

Part One

How Our Body  
Talks to Us

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# 1

## The Path to Pain

If you are reading this book, you are probably among the thousands of frustrated, angry people who are looking for help with their physical challenges and pain. According to the American Academy of Orthopedic Surgeons, for thirty-five million Americans—that's one in every seven—their movement is restricted by a musculoskeletal disorder, such as a broken bone, myofascial pain, arthritis, or a sports trauma. Pain sufferers are everywhere, from all walks of life and all ethnic backgrounds, socioeconomic levels, and ages. The common thread connecting these individuals is pain, either chronic (typically defined as pain that lasts longer than three months) or acute (pain that has more of a rapid onset to levels that often motivate a person to seek intervention).

Perhaps the pain you have is new. Maybe it's one more pain in a long list of pains that has prompted you to finally take action. Or maybe it's chronic pain that never went away or has disappeared, only to come back again. These scenarios often develop when chronic pain is improperly addressed over time. When this happens, the damage exceeds the body's level of tolerance, and the pain becomes acute. If intervention does not occur, disability or loss of function may result.

Maybe it's a pain that you're tired of treating with medication. The medication may not be helping any more, or perhaps its side effects have created their own problems. It could be a pain that you know is getting worse or will get worse if you don't do something about it.

You might not even experience “pain” per se, but you do have a muscular-related physical limitation that interferes with your daily activities, by causing difficulty in rising from a chair and sitting down, getting in and out of the car, or climbing up and down stairs. You might think that as long as you avoid a specific movement, you won’t have any pain. Of course, little by little, you start adding to the list of activities to avoid until, finally, your life is restricted to a few, limited things you can do without pain.

Even a very active person can have similar problems. A small musculoskeletal imbalance or weakness can significantly limit an active individual’s ability to perform at an optimum level. It can even result in your changing a favorite mode of exercise due to pain. No matter how hard you train or modify your technique, you can’t seem to rise above the plateau. For example, at the third mile in a run your knee begins to hurt, or you can’t play golf anymore because you will be laid up the next day with back pain. For the more elite athlete, an inability to cut, jump, balance, or accelerate as well with one side of the body greatly affects performance.

Peter, an up-and-coming triathlete, came to see me because he was unable to log the training miles from biking and running that he needed to improve his competition times. Sure, he could run ten miles and feel okay or bike thirty miles and feel pretty good, but as soon as he crossed those thresholds, his body began to break down, and the pain in his hip forced him to stop. Peter could swim without a problem, but that was only one third of what a triathlete needs to do. At the ten-mile run and the thirty-mile bike, Peter’s body could no longer tolerate the stress that his training put on it. His mechanical deficiencies became magnified, and pain reared its ugly head. So, running or biking was not the problem; it was the way Peter ran and biked. The program we designed for him reeducated his body to move the way it was supposed to move, without the mechanical stress that it was so accustomed to. Peter is now competing at a level he never thought possible, and without pain. He is a winning example of how body mechanics must first be viewed from a macro level. Although he’s a competitive athlete, Peter still had to begin with the fundamentals just like everyone else. If he hadn’t started with the basics, his body would have resorted to its old familiar ways.

## The Path to Pain

To help you understand what caused your present condition, I’d like to take you through what I term the “Path to Pain.” Everyone’s path is unique, but there is

a sequence of events that's common to individuals whom I see in private practice. It isn't unique to the people who come to Function First; it happens to almost everyone. It's a series of events that, when traced back, often leads us to the underlying cause of an individual's pain. As you read, you'll begin to understand how this applies to you, and more than likely, to many people you know. You will not discover something extraordinary and unique; instead, you and your "healing team" (doctors, therapists, chiropractors, etc.) will begin to place emphasis on long-term rehabilitation and the prevention of future occurrences by looking beyond each symptom and seeking the underlying mechanical trigger.

In my opinion, the Path to Pain begins with muscle imbalance issues. A muscle imbalance is a discrepancy in length and strength between two opposing muscle groups. That is, muscles that oppose each other (pull in opposite directions) need to maintain a mutually beneficial relationship. They should have corresponding lengths and strengths that allow a joint to move equally and within its normal range of motion. A predictable pattern occurs with these muscle imbalances based on how our neurological system works. It's a dirty little trick that our bodies play on us. You see, when a muscle gets tight, it begins to demand more attention from our command center, the central nervous system (CNS). The tight muscle thus receives more of the information from the CNS, until it deprives the opposing muscle of its fair share of the information. This is equivalent to adding fuel to the fire. The shorter, tighter muscle continues to get even shorter and tighter. The opposing muscle now becomes long and weak as a result. Therefore, the situation perpetuates itself, if you do not recognize and act upon it. Ultimately, these muscle imbalances will result in altered or inappropriate movement patterns, which are precursors to many types of musculoskeletal injuries.

Muscle imbalances can be caused by many different things. The most easily recognized are those associated with habitual postures. For many people, the picture of a slouching teenager may come to mind. When left unaddressed, these postures become more ingrained in people's physical characteristics. Other examples of habitual postures are a tendency to always stand on one leg or to regularly shrug the shoulders in response to cold, fear, or tension. Women who were teenagers and young adults in the 1950s and 1960s were taught to tuck their buttocks under when they stood. Over time, this affects the position of the pelvis and the lower back. Habitual postures can also develop from psychological influences. Certain observable postures are often associated with depression and fatigue, others with stress and fear. A person who consistently experiences these emotions may reinforce these undesirable postures.

Another major cause of muscle imbalances is the work environment. If you do a lot of any one thing, your body will get stronger and more efficient at the mechanics it takes to complete that task. This can lead to tighter and stronger muscles associated with accomplishing that movement. This is true whether you use a computer or run a jackhammer every day. If you sit all day with your hands in front of you, certain muscles will likely develop tightness, while their antagonist muscles will develop weakness. The same principle applies if you always hold a particular work tool the same way or have to assume a specific stance on a regular basis (e.g., as a grocery checker).

Past injuries and surgeries can also cause muscle imbalances. Trauma to the body, be it from an accident or surgery, creates a response within the tissue. This includes the skin, the fascia, the blood vessels, the ligaments, the muscles, and the nerves. But we all knew this, right? You've experienced this if you fell and skinned your knee or your buttocks became bruised from a needle. For the sake of our discussion, however, the importance of this response to the tissue is how it affects the way we move. If there is a lack of movement in one part of the body, be it a muscle or a joint, the body will make up for it somewhere else. Let's say that you strained the hamstring muscle in the back of your left thigh. Strains come in different degrees of severity—from just a few torn muscle fibers to a complete tear, in which one side of the entire muscle is separated from the other side. So, let's say that your strain was pretty bad, and the skin above the muscle became discolored and bruised (this is due to bleeding of the damaged muscle fibers). As that tear heals, one part of the process is that the body places scar tissue in and over the region of the tear(s). Scar tissue does not have the same elastic properties that muscle has. This means that a muscle full of scar tissue does not lengthen or stretch the way a healthy one does. If left to heal on its own, that injured hamstring muscle will have less flexibility at the hip and the knee joints that it helps to move. The result is that even though the bruising has disappeared, the damage remains and can continue to impact the rest of your body.

Another way to develop muscle imbalances is through improper physical training—for example, how individuals work out in the gym, the way athletes train, and how a “weekend warrior” participates in his or her sport. The main difference between improper physical training and stressful activity in the work environment is the intensity of the former versus the duration of the latter. Work-related imbalances are often caused by repeating certain tasks and movements over a prolonged period of time. During physical training, muscle imbalances tend to develop as a result of overloading the muscles

improperly—for example, a young man who spends most of his time in the gym training what I call the “mirror muscles.” These are muscles that he sees in the mirror—the chest, the biceps, and the abdominals. Since he doesn’t see the opposing muscles on the back side of his body, he doesn’t give them the same attention. Although he may do this only two or three times a week, he is adding resistance to the body in the form of the weights he lifts. Therefore, he is making himself dysfunctionally stronger; although his toned muscles may look good, they in fact cause an overall negative impact on the body.

Another good example is a middle-aged woman who is an avid golfer. She loves to walk the course for exercise and never uses a cart. She may play only a few times a week or every two weeks, but because golf is a one-sided sport, she tends to develop detrimental muscle imbalances on one side of her body. Although she isn’t working against resistance a way the weight lifter is, she has had to develop her body’s muscular force to generate speed in the club to hit the ball. No matter how good a golfer she is, she would do this at least one hundred times each round, if her actual strokes plus practice swings were added up. In this example, it is the repetition of a single, one-sided movement that results in the stress.

Another type of improper physical training that can negatively impact the body is walking or running asymmetrically. Your movements should be symmetrical, from left to right. Now, many professionals in my field would probably be quick to point out that very few, if any, humans are perfectly symmetrical in their gait. Yet when the trained eye can observe asymmetries without the use of high-tech recording equipment, it’s obvious that damage is being done to your body with every step. Asymmetries in your gait reveal the effects of your postural misalignments and muscle imbalances. Walking is your posture in motion. Take a look at an older pair of your running or walking shoes and see whether the wear patterns are the same on both soles. If you see exaggerated wear on the inner sole or the outer heel, you may have a problem with an asymmetrical gait. This is just one way to see firsthand the uneven wear and tear to your body. In addition, notice whether you form calluses regularly on one area of a foot that you don’t form on the other foot.

The last few contributing factors to muscle imbalances are those that you have very little control over. One such type consists of congenital factors. You are born with them—for instance, having one leg slightly longer than the other. This is a “true” leg-length discrepancy. I say “true,” because many people have imbalances that make one leg appear longer than the other when it really is not. True leg-length discrepancy is one in which a bone or several

bones are longer in one leg than in the other. This can create compensatory changes all throughout the body, as the individual adjusts to the uneven base.

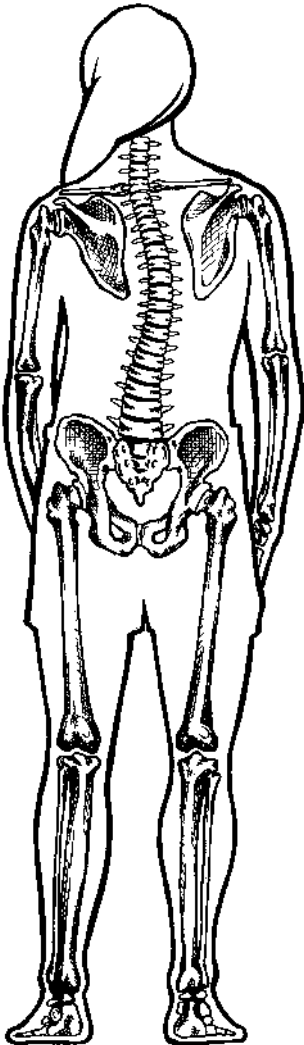
Scoliosis can also (though not always) be a congenital musculoskeletal issue. Scoliosis refers to a lateral curvature of the spine. This is seen when the spine is viewed from the back. Muscles on either side of the spine that should be of the same length are instead drastically different from one side to the other. Scoliosis is also found with a leg-length discrepancy, as a way for the body to compensate for the sideways tilting of the pelvis.

Other muscle imbalances develop indirectly as a result of neurological or neuromuscular disease. Examples of these would be imbalances due to stroke, Parkinson's disease, or fibromyalgia.

I'd like to make a very important point about congenital and disease-related imbalances: just because an individual wasn't directly responsible for the development of these imbalances doesn't mean that he or she is helpless to change them. To do this, we must stop the downward spiral by steering the body off the path of least resistance that it has traveled for so many years. We can accomplish this by working on getting the body as close as possible to an ideal alignment, using the exercises outlined in this book.

For example, let's look at the illustration of a woman in her early twenties who has congenital scoliosis (see figure 1). She believed that because she was born with it, she could do nothing about it and would just have to live with it. But by allowing the body to take the path of least resistance and giving in to the muscular forces acting on the scoliosis, the curves get worse and worse. In figure 2, we can see the same woman at fifty years of age. Although the curvature of her spin has deteriorated over the years, it isn't too late to begin the Function First program. The improvement in quality of life that one can experience by reversing the path of least resistance is worth every repetition of every last set of exercises.

How do you know whether you have muscle imbalances? A very effective way is to observe your static, relaxed posture. This, in itself, is not that easy for someone with an



**Figure 1**  
*Woman in her early twenties with scoliosis*

untrained eye, but in chapter 9 I'll provide you with examples of some of the more common postural faults that we regularly see. You can compare your stance with these examples in the mirror or let someone else inspect your posture and match your body to the closest example given.

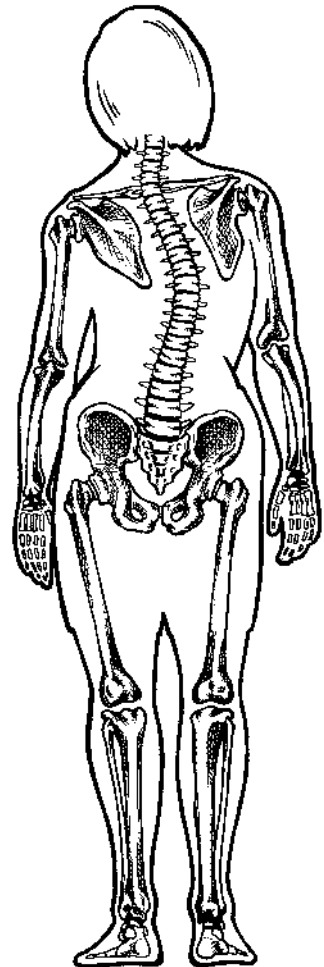
## The Story of Brian

Let us consider my client, Brian, who had a job loading and unloading furniture. He hurt his back because of muscular weakness throughout his core (hips, pelvis, and torso). Brian essentially stressed the muscles and the ligaments in his lower back because he wasn't strong enough to protect his spine against the outside force created by the weight of a piece of furniture. Brian's visit to the worker's compensation doctor resulted in orders to take two weeks off work, while using muscle relaxants and anti-inflammatories.

Returning for a follow-up visit two weeks later, Brian had only slightly improved symptomatically. The doctor then ordered an MRI (magnetic resonance imaging), a diagnostic tool that would determine whether any damage had occurred. It took about ten days to get an appointment and receive the MRI results. The MRI showed that Brian had a damaged disc between the vertebrae (bones) in his lower back. Depending on the extent of the damage and the philosophy and the ethics of the doctor, Brian's treatment could have gone several different ways.

A conservative-minded doctor would have sent Brian to physical therapy. Of course, at this point, he had already lived with the injury for twenty-four days, and it might even be longer before he could get physical therapy approved by his worker's compensation provider, as well as an appointment with a physical therapist. Valuable time would be lost. The longer Brian waited, the more deconditioned his body would become. The longer his pain lasted, the more likely his body would learn new coping strategies—compensations and apprehensions—to handle the pain.

Another doctor might have referred Brian to a spine specialist for further



**Figure 2**  
*Fifty-year-old woman  
with scoliosis*

evaluation. Again, more time would pass between the time of injury and proactive intervention. The spine specialist would have two options: refer Brian to physical therapy or do surgery. This is where the question of ethics and philosophy comes in. Would the spine specialist do surgery because that's what he does best? Or would he first refer Brian to a physical therapist to see whether a more conservative form of treatment might produce the desired results?

Unfortunately for Brian, he had a doctor who didn't just perform surgery; he did a spinal fusion. This involves the use of a metal "cage" to help fuse two vertebrae of the lower back together. It was not surprising to me that Brian actually felt worse after the surgery. First of all, the fusion did nothing to address the underlying cause of the injury. Second, Brian had essentially been lying around for longer than ninety days since the injury and had become terribly deconditioned.

Brian had not worked for over a year when he finally came to our Function First office. Even after the surgery, he was still in a great deal of pain and was extremely limited in the activities he could physically accomplish. Fortunately for Brian, we looked at his entire body, its condition, and what he needed to do in order to live a normal life again.

Brian started out with exercises similar to those in this book and slowly learned to use his body again the way it should be used. Instead of focusing on "what" hurt, we addressed the "why." Brian had many musculoskeletal issues that had been present before the back injury, and layers of compensation had occurred on top of the injury.

Our approach to Brian went beyond prescribing the standard "back" exercises. At this point, these exercises were actually too aggressive for Brian. His body needed an opportunity to start over. Instead of letting standard protocols guide Brian's exercise program, we let his body tell us what it could and could not do. Reproducing the pain or working "through" the pain is not part of our philosophy. The exercises that Brian received addressed muscle imbalances throughout his body and the associated movement patterns they produced. As Brian's alignment and movement patterns accepted consistent prompts from the exercises, his function improved and his pain diminished. With Function First's whole-body approach, we built a foundation for Brian to work from. Soon he was earning a living again and had renewed confidence in his body.

Brian's story illustrates the major shift that we need in current treatment models for musculoskeletal disorders. One concept that's beginning to shake things up is the idea of the "industrial athlete." This concept merges the philosophy of sports medicine with that of the workplace. The field of sports

medicine has always stressed preventative screenings and active rehabilitation, with a return to activity as soon as safely possible. Preseason physicals identify risk factors for potential musculoskeletal injuries. Tightness and weakness of specific muscle groups are identified and addressed with exercise, to decrease the risk of injury.

If an athlete gets injured, therapy and intervention begin the day of the injury. The athlete doesn't make this choice; the coach does. The athlete shows up every day in the training room just as he or she would to practice. If, for example, the athlete has an ankle injury, in conjunction with ankle rehabilitation the athlete would continue with normal upper-body workouts. Instead of running, the athlete would use an upper-body aerobic device to help maintain cardiovascular fitness. Team meetings are also mandatory, so that the athlete will remain invested in the team's goals and progress.

The need for this type of philosophy in the workplace seems obvious to me. Imagine screening workers for muscle imbalances if their job responsibilities require loading and unloading trucks. Or doing a postural screening of one hundred people at an accounting firm who sit at a computer for eight to ten hours a day.

This proactive approach would have two potential benefits. The first would be an obvious opportunity to reduce the number of injuries and their associated costs. The second would signify a company's position on work-related injuries. If a worker gets hurt on the job, it's not an automatic pass for several days off work. With a physician's clearance, the worker will be back on the job, contributing to the company in any capacity that he or she can.

But how about using this model with the general public as well? The current model in both industry and the private sector typically involves a visit to the doctor. This visit might be an appointment or an unscheduled visit to the emergency room or urgent care. The doctor will diagnose the condition, provide work or life modifications (e.g., no heavy lifting, stay off that knee, etc.), and then perhaps prescribe medications. This appointment is typically followed up by a reevaluation seven to fourteen days later. Could you imagine the team doctor for a professional or an Olympic sports team telling the team's athlete to go home and come back in a week for a checkup? That doctor would be out of a job before the athlete left his office.

In the sports medicine model, the procedure would involve immediate (that day or the next) intervention by a physical therapist, an athletic trainer, or an exercise physiologist, following the guidelines provided by the treating physician. But to really break new ground in the intervention model, the

evaluation and the intervention would look beyond the site of injury. This is the core concept that I profess throughout the book: intervention should affect all factors relating to the injury, both cause and effect.

Brian's is not the everyday case, but he is also not an exception. If Brian had been a professional athlete, he would not have been treated the way he was. Brian waited from 14 days to 24 days to 90 days before any outside interventions other than medications were used. Even if surgery were the only option, an athlete would be doing everything he or she could to go into and come out of that surgery as strong as possible.

## The Whole-Body Approach

A study published by the National Academy of Sciences on Musculoskeletal Disorders and the Workplace concluded, "Musculoskeletal disorders should be approached in the context of the whole person rather than focusing on body regions in isolation." This means that back, neck, and shoulder pain and injuries should be traced to their underlying causes, and health-care workers should examine a patient's whole body and the way that person uses his or her body. They should not look only at the injured spot.

Brian's case is not unique in the worker's compensation arena either. This scenario is also prevalent in private insurance, especially with health maintenance organizations (HMOs). Injured people have to make their way through many "gatekeepers" before they end up in a place where help other than medication is given.

Let's consider another client whom we'll call Pat. Pat was a successful, self-employed computer graphics consultant who worked out of her home. Being self-employed, Pat did not have worker's compensation insurance, but she did have private health insurance. She spent six or more hours every day working on the computer. Pat was a forty-five-year-old female who had observable postural faults. Her personal physician diagnosed her with tendinitis of the right wrist and elbow, associated with repetitive keying on the computer. Pat's treatment plan consisted of work modifications, a prescription for anti-inflammatories, icing, and a wrist brace to wear at night to keep her wrist straight.

This is not an uncommon treatment plan. My doctor friends tell me that it's an excellent way to treat the inflammation associated with Pat's condition. I do question, however, the logic behind the plan, since this was Pat's third

visit in a year with the same complaint. Yes, they were treating the inflammation, but they had not addressed the underlying reason for her recurring injury.

When Pat finally arrived at our office, it was plain to see how the mechanics of her upper body had been altered, due to the right side of her pelvis being high and her right shoulder sloping lower than the left one. Her right shoulder was unable to function the way it should have because it was so out of place; thus, she passed that responsibility on to the elbow. The elbow, doing its own work plus the work of the shoulder, was unable to provide any support for the wrist. The muscles of the wrist exceeded their work capacity. With that, the soft tissue in the area was altered, and the end result for Pat was tendinitis in the wrist. For Pat, it surfaced in the wrist, but for someone else—say, a tennis player—the pain could have been in the shoulder or the elbow.

Pat's injury would have become a continuous cycle if no one had looked beyond her wrist. Even if they had looked as far as her elbow, they would still have missed the bigger contributing factors. Pat might have ended up changing her line of work or deciding to have surgery. Surgery would have only accomplished the same objectives that her other prior treatments had: they temporarily masked the pain and did not address the cause.

## Only the Proactive Need Apply

Pat and Brian were motivated people. They wanted to get better and they sought the resources to do so. As I'll say again and again, the benefits that you'll experience from your discipline and commitment will be your reward. Your efforts will result in a reduction of pain and improved function and quality of life. Your body didn't reach this point overnight, so it isn't realistic to expect an improvement overnight. Therefore, if you promise yourself to do your exercises and be committed, you can expect the benefits that accompany this program.

Now that you've taken the initiative to free yourself from pain, you must also realize that, pain or no pain, the way you've used your body for many years is a major reason why you're having problems now. To counteract your habitual movements, we have to give your body an opportunity to feel the correct way of using its muscles. The best way to do this is with exercises that teach us the basics all over again, so that we can build a solid foundation. These are not weight-lifting or aerobic exercises. They are motor-learning exercises. And as subtle as they may appear, their influence on your body will be profound.