Golfer's Elbow: A Therapist's Perspective

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The Zero to 18" View

- You are not excited about this Initial Evaluation
- Patient presents with medial elbow pain
- Patient saw an MD who referred them to you
- There is point tenderness at the medial elbow
- Resisted wrist and finger flexion provokes the pain
- Ulnar nerve neuritis, OA, loose bodies have been ruled out
- Decision moment…
  - Heat/soft tissue, splint, patient education, cup, scrap, tape, mobilize, modalities…
  - Upper extremity mechanical evaluation…

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The 20' View

- Movement System Impairment (MSI) approach
- Basic concepts
  - Site of pain is the weak link, often the site of hypomobility
  - Pain is caused by repetitive suboptimal performance of a task
- Investigate and evaluate the system in its entirety
- Address the deficits with focused, customized interventions

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To Be Clear

- I did not go to Wash U PT School
- I do not work for Wash U
- I do not teach for Wash U

- But I am a Wash U groupie

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Tendinopathy

- Pain and dysfunction of a tendon
  - Fabric of the tendon is damaged
  - +/- pain
  - Dysfunction


Contents lists available at ScienceDirect

Best Practice & Research Clinical Rheumatology

journal homepage: www.elsevierhealth.com/berh

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Current trends in tendinopathy management

Tanusha B. Cardoso [a, *], Tania Pizzari [b], Rita Kinsella [b], Danielle Hope [c], Jill L. Cook [b]

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Golf

- A relatively safe sport
- A rotational sport
  - Trained and treated as a complete kinetic chain/linkage system
- Injuries are seen at all levels of play, ages of players
- Most common: cervical and thoracic spine, shoulder, elbow, wrist

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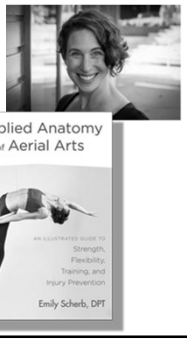
My Path



- Many trips to St. Louis to attend MSI courses
- CSM in Denver in 2020
  - Emily Scherb, PT thecircusdoc.com
    - Aerial Artists, circus performers
- Beyond Mice And Keyboards
  - Apply MSI principles to The Office Athlete
- Jen Dubbert PT and Bob Lind PT Fall 2022
  - Golf From a Movement Perspective

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Golf Injuries

- Low back is common
- Professionals: neck, wrist, hand
- Amateurs/high handicap: elbow injuries
  - Overuse of arms to generate force
  - Underuse of lower body power and trunk rotation
- 10 minute warm up shown to reduce risk of injury
  - Incorporate the entire kinetic chain / linkage system

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Jen Dubbert PT and Bob Lind PT

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Golf Swing

- Synchonized action of many body parts, strength, timing, coordination of movements
- Goal=club head speed
  - 100mph to drive a ball 300 yards
- Phases of Swing

Creighton A, 2022

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Elbow

- Occurs in 4% of professional, 24% of amateurs (Kohn, et al 1996)
- Overuse/overload, faulty swing mechanics, age, equipment
- Lateral epicondylitis is 5x more common than medial epicondylitis
- Right elbow of right handed golfers
  - Repetitive excessive muscular contraction
  - Just prior to impact on the down swing—large wrist flexor burst

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What Is MSI?

- Movement Systems Impairment Syndromes: Shirley Sahrmann, PT, PhD, FAPTA
- Structured, detailed musculoskeletal evaluation
- It is an evaluation and treatment philosophy based on kinesiology, anatomy and physics
- Results of the evaluation lead to treatment interventions
- Focus is on
  - Assessment of movement: patterns, quality, deficits, excesses
  - Assessment of alignment
  - Assessment of muscle performance, strength, length, “stiffness”, neuromuscular control
  - Identify inducers of faulty movement patterns
    - Repeated movements in daily activities
    - Sustained alignments

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What is MSI?

- Pain
  - The site and the cause of pain are often **not** in the same location
  - Pain most often arises from tissues that are stressed by subtle impairments in movement or alignment
  - Majority of musculoskeletal pain syndromes are the result of cumulative microtrauma from stress of repeated movements or sustained alignments (daily activities)
  - Hypermobility of a link in the system is often the pain generator/pain site
- Faulty alignments and movement patterns can be tolerated for some time before they induce pain

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What is MSI?

- An MSI evaluation can be done even in the setting of no complaints
- It gives you information about how the machine is working
  - Elucidate areas of potential concern
- Their research has resulted in the defining of Movement System Impairment Syndromes for each area of the body
  - Collections of kinesiological impairments named for the principal impairment
  - Examples: Scapular downward rotation syndrome, scapular depression syndrome

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Key Concepts

- Path of Least Resistance
  - Relative flexibility
  - Relative stiffness
  - Joint hypomobility
    - What moves is what hurts, usually
- The way everyday activities are performed is critical (repetition/alignment)

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Key Concepts

- You get what you train
- Presence of a muscle does not mean it is being used properly
- It is not "the exercise" but, rather, achieving the desired movement
- Cause and Source
  - Impaired scapular upward rotation; supraspinatus tendinopathy

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- What muscle groups are creating the most tension, which are ineffective
- In a multi-joint system, movement will occur at the joint that moves the most easily. Think: serratus anterior, trapezius, rhomboids, cuff muscles
  - Imagine lateral rotators very stiff. Upon internal rotation, scapula will wing because cuff muscles are stiffer than serratus anterior and lower trap

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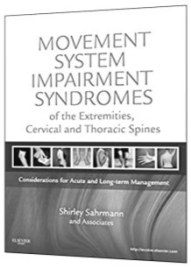

https://pt.wustl.edu/education/movement-system-impairment-syndromes-courses/

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Components of the Musculoskeletal Evaluation

- Alignment
- Movement
- Muscle Length/Stiffness
- Muscle Performance
- Neuromuscular control
- Muscle Strength

- Standing
- Supine
- Prone
- Quadriped
- Sitting

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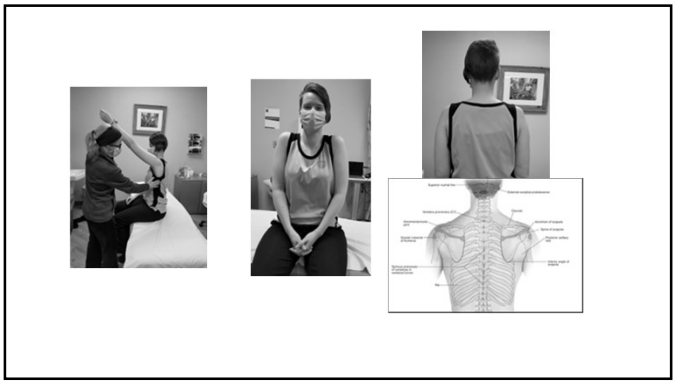

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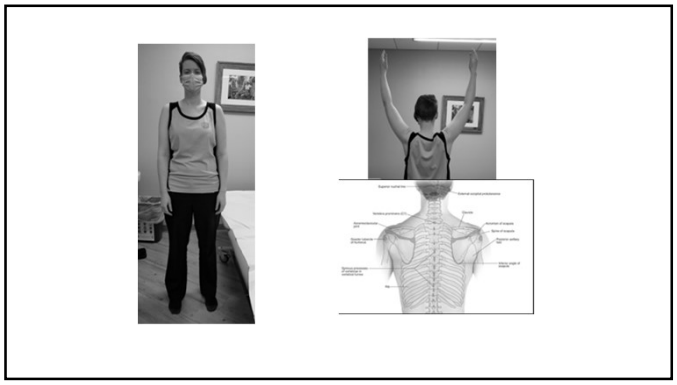

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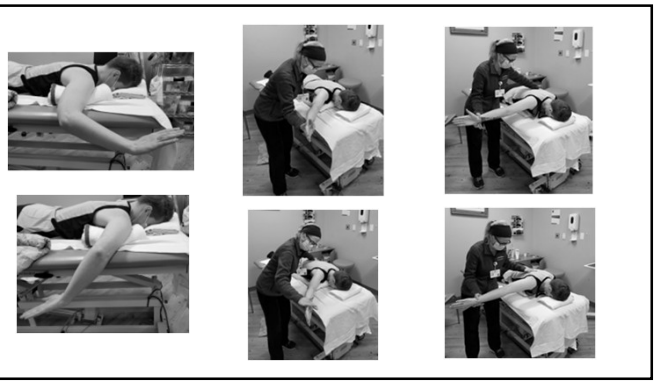

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Muscle strength and Function

- Focus for Medial Epicondylitis
  - Rotator Cuff
  - Serratus Anterior
  - Upper, middle, lower trapezius

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Likely Exam Findings for Medial Epicondylitis

- Standing:
  - With active shoulder flexion
    - Excessive scapular internal rotation, insufficient posterior tilt
- Supine:
  - Pec minor: stiff and short, especially on dominant side
  - Latissimus Dorsi: stiff and short bilaterally
  - Scapulo-humeral muscles: stiff and short. ** Teres major
  - Posterior capsule: stiff
  - Shoulder IR/ER: difficulty with neuromuscular control
  - Cervical: short and stiff extensors and suboccipitals

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Likely Exam Findings for Medial Epicondylitis

- Prone
  - Passive: limited IR/ER
  - Middle and lower trapezius muscle weakness
    - Weak versus difficulty recruiting
- Standing
  - Thoracic flexion
  - Impaired scapular mechanics
  - Limited shoulder ROM
  - Limited cervical ROM
- Quadriped
  - Thoracic flexion
  - Cervical extension (increases with rock back)

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Relevant MSI Diagnoses for Medial Epicondylitis

- Thoracic Flexion
- Thoracic Flexion/Rotation
- Scapular Internal Rotation/Anterior Tilt/Insufficient Upward Rotation
- Scapular Depression/Insufficient Upward Rotation
- Humeral Anterior Glide
- Humeral Superior Glide

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Now What?

- Create a targeted exercise program based on your findings
  - Stretches
  - Strengthening
    - Think about how you are strengthening weak muscles
      - Activate muscles in a shortened position to increase stiffness
    - Just because a muscle is strong doesn't mean it is doing the job
  - Taping: positioning, inhibition, facilitation, nerve mobility
  - Posture
  - Habits

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Forward Wall Slides With Lift Off

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A Few Go-To Exercises

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Special thank you to Ann Porretto-Loehrke, PT, DPT, CHT, COMT, CMTPT

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Helpful Groupings

Muscles that...	Internally Rotate Scapula	Externally Rotate Scapula
	Scapulo-humeral muscles	Serratus anterior
	Deltoid★	Middle trapezius
		Lower trapezius
		Rhomboids

Muscles that...	Downwardly Rotate Scapula	Upwardly Rotate Scapula
	Rhomboids ★	Serratus anterior
	Levator scapula	Upper trapezius
	Pectoralis minor	Lower trapezius

Muscles that...	Anteriorly Tilt Scapula	Posteriorly Tilt Scapula
	Pectoralis minor	Serratus anterior ★
	Biceps brachii	Lower trapezius

Muscles that...	Depress Scapula	Elevate Scapula
	Latissimus dorsi	Levator scapula
		Upper trapezius ★

Muscles that...	Abduct Scapula	Adduct Scapula
	Serratus anterior ★	Rhomboids
	Pec minor (per Ludewig)	Trapezius

★ Most effective muscles

Scapulo-Humeral muscles	Axio-Scapular muscles	Axio-humeral muscles
Supraspinatus	Trapezius	Latissimus dorsi
Infraspinatus	Rhomboids	Pectoralis major
Teres minor	Levator scapula	
Subscapularis	Serratus anterior	
Deltoid	Pectoralis minor	
Teres major		
Coracobrachialis		

Beautifully prepared by Maiko Morotani, PT

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Useful Information Sources for Follow Up

Wash U PT School **pt.wustl.edu**

- Education tab
- Video clips

Learnmovementsystem.com

Maiko Morotani, PT, graduate of Wash U's PT program

- Organizes and runs the MSI courses at Wash U

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Thank You!

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