Introduction

Over the past 34 years of my Chiropractic practice I have always strived to provide my patients with a competent level of care which addressed their concerns and issues regarding their health. My practice leads me on a course of study which involved multiple modalities in the fields of Nutrition, Acupuncture, Sports, Therapeutic Exercise and Fascial Research. All in an effort to gain a better understanding of the human body and the role of the Vertebral Subluxation Complex as a lesion which negatively impacted Neural and Biomechanical systems. What strategies could be put into play utilizing Acupuncture Energetics, Therapeutic exercise protocols and Fascial Research to improve spinal mechanics and overall improvement in patient health status? The articular joints must be viewed in the context of fascial continuity and directional perceptions. Therefore, the periarticular structures need to be viewed in the context of the overall continuity of the fascial sheaths. Ligaments are not a separate entity but a continuation of the tendons and fascia situated to perceive a directional stretch allowing stabilization of a joint during movement. Golgi tendon organs are also located within ligaments. Type III nerve endings which are identical to GTO are found within articular ligaments. Intermuscular septa are in continuity with ligaments as well as muscular insertions in the joint capsule. In my clinical setting I have observed that with the inclusion of Acupuncture protocols, Fascial Manipulation, Therapeutic exercise and Nutritional strategies an improved clinical outcome with my more complex cases was had. Along with better management with therapeutic rehabilitation and maintenance care helping my patients achieve a pain free healthy and active life style. It became clear to me that a system which encompassed all these principles would serve as a superior model in health care.

Neuralinductive AP Therapy (NIAPT)

Welcome to the exciting field of dynamic neuromusculoskeletal therapy. As a Chiropractor, Acupuncturist and Certified Fascial Manipulation Specialist I have experienced (NIAPT) as a galvanizing set of modalities and principles which applies multiple strategies in the diagnosis, treatment and rehabilitation of neural, somatic and visceral disorders. It is a comprehensive holistic mobilization therapy ergonomically designed to encourage and correct faulty movement patterns and inherent restrictions in all fascial layers. The Viscoelastic nature of Soft Tissue requires consideration of the fluid, elastic, fibrous and cellular components within the fascial makeup. The approach presented considers all movement-relevant subsystems of the body and treats their interaction as a total system as opposed to single isolated approaches. Movement is seen as a functioning system of interacting components on the macro and micro levels within the human fractal systems and segmental interactions. Therefore, it is not only to restore function of each component but also their coactions. Over millions of years the fractal systems in the body evolved to allow our vital functions to be optimized to produce a high level of efficiency within a relatively confined space to carryout out pain free efficient movement. NIAPT is an interactive therapy between therapist and patient designed to meet the patient within their physical level of comfort to be able to employ a series of strategies designed to refresh their level of mobility, flexibility, balance, strength, coordination, potential energy, circulation, peristalsis and overall wellbeing.

Physiorefreshment ™

A Holistic Mobilization Therapy created over 30 years ago by Michael Kettles PT. a tried and proven concept which has developed over the years adapting to the ever-evolving concepts in sports, rehabilitation, exercise and fascial research for optimal refreshing movement hygiene. Each encounter

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is an Individualized therapeutic protocol designed for each patient based on complex interactions between nerves, fascia, muscles, tendons, ligaments, joints and all movement-relevant subsystems of the body such as circulatory ECM and lymphatic systems. More often than not movements encountered in life are performed in a unique rather than stereotypical manner. Physiorefreshment makes the therapeutic exercises fun and challenging while at the same time addressing the biomechanical dysfunction. Physiorefreshment is designed to stimulate the fascial system, training our bodies to regain mobility and enabling a quicker return to daily and sporting activities. In a closed chain kinetic activity the distal part of the movement is fixed therefore movement in any one joint along the kinetic chain receive resistance training. Also, ambulation in a closed kinetic chain engages sequences, diagonals, short and long spirals of the trunk with the sequences, diagonals and spirals of the extremities. This method supports biomechanical and neurophysiological patterns. Neurophysiologically the proprioceptive system is stimulated to initiate and control muscle activation patterns while the biomechanical component for proper joint movement is coordinated through sequential activation patterns. All of which helps to produce a harmonic, healthy, dynamic, static and balanced life. Treatments are created to eliminate pain, restore normal movement which is key for the spiritual, mental and physical wellbeing. The Physiorefreshment TM Concept uses the synergies resulting from the combination of established standard protocols coupled with flowing movements mobilizing muscular segments, sequences, diagonals and spiral pathways along neurological loops in the patient's body to re-establish long-chain movement, improved posture, balance and a healthy functioning mind and body. This simple ergonomically designed system is a time and space saver which can be used on its own or combined with standard exercise equipment allowing a wide variety of movements so specific therapy can be coordinated in a flexible manner based on the requirements for the patient and their preferences. Also, the convenient design is a working relief for the therapist. Treatment and therapy can be carried out in the standing, seated, prone or supine postures adjusted for each stage of care from acute, chronic, rehabilitation and maintenance.

Physiology of Movement

Existing movement research paradigms such as Behaviourist, Cognitivist and Ecologist suggest various organizational patterns in human mobility. The Behaviourist looks at the cause and effect concept. The Cognitivist believe that motor sequences stem from active decisions. However, in the Ecologist paradigm the CNS utilizes reflex to achieve movements which can be explained in the architecture of fascia. All movement occurs along 3 spatial planes organized by the myofascial unit. The stretch reflex via the neuromuscular spindles located in the fascia are regulated by the endomysium, perimysium and epimysial fascia where movement is registered and transmitted via afferents to the brain. Posture is managed by the myofascial sequences. Motor schemes are managed by the myofascial diagonals and motor gestures are organized by the myofascial spirals. With the use of the Premium Gym (NIAPT) which targets various levels of myofascial tissues with tension and position provoking spindle reflexes executed in a closed kinetic chain to exam and focus the treatment on the malfunction within the line of movement. In addition, a global assessment can be made by observing other segments in relationship to the whole. In a closed kinetic chain model both proximal and distal parts are involved in the train of movement. Furthermore, with the premium gym linear as well as rotatory patterns with or without resistance can offer a multitude of settings there by affecting multiple joint axis and plains of movement. Neurophysiological functions with (NIAPT) stimulate the fascial system to initiate and control muscle activation patterns while biomechanically requiring a coordinated and sequential muscle

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activation pattern to control proper joint movement. Therefore, an immediate influence of imbalances, malposition and compensations can be detected and the appropriate therapy can be administered to correct and rehabilitate the patient. Pain relief, regeneration, rehydration, change in composition of loose CT from gel to sol improving fascial glide has an overall effect of improved circulation, metabolism, respiration and general wellbeing.

Fascia

What is the Fascia? The proposed definition from the 2007 Fascial Research Congress describes the soft tissues component of the CT: septa, joint capsule, aponeuroses, organ capsule, retinacula, ligaments, tendons, superficial fascia and endomysium. A body wide tensional force transmission network shaped by tensional loading.

Functions of Fascia

1) Structural support – It provides the structural framework for the body and maintains anatomical form for organs and systems.

2) Connections – It creates a continuous network of body tissue.

3) Protection – It cushions and envelopes the organs, muscles, nerves and blood vessels permitting the necessary mobility preventing friction, pressure and damage.

4) Metabolic – It provides a nutritious and waste removal functions. All metabolic fluids and blood pass from capillary beds and diffuse through the adjacent CT to cells and tissue. The CT mediates and controls various exchanges.

5) Storage of energy – adipose tissue

6) Regulation of diffusion of substances

7) Scar tissue formation

Components of Fascia

Cells - Metabolic properties and are responsive to biochemical and mechanical stimulation.

ECM – The extracellular matrix is a mesh of sturdy cables combined in an amorphous material to provide optimum mechanical strength with multi directional load.

Fibers - Made up of Collagen and Elastin fibers.

Ground Substance - The Ground Substance component of the ECM is made up of:

- Glycsaminoglycans, Hyaluran being the most abundant GAG located in the loose CT

- Water bound by proteoglycans which allow for plasticity and malleability

- Ions

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Biomechanical Properties of Fascia

Proper mechanical stimulation is necessary for fascial fibroblasts to create a fibrous matrix. Therefore, exercise therapies play an important role in the stimulation of matrix remodeling. Fibroblasts sense tensional changes and shear forces triggering them to adapt their metabolic functions. For example, with AP training, tensional fascial proprioception is activated through multidirectional movements with slight changes in the angle of movement. This creative change in muscle activation patterns reaching deep into the septa of the muscle. Long myofascial chains are the desired goal instead of isolated stretches. The versatility that can be achieved with AP therapy is endless. Therefore, the principles are vital to achieve fascial oriented training for the proper stimulation of collagen remodeling and enhancement of the biomechanical properties of fascia.

Proprioception

Fascia is one of the richest sensory organs. It is our most important organ for proprioception and the viscoelasticity of the CT. It is important for modulating receptor response and depending on the location of the fascia it determines the type of receptors present. For instance, joint receptors in the capsules and ligaments are stimulated at the extreme ROM and are quiet during physiological movements. Whereas proprioceptive nerve endings in the more superficial layers of fascia are more densely populated optimally situated to detect small annular movements from various different positions. Such as stretch and shearing motions particularly at the level between the fascia profunda and the subdermal LCT, an area where large sliding and shearing occur during multi articular extensional movements. Receptors are strategically situated in the various stratum of fascia in the tissue that is most suited for this activation. Pancini corpuscles being sensitive to compression and vibration are found in the deeper layers of the skin and subcutaneous layers as well as in the deep fascia. Mechanoreceptors like Ruffini and Pancini corpuscles are situated in the retinaculum and when stretched convert membrane potential via ionic channels creating electronic impulses which get transmitted via afferent nerves to the CNS providing proprioceptive information. There is also another transmission of impulses through the monosynaptic reflex arc to stimulate the peripheral organization such as when the small muscles of the hand or foot stretch the retinacula creating a piezoelectric effect which converts into an electric potential. Collagen fibers respond to this piezoelectric phenomenon combined with mechanical transmission to reach the neuromuscular spindles of the intended motor unit. AP tools can not only be utilized to break up scar tissue and mobilize dysfunctional CT but through addressing the neurophysiology of the superficial, deep and internal fascia stimulate classic meridians, Tendinomuscular channels, Anatomy trains, Tensional compensations within a myofascial unit, sequence, diagonal or spiral pattern.

Neuralinductive treatment of the meridians for internal dysfunction

Healthy fascia is necessary for the proper conduction of stimulus to the muscle spindle which triggers the neuronal networks of the internal organs. Fascia manages the temporal and spatial parameters of the internal organs. When stretched beyond their physical limitations or when triggered by overuse, thermal and noxious stimuli muscle spindles and enteric neurons are activated. This activation can create tensional changes in the internal organs volume and peristalsis leading to organ dysfunction as well as possible pain perception within the musculoskeletal system. Fascia is only able to effectively

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perform its functions if it can maintain its integrity by remaining elastic and fluid with the correct basal dimensions. Consequently, when the musculoskeletal system is dysfunctional it can play out by altering the harmonious internal organ functions as well as visceral somatic reflexes affecting the function of the musculoskeletal system. See an example of AP Neuralinductive Therapy “The Big Dragon”,

a treatment strategy for strengthening the back as well as influencing internal pathways via mechanical stimulation to balance sympathetic/parasympathetic nervous system and on fluid dynamics of the lymph, blood and ECM. Harmonizing the various reflex pathways which influence the Taiyang zone can have a positive influence on the organs which make up that energetic system the kidney, bladder, small intestine and heart when treating the back.

Restoration of Tissue dysfunction

Dysfunctions of the fascia manifest throughout the body via alterations in the physical and chemical makeup of the hylauron which shifts from sol to gel causing a restriction of laminar movement which can lead to tissue fibrosis, joint pain and dysfunction, scaring, neural dysfunction, altered autonomic function as well as vascular and lymphatic conditions. Manual treatments via, Active and Passive therapeutic exercises in conjunction with integrative therapies such as the Premium Gym, AP Tower, and AP tools.

Premium Gym (PG)

The PG is a closed kinetic chain system which allows for multiple ROM patterns in the linear and rotational planes. It can be used alone or in combination with pre-existing therapy equipment. For example, the Roman Chair exercise can be enhanced with the adaptation of the PG allowing for specificity of movement along a myofascial sequence, anatomy train or directed to a specific spinal motor unit to improve function. Treatment can also be administered during active movement while observing segmental and global movement patterns gaining a better comprehension of the patient’s malady. For example, while preforming an examination of a patient complaining of neck pain testing via CKC Squat Test an ascending type dysfunction within that chain of movements can be observed leading the practitioner to the appropriate treatment and corrective actions. In addition, a closed chain movement allows for improved control parameters as well as a safe, secure and creative movement scheme. Treatment can be directed to the offending segment or region with manual therapy, AP tools as well as other physical modalities. Additional equipment that can be modulated with the PG range from proprioceptive devices, balance pads, rotating discs, therapy bands, vibration plates, speed flossing bands, rebounders, glut/hamstring benches, Flexion Distraction tables as well as the invertrac. A full body therapy program can be created in the practitioner’s treatment suite. The PG design is based on ball mechanics and therefore imitates the physiology of hip and shoulder motion allowing for treatment, rehabilitative, and maintenance programs.

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AP Tools: Pen Pointer Pulser

These IASTM tools have a high specific weight and made of highly conductive materials allowing for hot/cold therapy or electrical muscle stimulation depending on the desired application. The V2A-Steel is easy to sterilize and is timeless in design and ergonomically convenient for the practitioner.

Pen

The Pen is a useful for general musculoskeletal therapy, whether for addressing fascial densities in the deep fascia, scars, or systems dysfunctions in the superficial fascia. The pen can be employed to dissolve adhesions. It can stimulate an acupuncture, motor point or TP. In addition, a linear application can be utilized on a meridian or anatomy train pathway to improve lymphatic, vascular circulation and help resolve stagnation with stimulation to the ECM. It's design is structured to penetrate with specificity on to the dysfunctional zone. The tip of the instrument allows for multidimentional inspection of the anatomical structures and transmits vibrational forces to the user indicating density changes within the fascial network. A flawless design allows working techniques between muscles, tendons, ligaments and joints to enhance the practitioner's perception of altered tissue generally not able to be reached by hand. The handle of the pen in a perpendicular or horizontal application is also utilized for stretching and decompressing the tissue.

Pointer

The Pointer, similar to the pen in design except for the tip which is smaller in surface area, flat and non-piercing allows for greater specificity in the treatment of Acupuncture, TP's, Motor points and Auricular points. Mobilization of scar tissue, fascial densities, fibrotic and sclerotic tissue masses with exquisite precision. Also, especially effective in the treatment of disorders of the hands and feet.

Pulser

The largest and heaviest instrument of the 3 tools with a cone shaped tip and spiral neck allowing reach into the interstices can stretch the tissue on the point and deep onto the deep fascia. The spiral surface tractions the tissue under pressure and at the same time displaces the fluids. The cylinder handle is designed for larger surface areas such as the paraspinal muscles or for separating larger muscles and tendons.

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