

Gentle, Evidence-Based Neuromuscular Re-education for Balance Improvement, Coordination Training, and Musculoskeletal Pain Relief

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Photography by Rosalie O'Connor

Patients are often unaware that the Feldenkrais Method (FM) offers a nonaddictive, noninvasive, and often relatively low-cost therapeutic approach for balance disorders, persistent pain, and mobility and coordination challenges. Where traditional physical therapy (PT) emphasizes standardized treatment for particular diagnoses, FM draws on the neurological bases of the developmental process and creates customized "learning how to learn" lessons that improve and expand one's movement repertoire. This paper explores the method through research literature, practitioner theory, and my observations as a long-time provider and teacher of both FM and PT.

# Through spontaneous and varied movement, young children naturally cultivate new neural pathways. Most adults, in comparison, rely on well-rehearsed movement patterns. This habitual movement can be limiting—and even stressfully inefficient.

Imagine an office worker who sits in a slumped posture for hours with little awareness of the gradual detriment to his body, except for occasional aches and pains. True postural change, and reducing or eliminating the resulting discomfort, is not achieved with effort alone. The chronic sloucher must learn a new repertoire for his spine, just as pianists learn to coordinate their fingers in the production of a harmony.

The act of learning is central to FM. It provides a comprehensive, gentle, and neurologically engaged approach to improving function. Dr. Moshe Feldenkrais' method offers patients an opportunity to, in his own words, "expand the boundaries of the possible: to turn the impossible into the possible, the difficult into the easy, and the easy into the pleasant."

A growing body of evidence supports FM's use to improve balance, comfort, and mobility. Studies have supported its application to a wide range of physical and mental health conditions, from stroke recovery to anxiety and depression. Feldenkrais movement lessons enhance a person's natural abilities to adopt healthier use of the body.

# AN OVERVIEW OF THE METHOD

FM is a uniquely beneficial form of neuromuscular learning. Feldenkrais may be distinguished from other body awareness practices by its focus on somatic learning as a goal, rather than solely as a process to achieve another outcome. This results in a more seamless application of movement-based learning to daily life.

The Feldenkrais approach uses a series of slow, gentle, and varied movements. These movement lessons guide patients to not only adopt more functionally efficient movement patterns, but also to promote motor learning. Together, the neurological and movement quality improvements can result in improved quality of life.

The following section explores the practice of FM and the mechanism by which it is theorized to address such issues as lower back pain, stroke recovery, atypical early childhood development, mental health, and general motor improvement goals.



Feldenkrais lessons include slow, gentle, and varied movements.

## THE PRACTICE

Dr. Feldenkrais theorized that movement problems resulted from an incomplete or unrefined self-image. To address this underlying psychological and neuromuscular issue, a Feldenkrais practitioner guides an individual or group through a series of sensorimotor explorations.

The slow, structured Feldenkrais movement lessons emphasize subtle variability, while promoting internal feedback, control, mindfulness, and a sense of calm. These lessons explore functional relationships between the various parts and systems of the body, as well as between the body and environment (i.e., the space in which the body moves and the supports on which it depends).

In my own practice, I open a new client's first session with a discussion of general principles of biomechanics and neuroscience, employing metaphor and visual aids. I often hold a flexible model of the pelvis and spine horizontally and compare the challenge of engaging the spine segmentally to learning to play a piano.

I explain that creating neuromuscular pathways for appropriate spinal activity involves the same central nervous system processes through which a pianist learns to move her fingers in innumerable combinations on the keys. Most new clientele use their spine with a detrimental lack of refinement and harmony. Beginning to think about the body's movements through metaphor can be an effective introduction for prompting people to relate more thoughtfully to their own movement patterns.

I then proceed through a comprehensive history, assessment and investigation before creating highly customized sensorimotor lessons. The context for movements involved may include sitting, standing, lying down, or walking. Typically, the lessons include movement explorations guided by tactile and verbal cues.

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Consider a patient who presented with lower back pain. Upon evaluation, I discovered considerable resting tension in her right foot and ankle. Discussion revealed that she had fractured her right ankle 35 years earlier. She reported that the injury healed well, with no adverse symptoms. Yet, when asked to compare the sensations of each foot and ankle while performing basic movements, she could clearly feel the difference.

I concluded that a neuromuscular pattern that served a protective role for the patient during her injury 35 years ago had persisted, but below her level of awareness. In our session, she learned to replace that limiting habitual pattern with one of more ease and suppleness. Subsequently, she reported significant improvement in lower back mobility and comfort. Follow-up evaluation revealed continued improvement of comfort and suppleness in the foot and ankle.

#### THE LEARNING MECHANISM

Research, clinical observations, and practitioner theory point to the act of learning as the mechanism of action by which the Feldenkrais approach refines sensorimotor discernment, increases mind-body integration, and addresses the various conditions for which it has been found to be effective.

A 2015 systematic review of randomized controlled trials considered outcomes in a range of populations and health and functional outcomes. According to the study, "The populations varied in age and diagnosis indicating that a beneficial effect is possible across different domains; again this is consistent with the use of the FM in diverse populations and also consistent with the notion that it is not a healing or disease-specific mechanism of action but rather one based on more generic learning and self-improvement."<sup>2</sup>

I have observed the mechanism of learning at work in my own practice. Consider stroke patients who come to my office, having already completed a traditional PT rehabilitation

program. Almost without exception, such patients present with significantly increased muscle tension in both the affected and unaffected lower extremities. When they learn to replace undifferentiated effort with more efficient neuromuscular engagement, these patients often experience dramatically increased energy and improved function.

In a neurology dissertation I co-authored, Batson et al. corroborated the effectiveness of FM post-stroke. The study concluded that, for certain stroke patients, group-based FM therapy improves balance, movement efficiency, and imagery ability. According to the study, "Those subjects who made the strongest gains in the [Berg Balance Scale] had the highest pretest [kinesthetic subscale of the Movement Imagery Questionnaire] scores, consistent with the logic of FM that enhanced kinesthetic awareness of the body results in improved function."

In a 2011 qualitative study of FM and other body awareness approaches, Mehling et al. examined the topic of kinesthetic awareness through the lens of practitioner theory. The study found that the process of learning to discern subtle sensory and motor events in movement is a key mechanism for mind-body integration. This finding is significant because such integration is often pursued as a therapeutic goal in itself. According to the study, "A central skill that patients learn through training and repetition is the ability to notice sensations, thoughts and feelings as they occur in their actual immediacy. What is noticed might be verbalized or not. The point is that the process of noticing and the learning of differentiated noticing were viewed by the practitioners as a path to integration."

This assertion by practitioners that the improved movement quality resulting from FM and other body awareness

## SUPPORTING BROADER TREATMENT

In my role as an accredited teacher of continuing education to licensed physical therapists, I teach that practitioners must fully commit to patient-centered care. I stress the importance of:

- Infusing their practice with the values distinct to FM, including life-long learning and selfdetermination
- Crafting customized movement therapy that takes into account prior and ongoing treatment in conventional medicine
- Providing follow-up and progress notes to the specialists and primary care physicians who also treat our patients
- Striving to make referrals quick and simple for both the patient and provider
- Being available for deeper collaboration with a patient's whole health care team

approaches translates into an improved quality of life is supported by peer-reviewed literature. A randomized clinical trial concluded in 2015 that Parkinson's Disease patients treated with Feldenkrais lessons showed improvement in quality of life and reduction in the level of depression, the most common mental comorbidity for Parkinson's patients. "The natural trajectory of disability in PD affects daily living activities and interferes in mobility and [quality of life]. Thus, offering exercises that motivate action and generate selfconfidence and self-control in PD patients is very important to the instigation of emotional states that trigger the intentional movements nicely. The Feldenkrais method favors the intentional movement in an easy and pleasurable way, and then it triggers emotional aspects related to the ability to perform daily activities easily," according to Teixeira-Machado, et al.5

In 45 years of practice, my own observations have reinforced these research findings. Again, consider a patient in my own practice. A two-year-old girl arrived with her mother, who was quite anxious that her daughter only scooted on her bottom and never crawled. Prior therapists had emphasized the need for crawling, but met with considerable resistance. Since scooting served her quite well, she had no interest in a function she could not relate to. Instead of focusing on crawling per se, through FM we engaged in broader sensorimotor activities. After two sessions, the mother sent me a video of the child crawling at home for the first time.

Because ease and calm accompany the learning process, issues of resistance and anxiety are often relieved. As a result, the neuromuscular learning opportunity can be fully seized. And it is this act of learning that enables FM's effectiveness for a variety of physical and mental conditions.

## FIRST-LINE TREATMENT

Clients often seek out FM after undergoing costly procedures and unsuccessful therapy in conventional medicine. Any candidate for PT is a good candidate for the Feldenkrais Method. Ideal candidates for the Feldenkrais approach as a first-line treatment may also include people who:

- Prioritize preventive care to maintain an active lifestyle
- Request an alternative to invasive procedures
- Desire a less-clinical environment for obtaining health care
- · Seek to avoid risks of opioid use for pain relief
- Express an interest in complementary medicine, such as yoga
- Post-stroke, can effectively engage in imagery practice, as determined by the kinesthetic subscale of the Movement Imagery Questionnaire<sup>3</sup>

## THE MOVEMENT MECHANISM

The practice of exploratory learning provides a framework for achieving the benefits of FM, but motor refinement is also inherently beneficial. The movement goals of the Feldenkrais Method can be summarized in Dr. Feldenkrais' concepts of "good action" and "mature behavior."

The Feldenkrais Method does not push people to exceed, strain, and achieve—rather it engages them to learn how to more easily and efficiently function.

Good action refers to movement in an efficient, differentiated and coordinated manner. As Dr. Feldenkrais described it, "All the faculties are smoothly coordinated to bear on the present circumstance, no matter how unexpected the demand may be. The musculature shows no useless contraction in any part of the body. All the articulations participate in every act. In short, the whole system is integrated on the present circumstance with perfection and poise, preparing the body and mind for future acts."

The term mature behavior describes the ability to act spontaneously, responding to the environment and situations without compulsion. This concept refers to a motor response that is effortless, makes effective use of self, and emphasizes exploration more than "correct" movement.

These two movement goals are of critical importance in translating the benefits of FM to daily routines. When life asks for a particular activity, our brain must learn how to coordinate an appropriate neuromuscular response. The primary positive outcome of FM is the development of just such a response, which can have benefits that far exceed relief of the targeted problem. Motor refinement and exploratory learning form the basis for FM's success as a therapeutic approach.

# A COMPLEMENT TO CONVENTIONAL THERAPY

Three unique qualities of FM make it an effective adjunct for PT. These qualities increase PT's effectiveness and appeal.

The first quality is FM's ability to produce a fundamentally gentler version of PT by relying on the mechanism of learning rather than undifferentiated effort. Secondly, FM directly involves the patient's central nervous system, bringing neuroplasticity to bear in their PT treatment plan. And finally, Feldenkrais makes PT more comprehensive and customized.



The gentle and playful, yet neurologically focused, nature of FM makes it ideal for addressing issues of early childhood development.

## THE GENTLE, NON-INVASIVE APPROACH: FINESSE VS. EFFORT

Traditional PT emphasizes strength and flexibility, and the functional significance of these outcomes is generally appreciated by practitioners of both traditional and complementary therapy. But FM improves upon PT by putting greater emphasis on improving patterns of sensorimotor functioning that enhance easier access to strength, suppleness, and finesse.

Feldenkrais practitioners customize lessons to not only address particular difficulties and disorders, but also to guide the client in "learning how to learn." A practitioner increases the potential for this sensorimotor learning by utilizing Dr. Feldenkrais' application of the Weber-Fechner Law: When effort is decreased, one can discriminate finer sensory changes.

"For example, if I hold a 20 pound weight, I cannot detect a fly sitting on it... If I hold a feather, the weight of a fly makes a great difference... In order to be able to tell differences in exertion one must first reduce the exertion. Finer and finer performance is possible only if the sensitivity—that is, the ability to feel the difference—is improved," said Feldenkrais.<sup>7</sup>

Through a lower level of exertion, FM not only stimulates refined sensorimotor discernment, but also results in greater comfort experienced during and after therapy sessions, increasing PT's appeal.

FM does not push people to exceed, strain, and achieve—rather it engages them to learn how to more easily and efficiently function. FM relies on the human being's enormous capacity to learn. The approach recognizes not only the overwhelming need for learning, but also its salubrious effects.

People often assume that sacrificing exertion would also sacrifice effectiveness. Indeed, outcomes-focused research comparing Feldenkrais and conventional PT is limited.

However, data from one outcome comparison study did find that, for nonspecific musculoskeletal disorders such as fibromyalgia, FM might be more effective at relieving pain than conventional treatment. This conclusion is consistent with at least one previous outcome comparison study focused on group therapy.<sup>8</sup>

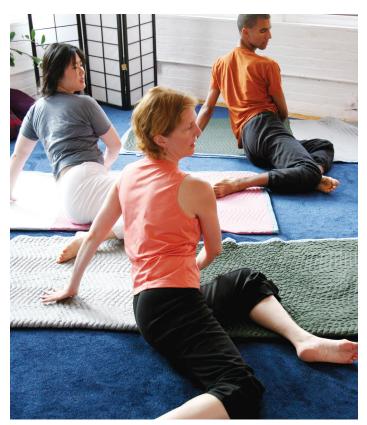
## THE BRAIN-FOCUSED APPROACH: MAKING CURIOSITY THE GOAL

FM's emphasis on improving learning processes allows the physical therapist to engage the patient's nervous system just as deeply as traditional PT engages the musculoskeletal system.

In an exploratory study of the neuroscience underlying FM, Verrel et al. examined the neural effects of two subtle variations on a Feldenkrais foot manipulation. A local version of the foot task emphasized small movements of the foot and ankle, while a global version focused on the foot's function as support for the larger body. The authors found that a short FM-based sensorimotor intervention can affect spontaneous cortical activity in regions functionally related to the exercise and that the two variants on the foot manipulation differentially affected subsequent resting state activity. "Increased resting state activity in higher-order motor areas supports the hypothesis that the global intervention engages action-related neural processes," according to Verrel et al.9

Feldenkrais practitioners have long viewed this nervous system engagement as a focused exchange of data between the body and mind—and a valuable tool for learning. "Sensory motor learning is how all physical learning takes place. It occurs through an information feedback process between your senses, muscles and brain," according to Feldenkrais experts and authors Zemach-Bersin, et al.<sup>10</sup>

FM's mind-body approach gives people, no matter their age, the opportunity to achieve functional gains through movement



FM can be provided through therapy sessions or group classes.

refinement and movement-based learning to a degree they haven't experienced since early childhood. This relaunch of somatic learning stimulates a playfulness and curiosity that many adults rarely experience, despite the fact that we all have the neurological capability.

"It utilizes your brain's innate capacity for learning and its potential for lifelong maturation and growth. Rather than teaching 'the right' way to move it provides you with 'more choices' of how you might move," explains Alan S. Questel, Guild Certified Feldenkrais Practitioner/Teacher.<sup>11</sup>

Somatic learning taps into the brain's inherent neuroplasticity. Dr. Feldenkrais published his first work on neuromuscular learning in 1949, far ahead of medicine's current acceptance of life-long neuroplasticity. From those early days, a fundamental characteristic of FM was its reliance on the brain's natural ability to form new neural connections throughout life.

## THE COMPREHENSIVE APPROACH: TREATING THE WHOLE PERSON

The benefits of FM clearly go beyond musculoskeletal outcomes to provide generalized physical, cognitive, and emotional benefits—in both treatment and prevention. As an adjunct, FM broadens PT's utility by offering providers a more holistic and customized tool. This is because Feldenkrais, compared to traditional PT, emphasizes a broader suite of influences on our health.

FM aligns with a biopsychosocial model of medicine. Rather than considering solely biological sources of disorders and pain, the biopsychosocial model takes into account

the psychological and social influences on our health. In traditional PT, a provider investigates muscle tone and joint tension. A FM practitioner not only considers such biological factors, but also brings psychological criteria (self-image, emotional habits, and values) and social context (environment, culture, and biography) into consideration.<sup>12</sup>

"Using this approach as a working model allows for more individualized approaches to health," said Bowes and Smyth, Guild Certified Feldenkrais Teachers who noted the broad suite of health conditions and ability goals to which Feldenkrais has been effectively applied. These include injury prevention as well as healing, improvement of general wellbeing, and even the achievement of performance goals with dancers, musicians, athletes, and actors. 12

Indeed, research has corroborated FM's effectiveness in a wide range of applications. Hillier and Worley in their systematic review found evidence supporting its application for varied populations and outcomes. "There is promising evidence that FM may be considered for balance classes in ageing populations, both as a preventative approach and for people at risk of falls. There is also some evidence for the use of FM where reduced effort, efficiency of movement, and awareness can play a part in reducing pain or discomfort," the authors concluded.<sup>2</sup> Data has also shown that, among seniors, Feldenkrais has driven positive changes in mobility, balance, balance confidence, and fear of falls.<sup>13</sup>

In my own practice, I have found FM to be effective in serving patients with a broad spectrum of persistent and complicated problems—such as postpartum issues, balance disorders, chronic lower back pain, and childhood developmental delays. The health and wellness benefits alone provide a strong reason to incorporate FM into a physical therapist's toolkit. But considered in combination with the gentle nature of the therapy and the deep neurological engagement it offers, the case is made even more compelling.

# VALUES ALIGNING FM WITH CONVENTIONAL MEDICINE

Distinct values provide a foundation for a Feldenkrais practitioner's competence. In my role as an accredited teacher of continuing education to licensed physical therapists, I teach that these values should infuse every aspect of a therapist's professional life and be reflected in their model of care, including interactions with clients and their broader health care team.

Though the values underlying the Feldenkrais Method are distinct, they are increasingly compatible with the evolving state of conventional healthcare—and with the modern demands of patients.

#### VALUES OF THE FELDENKRAIS METHOD

As a teacher, I promote many values intrinsic to the practice of FM. Here I will focus on two values that are central to the method: life-long learning and self-determination.

In Feldenkrais lessons, learning is not only the means—it is the end. The ability to learn is a primary goal and the mechanism by which FM achieves profound clinical results, as well as stimulates personal growth. I enter each new client relationship excited by the possibilities of reawakening the capacity of transformational somatic learning. This type of learning holds the same potential for adults as it did when we, as toddlers, used movement skill and finesse to build an evolving repertoire of efficient ways of moving. The importance of learning throughout the entirety of one's life cannot be overstated.

Coupled with the value of life-long learning is the value of self-determination. Feldenkrais practitioners create situations in which people feel motivated to carry their learning outside the walls of the therapeutic environment. We strive to instill curiosity in clients. We initiate exploration of self-organization, self-perception, self-image, and learning in order to determine a personal path to wellness. And above all, we respect our clients' ability to take responsibility for their own learning processes.

FM is a fundamentally values-driven treatment, with self-determination and life-long learning as two major guiding principles.

## **VALUES OF INTEGRATIVE MEDICINE**

More than 30 percent of American adults use health care approaches developed outside of mainstream conventional medicine, according to the National Center for Complementary and Integrative Health (NCCIH). These approaches, which include the Feldenkrais Method, are referred to as "complementary medicine" when used together with (rather than in place of) conventional medicine.<sup>14</sup>

My own clinic, The Wellness Station, combines complementary medicine (FM, therapeutic and aerial yoga, and comprehensive balance training) with conventional PT to provide personalized integrative medicine. Within my practice you'll find these key principles of integrative healthcare:

- Treatment of the whole person rather than an isolated symptom, in alignment with a biopsychosocial medical model
- The cultivation of meaningful, collaborative relationships between patient and provider
- A focus on prevention and wellness, rather than simply treatments of disorders<sup>15</sup>

As demonstrated by the NCCIH's statistics on the penetration of complementary approaches, the principles of integrative health care no longer lie on the fringe of American medicine. Experts in even the most conventional medical fields now acknowledge, with echoes of the biopsychosocial model, that diseases are commonly the result of an accumulation of many small effects from a wide variety of influences on health.

Furthermore, conventional medical systems are increasingly adopting the principles of integrative medicine. This trend is perhaps most striking in health policy reforms to emphasize wellness and prevention, in clinical guidelines

governing chronic disease management, in the exploration of immunotherapies in oncology, <sup>15</sup> and in pain management for military personnel and veterans. <sup>14</sup>

With the values of integrative medicine now widely established in conventional medicine, patients increasingly expect their portfolio of treatment options to be inclusive.

## **VALUES OF PATIENT-CENTERED CARE**

I also see the influence of integrative medicine in the growing paradigm of patient-centered care, which emphasizes a web of communicative relationships among a patient and all members of the patient's health team.<sup>16</sup>

I teach that physical therapists adopting Feldenkrais principles into their approach must fully commit to patient-centered care. I stress the importance of customized movement therapy that takes into account prior and ongoing treatment in conventional medicine; follow-up and progress notes to the our patients' broader health care team; quick and simple referrals for both the patient and provider; and deeper collaboration, as appropriate, with other health care providers.

The guiding principles of FM and integrative medicine are of primary importance within the context of the patient's PT sessions. But the principles' importance extends beyond the clinic walls. These values are aligned with and can actively support the treatment plans of the referring physician.

## DISCUSSION

Hopefully, my own experiences as a Feldenkrais practitioner and teacher have helped to elucidate the practice and its utility. This effective method is grounded in respect for humans' unlimited capacity for learning and growth.

A growing body of evidence already supports the efficacy of this approach for balance disorders and pain relief in various populations. Many practitioners, including myself, have witnessed the method applied with success in an even broader range of scenarios.

Peer-reviewed research and clinical observations corroborate the indispensable role that Feldenkrais lessons play as an adjunct to traditional PT. This integrative approach provides a gentler, more neurologically focused, and more holistic process to overcome adverse habits of movement. It is important that patients be educated about the significant benefits and minimal risks of the Feldenkrais approach.

This unique method allows people at all stages of life to actively engage in somatic learning of the type many assume is only possible in infancy. Throughout life, skillful and varied movement can serve as a resource to enrich our lives with healing, wellness, awareness, and harmony.

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