

# A Candle in the Dark

BY BRIAN HAYS

**H**orror stories often open with an idyllic setting of simple happiness and joyful expectations for a shining future. And so it was in 1983 in San Diego. As an aspiring musician I was doing as well as anyone could dream: I had teaching positions at both a community college and the UCSD Extension program, plus Adult Ed evening classes, with over 20 private students, restaurant and wedding gigs, and a growing number of concerts as a soloist, duo guitar act, and in a guitar quartet. Though I was only a steel-string finger picker through high school, in six-plus years of college I had a wide range of musical experience. I played a lot of early music: my first classical teacher was Robert Barto—for a few months before he left for Germany—whose senior recital of Dowland and baroque lute music had a big impact on me. My years of study with Celin and Pepe Romero covered the full range of traditional guitar repertoire, juxtaposed to the core focus of the UCSD music department on the avant-garde. This had me not only playing modern guitar pieces, but also doing a wide range of ensemble work.

I had finished my master's degree in classical guitar performance with a thesis on guitar technique, had a well-received recital, and everything was moving forward wonderfully for most of a year.

Then the Weirdness started.

## Initial Symptoms

*Note:* In right-hand fingerings, *p i m a* are the thumb, index, middle, and ring fingers, and *q* is the little finger.

The first thing I noticed was that the index finger was missing in *pimi* arpeggios with free strokes. Even though everything seemed fine at super-slow tempos, I hit a threshold where something would go wrong (usually the feeling that *i* was coming up short, but also that of *i/m* playing bumper cars). Despite being very careful to avoid tension, keep the hand relaxed, and stay within healthy guidelines of practice, nothing improved—and eventually symptoms spread to other movements.

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Spasms in strange parts of the hand became common, to the point of perpetual twitching. Rest stroke scales were OK for quite a while, but after several months that got weird too. Then the worst symptom, at least in outward visibility, emerged: my ring finger would curl into the palm of my hand any time I even thought about moving my index finger. It was a strange sensation. It was not a hard pull, just a soft but irresistible movement as if pulled by magnets. My extensors were paralyzed, and there was nothing I could do to push the finger back out, with or without tension.

This affected typing as well. Hitting any letters with my index finger invariably produced stray L's from the overactive ring finger.

My hand also developed tremors and twitches as a constant reminder of the condition. Perhaps the worst part is that I never experienced any pain at all. I had no right to claim something like tendinitis or carpal tunnel syndrome and thereby be absolved of insanity. If something had hurt, it might have been easier to know what to avoid. Strangely, the absence of pain makes it harder to find a way out.

After two years of a roller coaster that ultimately was only spiraling down, I had to quit. I bought a computer and dove into software development.

## **The Dark Ages**

This was a full decade before the Internet. There was no help available anywhere. Vague rumors of players with blown hands circulated, but very few professional musicians dared let anyone know they had a problem. You could find Leon Fleisher's story, but he had neither resolution nor even an accurate diagnosis at that time. Doctors simply didn't know anything. One literal quote from a hand specialist: "If you were a bricklayer, you wouldn't even know you had a problem." Unable to find anyone who could relate to the problem, I at least tried to own it, and in a cynical moment started referring to it as "Hays-wire Hand." But finally, six months later, a friend of a friend passed along the phone number of a guy in New York who helped people with hand problems.

Pat O'Brien was the rare musician who freely discussed his own issue (different from mine), how he overcame it, and how he learned things that helped many other musicians. My first phone call was life-saving. Pat was generous with his time and described the range of issues guitar players in particular deal with, and the unfortunately large number of people affected by these things. I bought a plane ticket, arrived in Manhattan late at night, and trekked the dark streets with my guitar and suitcase to his studio where he'd left a key for me. As if I needed an

ominous beginning, when I opened the door for him that next morning, the first thing he said was, “Did you hear the shuttle exploded?” I thought he was talking about a local bus or such, but this was January 28, 1986, and the Challenger space shuttle had been lost.

### **The First Lessons with Patrick**

Pat generously let me spend the next four days on the couch in his studio while giving me as much of his teaching time as possible. He started with an anatomy lesson, using a (hopefully nontoxic) Sharpie to draw the muscles on my forearm and hand. Then came the terminology for the joints, including the MCP (metacarpophalangeal), PIP (proximal interphalangeal), and DIP (distal interphalangeal).

The anatomy lesson had a few surprises. Most people wouldn't guess that the muscles that pull the outermost parts of the fingers are in the forearm. Nearest the skin on the palmar side lies the flexor digitorum superficialis (or sublimis, the FDS). It splits into four pieces of muscle that become tendons that run through the wrist out to the middle bone of each finger. It therefore flexes the middle (PIP) joint.

Below that, deeper in the arm, lies the flexor digitorum profundus (FDP), which has a similar structure with tendons running out to the tip bone of each finger, therefore flexing the tip joints. You might ask: How does the tendon that's underneath get past the upper one that attaches to the middle bone? With one of the simple marvels of nature, the FDS tendon splits into a fork and attaches to each side of the bone, and the FDP tendon flows through that fork out to the end.

The hand still has plenty of muscles too. The interosseous (between the bones) muscles pull sideways to spread fingers or bring them together. And of special note are the lumbrical muscles, which go from the palm to the first bone of each finger. They are the primary flexor of the big knuckle (MCP) joint.

It's important to realize that some oversimplification is necessary to start understanding anatomy, because there are always complications. In particular, though the FDP is the primary flexor of the tip joint and the smaller (but better leveraged) lumbrical pulls the bigger MCP knuckle, the starting point of the lumbrical is not anchored on a bone like most muscles. It starts from the tendon of the FDP. So the mechanics of how we flex the MCP joint are a miracle of coordination between the two muscles.

Though Pat covered the extensor and various thumb muscles, they weren't a primary point of discussion at this stage.

## Three Common Problems

Next, Pat described the three common problems he'd seen over the years: hooking the tip joints; tension in the palm of the hand; and spreading the fingers.

### 1) Hooking the tip joints

The flexor digitorum profundus pulls on the tip joints, and tends to be part of various hand problems. It starts with a single muscle mass near the elbow that then splits into four separate pieces. Therefore, if that first part of the muscle contracts, it pulls on all fingers. This limits the independence and separation of movements that you want as a musician. And this is the kind of anatomical structure that can vary in different people.

In particular, as a player it's critical to notice if moving one finger in *any* way causes a second finger's tip to flex. That unwanted flexion of another finger would be a problem during fast alternations, and it's important to find a way to stop that. Once there's a problem, the easiest way to avoid it is to not flex the active finger's tip in the first place. Letting the tip joint relax as the finger presses against a string is the opposite of the aforementioned flexing—and a common topic in guitar technique. Holding the tip firm, or in the worst case flexing it, yields different sounds that might be desirable. Though some people can do that with no ill effects, Pat stressed that if you have a problem, you should adopt the relaxed-tip technique for all strokes. This also leads to the conclusion to avoid flexing the tips at all, in everything from holding a toothbrush to picking up a coin, signing your name, and even scratching an itch.

In my case, it was a complete surprise when Pat showed me how I was hooking the tips. My technical training was already in the "relax the tips like the bristles of a paintbrush" camp. I'm pretty sure this was a secondary "compensatory" condition that came along after I'd been wrestling with the main problem for a long time. Since this was a clear, specific problem, I worked hard on it in the following weeks and months. My own oversimplification was to half-jokingly label my FDP "El Diablo en Forearm," which I confessed to Pat a year later. He laughed but chastised me that demonizing my body parts is probably not the best therapeutic approach.

My distal joints were never flexed all the time, though I have seen people with that severe of a problem. For me it was rather subtle,

yet significant. I *knew* I didn't want that happening, and in slow practice I could always touch a string and allow the tip to relax backward, but at faster alternations the unwanted flexing would creep in.

## 2) Tension in the palm of the hand

The “opposer” muscles that pull the base of the thumb and base of the little finger together (forming a “cup” in the palm) can be hyperactive, causing the hand to be in constant tension and affecting the paths of the fingers. Some other pedagogues suggest that a slightly cupped hand is a natural position to maintain for stability, but Pat pointed out that uncontrolled tension that you cannot release is a big problem. Again, the main course of action is to avoid that posture altogether. This isn't easy to change, as there are no muscles that really do the inverse of these muscles. You need to learn to just relax them.

## 3) Spreading the fingers

*Abductor* muscles pull fingers sideways, away from the center point of the hand.

*Adductor* muscles pull them back in toward the middle.

These small muscles inside the hand are not designed to bear weight. They should be used to keep the fingers in the desired alignment so the bigger muscles can pull directly.

Pat liked to use architectural metaphors to emphasize how the hand and fingers should be used. The adductors are the cross-bracing that keep the weight-bearing fingers in place. In general, spreading out (*abducting*) creates an unstable situation where the abductors themselves are applying pressure on the strings, and any increase in pressure from the larger muscles puts torque on an essentially twisted finger. This is more noticeable in the left-hand fingers squeezing against the neck of the guitar, but is still critical for the right-hand technique.

Pat also described a vicious circle that could lead players down the dangerous road of spreading the fingers. Once the fingertips are curved back toward the hand, they are like the meridians of a globe, running north–south. If you now abduct them, they only spread out at the middle (PIP) joints. The tips of the fingers remain together, like the meridians that were widely apart at the equator converging as they approach the South Pole. If your fingers are banging into each other instead of gliding past each other, you might react by spreading them, which ultimately makes it worse.

So, in general, abduction causes problems, including the weakening or actual atrophy of the adductor muscles over time. Learning to relax the abductors becomes critical. For me, strengthening the adductors that pull sideways back toward the center of the hand was helpful, but above all was the need to stay with movements that were as relaxed as possible. The goal is to have *no* extraneous tension in the muscles, so any countering exercises needed to be done very carefully. They are not to be part of normal play.

### **My Condition Went beyond the Most Common Three Issues**

Pat pointed out that the lumbrical muscles were overactive and not working independently. Though this literally tied into the FDP issues, there were two symptoms specific to misbehaving lumbricals.

- 1) Flexing the index at the MCP joint caused the ring finger to do the same, in a manner stronger than what the FDP issue would do. And the other finger combinations were also entangled. I couldn't flex any MCP joint without some other finger wanting to join in.
- 2) In some motions, a finger (usually the middle) would on its own extend in a very uncomfortable way. Though flexed at the MCP, it would feel "scooped," with the last two joints hyperextended. I started calling this my "swimmer" position because the shape of the finger was reminiscent of the arched back of a swimmer coming up for air, or the lifted head and arch at the start of a swan dive. This is about as far as you can get from what a guitar-playing finger should be doing.

I mentioned above the unusual aspect of the lumbrical starting from a tendon instead of a bone. It does the same kind of thing on the other end. Instead of just reaching across the MCP joint and attaching to the palmar side of the bone, it worms its way around to the back of the finger and attaches to the extensor tendons! So even though it flexes the MCP joint, the harder it pulls, the more it *extends* the PIP joint.

Pat stressed the general thought that I needed to learn to feel the tension in those muscles—not just the effects of what they moved—and had to relax the palm and not let tension build up.

## Guidelines for Recovery

In general, Pat's instructions were as follows:

As in any other athletic activity, stretching is important. All the muscles in the forearm should get stretched regularly. For the thumb and individual fingers, be gentle.

The goal is to make relaxed, loose movements, but it's important to define that. Desired movements need to be strong—there's nothing limp about them. But if a motion comes up against resistance from an overly tight hand, or if unrelated muscles tighten unnecessarily anywhere in the body, you need to slow down and address that. There's a trick to it though, because some things do move together. Part of Pat's artistry was in helping me learn which things are OK and which can be problematic.

Stay conscious—don't repeat things longer than you can keep monitoring them. And be aware that *something in your hand that feels right, is probably wrong*. To change habits, you have to be open to letting go of things.

Never do any repeated movement with one finger without also doing the same to all the others. Players that have a problem are often desperate to fix things, and “bearing down on a finger to make it behave” is not the right state of mind and can lead to additional problems. One way to protect against that is to do the same number of repetitions with each finger, *including the little finger*. (Another reason to use the little finger is to draw blood into that side of the hand.)

Most exercises he showed me had similar self-limiting strategies built in to avoid overworking anything.

Specific exercises are described below on page 98.

## After New York

It was a jam-packed week with a lot to digest. Pat told me it would take time to let things change, and to not be in a hurry. After several days I could feel some things changing for the better, giving me confidence to stick with it. Pat was very generous over the next year, taking periodic phone calls to answer questions. After a few months, the hooking of tip joints was greatly reduced, which helped slow rest strokes come back into play (Pat later said he'd heard this many times—rest strokes are safer and the last to go, and true to his prediction they were the first technique to recover). More important, the curling of the ring finger was noticeably better, and a few months later I felt like this was fully resolved.

With that symptom cured, I thought I was at least 90 percent on my way to playing freely again.

Meanwhile I'd been reading as much of the medical literature as I could access (which required trips to the university library in those days), and I got a subscription to a new journal called *Medical Problems of Performing Artists*. This was a wonderful addition to the music (and dance and other arts) medicine community, but issue after issue had articles about painful injuries like tendinitis. There were no references to painless loss of neurological control of the hand. So I submitted a missive outlining my condition, and how Pat was able to confirm that many others had similar issues—and how he was able to help them recover from the problem. The main purpose was to ask why no one was talking about this, what it might be called (“overuse syndrome” wasn't very precise), and how can overuse cause the brain to send stray signals to the wrong finger.

They published it in the spring of 1987, and it is reprinted in this issue of the *JLSA* on pages 81-84.

### **After the Article**

I soon received a steady stream of letters from musicians with similar problems, with whom I shared what I knew—the most important being Pat's phone number. I also received a handful of letters from doctors who thanked me for pushing this into the open. Most important perhaps was a phone call from Dr. Frank Wilson, a neurologist and one of the most prominent music-medicine doctors of the age (he actually ran a music-medicine clinic when few of these existed).

### **Finally, a Name**

Frank told me the condition was called focal dystonia. It was a known, documented neurological condition where the brain has lost its control of fine motor skills—and it doesn't only happen to musicians. No one knew exactly why or how it occurs, but somehow the feedback loops between sensory input, proprioception, motor control, and the learning process get confused, the map of the body gets metaphorically and literally blurred, and repetitions don't retrain movements the way they used to. He was very excited to hear of Pat and that he had found ways to reverse the effects, and the two of them collaborated over the next many years. Frank had a section about Pat in his widely published book *The Hand*. Making that connection was probably the most significant result from that article.

It's important to recognize that, until this time, only a handful of musicians had ever heard the term focal dystonia, and in fact few *doctors* knew of it. The haywire neurological aspects were not something that had any direct treatment. Pat's experience helping many different musicians, including violinists and other non-guitarists, led to a therapeutic arsenal dealing with a wide range of issues where only a percentage involved dystonia. Around 1990 he described my hand as being one of the most tangled he'd seen. When I asked what the success rate was for full recovery of such severe problems, he said it was difficult to come up with a number because so many people came to him temporarily and from long distances, and he couldn't know how many followed through. For those who were in New York or were able to work regularly for several months, the number was higher, but in general he guessed around 25 percent. At that time I knew several guitarists who had returned to performing with Pat's help, and in a world that had a 0 percent success rate anywhere else, I liked my chances.

Unfortunately, it took a while. My recovery had leveled off and I couldn't quite get back to where I could play for real. My energies had turned to raising a family and building my software company, though I periodically got back to the guitar and tried new things. I returned to visit Pat in the early 1990s for another lesson. He greeted me with a clap on the back and joked, "Ah, the man who started all the trouble!" Apparently the article had stirred up far more rehab work than I had realized.

We looked at the evolution of my symptoms. It's not unusual for dystonia to have different malfunctions ebb and flow. Though some strategies worked a bit, things didn't change overall until 2000. I hadn't seen Pat for a couple years, but was able to go back to New York for a couple days, and then again in 2001. I came away from those sessions with some new ideas, including going back to Villa-Lobos's *étude* #1, but with different fingerings, and doing ultra-slow, super-simple movements away from the guitar.

### **A Portrait of Patrick**

Those visits also inspired me to reflect on the man himself. Pat O'Brien was a very impressive individual. Literally, his individuality was impressive. He didn't try to be like anyone else, and I've never met anyone quite like him. I often described him as a walking library because his depth of knowledge showed up in any discussion. All he had to do was look up a little while thinking, and it was as if he were vividly seeing whatever he was dredging up. And yet he didn't recite dry facts;

everything was filed away with a purpose and came out with thoughtful interconnections. So I always qualified that reference right away because people expected it to mean he was tied to historical conclusions. Instead, Pat was as far away from being dogmatic as anyone I've known. Yes, he had come to conclusions about the healthiest approach to movements. But he remained perpetually curious and would entertain any question and explore its nuances.

To illustrate: A while before that 2001 visit, I watched my son reach for a guitar that was lying on the couch and pluck a string. Because of the angles, his fingertip went under the string and pulled it up away from the guitar, then released it with a loud splat. He played it "reversed" from usual technical instructions, by extending at the MCP big knuckle and hooking the PIP and DIP. But rather than jump on what was "wrong" with that technique, I tried it myself and found that my right index finger was completely incapable of making that movement. Good, bad, or ugly, that card just wasn't in my deck anymore, and that didn't seem right. My thought was: a healthy hand should be able to do *any* natural movement. How often or with how much strength is a different story, but not being able to do it at all indicates a malfunction that's probably worth correcting.

So I started checking out variations of the angles and the sensations and the pressures to determine where the edges of this particular paralysis resided. Since the movement had a natural tendency to hook the tip joint, I was extremely careful to mitigate that and invented a movement similar to pressing down a key in an old typewriter with a very deep throw. But the focus was on the lifting of the finger.

The starting position was an almost straight finger flexed as much as possible at the MCP (with the finger perpendicular to the palm). A neurologist later described that position as the "fullest expression of the lumbrical muscle." The movement then simply reversed those two joints, lifting the finger where the DIP stayed straight, the PIP flexed from 170 degrees to 90, and the MCP extended from almost 90 to a flat 180. This is of course the antithesis of the lumbrical's activity, and ended up giving me a tool to turn it off. I then simply moved back and forth, where the PIP flexed in exact opposite of how and when the MCP extended. To emphasize not hooking, I started by pushing my finger more than an inch *past* the first string, down into the sound hole until the string was near the fold of the PIP. Then I drew the finger back up, sliding against the string across the DIP joint like a violin bow sawing away at the string. If the tip hooked at all, it would hang up badly on the string, which helped as a test to ensure the FDP was not engaged.

I also came up with this partly in response to research on FD about the role played by the sensory system. Some studies had shown that dystonic hands have lost accuracy in the sense of feel. This can be improved by feeling the dots on dominoes or practicing Braille to relearn better sensation and sensory discrimination (and of course it goes beyond that—and some players have improved hand function using that and related techniques). So this was my small nod toward rubbing the whole finger and feeling the connection between the movement of pushing it out and the sensation of where the string was rubbing. I would also rotate the hand around so the string touched the sides of the finger, or go between the first two strings so it was getting rubbed on both sides.

When I showed this to Pat (with great trepidation), he was very curious. As to the first part of plucking in that direction (extending at MCP), he said there was a similar technique for baroque lute when the thumb needed to stretch to the lowest bass strings while the fingers still had to play the trebles. At least the MCP was straight and the PIP had to do the plucking. He agreed with the idea that it would be good to regain the ability to do those motions, as long as I kept it in the realm of a simple motion and not as the basis of a new technique.

### **Improvement Milestone: The Early 2000s**

I worked on that and the other ideas slowly and in very short (about five minute) sessions for the next two years. By then I was successful in removing all symptoms from my keyboard typing, and by 2003 had a breakthrough on the guitar where my thumb and middle finger could alternate even at quick tempos with complete freedom and no Weirdness. During the prior years, people used to ask, “Why don’t you play anyway?” since I could “fake” a piece by only playing with the thumb and doing some bizarre fingerings to get the notes out. But for me, the feel of the fingers dancing on the strings was a major part of the joy of playing. The art of the movement was as important as the art of sound because they are intertwined, interdependent, mutually feeding each other. What my well-meaning friends couldn’t relate to is that my hand was having spasms and cramps and doing weird things that I would have to fight the whole time. It felt horrible, it didn’t leave much headroom for being musical, and doing so only made my symptoms worse in the long run. But now I had something that, though limited, worked without all those distractions.

For the first time since 1983, I could practice a full piece and it would actually get better.

The Villa-Lobos étude is a lot of fun with just the thumb and middle finger! And now I could play Miguel Llobet's "Canço del Lladre" for my wife again.

### **Final Meeting with Patrick**

I returned to see Pat in 2006. Though not perfect, my hand continued to improve. At that session he broke out some easy Fernando Sor duets to demonstrate a point. I gave it a good shot but stumbled pretty badly. We both laughed when I confessed I had not actually looked at written music in 20 years. The bike riding came back quickly though, and we continued with an important lesson.

The early facsimile editions of the 19th-century guitar composers show fingerings that are quite different from modern editions (and one of Pat's amazing skills was to name several different editions and describe the merits or deficiencies of each). These days people tend to expect more mechanical control with technique, implying that if there's a relatively weak finger, you should train it to be as strong as the naturally strong fingers. But 150 years ago they were more respectful of the anatomy, and put the heavier middle finger on the beat (or on the most important melodic note) where a modern edition would think the index or ring finger is fine. They also brought the thumb up to the third string more often, especially to have more weight on an important note. Pat showed me many examples of using the thumb or middle finger on notes that make complete musical sense, but are surprising relative to modern arrangements. Another example was a simple waltz by Aguado with pickups to the downbeat. The pickups would always be played with the index. Pat emphasized that the old fingerings are much healthier, and since having all the notes the same is not very musical in the first place, it's better to exploit the differences between the fingers instead of neutralizing and overcompensating.

Around 2006 I also revisited neurologists to see if modern medicine had progressed. They had a new focal dystonia-oriented electromyogram (EMG) that could isolate the lumbrical problems, and I even got insurance approval for the kind of Botox treatment that had brought Leon Fleisher back to performing. Botox treatments can temporarily reduce the symptoms of FD, but its effects fade away in a few months. It only masks things and does not change the neurological malfunctions. Noting my level of neural-plasticity and partial success at retraining, my doctor mentioned a slight risk that the Botox treatment might adversely affect that training. It would likely give me temporary improvements in

playing, but wouldn't help after its effects wore off, and might even make things worse. Since I was more interested in helping to find a true cure to FD, I opted against the treatment.

Over the next five years I slowly improved, and could play more and more pieces, though not completely free of symptoms. The lumbrical entanglements were reduced but persisted in some movements, and I still had some tremors and random minor spasms. But I was happily playing music.

### **Lessons with David Leisner**

In 2011 I met with David Leisner, a great guitarist who had come up with his own approach to dealing with his dystonia, leading to his full recovery. I had four two-hour lessons with him over two weeks, and after several months had nearly eliminated the remaining Weirdness. It would be impossible to cover here exactly how his method worked on my last layer. David has a very specific sequence of training that starts with large movements (completely avoiding individual finger plucking) and progresses slowly to more complex, fine motor skills. Though I'd seen his videos on YouTube that try to describe the process, it wasn't until these lessons that I fully understood how to make it work.

Over the next couple of years I was able to play most of the repertoire. I was still working more than full-time running a software company and had no intention to play professionally as I didn't have the time to gain the final polish and high level of play reflected in my master's recital. But that's OK.

### **Last Contact**

It turned out that 2006 was my last visit to see Pat in New York. We did exchange occasional emails through 2011. I tried to seduce him to come to southern California, but his personal life was keeping him busy and he mentioned he wasn't doing much rehab work during that period. Since I was doing well, there was no need to squeeze in a trip to New York.

I did make sure in that email, 25 years after we'd met, to send him an important message, not realizing it would be my last:

*Dear Pat:*

*Meanwhile, just in case it wasn't clear and you hadn't heard it in a while, and perhaps if others never heard why you do the rehab work:*

*In 1986 you saved my sanity, and in many ways my life.*

*No one else in the world, and I checked under a lot of rocks, had any clue how to pull my train wreck out of the river. You gave me an understanding and a foothold that brought sense and direction to a spiraling nightmare.*

*I've thoroughly enjoyed all our meetings through the years, and have used your teachings in areas beyond music and finger-wiggling. And especially now that I'm playing music again, and I continue to re-work and re-apply your wisdom and perceptions,*

*I am daily, and will be eternally, grateful.*

*Brian Hays*

## **Specific Exercises**

*Caveat:* Some of Pat's guidance was in symbolic or metaphorical terms because that's often the best way for humans to understand a point. I'm going to get into very specific statements below, but remember that these are distilled from many conversations, and any one individual may need a different presentation to really understand what's important. In many cases this much detail might need to be avoided altogether if someone is getting overwhelmed. It's quite possible that any one of these actions could be overdone to the point of creating new problems, so you have to keep monitoring things and not push hard. I think this is a big part of why Pat never wrote down a method. Being able to listen to students (both in actual words and in seeing physical reactions) is critical to know when to switch gears or directions. To keep descriptions short, I'll refer to the problem hand as "right" and the opposite hand as "left."

## **Brushing**

The core exercise leading to relaxed play is basic strumming with an individual finger while the other fingers hang loose. The goal is a wide arcing movement that happens to hit the strings—not some precise plucking of sequential notes. If the sequence below is stressful at all, just stick with slow quarter notes for a number of days before adding on the faster notes.

Starting with the index, brush up, dragging it from treble toward bass with a relaxed tip, and then brush back down with the back of the nail. Done with little arm movement, the arc of the finger probably hits just four strings, but don't be exact. Note: In that first upstroke, be *very* careful about finishing that last string—try not to hook the tip immediately afterward. There can be a tendency to flex the DIP after releasing the string. Notice the up stroke is on the beat, unlike usual “folksy” strumming.

Start quite slow, with each stroke as a quarter note at 50 or slower. A metronome helps to keep things steady, but don't use it to chase a faster tempo.

Strum up and back twice, for a total of four beats.

Now play twice as fast, as eighth notes; up and back for four beats.

Now play twice as fast, as sixteenth notes; up and back for four beats.

Repeat with the middle finger starting with four slow quarter notes, then the ring finger, then the little finger. Once things improve and all this feels smooth and easy, then repeat the whole thing at 60, and perhaps again at faster speeds—as long as the swinging finger is loose and comfortable.

After playing faster, it's a good idea to slow it back down and finish at a slow pace.

Don't do it for more than six minutes at a time, but repeat as many times a day as you can.

Eventually, but only when it feels perfect, it's important to speed this up and really exercise each finger with a quick, loose, sweeping motion that's independent from extraneous muscle tension or other movements. Note, however, that because of the wide sweep, adjacent fingers might move some in a natural way. Knowing the difference between this and unwanted flexing of muscles may not be easy at first, which is another reason to keep it slow.

Always remember to continue playing it slowly more than you play it rapidly.

Pat once observed that rest strokes and free strokes are just the two parts of this same brushing arc. Where the finger comes through the second string to land on the third string is the rest stroke, and where it comes up after the last (probably fourth) string is the best free stroke. This emphasizes the desire for the fingertip to be well under the hand for free strokes.

## Addressing the Three Common Problems

### *Tip Joints*

The brushing exercise described above addresses this issue. You cannot brush across the strings cleanly if the tips are hooking. If they

are, you must slow down and do it more gently to find a way to do the motion with no hooking. Perhaps shorten the stroke and only touch two or three strings, then relax and let the finger fall back.

There are also things you can do off the instrument. As alluded to above, notice if your signature or handwriting is affected. For me it was subtle, but the top curve of my capital B had a kink in it. Try to slow down and smooth those things out, and hold the pen with nonhooked tips. Become aware of any other habitual movements that have tight tips.

### *Dragging Relaxed Tips*

The most productive specific exercise for me is hard to describe in just text. There are three phases to it: 1) dragging fingers with relaxed tips across a flat surface; 2) doing each finger one at a time; 3) moving it all to using the back of the left hand as the surface.

1) Arrange a table height where it's comfortable to put the belly of your forearm resting on it from elbow to wrist to fingertips, initially with the palm and extended fingers flat on the surface. You can use the back of a guitar, but under stress you might dig your fingernails into it, so a harder surface is safer to start. Keeping the wrist down, slowly drag all four fingers (kept lightly together, not spread out) toward the wrist as the hand lifts at the big knuckles; the forearm remains flat throughout. Make sure all tip joints relax backward, and slide until the middle joints reach their peak—do not go past the point where all the tips can remain relaxed back. The ending position has the hand arched in the air, still touching at the wrist, and the fingertips are all touching the surface, with MCP joints only slightly flexed, and PIPs approaching 90 degrees, depending on your anatomy and your condition. The fingernails have probably touched now (depending on their length) and the fingers are close to perpendicular to the table from tip to middle joint.

Depending on the level of hyperactivity of the FDP, you may not be able to make this movement without some fingers flexing at the tip joint (sometimes the little finger is the worst). If so, extend back out, and only come as far as you can while not flexing any tip, and go back and forth gently just in that range.

Now, the real trick is to lift the fingers straight up just a tiny bit, straightening only the MCP joints, and see if you can hold the posture without the tips hooking. That's the goal. Someone with a real problem with FDP probably can't come close to this at first. For me, the little finger in particular would hook instantly as soon as the pressure was released. In some cases, you might not be able to drag the fingers back at all without

hooking. If so, stay at that spot where the tips have hooked, try to relax all of the rest of your arm and body, and with your opposite hand's index, lightly touch the back of the hooked tip joint to push it into an extended position. Play with that for a while, and soon you can go back to dragging and will get a little farther. Do not expect this to be fixed in a day, but you can expect to feel some level of progress in a day or two.

2) If you can attain the final position with all fingertips relaxed back with minimum pressure to hold them in place, the next stage is to keep three fingers there, then extend just one finger at a time all the way out (keeping the others undisturbed—start with *i*), and drag that finger toward the wrist to rejoin the bunch in the final position. Now, as before, watch the next part carefully: as you lift *i* again to reach back out and repeat, try to not let it flex the tip *at all*, and watch the other fingers to see if they try to flex in reaction to the lifting motion.

If so, now you have something to play with away from the guitar that can retrain that muscle. The goal is to be able to have each finger lift, reach, and drag back, with no tip joint flexing anywhere. But you may not get there for a long time; at this point it's an individual thing to assess what's really happening. That's what Pat was so good at: observing things that I wasn't necessarily aware of, but also knowing when to warn me if I veered off into dangerous territory. This is why it's hard to expect this textual description to work straight out of the box. You have to be able to take the idea of isolating this movement, play with it, observe as dispassionately and open-mindedly as possible, and know when to stop or change what you're doing because something's getting dangerous. This is extremely hard to do on your own when under the stress of having your hand going crazy.

3) Use the back of your opposite hand instead of a guitar back or table.

Pat showed this to me at the very end of that first week. I told him, "I'm going to be on an airplane for five hours. What can I do while sitting there to jump-start the work I need to do—but not overdo it?" So this is a more compact form, and the limits are to use all fingers the same amount of time, and after about six minutes stop and do something else. The starting position is like punching the bottom of your open right hand with your left fist. With this variant, your right wrist might be slightly flexed or straight, since the whole arm is no longer in line with a table.

a) Make a fist with the left hand and hold it in front of you.

b) Put the middle of the palm of the right hand against the big

knuckles of the left, with the bottom half of the right palm flush against the left-hand fingers. The heel of the right will probably be near the middle joints of the left-hand fingers. You have to play with the height of the hand to find the right amount of room for the fingertips to work.

c) Bend the straight right-hand fingers at the MCP joint so the full length of the fingers lies on the back of the left hand. Note that you might be more comfortable if the base of the fingers is actually a little bit above the “table” of the left hand.

d) Drag the fingers back toward the right palm as before.

Repeat the whole process with individual fingers.

Be gentle! It’s actually a benefit to have your fingernails coming onto your other hand because you can feel if you’re applying too much pressure. Make it as light as possible and take care not to scratch yourself.

### ***Tension in the Palm of the Hand***

Unwanted tension in the little finger side of the palm seems to be in reaction to the thumb—literally, these muscles oppose each other and are inspired to fire at the same time. So getting the little finger side to relax requires careful monitoring of the thumb movements, and to practice them slowly while making sure the little finger side doesn’t engage.

Exercising the little finger (*q*) also helps to turn off *p/q* opposers:

1) On a single string, slowly alternate each finger with *q* in free strokes, such as

*i q i q i q i q m q m q m q m q a q a q a q a q*

2) Play two-note chords with each finger in “opposition” to *p*, being sure *p* uses “non-opposers” by pulling sideways toward the web.

*p/i p/m p/a p/q*

### ***Supporting Adduction and Reducing Abduction***

In a hand that has the abductors working overtime, the adductors can atrophy and become weak, or may just avoid firing because they’re out of practice. It’s important for all these muscles to work together in balance, and the primary goal is to ensure healthy muscle tone. Keep in mind the “meridians of a globe” metaphor: spreading can cause the tips to converge. The job of this exercise is for the PIP joints to be more together, and this will let the tips glide past each other more easily. But also realize that fingers are irregular. For example, many people’s indexes

have a significant twist to them so the plane of the nail is not parallel to the plane of the middle joint. So, we can't expect them to be molded into perfectly straight lines, etc.

Pat invented this somewhat crazy exercise that purposely gets all the fingers bunched up together and limits mobility. If your abductors are overactive, the movements are hard to do without a lot of wiggling. Otherwise it's very simple.

The adduction exercise with all fingers on one string:

- a) Place all four fingers on the 2nd string, in free stroke position.
- b) Put the thumb on the 1st string—yes, past the other fingers. This forces the fingertips to be under the palm near the end of their “throw.” Leave the thumb as relaxed as possible throughout.
- c) Squeeze the fingers together at the PIP joints, and then relax. Keep the fingers in place, though the tips may slide a little along the string as you compress and relax. Feel what happens at the tips when you squeeze—they should actually spread apart a tiny bit. When you relax the squeeze, see if the fingers can relax into the new position. Notice any tendency for the PIP joints to spread apart, and try to avoid that.
- d) Slowly lift *i* and pluck the 3rd string; let it bounce back then plant it back on the 2nd. This may seem quite awkward at first. Try to work through it by relaxing things more than tightening them, except for squeezing a tiny bit at the PIP joints. Don't lift the thumb out of the way.
- e) Repeat each finger, including *q*, minimizing any abduction impulses.

Be very careful with this one as it's a weight-lifting exercise to tone the small adductors and *not* something that should happen during real play. It might even require the index to play off the “wrong” side of the nail. Most players today use the thumb side of the nail to pluck the string, but in this position the finger may be touching the string on the right side. This is OK for occasional therapeutic value, so let it happen if that's how the fingers are aligned.

Though abduction issues can be somewhat subtle for the plucking hand, it's a big issue for the more gymnastic fretting hand. When players squeeze in a stretched position, they often have the curved index or little fingers playing on the outside of the tip and even falling over sideways. This can be very problematic as it's better to learn to keep the fingers “standing up” straighter so the stronger muscles are doing the squeezing.

Pat's lessons on left-hand technique and adduction are explained in *JLSA* XLVIII (2015), "Monologue on the Left Hand," but I mention it because I found it useful to flip the guitar over and do those fretting exercises with my right hand, though I had to be careful with the nails. That was another time I got Pat to chuckle.

### **Epilogue: Happy Endings vs. the State of Focal Dystonia in Today's World**

In the summer of 2016 my primary guitar teacher and dear friend Celin Romero invited me to take part in the Celedonio Romero Guitar Institute at Oklahoma City University, a 10-day intensive workshop with the entire Romero quartet giving private lessons and daily master classes to 36 students. When I agreed, Celin said, "Good, everyone does a concert at the end, and we can play the duet of Granados's 'Intermezzo' from *Goyescas*. What a moment that was! I started practicing like crazy. I also ended up playing the "Danza Espagnola #5" with Lito Romero, and Albéniz's "Granada" with Pepe Romero. What an incredible homecoming for me—to really be a musician again.

Meanwhile, on and off I've been monitoring the unfortunately slow progress of how the world is handling musicians' dystonia. Until just the past few years, most medical institutions continued to declare that it was incurable, and some still do. Yet over the years Pat helped a lot of people get full recovery, and there's a growing list of other musicians who have openly acknowledged they had FD and fully resolved their problem. And they seem to have done it through several diverse approaches. Unfortunately, no practitioner has been able to demonstrate an easily reproducible method with a high success rate. And though groups like Musicians with Dystonia and the Dystonia Medical Research Foundation (and many individuals using websites and social media) have spread the word about dystonia among musicians, many new "members of the FD club" still go through a long and painful period before getting diagnosed or finding any help.

I am currently trying to spur interest in studying the success stories to help evolve a better, quicker method of recovery. I encourage anyone who is interested to contact me directly.

The new Center for Music and Medicine (a combined effort of Johns Hopkins University and the Peabody Conservatory) is already working on one such project. But whether specific to dystonia or not, *all* music-medicine clinics deserve our support. Without a corporate interest to fund research, their only source of support will continue to be

the individuals who believe that we should do all we can to keep our artists healthy.

### **Musings on the Onset and Treatment of Dystonia**

As for the actual cause of dystonia, in my most humble opinion we have to be able to admit what we don't know. Theories are important, but too often they're supported by assumption. We just don't know what makes the brain go backward and smudge the neurology. The most insidious element of FD is the *breakdown in the learning process*. In the early days people would exclaim, "How sad that you have to start over," and I'd explain that, after starting over several times, it's not a question of relearning basic guitar training. What was lost is something we learned in the womb. The basic tool of repetitions not only fails to yield results, it creates more damage. My go-to metaphor: We use repetitious practice as a fine technical pencil, drawing more and more detail to refine the map in our brains. Then someone swaps out the pencil with a dirty eraser, and the more we write, the more it gets smudged.

And yet, recovery ultimately comes from creative approaches in re-training. So this must also overcome the common and very serious Crisis of Faith in practice. Especially for those who spent years trying systems that didn't work, it's very hard to fully invest in yet another idea without deep reservations.

Some observers state the presumption, "After years of bad technique, it finally crumbles under the pressure." Even the FDP theory tilts toward this a little bit: Here's a structure that encourages co-contraction if you're not careful, and the co-contraction under pressure and repeated faster and faster can't be good. But when and how this might spur the brain to scribble all over itself is a leap we really don't understand.

And for me, that part really must have been a secondary condition, because my technique was based on leaving the tip joints relaxed. It was a complete surprise to find out that there was unwanted hooking going on. And I'd bet that it only came after I became more abusive in trying to fix things with more aggressive repetitions when all hope was lost. So that would mean my dystonia started under different conditions. My suspicion is that it wasn't years of something wrong, it was weeks of something wrong, and it was a fairly subtle wrong, but at high speed and with more power to be louder. Some other famous cases of FD came about after a nonmusical physical injury, and a relatively short period of getting back up to speed. So it's possible that FD has more than one cause, more than one flavor, and more than one cure. It certainly presents itself in myriad

ways, and people have a hard time believing they have the same thing as the next person when the overt symptoms can look so different. And most, but not all, current treatments seem to require personal customization. What, if any, are the common threads?

This gets me back to the hope that studying people who *have* been cured (and the methods that got them there) might yield a spark of inspiration that could simplify the process.

Whenever I say, “hope,” one dear friend reminds me of his definition: *deferred disappointment*. Though that sounds pessimistic, I take it as a reminder that hope’s fulfillment comes from action. If everyone reading this issue of the *Lute Society of America Journal* made it a point to talk to *all* their friends and family—not just musicians—about musicians’ wellness and the need to support all aspects of keeping our artists healthy, that could have a huge impact. Every major city should have a music-medicine clinic because our symphonies and universities and, yes, bars have musicians with specific needs that range far beyond dystonia. But in a land where sports medicine abounds, our artists often have to cross the country to one of our few dedicated havens, or even go to Europe to get help.

Pat O’Brien is irreplaceable. But we have to do our best to shore up support for our musicians.