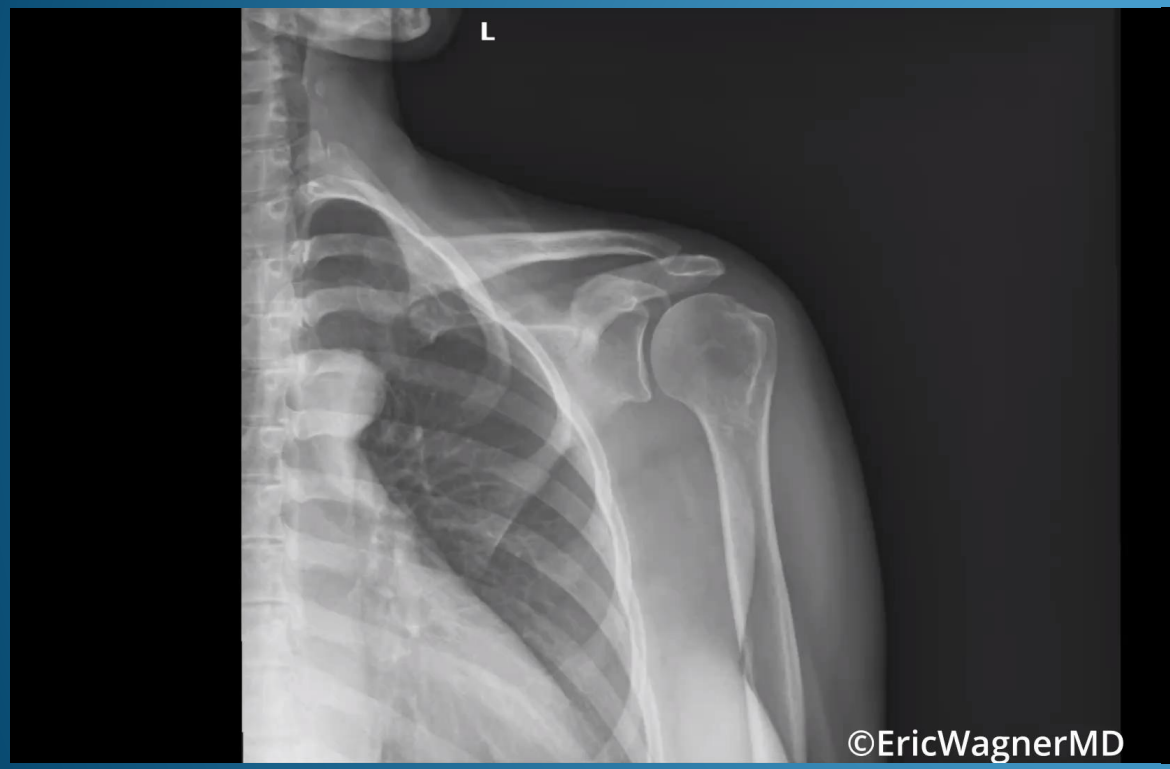
Dynamic Digital Radiography (DDR)



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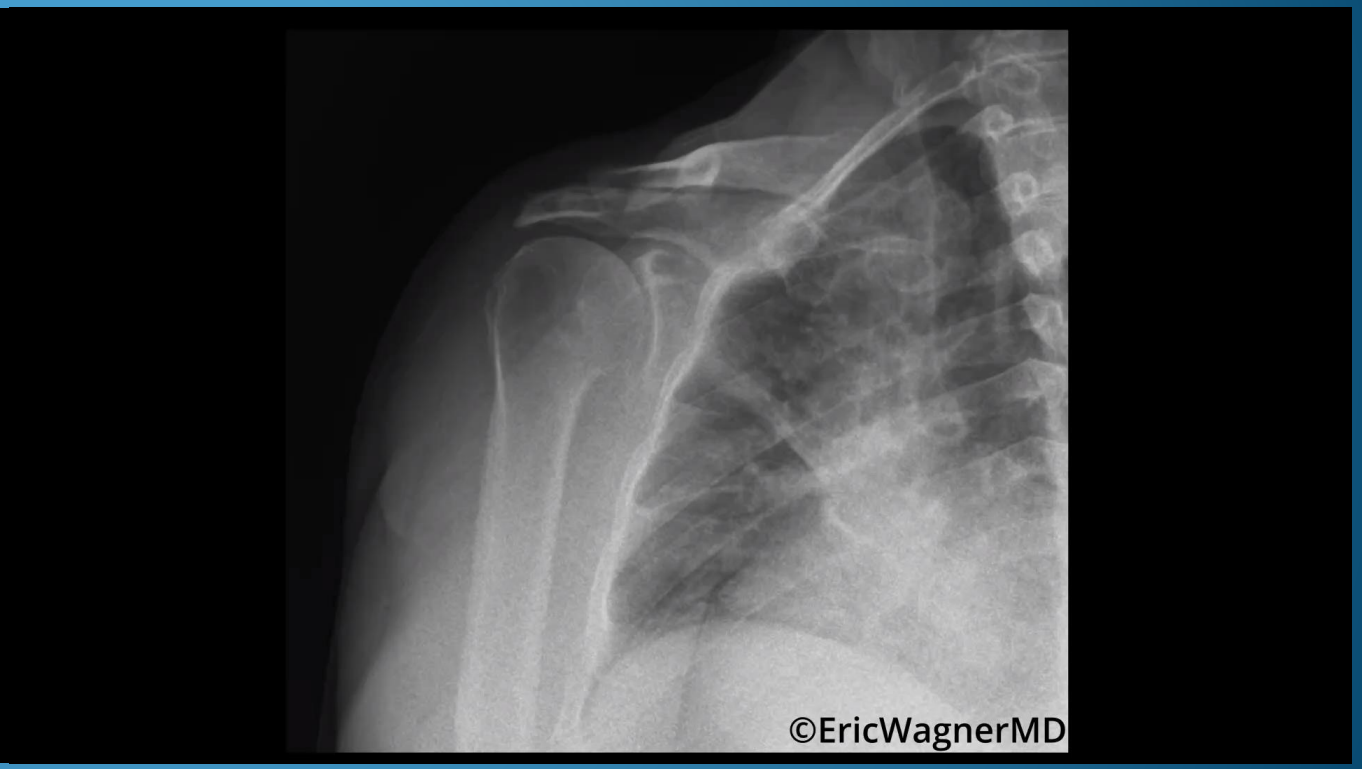
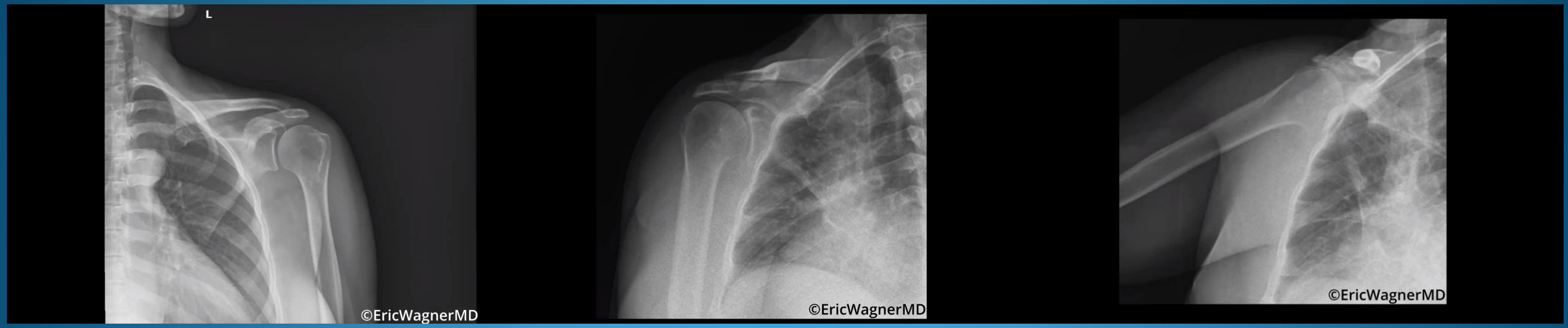


Rotator Cuff full thickness tear

Dynamic Digital Radiography (DDR)

Let's assess!



Normal

Rotator Cuff full thickness tear

What do we have here?

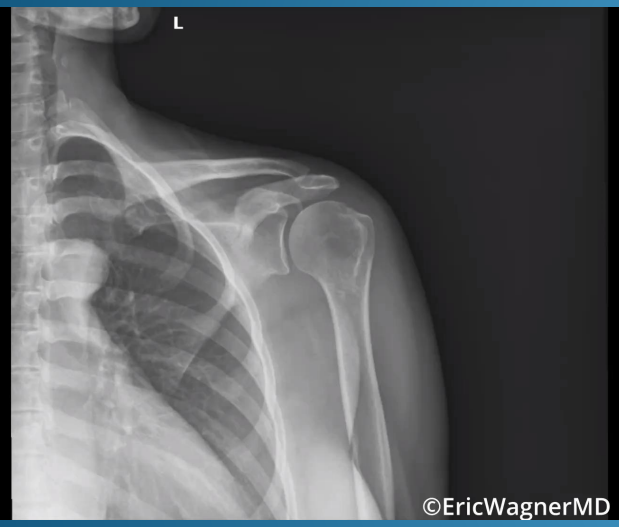
This is Jacob →

Be like Jacob!

That's the hot take ;o)

Dynamic Digital Radiography (DDR)

Let's assess!



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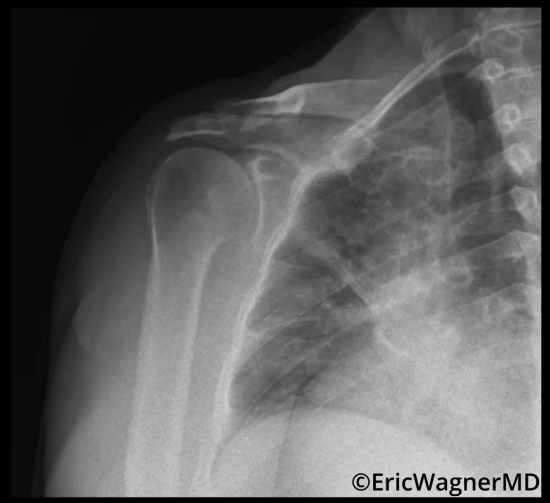
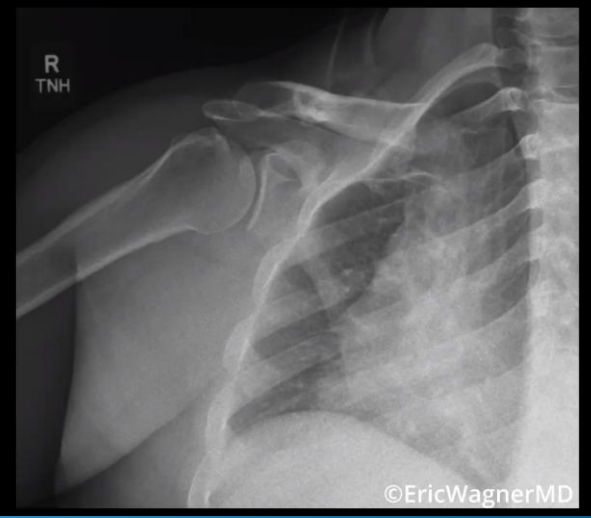


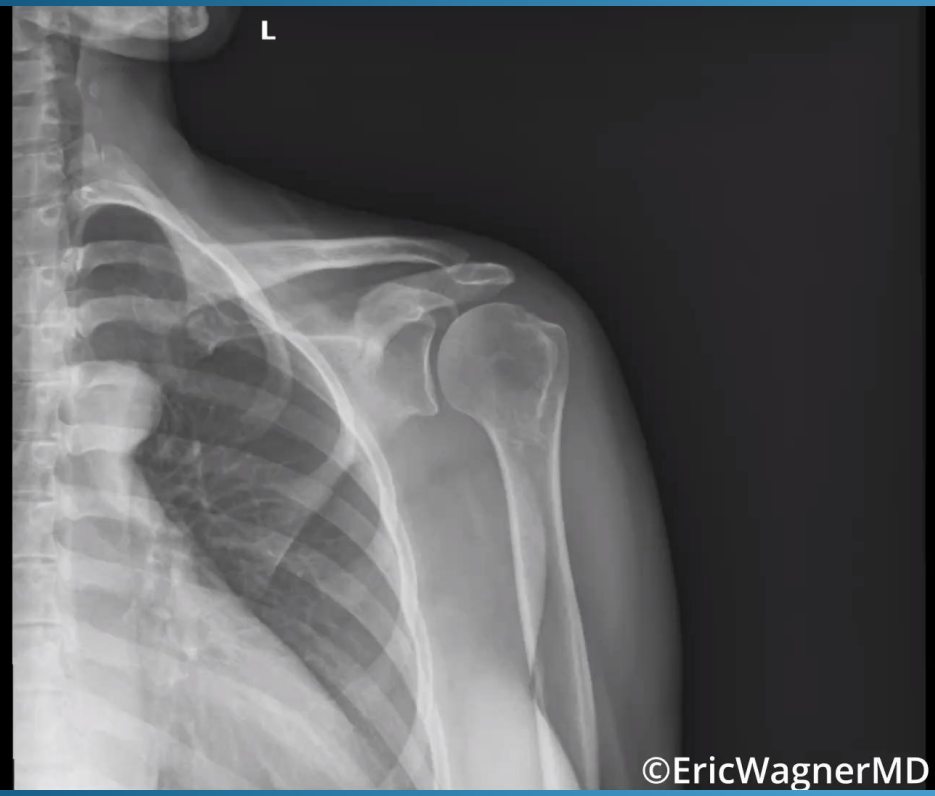
Rotator Cuff full thickness tear



Partial Thickness Tear

Dynamic Digital Radiography (DDR)

Let's assess!



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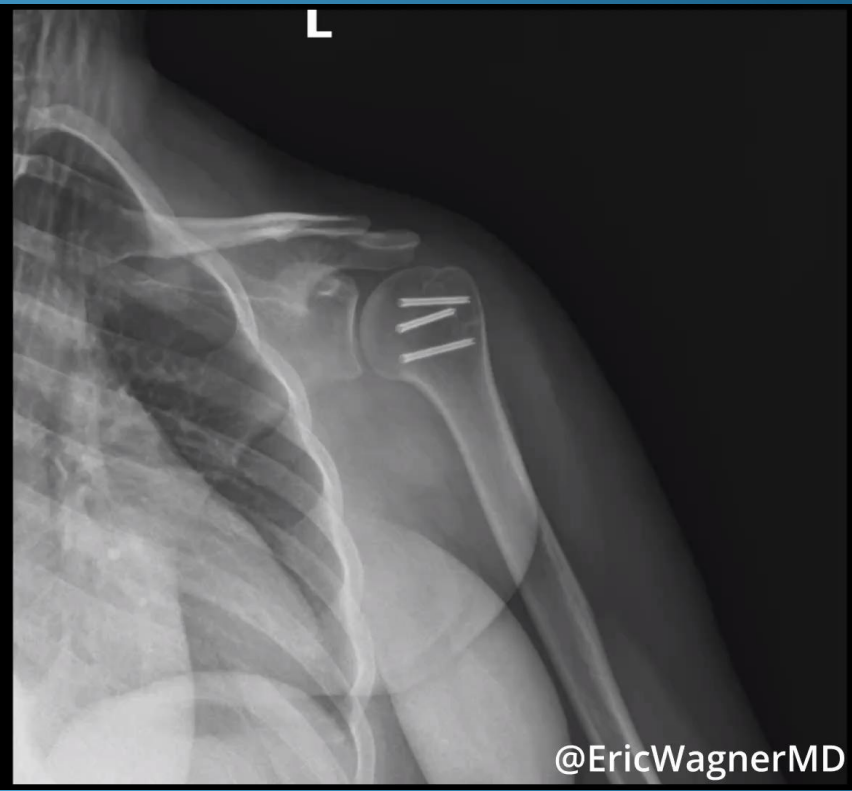
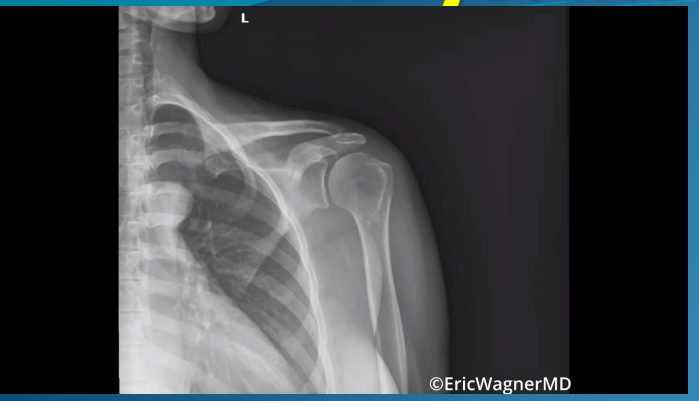


Rotator Cuff Repair

Dynamic Digital Radiography (DDR)

Let's assess!



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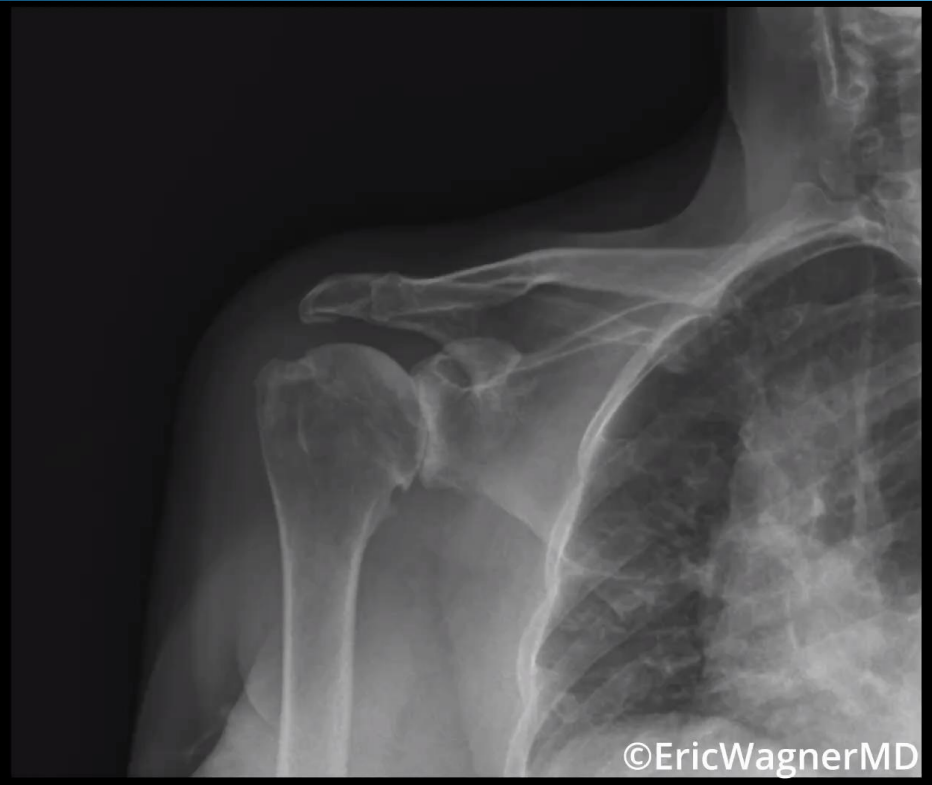
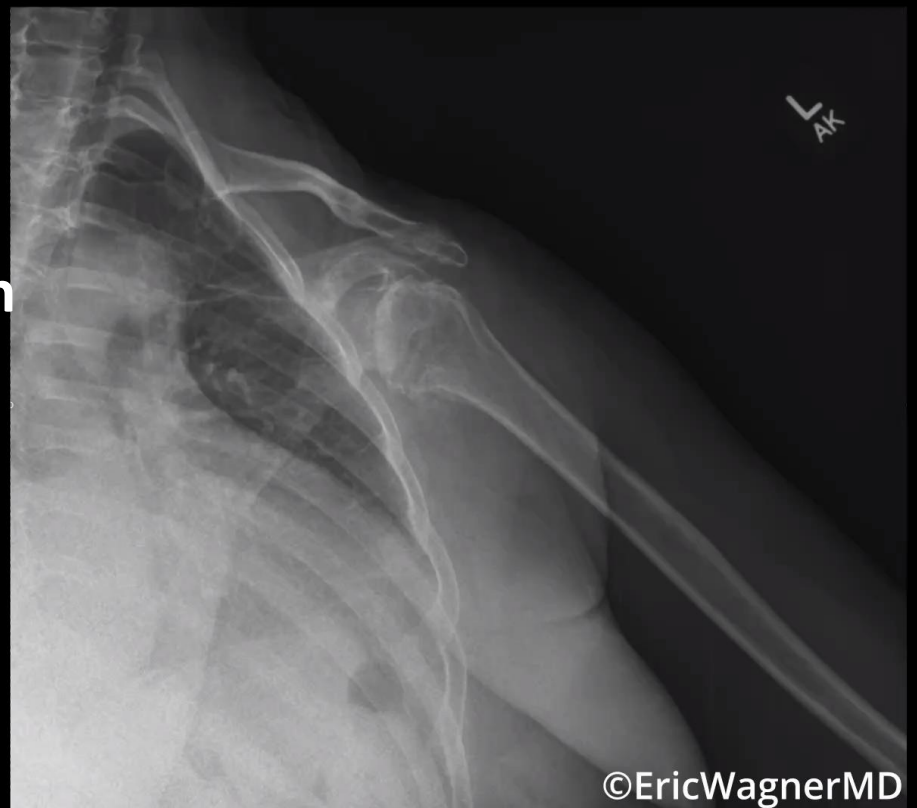


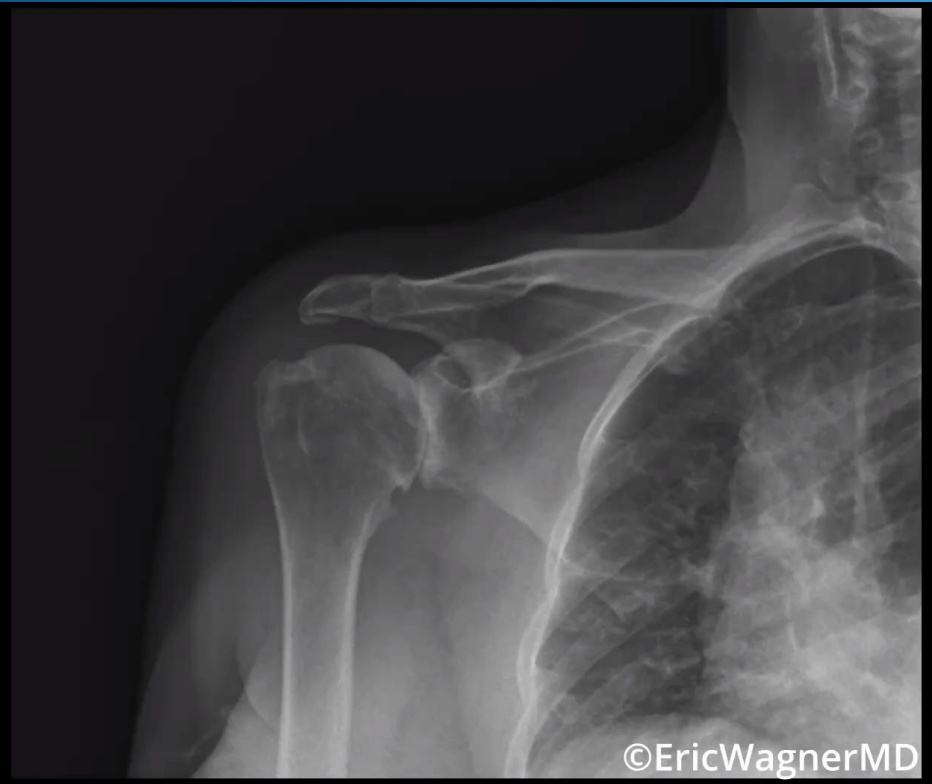
← OA with Motion

OA without Motion →



Dynamic Digital Radiography (DDR)

Let's assess!

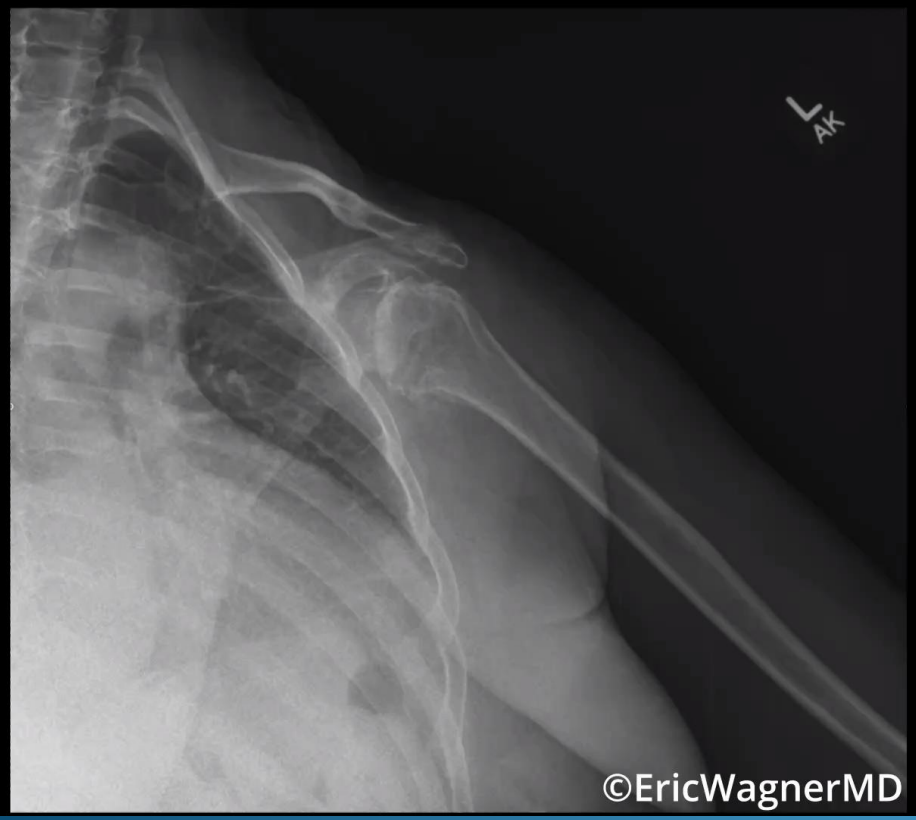


OA with motion

TSA….Replace this is a hemi

Dynamic Digital Radiography (DDR)

Let's assess!



OA without motion

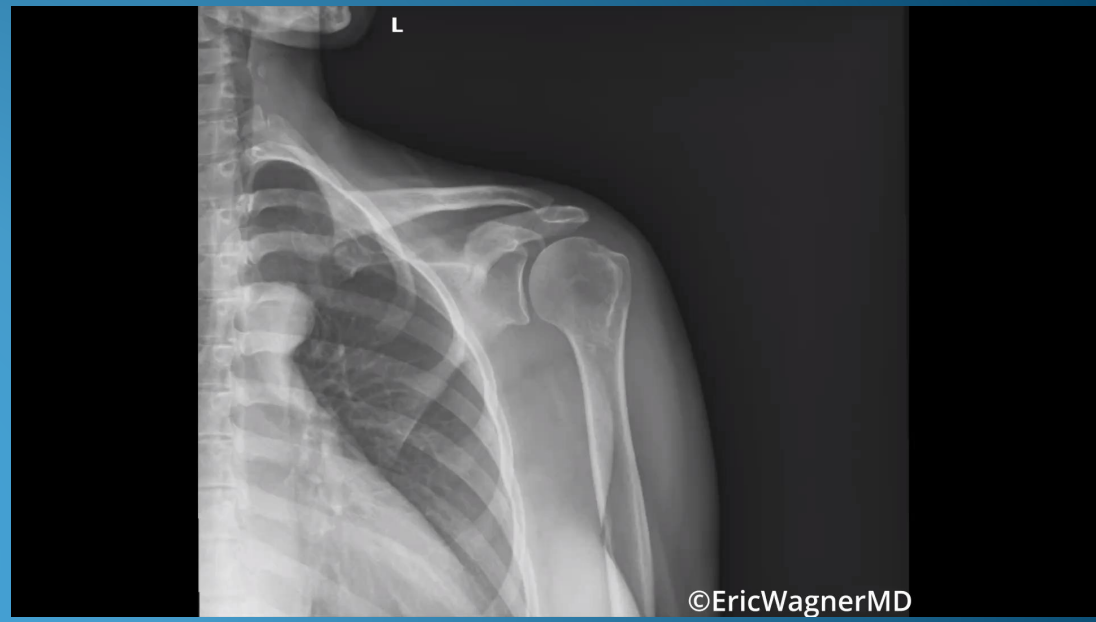
rTSA

Case Report

DDR DYNAMIC DIGITAL RADIOGRAPHY | CASE STUDY | HEALTHCARE

Rotator Cuff Tear Diagnosis Using Dynamic Digital Radiography (DDR) Technology

Eric R. Wagner , MD, MSc is an Associate Professor of Orthopedics, specializing in upper extremities at Emory Healthcare in Atlanta, Georgia. He has a passion for innovative approaches to patient care and is considered a trailblazer in his field. Dr. Wagner utilizes DDR for every patient he sees, providing an evidence-based practice for diagnosis and treatment.



60 yr old female
Former CrossFit active pickleball
Inconclusive plain films
Weakened er/flex

DDR's capability of showing the joint in motion allows patients to actively participate in their treatment journey. This patient could see the abnormal motion between the humerus and scapula in the pre-operative images resulting in a better understanding of her condition. It also enhanced her ability to focus on rehabilitation and better communicate with her physician and support systems.

Credit

Dr. Eric Wagner, MD, MS, FAAOS, CAQ

Jaden Hardrick, Clinical Research Fellow

EMORY
UNIVERSITY
SCHOOL OF
MEDICINE

Department of Orthopaedics

Upper Extremity Center

Department of Orthopaedic Surgery

Timing is Everything!

1:00-1:50

Relationships

Cuff Repair Vid

Epidemiology and Tears

DDR

2:00-2:50

Post Op Stages

Sling Management

PROM

CC Flex/ER

Stage Breakdown (1,2, and 3)

3:00-3:30

PT Timing/Frequency

Therex Applications (101, 201, and 301)

Additional Therex

Post Operative Stages

Stage 1:

0-8 weeks (PROM)

Stage 2:

9-10 weeks (PROM → AAROM)

Stage 3:

10-14 weeks (AAROM →AROM)

(Load added ~12 weeks)

Table III Immediate start to PT (postoperative day 1) staged ROM goals and approximate targets

	PFE	PER at 20° of abd	PER at 90° of abd	AFE
POW 2	60°-90°	0°-20°	NA	NA
POW 6	90°-120°	20°-30°	NA	NA
POW 9	130°-155°	30°-45°	45°-60°	80°-120°
POW 12	140°-WNL	30°-WNL	75°-WNL	120°-WNL

The presented data are targets and should not be exceeded. They may vary based on intraoperative tissue quality findings by the surgeon. When the initiation of PT is delayed, the entire progression is delayed by the same time frame. Interventions and range of motion (ROM) should not be forceful or painful. The larger ROM value is the maximum recommended ROM at a given time frame and represents the goal at that given time frame.

abd, abduction; *AFE*, active forward elevation; *PER*, passive external rotation; PFE, passive forward elevation; *POW*, postoperative week; *PT*, physical therapy; *WNL*, within normal limits.

Post-Operative Sling Management

IJSPT

ORIGINAL RESEARCH

A CRITERION BASED SLING WEANING PROGRESSION □SWEAP□ AND OUTCOMES FOLLOWING SHOULDER ARTHROSCOPIC SURGERY IN AN ACTIVE DUTY MILITARY POPULATION

Justin M. Hire, MD[1]
Joshua E. Pniewski, DPT[2]
Michelle L. Dickston, MPT[2]
Jeremy M. Jacobs, MD[1]
Terry L. Mueller, DO[1]
Brian E. Abell, DO[1]
John A. Bojescul, MD[1]

Pniewski J, Hire J, Dickston M, Jacobs J, Mueller, Abell B, Bojescul J. *A Criterion Based Sling Weaning Progression (SWEAP) and Outcomes Following Arthroscopic Surgery in an Active Duty Population.* IJSPT, 2014 APR;9(2):179-86.

Table 2. *Criterion Based Sling Weaning Progression (SWEAP) Protocol: Progression Criteria.*

	Answering yes or no should be based over the past week.	Yes/No
1	Is the patient's subjective pain report on the 1-10 Visual Analog Scale decreasing?	
2	Is the patient's use of narcotics decreasing?	
3	Is the patient's PROM increasing gradually following the procedures based protocols?	
4	Is the patient's uninterrupted sleeping habits gradually reaching normal for them? - The patient may increase in 1 hour long increments. - The patient may also be progressing from sleep destination (e.g. recliner/couch, to elevated postures in bed to supine)	
5	Is the patient tolerating the progression out of the sling?	
6	*Is the patient compliant with procedure protocol precautions? - This is an absolute criterion. - If the patient is non-compliant and at risk of compromising the repair they are to stay in the sling.	

*Note: This criteria must be answered yes in order to progress. Of the first 5 criteria they must meet 4/5 to continue the progression.

Passive Range of Motion and the Post-operative Shoulder

Thigpen et al. JSES 2016

"…performing all exercises with only as many repetitions as necessary to achieve the staged ROM goals."

J Shoulder Elbow Surg (2016) 25, 521–535

ELSEVIER

JOURNAL OF SHOULDER AND ELBOW SURGERY

www.elsevier.com/locate/ymse

CONSENSUS STATEMENT

The American Society of Shoulder and Elbow Therapists' consensus statement on rehabilitation following arthroscopic rotator cuff repair

CrossMark

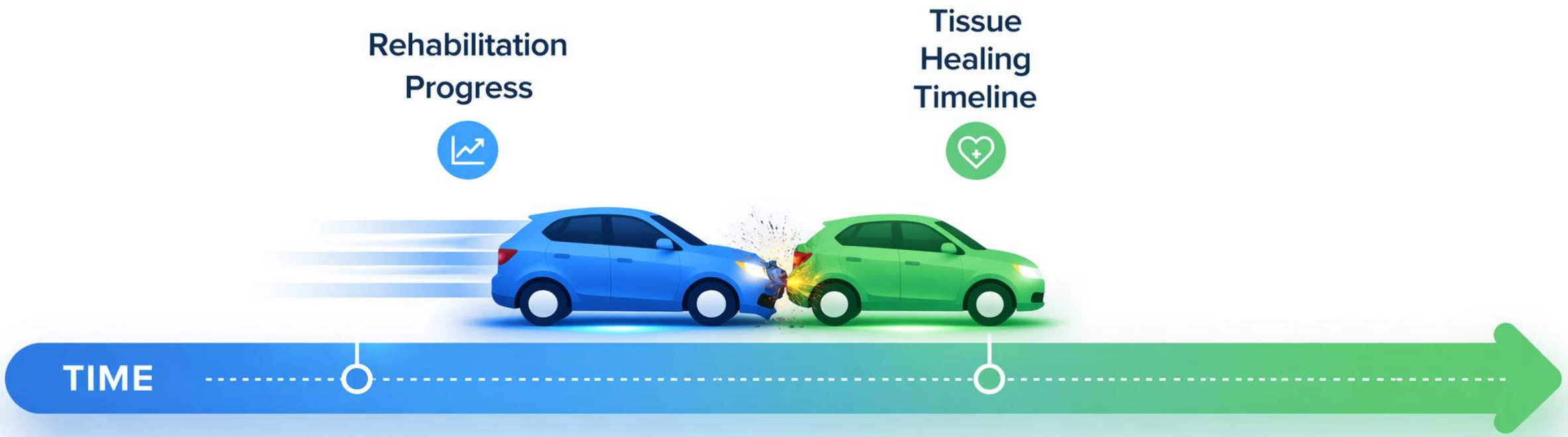
Charles A. Thigpen, PT, PhD, ATC[a,b,*], Michael A. Shaffer, MSPT, OCS, ATC[c], Bryce W. Gaunt, PT, SCS[d], Brian G. Leggin, PT, MS, OCS[e], Gerald R. Williams, MD[f], Reg B. Wilcox III, PT, DPT, MS, OCS[g]

The first 6 weeks matter most in my opinion.

Passive Range of Motion and the Post-operative Shoulder

Thigpen et al. JSES 2016

"…performing all exercises with only as many repetitions as necessary to achieve the staged ROM goals."



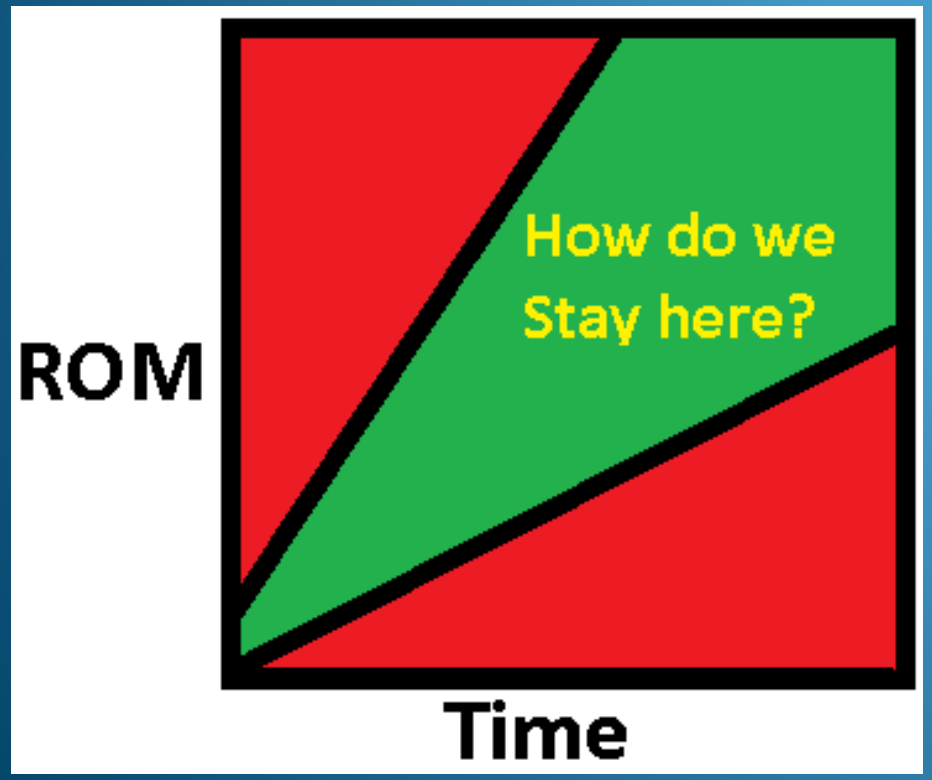
Passive Range of Motion and the Post-operative Shoulder

Early PROM:

Graded stress is important

Excessive/Repetitive stress is detrimental

		AFE 115
0-4wks PROM (<15%EMG)	<10 daily	
4-6wks AAROM (15-25%EMG)	<10 daily	PIR T12



Passive Range of Motion and the Post-operative Shoulder

Thigpen et al. JSES 2016

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A quick soapbox on RTCR Rehabilitation.

Which Camp are you in?

CAMP 1

Early Mobilization?

Aggressive Rehabilitation?

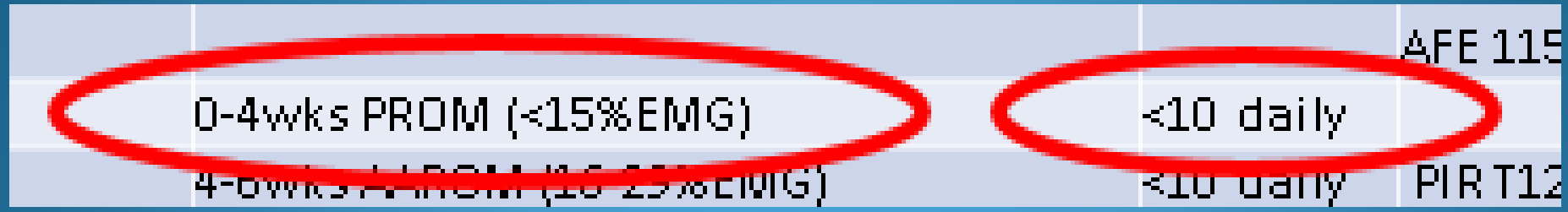
CAMP 2

Strict Immobilization?

Slow Rehabilitation?

Passive Range of Motion and the Post-operative Shoulder

Early PROM:



Quick question to my rehabilitation colleagues.

How do you document PROM?

8 minutes PROM in all planes (Time?)

5 reps CC flexion and 5 reps CC ER (Reps?)

Ask yourself why you would document in time and not reps? (CHUCK JSES 2016) <<<<reference this

Passive Range of Motion and the Post-operative Shoulder

What do you think PROM consists of?

Historically No PT in this room is wrong by any means.

The introduction of closed chained PROM for the GHJ

What is Open Chained (OC)?

- Fixed Thorax
- Moving Humerus

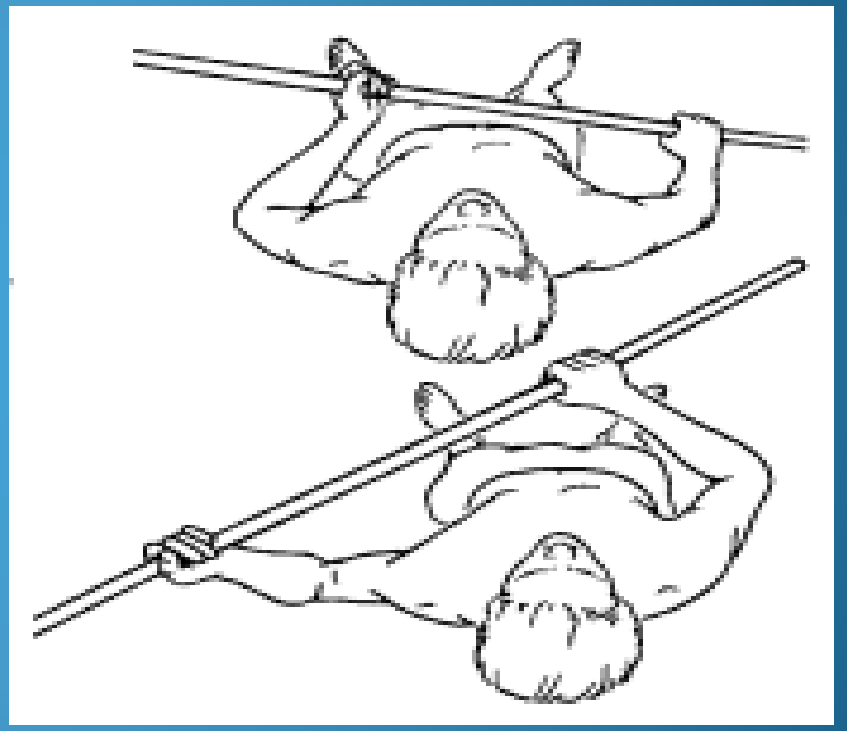
What is Closed Chained (CC)?

- Fixed Humerus
- Moving Thorax

Passive Range of Motion and the Post-operative Shoulder

The introduction of closed chained PROM for the GHJ

Examples of OC movement



Passive Range of Motion and the Post-operative Shoulder

As the GH Joint moves (thorax moving on a fixed humerus) towards maximal GH joint flexion, the patient should be looking at the floor.

The introduction of closed chained PROM for the GHJ

Examples of CC movement

Passive Range of Motion and the Post-operative Shoulder

CLOSED CHAINED PASSIVE FLEXION:

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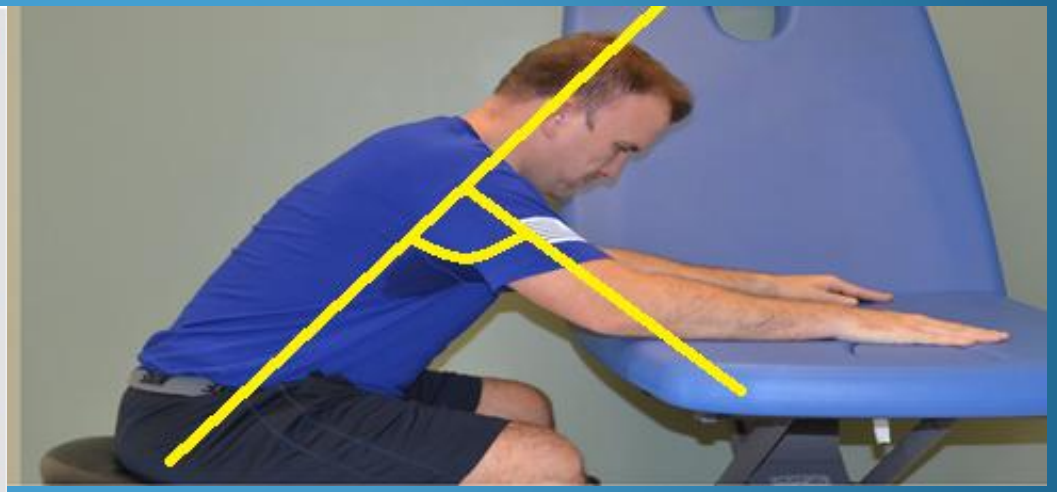


Passive Range of Motion and the Post-operative Shoulder

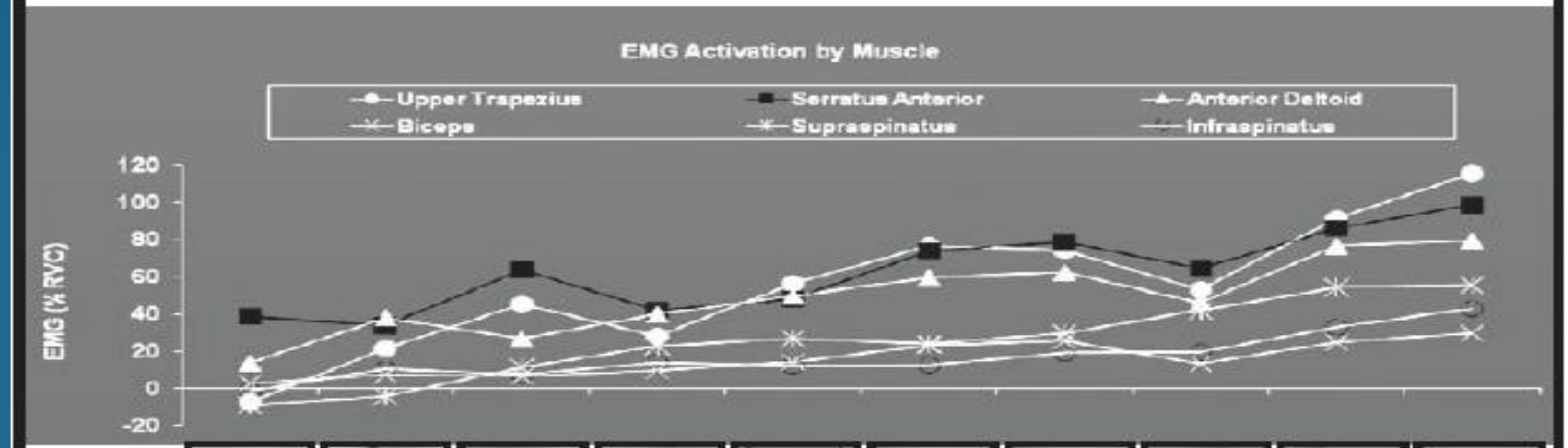
CC GHJ Flexion/Scaption by the evidence.

Flexion premise is based off of least % of MVC and maximal footprint contact integrity.

1. Uhl TL, Melton CD, Nitz AJ, et al. Comparing muscle activity during post-surgical range of motion exercises. University of Kentucky, 2008, Rehab Inovations, Inc. www.ueranger.com

2. Long JL, Ruberte Thiele RA, Skendzel JG, et al. Activation of shoulder musculature during pendulum exercises and light activities. JOSPT, 2010;4:230-237.

EMG Levels (%RVC)

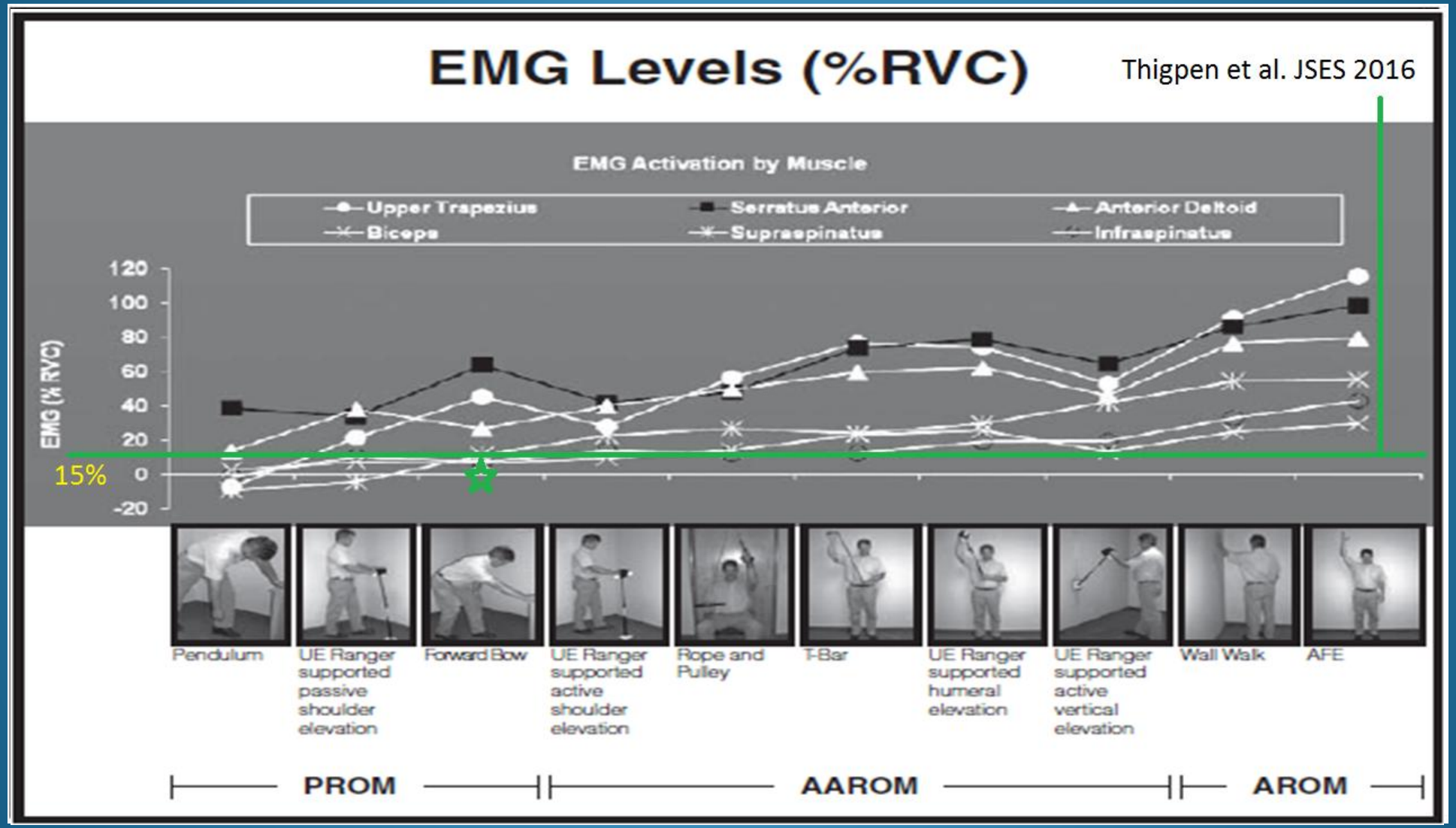


Pendulum | UE Ranger supported passive shoulder elevation | Forward Bow | UE Ranger supported active shoulder elevation | Rope and Pulley | T-Bar | UE Ranger supported humeral elevation | UE Ranger supported active vertical elevation | Wall Walk | AFE

PROM — AAROM — AROM

EMG Levels (%RVC)

Thigpen et al. JSES 2016

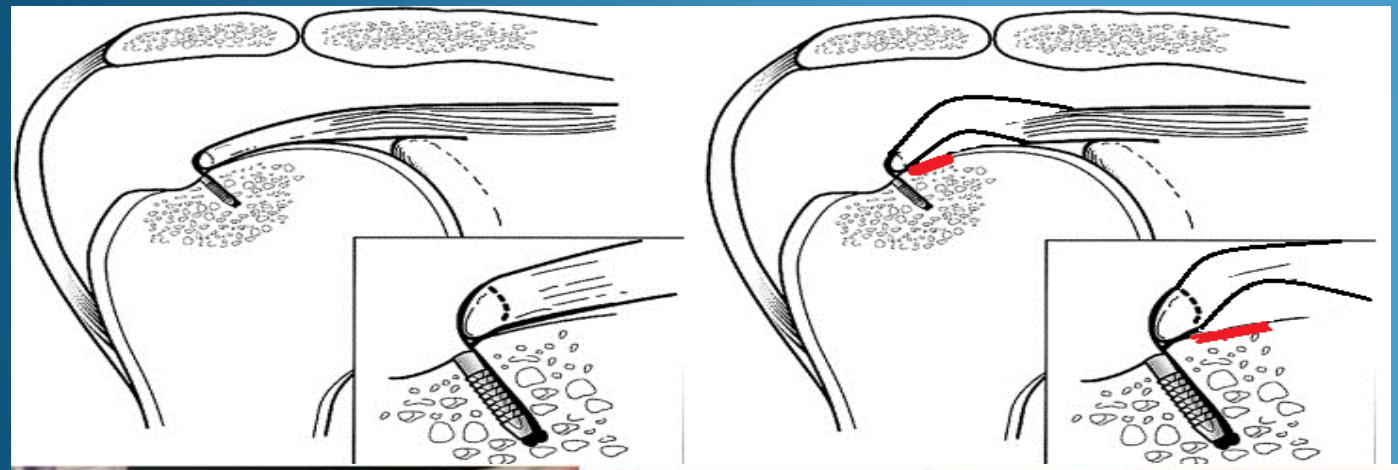


Passive Range of Motion and the Post-operative Shoulder

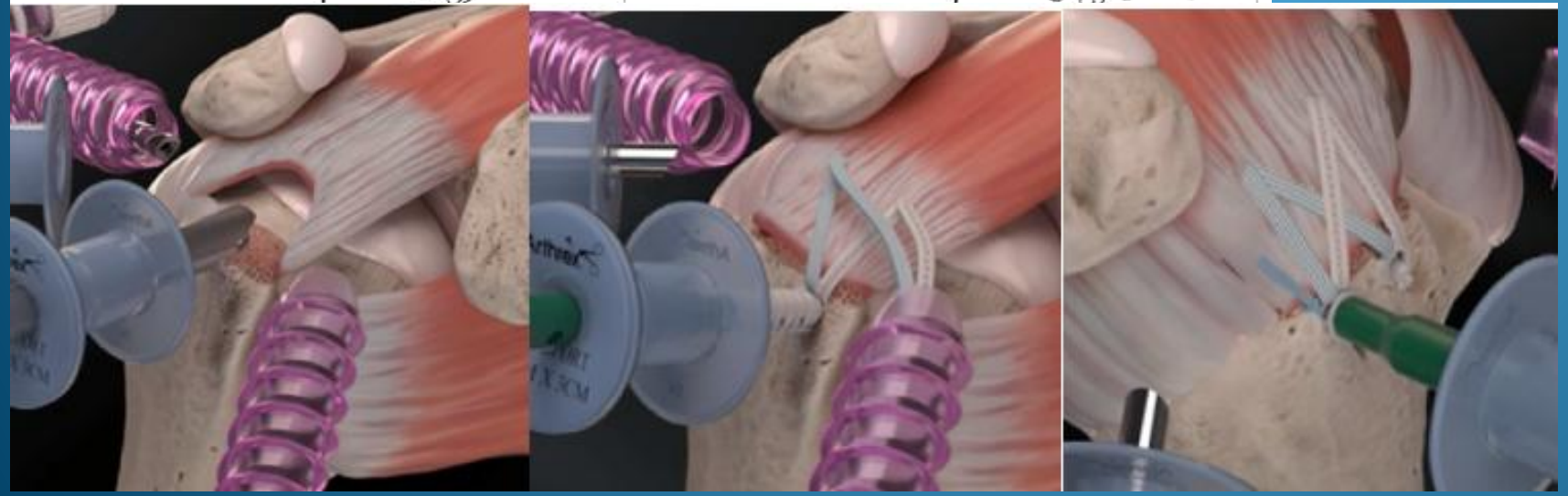
CC GHJ Flexion/Scaption by the evidence.

Prevent excessive Trauma to the footprint contact area

This is like continually “picking a scab.”



Adapted from original concept art by Park et al AJSM 2009.



Passive Range of Motion and the Post-operative Shoulder

CC GHJ Flexion/Scaption by the evidence.

Dosing of the prescription

~10 reps per day

It can be as few as 1 rep per day if range of motion goals are being met.

Duzgun et al (TURK 2011) actually published dosing prescription in their study.

This is rarely seen in the literature….the actual dosing of reps/sets etc.

Table 2 Accelerated and slow protocols after rotator cuff repair.

FAST	PROTOCOL			SLOW
Week	**Exercise**	**In clinic**	**At home**	**Week**
0-1 weeks	Cold pack (before treatment)		every 2 hours, for 20 min	0-1 weeks
1-2 weeks	Cold pack	Once every 20 min	every 2 hours, for 20 min	1-4 weeks
	Deltoid and biceps soft-tissue mobilization	Kneading, 5 min		
	Standing passive flexion near the table	10 repeats x 1 set	10 repeats x 2 sets/day	
	Standing passive abduction near the table	10 repeats x 1 set	10 repeats x 2 sets/day	
	Standing passive exercise with stick	10 repeats x 1 set	10 repeats x 2 sets/day	
	Active elbow flexion	10 repeats x 1 set	10 repeats x 2 sets/day	
	Active elbow extension	10 repeats x 1 set	10 repeats x 2 sets/day	
	Gripping exercises for hand	10 repeats x 2 sets	10 repeats x 2 sets/day	
	Active cervical flexion-extension	10 repeats x 1 set	10 repeats x 2 sets/day	
	Active cervical lateral flexion	10 repeats x 1 set	10 repeats x 2 sets/day	
	Active cervical rotation	10 repeats x 1 set	10 repeats x 2 sets/day	

Passive Range of Motion and the Post-operative Shoulder

Thigpen et al. JSES 2016

"…performing all exercises with only as many repetitions as necessary to achieve the staged ROM goals."

Passive Range of Motion and the Post-operative Shoulder

CC GHJ External Rotation by the evidence

External Rotatio ct area
in the anterior p

al. (J. Orthop. Res.

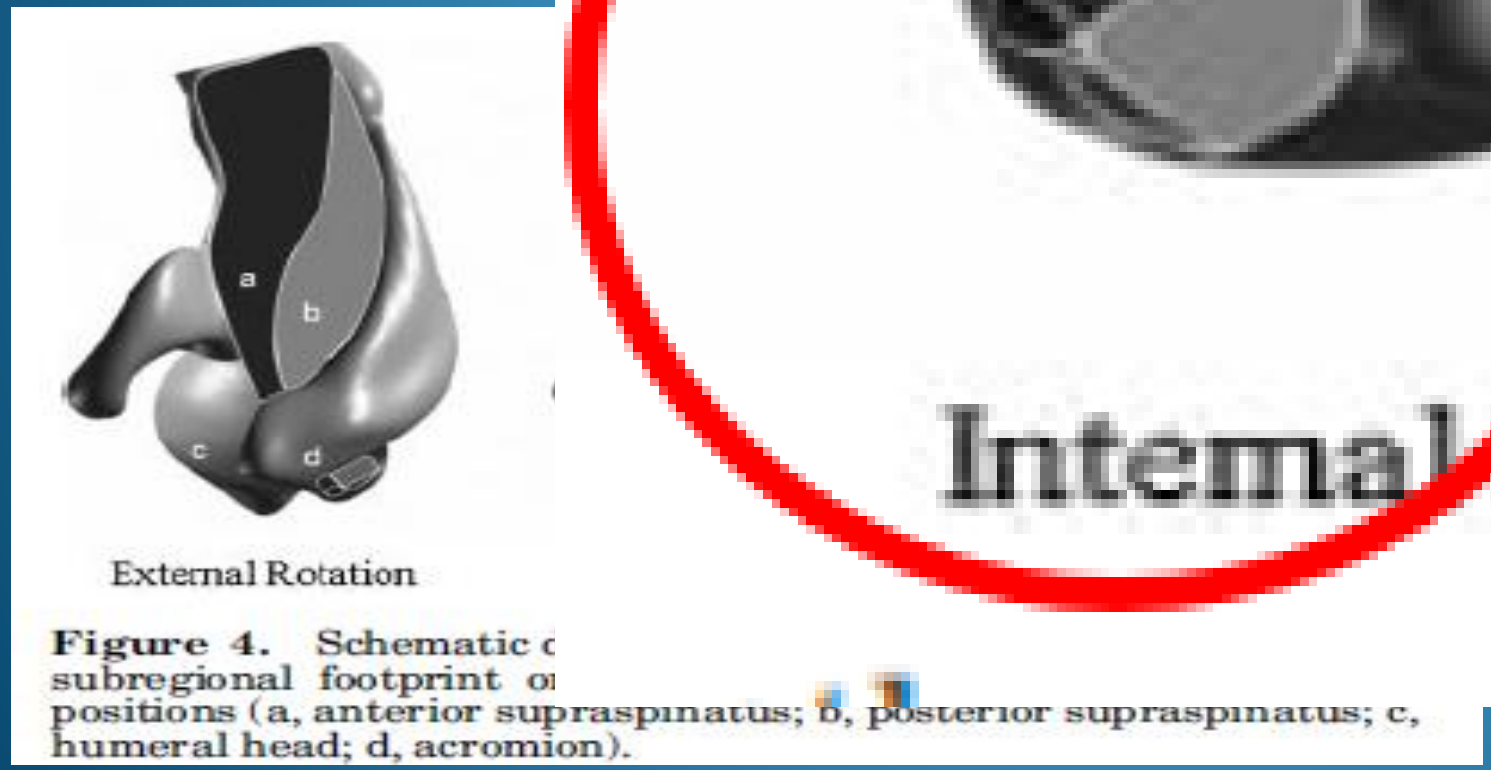
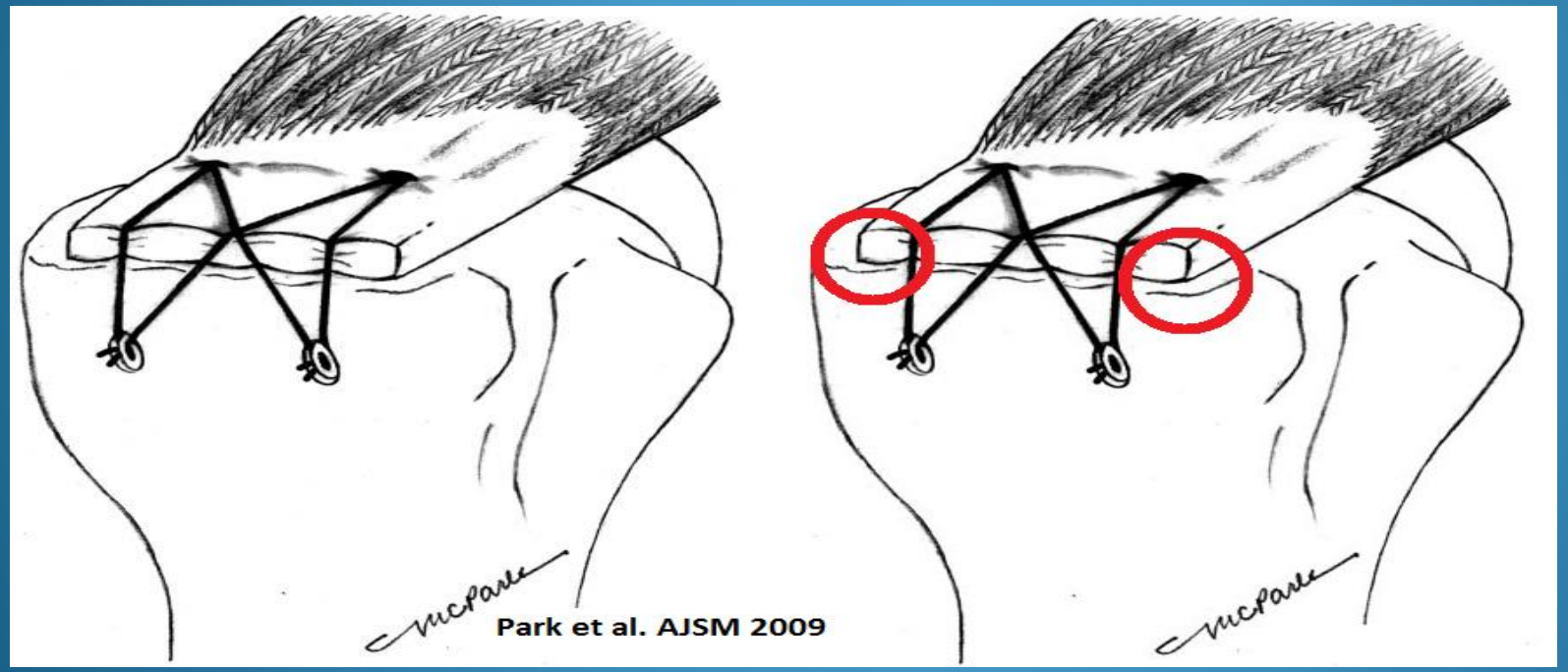


Figure 4. Schematic c
subregional footprint o
positions (a, anterior supraspinatus; b, posterior supraspinatus; c, humeral head; d, acromion).

Passive Range of Motion and the Post-operative Shoulder

CC GHJ External Rotation by the evidence

External Rotation is based off of maintaining footprint contact area.



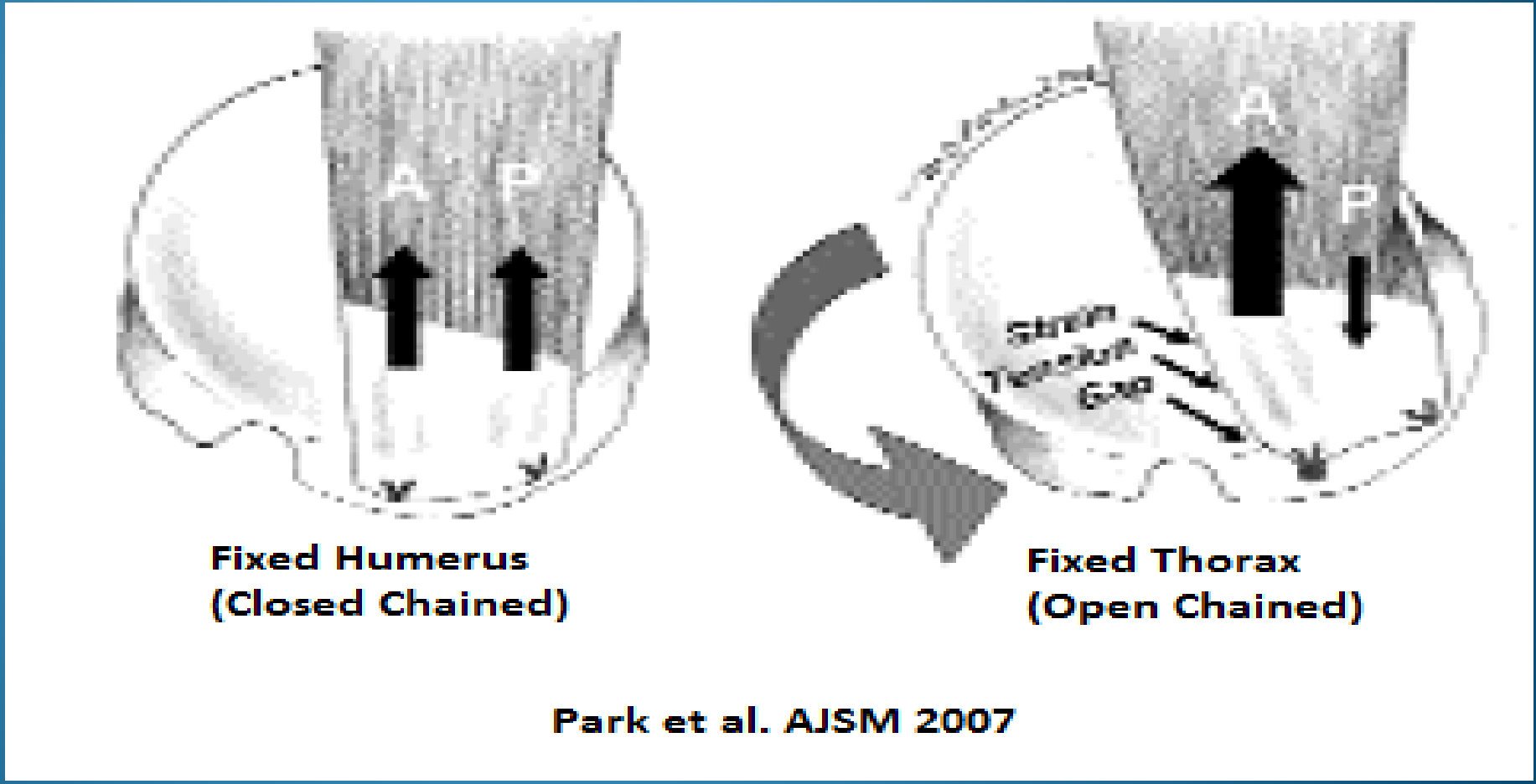
Park et al. AJSM 2009

Passive Range of Motion and the Post-operative Shoulder

CC GHJ External Rotation by the evidence

External Rotation is based off of maintaining footprint contact area.

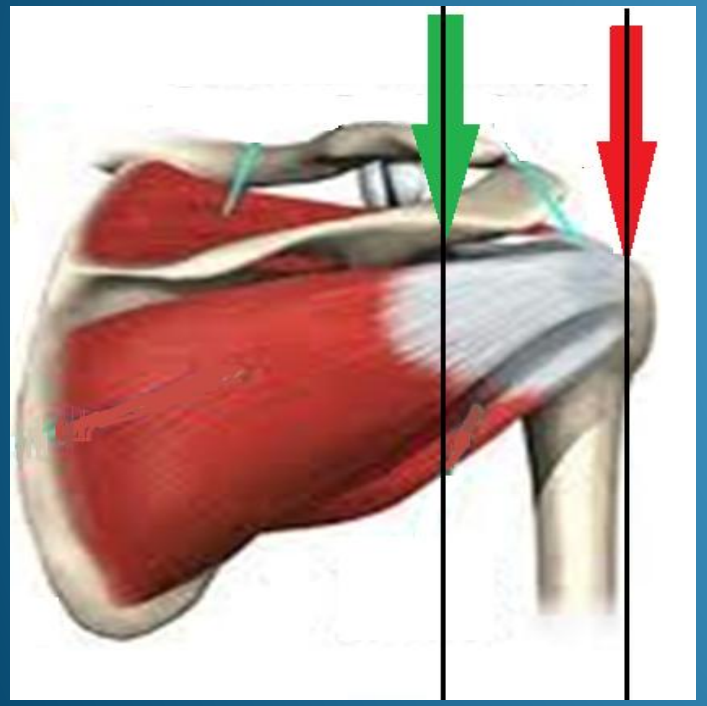
Park et al. AJSM 2007

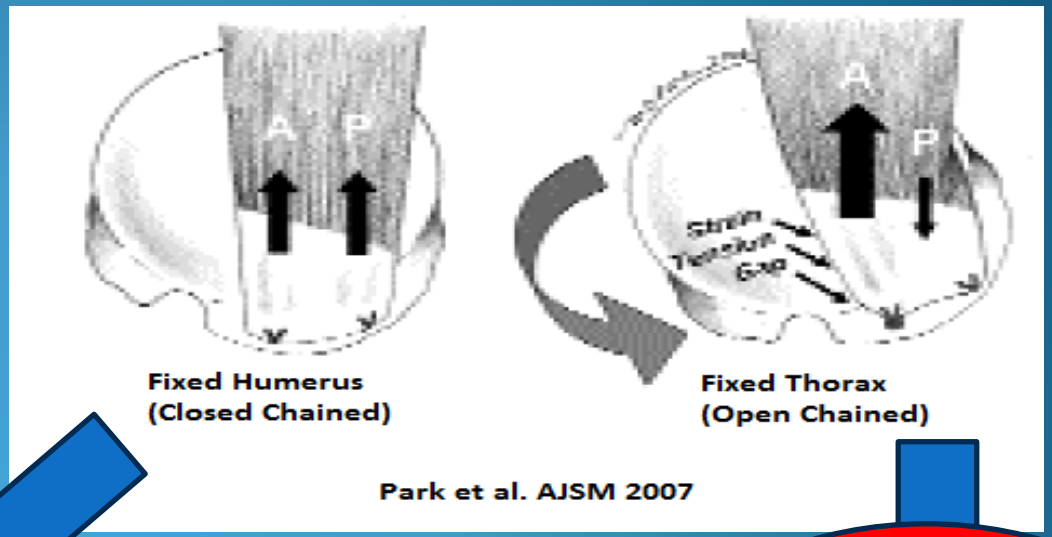


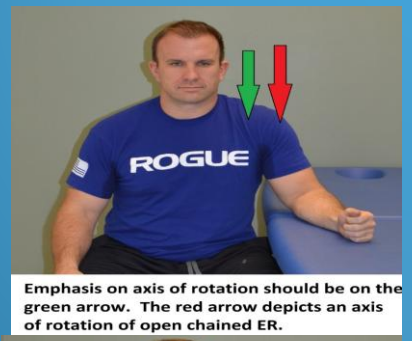
Passive Range of Motion and the Post-operative Shoulder

CC GHJ External Rotation by the evidence

Demonstration again!

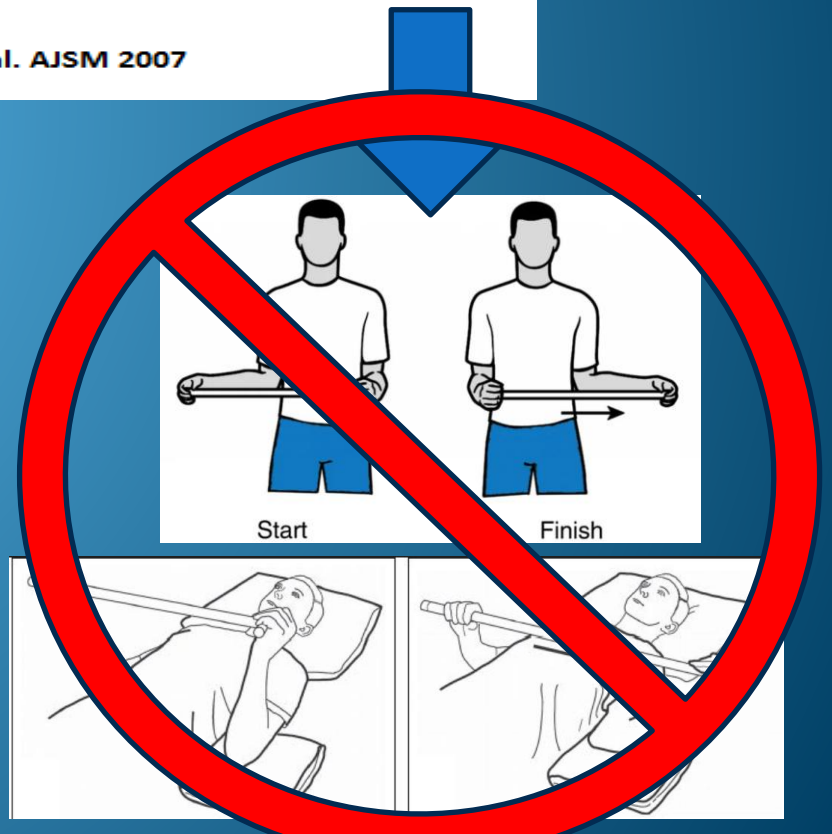






Emphasis on axis of rotation should be on the green arrow. The red arrow depicts an axis of rotation of open chained ER.

The "stretch" felt by the patient should be felt closer to the pec. Reposition and educate the patient if exquisit pain is felt closer to the red



Passive Range of Motion and the Post-operative Shoulder

Table III Immediate start to PT (postoperative day 1) staged ROM goals and approximate targets

	PFE	PER at 20° of abd	PER at 90° of abd	AFE
POW 2	60°-90°	0°-20°	NA	NA
POW 6	90°-120°	20°-30°	NA	NA
POW 9	130°-155°	30°-45°	45°-60°	80°-120°
POW 12	140°-WNL	30°-WNL	75°-WNL	120°-WNL

The presented data are targets and should not be exceeded. They may vary based on intraoperative tissue quality findings by the surgeon. When the initiation of PT is delayed, the entire progression is delayed by the same time frame. Interventions and range of motion (ROM) should not be forceful or painful. The larger ROM value is the maximum recommended ROM at a given time frame and represents the goal at that given time frame.

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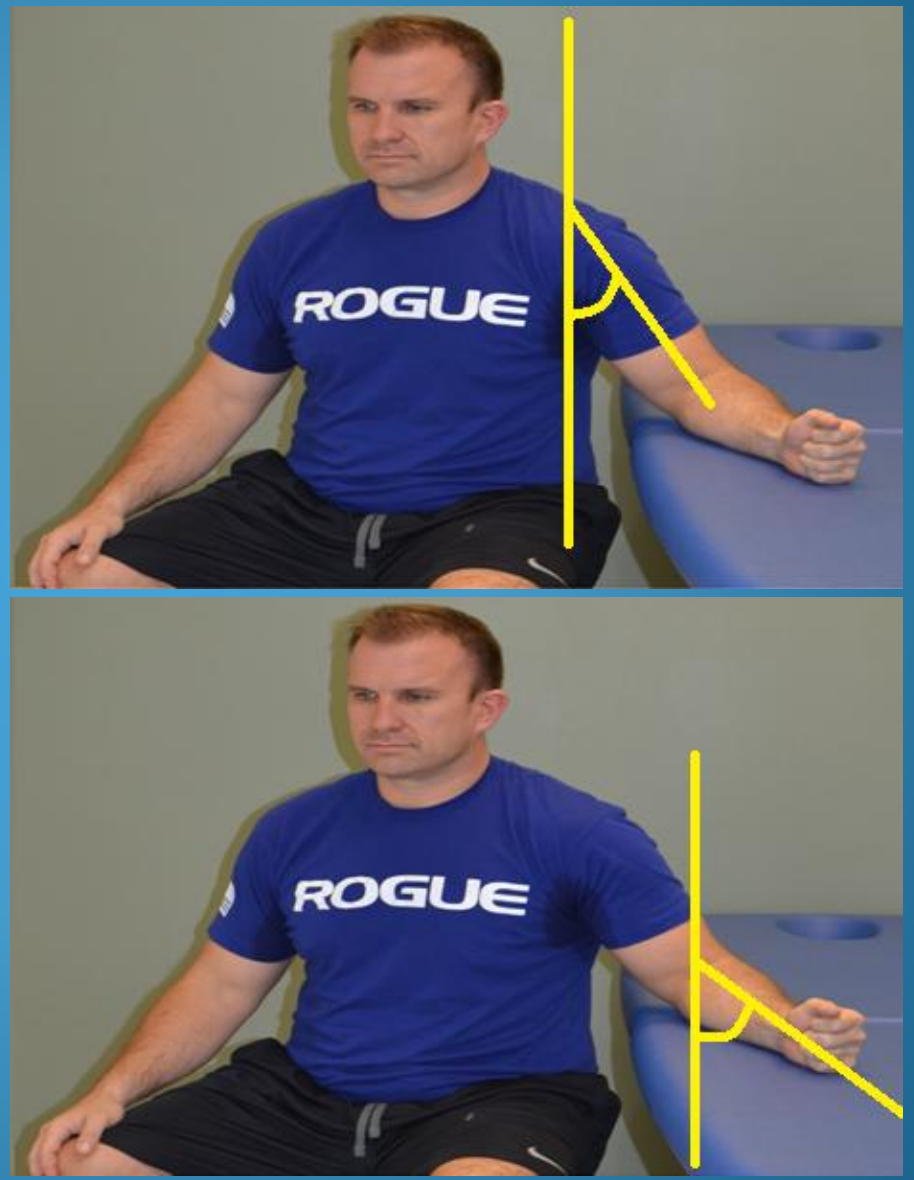


Passive Range of Motion and the Post-operative Shoulder

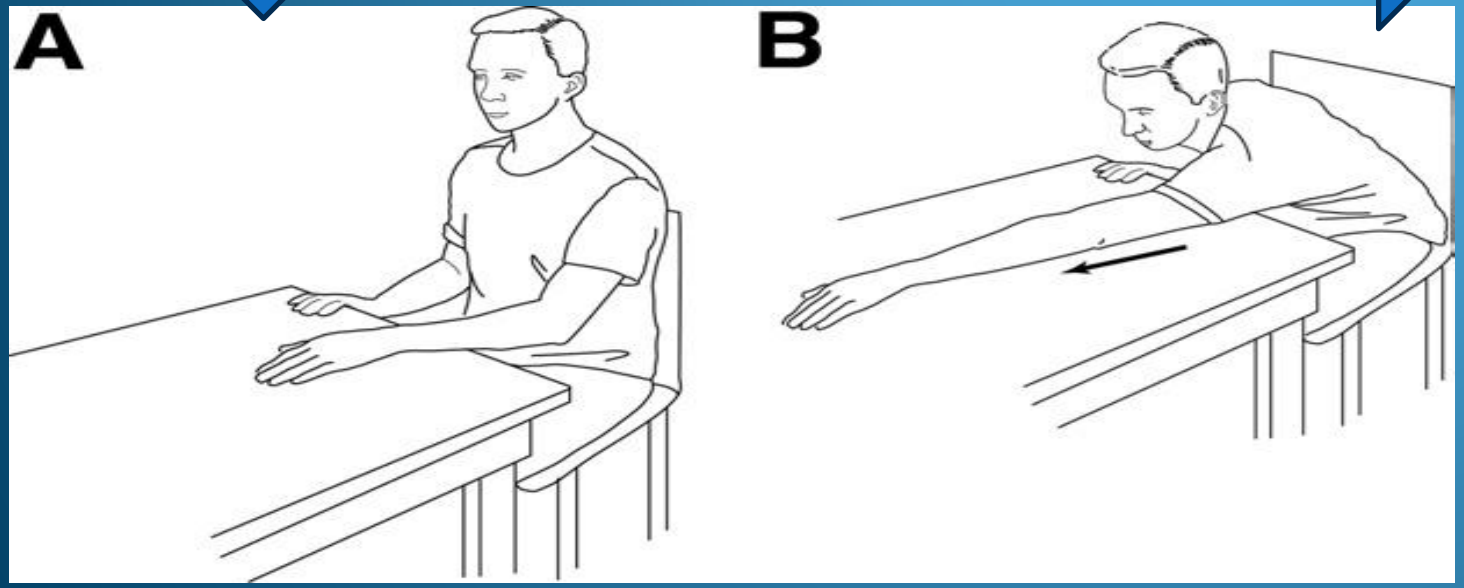
What the current literature states about a closed chained flexion activity.

Denard et al. (SCOPE 2011)

Koo et al. (SCOPE 2010)

And many other depict this as the primary PROM therex of choice. I do not agree that this is TRUE PROM.

Adaptation to satisfy the lit.



Passive Range of Motion and the Post-operative Shoulder

What the current literature states about a closed chained ER activity.

No real description or picture of ER except for the protocol or guidelines giving parameters (in degrees) of PROM in ER (e.g. 35, 45).

Millet et al. (JAAOS 2006)

Ghodadra et al. (JOSPT 2009)

Ross et al. (JAAOS 2014) …a review of lit piece.

Kenner et al. (JBJS 2014)

Koo et al. (SCOPE 2011)

Koo et al. (Clin. Sports Med. 2010)

Denard et al. (SCOPE 2011)

Passive Range of Motion and the Post-operative Shoulder

I saw these exercises demonstrated as an alternative therex for PROM at the ASSET RTCR course in 2011.

I have adopted them and attempted to justify their utility in practice.

I have used these for the past 15 years for thousands of post operative shoulders:

Labral repair
RTCR
Biceps Tenodesis
TSA/rTSA
MM Transfers (Lat, LT, etc)
Etc.

Passive Range of Motion and the Post-operative Shoulder

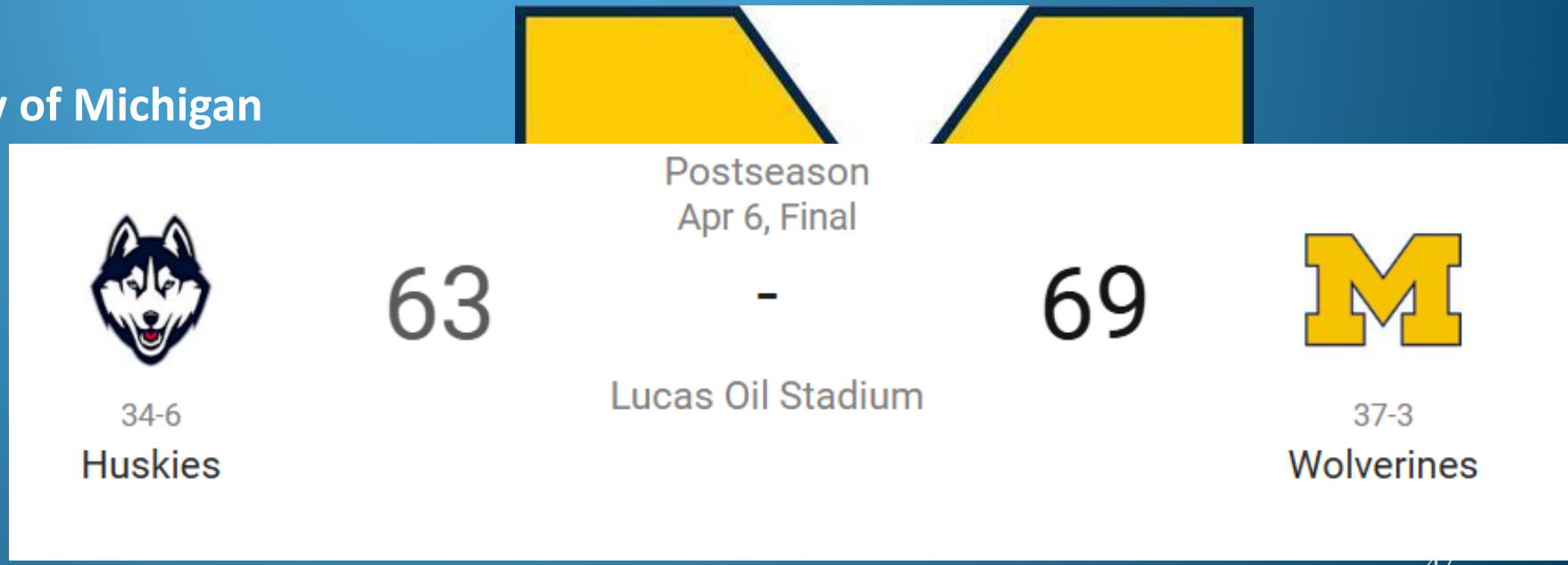
Here are the “no no's” we have seen before

A brief word on Pendulum or Codman’s Exercises:

Long et al. (JOSPT 2010)

Activation of the Shoulder Musculature During Pendulum Exercises and Light Activities.

From the University of Michigan



Passive Range of Motion and the Post-operative Shoulder

Long et al. (JOSPT 2010)

Correct: As described by Codman in 1984

Incorrect: as above but with active shoulder movement

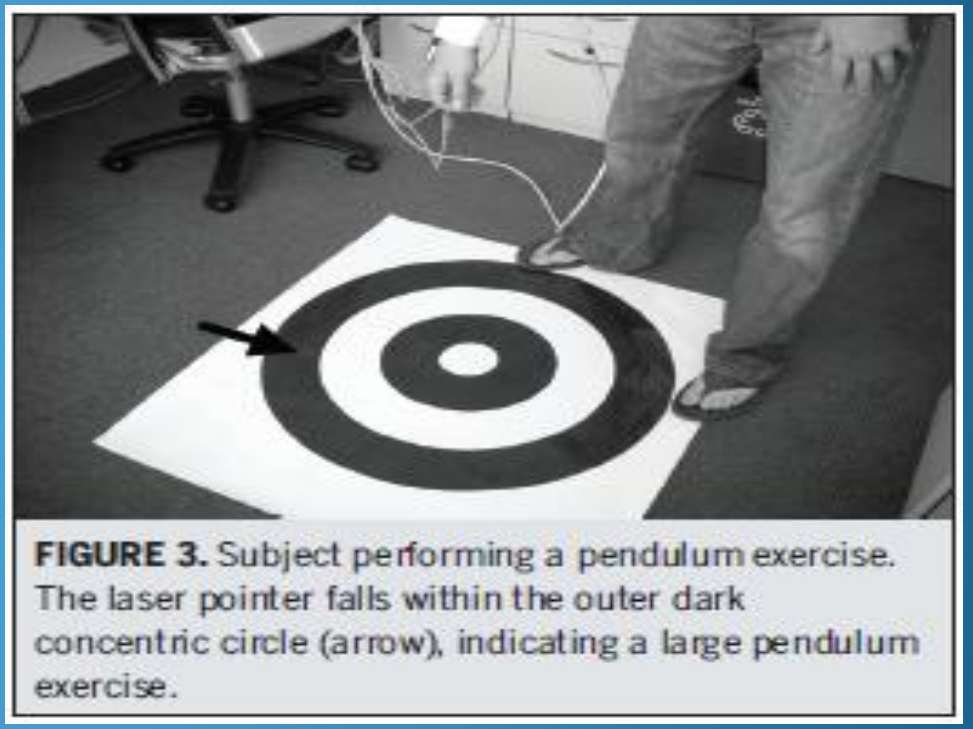


FIGURE 3. Subject performing a pendulum exercise. The laser pointer falls within the outer dark concentric circle (arrow), indicating a large pendulum exercise.

TABLE

Mean (SD) EMG Signal Amplitude as Percent of MVIC for Activities

	Supraspinatus	Infraspinatus	Deltoid
Small correct pendulum	8.0 (6.3)*,†	14.4 (37.4)*,†	2.8 (2.0)*,†
Small incorrect pendulum	8.7 (5.1)§	12.9 (25.8)§,‡	4.0 (2.4)§
Large correct pendulum	13.7 (12.9)*,‖	22.4 (39.0)*,‡	4.4 (2.7)*
Large incorrect pendulum	18.8 (15.6)†,§,‖	24.5 (41.2)§,†	6.0 (3.1)†,§
Typing	7.5 (5.1)¶	12.0 (13.2)¶,**	2.1 (2.3)¶,**
Drinking	21.0 (20.4)¶,*	18.3 (14.8)¶	4.4 (2.6)¶
Brushing teeth	12.1 (10.1)*	20.2 (21.3)**	4.1 (3.8)**

Abbreviations: EMG, electromyographic; MVIC, maximum voluntary isometric contraction.

* *Significant difference between small correct pendulum and large correct pendulum, P<.05.*

† *Significant difference between small correct pendulum and large incorrect pendulum, P<.05.*

‡ *Significant difference between small incorrect pendulum and large correct pendulum, P<.05.*

§ *Significant difference between small incorrect pendulum and large incorrect pendulum, P<.05.*

‖ *Significant difference between large correct pendulum and large incorrect pendulum, P<.05.*

¶ *Significant difference between typing and drinking, P<.05.*

* *Significant difference between drinking and brushing teeth, P<.05.*

** *Significant difference between typing and brushing teeth, P<.05.*

Long et al. (JOSPT 2010)

Post Operative Stages

Stage 1:

0-8 weeks (PROM)

Stage 2:

9-10 weeks (PROM → AAROM)

Stage 3:

10-14 weeks (AAROM →AROM)

(Load added ~12 weeks)

Table III Immediate start to PT (postoperative day 1) staged ROM goals and approximate targets

	PFE	PER at 20° of abd	PER at 90° of abd	AFE
POW 2	60°-90°	0°-20°	NA	NA
POW 6	90°-120°	20°-30°	NA	NA
POW 9	130°-155°	30°-45°	45°-60°	80°-120°
POW 12	140°-WNL	30°-WNL	75°-WNL	120°-WNL

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Post Operative Stages

Stage 1:

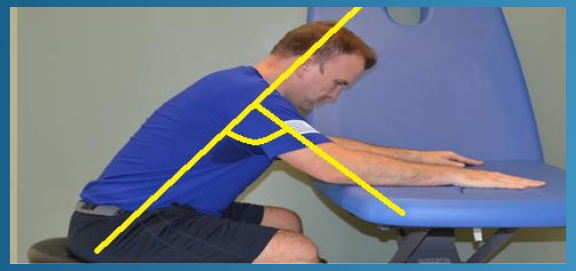
0-8 weeks

PROM of GHJ
Accessory Mobility
Education

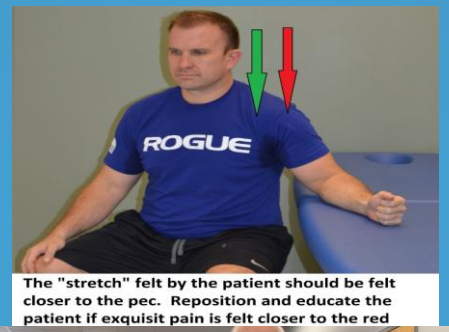
Post Operative Stages: Stage 1 (0-8 wks)

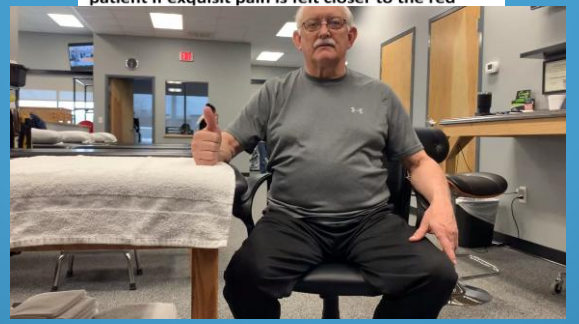
GHJ PROM

CC Flexion



CC ER





Pendulum

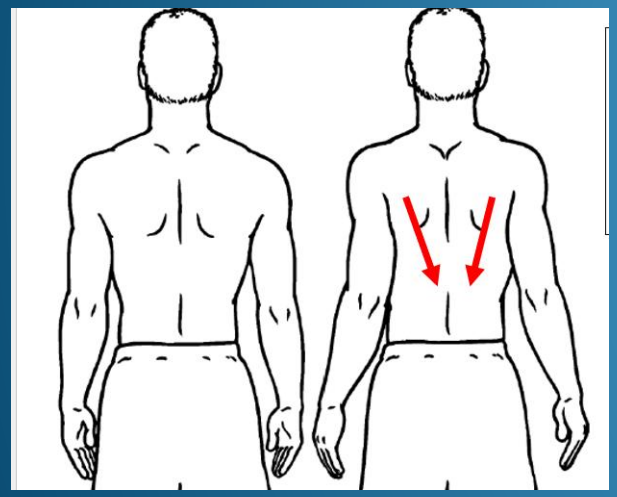
Dosage: 5-10 reps

“enough to reach staged PROM goals”

Post Operative Stages: Stage 1 (0-8 wks)

Accessory Mobility

Scap Retractions



Thoracic Extension

Thoracic Rotation

Dosage: 3 x 8 → 3 x 10 → max 45

Post Operative Stages: Stage 1 (0-8 wks)

Education

Sleep Health

Sling Education

Post Operative Stages

Stage 2:

9-10 weeks

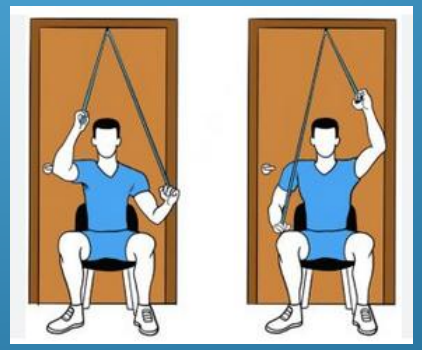
PROM → AAROM of GHJ
Accessory Mobility
Education

Post Operative Stages: Stage 2 (9-10 wks)

GHJ PROM → AAROM

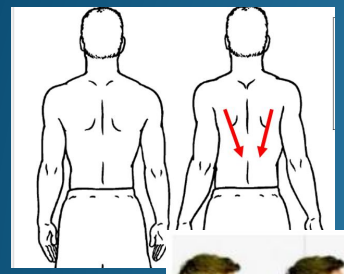
Minimize long lever arm movements

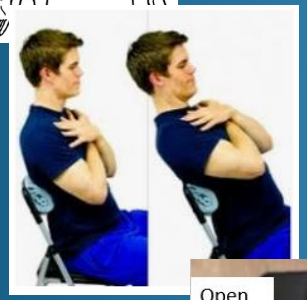
Need aarom video

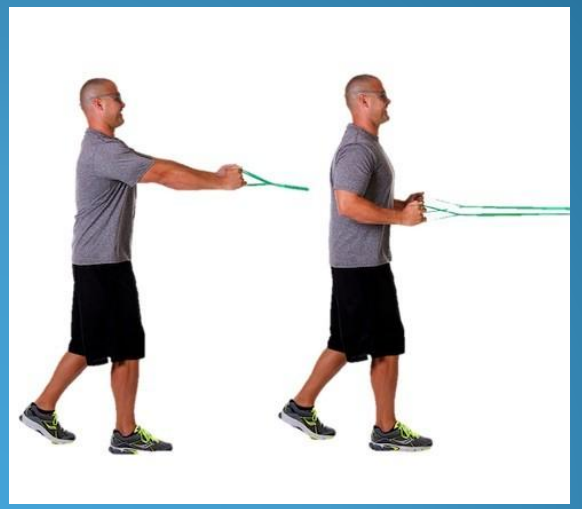


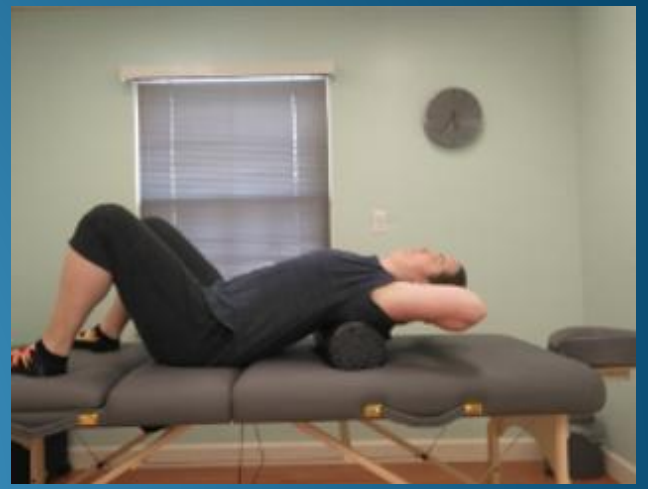
Post Operative Stages: Stage 2 (9-10 wks)

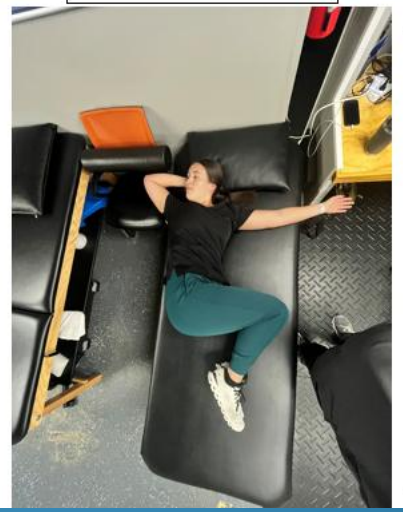
Accessory Movements









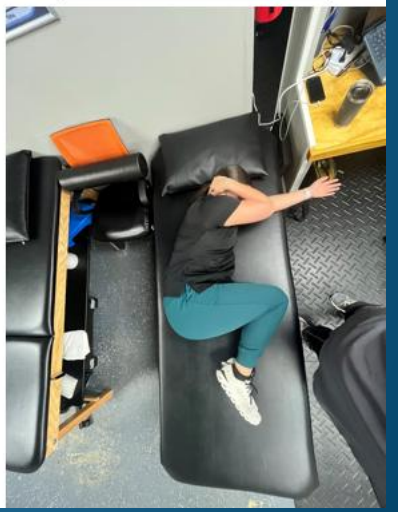


5-10 seconds Open

1 second closed

8 reps to each side

Make sure when closed you try to touch elbow to elbow



Post Operative Stages: Stage 2 (9-10 wks)

Education

- **Avoidance of long lever arm movements**
- **Continued Sleep health**
- **The “What not to do’s”**

Post Operative Stages: Stage 3 (10-14 wks)

AAROM →AROM → Strengthening
Accessory Mobility
Education

Table III Immediate start to PT (postoperative day 1) staged ROM goals and approximate targets

	PFE	PER at 20° of abd	PER at 90° of abd	AFE
POW 2	60°-90°	0°-20°	NA	NA
POW 6	90°-120°	20°-30°	NA	NA
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Post Operative Stages: Stage 3 (10-14 wks)

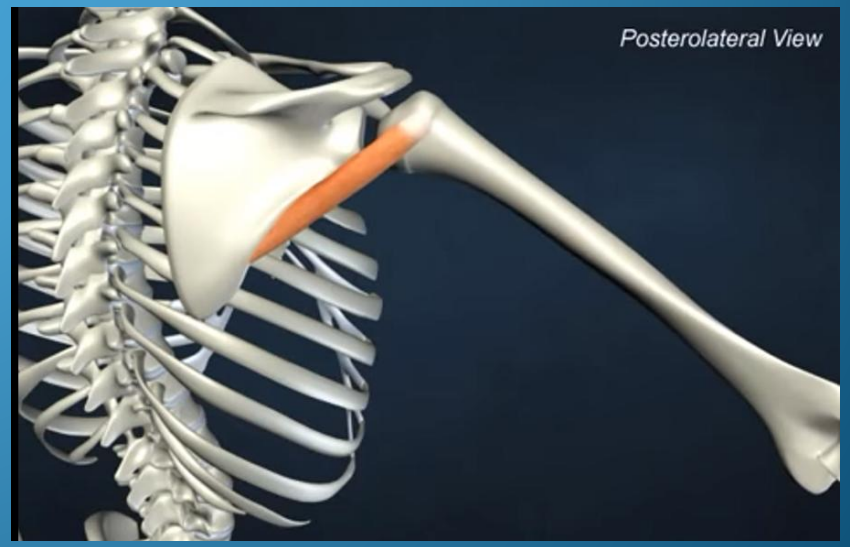
AAROM →AROM → Strengthening

Pic progression of T band ER elbow at side, small towel, Fat towel, Genies, 90/90

Lets do a lab right here….get the bands and towels

rTSA or Massive Cuff…ER is always
weak or really unable to ER past neutral

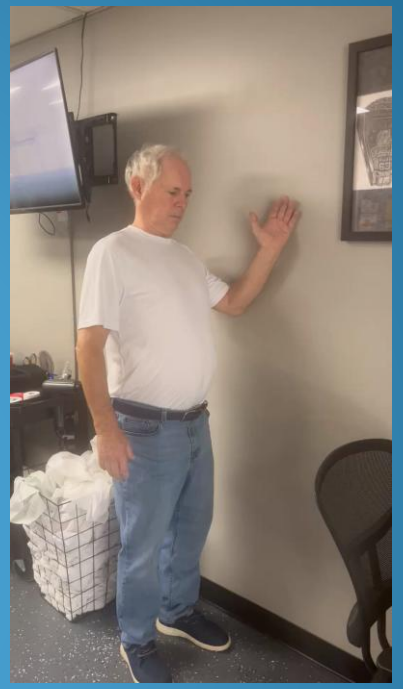
What do you guys do?????



Post Operative Stages: Stage 3 (10-14 wks)

Toughest Gap to bridge
AAROM → AROM

Gravity Eliminated?
Eccentrics?



Finding a volume to train to improve the load later

Post Operative Stages: Stage 3 (10-14 wks)

Accessory Mobility

Pushup Videos

Shoulder taps video

Post Operative Stages: Stage 3 (10-14 wks)

Education

Post Operative Stages Review

Stage 1:

0-8 weeks (PROM)

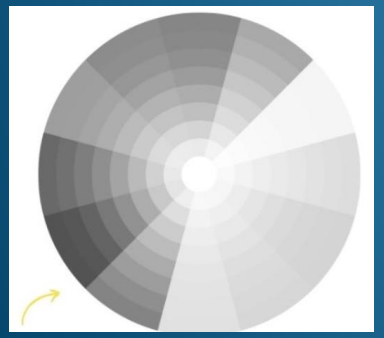
Stage 2:

9-10 weeks (PROM → AAROM)

Stage 3:

10-14 weeks (AAROM →AROM)

(Load added ~12 weeks)



Stages of gray

Table III Immediate start to PT (postoperative day 1) staged ROM goals and approximate targets

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Timing is Everything!

1:00-1:50

Relationships

Cuff Repair Vid

Epidemiology and Tears

DDR

2:00-2:50

Post Op Stages

Sling Management

PROM

CC Flex/ER

Stage Breakdown (1,2, and 3)

3:00-3:30

PT Timing/Frequency

Therex Applications (101, 201, and 301)

Additional Therex

	M	T	W	Th	F	M	T	W	Th	F	M	T	W	Th	F	M	T	W	Th	F
Month 1	SX										MD									
Month 2						MD														
Month 3																				MD
Month 4																				
Month 5																				
Month 6																				MD

Based off 6 months

In most cases the MD will follow up with the patient at 2 and 6 weeks and at 3 and 6 months post op. There may be some variability pending facility, surgeon, etc.

SX = Surgery Date, MD = MD Follow up

	M	T	W	Th	F	M	T	W	Th	F	M	T	W	Th	F	M	T	W	Th	F
Month 1	SX		PT		PT	PT		PT			MD		PT		PT			PT		PT
Month 2			PT		PT	MD		PT		PT	PT		PT			PT		PT		
Month 3	PT		PT			PT		PT			PT		PT			PT		PT		MD
Month 4																				
Month 5																				
Month 6																				MD

Patient A: PT POC 2 x week until 3 month FU = 24 visits

	M	T	W	Th	F	M	T	W	Th	F	M	T	W	Th	F	M	T	W	Th	F
Month 1	SX		PT					PT			MD		PT					PT		
Month 2			PT			MD		PT					PT					PT		
Month 3	PT		PT			PT		PT			PT		PT					PT		MD
Month 4																				
Month 5																				
Month 6																				MD

Patient B: 15 authorized PT visits

Can we see how easily the caps and limits can be reached?

	M	T	W	Th	F	M	T	W	Th	F	M	T	W	Th	F	M	T	W	Th	F
Month 1	SX		PT					PT			MD		PT					PT		
Month 2			PT			MD		PT					PT					PT		
Month 3	PT		PT			PT		PT			PT		PT					PT		MD
Month 4																				
Month 5																				
Month 6																				MD

Where would you want to spend you time?

Therex and a Logical Progression

On to the fun stuff

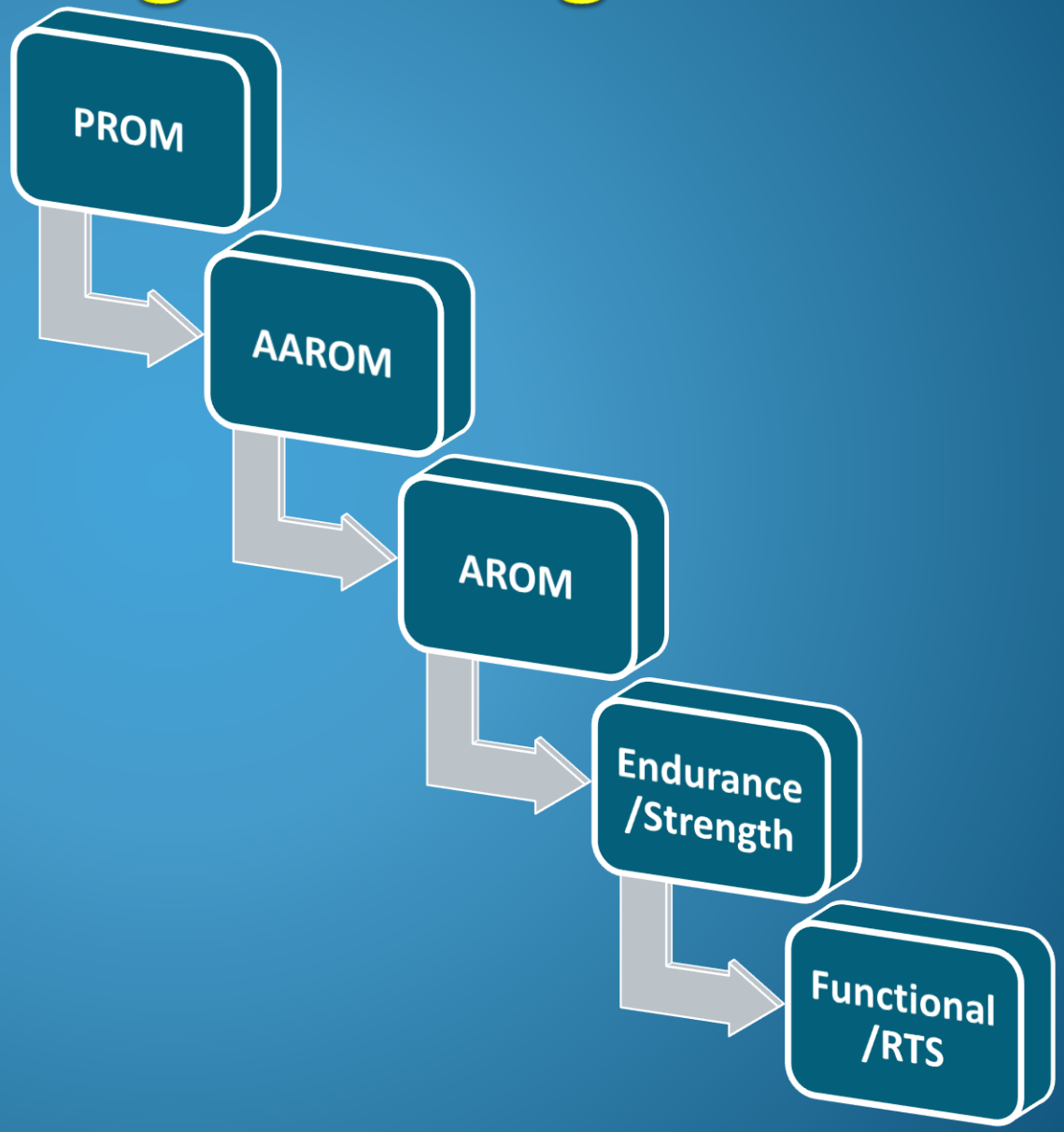
Therex and a Logical Progression

Therex Progression:

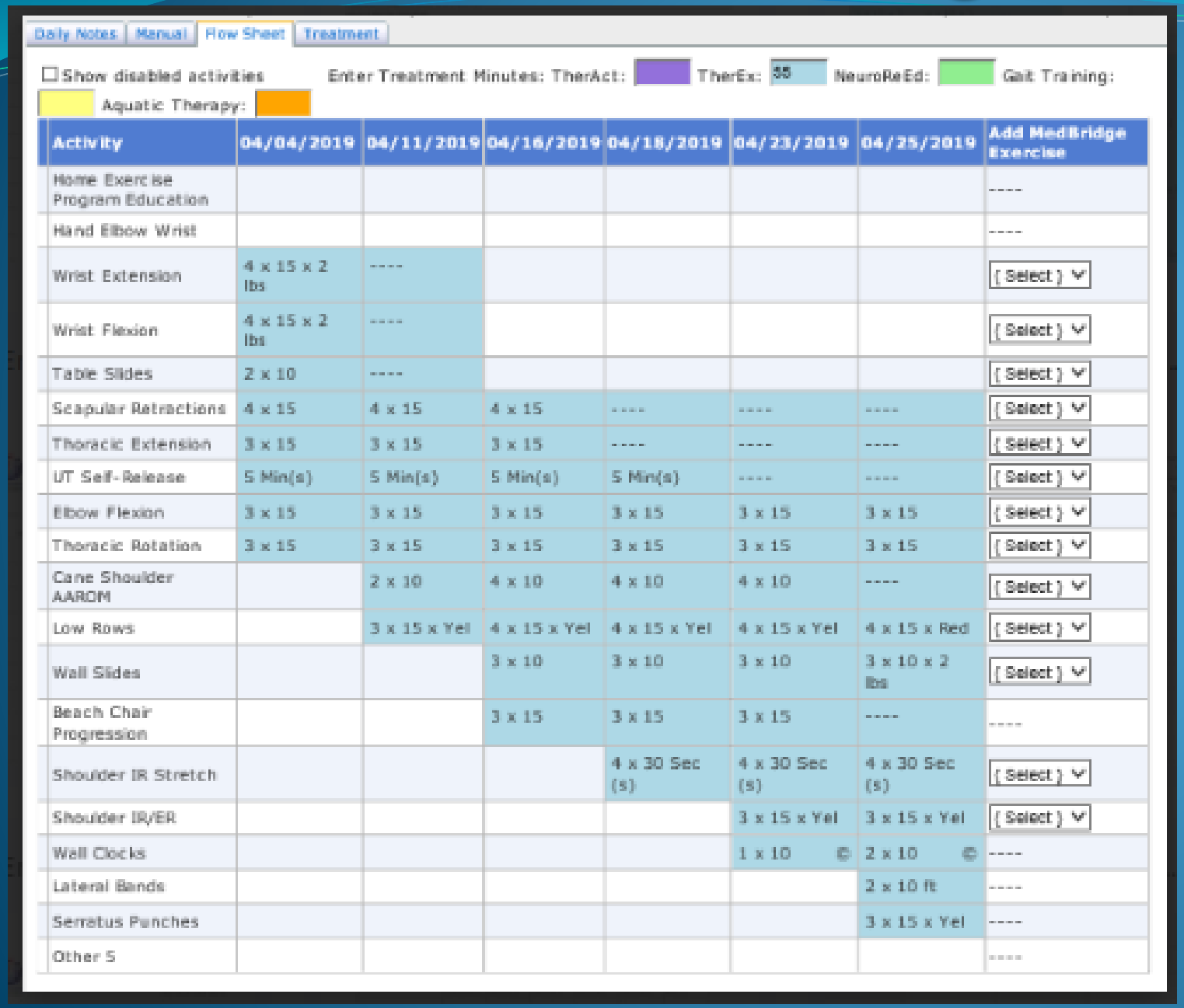
101 (Phase 1)
- Mobility and low EMG

201 (Phase 2)
- Initial load
- Proprioception
- Progressed Mobility

301 (Phase 3)
- Advanced proprioception
- Return to Sport Activities



Therex and a Logical Progression



Daily Notes | Manual | Flow Sheet | Treatment

☐ Show disabled activities Enter Treatment Minutes: TherAct: TherEx: 55 NeuroReEd: Gait Training: Aquatic Therapy:

Activity	04/04/2019	04/11/2019	04/16/2019	04/18/2019	04/23/2019	04/25/2019	Add MedBridge Exercise
Home Exercise Program Education							----
Hand Elbow Wrist							----
Wrist Extension	4 x 15 x 2 lbs	----					[Select]
Wrist Flexion	4 x 15 x 2 lbs	----					[Select]
Table Slides	2 x 10	----					[Select]
Scapular Retractions	4 x 15	4 x 15	4 x 15	----	----	----	[Select]
Thoracic Extension	3 x 15	3 x 15	3 x 15	----	----	----	[Select]
UT Self-Release	5 Min(s)	5 Min(s)	5 Min(s)	5 Min(s)	----	----	[Select]
Elbow Flexion	3 x 15	3 x 15	3 x 15	3 x 15	3 x 15	3 x 15	[Select]
Thoracic Rotation	3 x 15	3 x 15	3 x 15	3 x 15	3 x 15	3 x 15	[Select]
Cane Shoulder AAROM		2 x 10	4 x 10	4 x 10	4 x 10	----	[Select]
Low Rows		3 x 15 x Yel	4 x 15 x Yel	4 x 15 x Yel	4 x 15 x Yel	4 x 15 x Red	[Select]
Wall Slides			3 x 10	3 x 10	3 x 10	3 x 10 x 2 lbs	[Select]
Beach Chair Progression			3 x 15	3 x 15	3 x 15	----	----
Shoulder IR Stretch				4 x 30 Sec (s)	4 x 30 Sec (s)	4 x 30 Sec (s)	[Select]
Shoulder IR/ER					3 x 15 x Yel	3 x 15 x Yel	[Select]
Wall Clocks					1 x 10 ©	2 x 10 ©	----
Lateral Bands						2 x 10 ft	----
Serratus Punches						3 x 15 x Yel	----
Other S							----

Let's talk about flow sheets.

This is a more telling piece of documentation then our assessment from a snapshot perspective.

Therex and a Logical Progression

Muscle Performance

The 3 Elements of Muscle Performance

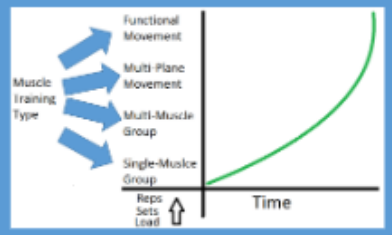
Strength	"...controlling heavy loads for a relatively low number of repetitions over a short period of time."
Power	"...composed of movements that are explosive and involve both strength and speed."
Endurance	"...generate and sustain tension, and resist fatigue over an extended period of time."

In many cases the early/acute phase of rehabilitation will focus on muscle endurance!

Specific, gradual increase of load and repetition is essential to minimize negative effects while still achieving improvement of muscle performance over time.

Sample rep/set scheme

Session 1	Session 2	Session 3	Session 4	Session 5	Session 6
3 set 15 reps	4 sets 15 reps	3 sets 20 reps	4 sets 20 reps	3 sets 15 reps	4 sets 15 reps
45 total	60 total	60 total	80 total	45 total	60 total
Yellow band	Yellow band	Yellow band	Yellow band	Red band	Red band

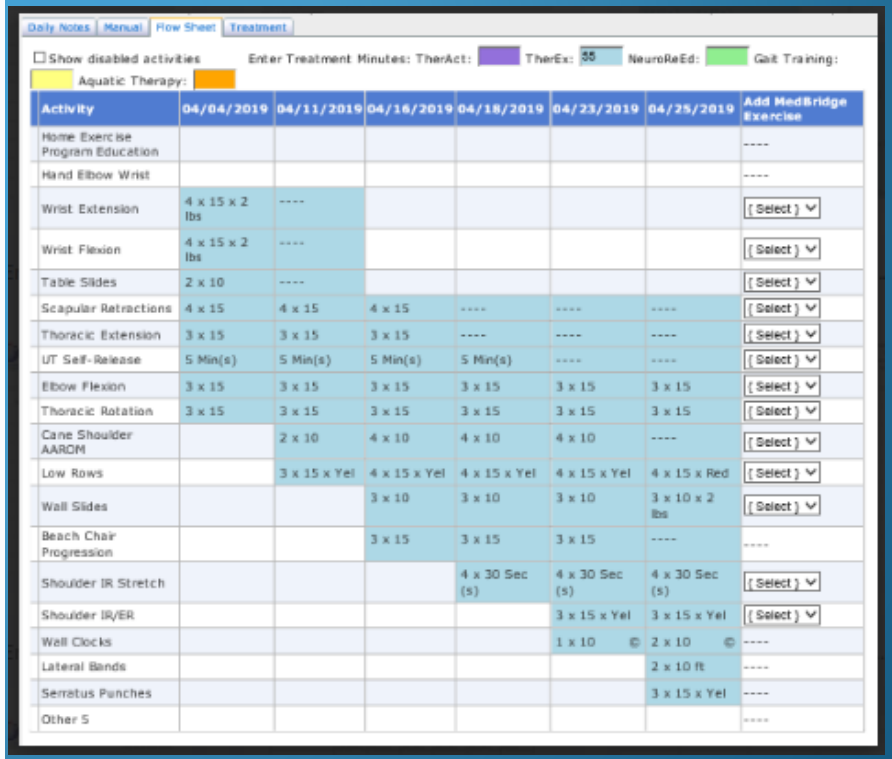


Repetitions, Sets, and Load

RULES (Every other day)

- Always scale repetitions to 3 sets of 15
  - Example:
- Load
  - Never start with a weight or exercise that you can not complete 15 times
  - No max lifts until 12 months post-op
  - Larger load at low repetitions early on is what may lead to injury.
  - Smaller loads at high repetitions can keep you in a safe zone

Rep and set scale
3 x 15
4 x 15
5 x 15
3 x 20
4 x 20
5 x 20
Increase Load and start over.
Or
3 x 15
4 x 15
3 x 20
4 x 20
Increase load
3 x 15
4 x 15
etc.



Daily Notes | Manual | Flow Sheet | Treatment

Show disabled activities Enter Treatment Minutes: TherAct: TherEx: 35 NeuroReEd: Gait Training: Aquatic Therapy:

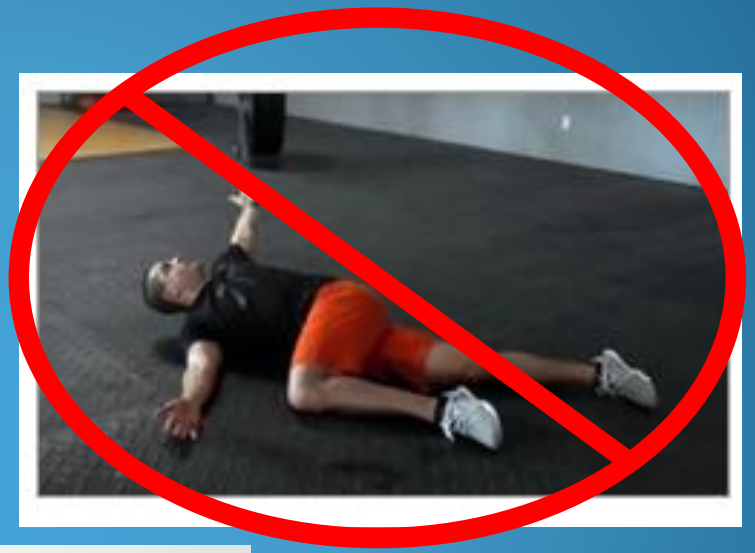
Activity	04/04/2019	04/11/2019	04/16/2019	04/18/2019	04/23/2019	04/25/2019	Add MedBridge Exercise
Home Exercise Program Education							----
Hand Elbow Wrist							----
Wrist Extension	4 x 15 x 2 lbs	----					[Select]
Wrist Flexion	4 x 15 x 2 lbs	----					[Select]
Table Slides	2 x 10	----					[Select]
Scapular Retractions	4 x 15	4 x 15	4 x 15	----	----	----	[Select]
Thoracic Extension	3 x 15	3 x 15	3 x 15	----	----	----	[Select]
UT Self-Release	5 Min(s)	5 Min(s)	5 Min(s)	5 Min(s)	----	----	[Select]
Elbow Flexion	3 x 15	3 x 15	3 x 15	3 x 15	3 x 15	3 x 15	[Select]
Thoracic Rotation	3 x 15	3 x 15	3 x 15	3 x 15	3 x 15	3 x 15	[Select]
Cane Shoulder AAROM		2 x 10	4 x 10	4 x 10	4 x 10	----	[Select]
Low Rows		3 x 15 x Yel	4 x 15 x Yel	4 x 15 x Yel	4 x 15 x Yel	4 x 15 x Red	[Select]
Wall Slides			3 x 10	3 x 10	3 x 10	3 x 10 x 2 lbs	[Select]
Beach Chair Progression			3 x 15	3 x 15	3 x 15	----	----
Shoulder IR Stretch				4 x 30 Sec (s)	4 x 30 Sec (s)	4 x 30 Sec (s)	[Select]
Shoulder IR/ER					3 x 15 x Yel	3 x 15 x Yel	[Select]
Wall Clocks					1 x 10 ©	2 x 10 ©	----
Lateral Bands						2 x 10 ft	----
Serratus Punches						3 x 15 x Yel	----
Other 5							----

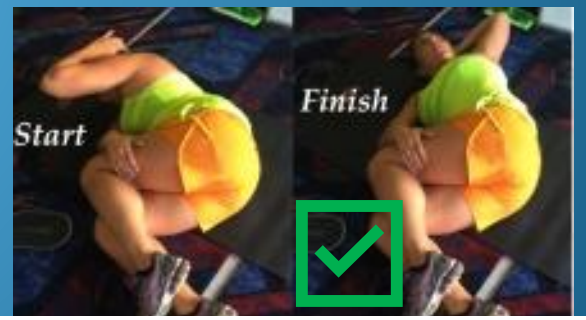
Increasing the intensity

Therex 101

Instability still needs mobility (in the right places)

T Spine Rotation





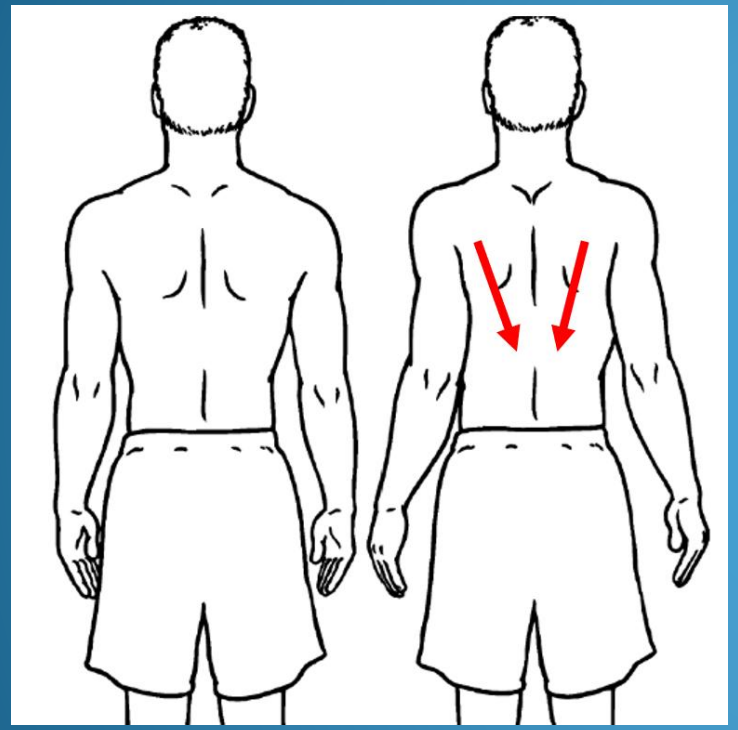
Therex 101

Instability still needs mobility (in the right places)

T Spine Extension

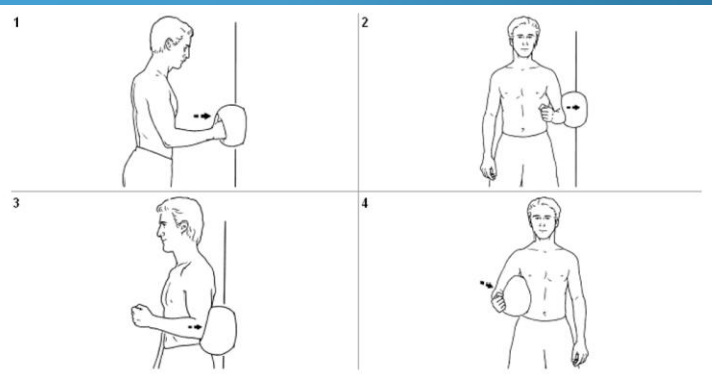
Therex 101

The classics



Are sub max isometrics still worth doing?

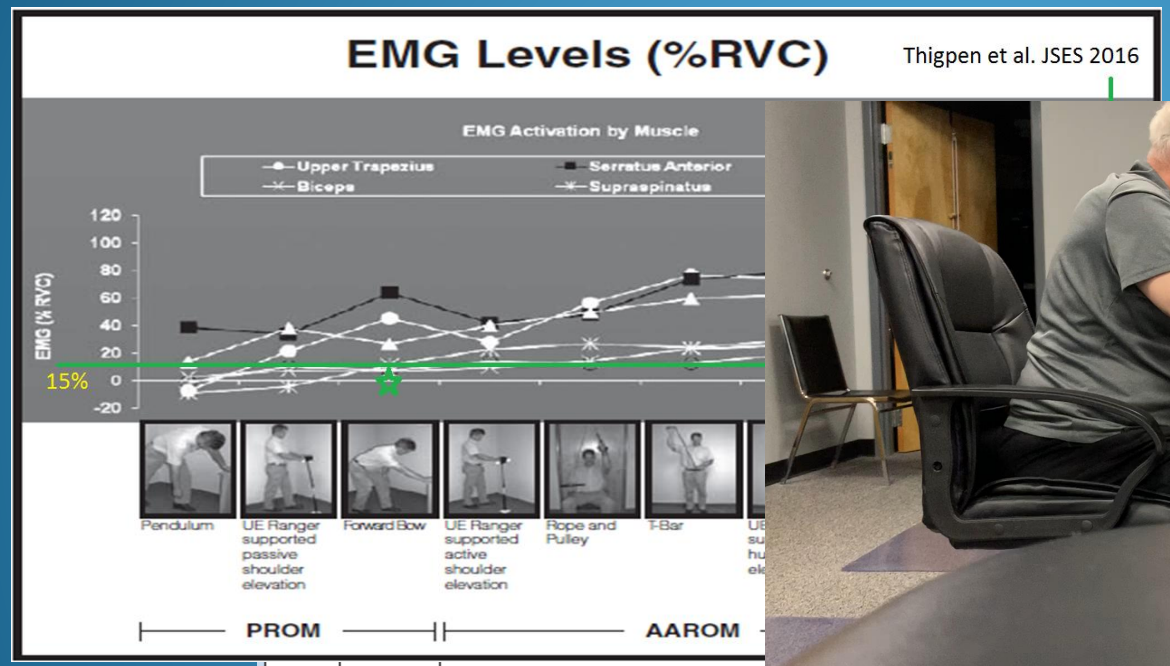
- Rotator Cuff Isometrics:
  - 2-3 sets of 15
  - Between 60-80% max muscle contraction.
  - 2 second ramp up, 2 second hold, 2 second ramp down for each repetition.

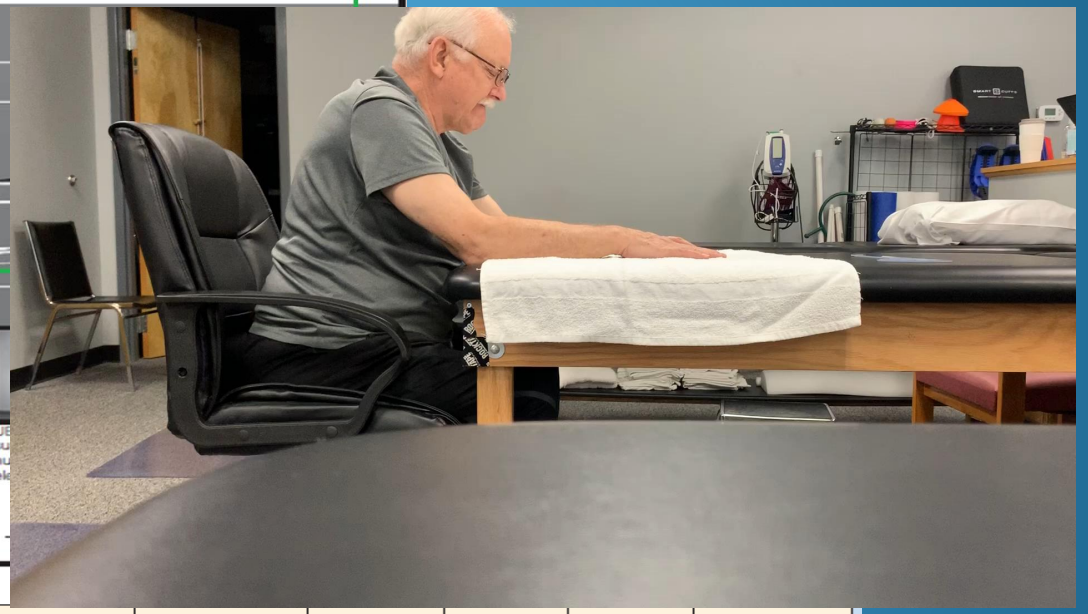


- Deltoid Isometrics:
  - 2-3 sets of 15
  - Between 60-80% max muscle contraction.
  - 2 second ramp up, 2 second hold, 2 second ramp down for each repetition.

Therex 101

The EMGs





2	GM	Supine band					
3	GM	Dusting medial	12 ± 6	8, 15	3	.90	
4	GM	Dusting center	12 ± 7	8, 16	3	.83	
5	GM	Dusting lateral	13 ± 7	9, 17	2	.94	
6	UA	T-bar active-assistive forward elevation	16 ± 9	11, 21	6	.69	1, 2
7	UA	Ball roll	16 ± 9	11, 21	2	.96	1, 2
8	UA	Rope and pulley	17 ± 10	11, 23	4	.89	1
9	UA	T-bar active low	20 ± 11	13, 26	3	.96	1, 2
10	UA	Wall walk	21 ± 10	16, 27	2	.94	1-5
11	A	Active forward elevation	29 ± 13	22, 37	4	.95	1-10

Gaunt et al. (Sports Health 2010)

Therex 101

The EMGs

Long et al. (JOSPT 2010)

FIGURE 3. Subject performing a pendulum exercise. The laser pointer falls within the outer dark concentric circle (arrow), indicating a large pendulum exercise.

Therex 101

Let's talk about this stick thing

What is superior Humeral escape?

Therex 101

Beach chair is still “beachin”

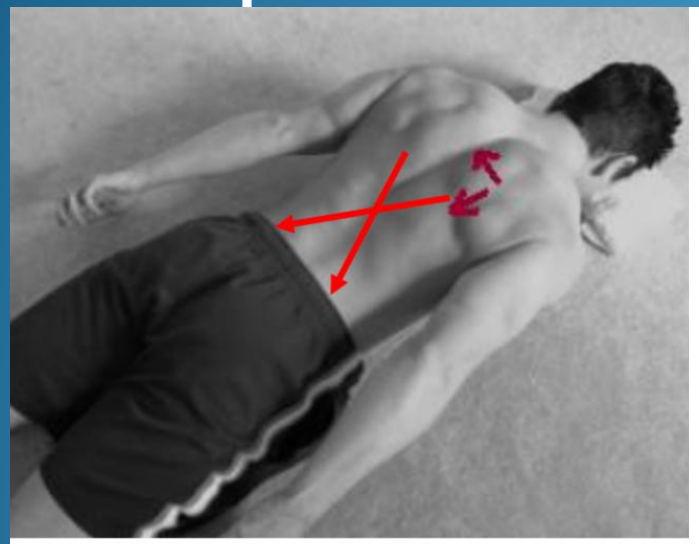
RangeMaster® Shoulder Therapy

Therex 101

Belly Taps

Therex 201

The Scapulae



Strengthening

3 Sets of 10 Repetitions

No shoulder "Hiking" Pretend you are putting your shoulder blades in the opposite back pocket.

NORTH AMERICAN JOURNAL OF SPORTS PHYSICAL THERAPY | FEBRUARY 2007 | VOLUME 2, NUMBER 1

ORIGINAL RESEARCH

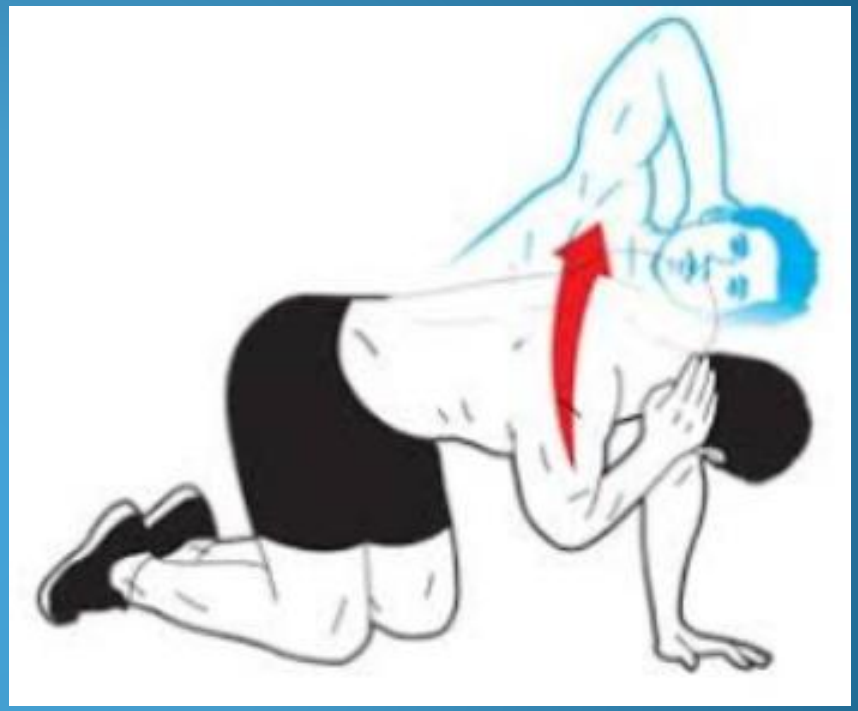
SURFACE ELECTROMYGRAPHIC ANALYSIS OF THE LOWER TRAPEZIUS MUSCLE DURING EXERCISES PERFORMED BELOW NINETY DEGREES OF SHOULDER ELEVATION IN HEALTHY SUBJECTS

Robert A. McCabe, MS, PT, OCS[a]
Karl F. Orishimo, MS[a]
Malachy P. McHugh, PhD[a]
Stephen J. Nicholas, MD[a]

McCabe et al (NAJSPT 2007)

Therex 201

Let’s keep the mobility rolling



Childs Pose

Stage 1:
4-5 repetitions of 5-10 second holds each direction

Stage 2:
4-5 repetitions of 15 second holds each direction

Therex 201

The Cuff (this is where we will find the sticking point)

Either ER or IR (sometimes both) will be symptomatic.

Advacement for Return to Sport (RTS)

Before we start looking at more advanced therex….
It’s always good to ask why do we do things.

It is ok to see someone for 23 (23.0001) minutes.

Superior humeral head migration occurs after a protocol designed to fatigue the rotator cuff: A radiographic analysis

Jaclyn N. Chopp, MSc[a], John M. O’Neill, MD[b], Kevin Hurley, MSc[a], Clark R. Dickerson, PhD[a,*]

J Shoulder Elbow Surg (2010) 19, 1137-1144

Proprioception is one thing but intentionally fatiguing the RTC is something I do not do.

Therex 301

What type of patient CAN we speed up?

-Has excellent scapular and RTC control at 10 wks+

Additional Therex

Proprioception is still relevant.

Additional Therex

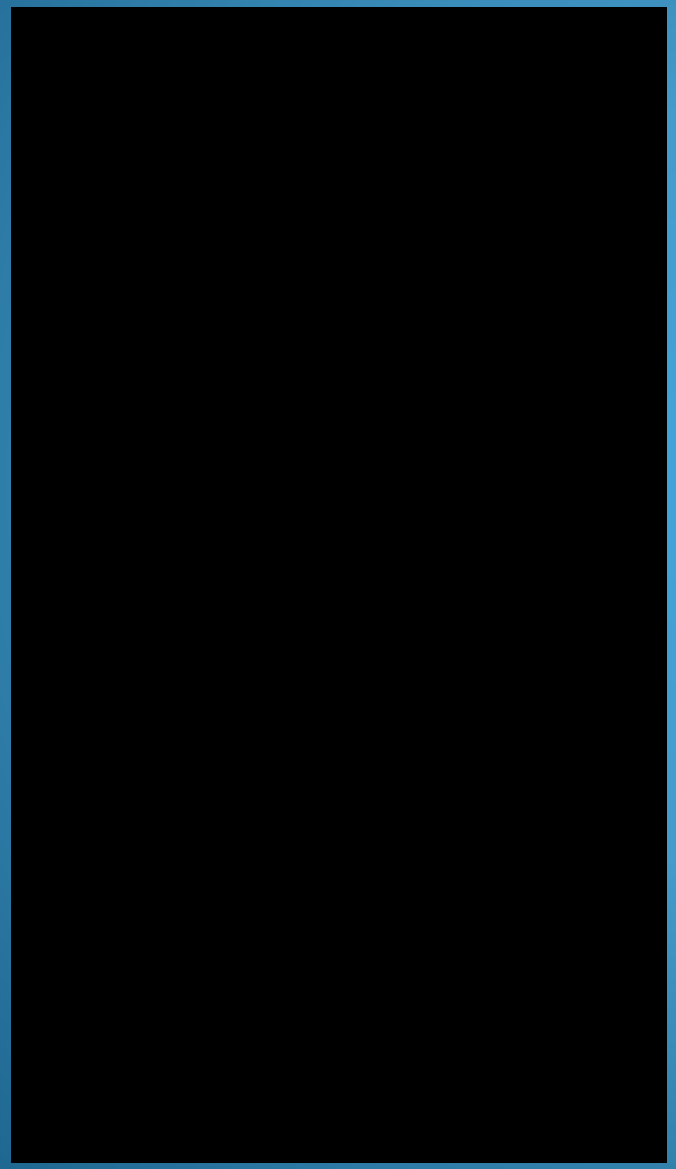
Did someone say core? (Gasp)

PALMETTO MOTION

PHYSICAL THERAPY | PERFORMANCE | SPORTS MEDICINE

Additional Therex

Early Proprioception



Additional Therex

Dynamic is Great

@wesleywang.dpt

POST SHARED ON FEBRUARY 17
BY WESLEYWANG.DPT

POST SHARED ON JANUARY 21
BY WESLEYWANG.DPT

Additional Therex

Heavy ain’t always bad and throw in some of that CORE!!! (don’t boo me because I said core)

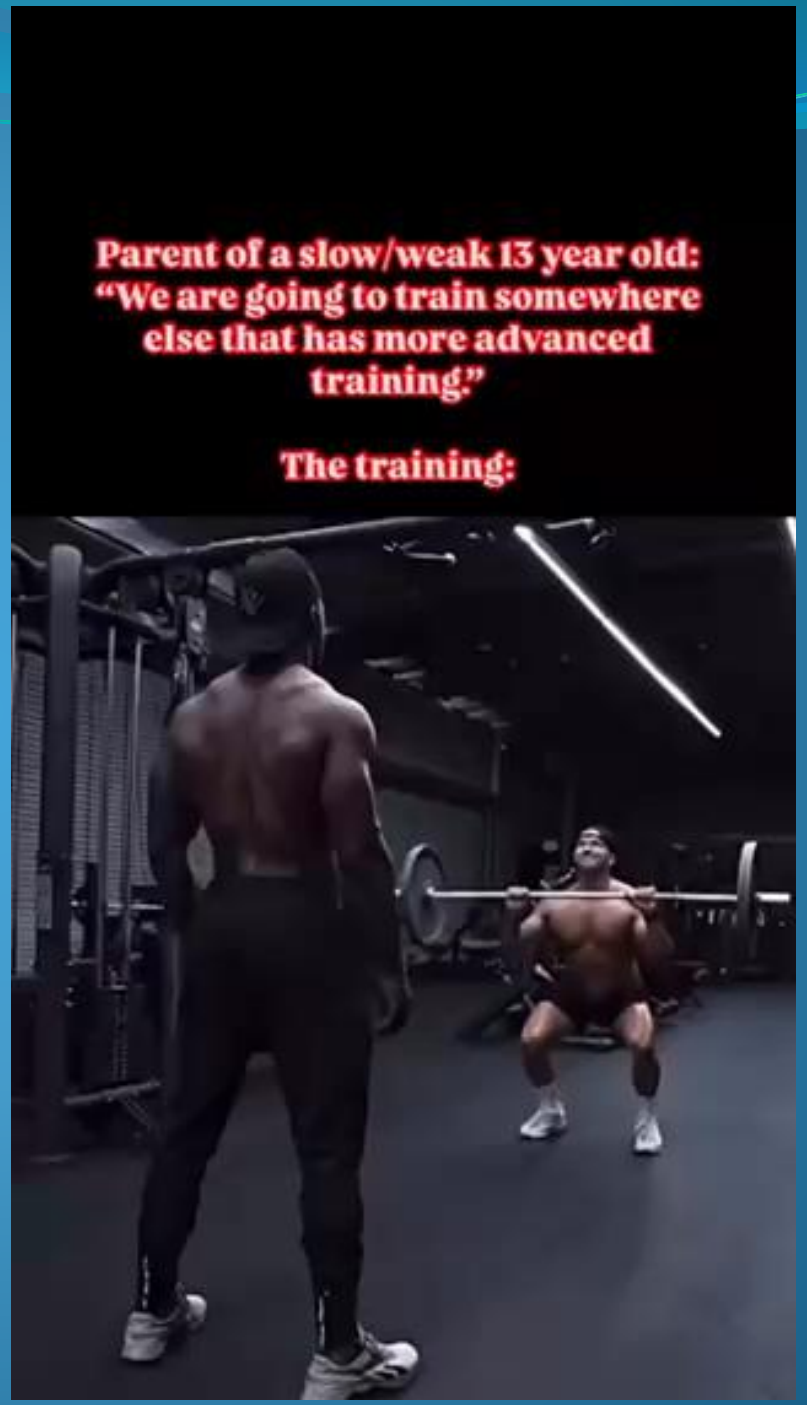
@chalengerstrength

Additional Therex

Not really Recommended
Still need to vet the net.

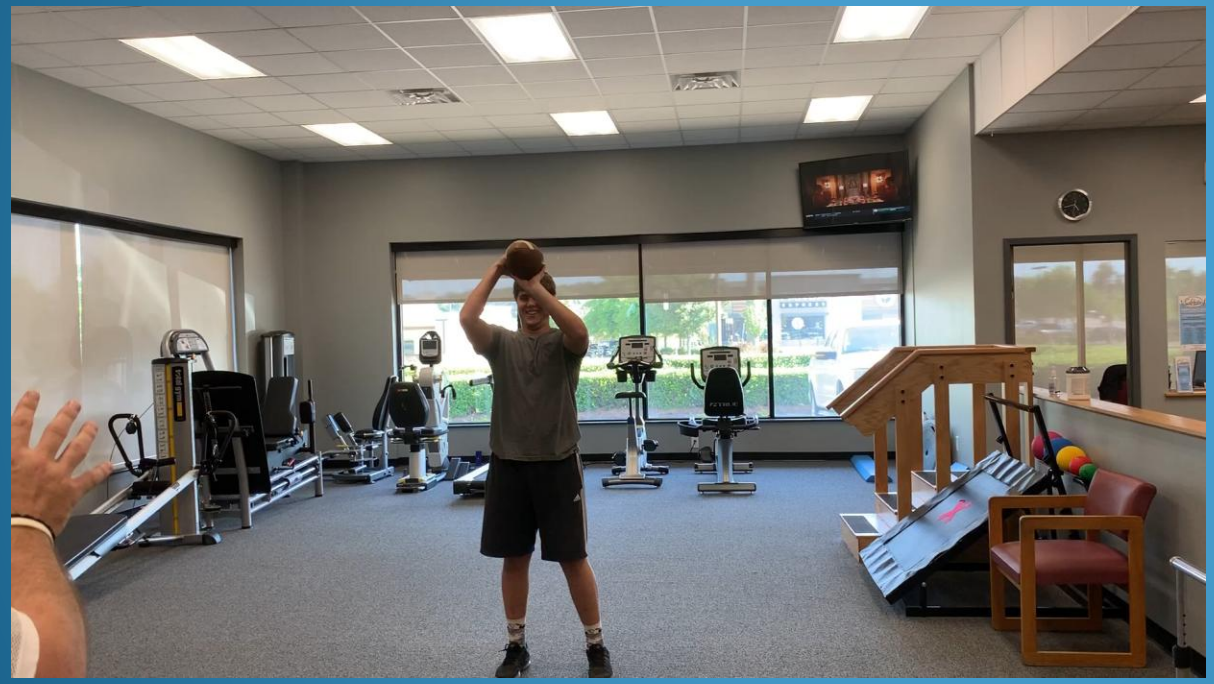
@chalengerstrength

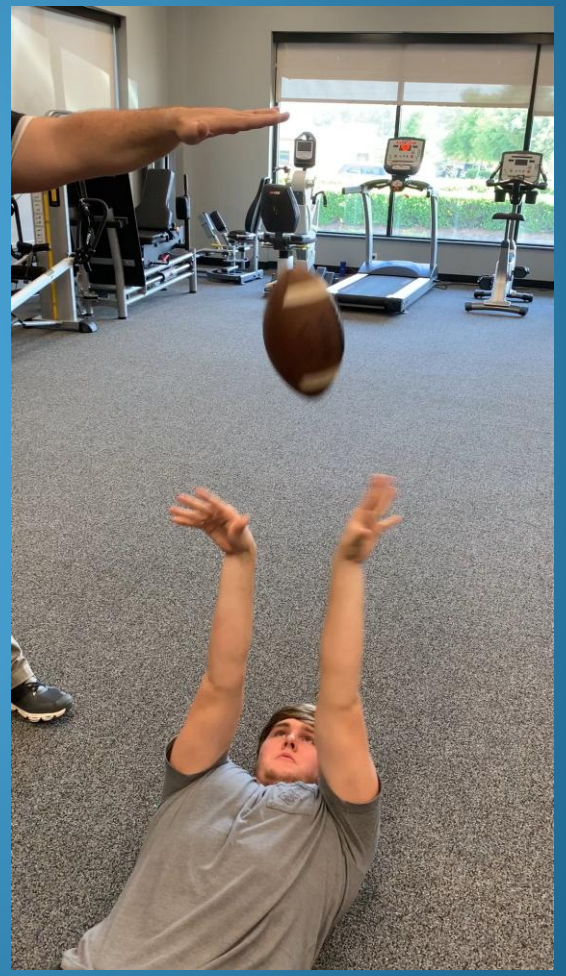
REEL SHARED ON FEBRUARY 13
BY CHALLENGERSTRENGTH



Additional Therex

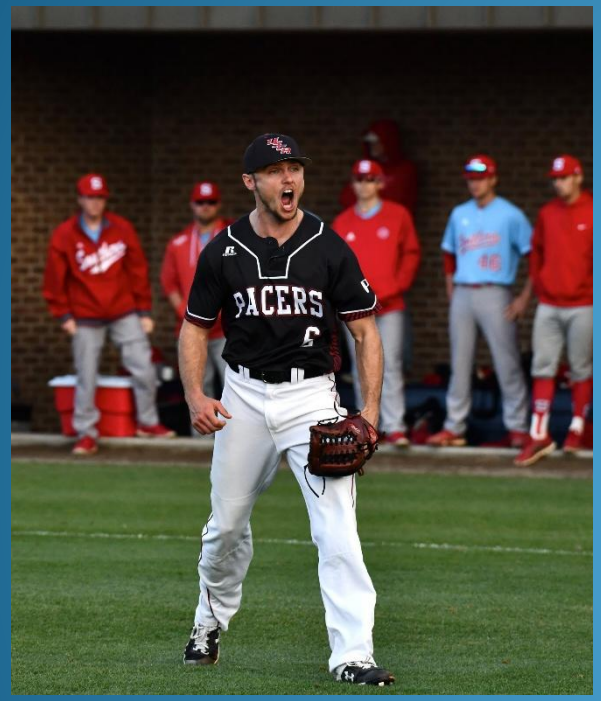
Always get specific before they do it on their own!





Additional Therex

Always get specific before they do it on their own!



Hunter Shuff
Assistant HC Coach

Fox creek HS

Additional Therex

Always get specific before they do it on their own!

Additional Pearls

Restore Strength

ASAP

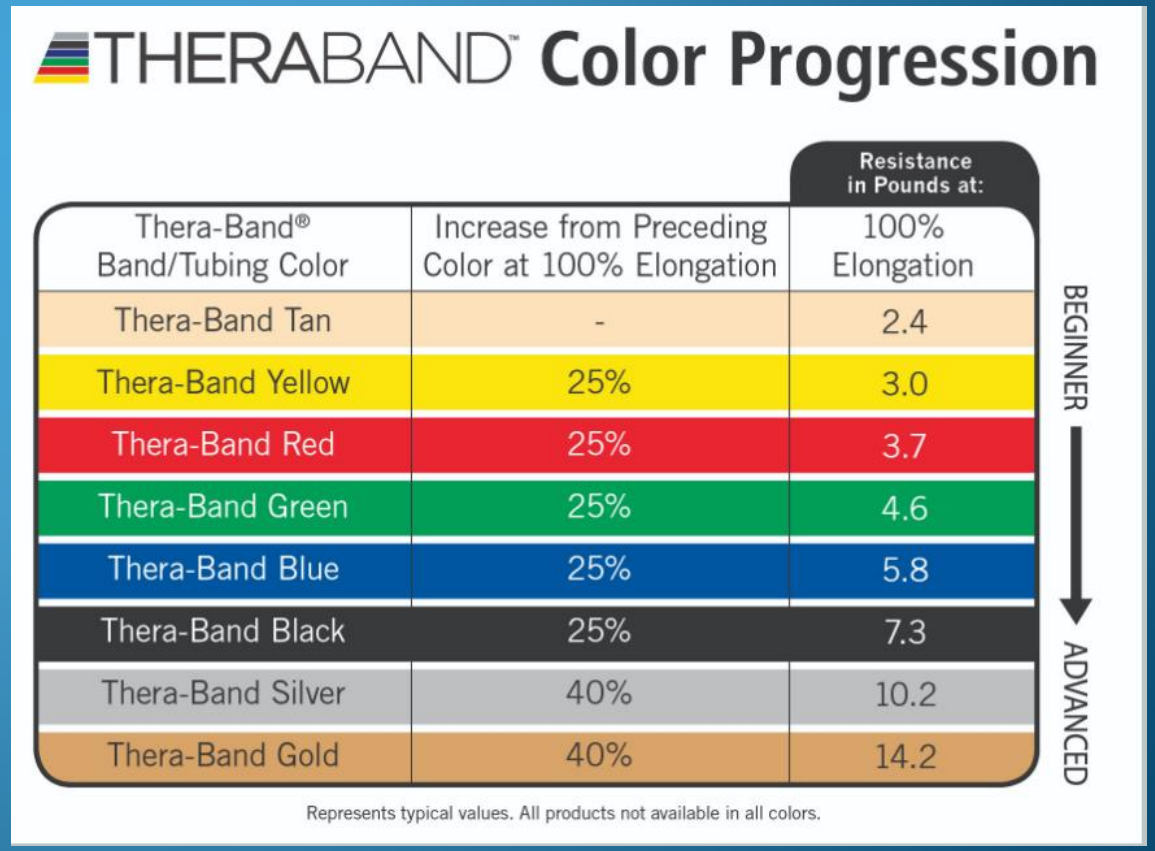
Start proximal and distal while regaining “shoulder” motion

- Scapular retraction isometrics
- Wrist and elbow strengthening
- Grip isometrics

For the shoulder = TB resistance

- ROM + strengthening

There is data for resistance levels



THERABAND Color Progression

Thera-Band® Band/Tubing Color	Increase from Preceding Color at 100% Elongation	Resistance in Pounds at: 100% Elongation
Thera-Band Tan	-	2.4
Thera-Band Yellow	25%	3.0
Thera-Band Red	25%	3.7
Thera-Band Green	25%	4.6
Thera-Band Blue	25%	5.8
Thera-Band Black	25%	7.3
Thera-Band Silver	40%	10.2
Thera-Band Gold	40%	14.2

BEGINNER → ADVANCED

Represents typical values. All products not available in all colors.

When to Slow Down?

What type of patient do we need to slow down?

-Very little pain under 6 weeks and has a compliance issue

These folks may want a sling

-Tolerates PROM too well

-PROM x 1 rep daily.

-Non-compliant

-Stays in the sling

-The “Hey look what I can do already!”

Literature Review

Barber et al. (SCOPE 2005)
Beaton et al. (JBJS 1996)
Burkhart et al. (SCOPE 1997)
Churchhill et al. (JSES 2001)
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Robinson et al (JBJS 2012)
Defroda et al (JBJS Rev)
Krauetler et al (AJSM 2018)
Hovelius et al (JBJS 2008)
Belk et al (AJSM 2023)
Hurley et al (Arthroscopy 2022)

Dynamic Digital Radiography (DDR) Credits

Dr. Eric Wagner, MD, MS, FAAOS, CAQ
Jaden Hardrick, Clinical Research Fellow

EMORY UNIVERSITY SCHOOL OF MEDICINE
Department of Orthopaedics
Upper Extremity Center
Department of Orthopaedic Surgery

Thank you
Time for questions and discussion!

Palmetto Motion Downtown

Palmetto Motion South (May 2027)