ELBOW LATERAL PAIN NON-OPERATIVE GUIDELINE

The following Lateral Elbow Pain Guideline was developed by HSS Rehabilitation and is categorized into four phases, dependent on patient presentation and symptom irritability. Patients may initially present in any phase. Classification and progression are both criteria-based and patient specific. Linear progression through phases may not be indicated. The clinician should balance appropriate interventions for the optimization of functional activities and achievement of patient goals, while considering symptom irritability and resolution of impairments.

Review the differential diagnosis appendix at the end of the document if uncertain of the symptom generator. The list includes subjective and objective identifiers that will assist in the diagnostic process.

FOLLOW REFERRING PROVIDER'S MODIFICATIONS AS PRESCRIBED

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High Irritability Phase

PRECAUTIONS

- Avoid repetitive lifting or resistance training involving the elbow/forearm/hand/wrist at this stage
- Minimize functional movements/positions that create irritability and/or apply high load/stress to affected area

ASSESSMENT

- Quick Disabilities of Arm, Shoulder & Hand (Quick DASH) – ages 18+
- Patient-Related Tennis Elbow Evaluation (PRTEE)
- Patient-Specific Functional Scale (PSFS)
- Youth Throwing Score - ages 10 -18
- Numeric Pain Rating Scale (NPRS)
- Observation: edema, posture, muscle tone or atrophy
- Cervical spine screening
    - Upper Limb Tension Test
- Sensory screen
- Pressure-Pain Threshold (assessed with an Algometer)
- Girth measurements
    - Joint line and 10 cm below
- Palpation
    - Anconeus, brachioradialis, extensor carpi radialis brevis (ECRB), extensor carpi radialis longus (ECRL), extensor digitorum communis (EDC), intersection area of Abductor Pollicis Longus and Extensor Pollicis Brevis with ECRB/ECRL, Supinator/radial tunnel
    - Lateral epicondyle at common extensor tendon
- Active range of motion (AROM)/Passive range of motion (PROM)
    - Cervical spine, thoracic spine, shoulder, elbow, forearm, wrist, and hand
- Joint mobility
    - Cervical and thoracic spines
    - Radiohumeral and ulnohumeral joints
    - Proximal radioulnar joint
    - Wrist joints
- Strength testing: Manual muscle testing (MMT) &/or dynamometry
    - Proximal musculature
    - Grip Strength (with elbow flexed to 90 degrees and fully extended)
        - Pain-free strength
        - Maximal strength

- Soft tissue quality and flexibility from cervical spine to the hand
- Special Tests:
    - Lateral elbow ligamentous integrity:
        - Varus test at 0 and 30 degrees of elbow extension
    - Lateral epicondylalgia: Cozen's Test, Mill's Test, Maudsley's test
- Neuromuscular control, i.e.scapulohumeral rhythm
- Functional status
- Level of general fitness

TREATMENT RECOMMENDATIONS

- Patient education
    - Avoid lifting objects with the elbow straight and palm facing down or with the wrist in an extended position
    - School, work, and/or home ergonomics
        - Assess aggravating conditions and modify accordingly
    - Use of splinting, if deemed appropriate
        - Counterforce brace with activities or during the day
            - Discuss how to wear counterforce brace: approximately 2-3 fingers from lateral epicondyle; place pad over extensor muscle belly, and make a gentle fist as you tighten strap
                - Patient education to modify the strap throughout day for comfort
        - Wrist cock up splint up. Can be used during the day or night to prevent aggravating movements / postures
    - Postural awareness
    - Pain neuroscience education, if appropriate
- ROM: as indicated based on evaluation
    - Shoulder, elbow, forearm, wrist
- Soft tissue mobilization to address restrictions
    - Proximal musculature
    - Wrist extensors and flexors
- Joint mobility: as indicated based on evaluation
    - Spinal mobilization/manipulation
    - Local joint mobilization, grade I for pain management or mobilization with movement
- Flexibility: as indicated based on evaluation
    - Proximal musculature
    - Wrist extensors and flexors (caution with irritated tendons)
        - Begin with the muscles in a slacked, elbow flexed position and progress to an extended elbow as tolerated
        - Begin with active stretching and progress to prolonged hold stretches
- Strengthening of postural, periscapular and glenohumeral musculature
- Neuromuscular Education, i.e. scapular rhythm training, rhythmic stabilization

- Modalities
    - Ice combined with TENS
    - low level laser
    - Iontophoresis
- Taping techniques: rigid or kinesiology tape, if appropriate
- Dry Needling, if appropriate
- Home exercise program (HEP)
    - Rest, splint if appropriate, ice
    - Patient education and activity modification
    - Address cervical, thoracic and shoulder restrictions
    - Strengthening of proximal musculature
- Cardiovascular conditioning
- Taping techniques: rigid or kinesiology tape, if appropriate
- Dry Needling, if appropriate

CRITERIA FOR ADVANCEMENT

- Reduced irritability during activities like carrying / lifting
- Able to make a submaximal effort fist with moderate pain

EMPHASIZE

- Patient education regarding pain provocation and counterforce brace/splint usage
- Activity modification
- Independence in HEP

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Moderate Irritability Phase

PRECAUTIONS

- Avoid premature or sudden increase in activity level
- Avoid repetitive lifting or resistance training involving the elbow/forearm/hand/wrist

ASSESSMENT

- Quick DASH
- PRTEE
- PSFS
- Youth Throwing Score
- NPRS
- Observation: edema, posture, muscle tone or atrophy
- Cervical spine screen
    - Upper Limb Tension Test
- Sensory screen
- Pressure-Pain Threshold (assessed with an Algometer)
- Girth measurements
    - Joint line and 10 cms below
- Palpation
    - Anconeus, brachioradialis, ECRB, ECRL; Intersection area of Abductor Pollicis Longus and Extensor Pollicis Brevis with ECRB/ECRL; Supinator/radial tunnel
    - Lateral epicondyle at common extensor tendon
- AROM/PROM
    - Cervical spine, thoracic spine, shoulder, elbow, forearm, wrist, and hand
- Joint mobility
    - Cervical and thoracic spines
    - Radiohumeral, ulnohumeral joints
    - Proximal radioulnar joint
    - Wrist joints
- Soft tissue quality and flexibility from cervical spine to the hand
- Strength testing: MMT
    - Proximal musculature
    - Grip Strength (with elbow flexed to 90 degrees and fully extended)
        - Pain-free strength
        - Maximal strength

- Special Tests:
    - Lateral elbow ligamentous integrity:
        - Varus test at 0 and 30 degrees of elbow extension
    - Lateral epicondylalgia: Cozen's Test, Mill's Test, Maudsley's test
- Neuromuscular control i.e.scapulohumeral rhythm
- Functional status

TREATMENT RECOMMENDATIONS

- Patient education and activity modification
- ROM exercises addressing deficits
- Joint mobilization: as indicated based on evaluation
    - Spinal mobilization/manipulation
    - Mobilization with movement
- Soft tissue mobilization to address restrictions
    - Proximal musculature
    - Wrist extensors and flexors
- Postural retraining/awareness
- Strengthening
    - Periscapular strengthening progression
        - Utilize the scapular plane for exercise progressions
    - Initiate activation of elbow/wrist musculature utilizing either isometric or eccentric training based on patient tolerance:
        - Start with short duration isometrics and advance to long duration/intensity
        - Eccentric wrist extension: Begin with bent elbow and progress to straight elbow
- Motor control activities for normalization of scapulohumeral rhythm
- Ice or heat for pain modulation
- HEP progression
    - Modified ADL's and gym or recreational activities based on level of irritability
    - Proximal musculature strength progression
    - Elbow and wrist strengthening initiation
    - Cardiovascular conditioning

CRITERIA FOR ADVANCEMENT

- Pain free self-care activities
- Mild pain with pulling/pushing/lifting/reaching tasks
- Tolerance to tasks that place low loads on the affected tissue
- Full AROM of elbow/wrist with mild or no pain in all planes

EMPHASIZE

- Patient education regarding pain provocation
- Limit load and intensity of activity based on patient tolerance
- Motor control and periscapular strength deficits

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Low Irritability Phase

PRECAUTIONS

- Monitor exercise dosage to prevent flare-ups

ASSESSMENT

- Quick DASH
- Youth Throwing Score
- PRTE
- PSFS
- NPRS
- Observation: edema, posture, muscle tone or atrophy
- Cervical Spine Screening
    - Upper Limb Tension Test (ULTT)
- Pressure-Pain Threshold (assessed with an Algometer)
- Girth measurements, if applicable
- Palpation
    - Anconeus, brachioradialis, ECRB, ECRL, Intersection area of Abductor Pollicis Longus and Extensor Pollicis Brevis with ECRB/ECRL; Supinator/radial tunnel
    - Lateral epicondyle at common extensor tendon
- AROM/PROM
    - Elbow, forearm, wrist and hand
- Joint mobility
    - Cervical and thoracic
    - Radiohumeral, ulnohumeral joints
    - Proximal radioulnar joint
    - Wrist joints
- Soft tissue quality and flexibility along local musculature
- Strength testing
    - Proximal musculature: MMT
    - Grip strength with grip dynamometer (if tolerated)
        - Elbow 90° of flexion
        - Elbow in extension, forearm neutral
        - Elbow in extension, forearm pronated
        - Elbow in extension, forearm supinated

- Special Tests:
    - Lateral elbow ligamentous integrity:
        - Varus test at 0 and 30 degrees of elbow extension
    - Lateral epicondylalgia: Cozen's Test, Mill's Test, Maudsley's test
- Neuromuscular control i.e.scapulohumeral rhythm
- Functional status
- Appropriateness for progression to independent home/gym program or Performance Services

TREATMENT RECOMMENDATIONS

- Patient education
    - Proper advancement for return to activity and prevent symptom recurrence
- ROM exercises addressing deficits
- Joint mobilization
    - Address any deficits as stated in previous phase
- Soft tissue mobilization
    - Address any deficits as stated in previous phase
- Postural retraining/awareness
- Strengthening
    - Multiplanar periscapular strengthening progression
    - Progress from isometric/eccentric to isotonic exercises of elbow/wrist musculature
- Neuromuscular control and sequencing in multiplanar patterns
    - Rhythmic stabilization
    - Resisted/loaded PNF
    - Closed chain stabilization with scapular control
    - Exercise blade perturbations
    - Overhead two hand plyometrics progressing to single arm
- Kinetic cross-linking exercises, e.g. contralateral proximal lower extremity strengthening
- Cardiovascular conditioning
- Initiate recreational/sport skills

CRITERIA FOR DISCHARGE OR ADVANCEMENT TO PHASE 4 (IF RETURNING TO SPORT)

- Pain-free ADL's
- Able to tolerate strengthening exercises in all planes with minimum to no pain
- Good scapular control above shoulder height without pain in the plane of scapula
- If returning to sport consider collaboration with trainer, coach or performance specialist as irritability resolves

EMPHASIZE

- Progressive isotonic loading of tissues
- Multiplanar motor control exercises

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Phase 4: Return to Sport (if applicable)

PRECAUTIONS

- Monitor exercise dosing and avoid overloading

ASSESSMENT

- Quick DASH including Sports Module
- The Youth Throwing Score
- Posture
- Cervical and thoracic mobility
- Soft tissue quality and flexibility
- Scapulothoracic coupling
- Functional Strength
    - The Athletic Shoulder (ASH) test
    - Single-Arm Seated Shotput Test
    - Isokinetic testing
    - Handheld dynamometry of the proximal arm
    - Upper Quarter Star Excursion Test
    - Closed Kinetic Chain Upper Extremity Stability Test
- Quality of movement during sport-specific activities
- Cardiovascular endurance
- Overall fitness level

TREATMENT RECOMMENDATIONS

- Progress scapulothoracic control exercises in a variety of positions
- Progress isotonic exercises to higher loads as indicated
- Closed kinetic chain progression exercises
- Single arm sport-specific plyometric drills
- Increase endurance and activity tolerance
- Progress total body multidirectional motor control and strengthening exercises to meet sport-specific demands
- Collaboration with trainer, coach or performance specialist

CRITERIA FOR RETURN TO SPORT

- Independent in appropriate return to sport program, e.g. Advanced Thrower's 10 Program
- Movement patterns, strength, flexibility, motion, power and accuracy to meet demands of sport
- Pain-free sports activities

EMPHASIZE

- Safe return to sport
- Training of skills in specific performance tasks

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Appendix: Lateral Elbow Pain Differential Diagnosis

Posterior Interosseous Nerve Syndrome

- Pain typically located (4 fingers) distal to the lateral epicondyle
- Weakness of finger extensors
- Wrist extension is possible, but only with a dorso-radial direction
- Thumb extension elicits pain at the lateral epicondyle of the humerus
- No sensation loss
- Provocative test: resisted forearm supination with compression at Arcade of Frohse

Radial Tunnel Syndrome

- Deep aching distal to the lateral epicondyle
- Pain at the belly of the brachioradialis
- Pain with repetitive wrist flexion, and/or pronation
- No motor or sensation loss
- Provocative test: resisted forearm supination

Fibromyalgia

- This is a widespread disorder of pain processing and perception, i.e. allodynia, hyperalgesia. The patient will have elbow pain in addition to tenderness on the “fibromyalgia 18 tender points” and many other symptoms, including:
    - Sleep disruptions
    - Chronic fatigue
    - Problems with memory and thinking clearly (sometimes called "fibro fog")
    - Problems with depression and/or anxiety
    - Overlapping conditions such as irritable bowel syndrome, restless leg syndrome, migraines, and others

Cervical Radiculopathy

- Clinical Prediction Rule
    - + Spurling's test
    - + ULTT A test
    - + Distraction test
    - Involved side cervical rotation < 60°
- Refer to Wainner et al 2003 for diagnostic accuracy data of this CPR

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