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## **Australian Association of Massage Therapists 2011 National Conference Cairns Australia**

### **Standing on the shoulders of Ancient Traditions to build a modern, effective approach to the treatment of Lateral Elbow Pain**

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#### **Lateral Elbow Pain**

Could be one isolated site of dysfunction OR a number of inter-related contributing dysfunctional components

The dysfunctional site may be just the victim of a larger culprit somewhere else.

#### **It is vitally important to assess & address the causative factors**

eg Local myofascial overload from wider biomechanical issues

Cervical spine stress from postural abnormalities.

#### **Overview**

We will examine 3 possible sites of dysfunction

1. LOCAL Local lateral elbow myofascial dysfunction
2. NEURO-DYNAMICS Adverse Radial nerve neuro-dynamics
3. CERVICAL Cervical spine segmental dysfunction

#### **1. LOCAL DYSFUNCTION**

#### **Getting Oriented – Surface anatomy of the Forearm**

##### **Elbow**

Lateral epicondyle / Supracondylar ridge / Head of the Radius / Radial nerve

Brachioradialis / Extensor Carpi Radialis Longus and Brevis / Supinator

##### **Wrist**

Radial Styloid process, wrist joint line

#### **Differential diagnosis**

Extensor Carpi Radialis Brevis tendinopathy, Supinator dysfunction, Radial tunnel syndrome

Pathology of the extensor attachment to the epicondyle (extensor enthesopathy)

#### **Establish the Stage of Pathology, Acute or Chronic, has major impact on management**

#### **Assessment:**

Vital to reproduce pain so you have an assessment point of reference so you can begin treatment and monitor that treatment so you know you are restoring ideal function

Aim to find an \* sign (\* sign defined as that movement, test or site of palpation that reproduces the symptoms most clearly)

#### **Active ROM** “Stop if any pain is elicited and show me the exact site of the pain”

Assess the unaffected side first

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Lots of possible options, we will focus on the movements most likely to reproduce pain and demonstrate dysfunction

	Affected side L/R	Unaffected side L/R	Comments
Wrist extension (70°)			
Wrist radial deviation (20°)			
Forearm Pronation (70°)			
Forearm Supination (85°)			

If AROM is restricted can perform any of these movements passively to assess if the range is available in the relevant joint

**Passive ROM in the opposite direction to assess tissue under stretch conditions and to determine PROM** “Stop if any pain is elicited and show me the exact site of the pain”

	Affected L/R	Unaffected L/R	Comments
Wrist flexion digits neutral (75°)			Where motion is occurring?
Wrist flexion digits flexed			
Elbow extension wrist in neutral (0°) wrist in flexion (0°)			

**Resisted Testing** “Stop if any pain is elicited and show me the exact site of the pain”

	Strong/Weak	Pain/No Pain	Comments
Elbow flexion (from 90°) thumb up			
Elbow extension (from 90°)			
Wrist extension in 90° elbow flexion			
Wrist radial deviation			
Forearm Supination			
Grip test: p lightly grasps the therapists hand in a “hand shake” position Slowly increase pressure			

### Local Treatment:

#### Restore ROM and myofascial mobility

Aim to reduce palpable abnormalities in associated myofascia (eg ECRB) eg focal (trigger) points structural thickening to restore ideal function, painfree contraction and ideal length

Reassess \* sign after each technique

**The Suite of effective soft tissue tools** Assess for target tissue then treat. Be systematic, Thorough and precise

- A. L / T Gliding ECRB
- B. DIP Assess for longitudinal bands then focal points within the bands. Treat in appropriate degree of tension
- C. Myofascial tension technique MFTT: To appropriate layer 1, 2, 3 or 4

1 = Superficial fascia between skin and epimysium of the muscle

2 = The epimysium of the muscle

3 = Thickened local site WITHIN the muscle

4 = The main stress distribution sites, epicondylar region and the fascial septa between adjacent structures

#### Treat in

1. Neutral
2. Through range passive or active wrist flexion/extension
3. In end range wrist flexion

### **Additional regions:**

Fascial band between the Lateral epicondyle and the Deltoid tuberosity

Just proximal & just distal to head of radius. Place extensor tissue under ideal tension by adjusting the amount of wrist flexion you place the wrist in.  
Pronate & supinate wrist while applying tension to the target tissue

At the true wrist joint: Assess that flexion is occurring where it should, at the wrist joint and the mid carpal joints. Very often all the motion occurs at the mid carpal region.

### **Self Management**

Ice regularly if acute (even for 3-5 mins)

Wear a forearm (tennis elbow) strap to deload insertion to bone

Seek technique coaching if related to sporting activity

Self massage especially in wrist flexion to ECRB.

Theraband "Backhand lunge" 3 X 5 to 3 X 15

Eccentric resisted wrist extension can be helpful in the chronic degenerative stage of tendinopathy.

## **2. NEURODYNAMICS**

Adverse Radial nerve neuro-dynamics

### **Definition**

*"Clinical neurodynamics is essentially the clinical application of the mechanics and physiology of the nervous system as they relate to each other and are integrated with musculoskeletal function"* Shacklock 2005 p2

### **Why is testing for NEURODYNAMIC Dysfunction Important?**

1. To determine if there is a neurodynamic dysfunction present that contributes to the lateral elbow pain
2. Utilise the test as an assessment - reassessment tool to monitor the effectiveness of any treatment performed,

**Do not however expect changes to always occur immediately post treatment.**

3. Allows for prompt referral to take place to another practitioner for specific diagnosis if you believe it is needed. There are a number of Physiotherapy clinics that specialise in Neurodynamic dysfunction

### **Cautions:**

**Significant injuries** especially trauma to the head, neck and arm

**Conditions:** such as Diabetes, AIDS & MS can all affect the response of the neural system

#### **High irritability:**

Symptoms are easily provoked

Symptoms are severe

Symptoms take a long time to settle once provoked

### **Contraindications**

Severe Neurological symptoms, eg from Nerve Root Compression, where active spinal movements reproduce distal (Limb) symptoms easily

Unremitting severe pain

## Procedure

Perform test on the asymptomatic or less symptomatic side first.  
Starting position and sequence of movements should always be consistent.  
Repeat the test a number of times before recording a measurement.

## Classification of Neurodynamic Responses

Neurodynamic tests can be normally positive as they evoke “a normal response” (neurogenic symptoms) in asymptomatic subjects.

You are looking to assess / record:

- If the presenting symptoms are reproduced
- The ROM when symptoms are reproduced – do they occur unusually early in the ROM of the testing procedure
- If the practitioner feels adverse tension / restriction to the passive testing procedure

The next step is to gauge the response to a “differentiating manoeuvre”  
One which places more or less tension on the neural structure being tested.

If the response is negative, that is, the symptoms remain constant during a differentiating manoeuvre, it is more likely that the symptoms arose from a local musculoskeletal disorder.  
If the symptoms increase or decrease then adverse neurodynamics exist.

### Practical Example:

Abduct arm to 90°                      IR GHJ / Pronate forearm                      Flex the wrist  
Are your symptoms reproduced?

Now laterally flex your neck away and toward - do the symptoms increase / decrease.  
If the symptoms stay the same – local pathology of the forearm  
If the symptoms alter - Adverse Radial nerve neuro-dynamics exist

### The Neurodynamic Test specifically for the Radial nerve

**RADIAL NEURODYNAMIC TEST 1** (Shacklock 2005) the test is also known as the **UPPER LIMB NEURODYNAMIC TEST 2 (RADIAL NERVE)** Butler 2000

**INDICATION:** Suspicion of a neural component to the Lateral elbow pain.

**PATIENT POSITION:** Supine, patient at side edge of table such that the acromion is lateral to the table edge, trunk & legs neutral.

**TECHNIQUE:** Start by depressing scapula to R1 with your hip while supporting the forearm and hand in 90° elbow flexion

1. Elbow extension
2. Gleno-humeral internal rotation & forearm pronation
3. Wrist Flexion
4. Gleno-humeral abduction

**NORMAL RESPONSE:**

Pulling in the lateral elbow region extending into the forearm and back of wrist.

Range of motion of asymptomatic patients in shoulder abduction is 40 - 45°

Yaxley & Jull (1991) as quoted in Shacklock (2005) p130.

5. If symptoms are reproduced or you note an early onset of resistance perform a differentiating manoeuvre – keep the arm and wrist at this point and ask for Head and Neck lateral flexion away “Do the symptoms increase and decrease?”

If so Adverse Radial nerve neuro-dynamics exist. The method for determining WHERE the restriction is present is to palpate along the radial nerve pathway for myofascial thickening – treat the area with MFTT and reassess.

RADIAL NEURODYNAMIC TEST 1		
Unaffected Side L R ROM / Symptoms	Affected Side L R ROM / Symptoms	Comments Eg Symptoms reproduced at 20° abduction increased with Cx LF away

Treatment to some common areas of myofascial / neural “impingement”

## 1. TREATMENT TO THE INTER-SCALENE TRIANGLE

**Palpate:** SCM Sternal Head and Clavicular head  
Scalenus Medius lateral to SCM Clavicular head (palpate transversely from TP’s)  
Ask the patient to Inhale – Can you feel the muscle contract at the final part of the inspiration

Assess the **Scalenus Medius** and its fascial mobility and interface with the Brachial Plexus – which layer /s are involved? Superficial layer or the Deeper Layers

- A. Treat With MFTT Longitudinal and Transversely with no Cervical movement
- B. Progress to treating while passively Laterally flexing and / or rotating neck away



Starting Position



Finishing Position

Longitudinal & Transverse MFTT

**Reassess:** RADIAL NEURODYNAMIC TEST 1

## 2. THE COSTOCLAVICULAR INTERVAL

Bordered by the Clavicle and the First rib.

**Treatment:** MFTT - Begin by ENGAGING tissue between the Clavicle and the First rib with Gleno-humeral joint in Horizontal Flexion.

Now Move supported thumb Medial to Lateral while passively Horizontally extending the arm

Repeat with the Scapula in slight elevation

**Reassess:** RADIAL NEURODYNAMIC TEST 1

### 3. THE SUB-CORACOID OR AXILLARY INTERVAL

The space under the Pectoralis minor muscle and the Coracoid process.

**Treatment:** Begin by ENGAGING tissue Medial to Coracoid process with Scapula SUPPORTED in Protraction

Treat using MFTT Medial to Coracoid process while the patient actively Retracts Scapula

Supine MFTT to Medial Upper-Arm fascia Lateral to Coracoid process while Passively Taking Gleno-humeral joint from Flexion to Extension

**Reassess:** RADIAL NEURODYNAMIC TEST 1

### 4. TREAT ALONG THE NEURAL PATHWAY OF THE RADIAL NERVE

For example

The Fascial window between Long Head of Triceps and Teres Major

The Fascial window between the Lateral head of the Triceps and the Brachialis

#### Self Management;

Neural "Self tensioner" see Shacklock

Starting point: Abduct arm to 90°

Internally Rotate GHJ / Pronate forearm

Flex the wrist and laterally flex the neck away to provide tension throughout the radial nerve pathway, return both to neutral and repeat. Begin cautiously

Neural "Self slider" see Shacklock

Starting point: Abduct arm to 90°

Internally Rotate GHJ / Pronate forearm

Flex the wrist keeping the head and neck still.

Now return the wrist to neutral while laterally flex the neck away.

Now return the neck to neutral while flexing the wrist.

This movement slides the radial nerve within the myofascial system and provides mobilization between the interface between the two systems.

### 2. CERVICAL DYSFUNCTION

Cervical spine segmental dysfunction

#### Getting Oriented – Surface anatomy of the Cervical spine

Spinous process C7

Transverse processes C7

Facet joint C 6/7 5/6 4/5

#### Dysfunction at the Cervical segments can affect:

The sensory nerve information travelling from the periphery into the spinal cord


Dermatome C 6

The motor nerve information travelling from the spinal cord into the periphery

Myotomes C 6 nerve root

#### Practical exercise

**Mobilisation of the intrinsic Cervical myofascia to restore Spinal segmental movement.**

<p><b>Prone:</b> Engage intrinsic Cervical myofascial tissue either side of the spinous processes at T1/C7 and provide tension in an oblique (45°) direction. Continue to treat segment by segment C6/7 C5/6 C4/5</p>	
<p>Progress treatment by adding Cervical Rotation away.  Place Forehead in Linked fingers and turn head 10 - 20°</p>	

**References:**

Butler DS, 2000, *The Sensitive Nervous System*, Noigroup Publications, Adelaide

Netter F, 2006, *Atlas of Human Anatomy 4<sup>th</sup> edn*, Saunders Elsevier, Pennsylvania

Shacklock M, 2005, *Clinical Neurodynamics - A New System of Neuromusculoskeletal Treatment*, Butterworth-Heinemann, Australia

[www.noigroup.com](http://www.noigroup.com) A great web resource for neurodynamic issues.

[www.neurodynamicsolutions.com](http://www.neurodynamicsolutions.com) A great resource