Shoulder Pain Assessment, Management and Return to Function

Steven Chipman, PT, DPT, MDT, SSRS, ASSET, HsB2LTC, DAD2TLLS

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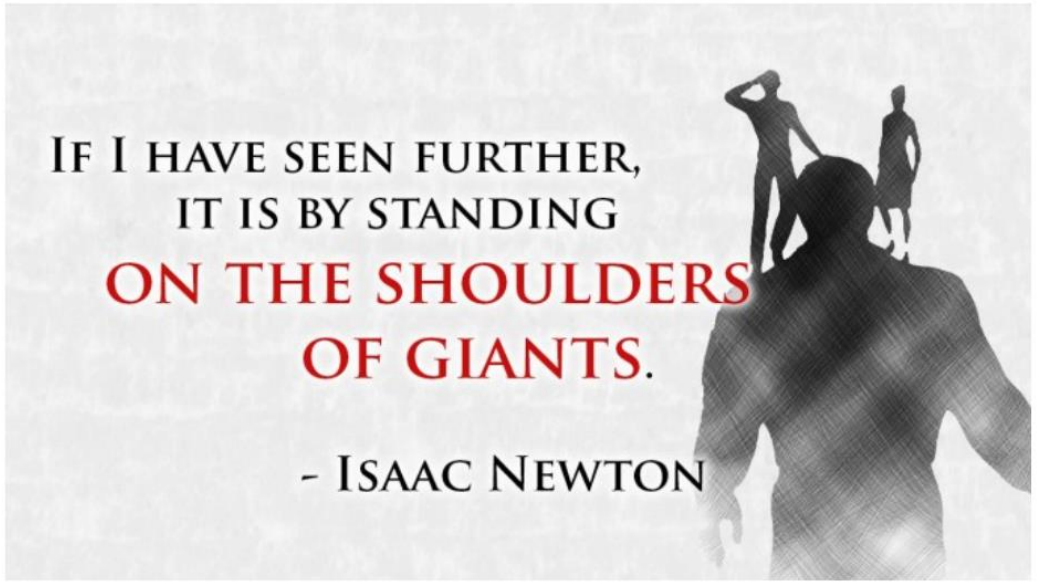
I Stand on These Shoulders…

- Mark Temme
- Jeremy Lewis
- Jill Cook
- Andrews
- Kevin Wilks
- Cincinnati Sports Medicine
- Ben Kibler
- ASSET
- McKenzie



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Outline

- Assessment of Shoulder Pain
- Management of Shoulder Pain
- Return to Function

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How would you perform…

- Subjective Assessment/pt interview?
- Clinical Assessment
  - Impairment measures?
- How do you anticipate the pt to present in the clinic?
- What exercises will you send home day 1? 12 Weeks?

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CASE 1

- 42 Y.O. Male
- Dx: ICD10: M25.512: Pain in Left Shoulder
- Left shoulder MRI – interstitial tear of the subscapularis, increased signal in superior labrum, mild AC joint arthritis

CASE 2

- 37 y.o Female
- ICD10: S46.012D: Strain of muscle(s) and tendon (s) of the rotator cuff of left shoulder
- Radiographs (-) for fracture

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CASE 3

- 83 y.o Female
- ICD10: M25.511: Pain in right shoulder, M75.121: Complete rotator cuff tear or rupture of right shoulder, not specified as traumatic
- MRI - massive RC tear.

CASE 4

- 74 y.o Male
- ICD10: S46.012D: Strain of muscle(s) and tendon (s) of the rotator cuff of left shoulder, subsequent encounter, M19.012: Primary osteoarthritis, left shoulder, M75.42: Impingement syndrome of left shoulder, M75.82: Other shoulder lesions, left shoulder
- Radiographs (-) for fracture, joint space well maintained

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Case Study 5

- 71 y.o Female: left shoulder pain.
- ICD10: M75.122: Complete rotator cuff tear or rupture of left shoulder, not specified as traumatic
- MRI:FTT supraspinatus

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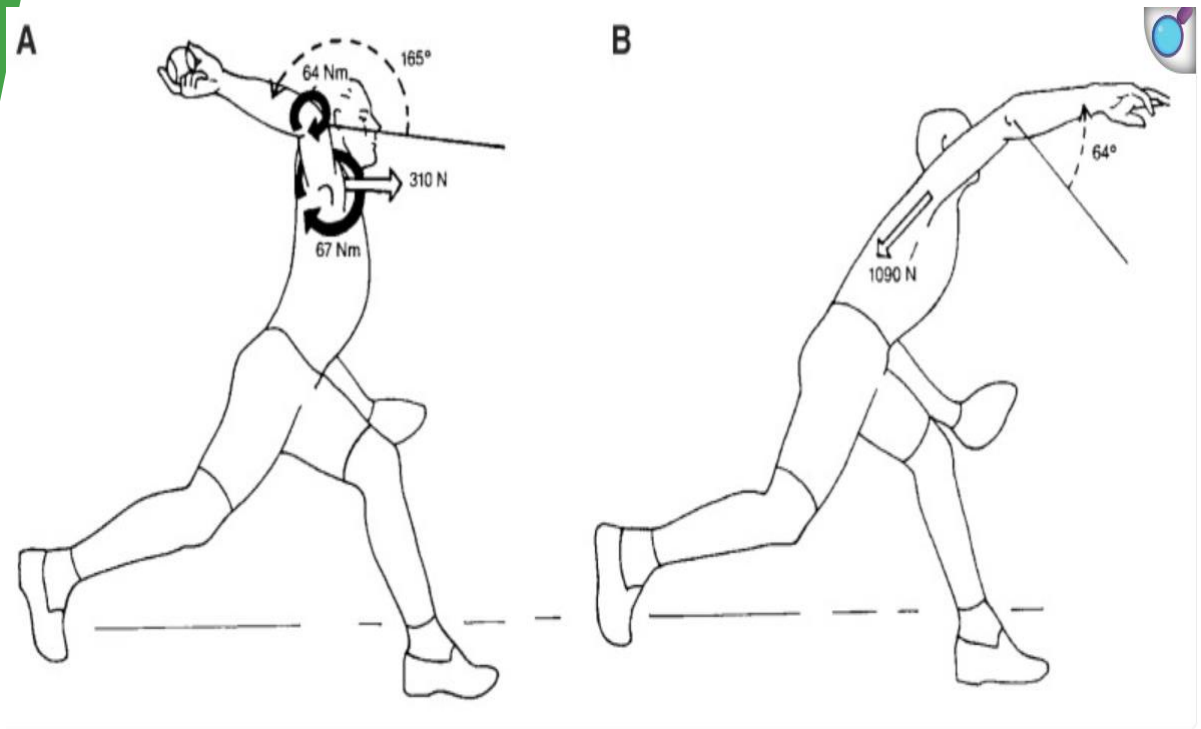
Forces on the Throwing Shoulder

Sports Health. 2010 Jan;2(1):39–50. doi: 10.1177/1941738109338548

Current Concepts in the Evaluation and Treatment of the Shoulder in Overhead-Throwing Athletes, Part 1

Physical Characteristics and Clinical Examination

Michael M Reinold [1,*], Thomas J Gill [1]



- angular velocity - 7000 degrees per second
  - fastest recorded human movement.
- 1 x body weight during external rotation (ER; late cocking)
- 1.5 x body weight during the follow-through phase (distracting the joint).
- Similar forces for other overhead-throwing athletes, such as football quarterbacks, softball players, and tennis players.

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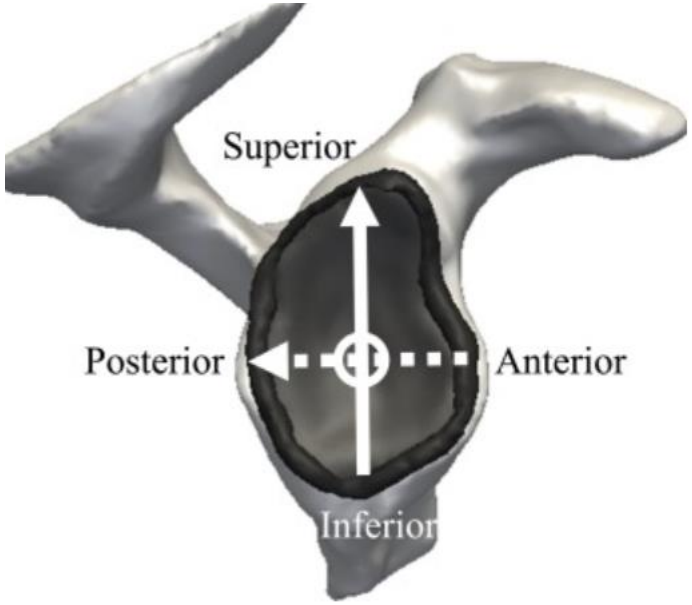
Shoulder: Compressive Forces

- Lifting a 10 kg suitcase laterally (240% BW)
- Holding a 5 kg box ventrally (180% BW)
- Walking with a cane (170% BW)
- Hammering a nail (70% BW)
- Hair combing (65% BW)
- Steering a car (40% BW)
- Feeding, personal hygiene and lifting “everyday objects(23-75% BW)

  - Bergmann 2007; Nikooyan 2010; Van Andel 2008; Veeger 2006; Westerhoff 2009; Anglin 2000; Charlton and Johnson 2006



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Shoulder: Compressive : Shear Forces

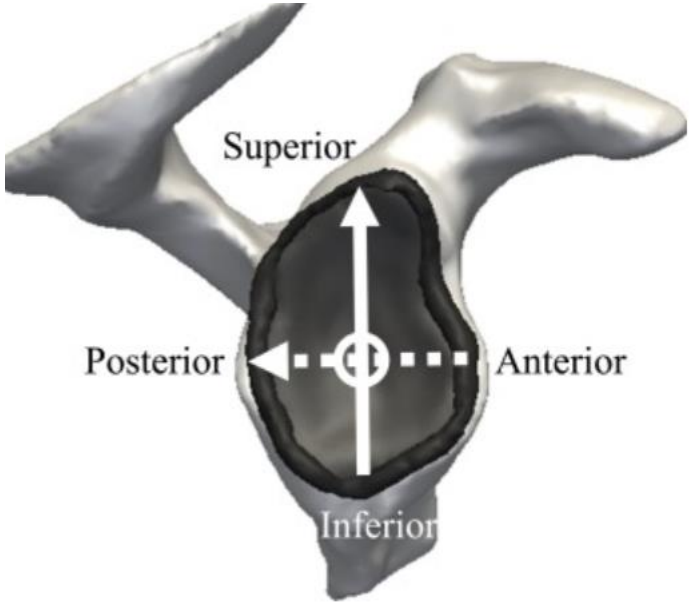
ELSEVIER

Clinical Biomechanics

Volume 54, May 2018, Pages 34-41

Analysis of shoulder compressive and shear forces during functional activities of daily life

Christian Klemt [a], Joe A. Prinold [a], Sharon Morgans [b], Samuel H.L. Smith [a], Daniel Nolte [a], Peter Reilly [a c], Anthony M.J. Bull [a]



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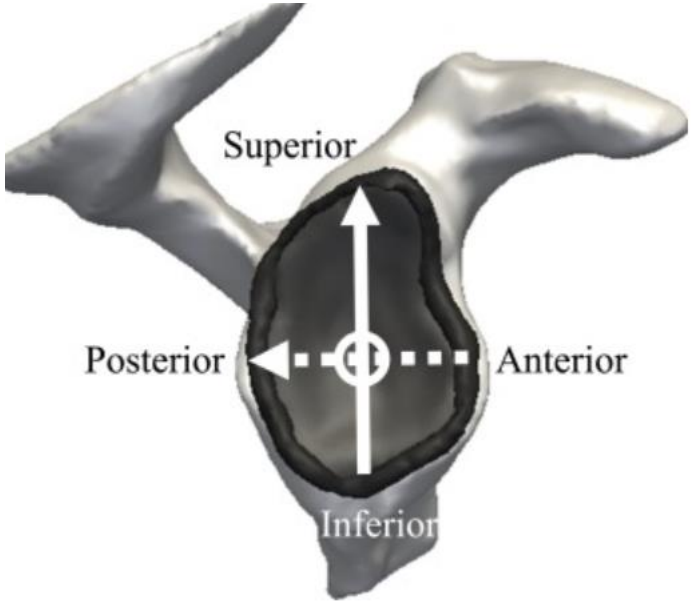
Shoulder: Shear Forces

- 26 ADLs – CF = 26% -164% BW
- SF > 0.50 considered significant
- 8/26 ADLs – SF = 0.50-1.90



- Sit to stand – CF 164% BW; ASF = 0.50
- Lift to place – CF 37%-55% BW; ASF= 0.40 – 0.88
- Reaching Cross body – CF 48% BW; ASF = 0.62; ISF =1.09
- Feeding Task –CF =32% BW; ASF=0.09; SSF 0.08
- Driving – CF= 33%- 47% BW; ASF <0.23; SSF < 0.09
  - Kelmt 2018

The Shoulder: Fun Facts

- MSK disorders are the 2nd major cause for “Years Lived with Disability” (main cause: Mental Health)

- MSK- shoulders are the 2nd - 4th most common complaints

- Shoulder pain:
  - 70% lifetime prevalence
  - up to 34% of people > 65 y.o experience shoulder pain
  - 1-2% of people consult their GP over the course of one year (annual incidence)
  - Only 21-50% report full resolution of shoulder pain after 6 months
  - 40-54% of people report on-going symptoms up to 1-3 years

- J. Lewis 2016 - Chard el al 1991; Van der Windt et al 1996; Macfarlane et al 1998; Winters et al 1999; Bot el al 2005; Linsell et al 2006; Feleus et al 2008; Pribicevic 2012; Koojiman et al 2013; Paloneva et al 2013; Vose et al 2012

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“Shoulder Pain”

- SS Tendinitis
- RC tendinosis/tendinitis
- Partial/Full Thickness RC Tears
- Subacromial bursitis/impingement
- Shoulder Impingement
- Subacromial pain syndrome
- Shoulder pain Syndrome
- Rotator Cuff Related Shoulder Pain (RCRSP)

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Editorial > J Orthop Sports Phys Ther. 2025 Jul;55(7):1-3. doi: 10.2519/jospt.2025.13405.

What's in a Name? The Case for Using "Rotator Cuff–Related Shoulder Pain" in Clinical Practice

Jeremy Lewis, Paul E Mintken, Amy W McDevitt

PMID: 40536259 DOI: 10.2519/jospt.2025.13405

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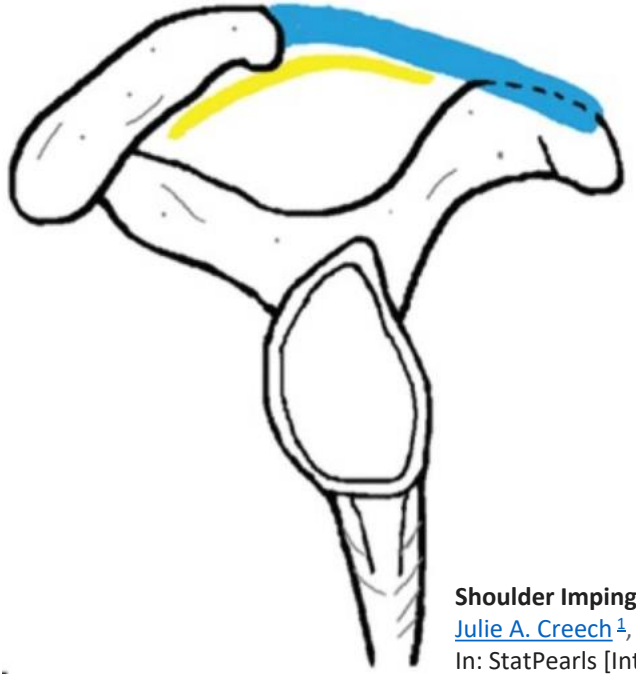
RCRSP

- Introduced 2016
- Refers structurally
  - Muscles, tendons, bursae, bone, ligament, capsule, nerve, vascular tissue
- Presents as Shoulder Pain and Weakness
  - Shoulder flexion/ER
- Avoids Problematic Pathoanatomical Dx
  - Subacromial Impingement Syndrome
  - Non-traumatic RC Tear
    - Both refer to anatomical location →difficult for most pt's to comprehend

      - Powell et al March 2023 PTJ:PT &Rehab Journal/Physical Therapy, 2023;1031-12

Subacromial Impingement

Coracoacromial Arch



Shoulder Impingement Syndrome
Julie A. Creech[1], Sabrina Silver[2]
In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2025 Jan.
2023 Apr 17.
Affiliations
•PMID: 32119405
•Bookshelf ID: NBK554518

Borders of the Subacromial Space

- 10 -15 mm space btw acromion/ humeral head
- Structures -subacromial bursa, rotator cuff tendons, long head of biceps, and the CAL.
- Impingement syndrome
  - Stress/strain/tear of any of these structures

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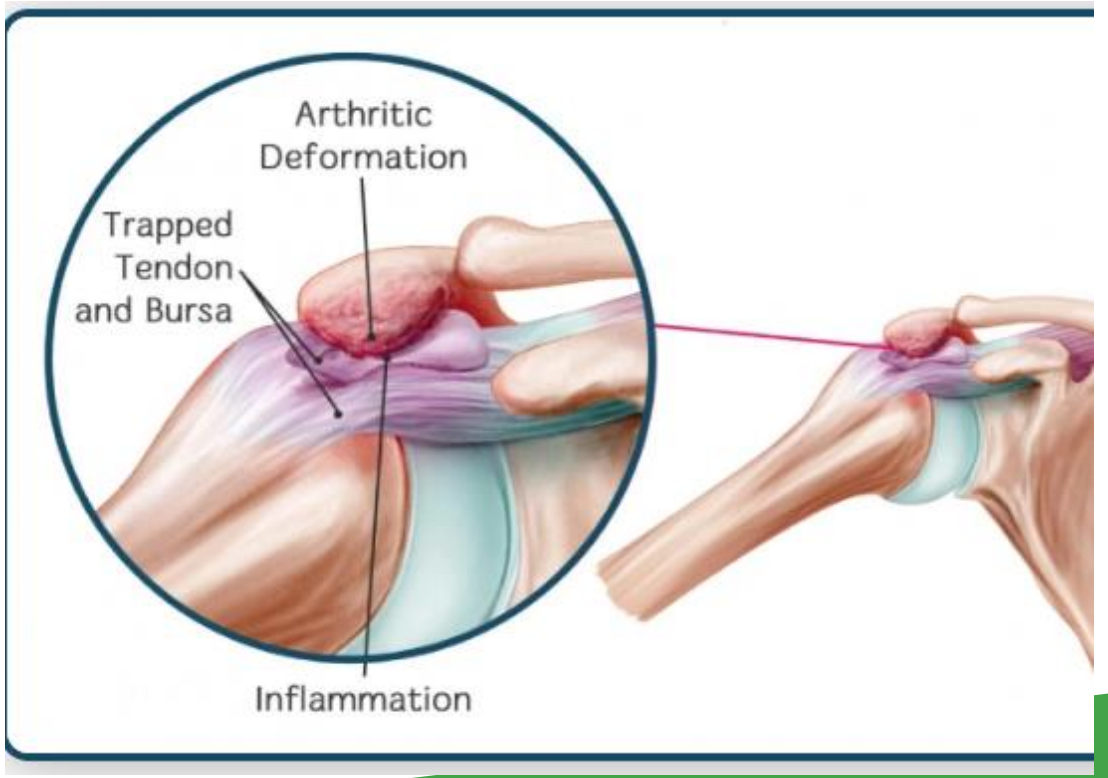
Assumption: Shoulder Pain Cause

- “Your acromion is causing the pain by ripping the tendon”
- “The symptoms are coming from your tear”
- “If we don’t operate on the small tear it will get to big and we won’t be able to repair it”.

Shoulder Impingement



Subacromial Impingement Syndrome

- 95% RC pathology → caused by Arcomion – Neer 1972
  - Basis for Acromioplasty ,Acromial irritation ,Pockets of microtrauma, Inflammatory Process, Tendinitis
- “For people >40 y.o. and in the absence of FTT, acromioplasty should be considered… after 1 yr, in those with persistent disability and after having adequate non-surgical treatment (Neer 1983)

- “When I finished my training in 1994, we were taught that surgery was the preferred way to treat a rotator cuff tear.” (Kuhn 2024)

Rising Incidence Acromioplasty/RC Repairs

- Incidence of Acromioplasty
  - 1996-2006 →254% Increase

    NY, USA
  - 2001 -2010 →746% Increase

    England, UK
    - Vitale et al 2010 JBJS 92: 1842-50 Judge et al 2014 JBJS 96: 70-4

- Incidence of RC Repairs
  - 1996 – 58,846
  - 2006 – 272, 148
    - Colvin et al 2012 National Trends in RC Repair JBJSurg (Am) A227-233

Uncertainties Associated with Surgery

- “The structural failure causes the symptoms”
- Assumption = symptoms arise from the RC tear however….
- Pain Does NOT correlate
  - Size of Tear
  - Amount of tendon retraction
  - Clinical Examination Findings
- Pain DOES correlate
  - Number of co-morbidities
  - Level of education
    - FACTORS NOT CHANGED BY SURGERY ☺
      - Unruh et al 2014 The duration of symptoms does not correlate with RCT severity JShlELSurg 23 1052-1058
      - Dunn et al 2014 Symptoms of pain do not correlate with RCT severity JBJS Am 96:793

MOON Shoulder Study

J Bone Joint Surg Am. 2024 Jul 9;106(17):1563–1572. doi: 10.2106/JBJS.23.00978

The Predictors of Surgery for Symptomatic, Atraumatic Full-Thickness Rotator Cuff Tears Change Over Time

Ten-Year Outcomes of the MOON Shoulder Prospective Cohort

John E Kuhn [1,a], Warren R Dunn [2], Rosemary Sanders [1], Keith M Baumgarten [3], Julie Y Bishop [4], Robert H Brophy [5], James L Carey [6], Brian G Holloway [7], Grant L Jones [4], C Benjamin Ma [8], Robert G Marx [9], Eric C McCarty [10], Sourav K Poddar [10], Matthew V Smith [5], Edwin E Spencer [7], Armando F Vidal [11], Brian R Wolf [12], Rick W Wright [1]

- **Exercise is effective for most patients.**
  - PT successfully treated over 70% of patients with atraumatic, full-thickness rotator cuff tears.
  - Positive effects of this treatment were shown to last for at least 10 years
- **Patient expectations influence success.**
  - Patients who believed physical therapy would work were more likely to succeed with non-operative treatment.
    - MOST SIGNIFICANT predictor whether pt would ultimately need surgery →HOW EFFECTIVE PT would be
- **Structural factors do not predict the need for early surgery.**
  - Tear size or location did not correlate with pain levels or the decision to have surgery within the first six months.
  - Challenges the idea that surgery is always necessary for a structural tear.
- **Most patients avoid surgery.**
  - In a study of 452 patients, less than 25% ended up electing to have surgery over a two-year period.
  - Most who opted for surgery did so within the first 12 weeks of non-operative treatment.

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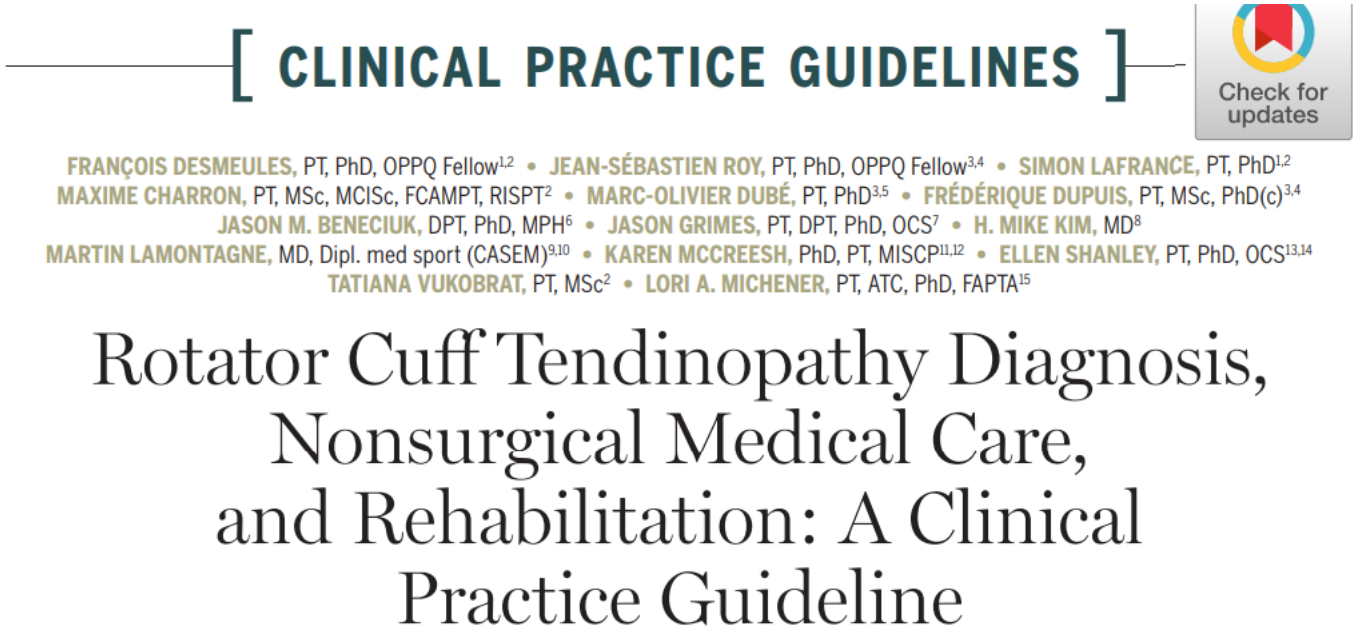
- “Our team was shocked when so many patients in the cohort improved with physical therapy, because it’s not at all what we expected… We’re also optimistic about the finding that low expectations for therapy drive patients to having surgery because we can modify this variable by educating patients that physical therapy can work” (Kuhn 2024)

What Should We Do???

- Journal of Orthopaedic & Sports Physical Therapy Published Online:April 1, 2025Volume55Issue4Pages235-274 https://www.jospt.org/doi/10.2519/jospt.2025.1318



What Should We Do?

- Clinical Assessment
  - Subjective Exam
  - Objective Exam
- Rehabilitation
- Return to Function

Clinical Assessment

- Subjective Assessment
  - Pt Interview/Pt Education
- Objective Assessment
  - Outcome Measures
  - Impairments
    - ROM/Strength/Posture
  - Special Test
  - Imaging

Subjective Assessment: Therapeutic Alliance

- “In order to maximize the benefits of physical therapy, a patient-centered approach is recommended as the basis for the development of a good working relationship between physical therapist and patient, with enhanced effectiveness of communication regarding specific tasks required to achieve treatment goals”.

Maher et al. Systematic Review on Treatment Outcome in Physical Rehabilitation: The Influence of the Therapist-Patient Relationship. *Physical Therapy*, 2010; 90 (8), 1099–1110.

Therapeutic Alliance

- Components that contribute to a strong therapeutic alliance (Bordin 1979).
  1. Agreement on goals (Collaborative Goal Setting)
  2. Agreement on interventions (Shared Decision Making)
  3. Effective bond between patient and therapist (The Therapeutic Relationship)

www.physio-pedia.com/Therapeutic_Alliance

[VIEWPOINT]

MAXI MICIAK, PT, PhD[a] • GIACOMO ROSSETTINI, PT, PhD[b]

Looking at Both Sides of the Coin: Addressing Rupture of the Therapeutic Relationship in Musculoskeletal Physical Therapy/Physiotherapy

As physical therapists/physiotherapists, we may have all experienced tense situations with our patients. For instance, we may become overtly frustrated with patients' actual or perceived lack of commitment to treatment plans. There's also the potential to react defensively when patients come into the clinic visibly angry or disappointed because their pain has increased and they attribute the flare to the last treatment session. Then, there are times when tension may be more subtle, like when a patient withdraws or pulls back emotionally from us because we were distracted, rushed through a session, or failed to acknowledge an important disclosure. These examples illustrate what is known in psychotherapy as "ruptures" to the therapeutic relationship.[1,2]

When physical therapists think of therapeutic relationship, we commend they typically see the side of the coin that reflects a patient-centered approach where therapist and patient work together on goals and activities that are meaningful to the patient.[3] Good rapport, trust, and respect form a bond that is established in a safe therapeutic space, shepherded by the physical therapist.[4,5] Ruptures are the implicit and often ignored "other side of the coin" of the therapeutic relationship. Considering the role ruptures play in the therapeutic relationship, they can be considered a negative contextual factor with the potential to elicit nocebo effects.[10] Seeing both sides of the coin becomes important because recognizing and addressing tensions could be pivotal to establishing and maintaining good-quality therapeutic relationships, which can, in turn, positively impact musculoskeletal outcomes.[7]

SYNOPSIS: As physical therapists, we may have all experienced tense moments in our therapeutic relationships with patients. Whether small or large, implicit or explicit, relational breakdowns are a normal part of human interactions. Within the clinical encounter, these tensions are called "ruptures." In psychotherapy, ruptures have been associated with increased dropout rates and poor clinical outcomes. To increase the likelihood that physical therapists establish, maintain, and strengthen therapeutic relationships with their patients, recognizing and repairing ruptures would seem logical. However, we contend that relational tensions, although inevitable, are most often avoided by physical therapists, potentially to the peril of the therapeutic relationship. A responsive approach that involves adjusting our mind set, being aware, and taking appropriate action could facilitate rupture repair. We provide clinical examples of rupture and repair and discuss the opportunities that "the other side of the coin" presents for professional and personal growth. *J Orthop Sports Phys Ther 2022;52(8):500-504. Epub: 15 June 2022. doi:10.2519/jospt.2022.11152*

KEY WORDS: musculoskeletal, pain, repair, rupture, therapeutic alliance, therapeutic relationship

The concept of relational rupture has also garnered attention in physical therapy, with calls for greater focus on relational breakdowns (eg, ruptures).[9] Relational rupture has emerged in therapeutic relationship studies in paediatric and neurological physiotherapy,[1,2] aligning with the idea of "turning points"[6] in physical and occupational therapy. This recognition signals an opportunity to not only acknowledge but also embrace ruptures in musculoskeletal physical therapy. In this Viewpoint, we will

- explain what ruptures are and how they apply in practice,
- describe an approach to addressing ruptures in practice, and
- present ruptures as an opportunity for growth.

DEFINING RELATIONSHIP RUPTURES

Ruptures are tensions or breakdowns in the therapeutic relationship.[11] They indicate rifts in the way physical therapists and patients are relating and are often caused by misunderstandings, moments of empathic discord, or dysfunctional relational patterns.[11] Ruptures generally fall into 2 categories, *withdrawal* and *confrontation* ruptures.[4] When patients withdraw, they become less engaged with us or their rehabilitation.[4] Confrontation ruptures are characterized by displays of frustration, anger, or dissatisfaction.[4] Ruptures occur on a continuum

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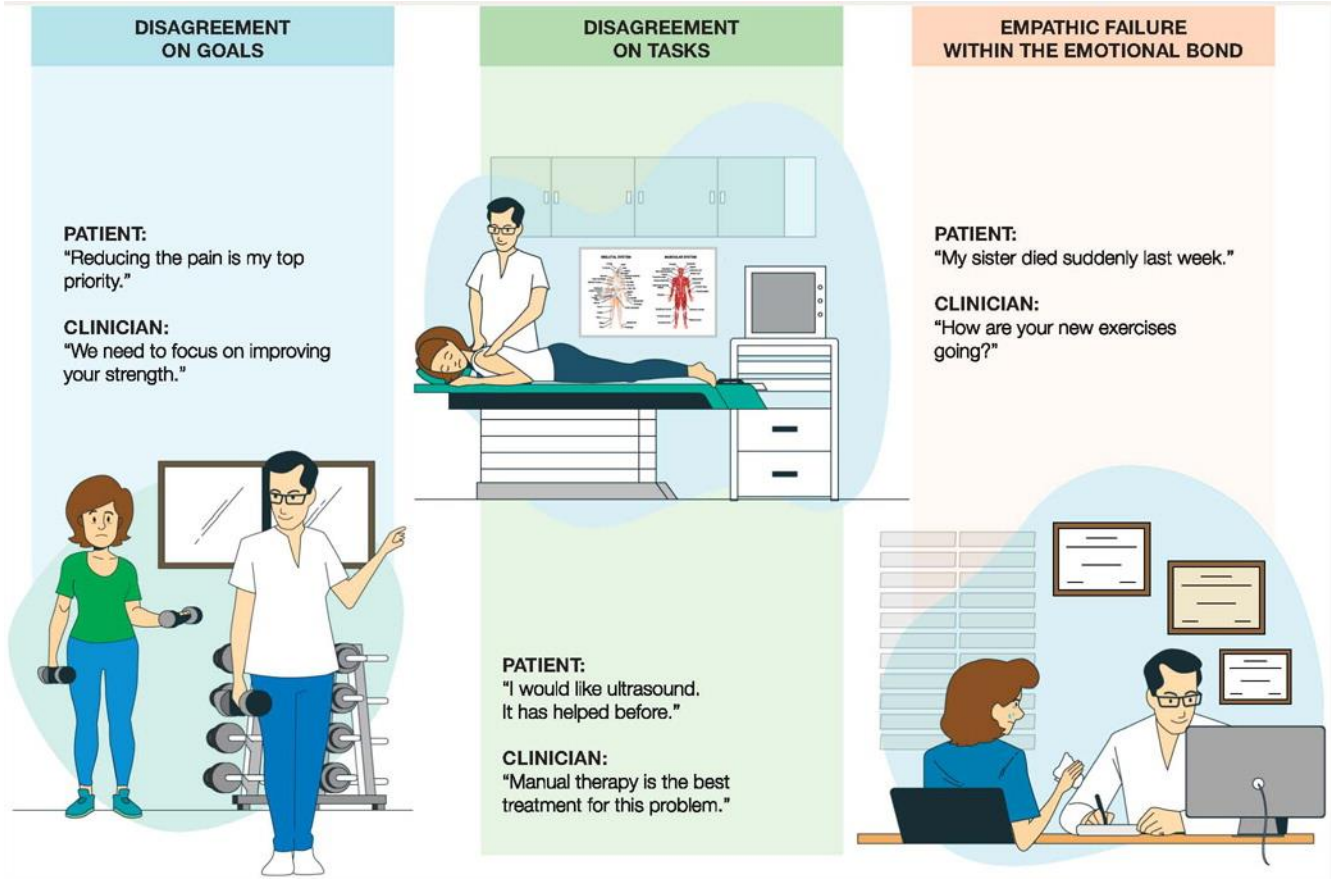


Therapeutic Alliance

"Restoring That Faith in My Shoulder": A Qualitative Investigation of How and Why Exercise Therapy Influenced the Clinical Outcomes of Individuals With Rotator Cuff–Related Shoulder Pain

Jared K. Powell, BExSc/BBus, DPhty[1,*], Nathalia Costa, PhD, BPhy (Honours)[2], Ben Schram, BExSc, DPhty, PhD, Professor[1], Wayne Hing, PhD, FNZCP, Professor[1], Jeremy Lewis, PhD, FCSP[3,4]

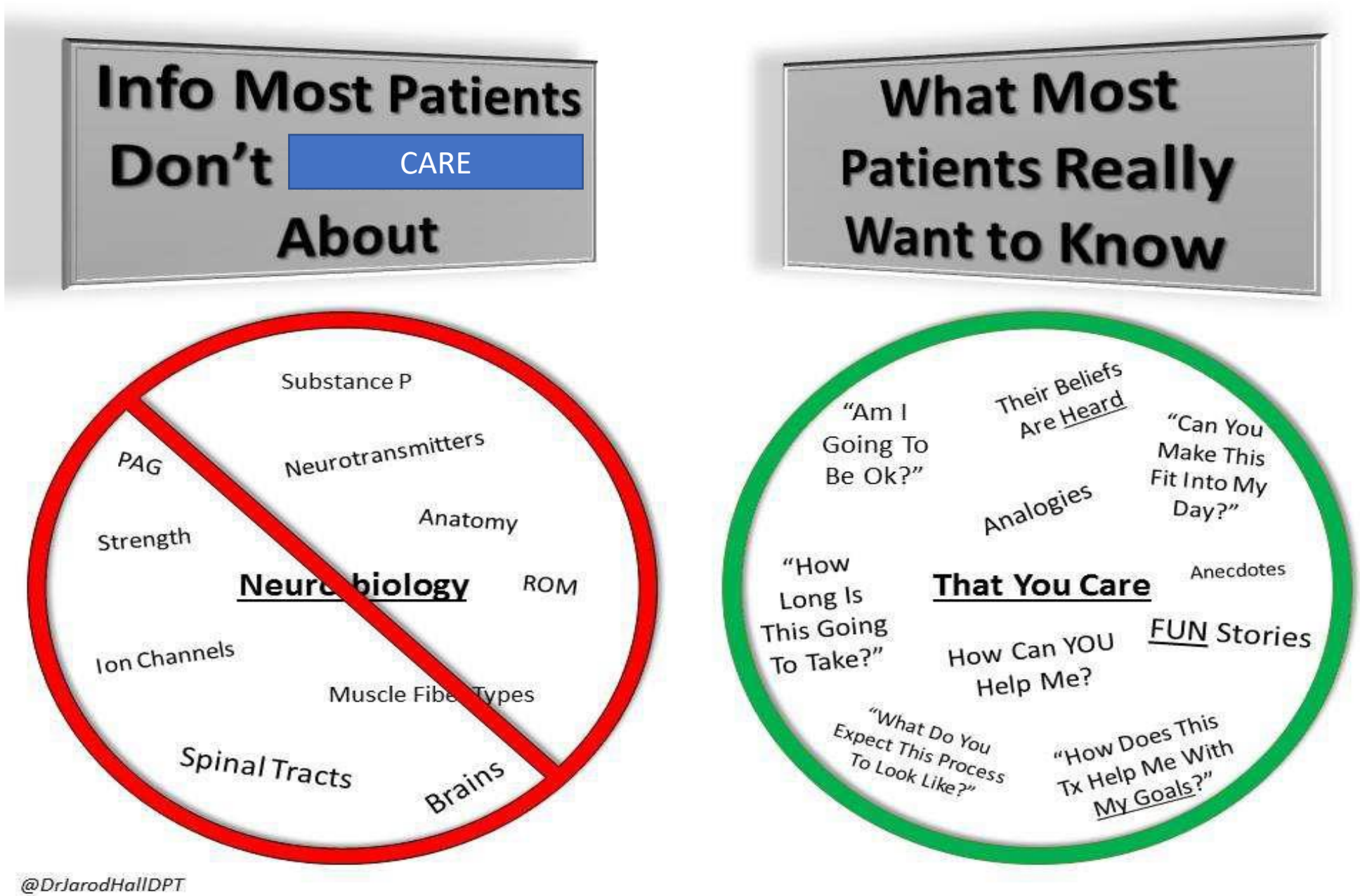
PTJ: Physical Therapy & Rehabilitation Journal | *Physical Therapy*, 2023;103:1–12

- All participants stressed their relationship with their treating clinician played an important role in their engagement in and improvement through exercise.
- Strong Therapeutic Relationship → (+) Experience
  - Built Trust
  - Collaboration
  - Reassurance
  - Empathy
- Controversially (-) Therapeutic relationship b/c of poor communication and lack of trust…
  - Meant Ex's could not contribute to clinical improvement bc pt would seek a different PT or not do the exercises

Patients want to know…

1. What is wrong with me
2. How long will it take?
3. What can I (the patient) do for it?
4. What can you (the clinician) do for it?

- Louis Gifford


Info Most Patients Don't CARE About
What Most Patients Really Want to Know
Substance P
Neurotransmitters
PAG
Anatomy
Strength
Neurobiology
ROM
Ion Channels
Muscle Fiber Types
Spinal Tracts
Brains
"Am I Going To Be Ok?"
Their Beliefs Are Heard
"Can You Make This Fit Into My Day?"
Analogies
"How Long Is This Going To Take?"
That You Care
Anecdotes
FUN Stories
How Can YOU Help Me?
"What Do You Expect This Process To Look Like?"
"How Does This Tx Help Me With My Goals?"
@DrJarodHallDPT

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Real Reviews

- Liz has been my lifeline through two joint replacements. I have laughed with her, cried with her and her focus and encouragement with me has made all the difference. She is the finest therapist I have ever known and her work with me has changed the quality of my life!
- Thomas that worked with me was kind, attentive and empathetic.
- Emily is very attentive.
- I had several concerns and Emily addressed every one of them. She was thoughtful and understanding and I enjoyed working with her.
- Tori is great. Very professional, attentive, encouraging, knowledgeable…
- Hannah is exceptional and essential compassionate.
- Everything is promp, very clean . Everyone is nice and courteous- very nice experience.
- My therapist Austin cares about my health and making sure my therapy is right for me

Assessment: Patient Interview

- Set the Scene
  - Be professional
    - “Please call me….” / “How would you like to be addressed?”
- Invite the patient to discuss their problem freely
  - What do you Think causes your symptoms ?
  - “Please tell me about your shoulder and how I can help you with it?”
  - Don’t Interrupt!
    - Most pt complete their opening statement </= 1 minute and NO MORE than 3 minutes
    - Some providers reported to interrupt during opening statement after 18-23 seconds!
    - When interrupted pt’s don’t report 2-3 health concerns!
      - Booth et al 2014; Lles 2008; Petrie 2002; Broadbent 2009; Finniss 2010
      - J. Lews The Shoulder 2016

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Assessment: Patient Interview

- What are you hoping to achieve today?
- What would you consider to be a successful outcome?
- How quickly do you expect to recover?
- Is there some else important for me to know to better understand you as well as how you as well as how your shoulder is affecting your life?
- Summarize back
- What do you think about the treatment I have suggested?
  - R Chester et al Br J Sports Med 2016 Psychological factors are associated with the outcome of PT for people with shoulder pain: multcenter, longitudinal cohort study
  - J. Lewis Shoulder Course 2016

Assessment: Patient Interview

- How much time do you spend sitting?
- How much physical activity are you doing regularly?

Sitting Time and Mortality from All Causes, Cardiovascular Disease, and Cancer

KATZMARZYK, PETER T.[1]; CHURCH, TIMOTHY S.[1]; CRAIG, CORA L.[2]; BOUCHARD, CLAUDE[1]

Author Information

Medicine & Science in Sports & Exercise 41(5):p 998-1005, May 2009. | ***DOI:*** 10.1249/MSS.0b013e3181930355

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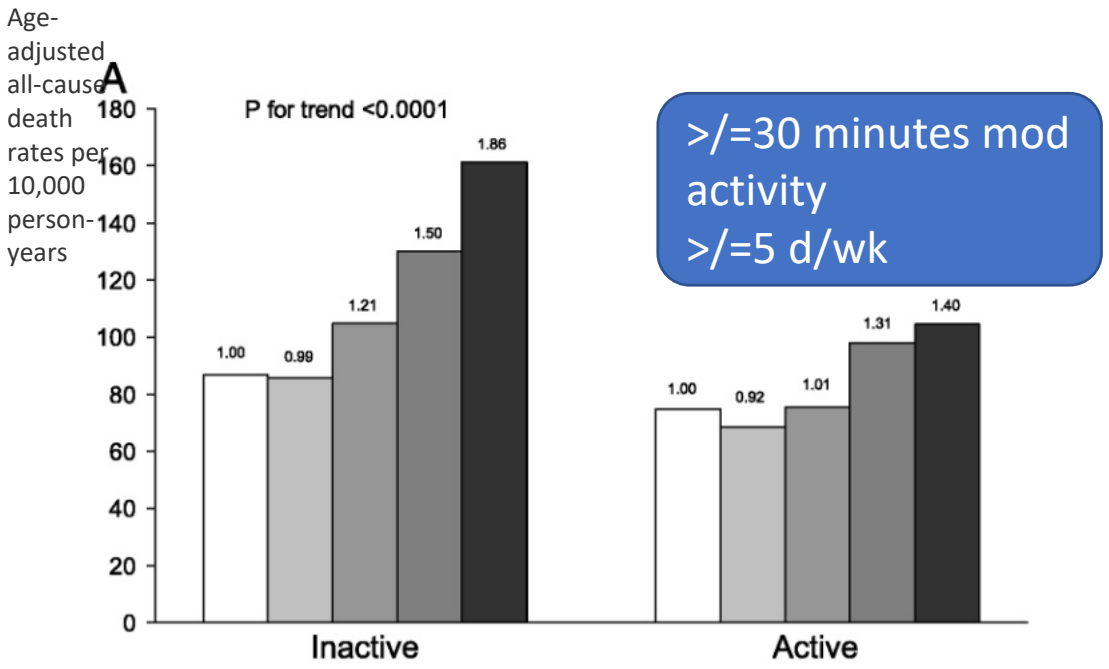
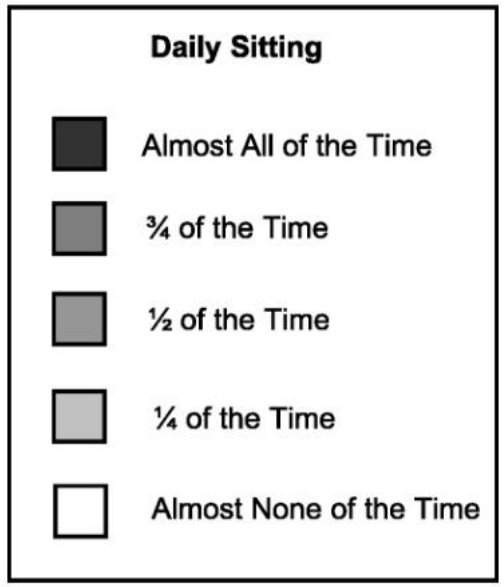
SITTING



>/=30 minutes mod activity
>/=5 d/wk



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How much do you sit?

- > daily time spent sitting in major activities is associated with elevated risks of mortality from all causes and from cardiovascular disease.
- Results remain significant after adjustment for potential confounders, including age, sex, smoking status, alcohol consumption, leisure time physical activity levels
- Even within physically active individuals, there was a strong association between sitting and risk of mortality.
    - Sitting seems to have an independent association with mortality rates beyond that explained by leisure time physical activity level *per se*. This is an important observation because it suggests that high amounts of sitting cannot be compensated for with occasional leisure time physical activity even if the amount exceeds the current minimum physical activity recommendations.

- BE ACTIVE + LIMIT SIT TIME!!

How much activity are you doing each week?

- The American Heart Association
  - >/= 150 minutes of moderate-intensity aerobic exercise each week for optimal cardiovascular health.
  - = 500 MET minutes per week, according to the Department of Health and Human ServicesTrusted Source.

Light < 3.0 METs	Moderate 3.0–6.0 METs	Vigorous > 6.0 METs
Sitting at a desk: 1.3	Housework (cleaning, sweeping): 3.5	Walking at very brisk pace (4.5 mph): 6.3
Sitting, playing cards: 1.5	Weight training (lighter weights): 3.5	Bicycling 12–14 mph (flat terrain): 8
Standing at a desk: 1.8	Golf (walking, pulling clubs): 4.3	Circuit training (minimal rest): 8
Strolling at a slow pace: 2.0	Brisk walking (3.5–4 mph): 5	Singles tennis: 8
Washing dishes: 2.2	Weight training (heavier weights): 5	Shoveling, digging ditches: 8.5
Hatha yoga: 2.5	Yard work (mowing, moderate effort): 5	Competitive soccer: 10
Fishing (sitting): 2.5	Swimming laps (leisurely pace): 6	Running (7 mph): 11.5

How much activity are you doing each week?

- Aim 3000 – 4000 METs/week
  - (Kyu et al Physical Activity & risk of cancer BMJ 2013)
- People who achieve total physical activity levels several times higher than the current recommended minimum level have a significant reduction in the risk…
  - breast cancer, colon cancer, diabetes, ischemic heart disease, and ischemic stroke events.

How to achieve 3000 METs/Week

Daily Requirment =430 METS/d

- Climbing stairs – 10 minutes
- Vacuuming – 15 Minutes
- Running – 20 Minutes
- Gardening – 20 Minutes
- Walking/Cycling 25 Minutes

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Assessment: Patient Interview

- Poor Outcomes associated with
  - Number of comorbidities
  - Level of education
  - Duration of symptoms

- Outcomes are improved in people who participate in regular physical activity.
  - R Chester et al Br J Sports Med 2016 Psychological factors are associated with the outcome of PT for people with shoulder pain: multcenter, longitudinal cohort study
  - J. Lewis Shoulder Course 2016

Assessment: Outcome Measure

- Validated and Reliable Questionnaires for pts with RC tendinopathy and other shoulder disorders
  - Desmeules et al JOSPT vol 55, #4, April 2025

- American Shoulder and Elbow Surgeons Score
- Constant-Murley Score
- Disabilities of the Arm, Shoulder and Hand (DASH) (Quick DASH)
- Oxford Shoulder Score
- Rotator Cuff Quality of Life Index
- Shoulder Pain and Disability Index
- Upper Extremity Functional Index
- Western Ontario Rotator Cuff Index
- Pennsylvania Shoulder Score

Assessment: Quick Dash

- 11 questions
  - daily activities, symptoms, social function, work function, sleep, and confidence
- 5-point Likert scale,
  - 1 (no difficulty) to 5 (unable).
- 100-point scale,
  - 100 represents greatest disability
- 10/ 11 items are necessary for calculating
- Minimal Important Change (MIC) = 8.2 to 13.4
  - **Responsiveness and minimal important change of the QuickDASH and PSFS when used among patients with shoulder pain**

Tarjei Rysstad [1,✉], Margreth Grotle [1,2], Lars Petter Klokk [3], Anne Therese Tveter [1]

QuickDASH

Please rate your ability to do the following activities in the last week by circling the number below the appropriate response.

	NO DIFFICULTY	MILD DIFFICULTY	MODERATE DIFFICULTY	SEVERE DIFFICULTY	UNABLE
1. Open a tight or new jar.	1	2	3	4	5
2. Do heavy household chores (e.g., wash walls, floors).	1	2	3	4	5
3. Carry a shopping bag or briefcase.	1	2	3	4	5
4. Wash your back.	1	2	3	4	5
5. Use a knife to cut food.	1	2	3	4	5
6. Recreational activities in which you take some force or impact through your arm, shoulder or hand (e.g., golf, hammering, tennis, etc.).	1	2	3	4	5

	NOT AT ALL	SLIGHTLY	MODERATELY	QUITE A BIT	EXTREMELY
7. During the past week, *to what extent* has your arm, shoulder or hand problem interfered with your normal social activities with family, friends,	1	2	3	4	5

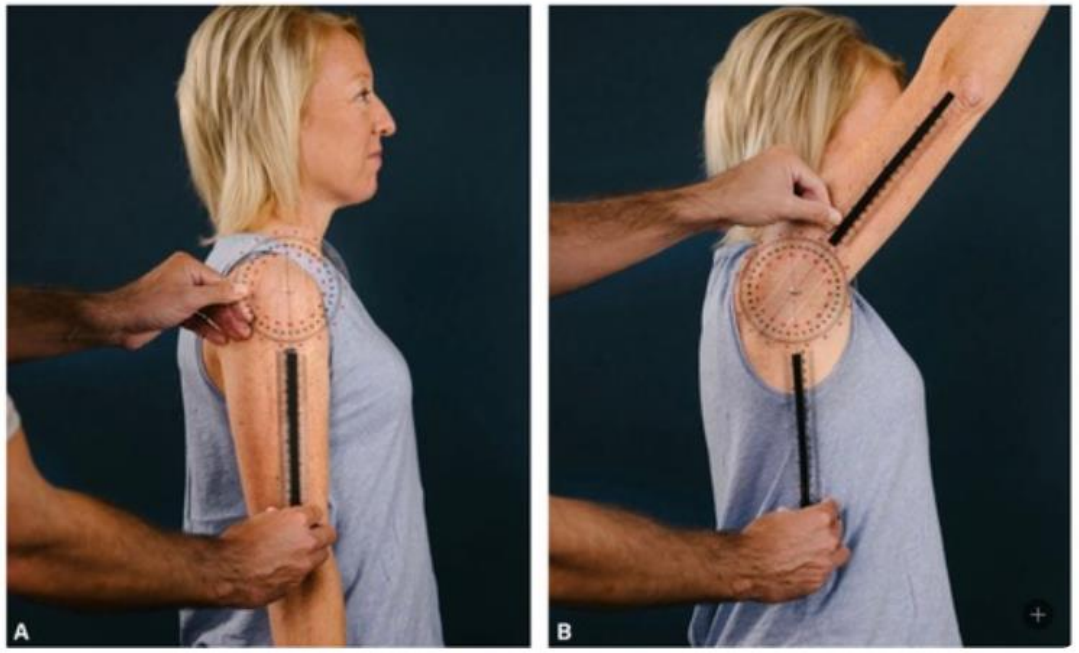
	NOT LIMITED AT ALL	SLIGHTLY LIMITED	MODERATELY LIMITED	VERY LIMITED	UNABLE
8. During the past week, were you limited in your work or other regular daily activities as a result of your arm, shoulder or hand problem?	1	2	3	4	5

Please rate the severity of the following symptoms in the last week. *(circle number)*	NONE	MILD	MODERATE	SEVERE	EXTREME
9. Arm, shoulder or hand pain.	1	2	3	4	5
10. Tingling (pins and needles) in your arm, shoulder or hand.	1	2	3	4	5

	NO DIFFICULTY	MILD DIFFICULTY	MODERATE DIFFICULTY	SEVERE DIFFICULTY	SO MUCH DIFFICULTY THAT I CAN'T SLEEP
11. During the past week, how much difficulty have you had sleeping because of the pain in your arm, shoulder or hand? *(circle number)*	1	2	3	4	5

Assessment: Shoulder ROM

- Don’t just measure ROM
- Ask about pain
  - Can you modify symptoms?
    - Ex.) Flexion/Abduction
      - Add IR or ER
      - Short vs Long lever arm
      - SSMP – baton stretch, inferior glide
      - Change weight
      - Involve the legs and pelvis with reaching



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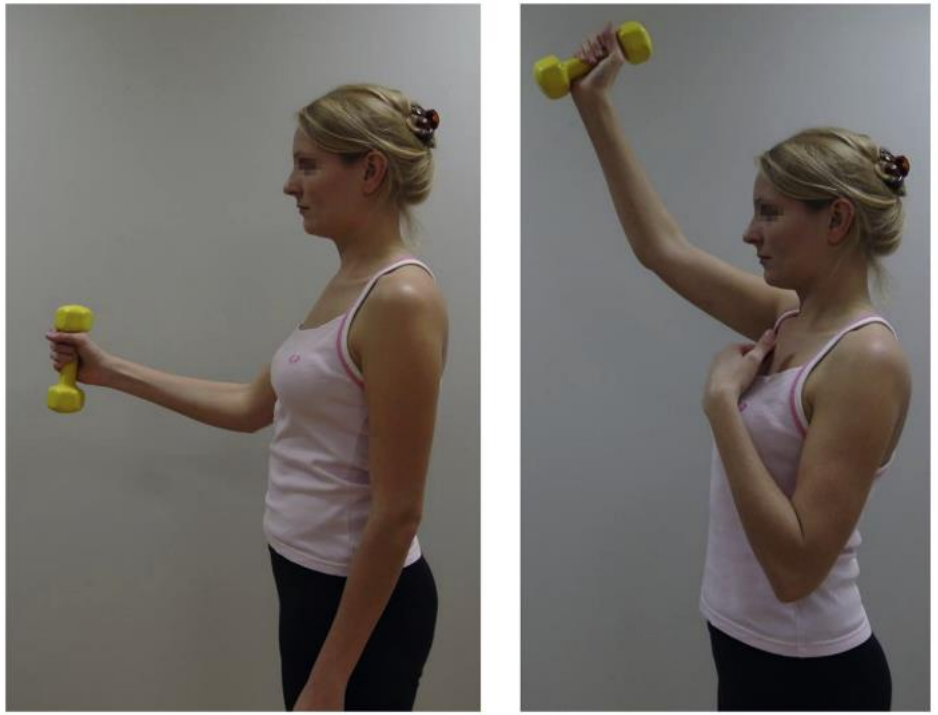

Fig. 1. SSMP (Stage 1). Example: Assessment of influence of thoracic kyphosis.

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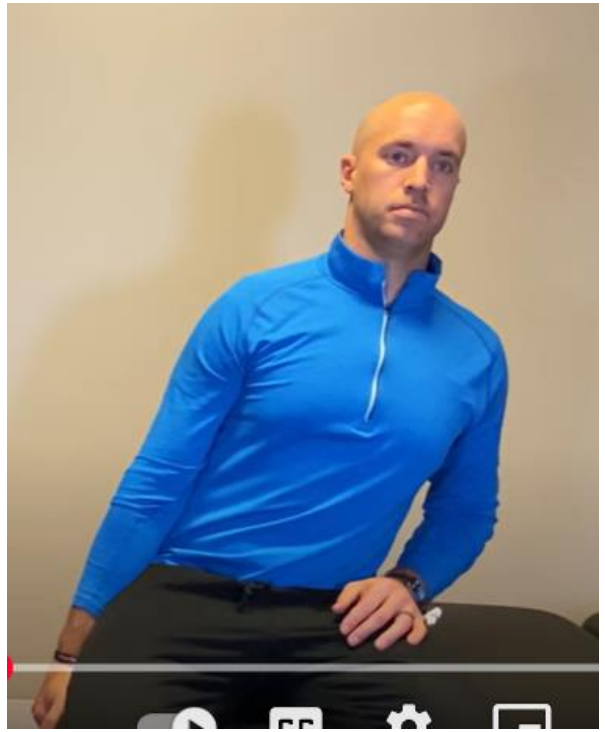

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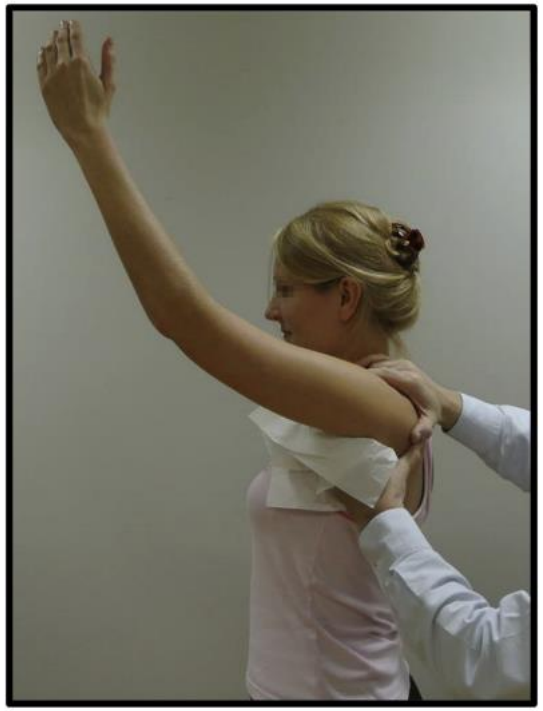

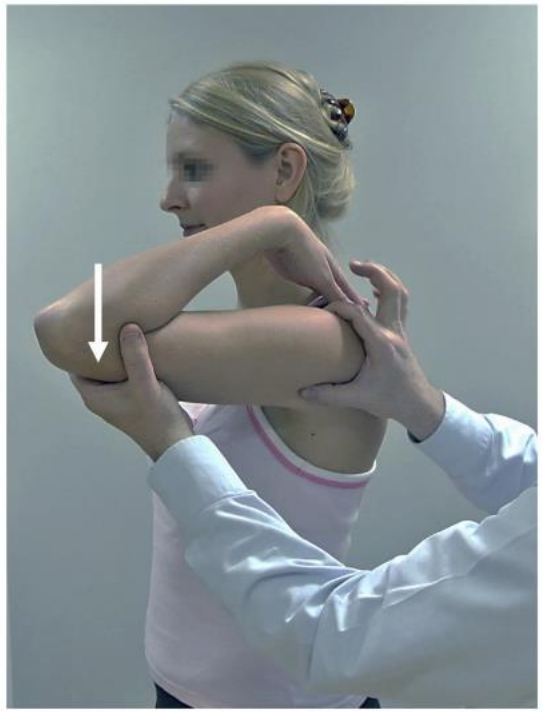

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SICK Scapula

- Scapular malposition
- Inferior medial border prominence
- Coracoid pain and malposition
- Dyskinesis of scapular movement

Assessment: Posture?

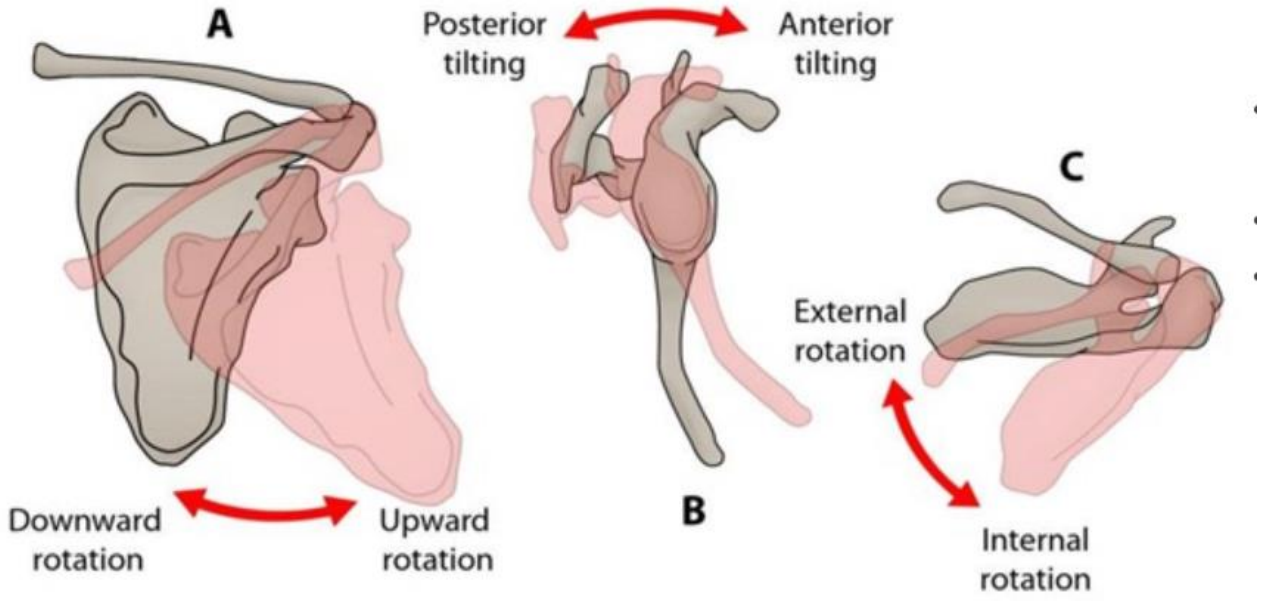
It’s your Posture!!! … is it?

Evidence = Inconclusive at best.

Forward Head: Rounded Shoulders?

Scapular Position?

- Kibler – Scapula Symposium?



Scapular Assessment: Kibler Classification

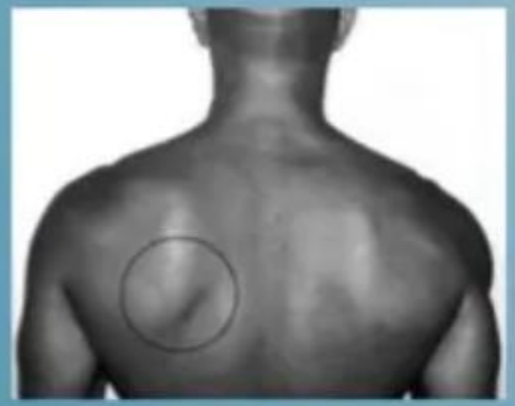
- **Execution:**

1. The patient performs 3 repetitions of bilateral shoulder elevations in the scapular plane at a speed of 45°/s
2. The examiner observes for winging and/or dysrhythmia

movements.

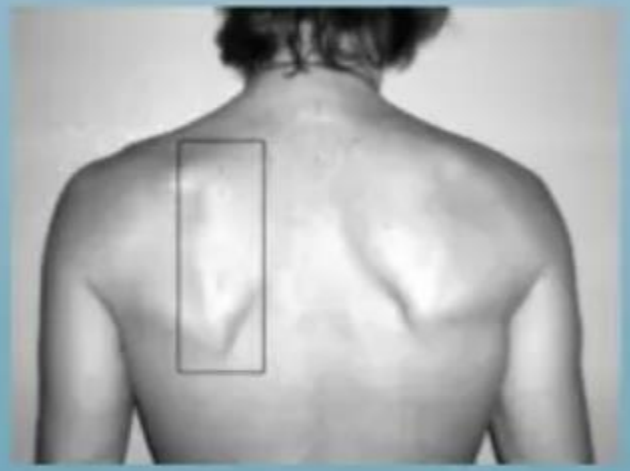
Dyskinetic patterns fall into 3 categories characterized by:

Type 1 – Prominence of the inferomedial border of the scapula

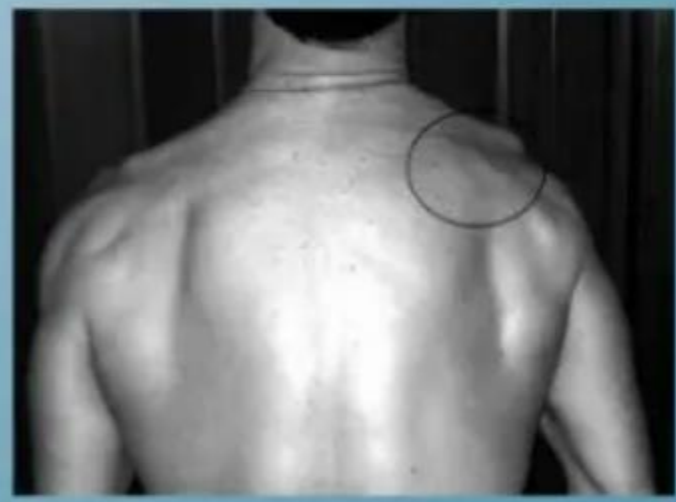


http://www.youtube.com/watch?v=HRaIJc5T_5g

Type 2 – Prominence of the entire medial border



Type 3 – Prominence of the superomedial border



Scapular Dyskinesis Test (SDT) by McClure

- **Execution:**

1. The patient is holding two dumbbells of 1.4kg/3lbs if he weighs less than 68.1kg/150lbs or 2.3kg/5lbs if he weighs ≥68.1/150lbs
2. The patient is asked to perform 5 repetitions of bilateral flexion followed by 5 repetitions of bilateral abduction in the frontal plane with straight elbows and at a cadence of 3 seconds
3. The examiner observes for winging and/or dysrhythmia

Lateral Scapular Slide Test

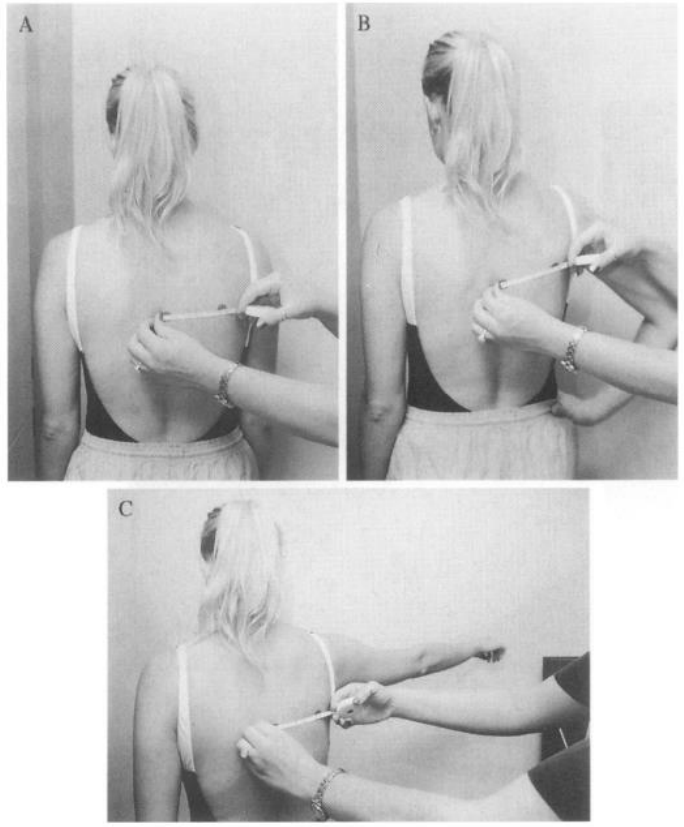


Figure 3. Lateral scapular slide test. A, Position 1. B, Position 2. C, Position 3.

- The LSS test begins with the establishment of a measurement reference point on the nearest spinous process to the inferior angles of the scapula
- Abnormal = 1.5 cm
- Pathology present = 3. 0 cm

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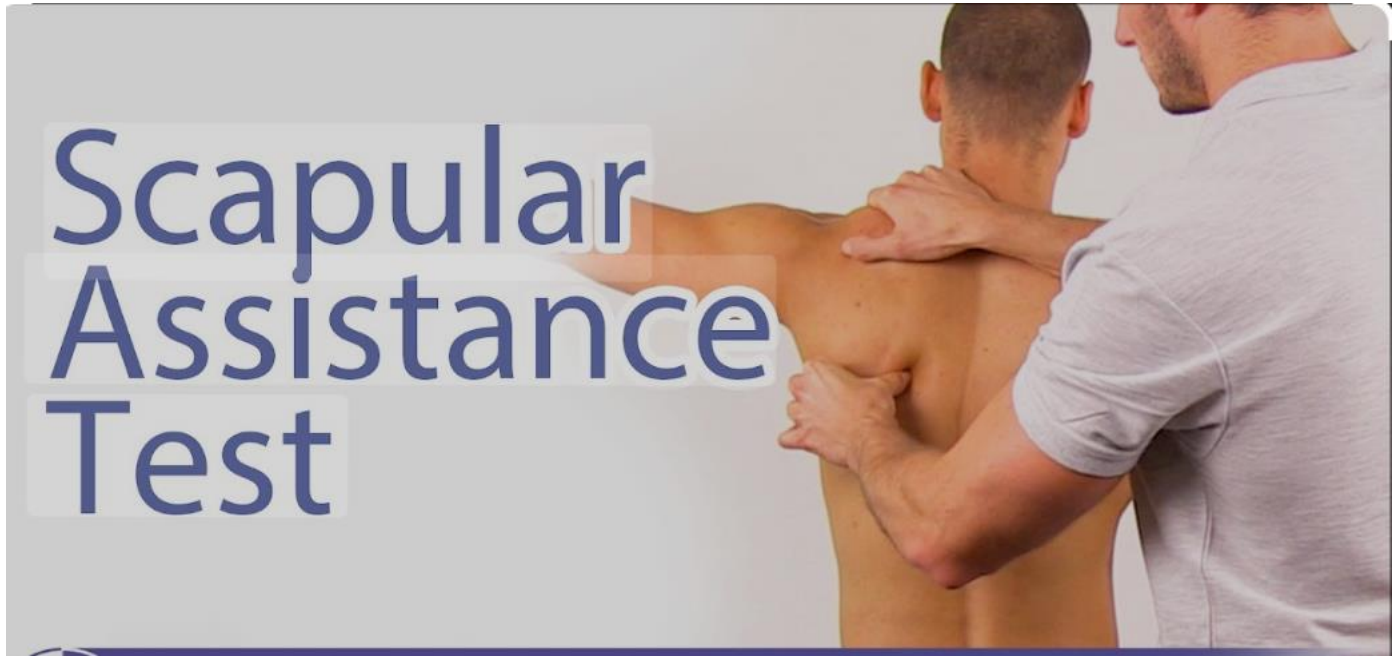

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Impairment: Grip Strength

- **+ Correlationship HGS**
- **increased activity in RC muscles**
- **Relationship to isokinetic strength of the shoulder**
- **Predictor of shoulder power**
- **Strongly associated with RC strength in pt with atraumatic shoulder instability**
- **with postoperative functional outcomes in patients undergoing ARCR**
  - Sporrong et al. (1996 Acta Orthop Scand 67(5)485-90). ;Mandalidis and O'Brien (J Bodywork Movement Ther. Horsley et al. (2016 Shoulder/Elbow 8 (2) 124-129. ; Sathya et al. (Association between hand grip strength and shoulder power in intercollegiate cricket players. Int J Innov Res Sci Eng Tech. 2016;5:3085–91; Rugayya et al Bulletin of Faculty PT (27) (1) Jan 2022 Does grip strength correlate with rotator cuff strength in patients with atraumatic shoulder instability**?** 2024 Apr 30;19:270.**Preoperative handgrip strength can predict early postoperative shoulder function in patients undergoing arthroscopic rotator cuff repair** Yu-Cheng Liu et al

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Normal Grip Strength

https://www.sheddonphysio.com/grip-strength-101-why-it-matters-and-how-to-strengthen-it

Normal grip strength varies by age and gender, but general averages are:

- **Men:**
  - Ages 20–29: 44–55 kg (97–121 lbs)
  - Ages 30–39: 42–52 kg (92–115 lbs)
  - Ages 40–49: 40–50 kg (88–110 lbs)
  - Ages 50–59: 36–46 kg (79–101 lbs)
  - Ages 60+: 30–42 kg (66–92 lbs)
- **Women:**
  - Ages 20–29: 27–35 kg (60–77 lbs)
  - Ages 30–39: 26–33 kg (57–73 lbs)
  - Ages 40–49: 24–32 kg (53–70 lbs)
  - Ages 50–59: 22–30 kg (48–66 lbs)
  - Ages 60+: 18–28 kg (40–62 lbs)

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Impairment: Shoulder Strength Testing

- MMT lack Reliability
- Handheld Dynamometers > reliable
    - Hayes et al 2002 J Shl and El Surg; Desmeules et al 2025 JOSPT CPG for RCTendinopathy
- Consider
    - Positional strength testing
        - Sitting, supine, prone, standing?
        - Usually Stronger in STANDING- may want to sit/prone
    - Repetitions to pain/fatigue

HHD: Shoulder Scaption

- Setup:
  - patient's arm at 90° of scaption,
  - HHD just proximal to the wrist.
- Instructions:
  - "On my go, push upward as hard as you can like you're trying to raise your arm. Make sure to keep your elbow straight."
- Tips:
  - Watch carefully for biceps compensation. Be sure the patient does not flex the elbow.
- Alternatives:
  - sagittal plane or abduction in the frontal plane
  - Supine or prone positions
  - HHD may also be positioned at the distal humerus

Zach Lentini, PT, DPT, CSCS ; Madison (Madi) Franek, PT, DPT, CSOMT
Published online onOctober 26, 2022https://doi.org/10.2519/jospt.blog.20221027

HHD: Shoulder ER

- Setup:
  - tester should position the patient's arm at their side, with their elbow flexed to 90°
  - HHD should be positioned just proximal to the wrist.
- Instructions:
  - "On my go, push outwards with the outside of your wrist as hard as you can. Make sure to keep your elbow pinned into your ribs."
- Tips:
  - Be sure the patient does not abduct the arm.
  - Consider using a small towel under the patient's arm.
- Alternatives:
  - Supine position with the elbow at the side and supported underneath by a towel or a bolster.

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Published online onOctober 26, 2022https://doi.org/10.2519/jospt.blog.20221027

HHD: IR

- Setup:
  - Position the patent's arm at their side, with their elbow flexed to 90°.
  - HHD should be positioned just proximal to the wrist.
- Instructions:
  - "On my go, push outwards with the outside of your wrist as hard as you can. Make sure to keep your elbow pinned into your ribs."
- Tips:
  - Be sure the patient does not abduct the arm.
  - Consider using a small towel under the patient's arm.
- Alternatives:
  - supine position with the elbow at the side and supported underneath by a towel or a bolster.

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HHD: Mid Trapezius

- Setup:
  - Shoulder horizontally abducted to neutral, with the arm parallel to the floor.
  - Shoulder may be externally rotated so that the thumb is pointing up.
  - HHD should be positioned just proximal to the wrist.
- Instructions:
  - “On my go, push up with your arm as hard as you can. Make sure to keep your elbow straight.”
- Tips:
  - Watch carefully to make sure the patient maintains an extended elbow.
- Alternatives:
  - HHD may also be positioned at the distal humerus.

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Published online onOctober 26, 2022https://doi.org/10.2519/jospt.blog.20221027

HHD: Lower Trapezius

- Setup:
  - Prone with their shoulder in the ‘Y’ position, with the arm parallel to the floor.
  - Shoulder may be externally rotated so that the thumb is pointing up.
  - HHD should be positioned just proximal to the wrist.
- Instructions:
  - “On my go, push up with your arm as hard as you can. Make sure to keep your elbow straight.”
- Tips:
  - Watch carefully to make sure the patient maintains an extended elbow.
- Alternatives:
  - HHD may also be positioned at the distal humerus.

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“Timely Progress”

PTJ: Physical Therapy & Rehabilitation Journal | *Physical Therapy*, 2023;103:1–12
https://doi.org/10.1093/ptj/pzad088
Advance access publication date July 13, 2023
Original Research

“Restoring That Faith in My Shoulder”: A Qualitative Investigation of How and Why Exercise Therapy Influenced the Clinical Outcomes of Individuals With Rotator Cuff–Related Shoulder Pain

Jared K. Powell, BExSc/BBus, DPhty[1,*], Nathalia Costa, PhD, BPhy (Honours)[2], Ben Schram, BExSc, DPhty, PhD, Professor[1], Wayne Hing, PhD, FNZCP, Professor[1], Jeremy Lewis, PhD, FCSP[3,4]

- Timely progress
  - + reinforces that ex’s are beneficial
  - Incentivizes compliance to ex’s
- What Constituted Progress?
  - Increased Shoulder Strength
  - Pain reduction
  - Improved ROM
  - Participation in Leisure Activities
  - Increased confidence
  - * 1 pt noted – improved strength, ROM, and pain but ultimate goal was to return to Pickle ball

Assessment: Special Test (Not so Special?)

It Is Time to Put Special Tests for Rotator Cuff–Related Shoulder Pain out to Pasture

AUTHORS

Paul Salamh, PT, DPT, PhD[1], Jeremy Lewis, PhD, FCSP[2–4]

AFFILIATIONS

Journal of Orthopaedic & Sports Physical Therapy
Published Online: April 30, 2020 | Volume 50 Issue 5 | Pages 222-225
https://www.jospt.org/doi/10.2519/jospt.2020.0606

- Special Test - Do not ID specific structures causing pain

"Pain Provocative" – if produce pt's symptoms – but not definitive

  - Not enough to inform pt "specific" source of symptoms and recommending surg/non-surg

Comprehensive Clinical Assessment /Phys Ex→ working hypothesis to implicate RCRSP

“Not so” Special Test?

J Athl Train. 2012 Aug;47(4):457–466. doi: 10.4085/1062-6050-47.4.09

Frequency of Use of Clinical Shoulder Examination Tests by Experienced Shoulder Surgeons

Aaron D Sciascia *, Tracy Spigelman †, W Ben Kibler *, Timothy L Uhl ‡

- 72 clinical test for top 9 shoulder dx
- Surveyed 131 Ortho MD’s - 71 responded
- Doc’s ADDED 50!!! More test = 122 TEST for 9 Shoulder dx!!!
- 25:122 used by 50% of the respondents
- 16: 25 most common test actually had research on sensitivity/specificity(no data for the other 9 test)
- PathoAnatomy- 7:9 categories- special test did NOT have high dx values!

Special Test: Not So Special

- The “Empty Can” and “Full Can” tests do not selectively activate supraspinatus.
  - Empty Can/Full Can = 8-9 other shoulder muscles equally activated as supraspinatus
    - Boettcher et al 2009 J Sci Med Sport 12(4): 435-439

Pain

- All shoulder tissues contain nociceptors
- Clinical test will stretch, traction and/or compress the SAB and other tissues and will PRODUCE→

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Pain

Pain is output from the brain.

- INPUT → OUT PUT = PROTECTION (from the harm/vulnerability)
  - PAIN
  - WEAKNESS
  - STIFFNESS

The degree of injury does not always equal the degree of pain

- major injuries with little pain
- minor injuries with a lot of pain (think of a paper cut).
  - *Author: Joseph Brence, PT, DPT, FAAOMPT, COMT, DAC www.moveforwardpt.com*

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- **Despite what diagnostic imaging (MRIs, x-rays, CT scans) shows us, the finding may not be the cause of your pain.**

- **Psychological factors, such as depression and anxiety, can make your pain worse**.

- **Your social environment may influence your perception of pain.**
  - pain increases when they are at work or in a stressful situation.
  - fundamental form of self-protection.

- **Understanding pain through education may reduce your need for care.**
  - A large study conducted with military personnel demonstrated that those who were given a 45-minute educational session about pain sought care for low back pain less than their counterparts.

    - *Author: Joseph Brence, PT, DPT, FAAOMPT, COMT, DAC www.moveforwardpt.com*

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What can we do?

- Provide reassurance/positive expectations (language, education, advice)
- Reinforce understanding that FOR MOST – the human body is VERY strong- Meant to move and handle forces!
- Explain symptoms > about sensitivity < about structural damage
- Demonstrate/discuss symptoms are often modifiable
- Provide understanding how exercise will help

Special Test: Clinical Prediction Rule

J Bone Joint Surg Am. 2005 Jul;87(7):1446-55. doi: 10.2106/JBJS.D.02335.

Diagnostic accuracy of clinical tests for the different degrees of subacromial impingement syndrome

Hyung Bin Park [1], Atsushi Yokota, Harpreet S Gill, George El Rassi, Edward G McFarland

Affiliations + expand

PMID: 15995110 DOI: 10.2106/JBJS.D.02335

- Impingement
  - (+)Hawkins, Painful Arc, IFS MT (+)
    - 95% Likelihood in “some degree”
- Rotator Cuff Tear
  - (+) Painful Arc, drop arm sign, IFS MT, > 60 Y.O.
    - 95% likelihood
  - (-) All 3 test
    - “probability for full RCT “very low”
    - < 60 Y.O. “even less likely”

Assessment: Imaging

- Symptoms are more about sensistivity than structural damage
- Imaging Research
  - Very poor correlation between changes seen on imaging and shoulder symptoms
    - Lewis et al 2009, 2011, 2014, 2015, 2016

- 22% (1:5) of general population have RC tear
  - 1/3 experience symptoms
  - Asymptomatic tears 2 x as common as symptomatic tears
    - Yamamoto et al 2010, 2011
    - Minagawa et al 2013

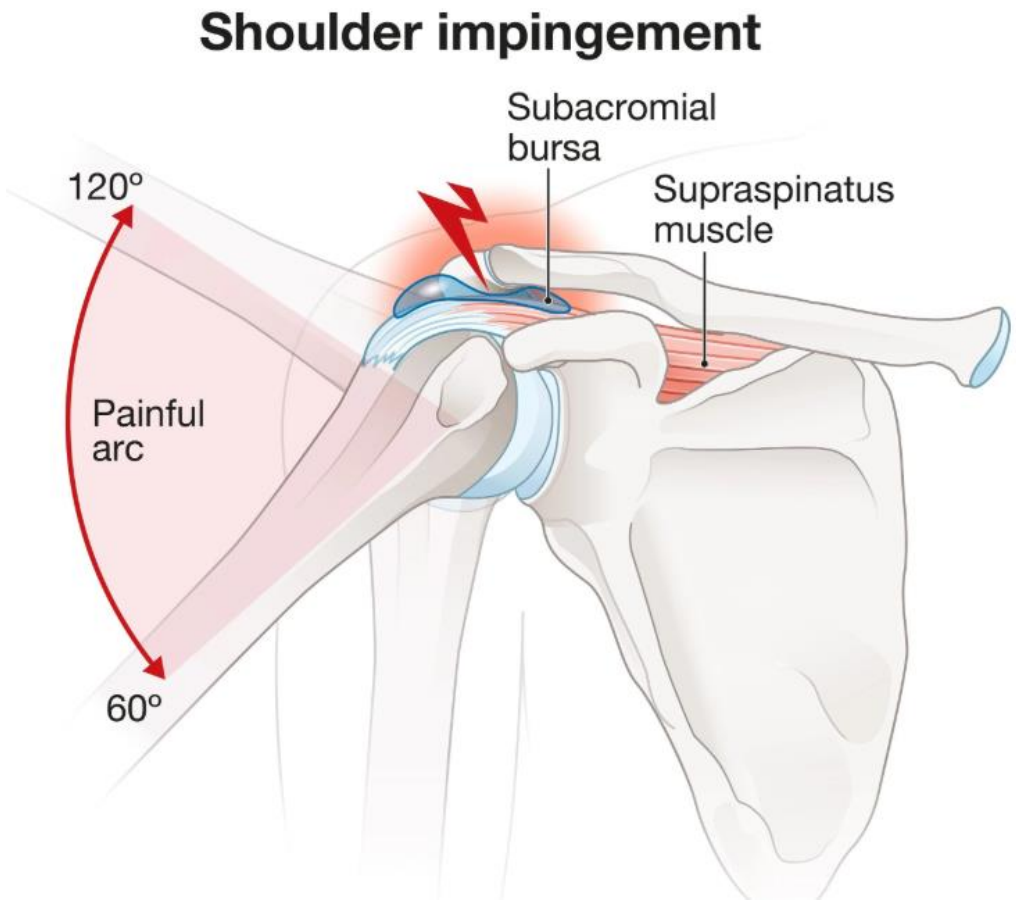
MRI Dx of Subacromial Impingement Syndrome

- 42 (n) with Subacromial impingement
- 31 (n) age matched ASYMPTOMATIC (control group)
- Shoulder evaluated with MRI
- RESULTS
  - SIS group 22/42 (55%) = RC pathology on MRI
  - Control 16/31 (52%) = RC pathology on MRI

RC PATHOLOGY related to Age

RC pathology observed in MRI does not correlate with symptoms

- Frost et al 1999 J Sh El Surg 8 (6) 565-568



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MRI: Asymptomatic Baseball Pitchers

- 14 Pro Pitchers: Asymptomatic
  - RC changes (SS/IS)
  - 79% Throwing Shoulders
  - 86% Non-Throwing Shoulders

  Labral Abnormalities
  - 79% Throwing Shoulder
  - 79% Non-throwing Shoulder
  - 2 SLAP lesions ID'd in both shoulde pitcher
    - Miniace et al 2002 AJSM

- 19 Pro Pitchers : Asymptomatic
  - High Resolution MR (2 Radiologist independently examined)
  - Tendinopathy 68%
  - PTT SS 32%
  - ACJ OA 21%
  - GHJ subluxation, labral lesions, observed
    - Del Grande et al 2015 J Comput Assist Tomogr

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Imaging

- Can’t Tell us where pain is coming from
- Biggest Predictor of a RC Tear???
  - GETTING OLDER

Management

- Irritable RCRSP
- Non-irritable RCRSP
- Advanced RCRSP
  - Techniques will overlap between stages

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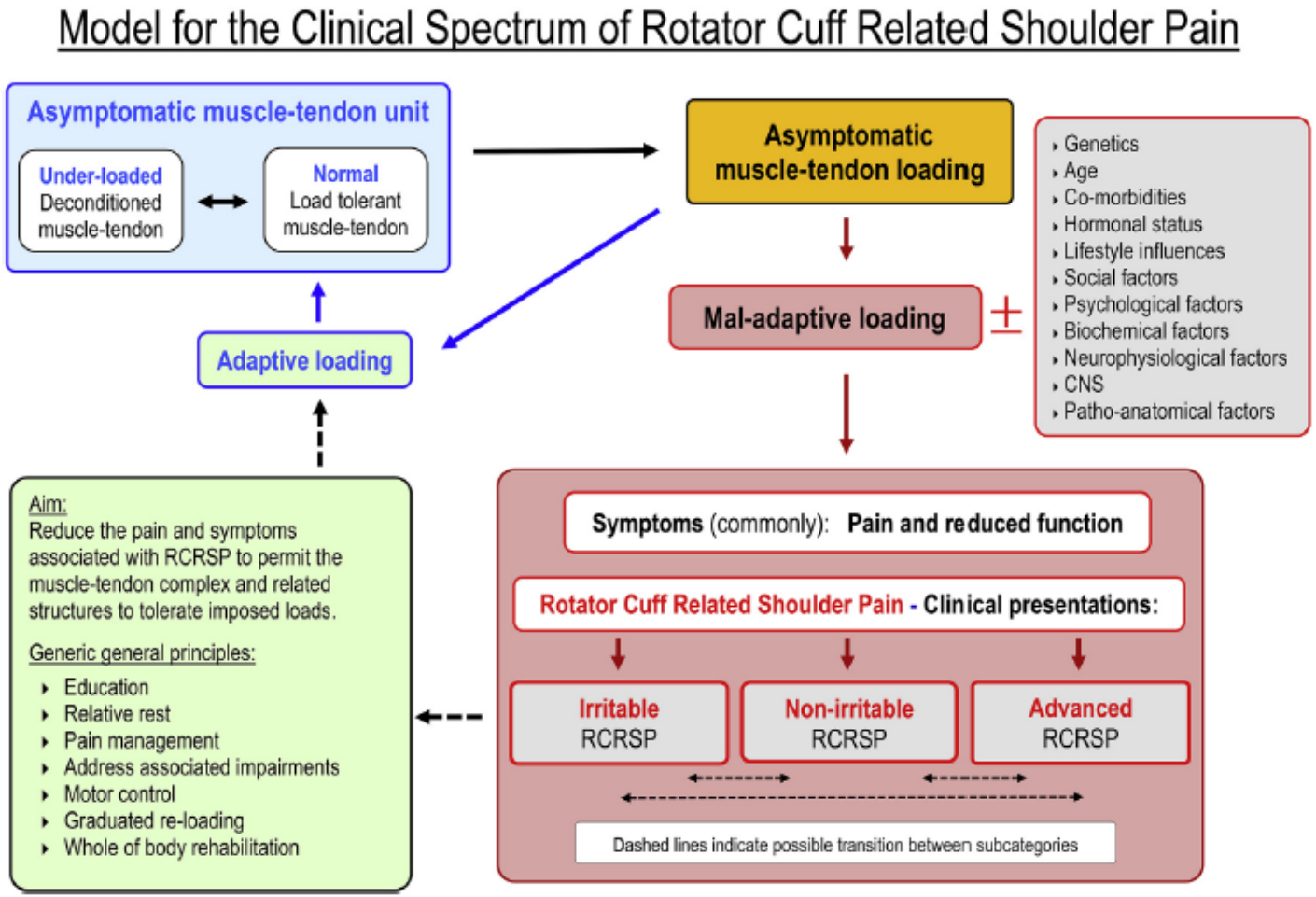

Fig. 6. Clinical model for the management of RC related shoulder pain.

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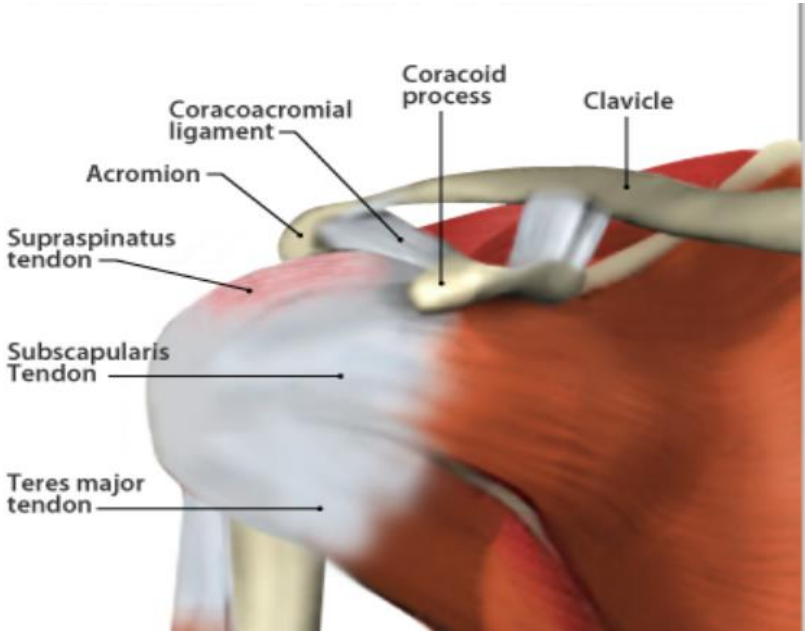
Symptom Management

- Common to all Clinical Presentations
    1. Education
    2. Relative Rest and Graduated Reloading
    3. Lifestyle Management
    4. All of body and functional Retraining

Muscle-Tendon Unit

Normal Tendon:

- Transmit force of muscle contraction to bone
- Load Tolerant
- Under loaded/Deconditioned



- Tendon Function
  - Not “one size fits all”
    - Energy storage and release
    - Positional/ Combination movements
    - Single/Multi-planar
  - Tendons hate abrupt changes in loading behavior
    - Michener et al 2015 JOSPT
    - Screen (2015) Grieves MSK PT

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Tendons

- Tendons undergo remodeling by controlled stimulus (exercise/work)
    - When under-loaded there is insufficient stimulus to stimulate the production of healthy muscle and tendon

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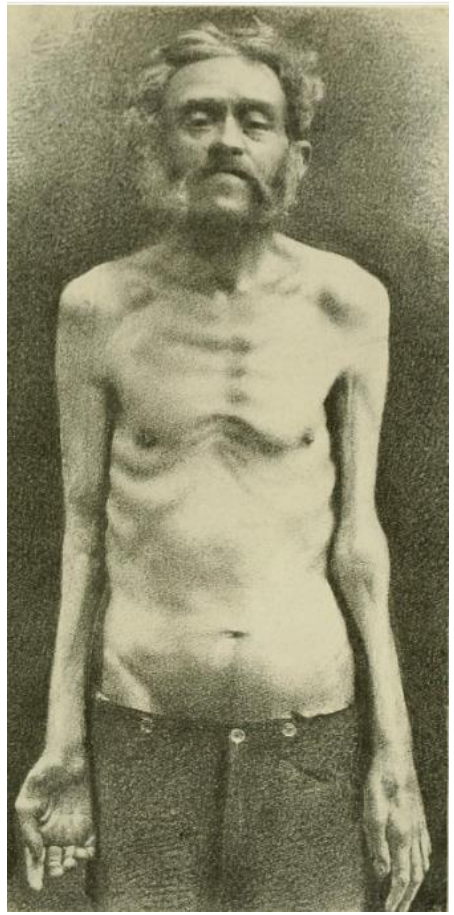
Inactivity: Affect on Muscle/Tendons

Adverse effects of INACTIVITY

- Atrophy and loss of muscle strength at a rate of 12%/wk
  - After 3-5 wks bedrest, almost 50% muscle strength lost
    - Jirika 2008
- 1 wk bedrest- healthy Men
  - 1.4 Kg of Total Muscle Mass→ 3.2% decrease in Quad CSA
  - 6.9% decrease in 1 RM
    - Dirks et al 2015
- Disuse weakness is reversed at rate of 6.9%/week with exercise
    - Nigum 2009
- More significant loss in older people (>/=60 y.o)
    - Kortbein et al 2008



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Lifestyle Factors Impact on Muscle/Tendons

- Increased adiposity decreased strength of tendon
  - Boivin 2013 BJR; Abboud et al 2012; Beason et al 2014
- Cigarette Smoking increases risk and size of RC Tears
- Smoking is a significant risk for poor tendon healing and results in less Type I collagen production
- People who smoke and RC Repairs have worse post-surgical results
  - Galatz 2006; Baumgarten 2010; Carbone 2012; Kukkonen 2014; Lundgreen 2014; Dean 2015

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Muscle Tendon Overload?

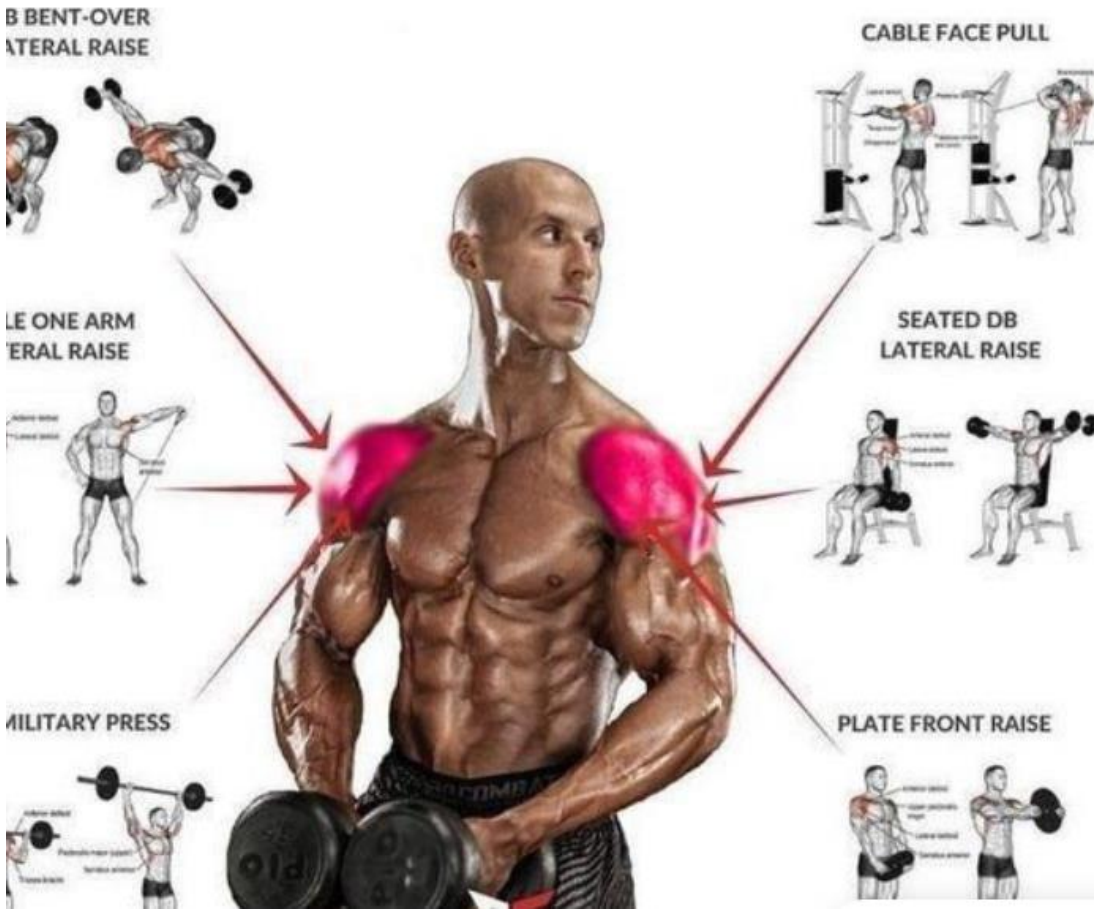
- Overload = Relative Term
- Varies between Individuals/Within Individuals

- +/- Factors
  - Age
  - Co-morbidities
  - Hormonal Status
  - Lifestyle Influences
  - Social factors
  - Psychological factors
  - Biomechanical factors
  - Neurophysiological factors
  - CNS
  - Path-anatomical factors

Muscle-Tendon Loading

- Normal load tolerant muscle tendon
- Adaptive Loading
  - When exercising/rehabilitating tendons need to be “tricked” that nothing has changed

  → carefully planned graduated loading



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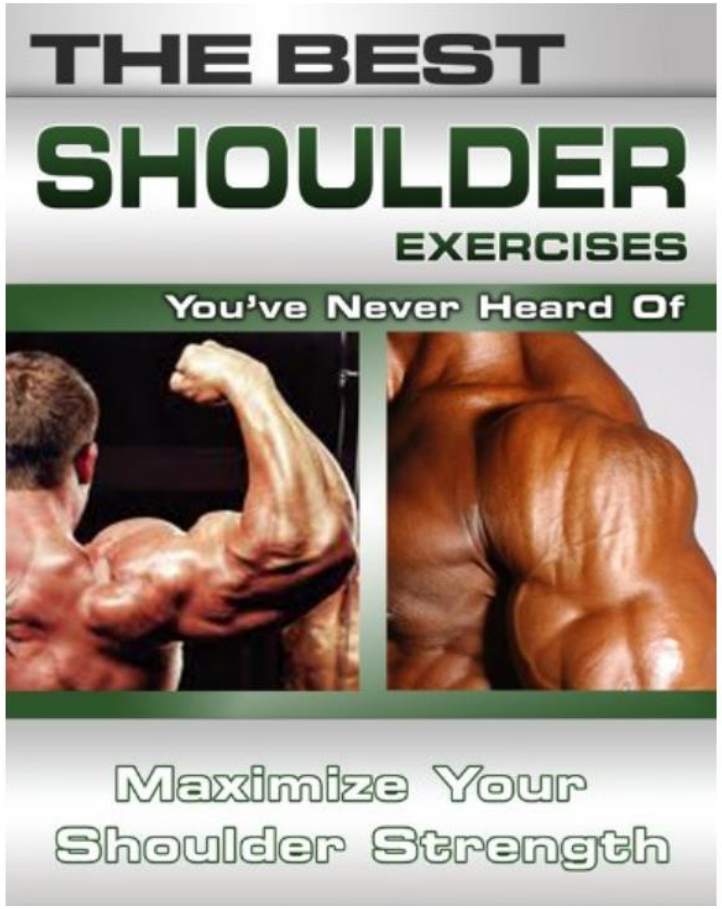
Rotator Cuff Related Shoulder Pain Management Principles



1. Education
2. Relative Rest (Load Management)
3. Graduated Exercise Program

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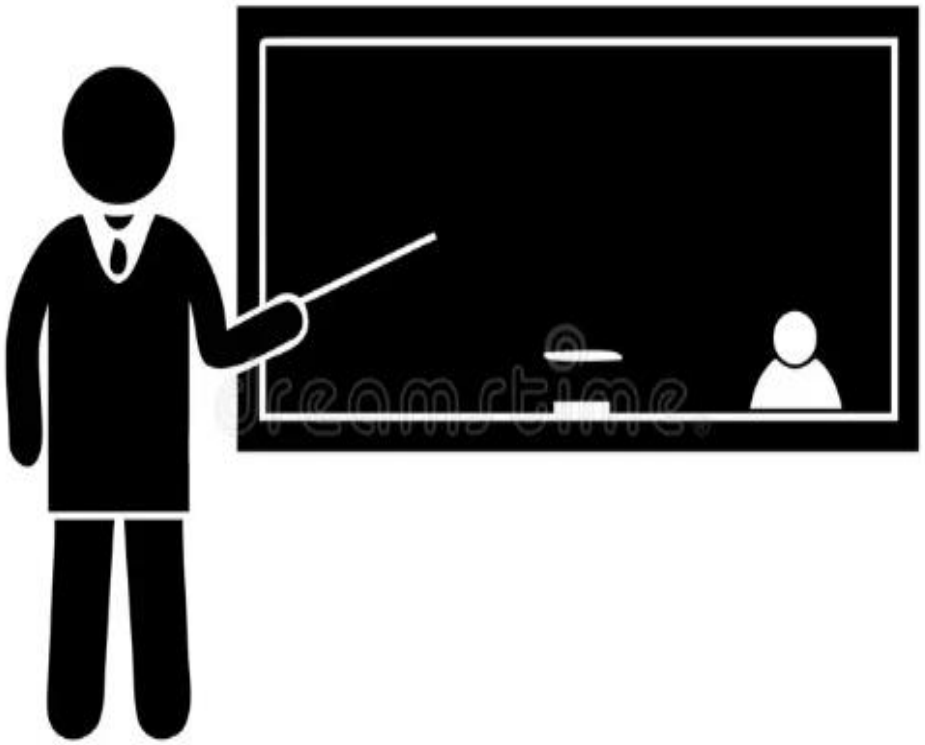
Education

- What the problem is
- Reassure – “people with shoulder pain usually get better”
- What are the treatment options?
- Shoulder tissues are “usually” really strong
- Reinforce poor correlation between imaging and symptoms
- Understand how exercise will help
- What the expected timeframes?
- “How do you feel about the treatment I am suggesting?”



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Relative Rest

- Relative Rest
  - DOES NOT mean bed rest
    - But MONITOR pain Night and 24 hour pain.
    - Worse in the morning? Next day?
- Fracture Analogy

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Envelope of Function (EOF)

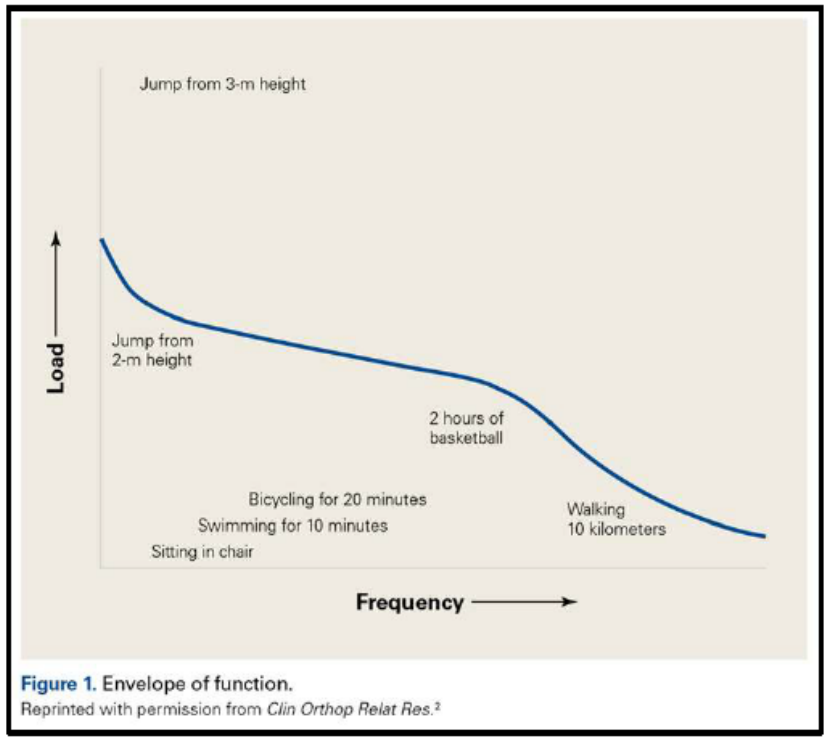

Figure 1. Envelope of function.
Reprinted with permission from *Clin Orthop Relat Res.*[2]

Hypothesis is that pain is the result when load applied to musculoskeletal tissues pushes it out of its EOF and exceeds the ability to maintain homeostasis.

Dye SF The Pathophysiology of Patellofemoral Pain: A Tissue Homeostasis Perspective. *Clinical Orthopaedics & Related Research.* 2005 436;100-110.

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Recovery Timeframe

- Discuss at first visit.
- Fluctuations will occur.
- Affected by activity and also rest, sleep and state of mind.

"Stock Market Analogy"

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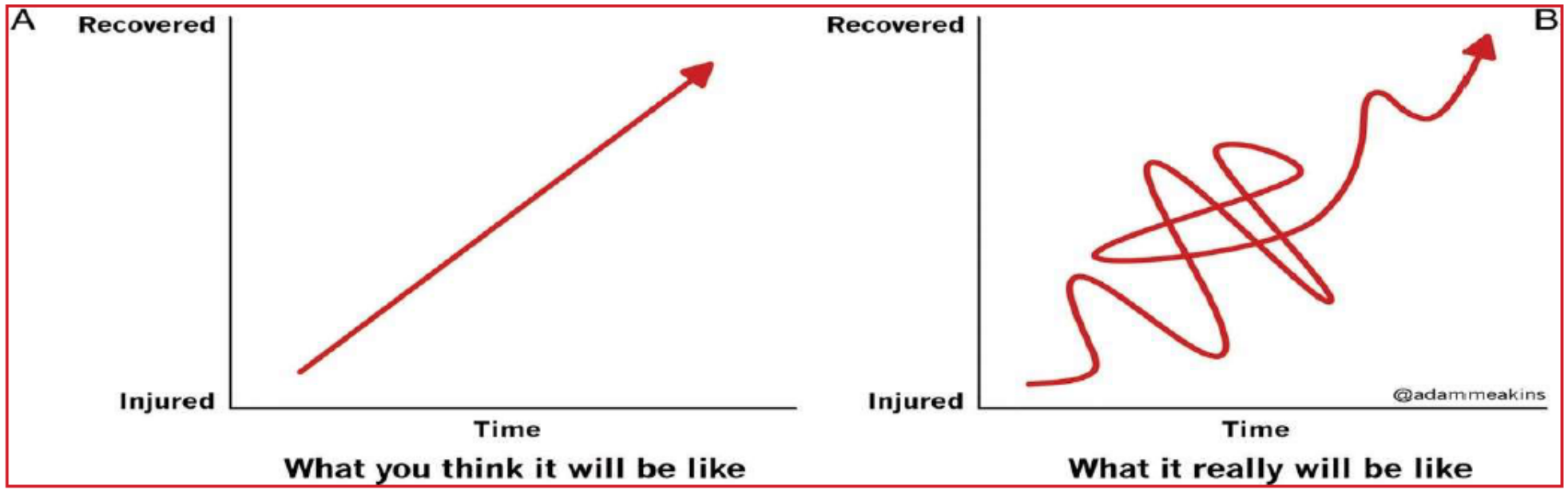
The peaks and troughs of recovery from injury.



Adam Meakins *Br J Sports Med* 2015;49:494.

BJSM

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Capacity

A tissue is at full capacity when the individual is able to perform functional movements at the volume and frequency required without exacerbating symptoms or causing tissue damage.

Cook &Docking.. "Rehabilitation will increase the 'capacity' of your ...insert musculoskeletal tissue here.... "Defining 'tissue capacity': a core concept for clinicians. *Br J Sports Med* 2015 Vol 49 No 23.

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Optimal Loading

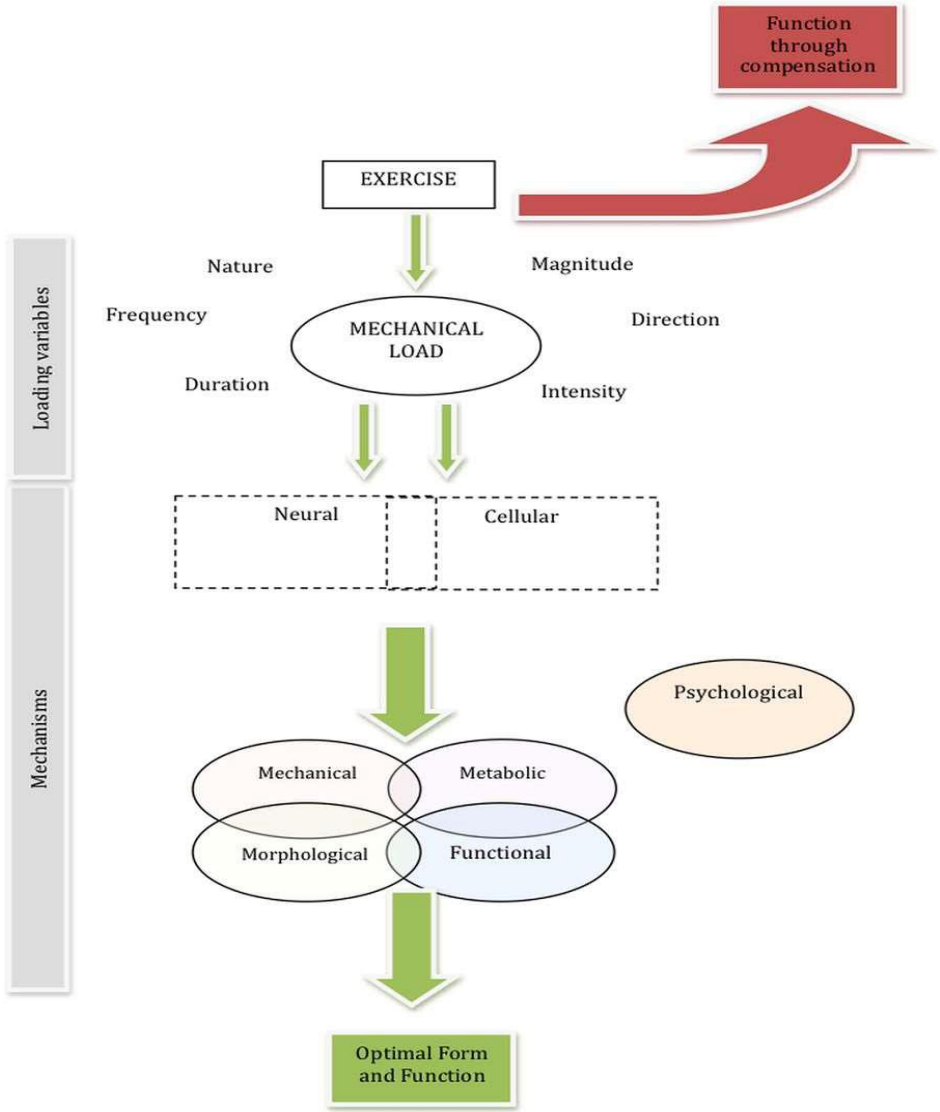
The load applied to structures that maximizes physiological adaptation and restores function.

- It should be directed to the appropriate tissues
- Gradually progressed in terms of magnitude, direction and rate.

The goal of the clinician is to…

- identify and progress the optimal level of difficulty of a movement that provides significant mechanical and neural stimulus while preventing poor quality, rigid movement or excessive overload.

- Glasgow et al BJSM 2015 Optimal loading: key variable and mechanisms



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Optimal Loading - Post Injury

- "POLICE" - protection, optimal loading, ice, compression and elevation.
- Emphasizes early mechanical loading in acute soft tissue injuries to enhance the effect of mechanical transduction rather than rest.
- Consider the use of crutches, braces, passive movements, manual therapy, antigravity treadmill and aquatic therapy to offload while providing mechanical stimulus.

Bleakley CM, Glasgow P, MacAuley DC. PRICE needs updating, should we call the POLICE? *Br J Sports Med* 2012;46:220-221.

Management: Irritable RCRSP

1. Relative Rest (load management, education)
2. Isometric Ex's
3. Hand gripping
4. Exercise contralateral side
5. Graduated Exercise/loading exposure

If NOT progressing

- relative rest and NSAIDs

Irritable RCRSP

Rotator Cuff Tendinopathy: Navigating the Diagnosis-Management Conundrum

AUTHORS

Jeremy Lewis, PT, PhD[1–4], Karen McCreesh, PT, PhD[5], Jean-Sébastien Roy, PT, PhD[6,7], Karen Ginn, PT, PhD[8]

AFFILIATIONS

Journal of Orthopaedic & Sports Physical Therapy
Published Online: October 31, 2015 | Volume 45 Issue 11 | Pages 923-937

- **Isometric exercises**
  - 50% maximal strength- increase/decrease according to patient's response
  - in direction of pain and weakness
  - use rolled towel between elbow and waist.
  - 3 repetitions × 30 seconds ,5 times per day (3-5 minutes of rest between repetitions)
- **Ice therapy**
  - ice wrap for 10 minutes, rest 10 minutes, and repeat.
  - perform 2 to 3 times per day
- **Shoulder external rotation**
  - (performed slowly) in plane of scapula with elbow supported below shoulder height (on towel, on tabletop, or on other hand) in pain-free range.
  - If beneficial, attempt 2 × 5 repetitions, 3 times per day (3-5 minutes of rest between repetitions).
  - Progress as appropriate

- Note: If symptoms are not resolving,
  - consider intrabursal injection of lidocaine or corticosteroid and lidocainec .
  - Manage post injection period as for post acromoplasty protocols (ie, self-assisted exercises, graduated and incremental increase in exercise tolerance, no driving).l
  - Consider loading once per day every second or third day until response to loading is established.
  - Gradually increase exercise tolerance, monitoring24-hour pain response.

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LOAD RESPONSE

Pain during exercise

0 = no pain 10 = worse pain imaginable

Adapted from Thommeé (1997) and Silbernagel (2007)

Monitor symptom response for 24-48 hours post exercise
Pain should settle quickly post exercise with no increase in symptoms or EMS the next day

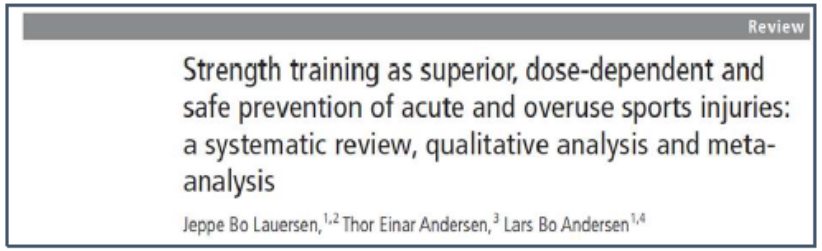
Strength Training– Injury Reduction


Review

The effectiveness of exercise interventions to prevent sports injuries: a systematic review and meta-analysis of randomised controlled trials

Jeppe Bo Lauersen,[1] Ditte Marie Bertelsen,[2] Lars Bo Andersen[3,4]

Lauersen et al, 2013


Review

Strength training as superior, dose-dependent and safe prevention of acute and overuse sports injuries: a systematic review, qualitative analysis and meta-analysis

Jeppe Bo Lauersen,[1,2] Thor Einar Andersen,[3] Lars Bo Andersen[1,4]

Lauersen et al, 2018

Consistently favorable estimates were obtained for all injury prevention measures except for stretching. Strength training reduced sports injuries to less than 1/3 and overuse injuries could be almost halved.

Strength training programs reduced sports injuries by an average of 66% and were, with 95% certainty, able to more than halve the risk of sports injury (95% CI 52% to 76%).

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The Exercise Program Should Be Structured and Tailored to the Individual Clinical Presentation

PTJ: Physical Therapy & Rehabilitation Journal | *Physical Therapy*, 2023;103:1–12
https://doi.org/10.1093/ptj/pzad088
Advance access publication date July 13, 2023
Original Research

"Restoring That Faith in My Shoulder": A Qualitative Investigation of How and Why Exercise Therapy Influenced the Clinical Outcomes of Individuals With Rotator Cuff–Related Shoulder Pain

Jared K. Powell, BExSc/BBus, DPhty[1,*], Nathalia Costa, PhD, BPhy (Honours)[2], Ben Schram, BExSc, DPhty, PhD, Professor[1], Wayne Hing, PhD, FNZCP, Professor[1], Jeremy Lewis, PhD, FCSP[3,4]

- Participants often believed that receiving an exercise program that was tailored to their individual clinical presentation was necessary for their clinical improvement
- Some participants expressed dissatisfaction and skepticism when provided with a seemingly generic exercise program that was not believed to be fit for their purpose.

- Participants noted
  - Exercise benefited them physically and emotionally.
  - Rebuilt trust in their shoulder
  - Challenged the belief that pain during exercise meant harm.
  - Many initially thought rest was the best way to manage their shoulder pain, often leading to overprotection and avoiding movement.
  - However, therapeutic exercises that involved movements they feared proved helpful in changing these beliefs.
  - This process increased their confidence in using their shoulder and reduced their fear of movement, showing that the benefits of exercise extend beyond physical improvements to positively impact emotional well-being.

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Non-Irritable RCRSP

- Establish functional goals/progress toward them
- Establish load tolerance (No Increase in pain at night/24 hours)
- Work in direction of pain/weakness (but be flexible)
- 1 CHANGE at a time
- Assess effect of starting and finishing with ISOM ex’s
- Externally pace load- Slow initially and increase speed

Non-Irritable RCRSP

- Benefits of graduated exercise/loading
  - Beneficial for tendon matrix structure, muscle properties and function
  - Powerful modulator of CNS
  - Can induce analgesia
  - Improve confidence/ self-efficacy
  - May reduce peripheral and/or central sensitivity
  - Repeated RC loading my improve structure
  - Strength (load) training
    - Load only stimulus shown to improve matrix
    - Load improves muscle artchitecture
    - Ensures sufficient capacity to perform task
      - Rio et al 2015 Tendon neuroplastic taining BJSM

RCRSP: Rehabilitation

- No fatigue/No pain initially
- Type I (endurance) and Type II (Strength) Fibers
- Between Sets
  - Aim for: Rest 2-3 (up to 5 minutes) between sets
    - Other ex's/ activities
- Frequency
  - Initially 2-3 d/wk
    - Ex. Rest >/= 48 hours btw sessions
    - Can ex other body areas on "shoulder rest days"
- Avoid
  - Energy storage and release activities in early stages
    - Ewing et al 2011 Med Sci Sport Ex

Non-Irritable RCRSP

Rotator Cuff Tendinopathy: Navigating the Diagnosis-Management Conundrum

AUTHORS

Jeremy Lewis, PT, PhD[1–4], Karen McCreesh, PT, PhD[5], Jean-Sébastien Roy, PT, PhD[6,7], Karen Ginn, PT, PhD[8]

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Journal of Orthopaedic & Sports Physical Therapy
Published Online: October 31, 2015 | Volume 45 Issue 11 | Pages 923-937

- Consider initial loading once per day on alternate days or every 3 days until response to loading is established(and does not provoke irritability), and then incrementally increase loading. If not responding, treat as irritable RC tendinopathy
- Options:
- 1. Graduated shoulder flexion program: initially low range/no external resistance/short lever arm to end range/incremental progress by adding external resistance and long lever arm
- 2. Shoulder external rotation program
  - a. Supported external rotation, as for irritable RCtendinopathy; progress to unsupported using weights and/or
  - b. In standing, use resistance tubing/weights and/or
  - c. In sidelying, use weights and/or
  - d. In prone
  - Note: Permissible to exercise in pain (to NPRS 5/10) as exercise tolerance permits and with no detrimentalresponse
  - Note: Progress to functional activities. When introducing activities involving speed or changes in explosive speed, reduce frequency to every 3 days to monitor response before progressing.

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Suggestion Only: Individualize for Pt's Progression Supported to Unsupported

Stage	Load	Speed	Reps	Sets	%1RM
1	No External	Slow	15-20	</=2	-
2	Light	Slow	15-20	</=2	< 50%
3	Mod	Slow	8-12	2-5	Apprx 50%
4	Heavy	Slow	5	2-5	50-80%

Stage	Load	Speed	Reps	Sets	%1RM
5	No External	Mod	15-20	</=2	-
6	Light	Mod	15-20	</=2	<50%
7	Mod	Mod	8-12	2-5	Approx 50%
8	Heavy	Mod	5	2-5	50-80%

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Suggestion Only: Individualize for Pt's Progression Supported to Unsupported

Stage	Load	Speed	Reps	Sets	%1RM
9	No External	Fast	15-20	</=2	-
10	Light	Fast	15-20	</=2	< 50%
11	Mod	Fast	8-12	2-5	Approx 50%
12	Heavy	Fast	5	2-5	50-80%

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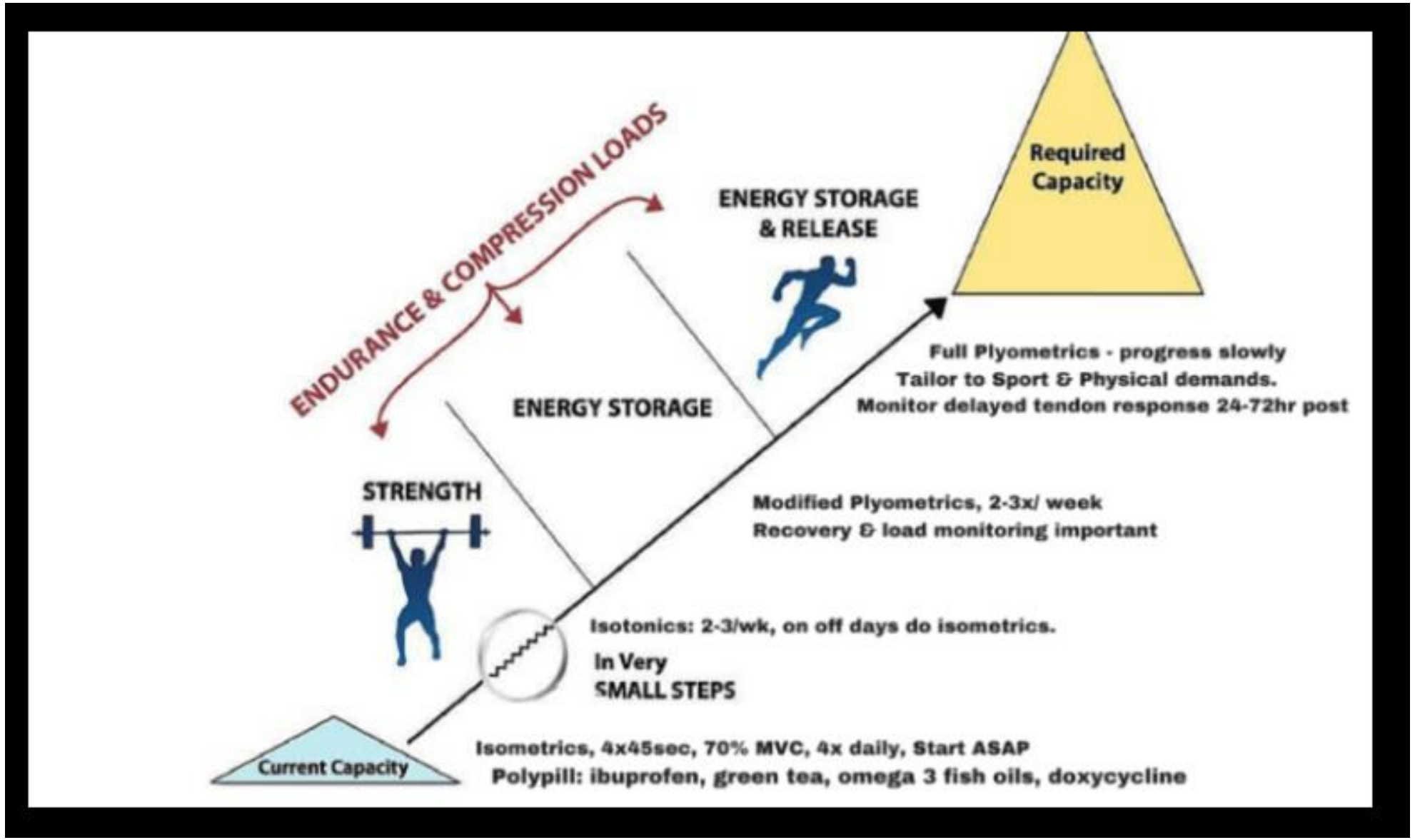
Stage	Load	Speed	Reps	Rep
13	Mixed	Slow	8-12 Mod (2-5 Sets)	15-20 Light </=2 Sets
14	Mixed	Slow	3-5 Heavy (2-5 Sets)	15-20 Light </=2 Sets
15	Mixed	Mod	3-5 Heavy (2-5 Sets)	15-20 Light </=2 Sets
16	Mixed	Fast	3-5 Heavy (2-5 Sets)	15-20 Light </=2 Sets


ENDURANCE & COMPRESSION LOADS
ENERGY STORAGE & RELEASE
Required Capacity
ENERGY STORAGE
Full Plyometrics - progress slowly
Tailor to Sport & Physical demands.
Monitor delayed tendon response 24-72hr post
STRENGTH
Modified Plyometrics, 2-3x/ week
Recovery & load monitoring important
Isotonics: 2-3/wk, on off days do isometrics.
In Very
SMALL STEPS
Current Capacity
Isometrics, 4x45sec, 70% MVC, 4x daily, Start ASAP
Polypill: ibuprofen, green tea, omega 3 fish oils, doxycycline

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Advanced RCRSP

- Use relevant components of irritable and mechanical nonirritable presentations
- Initiate Ainsworth (Torbay) rehabilitation program
  - For Massive RC Tears
  - Anterior Deltoid Program (Reading Anterior Deltoid Program??)
  - 10 Exercises
    - 10 reps each
    - 2-3 x day
    - 12 weeks (minimal)
- Progress to functional activities as able

Torbay Massive RC Tear Rehabilitation

Anterior Deltoid Strengthening Program

Stage 1.

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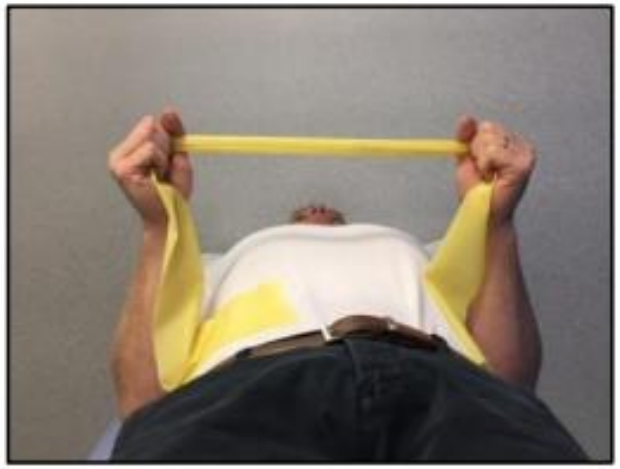
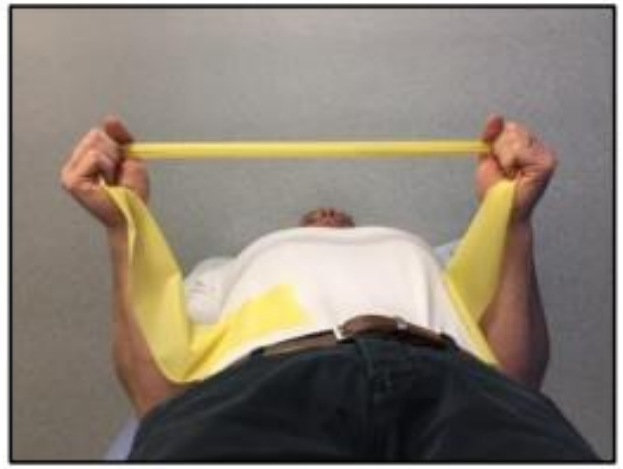
Stage 2.





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Stage 3.

Stage 4.

Repeat stage 3. Holding a bottle with a small amount of water to increase resistance.

Stage 5.

Activities in stages 1 – 4 repeated with head of bed progressively raised.

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Stage 6.

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Stage 7.

Stage 8.

Stage 9.

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Stage 10.

In 4 point kneeling transferring weight forwards and backwards.

In 4 point kneeling transferring weight side to side

In 4 point kneeling progress by either lifting a leg or an arm. Remember to keep your back still.

Upper Extremity Functional/Return to Sport Testing

- Strength Testing
  - Biodex (see Biodex protocol)
  - ER in neutral: IR in neutral: Supine
  - ER at 90/90 IR at 90/90
  - Scaption at 90 deg: Seated
- Interpretation of Results:
  - ER: IR Ratio: 72-76%
  - Strength to BW:
    - ER: 18-23%
    - IR: 26-32%
  - Bil Comparison:
    - 90% Limb Symmetry Index
    - In throwers, LSI should be >100% if affected side is throwing shoulder

Modified (Isometric) Prone Scapular Endurance Test: Fatigue Protocol

a. Prone with arm at 90 deg ER and 90 deg horizontal abduction with weight that is 2% BW. Contralateral hand behind back to mitigate assistance
b. Place a stool 5 inches below the hand after setting them into scapular retraction
c. Stop time when hand touches stool

Interpretation of Results[1]:

a. > 90% Limb Symmetry Index

Prone Plyo Ball Drops:

a. Patient in prone position on table with 2# plyoball in hand
b. Perform ball drops and catches for 30 seconds with the shoulder abducted to 90 and elbow extended

Interpretation of Results[1]:

- *90% LSI for return to practice*
- *100% LSI for return to sport*

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90/90 Ball Taps:

i. Stand in doorway at 90 deg abduction and bounce 2# plyoball against the wall for 30 seconds
ii. Count number of bounces on each side

Interpretation of Results:

a. 110% or greater on the dominant side

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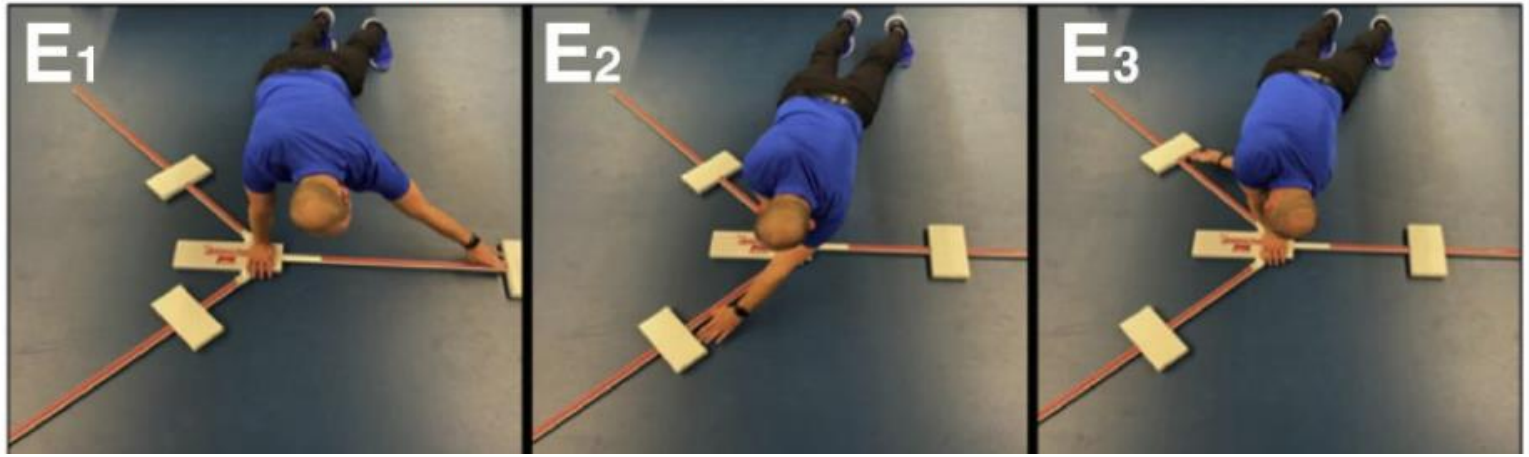
b. UE Y Balance Test:
   i. Stance arm is arm being measured, just as with LQYBT
   ii. Reach is named in terms of directional relationship to the stance arm
   iii. Start with right thumb just behind and parallel to red line in a pushup position with feet shoulder width apart and hands directly under shoulders
   iv. Unlike LQYBT, all 3 reach directions are performed sequentially, one right after another without a break in this order:
      1. Right medial reach, right inferolateral reach, right superolateral reach
      2. Rest
      3. Left medial reach, left inferolateral reach, left superolateral reach
      4. Rest
   v. Take the best number for each direction out of 3 attempts

Interpretation of Results[2]:

- *90% LSI*

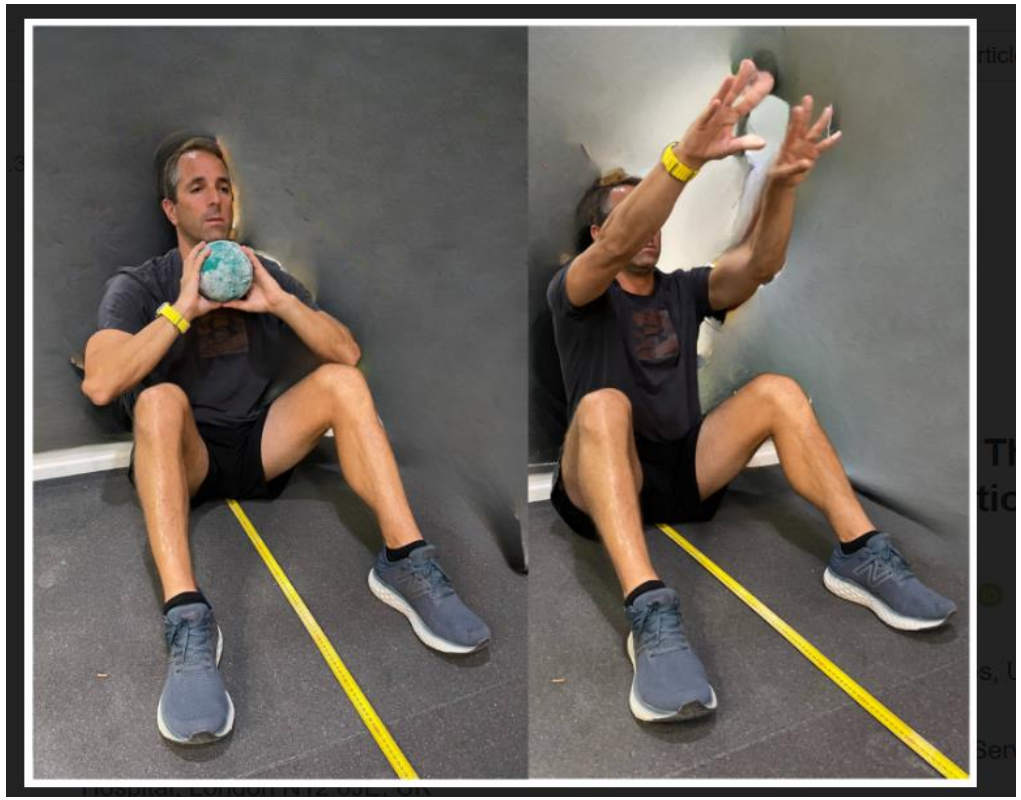


The Seated Medicine Ball Throw as a Test of Upper Body Power in Older Adults

Harris, Chad[1]; Wattles, Andrew P[2]; DeBeliso, Mark[3]; Sevene-Adams, Patricia G[3]; Berning, Joseph M[4]; Adams, Kent J[3]

Author Information

Journal of Strength and Conditioning Research 25(8):p 2344-2348, August 2011. | **DOI:** 10.1519/JSC.0b013e3181ecd27b



- "The SMBT is a highly reliable and reasonably valid test for assessing upper body muscular power in the older adult."
  - Low Cost
  - Safe
  - Repeatable – No need for fancy equipment

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Return To Function (Sport)

- Seated Medicine Ball Throw
  - Back:wall/bench
  - legs extended/bent in front
  - Ball to chest and throw- keep back to the wall/bench
  - Best of 3 trials
  - Males → 6# ball
  - Females →4# ball

RATING	DISTANCE (METERS)
Excellent	>/= 5.76
Good	5.00 - 5.75
Average	4.25 - 4.99
Below Average	3.50 - 4.24
Poor	</=3.49

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Single Arm Seated Shot Put

- Seated in chair/floor
- 2 kg medicine ball
- 4 warm ups/ 3 trials
- >/=90% Limb symmetry
- Minimal Detectable Change
  - Non-dominant UE 18 inches
  - Dominant UE 17 inches

Open in a new tab

Initial (A) and final moment (B) in the execution of the seated single-arm shot-put test.

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Seated Single-Arm-Shot Put Test

J Chiropr Med. 2020 Sep 4;19(3):153–158. doi: 10.1016/j.jcm.2020.01.001

Seated Single-Arm Shot-Put Test to Measure the Functional Performance of the Upper Limbs in Exercise Practitioners With Chronic Shoulder Pain: A Reliability Study

Jocassia Silva Pinheiro [a], Otávio Lima Soares Monteiro [a], Cezar Augusto Brito Pinheiro [a], Luana Maria Brenha Penha [a], Mariana Quixabeira Guimarães Almeida [a], Daniela Bassi-Dibai [b], Flavio de Oliveira Pires [a], Christian Emmanuel Torres Cabido [c], Cid André Fidelis-de-Paula-Gomes [d], Almir Vieira Dibai-Filho [c,*]

- SSPT has moderate to strong relationships with isokinetic peak forces for both limbs
- Inclusion:
  - score ≥18 points in the shoulder pain and disability index (SPADI),
  - + 2 of the following clinical orthopedic tests: Jobe, Neer, Hawkins-Kennedy, or the painful arc test.
- SSPT was a reliable tool for measuring the functional performance of the upper limbs in regular exercise practitioners with chronic shoulder pain.
  - MDC of 43.18 cm in the dominant limb.
  - For the nondominant limb, MDC value was 45.72 cm

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CKC UE Stability Test:

a. Start in pushup position with hands 36 inches (mark with tape)
b. Alternating hand taps across body to touch opposing piece of tape as many times as possible in 15 seconds
c. Female standard testing position is on knees in modified pushup position
d. For smaller or youth athletes, tape can be shoulder width apart

Interpretation of Results[1]:

a. >25 Reps for RTS
b. *>21 Reps for return to practice*

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Closed Kinetic Chain Upper Extremity Stability Test

- **Push up/Mod Push up Position**
- **Hands 36 in. apart**
- **Count # of touches in 15 SECONDS**
  - **Hand must come back to start position each time**
- **3 SETS of 15 Seconds**
- **45 Second break btw sets**

Figure 1. Starting position of the CKCUEST, modified CKUEST, and procedure

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Closed Kinetic Chain Upper Extremity Stability Test

- CKCUES Test is a reliable tool for evaluating upper extremity functional activity in sedentary and upper extremity sport specific males and females and also in subjects with subacromial impingement syndrome.
- Minimum detectable change (MDC)
  - >/= 3-4 touches for sedentary active and subacromial impingement syndrome males and females
- Accordingly, this study compared shoulder internal/external peak torque data at angular speeds of 60°/sec and 180°/sec with CKCUES data, and found high correlations for all the results
  - . The results showed the CKCUES test had high reliability, and had high correlations with the results of the hand grip test and isokinetic test, so it is considered a very useful examination method for clinical use.

▸ BMC Musculoskelet Disord. 2014 Jan 3;15:1. doi: 10.1186/1471-2474-15-1

Closed Kinetic Chain Upper Extremity Stability test (CKCUES test): a reliability study in persons with and without shoulder impingement syndrome

Helga Tatiana Tucci [1,2,✉], Jaqueline Martins [2], Guilherme de Carvalho Sposito [3], Paula Maria Ferreira Camarini [4], Anamaria Siriani de Oliveira [2]

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► N Am J Sports Phys Ther. 2007 Aug;2(3):159–163.

Reference Values for the Closed Kinetic Chain Upper Extremity Stability Test (CKCUEST) for Collegiate Baseball Players

James R Roush [a,✉], Jared Kitamura [b], Michael Chad Waits [c]

Table 1:

Descriptive statistics for all players (n=77)

	Age (yrs)	Height (m)	Weight (kg)	BMI*
Mean	19.03	1.83	83.5	24.92
SD	1.22	0.08	12.23	2.91
95% CI	0.27	0.02	2.73	0.65

Scores on CKCUEST according to playing position

Position	n	Mean *	Standard Deviation
Pitcher	30	30.30	4.82
Catcher	9	30.41	3.52
Infielder	26	30.78	4.02
Outfielder	12	30.30	4.00
All Players	77	30.41	3.87

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J Phys Ther Sci. 2015 Apr 30;27(4):1071–1073. doi: 10.1589/jpts.27.1071

Reliability and validity of the closed kinetic chain upper extremity stability test

Dong-Rour Lee [1], Laurentius Jongsoon Kim [2,*]

- reliability of the CKCUES test was very high (ICC=0.97).
- correlations between the CKCUES test and maximum grip strength (r=0.78–0.79), and the peak torque of internal/external shoulder rotation (r=0.87–0.94) were high indicating its validity.
- The reliability and validity of the CKCUES test were high.

Figure 1. Starting position of the CKCUEST, modified CKUEST, and procedure

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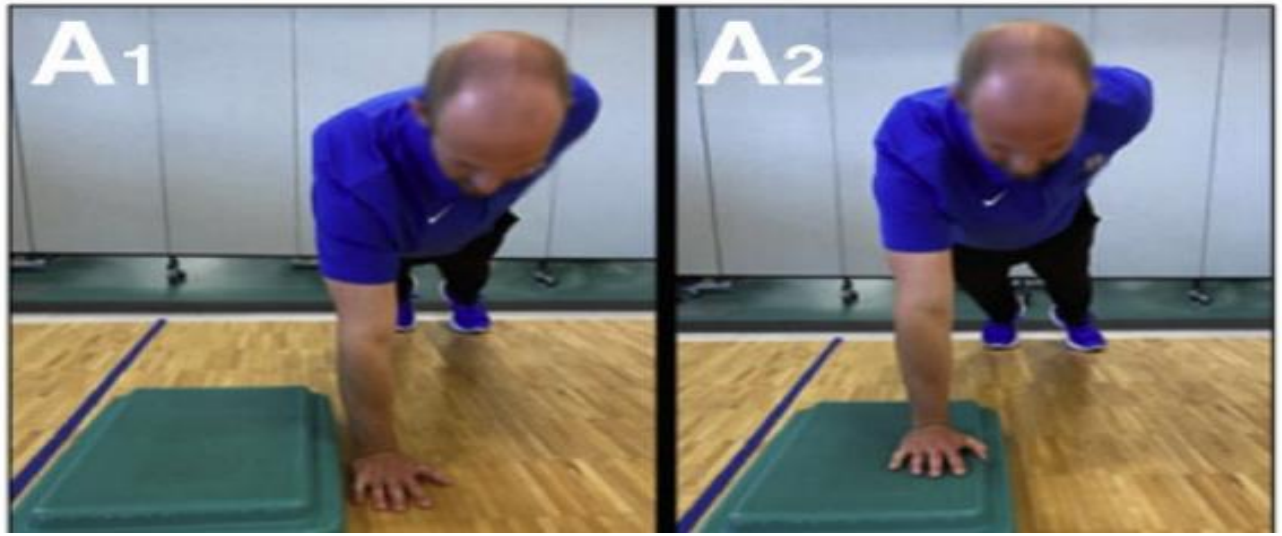
One Arm Hop Test:

a. Patient in one arm pushup position with back flat, feet and shoulders apart, weight bearing (WB) arm positioned perpendicular to floor
b. Place non weight bearing hand in posterior aspect of low back
c. Patient uses WB arm to hop onto 4 inch step
d. Patient uses WB arm to hop back down to starting position
e. Repeat 5 times as quickly as possible
f. Acceptable test is when patient fully hops onto the rubber portion of step, does not use other hand, does not touch down with a knee, keeps back flat, and feet in the same position.

Interpretation of Results[2]:

- *Expected asymmetry of 4.4 seconds between dominant and nondominant sides*



Case Study 1

- 42 Y.O. Male
- Dx: ICD10: M25.512: Pain in Left Shoulder
- Left shoulder MRI – interstitial tear of the subscapularis, increased signal in superior labrum, mild AC joint arthritis
- C/o of 8 month history of intermittent Left shoulder pain with reaching overhead, sitting still at his computer, overhead press, bench press and sleeping on the left side

Subjective Assessment

- Ask questions! – Pt's have all the answers!!
- Injury history
  - Started with change of jobs about 8 months ago
  - More sitting at the desk- "lower desk", reaching out to work with the mouse
  - Disrupts sleep -
    - what makes it worse? Reading from his iPad, lying supine
    - What makes it better? Lying head flat on his pillow
- Symptoms
  - Noted symptoms in his "4th and 5th fingers
  - Tingling/numbness
  - MRI of his Cx Spine by another MD – (several months ago, not the MD who referred him for Left shoulder pain)
    - "Bulging Disc to the Left of C5-6"

Physical Assessment

Outcome Measurement Tools

Upper Extremity

Upper Extremity Quick DASH	25/100

Range of Motion

Cervical AROM

Forward Bending	2 Fingers From Chest
Backward Bending	30°
Right Rotation	30°
Left Rotation	30°

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Shoulder AROM

Shoulder AROM	Right	Left
Flexion	160 °	155°
Functional IR Reach	T9	T9
ER (elbow at side)	50 °	50 °

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Strength: HHD

Gross Muscle Tests Upper

Shoulder

	Right	Left
Shoulder Internal Rotation	20.59#'s	15.22#'s (27% deficit)
Shoulder External Rotation	25.12#	23.61#'s (6% deficit)

Comments Grip Strength Right 120# ; Left 95#(20% deficit)

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Special Test

Impingement	**Right**	**Left**
Hawkins/Kennedy	Negative	Negative
Neer Test	Negative	Negative
Rotator Cuff	**Right**	**Left**
Empty Can	Negative	Negative
	Right	**Left**
Spurling's Maneuver	Negative	Positive

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Differential Diagnosis

- Left Shoulder Pain- RCRSP?
  - No Painful Arc of motion
  - No Pain with resisted IR
  - Hawkins/ Kennedy/Neer (-)
  - Empty Can/ Serratus Lift Off (-)

- Cervical Radiculopathy?
  - Spurling's (+)
  - Limited Cervical ROM
  - Weakness in Left IR and ER
  - Tingling/numbness reported in radicular pattern
    - Increase with computer work

Special Test: Clinical Prediction Rule

J Bone Joint Surg Am. 2005 Jul;87(7):1446-55. doi: 10.2106/JBJS.D.02335.

Diagnostic accuracy of clinical tests for the different degrees of subacromial impingement syndrome

Hyung Bin Park [1], Atsushi Yokota, Harpreet S Gill, George El Rassi, Edward G McFarland

Affiliations + expand

PMID: 15995110 DOI: 10.2106/JBJS.D.02335

- Impingement
  - (+)Hawkins, Painful Arc, IFS MT (+)
  - 95% Likelihood in “some degree”
- Rotator Cuff Tear
  - (+) Painful Arc, drop arm sign, IFS MT, > 60 Y.O.
  - 95% likelihood
  - (-) All 3 test – “probability for full RCT “very low”
  - < 60 Y.O. “even less likely”

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Cervical Prediction Rule: Cervical Spine

4 Test Positive

99% probability of Cx Radiculopathy

3/4 Test

the specificity of the CPR for diagnosing cervical radiculopathy is 94%.

- Positive Upper Limb Tension Test
- Cervical Rotation ROM < 60 deg (involved side)
- Positive Distraction Test
- Positive Spurling's Test

Case Study 2

- 37 y.o Female
- ICD10: S46.012D: Strain of muscle(s) and tendon (s) of the rotator cuff of left shoulder
- left shoulder injury after a slip and fall last night at home.
- She has difficulty reaching overhead, reaching behind the back and disrupts sleep at night.

Outcome Measurement Tools

Upper Extremity

Upper Extremity Quick DASH	54.54/100

Range of Motion

Cervical AROM

Forward Bending	Chin To Chest
Backward Bending	30°
Right Rotation	70°
Left Rotation	70°
Cervical AROM Comments	Pain noted on the left, with cervical rotation to the left.

Shoulder AROM	Right	Left
Flexion	160 °	160 °
Functional Internal Rotation Reach	T7	L5
ER in Neutral Position	70 °	60 °

Gross Muscle Tests Upper

Shoulder

	Right	Left
Shoulder Internal Rotation	10.38#	7.24#
Shoulder External Rotation	17.85#	9.07# (49% deficit)

Comments Grip strength Right: 60# Left: 50# (16% deficit)

Special Tests

Impingement	**Right**	**Left**
Hawkins/Kennedy	Negative	Positive
Neer Test	Negative	Positive

Rotator Cuff	**Right**	**Left**
Empty Can	Negative	Negative

	Right	**Left**
Spurling's Maneuver	Negative	Negative

How Would You Treat?

- Day 1?
- Day 6?
- 4Weeks?

Case Study 3

- 83 y.o Female
- ICD10: M25.511: Pain in right shoulder, M75.121: Complete rotator cuff tear or rupture of right shoulder, not specified as traumatic
- s/ p fall on 1/30/25, injuring her right shoulder. Radiographs were negative for fracture. MRI revealed massive RC tear.
- She has residual right shoulder pain, weakness and difficulty reaching away from her body.

- Outcome Measurement Tools
  - Quick Dash 61.36

Shoulder AROM

- Right Flexion 95°
- Left Flexion 135°

Functional Internal Rotation

- Right: Reach PSIS
- Left: T7

ER in Neutral Position

- Right 65 °
- Left 50 °

Gross Muscle Tests
Upper

Shoulder

	Right	**Left**
Shoulder Flexion	3.25# (61% deficit)	8.43#
Shoulder Internal Rotation	8.49# (12% deficit)	9.68#
Shoulder External Rotation	4.68# (43% deficit)	8.32#

How Would you Treat?

- Day 1?
- 6 Weeks?
- 12 Weeks?

Case Study 3

Right	Eval	10th Visit
Flex	3.25#	2.36#
IR	8.49#	13.31#
ER	4.68#	6.49#
Flex/Elb Bent		10.66#

Left	Eval	10th VISIT
Flex	8.93#	10.85#
IR	9.68#	12.81#
ER	8.32#	6.98#
Flex/Elb Bent		11.46#

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Case Study 4

- 74 y.o Male
- ICD10: S46.012D: Strain of muscle(s) and tendon (s) of the rotator cuff of left shoulder, subsequent encounter, M19.012: Primary osteoarthritis, left shoulder, M75.42: Impingement syndrome of left shoulder, M75.82: Other shoulder lesions, left shoulder
- Injured left shoulder about 1 month ago.
- Exercising at his gym doing "flys", he felt some pain with the exercise and stopped. He rested his shoulder for about 2 weeks, pain improved but still present.
- He has recently finished a steroid dose pack.
- Pain is improved but feels his shoulder is stiff.
- He points to his bicep tendon proximally, as the current source of pain.
- He denies tingling/numbness in his left UE.
- Of clinical importance he had similar symptoms in his right shoulder and responded well to PT, even with "small tear" per report. He has never had surgery in either shoulders.

Outcome Measurement Tools

Upper Extremity

Upper Extremity Quick DASH	25%/100

Observation

Comments Stretching anterior shoulder improves pain with reaching overhead.

Range of Motion

Shoulder AROM	**Right**	**Left**
Flexion	150 °	145°
Functional Internal Rotation Reach	T7	Sacrum
ER in Neutral Position	50 °	40 °

Strength

Gross Muscle Tests Upper

Shoulder

	Right	Left
Shoulder Flexion	19.26#	13.67#
Shoulder Internal Rotation	32.58#	35.81#
Shoulder External Rotation	17.74#	14.57#

Special Tests

Impingement	Right	Left
Hawkins/Kennedy	Negative	Positive
Neer Test	Negative	Positive

Rotator Cuff	Right	Left
Empty Can	Negative	Negative

Palpation

Comments Tender to palpation over the bicipital groove of the left shoulder.

How Would You Treat?

Day 1?

Day 7?

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Case Study 5

- 71 y.o Female: left shoulder pain that began this past June.
- ICD10: M75.122: Complete rotator cuff tear or rupture of left shoulder, not specified as traumatic
- MRI: MRI: FTT supraspinatus
- Left hand is DOMINANT UE.
- She had been working out with a trainer, doing some arm ex's and noted she began to have left shoulder pain. Her PCP gave her a steroid dose pack that helped initially. However, she's noted continued left shoulder pain and weakness effecting ADLs of lifting her purse, reaching behind her back to fasten her bra and disrupting her sleep

Upper Extremity

Upper Extremity Quick DASH	43.18/100

Range of Motion

Shoulder AROM	Right	Left
Flexion	150 °	150 °
Functional Internal Rotation Reach	T7	T8
ER in Neutral Position	70 °	70 °

	Right	Left (Dominant)
Shoulder Flexion	9.02#	6.12# (32% deficit)
Shoulder IR	14.34#	12.01# (16% deficit)
Shoulder ER	12.97#	12.87# (0.77% deficit)

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Special Tests

Impingement	**Right**	**Left**
Hawkins/Kennedy	Negative	Positive
Rotator Cuff	**Right**	**Left**
Empty Can	Negative	Negative
Drop Arm	Negative	Negative

Summary

- Subjective Assessment
  - Therapeutic Alliance
- Clinical Assessment
  - HHD, ROM, Strength
  - Modifiable and Measureable → Increase Pt satisfaction/success with POC
- Return to Function
  - Calm stuff down, build it back gradually
  - Optimal Loading of the muscle/tendon