



CHRONIC / ACUTE CONDITIONS

## The Future of Functional Neurology

AN INTERVIEW WITH DR. DATIS KHARRAZIAN

Dynamic Chiropractic Staff

*Functional* is the hot buzzword in health care these days; witness the rising popularity of functional medicine, functional testing and yes, functional neurology. In this exclusive interview, [Dr. Datis Kharrazian](#) shares his extensive insights on functional neurology, why and how it applies to the chiropractic profession, and where the field is headed.

A 1999 graduate of Southern California University of Health Sciences, Dr. Kharrazian is an associate clinical professor at Loma Linda University School of Medicine and an adjunct professor at National University of Health Sciences (where he is developing postgraduate programs in functional neurology). The author of the best-selling book, *Why Isn't My Brain Working?* he is considered a leading expert in nonpharmaceutical applications to chronic illnesses, autoimmune disorders and complex neurological disorders.

*Dr. Kharrazian, tell us about "functional neurology" and how chiropractors can use it in practice?*  
When we use the term *functional neurology*, we are really talking about "brain function" and many of the conditions chiropractors manage every day are actually "brain-based conditions."

For example, the functions of posture and balance, muscle tone, spinal stability, pain perception, and athletic performance are all related to "brain function." These functions are specific to pathways in the brain and when they are not working, patients suffer from dizziness, chronic pain, spinal instability, abnormal muscle tone / tightness, etc.

In a functional neurology model, we clinically evaluate if these pathways in the brain are playing a role in the patient's complaints; and if they are involved, we use therapies to improve brain function in specific areas with therapies such as balance exercises, eye movements, somatosensory stimulation, cognitive exercises, etc. We also consider dietary, nutritional and metabolic factors that could be

impacting brain function with our approach.

*Can you give a clinical example of how a functional neurology approach may handle typical chiropractic cases?* Sure. I recently worked with a patient who was suffering from chronic injuries whenever he would start working out. He ended up having repeated right-ankle sprains and had chronic right hip flexor tightness leading to chronic back pain. He had received countless chiropractic adjustments and massage to treat his chronic musculoskeletal problem, but despite all treatments, whenever he started a new exercise program, he would reinjure himself.

When he was given a complete functional neurology exam, we also identified that he was having difficulty finding words, left-right confusion, and having difficulty with basic math calculations. His examination revealed he was having problems recognizing vibration sense, hot / cold perception and pinwheel sensation on the right side of his body. These findings all indicated that his left parietal lobe was not working. His brain was not able to recognize where his right extremities were in relation to the rest of his body. This would cause him to suffer repeated injuries on the right side of his body.

It became obvious very quickly that if he could not perceive proprioception and joint position perception, he would continue to injure himself every time he would start an exercise program. For treatment, we gave him exercises to develop plasticity in his left parietal cortex with somatosensory exercises and right-left recognition therapies. As his brain improved and was able to perceive proprioception and joint position perception, he was able to avoid injury.

*So, his injuries were occurring because his brain was not able to perceive input properly the right side of his body?* Exactly - but that was only part of the picture. He was actually suffering from early-onset brain degeneration that had first started to impact the left area of his brain - the area involved with somatosensory perception on the right side of his body. His chronic musculoskeletal problem was only an expression of his impaired brain function.

In addition to helping him rehab his brain, we had to identify what was causing his brain to degenerate so early. On lab work, we identified that he was pre-diabetic, his diet was completely deficient of good fats, he had poor circulation, and his diet was very inflammatory. We made some adjustments to his diet and recommended some nutritional supplements, which made a huge impact on his overall health; in addition to finally treating his proneness to ankle sprains and chronic hip flexor tightness.

*What about other conditions chiropractors see all the time, such as spinal stability, muscle tightness and postural conditions?* It is important to remember that the brain is involved with all of these functions. The cerebellum controls intrinsic spinal muscle tone, so impairment in that region of the brain could lead to kyphosis, scoliosis and general spinal stability. The motor cortex controls movement; when it is impaired, it leads to postural imbalances such as increased muscle tightness.

Conditions such as dystonia or imbalances in muscle tone occur with impairments in the region of the brain called the basal ganglia. The vestibular system controls posture and balance; impairment in those areas can have a huge impact on gait and balance. Simply put, many of these clinical issues can be from impaired brain function or impaired brain integration.

*What other conditions do chiropractors who practice functional neurology tend to manage in their practices?* There is a long list of conditions, but once a practitioner gets more competent, they start to work with brain injuries, stroke rehabilitation, childhood developmental delays, neurodegenerative conditions, migraines, balance disorders, depression and mood disorders, seizures, etc.

*Where did the term "functional neurology" originate? Is it a chiropractic specialty?* Actually, the first people to use the term were neuroradiologists. They were using the term for functional MRI and neuroimaging in the early '80s. In 1985, the scientific medical journal *Functional Neurology* was launched to discuss physiological mechanisms that impact brain function. The journal is still in publication, and papers discuss a wide area of topics, from nutrition and neurochemistry, to the latest research in neuroimaging.

Then in the '90s, the "functional medicine" community started to use the term *functional neurology* in reference to using diet, nutrition and lifestyle factors to support healthy brain function. In 2005, some individuals in the chiropractic community started using the term instead of *chiropractic neurology* to describe what they were doing.

At this point, many different specialties are using the term and it generally describes any modality that increases function to the brain. Treatments can include manipulation, brain exercises, dietary interventions, nutritional supplements, physical therapy, cognitive exercises, etc.

*How do chiropractors practicing functional neurology interface with other providers (MDs, etc.), when it comes to case management?* I think it is unique for each practitioner, but generally, the more competent you are in writing accurate reports and sharing information with other health care providers, the easier it is to collaborate. For example, if a patient had dizziness and was referred from their MD to a chiropractor, a large part of healthy collaboration would be their ability to communicate with each other.

If the chiropractor reports back to the MD that the patient had a bone out of place in their neck and they adjusted it back into place, it may be difficult for an MD to understand how that would work. On the other hand, if the chiropractor reports that the patient was suffering from a peripheral vestibulopathy and was performing therapies to improve integration into those areas, it would be much easier for the MD to understand and continue healthy collaboration.

It is all about using common language, competence and communication. Most chiropractors who are competent in neurology have great relationships and collaboration with other providers.

*What do you think the role of functional neurology will be in chiropractic?* I think the best way to understand the future role of functional neurology in chiropractic is to see what is happening in all of the chiropractic colleges. We are not really seeing technique clubs such as Gonstead, diversified, AK or SOT anymore. We are seeing huge functional neurology and functional medicine clubs at almost every chiropractic college. It is becoming clear that the next generation of chiropractors is interested in learning about functional neurology and functional medicine, and learning how to integrate them together.

*With that said, where do you think the specialty of functional neurology is headed?* I am sure functional neurology will continue to expand and grow, involving multiple health care disciplines, just like it has in functional medicine. Functional neurology is not a chiropractic technique, but a field used by multiple specialties that are all finding ways to improve brain function.

As with all specialties, the new generation is going to take it to the next level. The integration of nutrition, diet, lifestyle, rehabilitation, cognitive exercises, laboratory testing, and a comprehensive approach to handling brain-related conditions will be the central theme. We have already seen this happening the past few years.

We just had our 7th Annual International Association of Functional Neurology and Rehabilitation (IAFNR) meeting. We are seeing DCs, MDs, DOs, NDs and PTs all working together and collaborating. There has been a large interest from MDs practicing functional medicine [and now] getting involved with functional neurology, as well as a recent explosion of NDs interested in this specialty. We are also having prominent PhDs and researchers show interest in this field.

IAFNR has been publishing its own peer-reviewed journal, *Functional Neurology Rehabilitation and Ergonomics*, for the past six years and it is now listed in the National Library of Medicine and indexed in EBSCO, which is the indexing service for every university and college worldwide. It is clear functional neurology is becoming a multidisciplinary specialty and collaboration with a large a field of experts will allow for a diverse list of approaches in improving brain function.

With the growing incidence of childhood developmental disorders, neurodegeneration, traumatic brain injury, and chronic pain and musculoskeletal disorders, there is a growing need for this specialty to develop, and chiropractors will be the central players.

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*Editor's Note:* For more information about the IAFNR, which will host its next annual conference in November 2016, [click here](#).

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