

Tennis Elbow Prevention and Treatment

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Outline

- Define the problem
- Conservative management options
- The Proliance Hand, Wrist and Elbow way



Define the problem



- Lateral epicondylitis
- Tennis elbow
- Tendinopathy

- Tennis elbow
 - Caused by an overload event which leads to tears (microtrauma) in the extensor carpi radialis brevis tendon
 - Affects 1-3% of the US population
 - Clinical diagnosis

- <https://www.assh.org/handcare/condition/tennis-elbow-lateral-epicondylitis>



Define the problem



The vast majority of patients improve
with conservative management

- <https://www.assh.org/handcare/condition/tennis-elbow-lateral-epicondylitis>



Conservative Management



- Rest
- Activity modification
- Nonsteroidal anti-inflammatory medication
- Physical therapy
- Injections
- Brace options

- <https://www.assh.org/handcare/condition/tennis-elbow-lateral-epicondylitis>



Conservative Management



TABLE I Recommendations for Care in Nonoperative Management of Lateral Epicondylitis*

Clinical Care Recommendation	Grade of Recommendation
Rest, activity modifications, and nonsteroidal anti-inflammatory medications should be considered first-line treatment for lateral epicondylitis	A
Corticosteroid injections do not provide a significant therapeutic benefit when compared with activity modifications or physical therapy in the management of lateral epicondylitis	A
When treating lateral epicondylitis, platelet-rich plasma injections provide similar levels of improvement in pain and function to controls	B
Larger dose botulinum toxin A treatments provide more effective improvements in pain and grip strength compared with smaller doses	C
Physical therapy and rehabilitation may provide improved symptom relief in the short-term management of lateral epicondylitis compared with rest and activity modification	C
Alternative measures such as autologous blood, botulinum toxin type A, and extracorporeal shockwave therapy provide sustained clinical benefit in acute lateral epicondylitis	I

*According to Wright¹⁴, grade A indicates good evidence (level I studies with consistent findings) for or against recommending intervention; grade B, fair evidence (level II or III studies with consistent findings) for or against recommending intervention; grade C, poor-quality evidence (level IV or V studies with consistent findings) for or against recommending intervention; and grade I, insufficient or conflicting evidence not allowing a recommendation for or against intervention.

Marigi et. al. *Lateral Epicondylitis: Critical Analysis Review of Current Nonoperative Treatment*. Journal of Bone and Joint Surgery 2023;11(2):e22.00170

Conservative Management



TABLE I Recommendations for Care in Nonoperative Management of Lateral Epicondylitis*

Clinical Care Recommendation	Grade of Recommendation
<p>Rest, activity modifications, and nonsteroidal anti-inflammatory medications should be considered first-line treatment for lateral epicondylitis</p> <ul style="list-style-type: none">• Rest<ul style="list-style-type: none">• The fundamental problem is overuse leading to repetitive stress• Wrist extension, forearm supination, excessive gripping<ul style="list-style-type: none">• Defined as the backhand stroke• “50% of all people playing tennis regularly will experience pain at the elbow region”<ul style="list-style-type: none">• Engel Tennis: Dynamics of Racket-Grip Interaction Journal of Hand Surgery 1995	A

Marigi et. al. *Lateral Epicondylitis: Critical Analysis Review of Current Nonoperative Treatment*. Journal of Bone and Joint Surgery 2023;11(2):e22.00170



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TABLE 1 Recommendations for Care in Nonoperative Management of Lateral Epicondylitis*

Clinical Care Recommendation	Grade of Recommendation
Rest, activity modifications, and nonsteroidal anti-inflammatory medications should be considered first-line treatment for lateral epicondylitis	A
<ul style="list-style-type: none">• Rest<ul style="list-style-type: none">• Smidt et al. published in the <i>Lancet</i> that 83% of patients had success with a “wait-and-see” approach	

Smidt N, van der Windt DA, Assendelft WJ, Devillé WL, Korthals-de Bos IB, Bouter LM. Corticosteroid injections, physiotherapy, or a wait-and-see policy for lateral epicondylitis: a randomised controlled trial. *Lancet*. 2002; 359(9307):657-62.



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TABLE 1 Recommendations for Care in Nonoperative Management of Lateral Epicondylitis*

Clinical Care Recommendation	Grade of Recommendation
<p>Corticosteroid injections do not provide a significant therapeutic benefit when compared with activity modifications or physical therapy in the management of lateral epicondylitis</p> <ul style="list-style-type: none">• Steroid injections<ul style="list-style-type: none">• A strong anti-inflammatory medication• At 6 weeks, steroid injections have better outcome measures<ul style="list-style-type: none">• Smidt et. al.• Bisset et. al.• At 52 weeks,<ul style="list-style-type: none">• Physical therapy 91% success rate• Wait-and-see 83%• Steroid injections 69%<ul style="list-style-type: none">• Bisset et. al. found 72% recurrence rate	A

Smidt N, van der Windt DA, Assendelft WJ, Devillé WL, Korthals-de Bos IB, Bouter LM. Corticosteroid injections, physiotherapy, or a wait-and-see policy for lateral epicondylitis: a randomised controlled trial. *Lancet*. 2002; 359(9307):657-62.

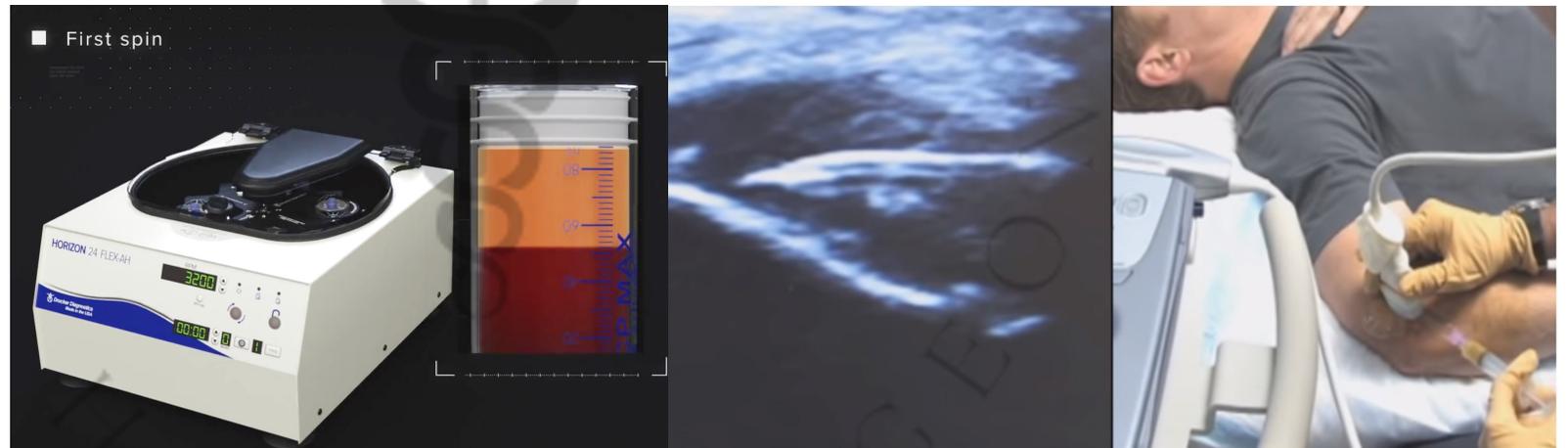


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TABLE I Recommendations for Care in Nonoperative Management of Lateral Epicondylitis*

Clinical Care Recommendation	Grade of Recommendation
<p>When treating lateral epicondylitis, platelet-rich plasma injections provide similar levels of improvement in pain and function to controls</p> <ul style="list-style-type: none">• Platelet-rich plasma<ul style="list-style-type: none">• Obtained by taking a sample of your blood• Concentrated platelets, growth and healing factors	B



Platelet-rich plasma injections. Hospital for Special Surgery. https://www.hss.edu/condition-list_prp-injections.asp
<https://www.arthrex.com/resources/AN1-000401-en-US/acp-max-platelet-rich-plasma-system>



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TABLE 1 Recommendations for Care in Nonoperative Management of Lateral Epicondylitis*

Clinical Care Recommendation	Grade of Recommendation
<p>When treating lateral epicondylitis, platelet-rich plasma injections provide similar levels of improvement in pain and function to controls</p> <ul style="list-style-type: none">• Platelet-rich plasma<ul style="list-style-type: none">• Mishra and Pavelko “93% reduction in symptoms”• Krogh et al. no difference between PRP, steroid and saline at 3 months• Linnanmaki et. al. no difference between PRP and saline at 1 year• Meta-analysis:<ul style="list-style-type: none">• Simental et. al. no difference between PRP and placebo• Niemniec et. al. significant improvements in patient outcome scores	B

Platelet-rich plasma injections. Hospital for Special Surgery. https://www.hss.edu/condition-list_prp-injections.asp
<https://www.arthrex.com/resources/AN1-000401-en-US/acp-max-platelet-rich-plasma-system>



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TABLE I Recommendations for Care in Nonoperative Management of Lateral Epicondylitis*

Clinical Care Recommendation	Grade of Recommendation
Alternative measures such as autologous blood, botulinum toxin type A, and extracorporeal shockwave therapy provide sustained clinical benefit in acute lateral epicondylitis	I
Larger dose botulinum toxin A treatments provide more effective improvements in pain and grip strength compared with smaller doses	C
<ul style="list-style-type: none">• Botox<ul style="list-style-type: none">• Neurotoxic protein• Multiple studies injecting the muscle to paralyze any activity• Cruze et. al. double-blind, placebo controlled<ul style="list-style-type: none">• 51.7% of Botox patients experience >50% relief• 25% of placebo	



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Larger dose botulinum toxin A treatments provide more effective improvements in pain and grip strength compared with smaller doses	C

- Extracorporeal shockwave therapy
 - A pneumatic generator supplies shockwaves to tissues
 - Multiple high level, randomized studies
 - No clinical benefit over control group
- Autologous blood
 - Similar to PRP
 - Multiple high level, randomized studies
 - No clinical benefit over control group



<https://www.sportsmedbiologic.com.au/shockwave-therapy.html>



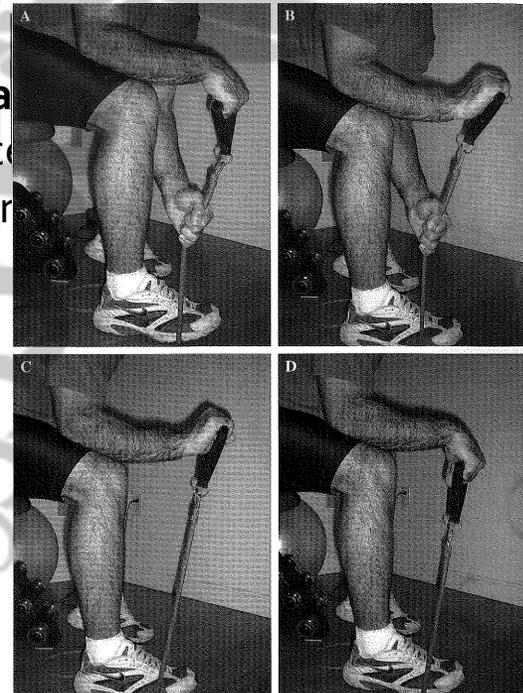
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TABLE I Recommendations for Care in Nonoperative Management of Lateral Epicondylitis*

Clinical Care Recommendation	Grade of Recommendation
Physical therapy and rehabilitation may provide improved symptom relief in the short-term management of lateral epicondylitis compared with rest and activity modification	C

- **Exercise based physical therapy**
 - Under the guidance of a physical therapist
 - **Concentric exercises**
 - Focuses on eccentric



Eccentric exercises

Martinez-Silvestrini et. al. *Chronic Lateral Epicondylitis: Comparative effectiveness of a home exercise program including stretching alone versus stretching supplemented with eccentric or concentric strengthening* J Hand Therapy 2005

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TABLE 1 Recommendations for Care in Nonoperative Management of Lateral Epicondylitis*

Clinical Care Recommendation	Grade of Recommendation
Physical therapy and rehabilitation may provide improved symptom relief in the short-term management of lateral epicondylitis compared with rest and activity modification	C

- **Exercise based physical therapy (EBPT)**
 - Cullaine et al. systematic review demonstrated improvements in grip strength, function and pain.
 - Yoon et al. meta-analysis of 429 patients showed better pain scores and improved strength when EBPT was added to other modalities
 - Smidt et. al. published in Lancet showed a 91% success rate

Smidt N, van der Windt DA, Assendelft WJ, Deville' WL, Korthals-de Bos IB, Bouter LM. Corticosteroid injections, physiotherapy, or a wait-and-see policy for lateral epicondylitis: a randomised controlled trial. Lancet. 2002; 359(9307):657-62.



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- **Lateral Epicondylitis Treatment Regimen**
 1. Get the pain under control
 - NSAIDs, steroid pills, steroid injections
 2. Get the problem to go away
 - Rest
 - Habit Awareness
 - Restore Balance
 - Proximal Strengthening



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- **Lateral Epicondylitis Treatment Regimen**
 - Rest
 - Wrist cockup brace
 - Elbow sleeve



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- **Lateral Epicondylitis Treatment Regimen**
 - Habit awareness
 - Posture
 - Ergonomics
 - Activity modification



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- **Lateral Epicondylitis Treatment Regimen**
 - Restore balance
 - Radial nerve glides

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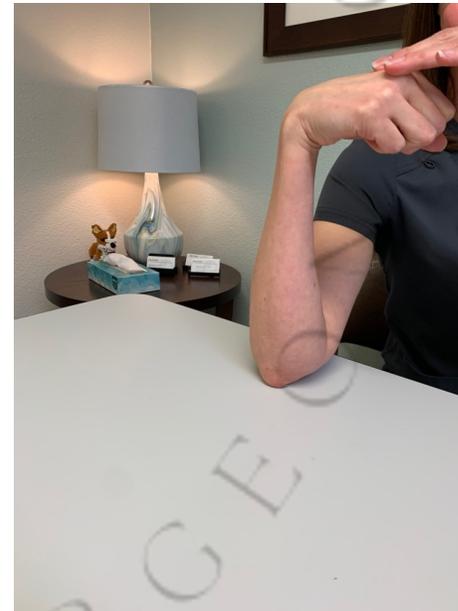
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- **Lateral Epicondylitis Treatment Regimen**
 - Restore balance
 - Wrist flexion/composite flexion



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- **Lateral Epicondylitis Treatment Regimen**
 - Restore balance
 - Wrist flexion/composite flexion
 - Namaste



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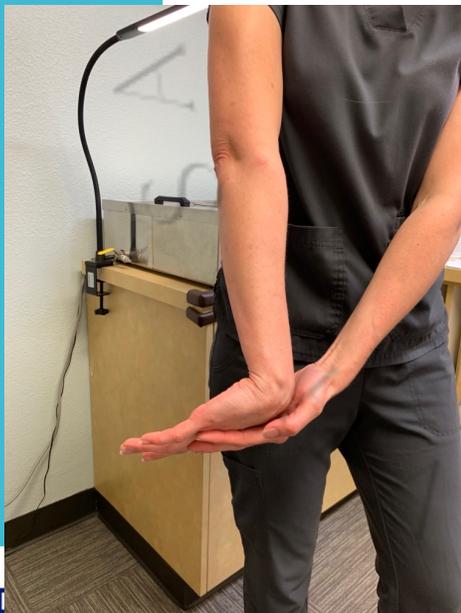
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- **Lateral Epicondylitis Treatment Regimen**

- Restore balance
 - Wrist flexion/composite flexion
 - Namaste
 - Long forearm stretching

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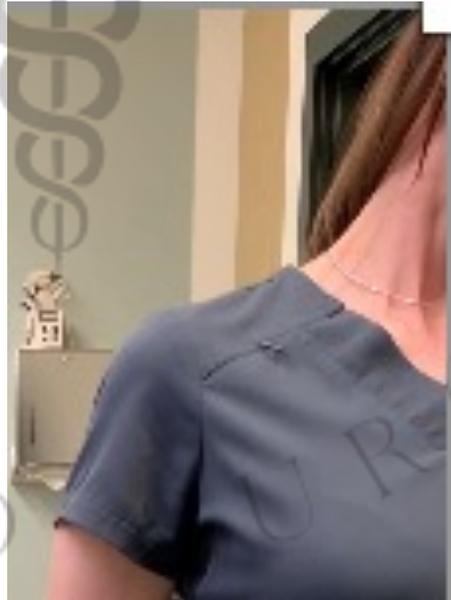
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- **Lateral Epicondylitis Treatment Regimen**
 - Restore balance
 - Wrist flexion/composite flexion
 - Namaste
 - Long forearm stretching
 - Neck rotation/lateral bend/scalene stretch



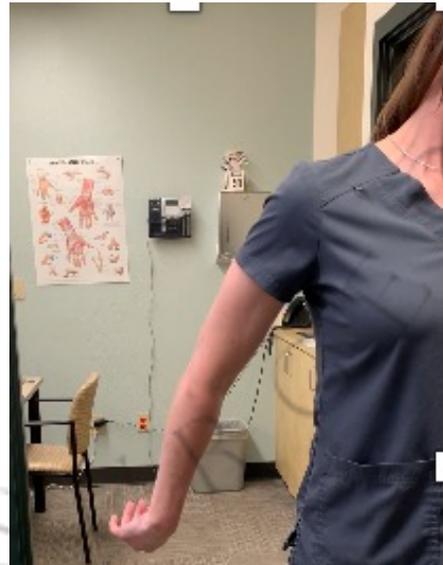
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- **Lateral Epicondylitis Treatment Regimen**
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 - Neck rotation/lateral bend/scalene stretch
 - Pec stretch



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- **Lateral Epicondylitis Treatment Regimen**
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 - Neck rotation/lateral bend/scalene stretch
 - Pec stretch
 - IR towel stretch



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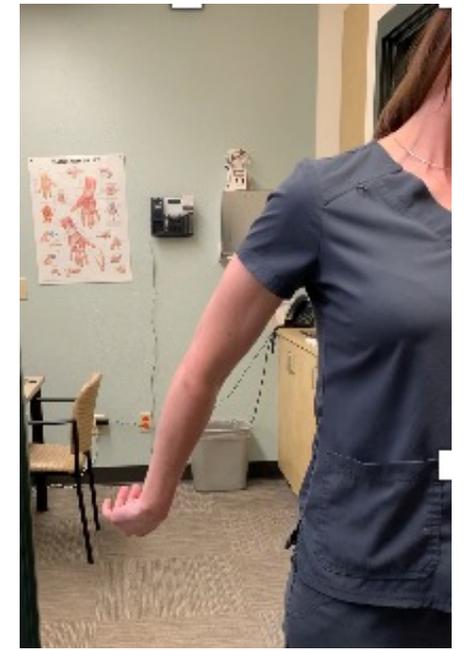
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• **Lateral Epicondylitis Treatment Regimen**

- Restore balance
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 - Namaste
 - Long forearm stretching
 - Neck rotation/lateral bend/scalene stretch
 - Pec stretch
 - IR towel stretch
 - Shoulder extension
 - Backward shoulder rolls



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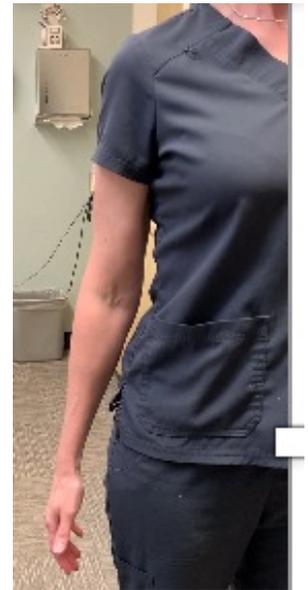
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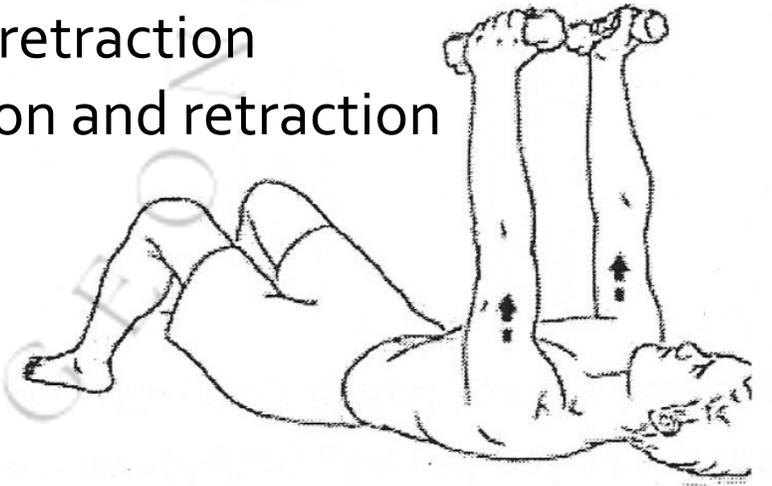
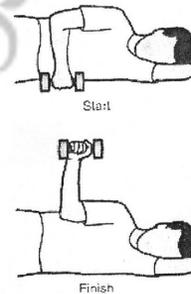
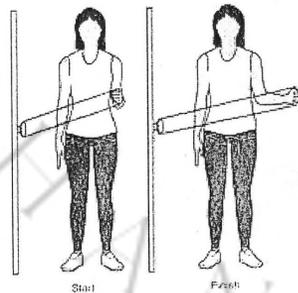
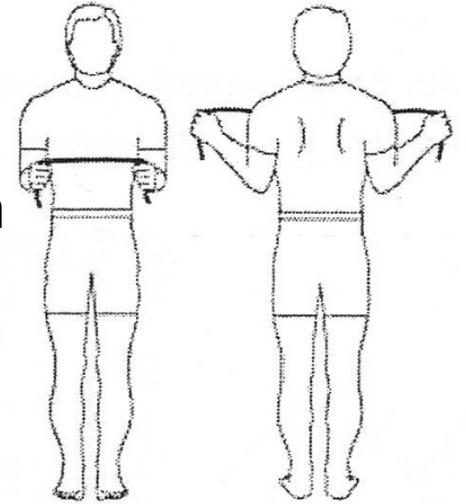
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• Lateral Epicondylitis Treatment Regimen

- Proximal strengthening
 - Scapular retraction
 - The I/T/Y
 - Rotator cuff ER/IR
 - Serratus anterior
 - Shoulder extension and retraction
 - Shoulder external rotation and retraction



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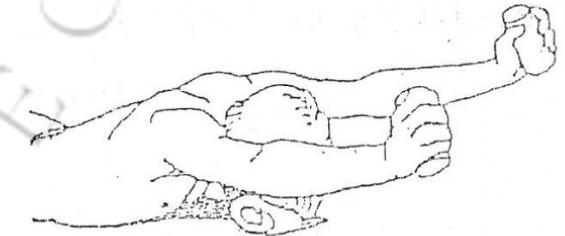
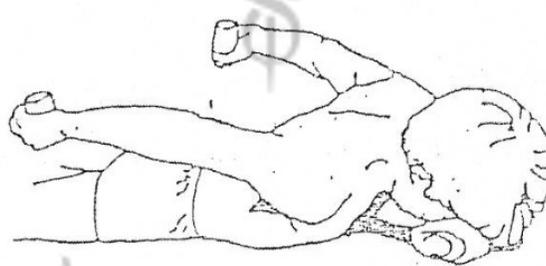
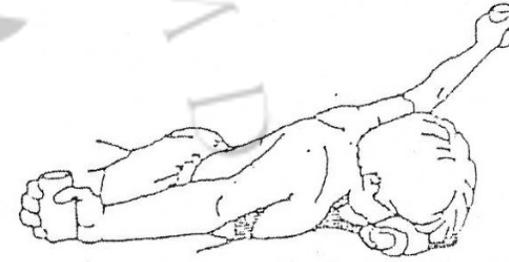
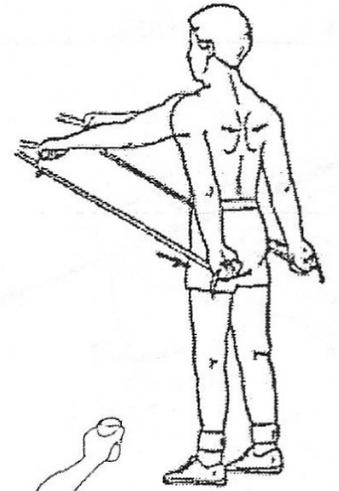
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• **Lateral Epicondylitis Treatment Regimen**

- Proximal strengthening
 - Scapular retraction
 - The I/T/Y
 - Rotator cuff ER/IR
 - Serratus anterior
 - Shoulder extension and retraction
 - Shoulder external rotation and retraction



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- **Lateral Epicondylitis Treatment Regimen**
 - What about the role of?
 - Corticosteroid injections
 - Botox, autologous blood , extracorporeal shockwave therapy
 - Platelet-rich plasma and Tenex

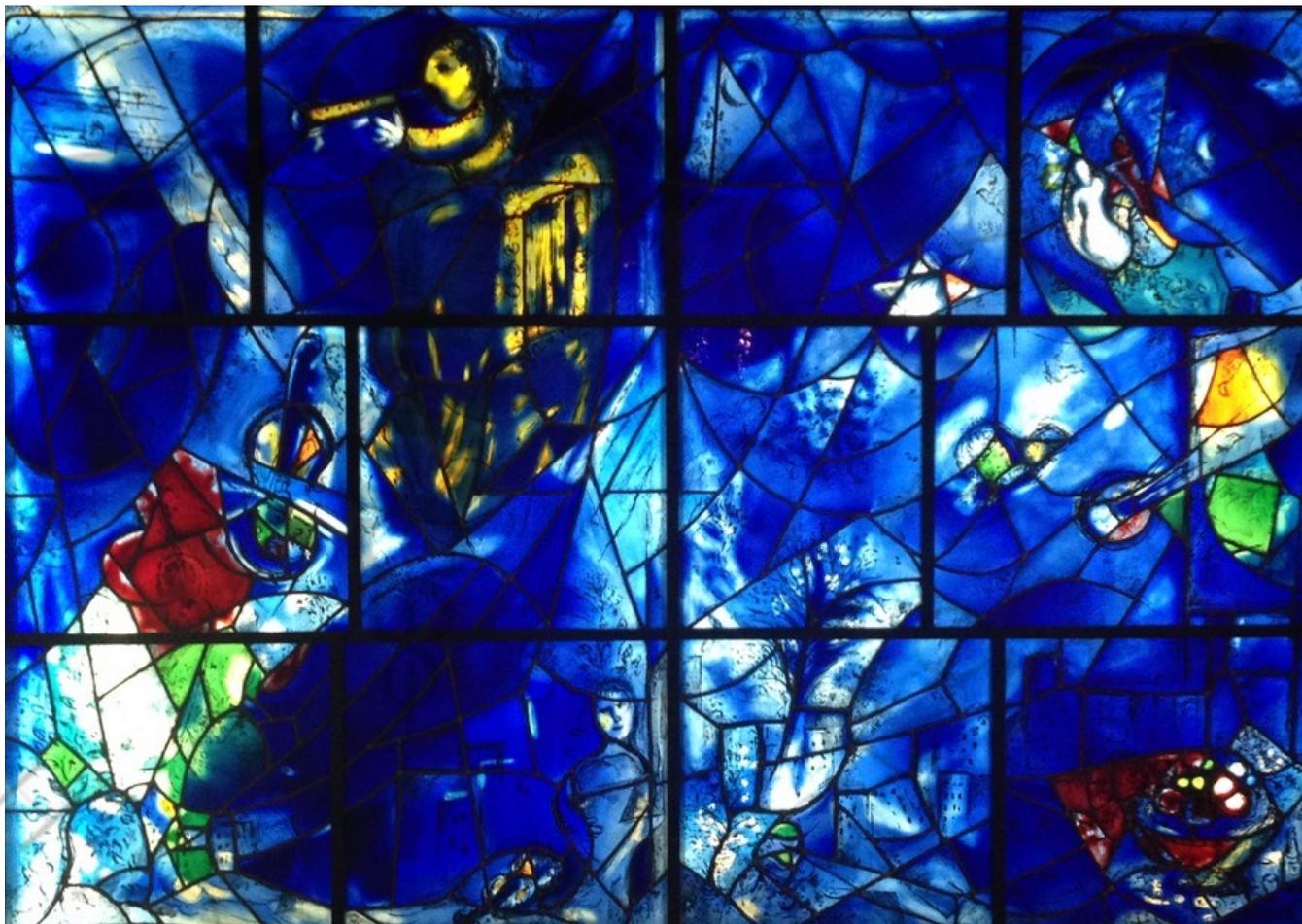


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Thank you!



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