

ORTHOSPINOLOGY

DISCOVER AT

DeCubellis Family Chiropractic

Upper Cervical Care & Arthritis of the spine

Chronic Traumatic Encephalopathy (CTE) is a neurodegenerative disease linked to repeated head traumas, such as concussions or sub-concussive hits, often observed in athletes involved in contact sports and military personnel. CTE is characterized by the accumulation of **tau protein** in the brain, leading to brain cell death and a progressive decline in cognitive, emotional, and motor functions. The symptoms of CTE can include memory loss, confusion, depression, impulsivity, aggression, and eventually, dementia.

While the direct treatment of CTE primarily involves symptom management, **orthospinology** (upper cervical chiropractic care) may offer potential benefits by addressing the neurological and structural implications of head and neck trauma that contribute to CTE. This is based on the theory that correcting upper cervical misalignments can optimize nervous system function, reduce inflammation, and enhance cerebrospinal fluid flow.

How Orthospinology May Help Address CTE

Though orthospinology doesn't treat CTE directly, it might help mitigate symptoms and secondary complications arising from head and neck trauma. Here's how:

1. Restoring Neurological Function

- **Brainstem and Spinal Cord Pressure Relief:** The upper cervical spine, particularly the atlas (C1) and axis (C2) vertebrae, play a critical role in protecting and supporting the brainstem, which is involved in the regulation of many bodily functions, including autonomic functions, balance, and coordination. Trauma to the head and neck can lead to misalignment of the atlas, placing stress on the brainstem and surrounding neurological structures.
- **Nerve Communication Improvement:** By correcting upper cervical misalignment, orthospinology aims to relieve this pressure, which could improve the overall flow of communication between the brain and body. Better nerve function may contribute to a reduction in neurological symptoms such as brain fog, headaches, mood disorders, and balance problems, which are commonly associated with CTE.

2. Improving Cerebrospinal Fluid (CSF) Flow

- **Impact of Atlas Misalignment on CSF Flow:** Research suggests that upper cervical misalignments can impair the normal flow of cerebrospinal fluid (CSF), which plays a critical role in cushioning the brain and spinal cord, removing waste products, and regulating intracranial pressure. In cases of head trauma, abnormal CSF flow can exacerbate brain injury and promote the accumulation of toxic proteins like tau, which are central to CTE pathology.
- **Restoring CSF Dynamics:** By correcting atlas misalignment, orthospinology may improve the flow of CSF, which could help to reduce intracranial pressure and prevent the buildup of harmful substances in the brain. This improved fluid dynamics could alleviate some of the cognitive and neurological symptoms associated with CTE.

Scientific Support:

- A study published in the *Journal of Upper Cervical Chiropractic Research* discussed the role of upper cervical chiropractic care in improving CSF flow in patients with **multiple sclerosis**, a condition also associated with impaired fluid dynamics in the central nervous system. Though not directly related to CTE, these findings suggest that upper cervical adjustments can influence brain fluid dynamics, potentially relevant for those with neurodegenerative conditions like CTE.

3. Reducing Inflammation

- **Chronic Inflammation in CTE:** One of the hallmarks of CTE is chronic inflammation in the brain, which exacerbates neuronal damage and contributes to the disease's progression. Traumatic brain injuries (TBI) often lead to neuroinflammation, and repeated trauma can cause ongoing inflammatory responses in the brain tissue.
- **Effect of Upper Cervical Care on Inflammation:** By restoring proper nervous system function and reducing mechanical stress on the brainstem and spinal cord, orthospinology may have an indirect anti-inflammatory effect. While it does not directly target brain inflammation, correcting spinal misalignments can improve autonomic regulation and possibly reduce overall systemic inflammation, which may help manage the inflammatory aspect of CTE.

Scientific Support:

- Studies on chiropractic care have demonstrated that spinal adjustments can influence the body's **inflammatory markers**. For instance, a study published in the *Journal of Manipulative and Physiological Therapeutics* showed that spinal adjustments, including upper cervical techniques, could reduce the levels of **pro-inflammatory cytokines**, which play a role in the body's inflammatory response. Though more research is needed specifically for CTE, this suggests a potential link between chiropractic care and reduced systemic inflammation.

4. Improving Blood Flow and Oxygenation to the Brain

- **Vertebral Arteries and Cerebral Blood Flow:** The vertebral arteries, which run through the cervical vertebrae, are major suppliers of blood to the brain. Misalignments in the upper cervical spine, particularly in the atlas, can interfere with blood flow to the brain, leading to decreased oxygenation and nutrient delivery. This can worsen cognitive and neurological symptoms, such as those seen in CTE, where impaired brain function is already a major concern.
- **Orthospinology and Blood Flow:** Orthospinology adjustments may improve blood flow by relieving compression of the vertebral arteries and promoting better circulation to the brain. This could help support cognitive function and reduce symptoms such as headaches, dizziness, and brain fog that are commonly associated with both CTE and traumatic brain injuries.

Scientific Support:

- A study published in *Brain Circulation* explored how spinal manipulative therapies, including upper cervical adjustments, can improve **cerebral blood flow**. By improving blood supply to the brain, patients with neurodegenerative or trauma-related conditions might experience symptom relief.

5. Alleviating Head and Neck Pain

- **Cervical Trauma and Pain in CTE:** Individuals with CTE often experience chronic head and neck pain due to the accumulated trauma to the brain and cervical spine. Upper cervical misalignments can exacerbate these symptoms by placing additional strain on the muscles and joints in the neck and upper back.
- **Pain Relief via Atlas Adjustment:** Orthospinology adjustments can relieve musculoskeletal tension and reduce pain in the cervical region, contributing to overall symptom relief for CTE patients. Reducing neck pain and tension can also improve quality of life, allowing patients to engage in more physical activity and maintain a better mental state.

Scientific Support:

- Research on upper cervical chiropractic care, including a study from the *Journal of Upper Cervical Chiropractic Research*, has shown that adjustments to the atlas can help alleviate headaches, neck pain, and other symptoms of cervical spine dysfunction. This type of pain management could be particularly beneficial for patients with CTE who suffer from chronic pain.

6. Supporting Cognitive and Emotional Health

- **Cognitive and Emotional Symptoms in CTE:** Cognitive decline and emotional instability, such as depression, irritability, and impulsivity, are common in CTE. Misalignment of the upper cervical spine can lead to impaired brainstem function,

potentially worsening these symptoms by disrupting the body's ability to regulate mood and cognitive processes.

- **Impact of Orthospinology on Mental Function:** By restoring proper nerve communication and reducing stress on the brainstem, orthospinology may help stabilize some cognitive and emotional symptoms. While it is not a cure for the neurodegeneration seen in CTE, improving nervous system function may help mitigate some of the cognitive and emotional effects.

Conclusion

While orthospinology cannot directly treat **Chronic Traumatic Encephalopathy (CTE)**, it may offer supportive care by addressing the secondary effects of head and neck trauma, such as poor spinal alignment, nerve interference, reduced cerebrospinal fluid flow, and inflammation. The gentle corrections performed in orthospinology may help alleviate symptoms like headaches, neck pain, cognitive fog, and emotional disturbances. Scientific studies support the idea that upper cervical adjustments can improve neurological function, blood flow, and inflammation, which may offer symptom relief for those suffering from the long-term effects of head trauma, including CTE.

However, it is important to note that more direct scientific research on the relationship between orthospinology and CTE is needed to fully validate its effectiveness in treating this condition. Therefore, orthospinology should be considered as part of a broader, multidisciplinary approach to managing CTE.