Learning Objectives

MedBridge Education
Neurodynamic Techniques: Upper and Lower Extremity
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Chapter 1: Terminology, ANT Sensation, and Recommendations

- Gain a basic understanding of the different terminologies used in literature when describing symptoms related to neurodynamic techniques (NDT).
- Explain what neural tension feels like.
- Recognize that symptoms related to common orthopedic injuries can be related to adverse neural tension (ANT).
- Discuss how ANT symptoms can occur beyond the chronic pain populations.
- Discuss how athletic performance limitations can be related to ANT.
- Discuss how neurodynamic assessment techniques put neural tissues under tension.
- Discuss how NDT are progressive and sequential in nature.
- Gain an understanding of how NDT scientific literature is limited to compression pathologies.

Chapter 2: Literature

- Discuss how Maitland, Elvey and Butler identified and described NDT in the literature.
- Gain an understanding of the theory of neurodynamics.
- Explain the goal of the neurodynamic assessment techniques.
- Identify that nerves need to have good mechanical interface/move freely with their surrounding tissues for optimal related range of motion to occur.
- Explain that nerves that are not brought under tension are crimped and should be able to move.
- Discuss how athletes are specifically at risk to develop ANT symptoms because they often perform their sports activities repetitively, often hold positions at the end of their range of motion and are often exposed to very heavy loads.
- Identify how populations that engage in work related repetitive movements endure consistent or repetitive tissue pressures, movement dysfunctional patterns or acute high pressures on tissues also are at risk to develop ANT symptoms.

Chapter 3: Physiology/Pathophysiology

- Discuss how nerves adapt to mechanical loads through elongation, sliding, cross-sectional changes, angulation and compression.
- Discuss how the failure of nerves to adapt to mechanical loads will most likely develop edema, ischemia, fibrosis and hypoxia.
- Identify the different stresses neural tissues can be exposed to, including immobilization, lengthening, compression, and repetitive low level stresses.
- Explain the concept “tension points” and its relationship to ANT symptoms.
- Explain the concept “double crush syndrome” and its relationship to ANT symptoms.

Chapter 4: Testing

- Discuss what happens during neurodynamic or also called neural tension tests (NTT).
- Identify what the purpose is behind neural mobilization techniques.
- Explain the hypothesis and rational underlying the neural mobilization techniques.
- Gain an understanding of the clinical presentation and the author’s personal findings and observations of patients with ANT.

Chapter 5: Throwing Injuries and ANT

- Discuss the relationship between throwers medial elbow pain and ANT.
- Discuss the dynamics of the ulnar nerve at the elbow, its risk for ANT and throwing mechanics.
- Identify the relationship between chronic medial elbow pain, the surrounding tissues, pathologic, compressive and anatomical factors and forces upon the tissues.
- Identify the relationship between the selections of surgical techniques and ANT when the ulnar collateral ligament is repaired in baseball players.
- Discuss the clinical presentation related to medial elbow pain and ANT in the throwing athlete.

Chapter 6: Assessments and Treatments

- Perform the upper extremity NTT techniques.
- Recognize the anatomical locations and track of the ulnar, median and radial nerves.
- Perform the upper extremity neural tension manual therapy techniques.
- Perform and discuss the teaching techniques for the upper extremity neural tension self-treatment/home exercises.
- Identify the contraindications of when the upper extremity neural tension self-treatment/home exercises should not be performed by the patient.
- Discuss why the author uses the Revered Slump Test to evaluate lower extremity ANT tests.
- Discuss what the Slump Test and the Reversed Slump Test tests for.
- Discuss why when patients have symptoms in the cervical, thoracic and/or lumbar spine, glute, thigh, lower leg, heel or foot should also be evaluated in their symptomatic area.
- Perform the lower extremity, sciatic and femoral nerve NTT techniques.
- Identify the anatomical locations and track of the sciatic, tibial, personal, sural, plantar and femoral nerves.
- Perform the lower extremity, sciatic and femoral nerve neural tension manual therapy techniques.
- Perform the teaching techniques for the lower extremity, sciatic and femoral nerve neural tension self-treatment/home exercises.
- Identify the contraindications of when the neural tension self-treatment/home exercises should not be performed by the patient.
Chapter 7: Case Studies

- Identify why a throwers’ medial elbow pain complaints may be related to ANT.
- Discuss how sedentary lifestyles can contribute to ANT of the median, ulnar or radial nerves.
- Discuss how weightlifters are prone to radial nerve symptoms. At the elbow.
- Discuss how compression type of injuries through trauma can contribute to ANT symptoms.
- Discuss how an acutely compressed nerve can cause more ANT symptoms 12 days later or after a longer period of time.
- Discuss why upper extremity ANT symptoms are often related to cervical spine pathology.
- Identify how the thoracic outlet can get compromised in those with upper extremity ANT.
- Discuss why a general orthopedic evaluation should not be ignored for those with ANT symptoms.
- Discuss reevaluating your patients’ NTT range of motion after treatment has been applied.
- Gain an understanding that often your patients’ hip range of motion is restricted when lower extremity, sciatic or femoral nerve ANT is present. Evaluation and treatment of those joints are also needed.
- Identify that patients that have suffered a severe ankle sprain that involves a plantarflexion/inversion mechanism often have lower extremity ANT symptoms and should be treated accordingly.
- Identify that improper prolonged holding postures can contribute to ANT symptoms and should thereby be corrected.
- Identify that a patient with a high level sensitivity of ANT can find relief of their symptoms by treating their opposite extremity first.