Implementing guidelines in the digital age

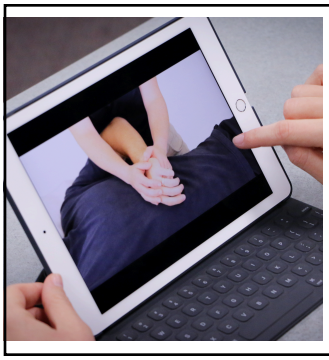
Michael Wong, PT, DPT OCS FAAOMPT
Associate Professor, Azusa Pacific University

PHYSIO•U

KAISER PERMANENTE

Clinical Pattern Recognition

AZUSA PACIFIC UNIVERSITY



DISCLOSURE

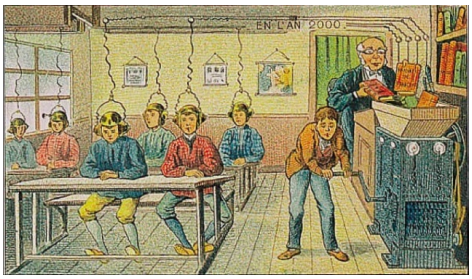
Michael Wong
PT, DPT, OCS, FAAOMPT

Medical App Developer for iPads/iPhones

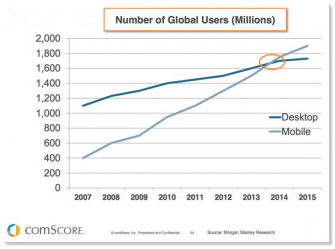
Clinical Pattern Recognition

PHYSIO•U

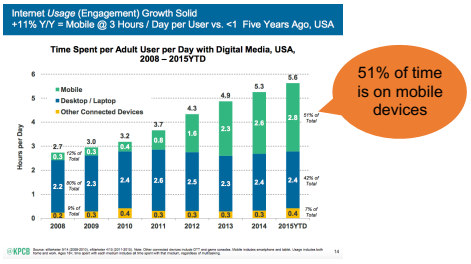
Villenard “En l’an 2000”



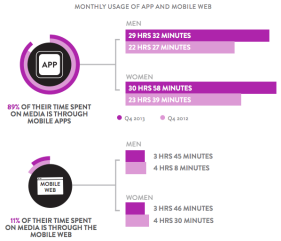
Shift from desktop computing to mobile…

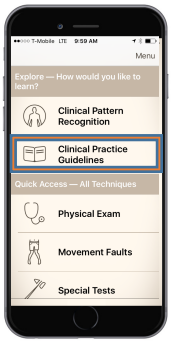


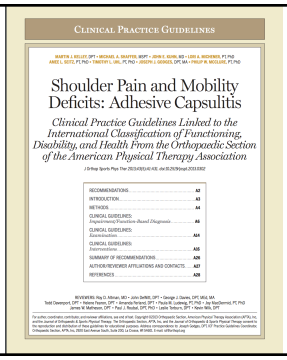
Time spent per day on mobile devices

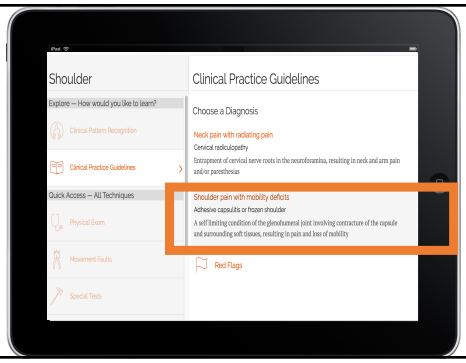


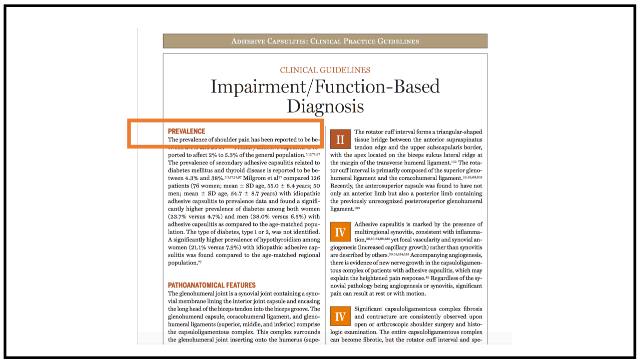
89% of time on media is through mobile apps vs. 11% on mobile web

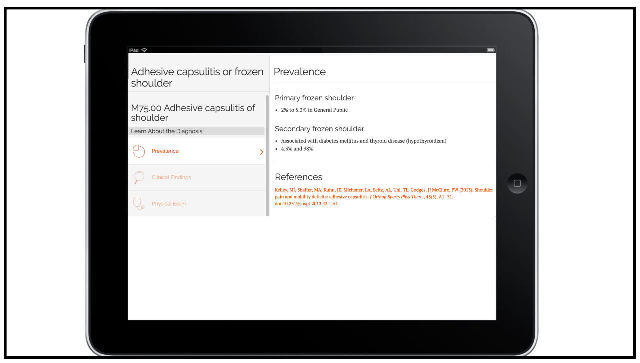


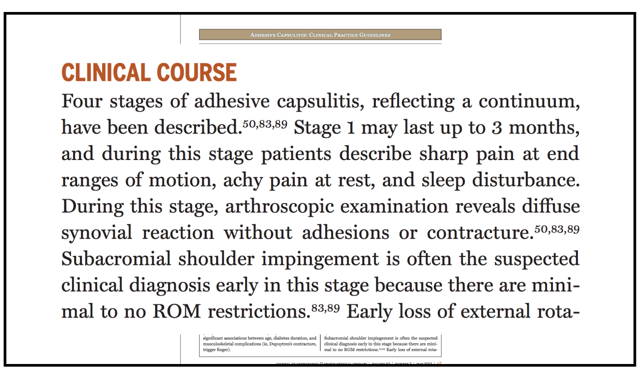

T-Mobile LTE 9:59 AM
Menu
Explore — How would you like to learn?
Clinical Pattern Recognition
Clinical Practice Guidelines
Quick Access — All Techniques
Physical Exam
Movement Faults
Special Tests

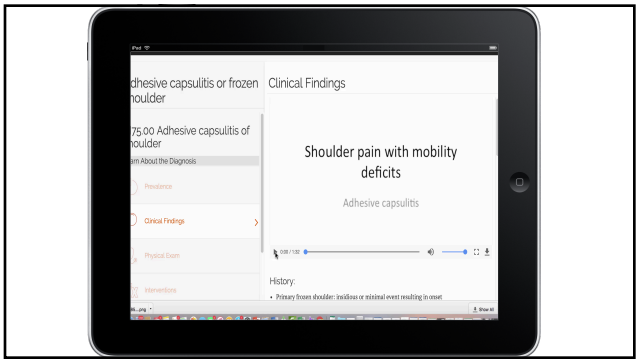

Clinical Practice Guidelines
Shoulder Pain and Mobility Deficits: Adhesive Capsulitis
Clinical Practice Guidelines Linked to the International Classification of Functioning, Disability, and Health From the Orthopaedic Section of the American Physical Therapy Association


Shoulder
Explore — How would you like to learn?
Clinical Pattern Recognition
Clinical Practice Guidelines
Quick Access — All Techniques
Physical Exam
Movement Faults
Special Tests
Clinical Practice Guidelines
Choose a Diagnosis
Neck pain with radiating pain
Cervical radiculopathy
Entrapment of cervical nerve roots in the neuroforamina, resulting in neck and arm pain and/or paresthesias
Shoulder pain with mobility deficits
Adhesive capsulitis or frozen shoulder
A self limiting condition of the glenohumeral joint involving contracture of the capsule and surrounding soft tissues, resulting in pain and loss of mobility
Red Flags

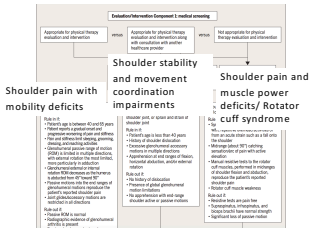

Adhesive Capsulitis: Clinical Practice Guidelines
CLINICAL GUIDELINES
Impairment/Function-Based Diagnosis
PREVALENCE
PATHOANATOMICAL FEATURES
II
IV
IV

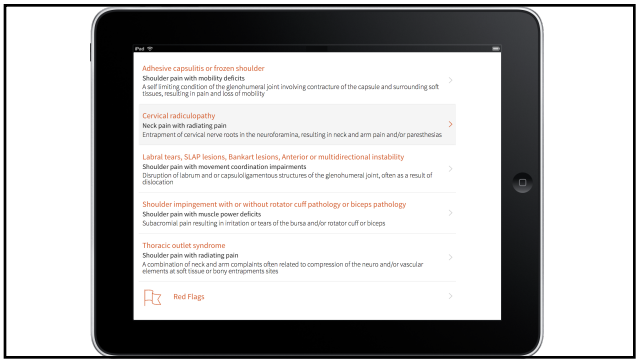

Adhesive capsulitis or frozen shoulder
Prevalence
M75.00 Adhesive capsulitis of shoulder
Learn About the Diagnosis
Prevalence
Clinical Findings
Physical Exam
Primary frozen shoulder
2% to 5.3% in General Public
Secondary frozen shoulder
Associated with diabetes mellitus and thyroid disease (hypothyroidism)
4.3% and 38%
References

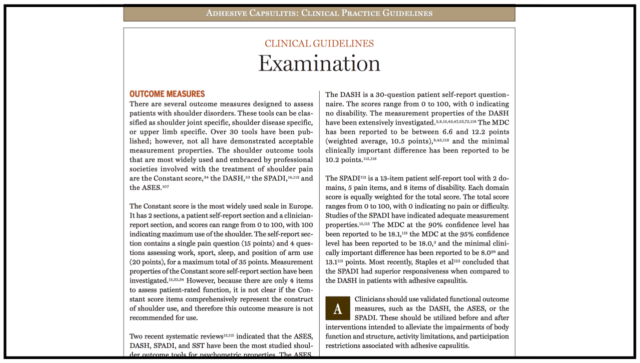

Adhesive Capsulitis: Clinical Practice Guidelines
CLINICAL COURSE
Four stages of adhesive capsulitis, reflecting a continuum, have been described.[50,83,89] Stage 1 may last up to 3 months, and during this stage patients describe sharp pain at end ranges of motion, achy pain at rest, and sleep disturbance. During this stage, arthroscopic examination reveals diffuse synovial reaction without adhesions or contracture.[50,83,89] Subacromial shoulder impingement is often the suspected clinical diagnosis early in this stage because there are minimal to no ROM restrictions.[83,89] Early loss of external rota-



Algorithms built into playable patterns!







ADHESIVE CAPSULITIS: CLINICAL PRACTICE GUIDELINES

CLINICAL GUIDELINES

Examination

OUTCOME MEASURES

There are several outcome measures designed to assess patients with shoulder disorders. These tools can be classified as shoulder joint specific, shoulder disease specific, or upper limb specific. Over 30 tools have been published; however, not all have demonstrated acceptable measurement properties. The shoulder outcome tools that are most widely used and embraced by professional societies involved with the treatment of shoulder pain are the Constant score,[34] the DASH,[53] the SPADI,[14,112] and the ASES.[107]

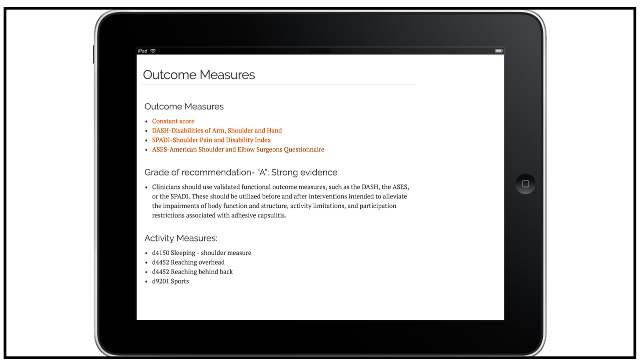
The Constant score is the most widely used scale in Europe. It has 2 sections, a patient self-report section and a clinician-report section, and scores can range from 0 to 100, with 100 indicating maximum use of the shoulder. The self-report section contains a single pain question (15 points) and 4 questions assessing work, sport, sleep, and position of arm use (20 points), for a maximum total of 35 points. Measurement properties of the Constant score self-report section have been investigated.[15,32,34] However, because there are only 4 items to assess patient-rated function, it is not clear if the Constant score items comprehensively represent the construct of shoulder use, and therefore this outcome measure is not recommended for use.

Two recent systematic reviews[15,115] indicated that the ASES, DASH, SPADI, and SST have been the most studied shoulder outcome tools for psychometric properties. The ASES

The DASH is a 30-question patient self-report questionnaire. The scores range from 0 to 100, with 0 indicating no disability. The measurement properties of the DASH have been extensively investigated.[2,8,15,43,47,53,72,118] The MDC has been reported to be between 6.6 and 12.2 points (weighted average, 10.5 points),[8,43,118] and the minimal clinically important difference has been reported to be 10.2 points.[115,118]

The SPADI[112] is a 13-item patient self-report tool with 2 domains, 5 pain items, and 8 items of disability. Each domain score is equally weighted for the total score. The total score ranges from 0 to 100, with 0 indicating no pain or difficulty. Studies of the SPADI have indicated adequate measurement properties.[15,115] The MDC at the 90% confidence level has been reported to be 18.1,[118] the MDC at the 95% confidence level has been reported to be 18.0,[3] and the minimal clinically important difference has been reported to be 8.0[98] and 13.1[115] points. Most recently, Staples et al[123] concluded that the SPADI had superior responsiveness when compared to the DASH in patients with adhesive capsulitis.

A Clinicians should use validated functional outcome measures, such as the DASH, the ASES, or the SPADI. These should be utilized before and after interventions intended to alleviate the impairments of body function and structure, activity limitations, and participation restrictions associated with adhesive capsulitis.



Outcome Measures

Outcome Measures

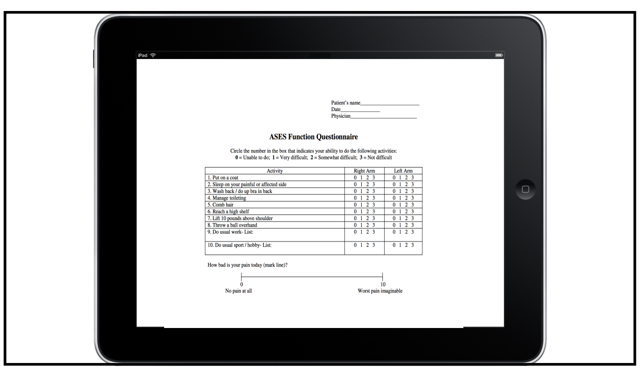
- Constant score
- DASH-Disabilities of Arm, Shoulder and Hand
- SPADI-Shoulder Pain and Disability Index
- ASES-American Shoulder and Elbow Surgeons Questionnaire

Grade of recommendation- "A": Strong evidence

- Clinicians should use validated functional outcome measures, such as the DASH, the ASES, or the SPADI. These should be utilized before and after interventions intended to alleviate the impairments of body function and structure, activity limitations, and participation restrictions associated with adhesive capsulitis.

Activity Measures:

- d4150 Sleeping - shoulder measure
- d4452 Reaching overhead
- d4452 Reaching behind back
- d9201 Sports



Patient's name________________
Date__________
Physician________________

ASES Function Questionnaire

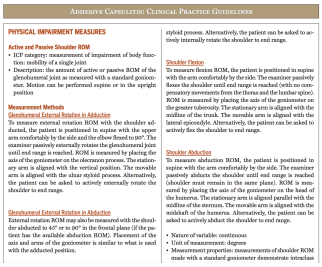
Circle the number in the box that indicates your ability to do the following activities:
0 = Unable to do; **1** = Very difficult; **2** = Somewhat difficult; **3** = Not difficult

Activity	Right Arm	Left Arm
1. Put on a coat	0 1 2 3	0 1 2 3
2. Sleep on your painful or affected side	0 1 2 3	0 1 2 3
3. Wash back / do up bra in back	0 1 2 3	0 1 2 3
4. Manage toileting	0 1 2 3	0 1 2 3
5. Comb hair	0 1 2 3	0 1 2 3
6. Reach a high shelf	0 1 2 3	0 1 2 3
7. Lift 10 pounds above shoulder	0 1 2 3	0 1 2 3
8. Throw a ball overhand	0 1 2 3	0 1 2 3
9. Do usual work- List:	0 1 2 3	0 1 2 3
10. Do usual sport / hobby- List:	0 1 2 3	0 1 2 3

How bad is your pain today (mark line)?

0 No pain at all — 10 Worst pain imaginable

Physical Impairment Measures: ROM



ADHESIVE CAPSULITIS: CLINICAL PRACTICE GUIDELINES

PHYSICAL IMPAIRMENT MEASURES

Active and Passive Shoulder ROM

- ICF category: measurement of impairment of body function: mobility of a single joint
- Description: the amount of active or passive ROM of the glenohumeral joint as measured with a standard goniometer. Motion can be performed supine or in the upright position

Measurement Methods

Glenohumeral External Rotation in Adduction

To measure external rotation ROM with the shoulder adducted, the patient is positioned in supine with the upper arm comfortably by the side and the elbow flexed to 90°. The examiner passively externally rotates the glenohumeral joint until end range is reached. ROM is measured by placing the axis of the goniometer on the olecranon process. The stationary arm is aligned with the vertical position. The movable arm is aligned with the ulnar styloid process. Alternatively, the patient can be asked to actively externally rotate the shoulder to end range.

Glenohumeral External Rotation in Abduction

External rotation ROM may also be measured with the shoulder abducted to 45° or to 90° in the frontal plane (if the patient has the available abduction ROM). Placement of the axis and arms of the goniometer is similar to what is used with the adducted position.

styloid process. Alternatively, the patient can be asked to actively internally rotate the shoulder to end range.

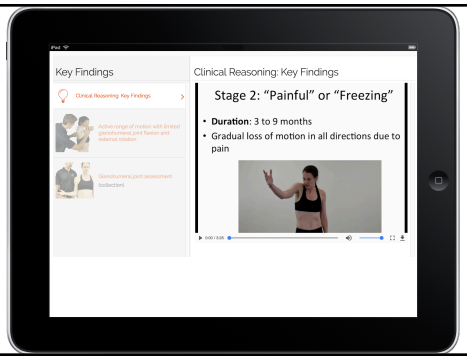
Shoulder Flexion

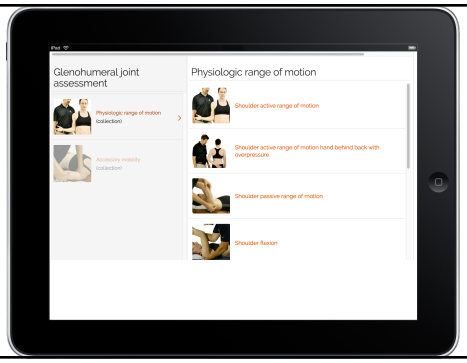
To measure flexion ROM, the patient is positioned in supine with the arm comfortably by the side. The examiner passively flexes the shoulder until end range is reached (with no compensatory movements from the thorax and the lumbar spine). ROM is measured by placing the axis of the goniometer on the greater tuberosity. The stationary arm is aligned with the midline of the trunk. The movable arm is aligned with the lateral epicondyle. Alternatively, the patient can be asked to actively flex the shoulder to end range.

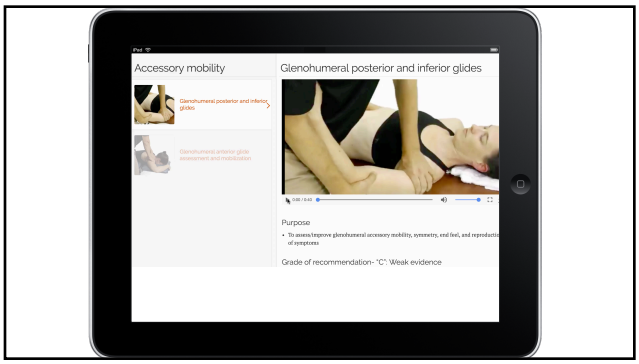
Shoulder Abduction

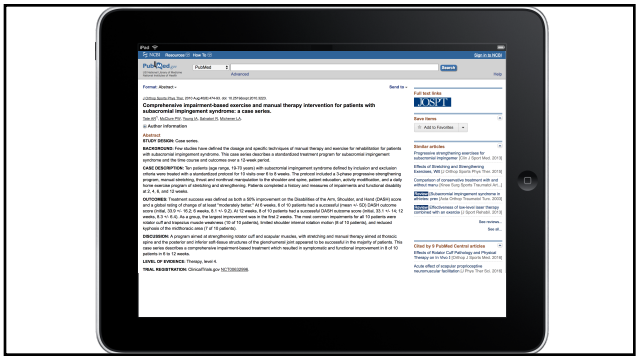
To measure abduction ROM, the patient is positioned in supine with the arm comfortably by the side. The examiner passively abducts the shoulder until end range is reached (shoulder must remain in the same plane). ROM is measured by placing the axis of the goniometer on the head of the humerus. The stationary arm is aligned parallel with the midline of the sternum. The movable arm is aligned with the midshaft of the humerus. Alternatively, the patient can be asked to actively abduct the shoulder to end range.

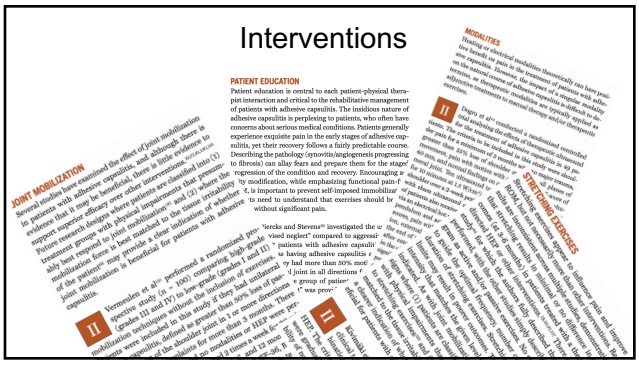
- Nature of variable: continuous
- Unit of measurement: degrees
- Measurement properties: measurements of shoulder ROM made with a standard goniometer demonstrate intraclass

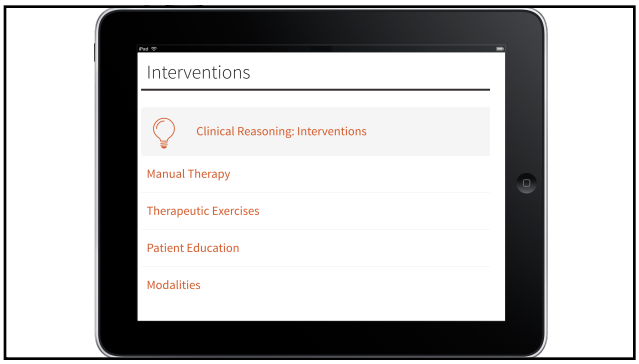


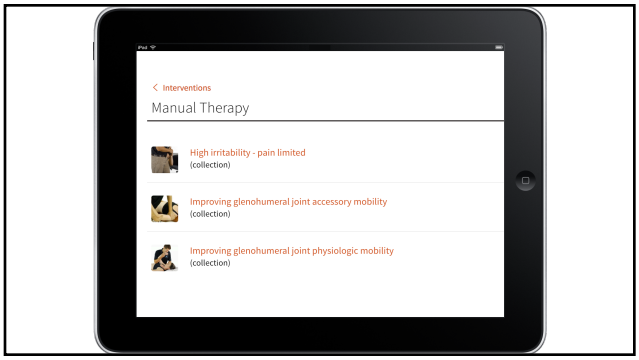


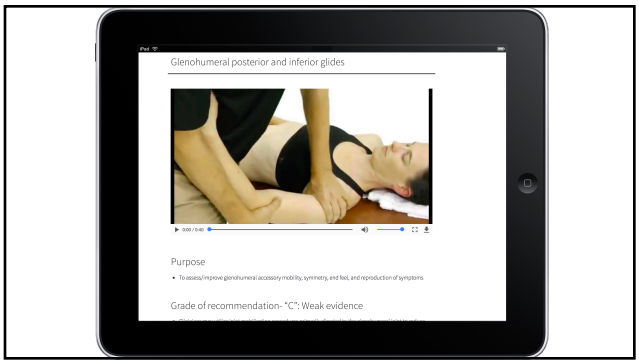

Accessory mobility
Glenohumeral posterior and inferior glides
Glenohumeral posterior and inferior glides
Glenohumeral anterior glide assessment and mobilization
Purpose
To assess/improve glenohumeral accessory mobility, symmetry, end feel, and reproduction of symptoms
Grade of recommendation- "C": Weak evidence

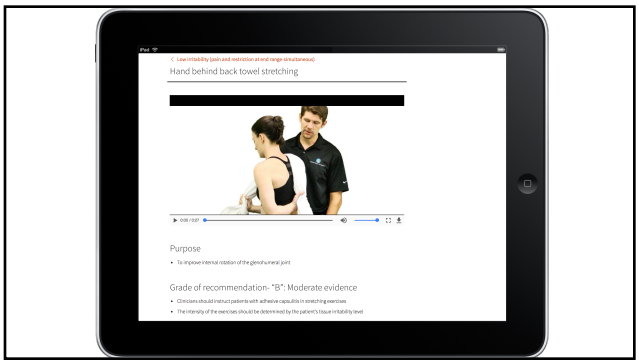

Comprehensive impairment-based exercise and manual therapy intervention for patients with subacromial impingement syndrome: a case series.
Abstract
STUDY DESIGN: Case series.
BACKGROUND: Few studies have defined the dosage and specific techniques of manual therapy and exercise for rehabilitation for patients with subacromial impingement syndrome. This case series describes a standardized treatment program for subacromial impingement syndrome and the time course and outcomes over a 12-week period.
CASE DESCRIPTION: A consecutive sample of patients with subacromial impingement syndrome defined by inclusion and exclusion criteria were enrolled in a standardized protocol for 7 visits over 8 to 9 weeks. The protocol included a 3-phase progressive strengthening program, manual stretching, thrust and nonthrust manipulation to the shoulder and spine, patient education, activity modification, and a daily home exercise program of stretching and strengthening. Patients completed a history and measures of impairments and functional disability at 2, 4, 8, and 12 weeks.
OUTCOMES: Treatment success was defined as both a 50% improvement on the Disabilities of the Arm, Shoulder, and Hand (DASH) score and a global rating of change of at least "moderately better." At 8 weeks, 8 of 10 patients had a successful (mean +/- SD) DASH outcome score (initial, 33.0 +/- 16.2; 8 weeks, 8.1 +/- 5.2). At 12 weeks, 8 of 10 patients had a successful DASH outcome score (initial, 31.1 +/- 14.12 weeks, 8.3 +/- 6.4). At a group, the largest improvement was in the first 2 weeks. The most common impairments for all 10 patients were pain with resisted testing (9 of 10 patients), limited shoulder internal rotation motion (8 of 10 patients), and reduced kyphosis of the thoracic area (7 of 10 patients).
DISCUSSION: A program aimed at strengthening rotator cuff and scapular muscles, with stretching and manual therapy aimed at thoracic spine and the posterior and inferior soft-tissue structures of the glenohumeral joint appeared to be successful in the majority of patients. This case series describes a comprehensive impairment-based treatment which resulted in symptomatic and functional improvement in 8 of 10 patients in 8 to 12 weeks.
LEVEL OF EVIDENCE: Therapy, level 4.
TRIAL REGISTRATION: ClinicalTrials.gov NCT00632996

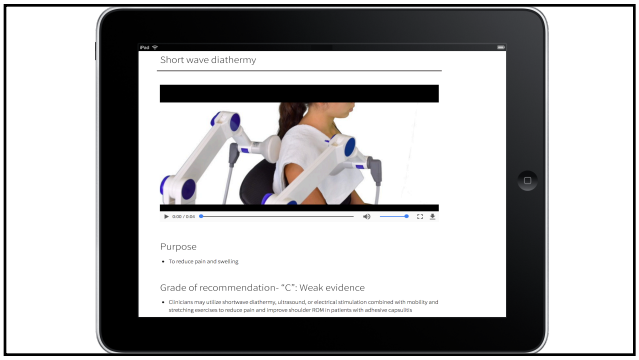

Interventions
JOINT MOBILIZATION
PATIENT EDUCATION
MODALITIES
STRETCHING EXERCISES

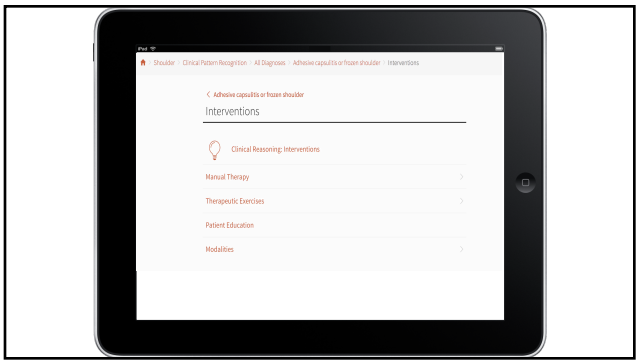

Interventions
Clinical Reasoning: Interventions
Manual Therapy
Therapeutic Exercises
Patient Education
Modalities

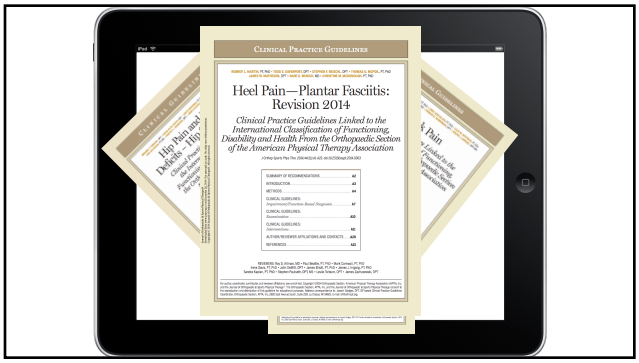

Interventions
Manual Therapy
High irritability - pain limited
(collection)
Improving glenohumeral joint accessory mobility
(collection)
Improving glenohumeral joint physiologic mobility
(collection)

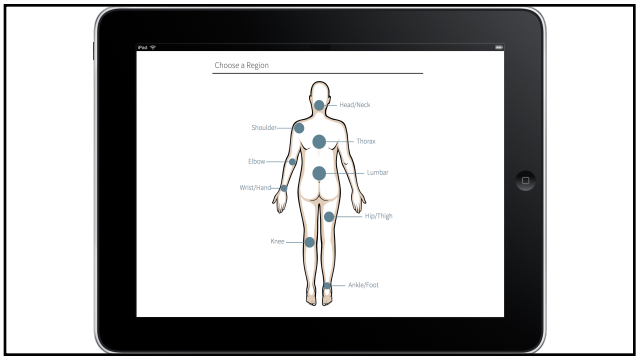

Glenohumeral posterior and inferior glides
Purpose
Grade of recommendation- "C": Weak evidence


Low irritability (pain and restriction at end range simultaneous)
Hand behind back towel stretching
Purpose
To improve internal rotation of the glenohumeral joint
Grade of recommendation- "B": Moderate evidence
Clinicians should instruct patients with adhesive capsulitis in stretching exercises
The intensity of the exercises should be determined by the patient's tissue irritability level

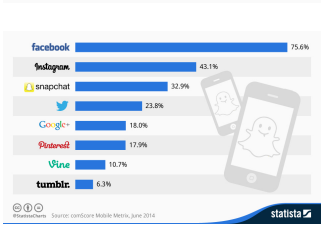

Short wave diathermy
Purpose
To reduce pain and swelling
Grade of recommendation- "C": Weak evidence
Clinicians may utilize shortwave diathermy, ultrasound, or electrical stimulation combined with mobility and stretching exercises to reduce pain and improve shoulder ROM in patients with adhesive capsulitis


Shoulder
Clinical Pattern Recognition
All Diagnoses
Adhesive capsulitis or frozen shoulder
Interventions
Adhesive capsulitis or frozen shoulder
Interventions
Clinical Reasoning: Interventions
Manual Therapy
Therapeutic Exercises
Patient Education
Modalities





Guideline implementation: **Social media**

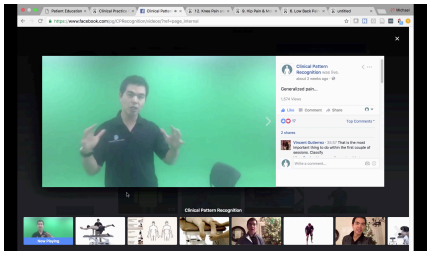


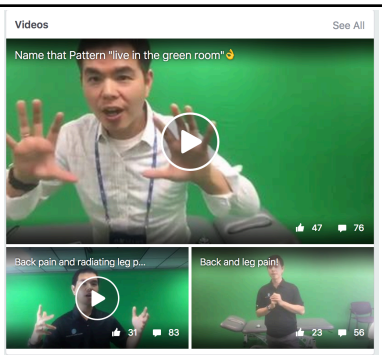
LIVE

Have engaging conversations with your followers

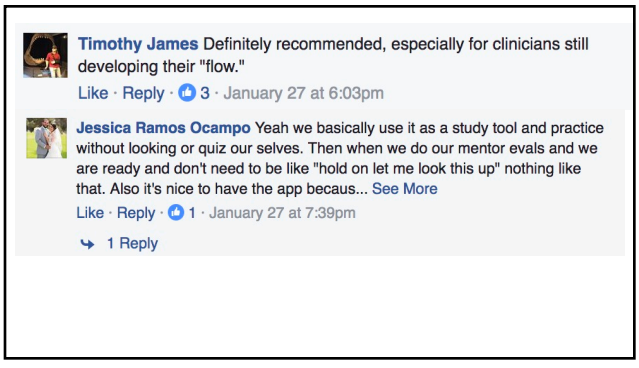
Live is the best way to interact with viewers in real time. Field their burning questions, hear what's on their mind and check out their Live Reactions to gauge how your broadcast is going.

Guideline patterns: In small chunks…




Videos
See All
Name that Pattern "live in the green room"
47
76
Back pain and radiating leg p...
31
83
Back and leg pain!
23
56


Jessica Ramos Ocampo It's an amazing app!!!!
Like · Reply · 8 · January 27 at 3:23pm
Jessica Ramos Ocampo I recommend it very much. It helped my career in physical therapy. It's easy to use and understand. And it is a great tool to keep with you forever
Like · Reply · 2 · January 27 at 3:24pm
Jacqueline Armstrong Love these apps!! The organization is great and does a great job at introducing pain patterns, the key findings in patient presentation, clinical exam, what associated impairments/movement faults you might find, and ways to address them! You can view by the pain pattern alone and see potential hypotheses/what to differential or you can view by potential diagnosis/source tissue! Awesome supplement!
Like · Reply · 6 · January 27 at 4:09pm
Amanda Jorinscay Love this App!!! it has been super helpful in learning skills taught in our ortho class. Our professors even made it a recommended resource for the class
Like · Reply · 5 · January 27 at 4:12pm · Edited


Timothy James Definitely recommended, especially for clinicians still developing their "flow."
Like · Reply · 3 · January 27 at 6:03pm
Jessica Ramos Ocampo Yeah we basically use it as a study tool and practice without looking or quiz our selves. Then when we do our mentor evals and we are ready and don't need to be like "hold on let me look this up" nothing like that. Also it's nice to have the app becaus... See More
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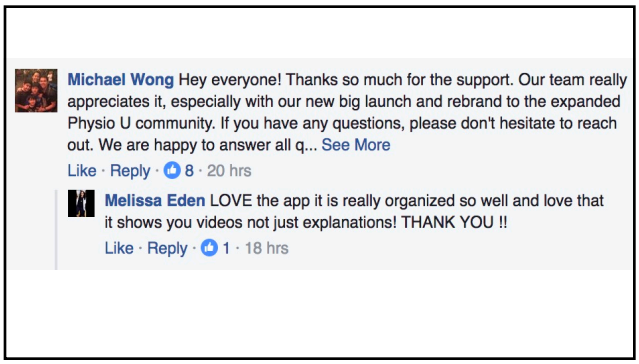
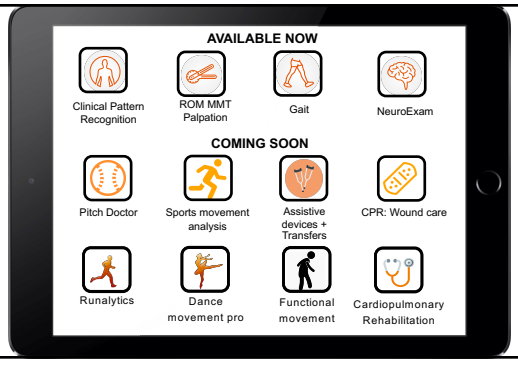


Schools using or beta testing Physio U apps




QUESTIONS?
THANK YOU!