

Conception of Human Body Biomechanical Balance, Metacognitive Diversity, Interdisciplinary Approach

Tamari Matsaberidze DMD, Moreno Conte, Valerio Quatrano and Viviana Bibilashvili DMD

Tbilisi State Medical University, Georgia.

*Correspondence:

Tamari Matsaberidze, Tbilisi State Medical University, Georgia,
E-mail: shashyshaty@yahoo.com.

Received: 02 March 2018; Accepted: 31 March 2018

Citation: Tamari Matsaberidze, Moreno Conte, Valerio Quatrano, et al. Conception of Human Body Biomechanical Balance, Metacognitive Diversity, Interdisciplinary Approach. Int J Oral Health Dent Manag. 2018; 2(1); 1-6.

ABSTRACT

In recent years a portion of the scientific literature and clinical trials (FDA approved clinical trials, Academic research papers, TMJ.org,) from all over the world have shown an anatomical-functional and pathophysiological connection between craniomandibular and craniocervical dysfunction, connecting various zones of the organism in a single tonic-postural system.

This research is based on biomechanical concept theory, Molar Lever conception and Domino Effect reaction in organism.

According to this theory, when dental support is not adequate the skull tends to collapse. Thus the top cervical vertebrae gets miss-aligned and the skull tilts and moves away from a symmetrical and balanced position on top of the shoulders. When postural collapse affects, strains, compresses and twists the brain stem, the body reacts with neurological symptoms. They are automatic unconscious reflexes that do not make it past the brain stem to the conscious brain.

So, called Dystonia: involuntary asymmetric muscle contractions. This study shows new vision in the treatment of cervical dystonia, as a bio-mechanical approach.

Research is based on clinical cases using Starecta Method, modified dental splint –The Rectificier- to solve a postural problems. Each case is individual and needs several diagnostic methods (Postural Platform, Stabilometric Platforms, X- rays, MRI Scan, Face Photos) according to the diagnoses. Statistics is based on multi analysis and effectiveness of this conception. You can solve a postural problem only if you know “precisely” how the bio-mechanism works and therefore the exact relationship between teeth, occlusion and posture.

Keywords

Dental arch, Molar teeth, Body posture.

Introduction

What is the relationship between teeth and body posture? How does dental occlusion affect the alignment of the spine? The shortest answer has two words: Molar Lever, a bio-mechanical type 1 lever that finds its fulcrum on the molar teeth.

In recent years a portion of the scientific literature and clinical trials have shown an anatomical-functional and pathophysiological connection between craniomandibular and craniocervical

dysfunctions, connecting various zones of the organism in a single tonic-postural system.

According to the biomechanical balance concept theory, several anatomical elements maintain central body balance: the vertebrae, mandibles and skull - all connected by joints. The only fixed element in this system is dental arch, which has the ability to fix the spine column at a certain position and itself appears one of the main and the only dynamic supports of the skull.

The mechanism by which the skull is supported by the dental arches is difficult to make out because the support is only momentary,

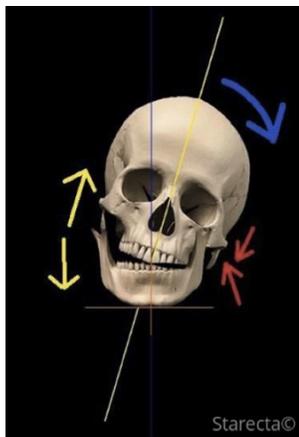
during the dental contacts. These contacts (involuntarily part, during swallowing or voluntarily part, when clenching the teeth) serve to transfer the forces to the underlying musculoskeletal structures and the mechanism is based on the Molar Lever, a bio-mechanical type 1 lever that finds its fulcrum on the molar teeth.

So, if dental support is inadequate the skull tends to collapse. Thus the top cervical vertebrae gets miss-aligned and the skull tilts and moves away from a symmetrical and balanced position on top of the shoulders and as a result, there are Domino Effect reactions in human's body - musculoskeletal compensatory measures of a descending kind. That's why, we can say that occlusion pathology may have a negative impact on the physical balance of the body. For example let's analyze in details the five phases of Lateral Postural Collapse that bring the skull to sink, the physiological curvature to change and the spine to undergo torsion.

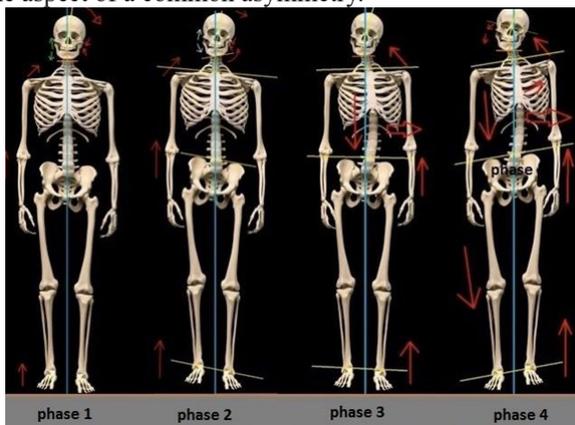
Lateral Postural Collapse Phases

Phase 0

In Phase 0 we take as an example an ideal human skeleton. Let's start from a hypothetical position of perfect symmetry. The vertical line divides the skeleton into two perfect halves, but this physical state of perfection is not met with in nature.



Postural collapse starts with the loss of symmetry of the dental arches. For example, removal of dental height on the left dental arch, that leads to asymmetrical work on the part of the masseter and temporal muscles (elevator muscles of the jaw) and as a result skull loses its support from the left side. So, skeleton begins to take on the aspect of a common asymmetry.



Phase 1

In Phase 1 the skull, forced to sink down, conforms to the asymmetrical condition which provokes chain reactions in the rest of the skeleton. With an inclination of the left the skull, entire right side of the body (left in the picture) raises itself and causes pelvis rotation in a clockwise direction.

Phase 2

The significant difference between Phase 1 and Phase 2 is the change in inclination of the jaw, which defers to the skull. Due to this, the supra- and infra hyoid muscles take on asymmetrical muscular burdens and has negative affect in various areas as: tonsils, throat, oral cavity, hyoid, speech formation, swallowing, etc.

Phase 3

In the phase 3 the muscles of the right side of the body are in spasm, in order to keep the skull from falling to the left. The muscles of the left side of the body contract and in this way pull the spine with them, so central part of the back begins to curve to the left, creating a scoliosis - as compensatory mechanism that serves to bring the center of gravity of the skull back to the vertical line and causes sinking of the right shoulder. This example demonstrates very well how the center of equilibrium always tends to keep the skull on its vertical axis which passes through the center of gravity.

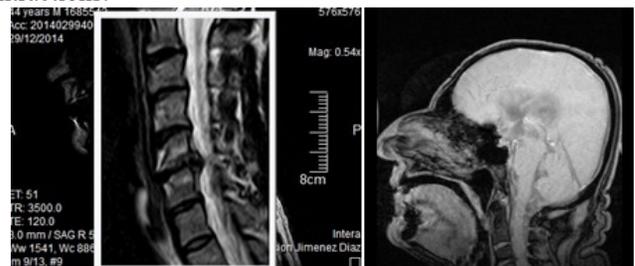
Phase 4

The skull, in order to return to its axis, increases the curvature of a spine. In this condition the rib cage compresses somatic organs within it. Due to these compressions, a number of internal organs can be subject to particular symptoms, such as shortness of breath, panic attacks, and gastrointestinal problems.

The muscles of the neck at this point are tense and painful. They work asymmetrically due to their varying lengths. So, common pathologies are generated in this area. Regarding the pelvis rotation, the left leg gets shorter and becomes a reason of frequent accidents, joint problems, constant pain, etc.

Phase 5: Cervical Dystonia

The final stage of postural collapse affects the brain stem. The MRI scan shows clearly that weight of the collapsing skull is falling on C5, C6 and C7 and that is the place where it is causing brain stem compression and torsion and the body reacts with neurological symptoms. They are automatic unconscious reflexes that do not make it past the brain stem to the conscious brain. That is what in medical terms is called Dystonia: involuntary asymmetric muscle contractions.



Treatment of Secondary Idiopathic Cervical Dystonia

Dystonia is a very complex, highly variable neurological movement disorder. As many as 600,000 people in the United States have dystonia, making it the third most common movement disorder behind essential tremor and Parkinson's disease. It is a condition that knows no age, ethnic or racial boundaries.

Depending on the part of the body affected dystonia can seriously impact daily functions. There are many types of dystonia and the most common of them is Secondary (symptomatic) Idiopathic Cervical Dystonia, results primarily from secondary causes.

There is a three-tiered approach to treating dystonia: botulinum toxin (botox) injections, several types of medication and surgery. These may be used alone or in combination. Medications and botox can both help block the communication between the nerve and the muscle and may lessen abnormal movements and postures.

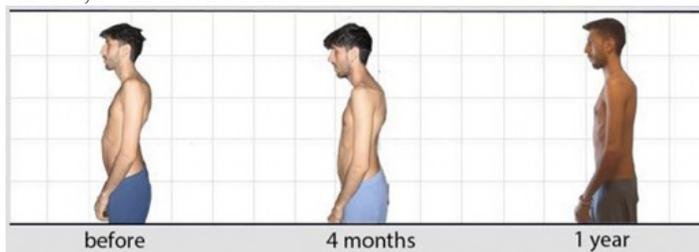
BOTOX may cause serious side effects that can be life threatening.

Problems swallowing, speaking, or breathing. Spread of toxin effect areas away from the injection site and cause serious symptoms including: loss of strength and all-over muscle weakness, double vision, blurred vision and drooping eyelids, hoarseness or change or loss of voice, serious and/or immediate allergic reactions, loss of the bone and etc.

Methods

New vision in the treatment of cervical dystonia, as a bio-mechanical approach

We want to introduce you a new vision in the treatment of Secondary Idiopathic cervical dystonia, as a bio-mechanical approach. The fundamental instrument of this experimental method is based on intra-oral appliance developed by Moreno Conte. The twisting collapse of his skeletal structure made Moreno to find a way to survive, so he invented Rectifier.

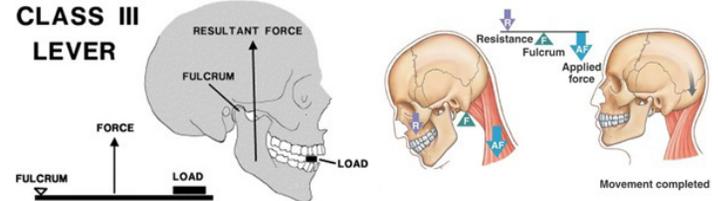


As stated previously, typical postural problems derive from the collapse of the skull, which doesn't have enough dental support, so we need to substitute the missing dental height to bring the skull back to its ideal position. Starecta method uses to register the correct posture on the Rectifier and to activate the Mandibular lever.

Mandible works like a lever of the third kind, where the fulcrum is located in the temporomandibular joint and the applied force is in correspondence with the masseter and temporal muscles which favor chewing. With the Rectifier we transform this lever in first

genus with fulcrum located in molar areas.

CLASS III LEVER



Starecta Method - Rectifier

In details Rectifier is a progressively adaptive, dynamic lower dental splint which has a height in the molar area that can vary from 3 mm up to 1 cm in height to give a vertical dimension. Swallowing reflex activates a lever, centered on the molar teeth to produce orthopedic force, that is opposite of the forces that push the skull down, so it moves mandible in protrusion, maxilla in extrusion and elevate the skull.

For the Rectifier to work, it is important that the patients have all the premolars and at least one molar in each side of the arch, so that it can be balanced without problems. Patient must place it in such a way that the new occlusion has to be captured in a perfectly upright position onto casting resin. This process is called registration and has to be repeated about in every 2 weeks, to update the occlusion. The intervals depend on the progress of the treatment. Jaw also has the memory of wanting to go back to its original position, but it could not be returned, because it is blocked by the rectifier.

Rectifier offers an immediate support to the skull, but the spine requires a certain period of time to straight that depends to the age, severity of the displacement, life style, what shape the musculature is in. The muscles need more time to become symmetrical. In fact, during this process, while some muscles tend to extend, their antagonists tend to contract. In a few words, they have to go through an inverse process to the muscular compensation that occurred during postural decay and, consequently, with the collapse of the skull.



Once the starecta method is finished with the bite Rectifier it is possible that more complex cases need to end with orthodontic work. In some cases, it is possible to start orthodontic treatment together with the Rectifier. This is possible by cutting segments of the Rectifier that hold the tooth or more teeth involved at the end so, that they can move in the desired direction and slowly restore correct occlusion with recovery of vertical size in the premolar and molar areas, lateral swabs and lateralizations.

The results of the Rectifier can be monitored with the objective

examinations: photos before, during and after the treatment: postural photos taken on the postural platform, static and dynamic stabilometric examination on the baropodometric platform, x-rays of the various segments of the body especially of the vertebral column; Subjective examinations such as taking patient's anamneses: present illness, past medical history and etc.

Results

Rectifier balances human's body in a musculoskeletal way using Archimedes laws and Newtonian Mechanics. Starecta is able to bring the body to the highest mental and physical potential, because affects the origin of this postural bio-mechanism.

The method and technology that Starecta has developed have a scientifically proven and documented record of removing the morphological alterations of a twisted spine, scoliosis, hyper lordosis and hyper kyphosis. The rectifier can also improve hormonal imbalance. In these cases specific examinations must be carried out for the person in addition to the general ones listed previously.

While exercising at the gym, the muscular symmetry is obtained with Rectifier, which balances your entire body, head to toes, using the bio-mechanism of the mandibular lever. Due to this bio-mechanism that the bite is putting into effect, during your workout sessions at the gym it is, finally, no longer necessary to perform horrible and damaging muscular and postural compensations, that used to be required in order to perform all the repetitions.

Clinical Cases

Success Case: Simone Sincini.

Diagnosis: Idiopathic gastroparesis, Pseudo chronic intestinal obstruction, Intestinal autoimmune neuropathy.

Symptoms: Chronic pain, Nausea, Vomit, Abdominal pain, Weight loss.

Postural Balancing Duration: 3 years 6 months (95% work already done). He is going to start the final work.

Contacts: simone.sincini@libero.it.

Medical History

Simone Sincini was a professional football player in the Civitanova Soccer Club. He had to stop career because of strange stomach problems. Also, at the end of any exercise Simone had pains along his left side of the body: on the left shoulder, left hip and the knee, nausea and a feeling of vomiting.

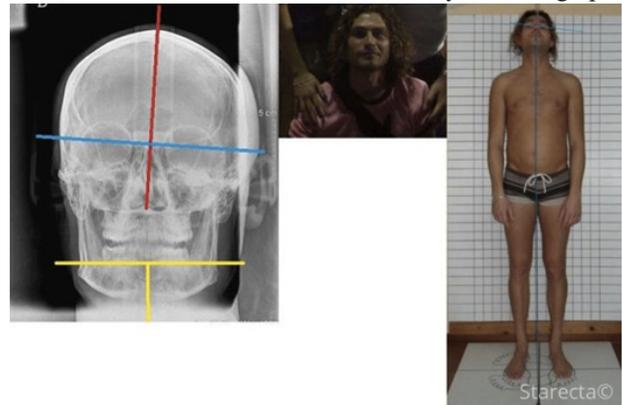


He suffered 2 times stomach surgery and 2 times knee operation. In 2007, in Bologna, doctors made stomach resection and after this operation he weighted 40kgs, so he could not work anymore or play football. In 2009 his muscular and physical conditions worsen even more. Some doctors decided to prescribe him psychotropic drugs, but no one thought that, these problems were connected to the postural imbalance.

Fortunately, Simone joined a community of people who were trying to apply some experimental techniques to straight a spine, correct posture and get the symmetry in a natural way. Let's understand what was Simone's real problem, and most importantly how it was identified by the Starecta team.

Objective examinations showed:

- A lateral deviation of the skull to the left, which had created a significant musculoskeletal asymmetry (frontal plane);
- A huge lack of dental height (sagittal plane) on both left arches in the premolar and molar areas, which had caused an increase of kyphosis, cervical and lumbar lordosis with eyes looking upward.



By observing Simone's frontal plane, we can understand how the lack of dental height on the left arch caused collapse of the skull. Due to lateral deviation of the skull to the left, the facial muscles of the left side became much more developed and pulled towards all the soft tissues, bones and cartilage. So, it is clear how Simone's nose, over the years, had deflected to the left, his left eye has lowered and the left cheekbone has developed more than the right one.

The lateral deviation of the skull on the left is causing musculoskeletal asymmetry, twisting of the trunk, pelvis and legs. According to the Simone's sagittal plane, an obvious lack of dental height in the premolar and molar areas made the skull to rotate upward and drop. Subsequently the skull has literally compressed the spine and spinal cord within it. The column, compressed by the skull, was forced to stay in a smaller space while having to maintain its natural length. And this is why there has been an increase in the normal physiological curves, such as kyphosis and cervical and lumbar lordosis, erupting in a posture like that shown in the photos.

During the compression spinal cord resists to the dropping effect of the skull and pushes the lower part of the brain upwards and this

The Starecta method is quite young and this article is one of the first scientific evidences that demonstrates its effectiveness. But over the next few years scientific evidences will increase exponentially. There are lots of patients in Starecta Community from all over the world who have solved their postural problems by using Rectifier. Getting the member of this community, patients can discuss their problems and treatment ways with the other members, who have already experienced Starecta.

Starecta team wants to abstain from publishing exact statistics, as they plan to start new clinical research working with the dentist Tamari Matsaberidze (DMD, international dentist from Republic of Georgia) and the doctors from the other fields of medicine, such as neurologists, therapists, radiologists and etc. Metacognitive diversity and interdisciplinary approach includes in this research Dystonia foundations, diagnostic centers and dental clinics to make meta-analyses.

Conclusion

Starecta is the one of the first methods capable of balancing the human's body and fully straightening the spine. It can be applied by all those who want to finally solve postural and symptomatic problems or by those who want to improve their sports performance. Rectifier's one of the most important roles is about giving the chance to the patients who have diagnosed secondary idiopathic cervical dystonia. Unfortunately, most percentage of people from Dystonia society is not informed about this experimental method. We must evaluate doctors' and patients' knowledge, practice and use of dental services in this direction.

We think that especially dentists should be interested with this innovation, as they can take a great part in this revolutionary way to provide all the dental aspects. Orthodontists could collaborate with Starecta team to treat several clinical cases together.

So, you can solve a postural problem only if you know "precisely" how the bio-mechanism works and therefore the exact relationship

between teeth, occlusion and posture.

Balance Your Body in Order to Heal Your Postural Symptoms.

References

1. Rashmi G Salkar, Usha M Radke, Sae P Deshmukh, et al. Relationship between Temporomandibular Joint Disorders and Body Posture. *International Journal of Dental and Health Sciences*. 2015; 2: 1523-1530.
2. Ricardo Alves MATHEUS, Flávia Maria de Moraes RAMOS-PEREZ, Alynne Vieira MENEZES, et al. The Relationship between Temporomandibular Dysfunction and Head and Cervical Posture. *J Appl Oral Sci*. 2009; 17: 204-208.
3. Susan Armijo-Olivo, David J Magee, Norman MR. Thie, et al. The Association between Head and Cervical Posture and Temporomandibular Disorders: A systematic review. *Journal of Orofacial pain*. 2006; 20: 9-23.
4. Roy La Touche, Alba Paris-Aleman, Harry von Piekartz, et al. The Influence of Cranio-cervical Posture on Maximal Mouth Opening and Pressure Pain Threshold in Patients with Myofascial Temporomandibular Pain Disorders. *Clin J Pain*. 2011; 27: 48-55.
5. Lara Jansiski Motta, Kristianne Porta Santos Fernandes, Raquel Agnelli Mesquita-Ferrari, et al. Temporomandibular dysfunction and cervical posture and occlusion in adolescents. *Braz J Oral Sci*. 2012; 11: 401-405.
6. Rocha CP, Croci CS, Caria PHF. Is there relationship between temporomandibular disorders and head and cervical posture? A systematic review. *Journal of Oral Rehabilitation*. 2013; 40: 875-881.
7. Michele D'Attilio, Maria R Filippi, Beatrice Femminella, et al. The Influence of an Experimentally-Induced Malocclusion On Vertebral Alignment in Rats: A Controlled Pilot Study. *The Journal of Craniomandibular Practice*. 2005; 23: 119-129.
8. Arturo Manns, Rodolfo Miralles, Hugo Santander, et al. Influence of the vertical dimension in the treatment of myofascial pain- dysfunction syndrome. *J Prosthet Dent*. 1983; 50: 700-709.