

CranioSomatics® for Touch for Health

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Touch for Health is a multi-faceted approach to health and the healing process. From a broad perspective, muscle function is related to many other indicators of general health, from acupuncture meridians to organ function. From a structural perspective, one of the underlying tenets is that posture and muscle function are inextricably related. Although it is acknowledged that there are many factors which can produce inhibited muscle function, this presentation discusses function from the CranioSomatic perspective.

The purpose of this article is to acquaint conference attendees with reciprocal relationships between the position and function of cranial bones and musculoskeletal function throughout the body. Due to the limited time available, this will only be a brief introduction. Practical applications of CranioSomatics in the evaluation and treatment of simple sutural restrictions, cranial sphenobasilar synchondrosis (SBS) strain patterns, and chronic common cranial patterns will be demonstrated.

Personal Background

I became acquainted with TFH in 1974 while attending chiropractic college in Los Angeles. I received my TFH Instructor's Certification in 1975 and taught classes for many years thereafter in Florida. For the last 35 years I have used TFH and Applied Kinesiology procedures in my clinical practice on each and every patient that I treat. Each patient treatment session always begins with an evaluation of specific musculoskeletal function and ends when I have successfully strengthened all muscles that I have identified as weak or inhibited.

After many years in practice, I arrived at several important conclusions. First, there were multiple musculoskeletal patterns of inhibited muscle function generally present in my patient population. Second, although the inhibited muscles in many of these *common patterns* could be strengthened using traditional treatment procedures, the inhibited conditions would return when the patient became weight-bearing and walked across the room. The muscles would again test *weak* when the patient was re-tested in the original positions.

Over a period of time it became obvious that many of these common chronic musculoskeletal patterns were compensatory to cranial strain patterns, which have characteristic effects on the osseous and soft tissue cranial components. As I developed successful cranial treatment procedures to release each of these cranial strain patterns, the related musculoskeletal patterns were also eliminated. It is important to note that when these musculoskeletal patterns had been corrected by my new cranial procedures, they did not return with walking or other weight-bearing activities. In fact, the previously inhibited muscles were generally still strong when tested on the patient's subsequent visits.

Historical Perspective

The development of cranial manipulative procedures as a therapeutic modality appears to have originated in the United States. Cottam and Smith (1981) report that Ligeros (1937), a Greek medical doctor, used the libraries and museums of Europe to research cranial manipulation back to 1250 B.C. and found no examples of cranial manipulation in the ancient world of Europe. Cranial techniques for therapeutic purposes were developed in the first half

of the 20th century by two American physicians, Nephi Cottam, DC and William Sutherland, DO. Both men developed comprehensive systems of cranial techniques, but systems with notably different characteristics. Cottam's very direct sutural release procedures were compatible with the manipulative techniques used by early chiropractors and became associated with the chiropractic profession. Sutherland's concept integrated all of the bones of the skull and the sacrum into a single functioning unit – the craniosacral mechanism. Treatment of the craniosacral mechanism was a more holistic approach and became the cranial treatment of choice for the osteopathic profession.

Nephi Cottam, DC

Dr. Cottam discovered the power and effectiveness of sutural release procedures in the mid-1920s when he provided immediate relief to a woman's severe headache using a cephalad lift to the cranial vault (Cottam, C., 1990). His application of the cranial procedure was based on a childhood memory that supported the concept that the bones of the skull were not fused and could be separated. Cottam remembered that as a child riding his pony in the desert he had observed the sutural separation of animal skulls drying in the sun. After studying the various sutures of the cranium, he began teaching his sutural release techniques in the late 1920s. By the 1930s his techniques were being presented in the United States, Canada, and Europe. In 1936, he founded the Cottam School of Craniopathy in Los Angeles and published *The Story of Craniopathy*.

William Garner Sutherland, DO

Sutherland's developmental research in cranial technique was inspired by a "guiding thought" that occurred to him in 1899 as he stood viewing a disarticulated skull in a display case at his osteopathic school. The bones had been positioned in their normal anatomical relationships, but were slightly separated to allow observation of the individual bones. Sutherland observed that the beveling of the temporal bone resembled the gills of a fish, and he

thought this might indicate articular mobility for a respiratory mechanism (Sutherland, A.E., 1962). This thought was the driving force behind his later research and development of his cranial concepts and treatment procedures.

Sutherland concluded, by examining the articular surfaces of the cranial bones, that the cranial bones were capable of articular mobility. Through his palpatory skills he identified a constant, cyclical, physiological motion of the cranial bones. He postulated that this cranial bone motion was coordinated and controlled by the three main folds of the cranial dura mater, which he referred to as the reciprocal tension membrane. He also was able to palpate a cyclical motion of the sacrum which appeared to be synchronized with the cranial motion. He postulated that the sacral motion was linked to the cranial bone motion by the spinal dura mater. Sutherland's contribution to the cranial field was an elaborate unified system with treatment procedures, which he described in his book, *The Cranial Bowl*, published in 1939.

Cranial Bone Anatomy

To understand the functional relationships between the cranium as a whole, individual cranial sutures, patterns of sutures (strain patterns), and the facilitation / inhibition of muscles, this discussion begins with a brief introduction to craniosacral anatomy and function. The skull has been described as the skeleton of the head and face. It consists of twenty-eight bones. Six of these are found in the middle ears and are inaccessible. The remaining twenty-two bones are divided into two groups. Eight bones form and complete the cranial vault and the cranial base that houses and protects the brain. The remaining fourteen bones form the face.

Cranial bones are functionally categorized as either midline structures or paired peripheral structures. This classification provides information on both the location and movement characteristics of each cranial bone. Four of the cranial bones are midline bones, located in the sagittal midline of the skull and their

movements are typically flexion and extension about transverse axes. The cranial midline bones are flanked by nine pairs of peripheral bones, much like the spine is flanked by peripheral structures: the twelve pairs of ribs and the upper and lower extremities.

The cranium is capable of a variety of movement patterns. The sphenoid and occiput, the two main midline bones, control the position and function of the other cranial bones just as the spinal vertebrae affect the position and function of the ribs, the pelvis and the extremities. The sphenoid controls the facial bones and the occiput controls the parietal and temporal bones. The peripheral bones of the cranium move functionally in internal and external rotation, as do the extremities.

CranioSomatic Concepts

Cranio refers to the cranium or skull and *Somatic* refers to the body or body wall. *CranioSomatics* describes reciprocal, functional relationships between cranial restrictions and the inhibition of specific muscles. Each cranial restriction can generally be correlated with one or more inhibited (weak) muscles. Conversely, weak muscles can generally be correlated with specific cranial restrictions. It should be understood that there is no separation in function between the cranial components and the extra-cranial (somatic) components of the musculoskeletal system. The entire musculoskeletal system functions as a single unit.

Cranial movements relate to musculoskeletal function: changes to either the cranial portion or the somatic portion are reflected in reciprocal compensatory changes in the other. These changes can be the restriction of a single suture or inhibited muscle, or a pattern of sutural restrictions or muscle inhibitions. The cranial bones are constantly shifting their relative positions – moving automatically in response to changes in posture and daily activities, or in response to other internal or external influences. The natural, globally-coordinated movements of the body

are seen in the contra-lateral movements of the gait pattern. When we walk or run our gait pattern allows us to move efficiently around the flexible but steady midline of the body: our spine. The bones of the head also move in coordinated ways, which directly correspond to movements of the body. Patterns of movement will be discussed later.

By learning and applying CranioSomatic relationships a practitioner can identify sutural restrictions by evaluating the function of selected muscles. Conversely, an analysis of sutural restrictions can be used as a guide for identifying and treating musculoskeletal dysfunctions. When a sutural restriction is released the muscle function will return to normal. In the case of an unusual stress on a body joint or muscle (maybe from a fall) a gentle traction or range of motion movement of the involved joints may correct inhibited muscle function, and restrictions in the related cranial sutures will also be corrected.

Identifying Sutural / Muscle Relationships

Sutural restrictions in the cranium can be identified by therapy localization (TL) along sutures (or palpation for tenderness along sutures), and challenge procedures can be used to evaluate cranial bone ranges of motion. Musculoskeletal patterns in the body can be identified by using manual muscle testing, TL, or palpation for tenderness along muscles. They can also be identified by evaluating spinal and extremity ranges of motion using palpation or challenge procedures. Some TFH practitioners may find it convenient to begin CranioSomatic evaluations by using manual muscle testing, TL and challenge to assess facilitation and inhibition of muscles in the body, and then using TL to confirm corresponding relationships in the cranial components. These evaluation methods will probably be the preferred choices for lay practitioners and others not skilled in cranial palpation. (Sutural restrictions can generally be released by digital pressure applied perpendicular to the suture; however, these techniques are beyond the scope of the present discussion.) Individual sutural restrictions can be identified by positive TL; they

can also be identified by testing the related muscles. The following is a sample list of sutural / muscle relationships:

- Frontonasal suture:
weak leg adductors (+TL to medial thigh)
- Internasal suture:
weak leg adductors (+TL to medial thigh)
- Nasomaxillary suture (distal):
weak hip flexors (slight external rotation)
- Frontozygomatic suture: weak hip and shoulder flexors (neutral – no rotation)
- Anterior squamosal suture:
weak shoulder abductors (internal rotation)
- Middle squamosal suture: weak shoulder abductors (neutral – no rotation)
- Posterior squamosal suture:
weak shoulder abductors (external rotation)
- Parietal notch: weak teres minor muscle

Movement Patterns

The sphenoid and the occiput are connected by a cartilaginous plate – the sphenobasilar synchondrosis (SBS). Two types of movement are described as occurring around this junction. One of these movements is physiological and the other is compensatory.

Physiological movement is subtle, continuous, cyclical, and relatively constant regardless of one's activities. The sphenoid and occiput exhibit a slight motion, alternately flexing and extending at the SBS junction. This slight physiological movement is accompanied by a slight corresponding external and internal movement of the peripheral bones. These subtle movements of the cranium are often associated with the cranial rhythmic impulse (CRI), which can be palpated throughout the body. These slight movements of the cranial bones may be considered analogous to the slight on-going movements of the ribcage in pulmonary respiration. Physiological movements do not appear to result in sutural restrictions or inhibited muscle function.

Compensatory movement is an alteration in the position and function of cranial components resulting from changes in posture, physical activity, or trauma. Prior to the fusion of the SBS junction in the mid-teens (Okamoto, et al., 1996; Liem, 2009), the sphenoid and the occiput can flex and extend, rotate in opposite directions about their anteroposterior axis (torsion), side bend relative to each other, and perform a variety of other compensatory movements known as SBS patterns. Each of these patterns is a unique arrangement of the midline and peripheral bones, as well as a unique musculoskeletal pattern.

After fusion of the SBS junction, these compensatory movements may primarily involve the peripheral bones, with only slight movement occurring at the SBS. SBS movement patterns can still occur after fusion of the SBS junction due to the large number of cranial articulations or joints (over 100), flexibility of the vault bones that were formed in membrane, the flexibility of the soft tissues involved, and the flexibility of living bone, including the SBS junction. These characteristics allow the sphenoid and the occiput to share many compensatory movement characteristics with the spinal vertebrae.

Ideally, movements in the various cranial patterns should be symmetrical in both directions, with equal ease of movement, and the cranial bones should return to a *neutral* position after a movement has been completed, with no sutural restrictions or inhibited muscles. When the cranium is *stuck* in a compensatory pattern it will resist returning to the neutral position, and it is called an SBS *strain* pattern. The musculoskeletal system will also be *stuck* in the same pattern. In reality, the cranium may be in multiple strain patterns simultaneously, and in such cases, the body will also be in multiple patterns. Each strain pattern can be identified in the cranium by its unique pattern of sutural restrictions, and throughout the body there will be comparable specific patterns of inhibited muscle function.

A strain pattern is named according to the direction in which it is stuck. For example, if the SBS junction is flexed, the pattern is a flexion strain pattern. If the sphenoid has twisted relative to the occiput (with the right greater wing moving superior), the strain pattern is a right torsion. Each SBS pattern refers not only to the position and function of the sphenoid and occiput, but also to the position and function of all peripheral (paired) structures, both in the cranium and in the body. In the cranium, the peripheral bones are moved directly or indirectly by the sphenoid and occiput, which carry the peripheral bones with them into the various strain patterns. The position of the occiput directly affects the spine, and it influences the shoulder girdle and pelvis, which carry the rest of the body into compensatory patterns that mimic the cranial strain patterns.

Evaluating Cranial Strain Patterns

Cranial strain patterns can be identified by restricted cranial ranges of motion, positive TL of sutural restrictions, and patterns of musculoskeletal dysfunction, particularly by inhibited muscle function. Note that inhibited muscles may exhibit positive therapy localization (+TL). SBS cranial strain patterns can also be identified by evaluation of the function of cranial muscles (e.g., challenging eye movements, jaw movements, etc.). The following lists provide procedures correlating some cranial and somatic relationships for 3 of the 10 cranial strain patterns that are often seen in the clinical setting: Flexion, Extension, and Right Torsion. The other strain patterns – left torsion, vertical strains, lateral strains, and side bendings with rotation, will not be discussed here.

SBS Flexion Strain. The spinal portion of this pattern is in Postural Extension (i.e., an increase in spinal curvatures). The pattern can be initiated by full inhalation. The presence of multiple strain patterns will result in mixed findings:

- Lower extremities resist internal rotation – positive challenge

- Weak shoulder and hip flexors – bilaterally
- Cranial bones move better into flexion / external rotation (palpation or challenge)
- Positive TL to lateral coronal suture – bilateral
- Positive TL to lateral lambdoidal suture – bilateral
- Eyes looking down – positive Challenge
- Mandible retracted – positive challenge
- Positive TL to the frontozygomatic suture – bilateral

SBS Extension Strain. The spinal portion of this pattern is in Postural Flexion (i.e., a decrease in spinal curvatures). The pattern can be initiated by full exhalation. The presence of multiple strain patterns will result in mixed findings. The findings for Extension should be the reverse of those for Flexion.

- Lower extremities resist external rotation – positive challenge
- Weak Tensor Fasciae Latae – bilaterally
- Cranial bones move better into extension / internal rotation (palpation or challenge)
- Positive TL to medial coronal suture – bilateral
- Positive TL to medial lambdoidal suture – bilateral
- Eyes looking up – positive challenge
- Mandible jutted – positive challenge
- Negative TL to frontozygomatic sutures

SBS Right Torsion Strain. The findings for this pattern will match SBS Extension / Postural Flexion on the right and SBS Flexion / Postural Extension on the left. The presence

of multiple strain patterns will result in mixed findings.

- Left lower extremity resists internal rotation – positive static challenge
- Right lower extremity resists external rotation – positive static challenge
- Shoulder and hip flexors – weak on left / strong on right
- Cranial bones move better into right torsion than left torsion (palpation or challenge)
- Positive TL to left lateral coronal suture
- Positive TL to left lateral lambdoidal suture
- Positive TL to right medial coronal suture
- Positive TL to right medial lambdoidal suture
- Eyes looking to the right – positive challenge
- Mandible shifted to the right – positive challenge
- Positive TL to left frontozygomatic suture
- Negative TL to right frontozygomatic suture

Functional Patterns versus Chronic Patterns

Now we need to discuss an important distinction between two types of cranial and musculoskeletal dysfunctions. These dysfunctions occur and are discussed in the terms mentioned above – Flexion, Extension, Torsion, etc. – but they have significantly different characteristics when it comes to treatment. One type of pattern is usually temporary; these patterns are referred to as *functional* or transient patterns. Although both cranial bone movements and muscle function are restricted or inhibited, various therapeutic procedures can generally release the compensatory pattern and provide corrected muscle function. These restrictions of the cranial bones or body muscles can be considered *functional* patterns

because they change from moment to moment in response to one's activities, posture, or trauma. A functional cranial pattern could be a restricted frontozygomatic or temporozygomatic suture resulting from lying face down on a treatment table, or a global pattern of sutural restrictions resulting from a temporary anterior tipping of the pelvis.

The other type of pattern is chronic (going on for a long time); these patterns are difficult to treat successfully. In chronic, common cranial patterns, the muscles, fasciae, and other soft tissue elements involved in the cranial patterns appear to have adapted to their positions, and they have also resulted in patterns of muscle inhibition that do not respond to most therapeutic interventions. These patterns were discussed in my "Personal Background" above. These chronic cranial patterns can be considered *structural*. The characteristic musculoskeletal inhibitions of these patterns, and the cranial techniques for releasing the chronic, common cranial patterns that are maintaining them, will be demonstrated.

Conclusion

Musculoskeletal compensation can occur as a result of many factors, including individual sutural restrictions and SBS strain patterns. Both the musculoskeletal compensations and the cranial patterns can be identified by manual muscle testing, therapy localization, challenge, and other evaluation procedures. For TFH practitioners who are familiar with these evaluation procedures, the identification and treatment of individual sutural restrictions requires only a modest amount of new information, mostly about the location of sutures, the muscle / suture relationships, and simple suture release techniques. These concepts and skills would be an asset to most TFH practitioners. Some other procedures, such as the release of SBS strain patterns, particularly the chronic cranial strain patterns, would be best performed by LMTs, nurses, and other practitioners who also have substantial study in anatomy and physiology.

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