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Seize the Evidence!
Lateral Elbow Tendinopathy and the Role of Scapular Muscle Strengthening

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Ann Lucado, PT, PhD, CHT
Atlanta, Georgia

Collaborators at University of South Alabama:
Joseph M. Day, PhD, MSPT, OCS, CIMT
R. Barry Dale, PT, PhD, OCS, SCS, ATC, CSCS

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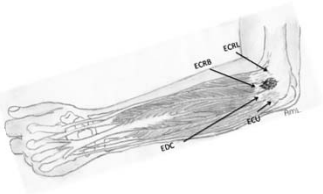
Lateral Elbow Tendinopathy (LET)

- Most common cause of elbow pain[1]
  - Prevalence as high as 29% in occupational settings[2,3]
  - Incomplete resolution of symptoms or recurrence ranges from 20-38%[4-6]
  - Etiology likely to be multifactoral



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Lateral Elbow Tendinopathy

- Lack of consensus on best management approach
  - Moderate and high levels of evidence support use of local exercise/strengthening for LET
  - Often studied as a part of a multimodal treatment approach

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LET and Local Strengthening

- Systematic Reviews in past 5 years found
  - Raman et al, 2012[7]
    - Moderate to high quality studies show improvements in pain, strength, and disability as a response to local exercise interventions
    - Evidence is insufficient as to whether local strengthening adds to the benefits seen in multimodal treatment

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LET and Local Strengthening

- Systematic Reviews in past 5 years found
  - Olaussen, et al 2013[8]
    - Moderate evidence supports either cortisone injection or local exercise plus manipulation in short-term, but for intermediate-term cortisone injection were worse
    - No difference in long-term outcomes
      - Overall improvement
      - Pain
      - Grip strength

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LET and Local Strengthening

- Systematic Reviews in past 5 years found
  - Hoogvliet, et al 2013[9]
    - Moderate evidence supports the short and mid-term effectiveness of concentric and eccentric exercise as an adjunct to local mobilization in improving pain and function
  - Brantingham, et al 2013[10]
    - Multimodal treatment program which includes exercise appeared to be effective in reducing pain, increasing grip strength and function in short-term

LET and Local Strengthening

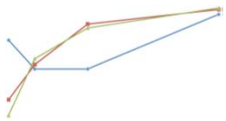
- Cullinane, Boocock, and Trevelyan[11]
  - 2014 SR of articles that utilized local eccentric exercises either in combination with other treatments or in isolation
  - 12 studies included
  - Based on the information extracted from primarily medium quality studies
    - Concluded eccentric wrist extensor exercises are most effective in improving function as a part of a multimodal treatment program in short term (< 24 wks)

LET and Local Strengthening

- Stasinopoulos & Stasinopoulos, 2016[12]
  - Report greatest short-term treatment effect in group performing a combined eccentric-concentric with isometric strengthening to the wrist extensors compared with
    - Eccentric- concentric strengthening alone or
    - Eccentric strengthening alone

LET and Local Exercise

- Olaussen et al 2015[13]
  - No long term (1-year) differences of percentage of self-reported recovery on a 6-point scale between 3 groups:
    - Control (Wait-listed)
    - Multimodal PT including local exercise plus corticosteriod injection
    - Multimodal PT including local exercise plus sham injection

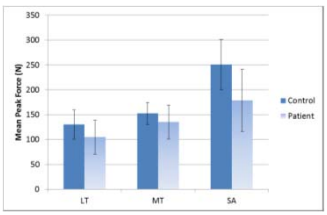


LET and Scapular Strength Impairment

- Lucado et al, 2012[14]
  - When tennis players (all female) with LET (n=21) were compared to those without LET (n=21)
    - Lower trapezius strength adjusted for body weight was significantly lower (p<.001)
    - Strength ratio between upper trapezius and lower trapezius significantly higher (p=.005)
      - A higher ratio indicates greater strength of the upper trapezius when compared to the lower trapezius muscle fibers
      - May indicate a tendency for altered scapular control
      - Imbalance between the scapular upward and downward rotators may interfere with proper shoulder kinematics during tennis play

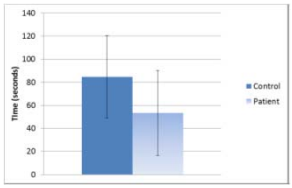
LET and Scapular Strength Impairment

- Day et al, 2015[15]
  - The involved side of the patients with LET had significantly lower strength compared to control group without LET
    - Middle Traps(P=.031)
    - Serratus Anterior (P<.001)
    - Lower Traps (P= .006)



LET and Scapular Strength Impairment

- Day et al, 2015[15]
  - The involved side of the patients with LET had significantly lower endurance of scapular muscle groups compared to control group without LET(P = .003)



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LET Case Study

- Bhatt et al, 2013[17]
- Patient with a 5-month history of LET
- Periscapular weakness and malpositioning evident on eval
- Exercise intervention of MT and LT strengthening progression implemented (5 visits over 10 weeks)
  - NPRS decreased from 7 to 0/10 pain
  - PFGS increased 38%
  - MT/LT strength increased to 5/5
  - Scapular position improved to visual inspection
  - Full resolution of symptoms and function (DASH)

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SMS for LET Protocol

- Funding from Orthopedic Section of the American Physical Therapy Association for the Mercer site
- Funding from American Society of Hand Therapists for the South Alabama site
- Current n= 5 from Mercer site n= 11 from South Alabama site (total following protocol =16) to date

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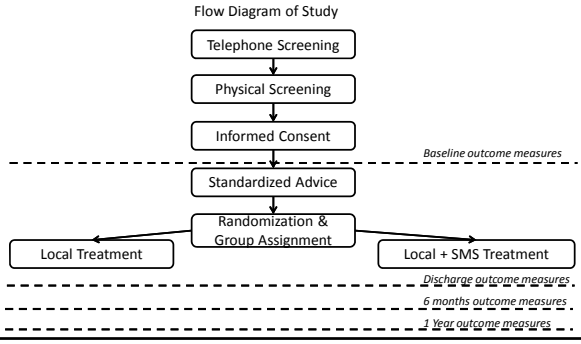

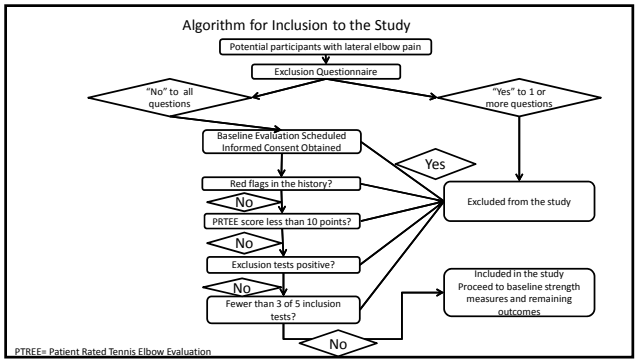

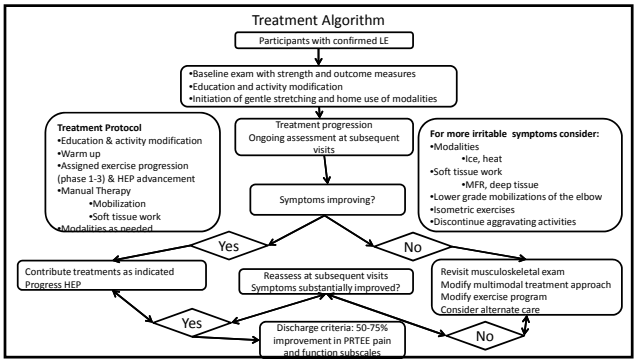

SMS for LE Preliminary Results

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