

**A REVIEW OF OSTEOPATHIC TREATMENTS  
FOR PEDIATRIC CONDITIONS**

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## **Introduction and Short History of Pediatric Osteopathy**

The history of osteopathy seems to have begun with an experience in the area of pediatric medicine in 1874, when Dr. Andrew Taylor Still cured a child suffering from dysentery and went on treating successfully all the other children who were entrusted to him, starting with that case. Dr. Sutherland further discovered the huge benefits that cranial osteopathy can bring to children whose cranium had suffered serious aggressions or lesions during their intrauterine life, birth or early childhood. (Tricot Pierre, 2008).

After applying the principles and techniques of Dr. Sutherland, and witnessing their near miraculous results in patients, Dr. Frymann became convinced of the effectiveness of Dr. Sutherland's approach. She studied with him intensely during the final years of his life and became a specialist in cranial osteopathy. Dr. Sutherland realized that the optimal effect of his approach would be for the benefit of children (Dr. Frymann's passion) and vowed to teach her everything that he had learned. Dr. Frymann in turn was determined that no child should needlessly suffer from the consequences of birth trauma that could effectively be treated with osteopathy. (<http://osteopathiccenter.org/osteopathy/>)

In Romania, my country, the first book published on osteopathy was a translation of Pierre Tricot's "Osteopathy for Children – A Global Concept in Health Recovery" in 2008, which made a lot of parents concerned with treating any dysfunctions that might appear following a difficult birth. Due to this, I've had increasingly more newborn babies brought in for osteopathic treatment. Working with newborns is one of my greatest satisfactions as a doctor, physical therapist and manual osteopath.

This history and the need to further develop this new field in Romania, in order to provide a good start for the physical and emotional development of children, stand at the core of my motivation in writing this paper.

## **Definition and General Principles**

Osteopathy is a system of diagnosis and treatment that uses manual methods and techniques with a view to recover and maintain health by re-establishing tissue micro-mobility and the biodynamic balance of the organism, stimulating the self-healing process. Osteopathic techniques activate neuromuscular, neurovascular and neuroendocrine mechanisms, never treating one single symptom, but focusing instead on the patient as a whole, and taking into account the fact that sometimes, the cause of an osteopathic dysfunction can be located within a distance, in a totally different area of the body.

The fundamental principles of osteopathy may be summarized as follows:

- The body is a unit functioning as a whole. Dysfunction in any area will impact all other areas of the body through membranous, myofascial, bony articular, neurologic and vascular interactions, as well as through the primary respiratory mechanism (PRM). Consequently, the osteopathic treatment of somatic dysfunction will affect the entire body.

- The body is a self-regulatory mechanism. Its function is directed toward homeostasis, i.e. the maintenance of physiologic balance resulting from a dynamic state of equilibrium between interdependent body functions. Somatic dysfunction impairs this mechanism.

- Structure determines function and is, in its turn, influenced by function. Dysfunction – the impediment of normal function – will, over time, result in abnormal structure. In the treatment of infants and young children, that structure is responsive and as such may be affected by osteopathic procedures. Structure can be modified progressively less successful as the person grows older, so the treatment of adolescents is more efficient when addressing functional issues.

- The body has the inherent capacity to heal itself, but this can be affected by its inability to compensate for age, health problems and somatic dysfunction. The progression of time is permanent, but illness may be treated to a higher or lower extent by standard medical means and somatic dysfunction can be addressed by osteopathic treatment. Effective treatment of somatic dysfunctions, supporting the body's self-healing capacity, will enhance standard medical treatment of illness.” (Sergueef. N, 2007)

## **Manual Osteopathic Techniques Used for Treatment of Children**

The spectrum of manual osteopathic techniques is focusing on the principle that body structure and function are dependent on one another. When structure is altered via the musculoskeletal system, other body systems develop abnormalities, as well. This, in turn, can produce restriction of motion, tenderness, tissue change and asymmetry (somatic dysfunction).

Osteopaths use various manual osteopathic procedures to diagnose and treat somatic dysfunctions. Some of the most commonly used include:

### **Soft-Tissue Technique**

Commonly applied to the musculature around the spine, this procedure consists of a rhythmic stretching, deep pressure and traction. Its purpose is to move excess tissue fluids (edema) and to relax hypertonic muscles and myofascial (fibrous tissue) layers associated with somatic dysfunction.

### **Myofascial Release**

This procedure is designed to treat primarily the myofascial structures. When using direct myofascial release treatment (MRT), a restrictive barrier is engaged for the myofascial tissues, and the tissue is loaded with a constant force until release occurs. In treating with indirect MRT, the dysfunctional tissues are guided along the path of least resistance until free movement is achieved.

### **Lymphatic Technique**

This manual procedure is designed to promote circulation of the lymphatic fluids and can be used to treat various difficulties. One technique is pressure applied with the osteopath's hands to the supine patient's upper anterior chest wall. When the force that is applied to the chest reaches its maximum on expiration, the osteopath removes his hands from the patient's body with a sudden move. This increases negative pressure of the chest, assisting the body's respiratory mechanism to move lymphatic fluids.

### **Thrust Technique**

With this procedure, the osteopath applies a high-velocity/low-amplitude thrust in order to restore specific joint motion. With this type of technique, the joint regains its normal range of

motion and rests neural reflexes. The procedure reduces and/or completely nullifies the physical signs of somatic dysfunction: tissue changes, asymmetry, restriction of motion, and tenderness.

### **Counterstrain Technique**

The Counterstrain technique is a manual procedure in which the patient is moved passively away from the restricted motion barrier towards the position of greatest comfort. At this point, passive asymptomatic strain is induced. (<http://osteopathiccenter.org/osteopathy/>)

### **Articulatory Technique**

Articulatory techniques are direct techniques that take a joint through its range of motion to engage and correct a restrictive barrier.

Articulatory techniques are quite useful in children of virtually all ages, except perhaps infants. Pain, swelling and tenderness are relative contraindications to articulatory techniques, pending further investigations. This type of approach should never be used in case of joint instability, ligament laxity and connective tissue disease.

### **Balanced Ligamentous Technique (BLT)**

Balanced ligamentous and balanced membranous tension techniques were first described by William G. Sutherland in the early part of the 20th century (Lippincott, 1949).

### **Osteopathy in the Cranial Field/Balanced Membranous Technique**

Osteopathy in the cranial field was first described by Sutherland in the early part of the 20<sup>th</sup> century. Sutherland's model has several key components: the fluctuation of the cerebral spinal fluid; the motility of the neural tube; the movement of the falx cerebri, tentorium cerebelli, and falx cerebelli as a reciprocal tension membrane that influences the mechanics of the cranial bones; and the movement of the sacrum.

The sutures do not exist at birth: during the first year of life they begin to develop in some areas, but continue to change until puberty. Many bones are composed of composite parts that are joined by cartilage bridges. The composites will unite at various times after birth. Sutures provide protection against compressive forces. Because newborns and infants lack this protective mechanism, it is often safer to avoid indirect cranial techniques that exaggerate the strain pattern.

## **Facilitated Positional Release**

Facilitated positional release (FPR) is an indirect myofascial technique developed by Stanley Schiowitz (1990). Some osteopaths consider FPR a form of functional technique. In general, the indications for its use include hypertonic muscles and fascial restrictions. FPR can be used to treat segmental and group dysfunctions of the spine, as well as dysfunction of superficial and deeper myofascial tissue in the extremities, torso, pelvis and neck. Two models for the mechanism of action of this approach have been described. The first concerns the spinal reflex model and the second is based on the nociceptive model.

Because joint architecture and structure is immature, the physiological end range of motion in many joints is much more subtle in children than in adults. In addition, depending on the area of the body, the adult morphology of some joints is not present until puberty. Consequently, with FPR, as with all indirect techniques, it is important to be very precise with positioning. Exaggerating the position of ease can stress the physiological barriers of the tissue and cause injury.

## **Muscle Energy Technique**

The muscle energy approach was developed by Mitchell in the 1950s. Muscle energy technique (MET) is a direct technique which engages the restrictive barrier and uses active muscle contraction to address the somatic dysfunction. The patient is directed to use his or her muscles from a precise position and in a specific direction against a counterforce applied by the osteopath. The purpose is to restore motion, decrease muscle/tissue changes and modify asymmetry of somatic dysfunction. Muscle energy technique can be employed in one of five ways classified according to the type of muscle contraction used: isometric, isotonic concentric, isotonic eccentric, isolytic or reciprocal inhibition.

In order for this muscle energy to be successful, the patient must be able to follow directions precisely. This is why the use of muscle energy is limited to older children and adolescents, who can understand and follow instructions. (Carreiro J.E, 2009, pg 3-12)

Throughout our lives, our bodies are adapting to stresses and strains and learning how to react to stimuli, an activity that peaks during our childhood and the teenage years. It is vital to maintain good physical health during these times and to be as free from restrictions as possible. Physical habits learnt here will help determine health, posture and function throughout later life.

Because of the wide variety of techniques available to osteopaths, and the gentle and non-invasive nature of many osteopathic methods, osteopathy has shown itself over the years to be well suited to the treatment of children. People do not immediately think of children as needing osteopathic treatment, but osteopathy can benefit children at all stages of their development. (<http://www.osteopathy.net.nz/children.html>)

## **The Most Frequent Pediatric Conditions Encountered in My Practice**

My practice has brought me in contact with a wide range of patients, but the following would be the most frequent conditions encountered:

**Torticollis** is a malposition of the neck such that imposes a limited range of motion in one direction. As a result, the child prefers to hold the neck bent on one side. In 80% of cases, the head is bent on the right side, with a leftwards rotation. Torticollis may be congenital or acquired. The most common etiology is biomechanical (functional), but other etiologies need to be considered, as well. Congenital deformities of the cervical or upper thoracic spine may also present as congenital torticollis. Injury to the cervical musculature with hemorrhage or scarring will also present as torticollis. Rarely, torticollis may occur as a result of neurological damage to the spinal cord or brain. Magoun (1973) describes congenital torticollis as a sign of accessory nerve irritation (not damage) secondary to strains of the cranial base. In infants and young children torticollis may develop secondary to strabismus. In newborns, torticollis is sometimes described as a component of a larger postural condition called infantile postural asymmetry.

Congenital torticollis is often not diagnosed until the child is 4–6 weeks old, at which time the parent or physician notices an awkward positioning of the head or the early development of a flat spot on the skull. Plagiocephaly tends to present sooner in newborns with torticollis secondary to base strain than in those with primary cervical torticollis. (Carreiro, J.E., 2009)

**Plagiocephaly** is a general term used to describe an abnormal shape of the skull. It differs from the normal adaptive molding that accommodates the newborn head to the maternal pelvis in that molding resolves spontaneously within the first day of life and plagiocephaly persists or even worsens.

Treatment of plagiocephaly, especially secondary plagiocephaly, requires two things: resolution of any mechanical strains or abnormal tensions that are contributing to maintaining the distortion of the cranial bones; and – most importantly – finding a way to stop the child from lying on the flat spot.

In plagiocephaly, the distortion of the vault is often due to the membranous strain through the reciprocal tension membrane (RTM) system of the head. (Carreiro, J.E., 2009)

### **Feeding Difficulties**

Suckling will be more difficult and tiring for a baby when tensions through the head, face or throat are left over from mechanical strains acquired at birth. These strains may have been influenced by: face or brow birth presentations; overstretching of the throat or irritations of the throat by tight umbilical cord around baby's neck ; misshapeness (moulding) of the whole skull. Residual strains in the neck can cause baby to favor feeding more comfortably on one side than the other.



Nerves that control tongue coordination, sucking and swallowing can become irritated as they exit the base of the skull as this area is prone to maximal birth compression. These babies are described as having a 'weak suck'. Osteopathy techniques can deal with many feeding issues.

(<http://www.osteogoodhealth.com/>)

### **Digestion disturbances** (Colic, gastro-esophageal reflux, regurgitations, constipation)

The osteopathic literature includes much discussion of strain patterns common to colic. These include dysfunction in the cranial base, craniocervical junction, and upper and mid-thoracic areas, which are also commonly involved in cephalgia. In some children, colic may also be a disease of the immature nervous system.

Osteopathic treatment is mainly directed at somatic dysfunction of occipitocervical junction and upper cervical spine for their effect of the vagus and parasympathetic somatovisceral reflexes.

Somatic dysfunction of the thoracic spine, ribs and upper lumbar spine may be treated to affect sympathetic somatovisceral reflexes. In other words, the organs involved in digestion are supplied by nerves emerging from the thorax (T5-T12). If these segments are dysfunctional by any means, the infant may suffer from digestion disturbances. Dysfunction in these areas also impacts the lymphatic and venous drainage of the abdominal contents, of which the diaphragm is extremely important. (Carreiro J.E., 2009)

### **Crying, Screaming, Irritability**

In babies, frequent crying, restlessness, fractiousness, jumping at loud noises and taking a long time to settle to sleep may be attributed to a retained birth compression. The baby's head may be uncomfortable, possibly with a headache. Babies are characteristically more relaxed being carried than lying down, because the extra pressure of the mattress on their heads aggravates the tensions already occurring in their head. Babies who had a complicated birth due to e.g. having the umbilical cord wrapped around their neck or having been jammed in the birth canal are often very anxious babies. Also babies who have had a very rapid delivery can often be very irritable. Pediatric osteopathy has been helpful in treating many babies with birth compression. (<http://www.osteogoodhealth.com/>)

### **Ear Infections and Sinusitis**

Children who suffer from recurrent ear infections often require weekly osteopathic treatment for a period of four to eight weeks. The duration and specific types of treatment vary with the individual child. Follow-up treatment on a periodic basis may be needed in order to maintain appropriate motion of the cranial mechanism. (<http://www.traditionalosteopathy.com/children.htm>)

## **Asthma**

Osteopathic treatment of asthma is focused at improving rib cage function and increasing lung capacity, therefore reducing the need for inhalers.

## **Scoliosis**

Idiopathic scoliosis is rotational malalignment of one vertebra on another, which produces a lateral curvature of the spine. Adolescent idiopathic scoliosis is the most common form, occurring near to or at puberty. Children between 10 and 16 years are at greatest risk for the development and progression of a curve, and girls are almost 4 times more likely to be affected than boys. Idiopathic scoliosis affects 17 in every 1,000 children in western countries. (Carreiro J.E, 2009)

The treatment will include osteopathic treatment to the pelvis and the head, the rib cage, the abdominal wall and the fascial mechanism of the body as well as the area manifesting the spinal curve.

([http://www.healthy.net/Health/Article/The\\_Osteopathic\\_Approach\\_to\\_the\\_Child\\_with\\_Scoliosis/1063](http://www.healthy.net/Health/Article/The_Osteopathic_Approach_to_the_Child_with_Scoliosis/1063))

**Tech neck or straight neck** is a term describing the repeated stress to the body (especially the neck) caused by children spending large amounts of time hunched over their handheld electronic devices such as a smart phones, tablets, video games and laptops, for hours on end every day, with their heads bent forward. Osteopathic treatment can help maintain or restore proper biomechanics to the neck and upper back, in order to ensure that the joints remain mobile. Soft tissue mobilization will reduce muscle tension and pain in the neck and upper back. Also, guidance on correct posture and appropriate exercise will help. (<http://www.osteogoodhealth.com/>)

## **Sports Injuries**

Commonly treated injuries in this category include: neck and back strains; shoulder, elbow and wrist injuries; hip and pelvic injuries; knee, leg and ankle injuries.

Reduced joint or muscle flexibility will affect the performance, and may result in injury. Osteopathy facilitates a return to optimal function and prevents compensatory strains from occurring, with the aim of minimizing re-injury and allowing for a quicker return to physical activity. Osteopathic treatment involves manual techniques, including soft tissue stretching, mobilization, inhibition and manipulation – techniques that assist in improving elasticity, strength, endurance, mobility and performance. (<http://www.osteopathy.org.au/>)

**Whiplash** is caused by a rapid acceleration–deceleration movement of the head on the neck. Usually associated with motor vehicle accidents, whiplash injury may also occur in sports injuries, shaken baby syndrome and head injuries. (Carreiro.J.E, 2009)

**Genu Valgus** develops as a normal variation in some toddlers and in most resolves by 5 or 6 years of age, although it can persist until the age of 8. Genu valgus may also be seen in early adolescence, when it is thought to be a result of rapid growth. Children with significant spasticity involving the adductor column may develop a valgus deformity, and those with weakness of the lateral hip rotator muscles, such as the gluteus maximus and piriformis, are also at risk. Genu valgus posture during standing may be associated with pes planus, everted calcaneus, an internally rotated femur, lower limb compensation for persistent femoral anteversion, internally rotated tibia, or an anteriorly tipped pelvis. Valgus posturing during gait only suggests compensation for an inverted calcaneus (varum calcaneus), abnormal muscle firing patterns, leg length discrepancy, increased adductor tone or spasticity. (Carreiro J. E, 2009)

**Genu Varum** is the normal position of the knee from birth to early walking. It resolves spontaneously in most children before 2 years. In newborns, the appearance of genu varum is often magnified by the normally increased flex or tone of the hips and knees, although it may also be exacerbated by true internal torsion of the tibia or femur. The genu varum of the newborn is accompanied by a physiological bowing of the tibia. This is due to the intrauterine lie, where the hips are flexed, while the feet and legs are turned medially. This position creates an external rotation of the femur and an internal rotation of the tibia. As the tone in the flexor muscles of the leg decreases, the femur and tibia assume a more neutral position. Both the physiological bowing and the genu varum should resolve spontaneously. However, if the associated muscles and ligaments remain restricted due to concomitant biomechanical dysfunction, the growth pattern of the leg will be affected. (Carreiro J. E, 2009)

## Research Findings

In 1963, Dr. Frymann published the first scientific research documenting the consequences of osteopathic birth trauma in 1,250 infants. Although she found that as much as 80% of infants had significant birth trauma, she noted that nearly 10% of babies had such severe trauma that, if left untreated, would result in the life-threatening symptoms. Back in 1949, the birth of her own son had been very prolonged and difficult, and afterwards the child cried, had feeding difficulties and uncontrolled vomiting. After many consultations with top doctors in the field, despite her best efforts, her infant son died in her arms. This tragic personal experience motivated Dr. Frymann in her further studies of such conditions previously unrecognized by mainstream medicine, and she is well known for stating: “It is no more normal for an infant to vomit after every feeding than it is for you or I to vomit after every feeding.”

In 1971, she published the first article in the medical literature scientifically documenting (with the use of force transducers) the subtle, almost imperceptible movement of the human skull. In 1992, she published a landmark three-year study documenting the effectiveness of Osteopathic Medical Management in Children with both neurologic and medical problems. This particular study suggested that after three months of osteopathic treatment, children gained a three year improvement in neurodevelopmental age using standard developmental testing instruments.

In 2003, with the help of state-of-the-art advanced bio-impedance and ultrasonography equipment in Russia, she was able to show how specific osteopathic cranial techniques altered blood flow and resulted in functional changes within the brain itself. Part of this 2003 research took place in the former Soviet Union, a country that has been influenced greatly by Dr. Frymann’s work. (<http://osteopathiccenter.org/osteopathy/>)

From early infancy there is much that can and should be done by an osteopath to promote and maintain health throughout a child’s development. A study of 125 early infants found that 85% had some degree of abnormality in the bones of the skull, whether the birth was normal or not. The bones in the skull compress and overlap during childbirth, allowing it to fit through the birth canal. This process, while necessary, can lead to problems later on. The skull is easily traumatized at this time and complications such as the use of a ventouse or forceps, breech birth (positional problems), Caesarean, big babies with smaller mothers and prolonged or speedy deliveries can all lead to health issues. (<http://www.osteopathy.net.nz/children.html>)

## **Conclusions**

One of the major conclusions is that osteopathy, by accessing the information and data base of allopathic medicine (anatomy, physiology, bio-physics, chemistry, physiopathology), proposes a panoply of specific manual techniques, gentle and non-invasive (soft tissue techniques, myofascial release, cranial techniques etc.), that treat and prevent a whole variety of problems specific to childhood and adolescence. Moreover, and this is perhaps the most important aspect, osteopathy stimulates the self-healing and self-adjusting potential of the little patients, according to the principle “*Medicus curat, natura sanat*”.

Faithful to the principle enunciated by the founding father of osteopathy, A.T. Still, who states that “To find health should be the object of the physician. Anyone can find disease.”, osteopathy – regardless of the chosen techniques – responds to this therapeutic desideratum, i.e. is always looking for health in the sense of removing restrictions and re-establishing the body balance by supporting its inherent healing force.

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