

INVITED COMMENTARY

CranioSacral Therapy, Brain Injury, and American Football: Time for a Convergence

Eric Leskowitz, MD

Editor's Note: Psychiatrist and chronic pain specialist, Eric Leskowitz, MD, retired recently after 20 years as a member of the Department of Psychiatry at Harvard Medical School. He continues to lead the Integrative Medicine Task Force at the Harvard-affiliated Spaulding Rehabilitation Hospital and maintains an avid interest in the potential of integrative practices in sports-related contexts. His first column for *JACM*, in the May 2017 issue, “The Zone: A Measurable (and Contagious) Exemplar of Mind-Body Integration,” examined emerging evidence on athletes seeking that special level of “in the zone” performance through integrative strategies. In this, Dr. Leskowitz turns to what may be viewed as the other end of contact sports performance: concussion and brain injury. The focus is on football, though the applications may extend to the military. Again, the evidence is only emerging, and begs more thorough exploration.

—John Weeks, Editor-in-Chief, *JACM*

WILL SMITH MAY not have gotten an Academy Award for his portrayal of Dr. Bennett Omalu in the 2016 movie *Concussion*, but his depiction of the forensic pathologist brought the issue of sports concussion to a much wider audience than ever before. As the film demonstrated (“Based on a true story”), the National Football League had for years been minimizing any connection between commonly experienced repeat concussions and later symptoms of traumatic brain injury (TBI). Recent concerns include the devastating disorder known as chronic traumatic encephalopathy (CTE). Now the word is out.

So at least the first stage of public health action is underway—increasing awareness of the problem, education of athletes and trainers, and prevention. This response also includes several elements: the required clearance of a player by a team trainer before re-entering the game after a concussion, better recognition of postconcussive syndrome (PCS) at the high school and college level, use of appropriate language (so that it is no longer trivialized as “a dinger”), and development of computerized sensors and shock-absorbent headgear. Concurrently, another population at risk of TBI is also getting increased attention—military personnel serving in Iraq who suffer head trauma as a result of blast injuries from improvised explosive devices (IEDs).

But despite this increased attention to TBI, definitive research into effective treatment modalities is lagging.¹ Ironically, though, an approach with great clinical potential

has emerged from within the National Football League (NFL) itself—not from its corporate bureaucracy, but from a former star player whose own quest for self-healing from PCS led him to explore the world of alternative and complementary medicine.

Ricky Williams won the Heisman Trophy in 1995, America’s highest award for college football players. He went on to have a distinguished professional career with the Miami Dolphins. He was named to the Pro Bowl before he retired in 2011. His unusual career was marked by a 2-year leave of absence during which he studied a range of holistic therapies, including Ayurvedic medicine in India. He found particular benefit from a variant of traditional osteopathy in the cranial field, a technique known as CranioSacral Therapy (CST).² Williams went on to receive training in CST. In subsequent collaboration with the primary training center for this technique, the Upledger Institute (UI) in Palm Beach, FL, he has organized a CST-based residential treatment program for ex-NFL players with suspected mild TBI.

Before describing the program and reporting on some preliminary results, a description of CST is in order. Contrary to the orthodox medical operating assumption, osteopaths since the 1930s have maintained that the cranial vault—the skull—is not a fixed box whose edges—the sutures—are fused in place. Rather, by an easily learned technique of manual palpation at the temporal bones, they are able to detect a rhythmic pulsation in which the skull

perceptibly expands and contracts outward and inward ~5 times per minute. This is significantly slower than the respiratory rate or heart rate. As a result of fluid dynamic studies,³ the movement is now believed to represent pulsations of the cerebrospinal fluid.

CST practitioners assert that physical and even emotional traumas can become embedded in the connective tissue surrounding the central nervous system. This process is in alignment with the embodied trauma model proposed by other body-centered therapies such as myofascial release and yoga. Noted post-traumatic stress disorder (PTSD) researcher and psychiatrist Bessel van der Kolk alludes to this connection in title of his book “The Body Keeps the Score”.⁴ Very gentle (<5 g) pressure applied by the therapist to the skull facilitates the “release” of these restrictions in the dura mater and the dural tube.⁵ This release is felt by the CST therapists as a change in balance, force, and rate of the cranial rhythm. It is typically accompanied by feelings of relaxation and comfort in the patient, a process called “somato-emotional release” by practitioners.

Over 10,000 CST practitioners have been certified by UI in America alone (full disclosure—I am trained in CST but do not incorporate it into my pain management practice). As a result, many physical therapists and osteopaths are able to administer this treatment under insurance coverage. Nevertheless, the clinical research base for CST is surprisingly sparse. Several case reports and descriptive studies^{6–8} and nonpeer reviewed individual narratives^{9,10} have been published. In these articles, Olympic athletes tell of recovering rapidly from injury (a mild TBI from a diving injury), or winning skiing slalom medals after using CST to facilitate their training. These hints of potential benefits are promising enough that all interested parties—the NFL, the Department of Defense, and, most importantly, the community of CST practitioners—ought to address this shortage of data.

The UI/Ricky Williams program was initiated for just this reason.¹¹ So far, 11 former players, divided into two separate cohorts, have participated in the 5-day residential program that features two 90-min-long CST sessions per day, daily group discussion, educational talks, and sharing of life experiences. The research component includes pre- and postprogram measures of cognitive function (the ImPACT), mood (Beck Depression Inventory), physical function (range of motion), and reflexes (Dynavision).

This is a pilot study. Its validity is limited by the lack of randomization and the absence of a matched control group. Nevertheless, the preliminary results¹² show that the players experienced statistically and clinically significant improvements in range of motion, pain, sleep, and cognitive function. Future studies will be needed to disentangle the role of several powerful nonspecific healing factors that could in and of themselves account for the positive results. Among these are group cohesion and bonding (reminiscent of the team chemistry they had experienced as players), the stress reduction inherent in spending a week in Florida, and the impact of improved sleep and decreased pain on cog-

nitive function. Also to be determined are: can more severe TBI (and possibly even CTE) be ameliorated by CST? Would military PCS after IED also respond to CST? And what effect would early intervention have (i.e., CST immediately after concussion)?

The high praise given to the program by these ex-NFL subjects shows that something significant is happening, even if the details are not yet fully understood. Surely the NFL, the Department of Defense, and CST providers everywhere should support further research to understand how CST may help heal TBI in their athletes, their soldiers, and their patients.

References

1. Burke MJ, et al. In search of evidence-based treatment for concussion: Characteristics of current clinical trials. *Brain Inj* 2015;29:300–305.
2. Upledger JE, Vredevoogd JS. *Craniosacral Therapy*. Seattle: Eastland Press, 1983.
3. Moskalenko YE, et al. Slow rhythmic oscillations within the human cranium: Phenomenology, origin and informational significance. *Human Physiol* 2001;27:171–178.
4. van der Kolk, B. *The Body Keeps the Score: Brain, Mind and Body in the Healing of Trauma*. New York: Viking, 2014.
5. Upledger, J. *Your Inner Physician and You*. Berkeley CA: North Atlantic Books, 1997.
6. White JE, White JE, Baldt G. Relation of the craniofacial bones to specific somatic dysfunctions: A clinical study of the effects of manipulation. *J Am Osteopath Assoc* 1985; 85:603–604.
7. Harrison RE, Page JS. Multipractitioner Upledger craniosacral therapy: Descriptive outcome study. *J Altern Complement Med* 2011;17:13–17.
8. Haller, et al. Treating the sequelae of postoperative meningioma and traumatic brain injury: A case of implementation of craniosacral therapy in integrative inpatient care. *J Altern Complement Med* 2015;21:110–112.
9. Upledger J. CranioSacral Therapy in rehabilitation (“Vertigo in an Olympic diver,” p. 7–8). In: Leskowitz E, ed. *Complementary and Alternative Medicine in Rehabilitation*. St. Louis, MO: Churchill Livingstone Press, 2003.
10. Murphy J. Olympic skier Julia Mancuso’s workout. *Wall Street Journal* 2014.
11. Dr. John E. Upledger Foundation. Online document at www.upledger.org/what-we-do/concussion-program.php Accessed October 31, 2017.
12. Wetzler G, et al. Craniosacral therapy and visceral manipulation: A new treatment intervention for concussion recovery. *Med Acupunct* 2017;23:239–248.

Address correspondence to:

Eric Leskowitz, MD
 Integrative Medicine Task Force
 Spaulding Rehabilitation Hospital
 300 First Avenue
 Charlestown, MA 02129

E-mail: eleskowitz@partners.org