The MyoKinesthetic System, Part II: Treatment of Chronic Low Back Pain

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Low back pain (LBP), both acute and chronic, is one of the most common disabling and poorly understood conditions in health care today. Researchers estimate that LBP in industrialized countries will have a lifetime prevalence of over 70% and will account for substantial health care costs and personal distress. In addition, chronic LBP that resolves with treatment is subject to a 90% recurrence rate. A lack of understanding of the source of LBP results in a vague diagnosis of nonspecific LBP in 85–95% of patients who report to a primary care physician with complaints of back pain. Nonspecific LBP is an ambiguous term assigned to patients when an anatomic source or pathology cannot be identified, and the use of this diagnostic classification does not lead to effective treatment.

Although considerable research has been conducted on different treatment methods for LBP, a majority of the findings conflict with one another. The results of more than 1,000 studies on management of LBP are inconclusive in offering support for one or more techniques. Due to the complex nature of LBP, treatment based solely on pain presentation is not always effective. Treatment-based classification (TBC) systems are used in an attempt to improve patient outcomes by placing patients into subgroups according to specific patterns of signs and symptoms. Delitto et al. developed one of the first TBC systems for patients with acute LBP. The purpose of this system was to match a patient’s treatment with their LBP classification, which was based on an examination and specific algorithm for decision making. The success of the Delitto et al. TBC system is still under investigation, but support exists for improving LBP patient outcomes through the use of this system.

The interventions used in the Delitto et al. TBC system for LBP are manipulation, specific exercise, traction, and stabilization. The MyoKinesthetic (MYK) System is another TBC system, but it currently has not been studied to determine its effectiveness for treating patients with nonspecific LBP. The MYK System guides a clinician through a comprehensive approach to the evaluation and treatment of musculoskeletal injuries. Treatment strategies are designed to affect the nervous system in a specific way by treating a precise combination of muscles.
Within the MYK System, a clinician utilizes an evaluation of the patient’s posture and identifies symptoms and muscle weakness to determine the appropriate nerve pathway treatment. The MYK treatment combines active and passive movement with tactile stimulation of each muscle innervated by one nerve root. The MYK System utilizes several ascending tracts (anterior or lateral spinothalamic, and anterior and posterior spinocerebellar) to improve communication from the central nervous system (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. 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. The primary goal of the MYK System is to balance posture by treating muscles bilaterally along a specific nerve pathway, thereby producing changes in the nervous system.

The purpose of this case report was to assess the effectiveness of the MYK System as a treatment for LBP. While this case study is Part II of a report regarding the MYK System, additional descriptive information about the MYK System can be found in Part I (http://dx.doi.org/10.1123/ijatt.2014-0131). Additionally, in this study, the Stanton et al. algorithm was used to place this patient into the Delitto et al. TBC system to determine if MYK treatment could be included as an intervention within one of the subgroups. We documented the outcomes of a single patient who was diagnosed with multiple disc herniations and treated with the MYK System.

Case Report

History

The patient, an otherwise healthy 22-year-old male, presented with LBP of approximately two years duration without previous history of LBP before this onset. Pain was isolated to the lumbar spine and along the quadratus lumborum bilaterally. The onset of symptoms initially occurred when the patient attempted to stand from a seated position on a boat. Before this event, the patient had completed a half Ironman competition and heavy weightlifting workout in the days preceding the initial onset of pain, but did not report any discomfort or pain with these events. When the symptoms arose, the patient experienced severe muscle spasms, which caused him to seek treatment in the emergency department. Initial treatment consisted of medication and physical therapy. The patient completed physical therapy treatments for two years, with minimal relief in symptoms. Massage and heat provided the greatest relief, but the positive effects only lasted a couple of hours. Magnetic resonance imaging (MRI) and radiographs, completed about 10 months postinjury, revealed mild disc herniations at L3–4, L4–5, and L5–S1. Diagnostic imaging did not reveal any signs of inflammation or compression of his nerve roots and there was no evidence of spondylolysis, spondylolisthesis, or degenerative changes.

Due to a lack of progress with physical therapy treatment, the patient decided to undergo a rhizotomy (a surgical procedure designed to relieve chronic back pain by severing the sensory nerve roots) one year and four months following the initial injury. The patient reported pain relief for two months following the procedure, but pain eventually returned to levels equal to presurgery status. The patient continued physical therapy treatments and denied taking any medications for pain. At eight months postsurgery, the patient reported to our clinic for another opinion.

Examination

During the initial exam, the patient’s chief complaint was centralized, constant LBP. The examination did not reveal any swelling or deformity, but the patient was tender to palpation over the following areas: bilateral quadratus lumborum and piriformis, right gluteus medius and popliteus, and left ischial tuberosity. The patient reported the greatest amount of pain during sitting (5 out of 10), no pain at rest (0 out of 10), and current pain with standing (3 out of 10) using the Numeric Rating Scale (NRS). Disability was measured using the Disableness in the Physically Active (DPA) scale and Modified Oswestry LBP Disability Questionnaire (modified OSW). The patient reported a 13 on the DPA scale, which is scored from 0 (no disability) to 64 (maximum disability). His modified OSW was 10%, which indicated minimal disability. The patient chose sitting as his limited activity on the Patient-Specific Functional Scale (PSFS), and rated it a 3 out of a possible 10. Activities are rated on the PSFS on a scale of 0 (cannot perform) to 10 (can perform normally at preinjury level).

All active range of motion (AROM) measurements were obtained by averaging three readings. The same