Integrated Manual Therapy to Eliminate Multiple Nerve Compression Patterns of the Upper Body

The current medical system so often confuses severe clinical conditions such as Thoracic Outlet and Carpal Tunnel Syndrome. That is because almost every patient that gets treated for either of these conditions will have nerves chronically compressed in multiple areas between the brain, spinal cord, neck, shoulder, and arm. This dynamic multimedia presentation will highlight our cervical, shoulder and arm work to eliminate multiple nerve entrapment conditions of the upper body. Therapists will learn specific tests such as the Spurling Test indicating spinal nerve root compression in the neck. The Eden's Test indicating clavicular compression of the brachial plexus of nerves and subclavius artery. The Adson's Maneuver Test indicating scalene involvement on nerve and vascular compression between the 1st and 2nd rib and clavicle. The Wright Abduction Test indicating the role of the pectoralis minor on the brachial plexus of nerves. The Pronator Teres Test indicating the role of the pronator teres on the median nerve, and other tests such as Phalen's Test, Tinel's Test, and the Tethered Median Nerve Stress Test. The highlight of this seminar will be the hands on techniques that will eliminate the musculoskeletal cause of each area of nerve compression between the brain and the fingertips. In addition, therapists will learn life changing techniques to release complicated frozen shoulder problems.

- <u>**Learning Objectives**</u> *Upon completing this segment the therapist will be able to:* Understand the importance of nerve compression tests, and learn techniques to eliminate nerve compression patterns between the brain and the fingertips.
- Realize that carpal tunnel nerve pain usually starts in the neck and shoulder area. Using a garden hose analogy, it will become obvious that nerve compression patterns must be released further up the kinetic chain when clients experience tingling, numbness, paresthesia or "pins and needle" sensations in the shoulder arm, wrist, hand or fingers.
- Perform orthopedic assessment, and understand nerve tests such as Spurling's Test, Adson's Test, Eden's Test, Wright Abduction Tests, Bicipital Aponeurosis Strain Test, Pronator Teres Test, Pronator Teres Syndrome, Phalen's Test, Tinnel's Test, and Tethered Median nerve Test.
- Perform manual therapy techniques to release the underlying cause of each nerve compression test before proceeding to the next nerve test down the kinetic chain.
- Understand the importance of evaluating for strains, sprains, capsular patterns and joint fixation patterns that would need to be addressed to correct a number of the nerve tests.
- Evaluate and release shoulder capsular patterns that can contribute to nerve compression.
- Treat sprains and strains that can block nerve conduction.
- Stretch tight muscle groups and activate and strengthen weak, inhibited muscle groups between the brain and fingertips.
- Know when to refer out to other health care providers.
- Restore normal range of motion and normal muscle resting lengths throughout the upper body.
- Assure that the therapist eliminates the underlying soft tissue cause of joint fixations and nerve compression patterns.
- Suggest appropriate corrective exercises that will involve nerve glides.
- Manual Therapists must assess and treat nerve compression in the cervical area first before evaluating and treating nerve compression patterns of the shoulder and arm.

- **Nerve Test #1-Spurling's Test** (Fig.1) Also know as Maximal Cervical Compression Test and Foraminal Compression Test, is used during a musculoskeletal assessment of the cervical spine when looking for cervical nerve root compression (Figure 2) causing cervical Radiculopathy. (Rotate client's neck to involved side 45 degrees, and side bend onto cervical spinal nerve roots-ask about increased numbness, tingling, or pins and needles.

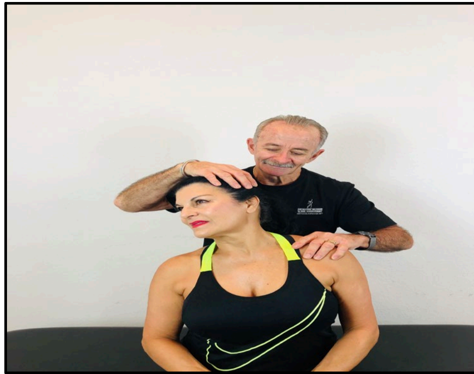

Fig.1

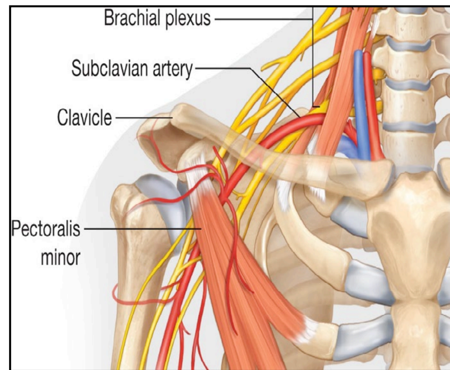

Fig.2

Treatment for a positive Spurling's Test will involve releasing the upper trapezius (Fig 3), releasing the SCMs (Fig 4), and reducing the forward neck posture (Fig 5-6).

Fig.3

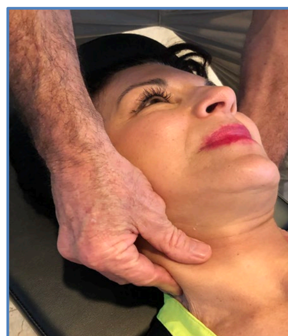

Fig.4

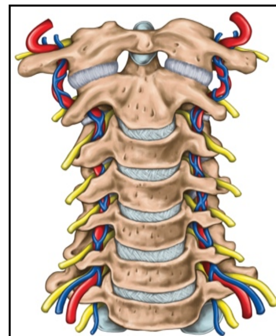

Fig.5

Fig.6

Then facilitate posterior facet closing and opening (Fig.7). Next use the thenar eminence of each hand and perform lateral flexion to facilitate facet joint lateral opening and closing. (Fig.8). Finish be stretching the sub-occipitals to decompress the occiput from jamming C1-C2. (Fig.9-10).

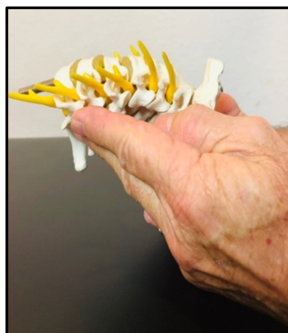

Fig.7

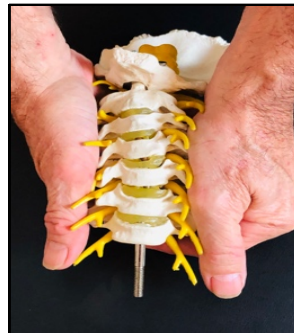

Fig. 8

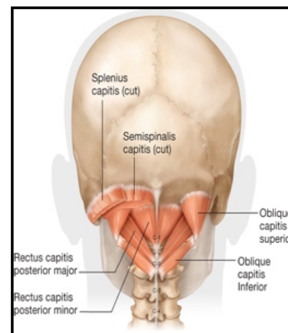

Fig.9

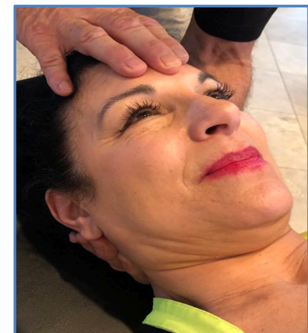

Fig.10

Nerve Test #2-Eden's Test –Also known as the "Military Brace Test". Check the strength of the radial pulse and then compress down on the clavicle. Have the client retract their scapulas and see if the strength of the pulse diminishes or there is any increase in numbness, tingling or pins and needle sensations into the arm, wrist hand or fingers (Fig.7). This part of Thoracic Outlet Syndrome (Fig. 8) Involves the unstable clavicle compressing the brachial plexus of nerves or the subclavius artery. Treatment involves elevating & stabilizing the clavicle (Fig. 9)

Fig. 7

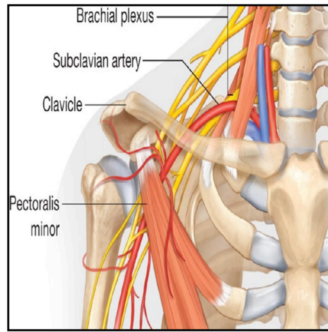

Fig.8

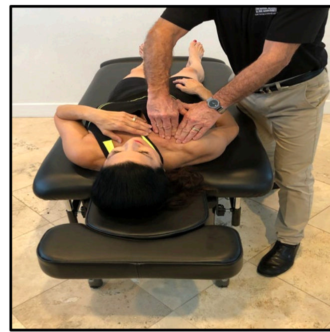

Fig.9

- **Nerve Test #3- Adson's Test (Fig.10)** -Check the strength of the radial pulse. Client then rotates their head to the involved side and takes a deep breath. The scalenes will contract and elevate the 1st and 2nd ribs on inhalation. Therapist checks for a reduction in the strength of the radial pulse or increased numbness, tingling or parasthesia. A positive test indicates tight anterior and middle scalene involvement on nerve and/ or vascular compression between the 1st rib and clavicle. (Fig. 11). Treatment requires using the first rib and deep breathing to stretch the anterior scalenes (Fig.!2) and middle scalenes (Fig. 13). This decompresses the subclavius artery and frees up the brachial plexus of nerves.

Fig. 10

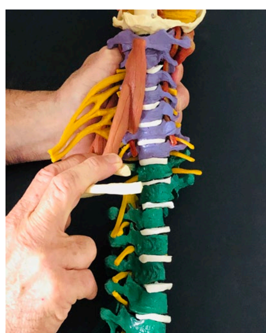

Fig. 11

Fig. 12

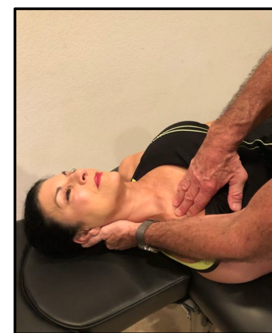

Fig.13

Nerve Compression Test #5: The Wright Abduction Test (Fig. 14) indicating the role of the pectoralis minor on the brachial plexus of nerves (Fig. 15) The therapist checks the radial pulse and then abducts and externally rotates the humerus, while feeling for a reduction in the pulse or increased nerve symptoms, such as increased numbness, tingling or pins and needle sensation. Treatment requires stretching the pectoralis minor, but may require doing shoulder capsule work, if a hard end feel is found (Fig. 16), or treating a muscle strain in the pectoralis minor if present when performing a muscle-resistance test as part of the P.N.F. stretch.(Fig 17).

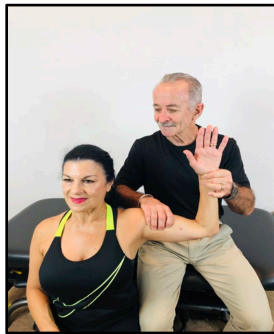

Fig. 14

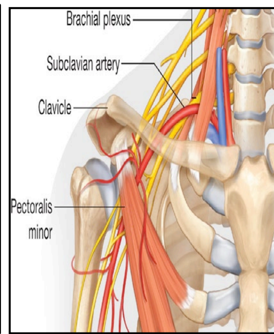

Fig. 15

Fig. 16

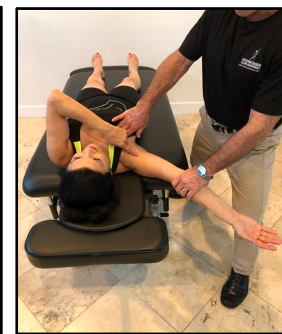

Fig.17

Nerve Compression Test # 6 Cubital Tunnel Syndrome (Fig. 18) can involve ulnar nerve entrapment due to a joint fixation, ligament sprain, or muscle tendon strains. Treatments involve mobilization of the radial /ulnar joint, and treating muscle strains such as flexor carpi-ulnaris . That is because the ulnar nerve runs right through the proximal portion of flexor carpi-ulnaris, and can be affected along with the median nerve from a pronator teres strain. Bicipital aponeurosis tendinosis (Fig. 19) is when a strain occurs in the aponeurosis attachment of the biceps on the proximal ulnar head. This scars down the median nerve, and creates the same clinical symptoms as carpal tunnel syndrome. This lesion must be treated prior to treating the median nerve at the wrist in the actual carpal tunnel area.

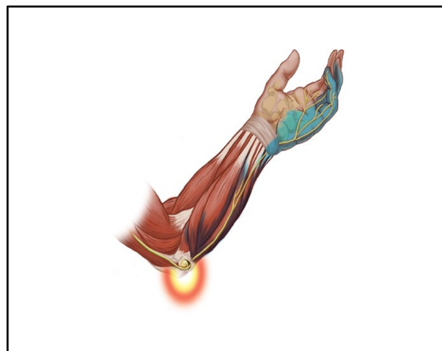

Fig.18

Fig. 19

- **Nerve Compression Test #7: Pronator Teres Syndrome:** Working on the computer puts the pronator teres in a chronically shortened position (Fig. 20). This day to day activity, along with activities like driving our car and doing manual therapy all day, involves the median nerve being compressed by a chronically tight pronator teres muscle. This compression of the median nerve results in the same clinical symptoms as " carpal tunnel syndrome". The clinical condition is known as "pronator teres syndrome" and must be addressed prior to treating the wrist area for "carpal tunnel syndrome". Treatment involves mobilizing the radial and ulnar head, using positional release of the articular ligaments, if there is a "hard end feel" on supination (Fig.21-22), and active release of the pronator teres to free up the median nerve. (Fig. 23)

Fig. 20

Fig. 21

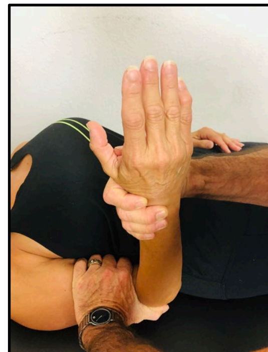

Fig.22

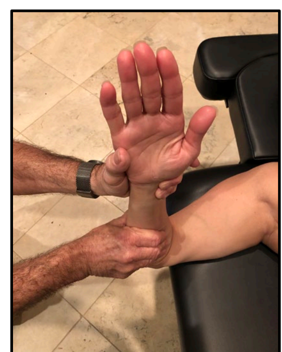

Fig.23

Nerve Compression Tests 8 & 9: The Tinel's Test and the Phalen's Test: These tests indicate compression of the median nerves at the wrist, and refers to those particular dermatomes. (Thumb, index finger, middle finger and part of the ring finger –Fig.24)

The **Tinel's Test** is performed by tapping on the transverse carpal ligament directly over the median nerve (Fig. 25). It is a positive test if it causes tingling in the thumb, index, middle finger, and the radial half of the fourth digit. The **Phalen's maneuver** is a test for true carpal tunnel syndrome. Also know as the wrist flexor test. The client presses the back of their hands and fingers together with the wrists flexed and fingers pointed down. (Fig. 26). If the client feels tingling, numbness or pain in the fingers within 60 seconds there is a compromised median nerve. A physician would perform this test to indicate the patient may have carpal tunnel syndrome.

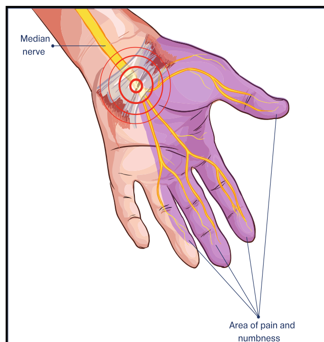

Fig. 24

Fig. 25

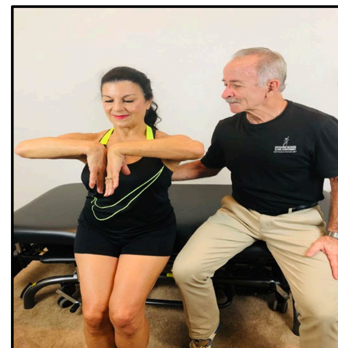

Fig. 26

Treatment involves mobilizing the radial and ulnar bones to free up the median nerve (Fig.27). Then perform myofascial release to lengthen the wrist flexors (Fig. 28). Follow that by releasing the deep transverse carpal ligament. This is done by pulling the carpal bones lateral while the client extends the wrist and fingers (Fig. 29-30). Stretching the transverse carpal ligament. helps create space for a glide of the median nerve to happen. Therapists can also attempt mobilizing the carpal bones (Fig.31), through positional release of the articular ligaments, and arthrokinetics. (Fig. 32)

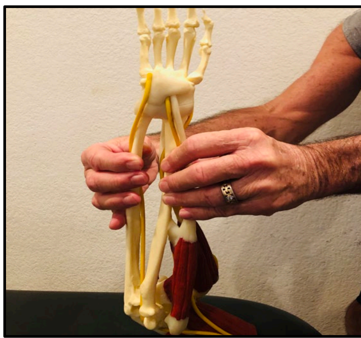

Fig. 27

Fig.28

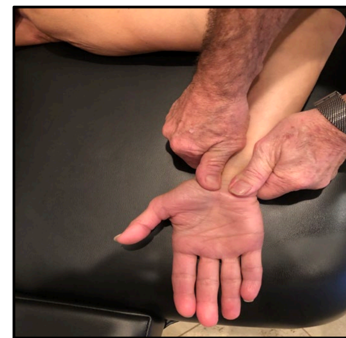

Fig.29

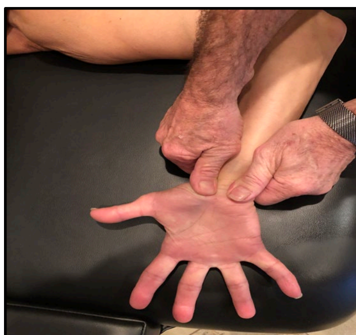

Fig. 30

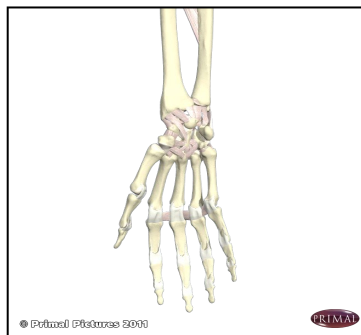

Fig.31

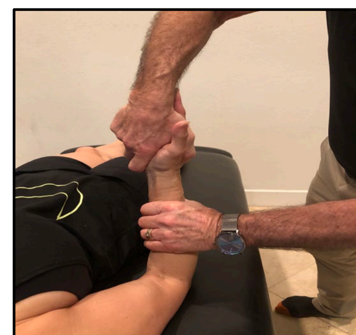

Fig.32

To release the radial nerve at the elbow, use muscle resistance testing to rule out a strain in the wrist extensors (Fig.33). If there is a strain in the extensors at the elbow, perform multi-directional friction(Fig. 34), followed by concentric & eccentric muscle contractions (Fig.35). Be careful not to friction on the radial nerve (Fig.36).

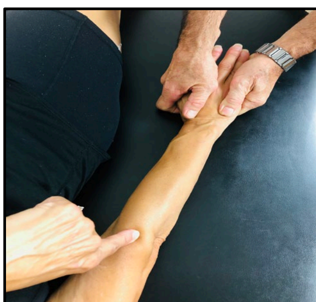

Fig. 33

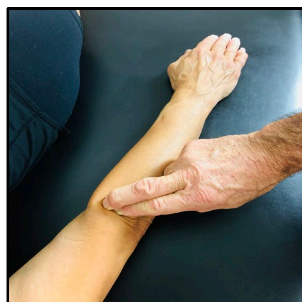

Fig.34

Fig.35

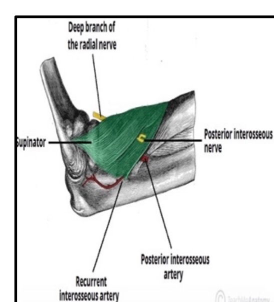

Fig.36

Perform muscle resistance testing to rule out a strain in the supinator(Fig.37). Scarring in this muscle will compromise the function of the radial nerve (Fig.38). This can cause numbness, tingling, pins and needle sensations and weakness into the thumb and index finger. If you have a strain and perform multi-directional friction to the strain (Fig.39), be careful not to further irritate the radial nerve. Follow the friction by concentric and eccentric contraction of the supinator(Fig.40) to re-align the scar tissue and free up the radial nerve.

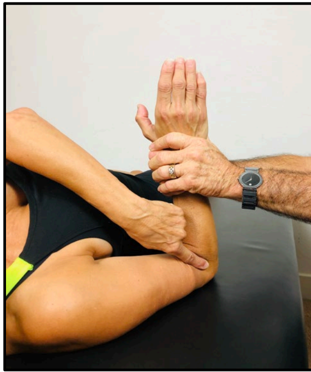

Fig.37

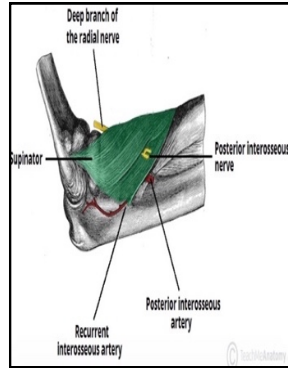

Fig.38

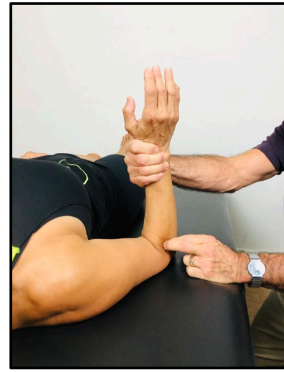

Fig.39

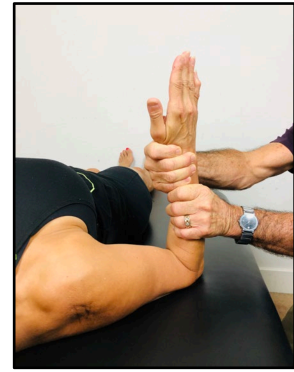

Fig.40

Once all nerve fixations, nerve entrapments and nerve scarring are released, clients must learn to do nerve glides (also know as nerve flossing) and nerve tensioning techniques for full recovery of the nerves. The main nerve glides are Median Nerve Glide (Fig.41); Radial Nerve Glide (Fig.42); and Ulnar Nerve Glide(Fig.43).

Fig.41

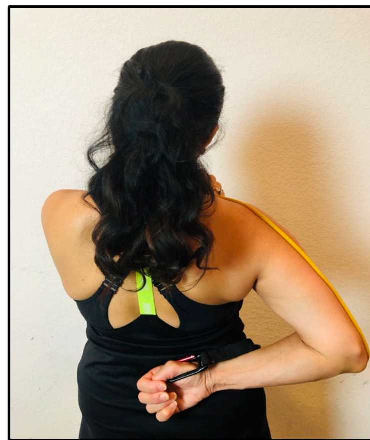

Fig.42

Fig.43

In states, providences and countries where therapists are allowed to teach corrective exercises, have the client stretch tight muscle groups and strengthen weak muscle groups in the neck, shoulder, elbow, wrist and hand areas.

Muscle groups to Stretch: SCM/Anterior Scalenes (Fig.44), Middle Scalenes (Fig.45), Pectoralis Monor(Fig.46), Pornator Teres(Fig.47), and Wrist Flexors(Fig.48).

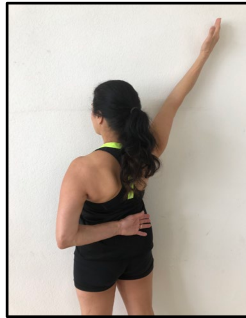
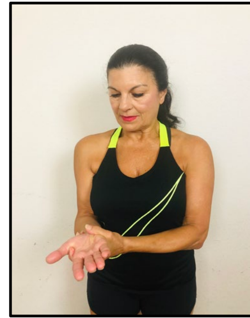

Fig.44 **Fig.45** **Fig.46** **Fig.47** **Fig.48**

Muscle Groups to Strengthen: Rhomboids (Fig.49), Posterior Rotator Cuff & Wrist Extensors (Fig.50) and Supinator (Fig.51).

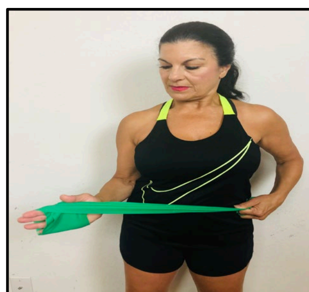
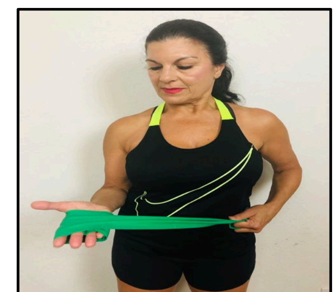

Fig.49 **Fig.50** **Fig.51**

These Corrective Exercises are in Our Home Care Retaining Disc of The DVD Series-Assessment, Treatment, and Home Retraining Exercises For Multiple Nerve Compression Patterns

References: DVD Series-Assessment, Treatment, and Home Retraining Exercises For Multiple Nerve Compression Patterns, James Waslaski; Clinical Massage Therapy: A Structural approach to Pain Management, James Waslaski; Orthopedic Assessment for Massage Therapists, Whitney Lowe; MyoSkeletal Alignment Techniques, Erik Dalton; Assessment & Treatment of Multiple Nerve Compression Patterns DVD (Upper Body), James Waslaski; Total Body Balancing, Dr. Kerry D'Ambrogio. **For DVDs and seminar information go to** www.orthomassage.net