

# **Thoracic Facilitation**

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## **History:**

Four weeks prior to the assessment, a 28 year old right dominant female physiotherapist (Ms. R.) started experiencing a deep ache in the right arm (medial aspect of the cubital fossa) during a 13 km run. She promptly stretched this out with a combination of biceps, triceps, and wrist extensor and flexor stretches. No further symptoms were felt immediately after the stretches.

With continued running the symptoms would appear and be more pronounced during longer runs. If stretched out as above as well as holding the water bottle with the left hand, the symptoms could be controlled. She initially held the bottle in the right hand.

Two weeks later, the client started noticing a pronounced ache in the same region of the arm. The stretches seemed to be less effective and the client also noticed that lifting the arm above her head would aggravate her symptoms.

Since this time, her symptoms were ISQ; however, she had been more conscious of the symptoms with her work and running.

Prior to her assessment, she had just finished a half marathon and had noticed that she had intermittent right trapezius pain. This last symptom had persisted to the time of assessment.

No complaints with respect to paraesthesia or numbness and had no previous history of arm or neck pain. No previous history of trauma.

Her general health was good and she reported taking no medication.

## **Objective:**

### **Observation/Palpation:**

Ms. R. was extended in the thoracic spine with the apex at the T4 level. Her cervical lordosis was within normal limits and posterior symmetry was equal in the cervical and thoracic spine.

Slight depression was noted in the right trapezius muscle and scapula. The right cubital fossa on full extension had a raised striated appearance on the medial aspect which felt like muscle tissue on palpation.

The thorocolumbar region and lumbar spine were normal in appearance.

PA pressures of the thoracic spine produced tenderness from T1 to T9 with the tenderest segment being T4. This was then sustained to see the effects which then began to reproduce the deep cubital fossa pain.

Increased tonicity on palpation of the paraspinals was noted bilaterally along the mid thoracic spine (right more than left).

**Mobility Testing/ROM:**

Active and passive range of motion of the wrist and elbow were full but slight tissue tension at the end of both wrist extension and elbow extension. This reproduced a slight comparable symptom. The symptoms were more pronounced on combined wrist and elbow extension.

The only comparable symptom reproducible in the shoulder was on full shoulder flexion with overpressure.

Cervical range of motion and PIVMS were within normal limits with no reproduction in symptoms. Stability testing was normal.

Mobility of the Thoracic Spine was much limited into flexion with a “tight” feeling at the end of range (~1/2 range). Extension produced pain in the cubital fossa on the right only.

PIVMs of the thoracic spine were equally limited throughout in a consistent pattern of flexion, left side flexion, left rotation. Unilateral flexion PAMs reproduced soreness at each level. PIVMs into right unilateral extension at each level reproduced local pain and T3-T5 PAMs into extension at these levels reproduced pain into the cubital fossa on the right.

**Length/Tension Testing:**

Comparable findings included:

Erector Spinae: Tonic and truly short on the right more than left

Upper Fibers of Trapezius: Lengthened with decreased tone

Common Wrist Extensors: Hypertonic but not truly short

Deep Neck Flexors: Good Tonic Endurance and Pattern

**Neurological Testing:**

No neurological signs or symptoms

**NeuroDynamic Testing:**

Positive Neurodynamic testing of the median nerve with a reproduction of right upper fibers of trapezius ache.

Positive Neurodynamic testing of the ulnar nerve with a reproduction of right cubital fossa ache.

Neck Flexion Testing – Negative

Full Slump – negative but reproduced thoracic tightness

Sympathetic Slump (slump with neck in full extension) – positive for arm pain

**Analysis:**

The presence of the arm symptoms and increasing nature with such a pronounced thoracic extension begs the question as to whether facilitation of the thoracic spine is indeed the cause of her arm symptoms.

To determine this, a ruling out of other more obvious causes is essential. Firstly, are the arm symptoms simply an overuse phenomenon due to running and holding a water bottle? She did get initial relief by transferring the water bottle but the relief was not long-term and the symptoms then became more constant in nature. No other activity

of the arm, despite being an active physiotherapist (a truly contact sport), seemed to cause a complaint.

We then need to think of the neck due to the nature of the symptoms and the reproducibility with the neurodynamic testing. This is not likely due to the fact that the cervical spine in isolation had no dysfunction with it. We would expect increased tone and/or reduced mobility.

This leaves us with the thoracic spine and all its wonders. We have a runner with an extended posture who gets pain in the arm with longer running. This becomes more constant over time with continued exercise. There is thoracic tenderness which, although seen quite often, is actually a sign of dysfunction. The mobility of the thoracic spine out of the extended position is decreased and when the extended position on the right is increased, a reproduction of the arm symptoms existed. The slump is negative as we are looking to reproduce the arm symptoms; this is different when we add the slump position with full cervical extension (this produces a lengthening of the sympathetic nervous system as the ganglia of the cervical spine are lengthened in extension).

The above information suggested that this individual had increased thoracic facilitation of the right side in the mid thoracic region. With an extended spine, in running and with deeper breathing patterns, this produces even further extension of the mid-thoracic spine. This would further irritate the sympathetic chain due to its proximity to the ribs. This likely added tension to the neurodynamic system which then caused facilitation of the myofascial system supplied by these nerves.

### **Treatment:**

The first treatment consisted of education of posture and its effect on the neural system. As Ms. R. understands more of her postural habits, she could control the symptoms with greater ease. Ms R. was also shown a general thoracic flexion exercise in sitting that she was to do 10 times in a row 5-6 times a day. This was never to go further than a slight thoracic feeling of stretch. No latent pain was to exist.

Since she had been running and was ISQ to this point, I decided to not take her off running so that changes in her other exercises did not mask treatment effects.

One week later Ms.R. reported that her pain was 40% decreased. The thoracic spine had begun to be sore on an intermittent basis but that this was minor.

I then began to mobilize the thoracic spine into unilateral flexion on the right using PIVM's and PAM's. Paraspinal massage to increase blood flow to the region was done and a home programme of mobility into right unilateral flexion was given.

Five days later she stated that the arm symptoms were almost entirely gone and that there was no appearance of the striated muscle fibers seen earlier. Her UFT ache still existed but only with a full day of heavy activity. Continued mobilization as above was continued and we added neurodynamic flossing of the upper quadrant in a supine position for the median nerve. This was given as a home programme.

I followed this client for 2-3 visits as per my last session with continued improvement. On our last visit, she had no further symptoms. The neurodynamic testing was normal as was the sympathetic slump. The tone was normalized in the upper extremity as in the thoracic spine although the thoracic segments T3-T5 were still tender on palpation with a PA pressure.

Although this individual stopped doing her “physiotherapy” exercises within a month after our last visit, she has continued to do well with no recurrence of symptoms. On informal follow up over a year later, she stated that she remained symptom free and still ran and did all her activities but maintained that she was paying more attention to her posture.

**Conclusion:**

This is an interesting case as I believe that it allows us to view the complexity that the Thoracic Spine really is (especially in the presence of facilitation). As a therapist, I chose one avenue of treatment that worked well on this individual. I think that the therapist who may have chosen manipulation and exercise would probably have gotten a very similar response. I think that clinical reasoning in this case prevented a lot of needless treatment or needless change in activity level (both which can cause a client to become frustrated) and facilitated (no pun intended) quicker recovery.

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