

The MyoKinesthetic System, Part I: A Clinical Assessment and Matching Treatment Intervention

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In sports medicine, clinicians and authors have emphasized the need to shift from an isolated evaluation of a painful structure to an assessment of multiple regions of the body.^{1,2} The purpose of this new approach is to identify painful areas, as well as areas of dysfunction that may be the cause, or a contributing factor, to the patient's pain. In short, the site of pain may simply serve as a warning for other, more significant complications in the body.³⁻⁵ In chronic pain cases, it is common for the site of pain to be a structure that is overworked in response to other areas in the body not functioning properly.^{6,7} As a result, clinicians are challenged with finding efficient ways to look beyond the site of pain to determine the source of a patient's complaint or dysfunction.

KEY POINTS

- The MyoKinesthetic System is a relatively new form of manual therapy used to identify posture asymmetries that result in pain and dysfunction.
- The uniqueness of the MyoKinesthetic System lies in the ability to match treatment to dysfunction identified in the global assessment.
- The MyoKinesthetic System can be used to treat a variety of musculoskeletal conditions.

Utilization of comprehensive (i.e., global) evaluation models, such as the regional interdependence (RI) approach, has aided clinicians in the identification of other contributing factors affecting pain and dysfunction.¹ The MyoKinesthetic (MYK) System (Myokin, Inc., Shawnee Mission, KS) is another global model, which contains a broad assessment focused on classifying the body's primary dysfunctions. The MYK System evaluation is used to detect compensations within the nervous system that are displayed by postural abnormalities and result in physical impairment. The concept was developed by Dr. Michael Uriarte as a means to balance the nervous system by treating the muscles versus applying the common chiropractic philosophy of treating bony positional faults with manipulation.⁸ Dr. Uriarte developed the theory of the MYK System through experimentation in his clinical practice. The technique was first introduced in 1998⁸ and has not been researched; therefore, all current evidence is anecdotal in nature.

The MYK System is a unique paradigm because the purpose is to evaluate and treat posture imbalances as a method to restore allostasis. The theoretical underpinnings of the paradigm are that standing, static posture underlies all movement patterns; therefore, if posture is not symmetrical, movement will be dysfunctional.⁹ Posture imbalances may result from changes in the central nervous system (CNS) as it responds to afferent feedback from the muscles to achieve pain-free motion.¹⁰ If an unbalanced posture exists, an underlying cause must be present, and the body must compensate before one initiates any movements.

The following brief example is used to translate the MYK System theory of a CNS-caused compensation to a mock patient presentation. In this example, if a patient experiences a fall, this can result in one or more bony positional faults. As that person returns to a standing posture, afferent nerves send signals back to the brain alerting it about the subluxations, while the CNS has sent messages through efferent nerves to the surrounding muscles to contract or relax. The result of CNS response may be observed through postural asymmetries, such as a rotated head, elevated scapula, or internally rotated hip.⁸ The postural asymmetries may also result in restricted joint motion and subsequent decreased mechanoreceptor firing.⁸ The development of these compensations indicates the presence of a causative factor, and it could be argued under the RI model that treating the postural imbalances through an intervention that stimulates the CNS is necessary to address the root cause of a patient's dysfunction and pain.

In addition to postural asymmetries, Dr. Uriarte has included numerous pathological conditions that can be treated with the MYK System, such as headaches, medial epicondylalgia, sciatica, patellofemoral pain, plantar fasciitis, and Achilles tendinopathy.⁸ Indications for treatment include posture imbalances, limited range of motion, pain, peripheral neuropathy, and muscle weakness. The only known contraindications to the MYK System treatment are moving beyond the



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patient's range of motion, open wounds, infections, bleeding disorders, fractures, or any other contraindication associated with massage. Treatment time varies (5–20 min) based on the nerve root level being treated. The purpose of this article is to provide an overview of the MYK System clinical assessment and treatment technique.

MYKINESTHETIC SYSTEM CLINICAL ASSESSMENT

A clinician using the MYK System is guided by a specific evaluation process that matches a patient's posture imbalances and symptoms to a corresponding nerve root level (e.g., C3, L4, S2), which is used for treatment.⁸ The MYK System assessment includes a thorough posture analysis, as well as: identification of peripheral neuropathy and pain, evaluation of weak movements through manual muscle testing, and inclusion of diagnosed pathological conditions. The MYK System posture analysis is completed with the patient in a standing position for the majority of the assessment. The patient's posture is observed from head to toe and each imbalance is documented on a chart (Figure 1). Hip, leg, foot, and toe postural exams are performed in a standing, seated, and prone position. Each imbalance identified in the evaluation is correlated to one or more nerve root levels on the posture chart. At the end of the assessment, the nerve root levels are totaled to determine the nerve pathway that contains the highest number of imbalances, and is presumed the cause of pain and dysfunction.⁸

Within the MYK System postural analysis, clinicians are also provided a dichotomous key to aid in the determination of the appropriate treatment level. The key may be necessary if the clinician discovers that two or more nerve root levels have an equal number of posture imbalances. In cases where the patient's evaluation leads to two nerve root levels (i.e., L4 and L5), the clinician utilizes the other assessment components such as positive dermatomal, myotomal, or peripheral nerve findings to select the appropriate treatment level. Each positive finding within the evaluation can be correlated to a single nerve root level to provide a means for discriminating between treatments. Treating the incorrect nerve root level will not result in an increase in symptoms, and often provides some relief but usually does not resolve the entire presentation (symptomology and function). The detailed evaluation included in the MYK System is theorized to allow the clinician to treat the cause of pain and not just the site of pain.⁸

MYKINESTHETIC SYSTEM TREATMENT TECHNIQUE

The primary goal of the MYK System is to balance posture by treating muscles bilaterally along a specific nerve pathway (e.g., C5, L5, S1), thereby producing changes in the nervous system.⁸ Pain and dysfunction can disrupt the transmission of signals traveling between the CNS and the muscles, resulting in muscle inhibition or facilitation. The MYK System is theorized to stimulate several ascending sensory tracts (anterior or lateral spinothalamic, and anterior and posterior spinocerebellar) to improve communication from the CNS to all of the muscles innervated by one nerve root. The spinothalamic tracts are stimulated by touch, and the spinocerebellar tracts are stimulated with movement.⁸ The CNS operates by receiving input from the tissues and environmental stimuli through these ascending tracts, and produces a response to regulate the musculoskeletal system.¹¹ For example, repeated movements and tactile stimulation can change the brain's perception of that body part.¹¹ By forcing information up to the brain along several different routes in a MYK System treatment, it is theorized that the CNS responds by sending signals back to the body to expedite allostasis.⁸ Although the intervention only includes muscles innervated by one nerve root, other muscles are affected when the CNS reacts to the treatment. It is hypothesized that as the nervous system communication (efferent and afferent) normalizes, it allows all of the muscles to function properly.⁸ The normalizing of neural input and output along the total nerve root pathway may produce changes in the musculature innervated by that level. In addition, this muscular normalization may decrease compensation in adjacent and remote areas as in other RI models (e.g., myofascial release, total motion release). Many of these changes can be evidenced by observed changes in postural balancing, increased range of motion, and decreased pain.

The MYK System treatment combines active and passive movement with tactile stimulation of each muscle innervated by one nerve root (Figures 2 and 3). Tactile stimulation can be performed with deep or soft pressure anywhere on the muscle, as long as the proper combination of muscles receives stimulation. By treating all of the muscles in a single nerve pathway way, it is theorized that the treatment stimulates every mechanoreceptor along that pathway. Stimulation of multiple mechanoreceptors is speculated to be more effective than stimulating a single mechanoreceptor,⁸ and results in decreased nociceptor firing and muscle relaxation.^{12,13} Since muscle and fascia contain mechanoreceptors, both can be affected by the treatment. Researchers have also shown that forms of proprioceptive input, similar to MYK treatment, demonstrated changes in the brain's perception of and reaction to pain.¹⁰

The MYK System treatment is always completed bilaterally, as the CNS functions bilaterally, and neural components are responsible for the cross-education of muscle strength and motor skills.^{14–17} For these reasons, all movements and tactile stimulation are performed bilaterally to increase the transfer of information from the muscle on one side of the body to the other. The treatment is continuous, and the clinician moves from one body area to the next until all muscles have been treated. All movements within the treatment parameters should be pain-free and the treatment can be performed daily. Analogous to other manual therapy interventions, the MYK System can directly impact the autonomic nervous system and may influence all levels of the healing process.

| | | | | | |
|-----------------------|---------------|---------------|-------------------------------------|--|--|
| HEAD | | | LUMBAR SPINE | | |
| Extension | _____ (C1–C3) | (L1–L5) | _____ Flexed | | |
| Flexion | _____ (C1–T1) | (L1–L2) | _____ Extended | | |
| Rotation | _____ (C1–T1) | (L1,L2) | _____ Lateral flexion | | |
| Lateral flexion | _____ (C1–T1) | (L1–L5) | _____ Rotation | | |
| SCAPULA | | | HIP | | |
| Elevated | _____ (C3,4) | (L5,S1) | _____ Anterior rotated (flexion) | | |
| Depressed | _____ (C3–C5) | (L1,2,3,4,5) | _____ Posterior rotated (extension) | | |
| Protracted (abducted) | _____ (C3–C5) | (L2,L3) | _____ Downslip (abduction) | | |
| Retracted (adducted) | _____ (C5–C8) | (L4,L5) | _____ Upslip (adduction) | | |
| Upward rotated | _____ (C3–C8) | (L2,3,4,5,S1) | _____ Lateral rotated | | |
| Downward rotated | _____ (C3–C7) | (L5,S1) | _____ Medial rotated | | |
| SHOULDER | | | KNEE | | |
| Flexed | _____ (C5–C8) | (L3,L4) | _____ Flexed | | |
| Extended | _____ (C5–C8) | (S1) | _____ Extended | | |
| Depressed (abducted) | _____ (C5–C8) | (L2,L3,S1) | _____ Externally rotated | | |
| Elevated (adducted) | _____ (C5–C6) | (S1) | _____ Internally rotated | | |
| Medial rotated | _____ (C5–C6) | | | | |
| Lateral rotated | _____ (C5–C8) | | | | |
| ELBOW | | | ANKLE | | |
| Flexed | _____ (C7–C8) | (L4) | _____ Planter flexed | | |
| Extended | _____ (C5–C7) | (S1,S2) | _____ Dorsiflexed | | |
| | | (L4) | _____ Everted | | |
| | | (L4) | _____ Pronated | | |
| FOREARM | | | _____ Inverted | | |
| Supinated | _____ (C6–T1) | (L5,S1) | _____ Supinated | | |
| Pronated | _____ (C5–C6) | (L5,S1) | | | |
| WRIST | | | BIG TOE | | |
| Flexed | _____ (C6–C8) | (L5) | _____ Flexion | | |
| Extended | _____ (C6–T1) | (S1,S2) | _____ Extension | | |
| Radial deviated | _____ (C7–C8) | (S1,S2) | _____ Hallux varus/abduction | | |
| Ulnar deviated | _____ (C6–C7) | (L5,S1) | _____ Hallux valgus/adduction | | |
| THUMB | | | TOES | | |
| Flexed | _____ (C7–T1) | (L5) | _____ Flexed | | |
| Extended | _____ (C6–T1) | (S1,S2) | _____ Extended | | |
| Abducted | _____ (C8–T1) | | | | |
| Adducted | _____ (C6–T1) | | | | |
| FINGER | | | | | |
| Flexed | _____ (C6–T1) | | | | |
| Extended | _____ (C7–T1) | | | | |
| Abducted | _____ (C8–T1) | | | | |
| Adducted | _____ (C8–T1) | | | | |

Figure 1 MyoKinesthetic System posture chart.



Figure 2 The starting (left) and ending (right) position for MyoKinesthetic System passive treatment of the gluteus medius and minimus muscles. The clinician applies tactile stimulation between the greater trochanter and iliac crest while passively moving the hip into adduction.



Figure 3 The starting (left) and ending (right) position for MyoKinesthetic System active treatment of the hamstring muscles. The clinician applies tactile stimulation to the hamstrings while the patient actively contracts the quadriceps.

SUMMARY

Similar to other global methods, the MYK System assesses the entire body to address compensations that have led to pain and dysfunction. As clinicians search for the most effective strategies to evaluate and treat pain, the MYK System may be a valuable addition to their practice. An advantage of the MYK System is the ability to match a treatment to identified dysfunction and asymmetry revealed in the evaluation; however, research is needed to determine if the MYK System is effective in treating musculoskeletal conditions. In Part II (forthcoming), we will present an a priori case study used to assess the effectiveness of the MYK System to treat nonspecific chronic low back pain.

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