Active Isolated Stretching: The Mattes Method

Active Isolated Stretching began to develop in 1970. What began as an attempt to find specific techniques to alleviate pain and improve everyday performance 40 years ago has developed into the scientific based art of isolated movement that we may experience today. The educational background in physiology, kinesiology and functional anatomy provided the basis for the innovative therapeutic technique Active Isolated Stretching (AIS). Active Isolated Stretching has been incorporated into the therapeutic myofascial technique termed the Mattes Method. The Mattes Method promotes functional and physiological restoration of muscles, tendons, vertebrae, ligaments and joints facilitating healthier superficial and deep fascial planes. Various literary attempts have been made attempting to replicate this model with varying degrees of success.

Human movement is more enjoyable when the body is flexible and capable of performing without restriction. Active people understand the importance of good health and seek specific methods to improve their abilities by including stretching exercises into their daily lives. Flexibility is not a general factor but is specific to each joint. Work or exercise that produce repeated overuse of the same muscles confine joints within a restricted range of motion and tends to reduce flexibility. The primary obstacle to flexibility is the tightness of the surrounding muscles and fascia of a joint.

Flexibility and proper stretching have played a very important role for enhancing performance, rehabilitation and wellness. Athletic achievements have been elevated to new heights through the knowledge of kinesiology (science of human movement), anatomy and physiology. Flexibility is possibly the most important factor in the longevity of an athlete and is key in the prevention and recovery of sports injuries. Postural defects such as scoliosis, kyphosis and lordosis clearly illustrate the loss of tissue elasticity and resultant strength deficits of the shortened muscles and stress on the antagonist over lengthened fascia and muscles. Trauma, overuse and age are the most common causes of muscle tightness resulting in protective flexor postures. Our upright biped stance and constricted gait patterns further contribute to functional muscle weakness and contractures.

Strong tensile forces of the muscles and fascia surrounding the specific joint determine flexibility. Optimizing flexibility through reduction of fascial tension has long been a goal for many manual therapists. Pioneers such as Dr. Janet Travell, Dr David Simons, Ida Rolf, Professor Robert Shelton, Moshe Feldenkrais, and John Barnes have all developed techniques for restoring proper physiological myofascial tension. The manual stretch of muscles and fascia creates mechanical, bioelectrical and biochemical responses that promote improved vascular and lymphatic circulation, increased oxygenation, removal of body toxins, and a more efficient nervous system.
In order to better understand our body’s health and the performance of our bodies we need to understand the nature of fascia and the role it plays in wellness. Fascia is a three-dimensional fibrous matrix that provides interconnections throughout all cells of the body. Fascia surrounds muscles, bones and joints, which gives our body structural integrity and strength. Being continuous throughout the body, fascia encompasses the sensory organs of the nervous system, blood vessels and lymph channels. Fascia also serves as an extensive water storage system. Oxygenation of the cells and tissues are regulated by fascia. Furthermore, this fascial network facilitates the removal of our body’s toxins. Distortion of the fascial matrix by trauma, aging, posture, hormonal or metabolic imbalances, injury and toxins, disrupts the homeostasis of the body. These conditions left untreated promote detrimental contractures, inflammation, lymphatic congestion, peripheral vascular obstruction, hypertension and a host of other disease states.

Fascia as a protective layer is much more stable than muscle tissue. The fascia is divided into two basic types and layers – subcutaneous and subserous. Subcutaneous fascia connects skin, muscles and skeletal structures. Subserous fascia lines the body cavities. The subcutaneous fascia has two distinct layers that form continuous sheets over the entire body, superficial and deep. The superficial layer is a double layer that is fused and continuous. Superficial fascia is very elastic due to the crisscrossing pattern of fibers. The integrity and proper tensile tone promotes wellbeing. Trauma creates micro bleeding that heals into adhesive scar tissue, which change the tensile tension of the musculoskeletal system. Additionally, this scar tissue interferes with the communication channels similar to a snag in a silk sweater that distorts the pattern of the sweater at the point of the snag as well as to points distant. These disruptions in the fascial web create tensile forces where pressure points or trigger points become manifest.

Facilitated stretch based on anatomical knowledge of muscle origin and insertion provides for optimal flexibility without trauma. Although myofascial planes are continuous, there are some underlying differences. These sheets are laid down in a very precise way and fall under the general rule called Wolff’s Law. Wolff’s Law state “the form of the bone being given, the bone elements place or displace themselves in the direction of the functional pressure and increase or decrease their mass to reflect the amount of functional pressure.” Therefore, the fibers are laid down along the lines of stress within the body and adhere to proper anatomical positioning. As one tries to stretch a muscle or tendon outside the proper plane of attachments, tension and friction is increased and resistance is encountered that will ultimately prevent full flexibility. Even more detrimental is the potential for injury and muscle tear. The body responds to inappropriate tension by recruiting the opposite muscle groups to contract and deter the stretched muscle from any potential injury.
Sherrington’s Law of reciprocal inhibition and muscle contraction states that when a muscle on one side of a joint is contracted, the muscle on the opposite side sends a neurological signal to relax or release. Sherrington’s Law in combination with a slow controlled rhythmic stretch of no greater than two seconds provides for a neurologically Sound technique that does not trigger a reflexive antagonist contraction that inhibits the stretch potential of the muscle. Muscles have the capacity to be stretched up to 1/6 times their resting length (1). However, muscles tear and rupture if stretched beyond this point. All muscle tears result in bleeding at the site of the tear. Bleeding promotes scar tissue formation, which is how a body naturally heals itself. The scar tissue is stiff, being less flexible than non-scarred muscles or tendons. Whenever flexibility is compromised, muscle weakness and contractures develop. (2)

Our bodies have incorporated a defensive mechanism in order to protect from overstretch and trauma. This protective mechanism involves the stretch sensors within the muscles and tendons. In the muscles, these sensors are termed muscle spindles. In the tendon attachments, these sensors are the Golgi bodies. Both of these stretch sensors provide a complex protective mechanism known as the myotatic stretch reflex. This myotatic reflex prevents a muscle or tendon from over stretching too far or too fast, helping to prevent an injury. The stretch reflex of the muscle spindles and Golgi bodies are the body’s sensors for coordinated muscle contraction and relaxation.

Major obstacles to optimal flexibility are often underlying medical or physical conditions. Inflammation, overuse, trauma, neurological injuries, hormonal or vascular problems can promote fascia, muscle and joint tightness resulting in contractures. Muscle imbalances because one muscle group is stronger or less flexible than the opposite muscles. Aging may be a factor because aging promotes atrophy with lost elasticity of muscle and connective tissue. Weaknesses lead to strength and flexibility imbalances between antagonistic muscle groups, which creates adverse strains on the skeletal system and resulting postural abnormalities. An increase in the concentration of connective tissue within the muscle belly is noted (endomysium, perimysium). There is also increased collagen cross-linking with age.

Specific principles of Active Isolated Stretching include:

1. Identify the muscles to be stretched.
2. Isolate the muscles to be stretched by using precise localized movements.
3. Intensify the contractile effort of the agonist muscles opposite to the antagonist muscles through neural reciprocal innervation.
4. Reciprocal inhibition by neural signal. The antagonist muscles are signaled to relax and lengthen short of triggering the Myotatic Reflex.
5. Increase local blood flow, oxygen and nutrition to tissues before and after activities. The contracting muscles are major vehicles used to deliver blood, oxygen and nutrition. Repetitive Isotonic muscle contraction transport fluids and gases to specific regions in far greater volume than static or isometric muscle contractions. Numerous repetitions are an important consideration in a thorough warm or post activity recovery process.
6. Oxygen through deep breathing decreases fatigue and is important to release muscle and fascial tissue tension. Other than stretching itself, relaxation is the most important factor in developing flexibility. Fatigue results from tension in contracted muscles, inflexibility, insufficient blood and oxygen and limited nutritional supply to the tissues.

7. Stretching is a daily requirement. Muscles shorten, stiffen or become tense from work, training, posture, gravity or stress. Active Isolated Stretching helps restore full joint movement, decrease tissue soreness and fatigue, increase muscle/fascia pliability and improves posture.

**Major beneficial effects of the Mattes Method are:**

1. Active Isolated Stretching improves oxygen, blood flow and nutrition of myofascial structures pronating growth and repair.
2. AIS stimulates the circulation and drainage of lymph, which helps eliminate metabolic waste.
3. AIS improves flexibility and health of muscles, fascia, tendons and ligaments.
4. AIS breaks down the friction and “gluing” among fascial sheathes.
5. AIS helps separate fibrosis and breaks down adhesions that may result from trauma or inflammation.
6. Active Isolated Stretching realigns collagen fibers.
7. AIS reduces muscle spasms.
8. Active Isolated Stretching reduces the risk of muscle/fascia strain or tear.
9. Through AIS exercises and improved blood/oxygen flow a reduction in spasms, splinting and tension as a result of ischemia.

The outstanding results experienced with difficult problems such as Parkinson’s, TMJ, thoracic outlet syndrome, cervical, thoracic and lumbar disc problems, Lou Gehrig’s disease and incomplete spinal cord injuries give hope for greater health improvement for thousands of people. Active Isolated Stretching: The Mattes Method epitomizes efficient stretching with maximum results.

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[www.stretchingusa.com](http://www.stretchingusa.com)
Footnotes:

1. Sweigard, Lulu F. Human Movement Potential, Its Ideokinetic Facilitation  P. 139