

Tendinopathy: Current Evidence
and Treatment Strategies

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Tendinopathy Quiz

True or False: Tendinitis is one
of the most common ailments
seen by physical therapists.

False! PT's treat tendinopathy, not
tendinitis.

True or False: Eccentric activity
is a primary cause of
tendinopathy and should be
avoided in treatment.

False! Ironically, unaccustomed eccentric
loading does contribute to tendinopathy,
but graded eccentric loading cures it.

True or False: “No pain, no gain” is an axiom of personal trainers. Therapeutic exercise should not be painful.

False! Graded eccentric exercise, can and should be, uncomfortable at times.

True or False: Eccentric loading is a relatively new concept in the management of tendinopathy.

False! Curwin and Stanish recommended graded eccentric loading in the management of “tendinitis” in the early 1980’s.

True or False: Graded eccentric loading has an anecdotal, low level of evidence in the management of tendinopathy.

False! Graded eccentric loading has a strong evidence base, validated in multiple clinical trials.

True or False: Calf stretching is a universally accepted component in the management of Achilles tendinopathy.

False! Some well regarded experts in this field discourage calf stretching in the presence of Achilles tendinopathy.

True or False: Manual therapy is a relatively new concept in the management of tendinopathy.

False! James Cyriax, **Sr.** wrote about transverse friction massage in 1910! James Cyriax, **Jr.** popularized it's use among physiotherapists in the 1940's.

James Cyriax, Jr. Circa 1945



True or False: Certain types of antibiotics can lead to tendinopathy and even tendon rupture.

- True! Fluoroquinolone types of antibiotics, such as Cipro, weaken tendons, even several weeks after their use.

True or False: Anti-inflammatory medications, such as Ibuprofen, are an effective remedy for tendinopathy.

- False! Since tendinopathy has a minimal inflammatory component they do very little other than destroy the stomach.

True or False: Giraffes have twice as many cervical vertebrae as humans.

- False! They have 7, just like us. However....

Zambia, Africa.



No intervertebral discs...



A perfect ball-and-socket joint...no neck pain!



Examination by Problem

- Shoulder tendinopathy
- Rotator cuff tear
- Glenohumeral instability
- Labral tears
- Arthritis
- G-H loss of motion problems
- Frozen Shoulder
- ac/sc problems
- Scapulothoracic problems

Tendinitis, tests

- Selective resisted motions
 - "Isolate" rotator cuff tendons
 - Supraspinatus
 - Infraspinatus/teres minor
 - subscapularis
 - Speed's sign (long head of biceps)
- Impingement signs
 - Neer/Hawkins Kennedy Impingement Sign
- Palpation
 - Need to know positions!

Supraspinatus



- Isometrically resist shoulder abduction at 30 degrees elevation, in scapular plane, with slight internal rotation.

Infraspinatus



- Resist shoulder external rotation with elbow bent to 90 degrees, in neutral or 90 degrees of flexion.

Biceps Tendinopathy

- *THE* most common shoulder problem?

THE EFFECTIVENESS OF MANUAL THERAPY AND ECCENTRIC EXERCISE FOR BICIPITAL TENDINOPATHY IN PATIENTS REFERRED FOR WORK HARDENING SERVICE: A CASE SERIES

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Introduction

Bicipital tendinopathy is a common cause of shoulder pain and disability. It is characterized by pain and tenderness at the bicipital groove, which is exacerbated by overhead activities and resisted elbow flexion. The pathophysiology is thought to be related to repetitive microtrauma and degenerative changes in the biceps tendon. Manual therapy and eccentric exercise are potential treatment options for this condition.

Purpose

The purpose of this study was to determine the effectiveness of a combined manual therapy and eccentric exercise program in the treatment of bicipital tendinopathy in patients referred for work hardening services.

Methods

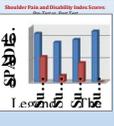
A retrospective case series design was used. Data were collected from the medical records of 10 patients who were treated with a combination of manual therapy and eccentric exercise. The primary outcome was the change in the Shoulder Pain and Disability Index (SPADI) score over a 12-week period.

Intervention

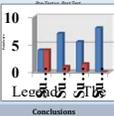


Results

Shoulder Pain and Disability Index Score



Mean SPADI Score



Conclusions

A 12-week program of manual therapy and eccentric exercise resulted in a significant decrease in SPADI scores in patients with bicipital tendinopathy. This suggests that this combined approach may be an effective treatment for this condition.

Acknowledgments

The authors thank the physical therapists who assisted in the data collection and the patients who participated in the study.

References

1. American Academy of Orthopedic Surgeons. *Orthopaedic Physical Therapy: Principles and Practice*. Philadelphia: Elsevier; 2013.

2. American Physical Therapy Association. *Physical Therapy: The Guide to Practice*. Philadelphia: Elsevier; 2014.

3. American Occupational Therapy Association. *Occupational Therapy: The Guide to Practice*. Philadelphia: Elsevier; 2014.

Long Head of Biceps



- Resist elbow flexion at 90 degrees flexion, shoulder neutral, or with shoulder flexion and straight elbow (Speed's test.)

Speed's Test



Subscapularis



- Resist shoulder internal rotation with neutral shoulder, elbow flexed to 90 degrees.

Pectoralis Major



- Resist shoulder horizontal adduction by having patient isometrically press hands together.
- Pain provocation suggests pec involvement.

Impingement Sign



- Combine motions of internal rotation, flexion, and adduction; apply graded over-pressure (Hawkins/Kennedy.)
- Looking to reproduce subacromial pain.
- ("Neer" impingement sign requires anesthetic injection for relief.)

Palpation- Supraspinatus



- Internally rotate shoulder by placing hand in small of back.
- Palpate supra just anterolateral to acromion

Infraspinatus



- Flex shoulder to 90 degrees, full external rotation, and adduction.
- Palpate infra just below posterior aspect of acromion.

Long head of biceps



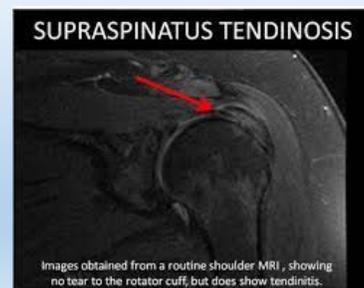
- Shoulder in neutral rotation, some extension.
- Flex elbow to 90.
- Palpate long biceps tendon along bicipital groove from acromion down.

Subscapularis



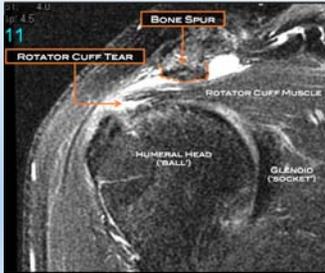
- Set up as for biceps.
- Palpate just medial to bicipital groove, on lesser tuberosity

MRI



Images obtained from a routine shoulder MRI, showing no tear to the rotator cuff, but does show tendinitis.

Small Rotator cuff tear....decompression likely.



Rotator Cuff Tear Tests

- Observe active shoulder elevation, looking for quality of motion
- Drop arm test- supraspinatus, cuff in general
- Sag-sign and horn blowers- infraspinatus
- Lift-off sign- subscapularis

Drop Arm Test



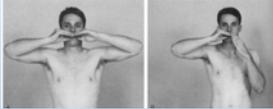
- Have patient elevate to 90 degrees abduction
- Provide downward resistance
- Will drop if rotator cuff (**supraspinatus**) is torn or very irritable.

Sag Sign



- Assistant patient to 90 degrees abduction, slightly less than 90 degrees external rotation.
- Arm will fall into internal rotation if **posterior cuff** (infra, teres minor) are torn or weak.

Horn Blowers Sign



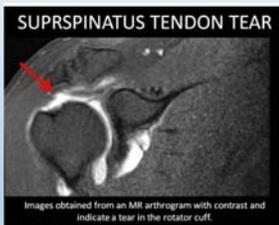
- Assume position as if playing horn.
- Arm will drop downward if **posterior cuff** is torn or weak.

Lift-Off Sign



- Have patient (or assist) place hand in small of back.
- Ask them to lift back of hand off back.
- Will be unable to do so if **subscapularis** is torn or weak.
- Or, use tummy pat.

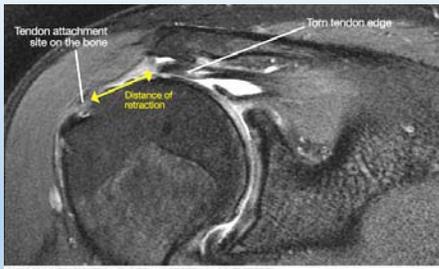
MRI: Rotator Cuff Tear



MRI: Failed RCR



Supra tear that *may* be repaired.



Accessory or Joint-play Motions

- Arthrokinematic motions
- Not under patient/athlete's voluntary control, but necessary for normal movement
- Can be assessed by examiner.

Shoulder Accessory Motions

- Lateral distraction
- Anterior glide
- Posterior glide
- Inferior glide
- A-P and inf-sup glide a-c
- A-P and inf-sup glide sc
- Passive movement of scapula

G-H Lateral Distraction



- Laterally distract humerus, noting degree, "feel" of motion available.
- Be sure to use full surface of hand to avoid painful pressure points.

G-H Anterior Glide



- Stabilize scapula (or take up "slack" from scapula mobility.)
- Apply gentle anterior glide.

G-H Inferior Glide



- Gentle distraction...
- Apply gentle inferior pressure.
- Can vary amount of external rotation (picture joint capsule from anatomy.)

G-H Posterior Glide



- Internally rotate humerus.
- Gentle downward pressure.
- May combine with some distraction.

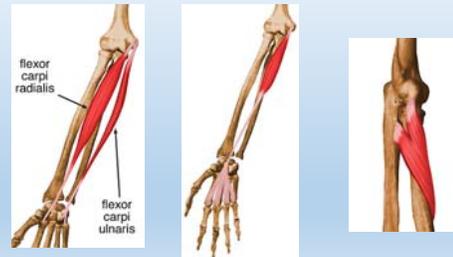
Tennis Elbow/Golfer's Elbow



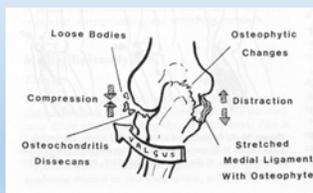
Epicondylitis

- Usually due to high speed, eccentric loading of muscles.
- Generally, medial epicondyle in golfers, lateral in tennis players, but can be reversed.
- Lesion may be at epicondyle, in tendon, M-T junction, or muscle belly.

Medial Muscles



Valgus Stress of Throwing



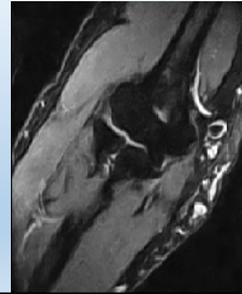
X-Ray, Growth Plates



Little Leaguer's Elbow

- Opening of medial epicondyle growth plate from traction force of valgus position during throwing.
- Closure of lateral epicondyle growth plate from compressive force of throwing valgus.
- Similar forces in softball windmill pitch...not innocuous just because it's "underhand."

MRI: Medial tendinopathy...fatty infiltration.



Lateral "epicondylitis."



De Quervain's "Disease"

- Tenosynovitis of thumb extensors, abductors
- Often repetitive motion injury.
- Treat with transverse friction massage, injection.



Finkelstein's Test

- Have patient make fist with thumb inside fingers.
- Actively ulnar deviate, may apply gentle overpressure.
- Pain over thumb extrinsics suggests DeQuervain's tenosynovitis

Patellar Tendinopathy

