

# Therapy for Recovery from Traumatic Brain Injuries using Manual Cranial/Structural Techniques

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Even mild traumatic brain injury can lead to dramatic long term dysfunction and degeneration of the brain. Science has shown us new systems responsible for the health and wellbeing of the brain. These have given us definitive images as to what happens to the brain with a traumatic brain injury and clear pathways for recovery. Adrienne Larkin has a very informative video on YouTube that was an address to cranial osteopaths which supports this.<sup>1</sup> This article will expand on these pathways to recovery showing how Cranial/Structural techniques applied by massage therapists are extremely effective in treating and rehabilitating traumatic brain injuries (TBI).

After a traumatic brain injury many symptoms can appear. Some appear directly related as they occur in the brain and others appear as a response to the brain not functioning properly.

There is a cerebral blood flow disruption. This directly relates to difficulties with cognition, metabolic imbalances, and physical activity and exercise. Often clients can have dramatic limitations with cognition where reading is either extremely difficult or actually impossible. In addition normal mental activities are challenging and often incomplete. The mental functioning that is necessary for success in our culture is not up to its task. Metabolic imbalances can affect all functions where a functioning metabolism is necessary. This can be especially noticed in relation to the pituitary which often results in lethargy and lack of interest in areas that were extremely important to the client previous to the TBI. Exercise intolerance is directly related to metabolic imbalances and the poorly functioning central nervous system.

Along with the cerebral blood flow disruption there is inflammation and edema after a TBI. This inflammation is also a result of blood brain barrier disruption affecting all aspects of the brain function. In more severe cases there is actually torn brain tissue resulting in dead cells and the inability of the blood brain barrier to properly heal leaving an ongoing worsening condition over time.

Mood disorders are prevalent and directly related to HPA axis overstimulation (interaction of Hypothalamic/Pituitary/Adrenal endocrine glands). Add to this the metabolic imbalances and mood swings can be as extreme as depression.

The autonomic nervous system is affected by inflammation and edema in the early stages of recovery. If left untreated other problems such as the buildup of talc and amyloid beta can add to an already misfiring autonomic system leading to long term lack of brain function and health problems.

The hydraulics of the brain are damaged. Cerebral spinal flow and blood flow are impaired. The lymphatic system carries cerebral spinal fluid through the brain under pressure, supplying nutrients and taking away waste. It shadows the circulatory system. Both systems are injured in TBI.

1. brain cells are not getting the proper nutrients necessary for proper functioning and healing,
2. waste products like debris and dead and damaged cells, inflammation, amyloid beta and talc all build up creating further degeneration that results in impaired brain functions later in life.
3. residual inflammation “smolders” affecting sleep, metabolism, and mood disorders.

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<sup>1</sup> Larkin, Adrienne. “How Cranial Osteopathy Can Heal Traumatic Brain Injury”. Online Video clip. <https://www.youtube.com/watch?v=zLjHdqB0yc>. *YouTube*. YouTube Posting Date, 30 June 2015. Date of Access, 26 September 2016.

There is also a disruption of the blood / gut barrier and the emergence of allergies and environmental sensitivities, digestive problems and even leaky gut syndrome, again related to the lack of fluid drainage so necessary for the health of the brain.

Looking further, the structure of the brain is disrupted with TBI. The meninges which include the reciprocal tension membrane, dural membrane, falx cerebri, and tentorium cerebella support the brain and are the main structures where blood vessels, the glymphatic system which surrounds the blood vessels, and the lymphatic system are held. Many clients with TBI not only have distorted meninges but also show actual visual tears with the new diagnostic tools. Thus the supporting structure for the brain cannot hold the brain lobes creating strains in the actual brain tissue. This leads to stress and stretching of the axons which in turn leads to chronic axonal inflammation that will result in chronic traumatic encephalopathy unless the tension is taken off the lobes of the brain by rebalancing the meninges.

As you can see, following a TBI the brain needs a lot of assistance for any hope of recovery. Treating specific areas can produce dramatic improvement and restore the brain to homeostasis. Unless these are addressed damages to the brain can result in chronic traumatic encephalopathy, degenerative brain disease, and even long term dementia and Alzheimer's. Structural damage to the meninges directly affecting the glymphatic system results in the accumulation of cellular waste products which is associated with all neuro-degenerative diseases. According to Jeffrey Iliff "essentially all neurodegenerative diseases, including Alzheimer's disease, protein waste accumulates and eventually suffocates and kills the neuronal network of the brain."<sup>2</sup> Similar damage to the meninges also affects the lymphatic system which recent research shows is much more extensive and prevalent in the brain than previously thought. Quoted from UVA Today Johnathan Kipnis says "we believe that for every neurological disease that has an immune component to it, these [lymphatic] vessels may play a major role."<sup>3</sup> It is obvious that a highly functioning lymphatic system is necessary for recovery from TBI due to the inflammation and accumulation of waste products and the potential of a blood/gut barrier issue.

**Enter Cranial/Structural Therapy!** Structural imbalance in the cranium and cranial motion was already present before the traumatic brain injury. This imbalance affects the structure of the entire musculoskeletal system and led to the development of Cranial/Structural Therapy which focusses on releasing the imbalances and bringing the whole structure into balance, support and function. After a TBI not only are systems in the brain damaged, but the existing imbalances in the cranium and cranial rhythms are increased which produce greater structural imbalances in the overall body structure. The imbalance in the spine, especially in the neck, is significant as the relationship of the foramen magnum in the occiput and C1 are often further imbalanced due to the force of the injury. The brain stem is irritated at the foramen magnum resulting in inflammation and restriction of the dura. Applying the **Cranial/Structural Core Distortion Releases (CSCDR)** to restore structural balance will reduce the inflammation of the brain stem and restrictions of the dura.

The CSCDR, which releases imbalances in the cranial structure, directly unwinds and balances the distortions in the meninges. This is extremely important in the recovery from TBI. As the meninges unwind, pressures on the glymphatic, lymphatic and circulatory systems are released allowing them to regain function and remove waste products, inflammation, and debris from the damage. With the CSCDR cranial decompression also occurs which supports the pumping of cerebral spinal fluid in the venous sinuses and the glymphatic system reducing inflammation and swelling. The rebalancing of the

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<sup>2</sup> Quote from the research report: University of Rochester Medical Center. "Previously unknown cleaning system in brain: Newer imaging technique brings 'glymphatic system' to light". Science Daily, 15 Aug. 2012. Web. 27 Oct. 2012.

<sup>3</sup> Quote from the research report: University of Rochester School of Medicine. "Researchers Find Textbook-Altering Link Between Brain, Immune System. UVA Today, 1 June 2015.

meninges allows the lymphatic system to start performing properly which specifically reduces inflammation in the brain. As the meninges unwind into balance, support for the lobes of the brain is restored. This takes the strain off the axons and reduces cause of the axonal inflammation facilitating recovery from traumatic encephalopathy.

The CSCDR not only addresses many of the conditions of TBI, but also creates increased range of motion in the cranial bones for further rehabilitation of the brain using the advanced Cranial/Structural therapy explained here. I developed the **Cranial/Structural Frontal/Occipital Decompression** (CS FO Decompression, aka “Big Pump”) specifically to pump out excess fluid and inflammation, and restore homeostasis in the brain. By compressing the frontal bone and occiput, and then rocking them releasing the compression pressure very slowly through seven layers in the brain we are forcing cerebral spinal fluid with pressure through the glymphatic and lymphatic systems. This pumping pressure helps open blockages in the glymphatic system and pumps out waste products, talc, amyloid beta and debris left over from the TBI. This also stimulates and reestablishes lymphatic drainage by restoring the lymphatic system to drain out inflammation and swelling boosting the brain’s immune system to speed up recovery.

Applying both the CSCDR and CS FO Decompression for the treatment of mild TBI has proven to be extremely effective in achieving full recovery from mild TBI. Using these therapies massage therapists are able to manually restore both the lymphatic and glymphatic systems facilitating the restoration of multiple systems and structures in the brain which have been damaged in mild TBI. Treatment of Autism, Alzheimer’s, dementia, dysfunction from multiple concussions, and more has been very successful using these therapies.