

Balance and It's Relevance for Concussion Identification, Rehabilitation, and Neurodegenerative Conditions

Interview with
Trevor Berry, DC, DACNB

By *The American Chiropractor*

DR. TREVOR BERRY DC, DACNB

Dr. Berry was born and raised in Alberta, Canada. He completed his pre-medicine requisites at the University of Calgary and went on to complete his Doctorate at Parker University in Dallas, Texas. He graduated Magna Cum Laude, Salutatorian and was the recipient of many academic awards including the Parker Scholastic Excellence Award. Upon completion of his Doctor of Chiropractic, Dr. Berry attended the Carrick Institute for Graduate Studies. Dr. Berry has traveled throughout North America and Europe attending neurology conferences and modules to obtain the most recent information in the field of functional neurology. He became a board certified Chiropractic Neurologist in 2001 upon passing the American Chiropractic Neurology board examination.

*Dr. Berry has been doing FDA research on neurological effects of Laser Therapy since 2011 and in 2014 he received the Erchonia Researcher of the Year Award. Since then he has been hired by the Erchonia Corporation as a neurology consultant and international speaker. With his background in functional medicine, Dr. Berry lectures for Xymogen and was hired on in 2017 by Vibrant America Diagnostic Company as a neurology consultant and lecturer. He was also brought on by BTB Health Systems as a partner, lecturer and consultant in 2017 and lectures nationally and internationally for topics including functional neurology, functional medicine, laboratory testing and interpretation, laser therapy and more. In an interview with *The American Chiropractor (TAC)*, Dr. Berry (**TB**) shares some interesting developments in the area of the identification and rehabilitation of injuries to the central nervous system.*

INTERVIEW

TAC: Can you talk a bit about using balance as a diagnostic tool in establishing injury to the CNS?

TB: Balance testing is an excellent objective biomarker for assessing the status of the CNS. The literature supports using balance assessment as a baseline screening tool, disease progression and outcomes of various treatment parameters. Measuring balance with the use of force plates is the gold standard in the field and research shows it is diagnostic in conditions ranging from traumatic brain injury to Parkinson's disease. It is also used in many other areas of health science such as orthopedic evaluations to outcomes in medical intervention.

TAC: How has this research been gathered over the years.

TB: There are almost 5000 published papers on force plate testing in PubMed. We utilize the BTrackS Assess Balance

System for our balance testing. The system measures both static and dynamic balance and has a normative database of 17,000 test results. Each balance test is compared against those norms to determine percentile ranking. This system is very affordable (less than \$2000) and is utilized by chiropractors throughout the United States.

TAC: Are there any other tests that can be used to diagnose these types of injury? What is the benefit of using a force plate balance testing?

TB: Yes, there are many other tests used to assess the CNS. Obviously advanced imaging such as fMRI and CT scans can be used to assess things like subdural hematoma in an acute head injury. Cognitive and Neuropsych testing may be used in assessing neurological degeneration like Alzheimer's or in TBI (Traumatic Brain Injury). We like to use Videonystagmography, Advanced Vitals, and a comprehensive bedside neurological exam in our office so that we can evaluate the entire nervous system rather than a basic, quick neurological exam. For various reasons, the comprehensive neurological exam has waned amongst healthcare providers and it has gotten to the point that many neurological cases are "treated" based solely on symptoms alone. Force plate balance testing analysis is critical in our understanding of the human frame and nervous system. It allows us to extrapolate information about the somatosensory, vestibular, and oculomotor systems, all of which play a major role in the CNS.

TAC: What are some uses that something like this type of technology could be used in the typical family practice setting, or sports chiropractor setting?

TB: All practices can use it for fall risk. All practices can use it for outcome assessment pre- and post-care. Sports chiropractors may use it in injury recovery like rehabbing from an ACL sprain and all doctors could use it for injury prevention (i.e., if their center of mass is stable, and they don't have a left anterior sway pattern, they may be less likely to keep reinjuring their chronic left hamstring pull). If certain therapies aren't working, this may be a good window as to why. Other therapies, muscle training and balancing, or other treatment parameters may need to be applied to stabilize the patient first so they may respond better to the other care. If you are having those patients that never "hold" their adjustments, they may require more

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INTERVIEW

vestibulospinal integration that can be assessed using a balance plate. And if you make their balance testing worse it can give you guidance that you might need to try a different strategy.

TAC: Does a chiropractor need advanced training for using a force plate balance testing, or is it plug and play?

TB: Force Plate Balance Testing is excellent for ANY kind of healthcare provider, let alone chiropractors. The BTrackS System is particularly effective because it is portable (just 15 pounds) and the software is incredibly easy to use. Any subspecialty in chiropractic could stand (no pun intended) to benefit from this type of testing. For example, if you treat mostly low back pain, a balance plate might detect a forward center of pressure or sway pattern that needs to be corrected first so that they get optimal results with their other chiropractic treatments. The BTrackS System has done an amazing job with adding on testing software to meet the needs of the field doctors. You can just plug and play for basic balance testing and posture analysis all the way on down to Cervical Challenge Testing and full Sensory Organization Testing (SOT force plate testing). In contrast to the old school “stand on 2 scales and look at the asymmetry” screen, balance tracking with the BTrackS gives an exact percentage of side to side and forward to back weight distribution so that is a much better screening tool for doctors to analyze or even doing screenings at fairs and events such as that.

It's a light weight and very portable device which makes it easy to take to the field if you are a sports doctor or to schools to perform pre-season concussion screenings. It's a very dynamic device.

TAC: What ways can chiropractors help with concussion recovery?

TB: First, chiropractors can play an important role in detecting concussions. For example, with our BTrackS preseason balance screen, if an athlete takes a hit to the head we can immediately do a comparison evaluation as an objective marker to assess return to play status. With our post-doctoral training we look at many factors in oculomotor stability, vestibular and sensory integration, fast eye movements (saccades) and other signs that the patient may present with that need to be addressed to rehab the patient back to pre-injury status.

We also use other devices like transcranial low-level laser therapy to facilitate the recovery of concussions like down regulation of glial priming, prevention of cell apoptosis, mitigation of NF-kB, reduction of amyloid beta burden and neurofibrillary tangles and many more of the pathophysiological consequences of head injuries. As I dug into the research on low-level laser therapy it became very evident there are specific wavelengths and dose parameters that must be met for optimal outcomes especially in brain. The biggest myth in this area is the notion that the higher the power



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laser the better it must be, and this can't be any further from the truth. It was through my research that I quickly realized that lower-powered class II lasers are ideally suited (and safe) for the brain-based work I do. That is why I attached my cart to the Erchonia Laser horse since their laser parameters are ideal for brain work let alone the fact that they have more FDA research than all of the other laser companies combined. The last question I commonly get is if that type of laser can penetrate the skull and I am happy to announce we are publishing a clinical trial that demonstrates their base laser model activating the different parts of the brain with a 10-minute treatment. These functional images are quite remarkable! We also use different nutrition and diet protocols at different phases of our concussion recovery.

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TAC: Do chiropractic adjustments ever cause the opposite effect? Are there areas/techniques that may be advantageous?

TB: YES! We all know how powerful a neurological tool the chiropractic adjustment is, but this can render it contraindicated in some of the acute phase TBI cases. If vitals, gaze holding, VOR reflexes, cerebellar inhibition, and other factors are not stable the nervous system may not be able to handle that type of afferent input. We may do other oculomotor, vestibular, or distal large diameter therapies first to build up tolerance and stability before we introduce manipulation. If the doctor is in doubt or is not comfortable in assessing these markers, it's best they error to the side of caution and potentially refer out to a doctor that is trained in this area. We work closely with many chiropractors in our area that refer their more complex cases for management and then we get them back to their office.

There is a place for all chiropractic techniques in neurological management. There is a reason lower amplitude and higher amplitude techniques exist and can get results. Hypothetically speaking, I would be very cautious using higher amplitude upper cervical adjustments in acute phase TBI but at various stages of recovery an upper cervical specific or Gonstead adjustment may be the best-indicated technique. I would rather look at the central consequences of any modality over the label of what techniques might be better or worse. If the patient can tolerate a higher

amplitude and that is the best thing for their autonomies and other central findings, then that is what I will use. If I know they can't tolerate that much input I will resort to other modalities. For example, certain TBI cases I may start out with a distal finger or toe adjustment or fast stretch to start to increase lateral cerebellar integration and then work my way more proximal.

TAC: For chiropractors in the field, how could they utilize force balance plate testing to enhance their practices?

TB: It is a perfect screening tool. Go to sports teams and schools and offer screenings. You may even have your staff run the screens. It's easy to do and our staff does all of the testing at our office. It can be a good way to establish a relationship with the community and if they do suffer and injury they are now coming in to see you for retesting and patient care. It can be used at senior centers, pre- and post-op, the list is endless. Patients and their families also love the objective markers. When they have a massive sway pattern ellipse, show a 68% forward center of pressure, and are deemed a high "red" fall risk and through the course of your care their ellipse tightens up, their center of pressure balances to a 52-48% front-to-back balance and their fall risk comes in under the low "green" category they are singing your praises and they take their reports home like getting straight A's on a report card. And this is all based on peer-reviewed FDA cleared science. It's wonderful! **TAC**

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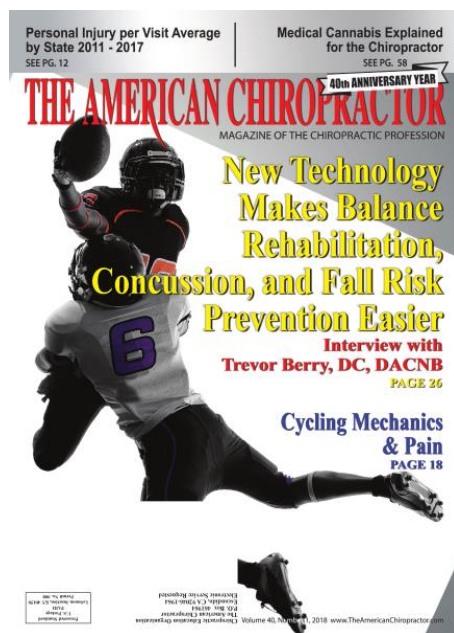
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