# Recovery of Functional Mobility with a Long-Term Nursing Facility Patient Utilizing the Fascial Distortion Model: A Case Study

Thomas Kincheloe IV, DO; Christina Cherry, DO; and Francis Yoo, DO

#### Abstract

Functional immobility has demonstrated a higher risk of all-cause mortality in geriatric population. It is noted that musculoskeletal pain is one major factor involved with geriatric functional immobility. The fascial distortion model (FDM) utilizes pathognomonic physical gestures to diagnose and treat musculoskeletal pain. In this case study, a long-term nursing facility patient with significantly prolonged wheelchair-to-bed transfer presented with several upper and lower extremity fascial distortions. After FDM treatment, the patient demonstrated a moderate return of functional mobility. This case presents the utility of FDM treatment in cases of decreased functional mobility due to musculoskeletal pain as well as treatment for patients in skilled nursing facility settings.

## Introduction

The fascial distortion model (FDM) is a perspective and treatment modality of musculoskeletal pain. As first described by Stephen Typaldos, DO, in 1991, musculoskeletal pain is a result from 6 different types of distortions within the fascial structure. Each type of fascial distortion is described through a series of pathognomonic physical gesture and their associated verbal cues.<sup>1</sup> These distortions, with their pathognomic physical gesture, are:

- Triggerband (TB) Grazing with fingers along a linear path
- Herniated Triggerpoint (HTP) Pressing a thumb or multiple fingers to a specific soft-tissue area
- Continuum Distortion (CD) Placing a fingertip to a single point at a transition zone between tissues
- Refolding/Unfolding Distortion Grasping/Cupping joints with whole hand, attempting to compress or decompress a joint, and/ or rubbing the joint margin with one finger
- Cylinder Distortion Kneading an area of the body not near a joint, stroking a small area with fingers, and/or sweeping with palm over large areas sometimes not touching the skin
- Tectonic Fixation Attempts to self-mobilize the joint

Identification of fascial distortions through skilled practitioners have demonstrated statistically significant interrater reliability, in EuroFrom the Department of Osteopathic Manipulative Medicine, Michigan State University.

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Correspondence address:

Thomas Kincheloe IV, DO tkincheloe@pnwu.edu

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pean research.<sup>2,3</sup> In FDM case studies, treatment utilizing the FDM has demonstrated successful return of range of motion within a few treatments.<sup>4,5</sup>

A decrease in mobility is one of the first signs of declining health due to the increased need for dependency. With the patient losing their independence, they become more prone to frequent hospitalizations, institutionalization, and death. One study surveyed participants with their level of activity and various comorbidities. The results of the study indicated that participants had a 30% to 47% decreased risk in all-cause mortality with self-reported higher levels of activity level.<sup>6</sup> This decrease in all-cause mortality was reiterated with two later studies that utilized the Timed Up and Go (TUG)<sup>7</sup> and Accelerometer<sup>8</sup> as methods to assess the activity level and mobility of the patient. According to self-reported studies in geriatric populations, an inversely proportional relationship is correlated with decreasing functional mobility and increasing pain patterns.<sup>9,10</sup>

## **Case Report**

A 94-year-old Caucasian wheelchair bound female presented to the skilled nursing facility after a left total hip replacement for short term rehabilitation and transitioned to long-term nursing care voluntarily due to poor social support. She has several comorbidities, including bilateral hip and knee osteoarthritis, restless leg syndrome, complex regional pain syndrome, history of unspecified dislocated hip, right hip bursitis, right shoulder impingement with mild supraspinatus tear, age related cognitive deficit, coronary artery disease, hypertension, atrial fibrillation, and chronic kidney disease stage 3. The patient was evaluated in the nursing facility by the osteopathic neuromusculoskeletal medicine (NMM) team, consisting of at least one attending physician and one NMM resident, monthly for a total of 24 months for bilateral hip pain, left shoulder pain and difficulty transferring. Physical therapy noted antalgic gait with decreased velocity and decreased balancing. For the past year, the patient has had treatment utilizing physical therapy in conjunction with osteopathic manipulative treatment (OMT), consisting primarily of myofascial release, balanced ligamentous tension, osteopathy in the cranial field, Still technique, muscle energy technique, and articulatory technique. The patient has demonstrated moderate improvement with periodic episodes of relapse. Upon subsequent evaluation, the patient presented with pain in the right hip and bilateral shoulder and upper arms. The patient was unable to extend the right hip beyond 5 degrees of hip flexion and to extend the right knee past 30 degrees of flexion. The patient also noted significant pain with active range of motion with left shoulder abduction and right elbow flexion, without any decrease in range of motion. The patient was noted to have a wheelchair-to-bed transfer time lasting 15 seconds while needing the use of a one-person assist. As there was minimal progression beyond one-person assist in transfer over the course of physical therapy and OMT, fascial distortion model was chosen due to its different approach for treating the patient than had been previously attempted to treat the patient. The patient depicted numerous fascial distortions to include:

- Right femoral HTP pressing three fingers inferior to inguinal ligament at the femoral canal
- Right arm cylinder distortion sweeping entire arm over the right biceps brachii
- Several left arm CDs pressing a single finger along several points at the humeral attachment of the deltoid muscle and the supraspinatus

Identification of HTP, a protrusion of deeper layer of fascia bulge though a superficial fascial defect, and CDs, numerous minute protuberances or "grain of sand/rice" texture at ligamentous-osseous transition zones, were confirmed upon palpatory exam. Treatment was performed by applying steady pressure to the HTP and CDs with the practitioner's thumb until reduction of fascial defects were achieved. Cylinder distortion was unwound utilizing the "squeegee" method, where the practitioner encompasses the affected area with their hand and slowly sliding along the indicated area, while maintaining constant pressure.

Subsequently, the patient noticed complete reduction of pain in the left shoulder through active range of motion and increase range of

motion to 5 degrees of right hip extension. The patient was able to wheelchair-to-bed transfer within 10 seconds with only minor assistance utilizing furniture immediately after treatment. The patient continued to show overall improvement of range of motion and reduction of pain for the following two months during scheduled monthly in-facility visits without needing OMT or FDM.

#### Discussion

During this case study, assessment of the functional mobility of the patient is predominantly subjective, with the patient stating moderate decrease in pain and moderate increase in mobility. Objectivity of the functional mobility was noted with range of motion testing and wheelchair-to-bed transfer. The utility of the TUG test or Accelerometer use could have been implemented in this setting to further denote the level of improved mobility. The TUG test is performed where the patient must stand from a chair, walk three meters, turn around, return back to the chair, and be seated. The patient is timed from the moment their back leaves the backrest of the chair and ends at the time the patient returns to a seated position. A shorter time demonstrates functional mobility as compared to longer times has a correlation with increased risk of falling. The TUG has demonstrated a reliable method for quantifying functional mobility in elderly populations.<sup>11,12</sup> As a decreased functional mobility is subjective in nature to the relationship with musculoskeletal pain, the patient did demonstrate an improvement with decreased pain with motion, increased active range of motion, and with wheelchair-to-bed transfer unassisted.

Frailty of tissues is a concern when it comes to treating the elderly population. Limited studies have been reported with regards to the demographics of dermatoporosis. Two French studies looking at prevalence in dermatoporosis demonstrated 32% to 37.5% in the sampled populations.<sup>13</sup> Prevalence of skin tearing was noted to range between 4.6% to 41.5% among community and nursing home reports in Australia and Denmark.<sup>13</sup> In one prospective cohort study in Japan demonstrated a cumulative incidence of 3.8% among the 368 patients over a 3 month study.<sup>13</sup> As chronic skin fragility is a concern in the growing aging population, treatment utilizing compression as well as skin dragging techniques are contraindicated in these cases. As chronic skin fragility is noted to be about 13% in the population over 65 years of age in 2010<sup>13</sup> treatment utilizing compression as well as skin dragging techniques are contraindicated in these cases. Additionally, it is estimated that about 25 million Americans are noted to have a bone density 2.5 standard deviations below the mean.<sup>14</sup> As a risk factor for osteoporosis is age greater than 65, careful consideration on the utility of FDM prior to application. The patient in this case study had neither dermatoporosis nor osteoporosis.

As previously reported, there was a noted correlation with musculoskeletal pain with decreased functional mobility.9,10 In this case study, there was a moderate return of functional mobility with treatment of the musculoskeletal pain. The FDM attributes musculoskeletal pain as a manifestation of alterations to the underlying fascia. Fascia is the connective tissue network of soft-tissue fibers and planes that encompasses organs, muscles, bones, and nerves that creates structural support for the entire body. Within this connective tissue, there is a complex system of cytokines, biochemicals, and receptors that are utilized to give the body the ability to navigate its surroundings and recognize stressors to the integrity of the supported tissues. Nociceptors within the connective tissue is responsible for conveying pain signals when there is mechanical disruption to the fascial continuum.<sup>15,16</sup> Additionally, non-physiologic stimuli can lead to activation of the nociceptors. Hyaluronic acid is layered over the fascial layers that allow gliding between the tissues. As a decrease in hyaluronic acid occurs, the tissues develop increased difficulty with gliding, leading to a proposed articular stiffness, tissue dehydration and increased cellular metabolism.<sup>15</sup>

#### Conclusion

This case report highlights the possibility of utilizing FDM as a treatment modality for fascial distortions leading to a decrease in functional mobility. It is important for clinicians to recognize a decrease in functional mobility can have various etiologies and careful exploration of each possibility should be thoroughly evaluated. Unlike previous case studies that have highlighted the utility of FDM within outpatient office encounters, this case presented how FDM can be incorporated into the treatment regimen for patients in a long-term nursing facility. Additionally, current available literature in FDM has been limited to case reports and review studies. The utility of FDM is continuing to advance with the publication of new research.

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