

# *Habits, tics, bruxism, speech disorders and orofacial dyskinesia: An expression of necessary craniosacral and postural autoregulation in humans?*



*'The Balance Treatment Concept'*

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## **Abstract:**

We set forth a new hypothesis concerning the physiological autoregulative meaning of habits, tics, teeth clenching, grinding and orofacial dyskinesia. In the sense of an auto-regulation and the aim of a short-term unstable improvement in function of the Cranio-Mandibular System (CMS) and Cranio-Sacral System (CSS), it is questionable whether these conditions are senseless or useless. They appear to be rather purposeful adaptations of the autonomic nervous system, which aid in the postural self-treatment. During the execution of the dysfunction or shortly thereafter up to the next swallow or bite in centric occlusion tests with regards to fixations or subluxations of the sacro-iliac joints are falsely negative. Swallowing or biting into centric occlusion contributes obviously to weakening of this new neurological program, which is regularly established through the dysfunction. After swallowing or biting, the craniomandibular proprioceptive input into the autonomic central nervous system results in re-establishing the original pathologic peripheral adaptations to the malocclusion (Cat: I + II SOT). These may be another advantage for the effectiveness of chewing with regard to a better mechanical digestion. The Balance-Treatment Concept takes this correlation into consideration in orthodontic practice. The goal is to eliminate craniomandibular triggers of the peripheral pathological adaptations to malocclusions or Cranio-Mandibular disorders (CMD).

**Keywords:** Habits, tics, clenching, grinding, tongue thrusting, thumb sucking, orofacial dyskinesia, speech disorder, visceral dysphagia, grinding, parafunction, cranio-mandibular disorder (CMD), balance-treatment concept, applied kinesiology, AK

Since 1995 we have supported and promoted the hypothesis of a pathological relationship between the cranio-mandibular system and the body posture, including head-, shoulder-, arm-, back-, and knee pain as well as habits, tics, speech disorders and orofacial dyskinesia. A new and better orthodontic treatment method with comprehensive goals. Based on our findings we modified our orthodontic treatment method, which we call the Balance Treatment Concept. It is the result of the systematic use of manual functional diagnostics for the temporomandibular joint (A. Bumann), Applied Kinesiology (AK), and functional neurology. Through selective therapeutic changes in the cranio-mandibular system (CMS), we accomplish permanent improvements in function of the Cranio-Sacral System (CSS) and in the body posture. The Balance Treatment Concept is a new interdisciplinary orthodontic treatment protocol, which connects knowledge of general dentistry and orthodontics with general orthopedics, general medicine and so-called naturopathy (e.g.: Applied Kinesiology, Acupuncture, Homeopathy and Chiropractic, etc.). The most important statement of this concept is that by improving the positions and functions of teeth, masticatory muscles and jaws in relation to the

body posture will not only improve the function of the Cranio-Mandibular System, but will also produce significant treatment success in peripheral areas such as the spine, pelvis, shoulders and in the endocrine system (hormone regulation). This treatment is possible at any age, but it is of particular significance in children and adolescents. The aim is not only to free the patients from symptoms but more importantly, to establish a high degree of robust health. In the literature on this topic, there are several etiologic concepts with respect to the dysfunctions discussed:

- **W. Correll** [6], a behavioral psychologist, argues that these dysfunctions are acquired skills developed as a result of a learning process that is part of the connection between a stimulus and a response. The process of learning only occurs if some form of need-satisfaction is produced by the response.
- **R. Clausnitzer** [3,4], a speech therapist, alternatively argues that such habits are the result of a generic desire to satisfy a need. She claims that they originate from a malfunction within physiological pathways (e.g.: irregular oral breathing, incorrect swallowing, dyslalia)
- **C. Schulze** [5], an etiologically-orientated orthodontist, sees a connection between the genetically based malocclusions and oral dyskinesia: "Mainly the wrongly inherited trait causes the oral dyskinesia".
- **R. Fränkel** [9], a well known functionally orientated orthodontist, attempted to prove in his longitudinal studies that inherited muscular malfunctions contribute to

the pathologic growth of the jaw.

- **E. Thiele** [1], a speech therapist, describes the malfunction as a neuromuscular disturbance with both causal psychic and physical origins.
- **H. G. Sergl** et al. [10], an orthodontist and psychologist, interprets habits as a result of neurological errors due to an overstimulation of the nervous system. This may lead to these inappropriate movements from a compensatory neurological program which attempts to replace the inappropriate behavior pattern.
- **S. Linder-Aronson** et al. [8], an ENT physician, states that the incorrect position and function of the tongue is the result of enlarged adenoids and palatal tonsils.
- **Bigenzahn W; Fischman L. und Mayrhofer-Krammel U.** [7] interpret the development of tongue thrusting as a result of premature bottle feeding in infants.

The deteriorating consequences of the discussed malfunctions with respect to malocclusions and orthodontic therapy are commonly recognized (e.g.: protrusion of the front teeth, maxillary compression and open bite, root resorption and enamel abrasions (bruxism) and temporomandibular joint dysfunctions – TMD).

### **Method (case studies):**

For many years we regularly observed that habits, tics and orofacial dyskinesia create a temporary unstable improvement in the cranio-sacral function and body posture until the next bite into the

pathological habitual occlusion (e.g.: during swallowing). It appears to us, that a malfunction in the Cranio-Sacral System (CSS) triggers the autonomic nervous system in order to establish a myofunctional auxiliary program. This enables the organism to temporarily suppress the essential pathological consequences of the malfunction to the CSS in the framework of Correll's [6] need satisfaction principle.

From this point of view these habits etc. are part of a vital autoregulation of neurological organization in humans. The social demand for correct speech may create a conflict with this myofunctional auxiliary program. During the initial clinical examination of patients it is therefore always crucial to take the unstable craniosacral benefits of habits etc. into consideration. Regarding the results of Applied Kinesiology, the following changes occur during and shortly after the execution of the dysfunction:

1. Previously positive therapy localizations or challenges (one or both sides) at the sacro-iliac joint (Cat: I or II SOT) become negative.
2. Previously positive therapy localization at the cruciate suture and testing for a total compression syndrome become negative.

## 1. Clinical example: Clenching

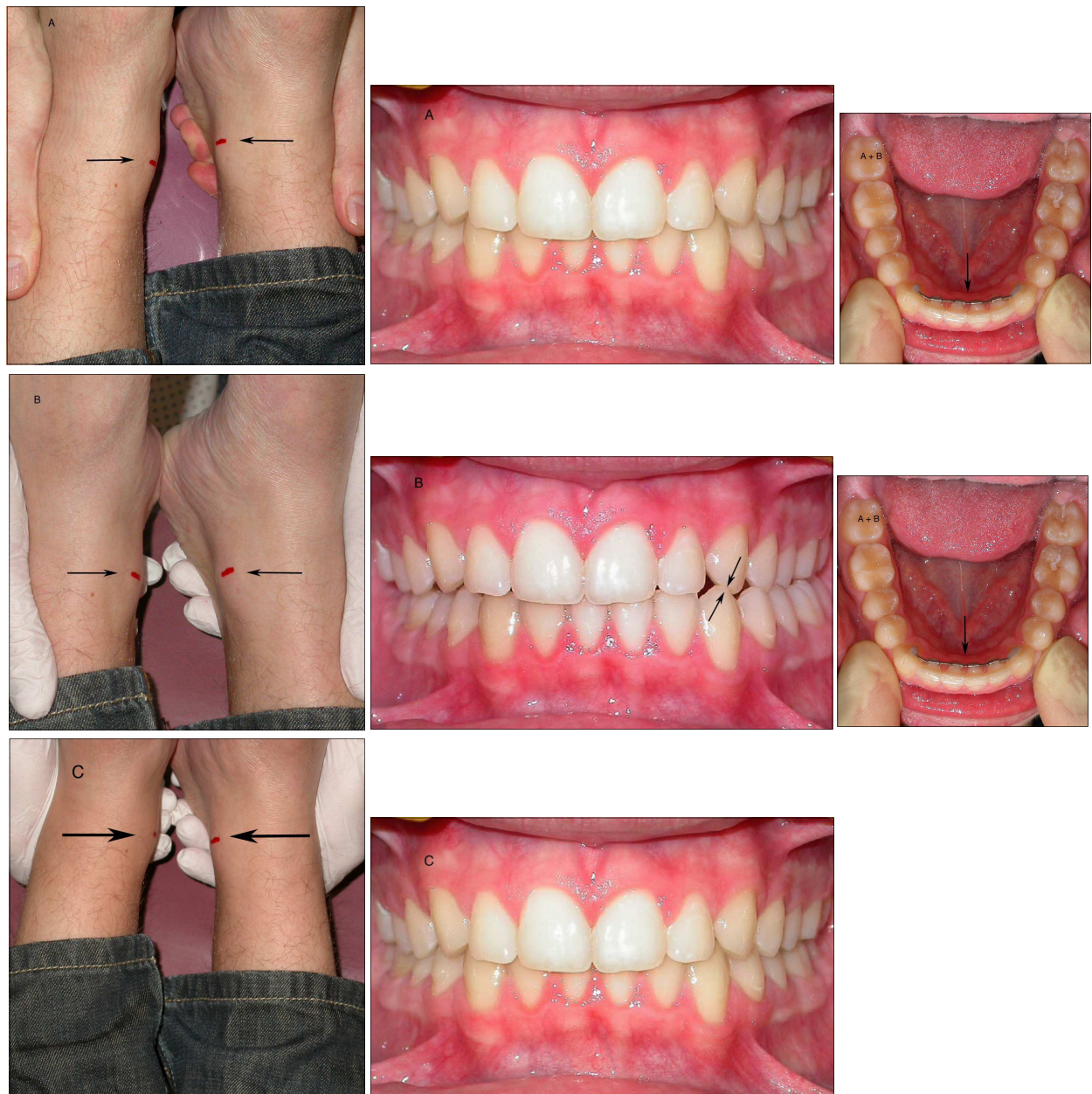


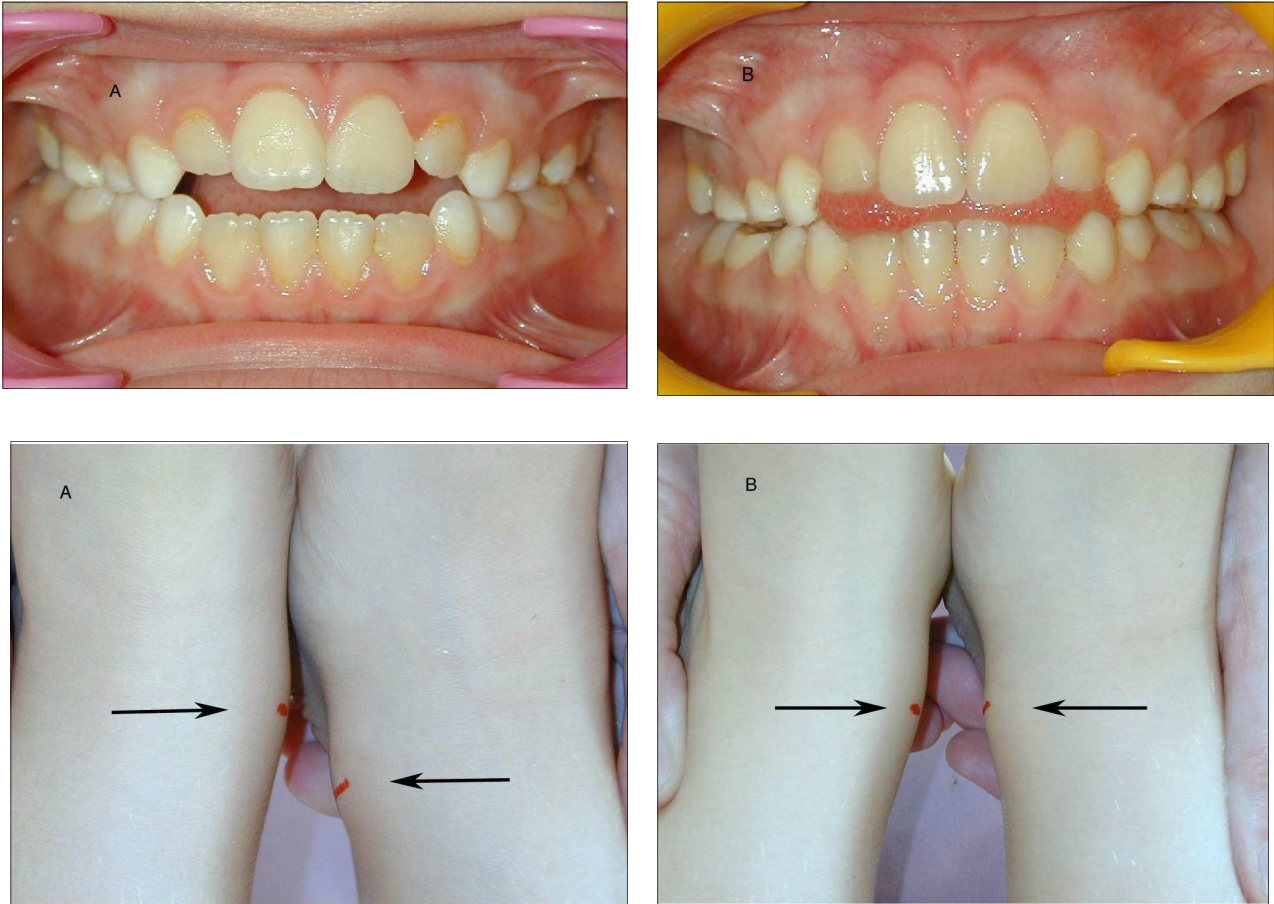
Fig. 1:

Above: Male, 13 years old, with instability in the sacro-iliac joint (Cat. II SOT) and a leg length difference of 2 cm in supine position. Fixed retainer on lower front teeth proved to be partly responsible for the existing craniosacral dysfunctions : Universal Jaw [11], (status: A)

Middle: The same patient displaying change of leg length while sitting up from supine position indicating a unilateral fixation or subluxation of the sacro-iliac joint (status: B)

Below: Balance (unstable) of the leg length difference (status: C) in supine and upright position during consciously grinding on an active grinding facet at tooth 12.

## 2. Clinical example: Tongue thrusting



**Fig. 2**  
Positive craniosacral impact of the tongue thrusting, especially noticeable by a balance of the pre-existing leg length difference. Please note the change in position at the symmetrical marker in the middle of the ankle (Status A) without the impact of the tongue thrusting and during execution of the dysfunction (Status B).

### 3. Clinical example : Clenching



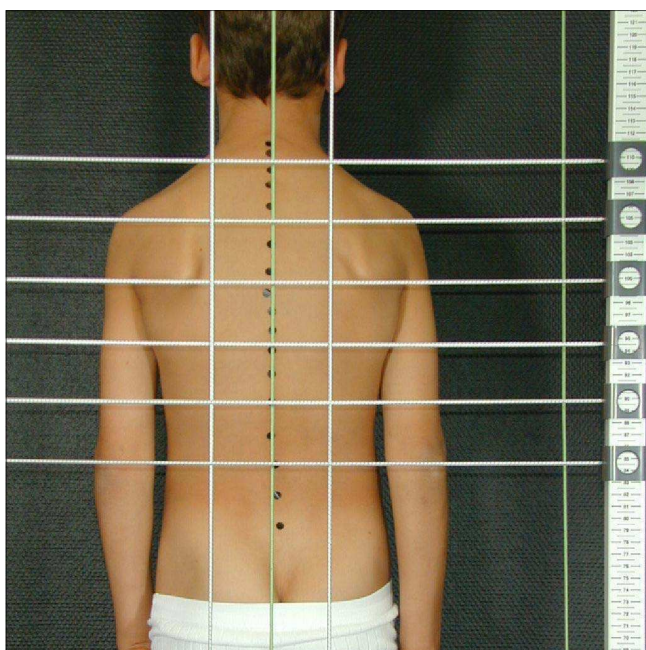
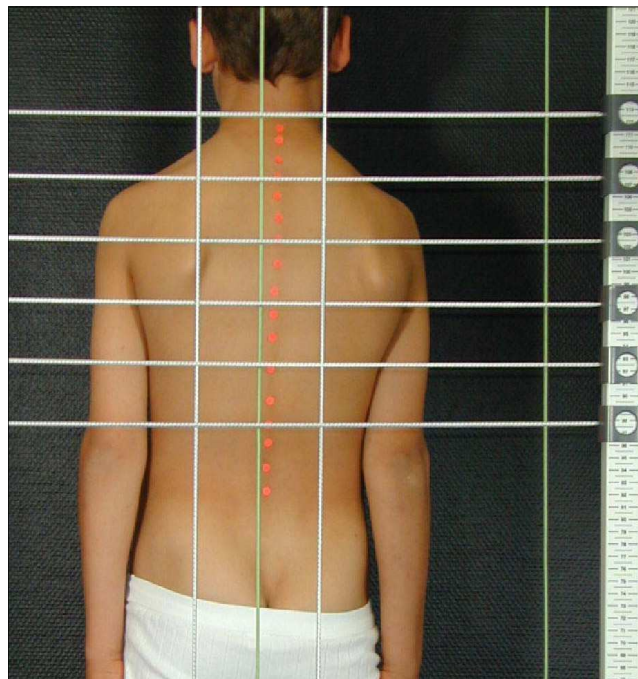
Fig. 3:

Left: Patient with the habit of left-sided adductor pressing especially at the left masseter muscle. Without clenching, a decline of vision capacity occurs in the left eye.

While covering the non-affected right eye, Applied Kinesiology (AK) tests diagnosed a hyper-reactive challenge and a positive therapy localization at the right sacro-iliac joint occurs. All three diagnostic findings were negated while clenching.

Right: After an ophthalmic examination and the prescription for prism glasses, the clenching and the hyper-reactive challenge while covering the right eye and the positive therapy localization (TL) at the right sacro-iliac joint disappeared permanently as well as the clenching habit.

#### 4. Clinical example: Finger Sucking



*Ich möchte nicht mehr lutschen*

Wochentag	☀	☾	Wochentag	☀	☾
Montag	Nein	Nein	Montag		
Dienstag	Nein	Nein	Dienstag		
Mittwoch	Nein	Nein	Mittwoch		
Donnerstag	Nein	Nein	Donnerstag		
Freitag	Nein	Nein	Freitag		
Samstag	Nein	Nein	Samstag		
Sonntag	Nein	Nein	Sonntag		

Fig. 4: 9 years old boy with a long established thumb sucking habit, postural distortion of the spine and left laterognathia. Due to tongue thrusting (visceral dysphagia) the boy was able to temporarily negate the preexisting instability at the right sacroiliac joint (Cat. II SOT), therapy localizations of testing for a total compression syndrome, tension of Dura Mater (Cat. I SOT) as well as to balance or arrest the leg length difference. After correcting the lateral deviation of the mandible and orthodontic expansion of the upper jaw in order to release from maxillary and cranial compression the same boy abandoned this habit with the additional aid of a “Stop-sucking contract” and was cured from the positive therapy localization at the right sacroiliac joint Cat.II (SOT) through the orthodontic therapy. The previously positive AK-Test in expiration and the leg length difference were also solved relapse free within a one-year observation period.

**Case study:**

9-year-old boy (Fig. 4) has a long established thumb sucking habit with a consecutive frontal open bite, left laterognathia with a postural distortion of the spine in the sense of an instability in the sacroiliac joint (Cat. II SOT) and a maxillary compression with dura tension (Cat. I SOT).

The mother reported that the boy as an infant used a pacifier in order to facilitate falling asleep. Later when the pacifier was removed, he developed the habit of sucking his thumb, especially while in a resting state and while falling asleep. From the age of six to nine years of age, the family made several failed attempts to wean this habit (e.g.: placing a bandage on the sucked thumb, exhortations, pyjamas with closed sleeves, reward systems for good behavior as well as penal threats. Since the child's grades at school were deteriorating due to the increased exposure to stress, the parents stopped their habit intervention efforts.

Our AK examination yielded the following: With the aid of the sucking habit, the boy was able to temporarily negate the therapy localization at the right sacroiliac joint and the positive AK-Test for testing for a total compression syndrome (Cat. I SOT) as well as to counterbalance the leg length difference. Several initial improvements from cranial osteopathy as well as physiotherapy to the painful jaw muscles as well as chiropractic treatment for the Cat: I + II SOT relapsed and had no influence on the sucking habit.

The patient received orthodontic treatment by means of a quad-helix fixed appliance in the upper jaw, therapeutical re-shaping of deciduous teeth monitored by AK and the following functional treatment with the Bionator (W. Balters) with AK monitored bite, which yielded in a centric skeletal positioning of the lower jaw. The same boy spontaneously abandoned his habit with the additional aid of an "stop-sucking contract" and was cured of the positive therapy localization at the right sacro-iliac joint Cat.II (SOT) due to the comprehensive orthodontic therapy. Positive AK- tests for a total compression syndrome became negative after upper jaw expansion through the application of the quad helix appliance. The difference in leg length remained balanced and relapse-free after a one year follow up.

**Discussion:**

The illustrated case demonstrates the strong relationship between malocclusions and peripheral dysfunctions regarding Cat. I and II (SOT). Today we know that the Lovett-Brothers-relationship does not end at C1/L5, but rather is extended beyond the limits of the vertebrae. The sphenoid with the coccyx, the occiput with the sacrum, and the temporal bone with the ileum have this kind of relationship. The malocclusion described in this case lead to asymmetrical muscle activities from the adductor muscles (e.g.: masseter), which consequently lead to asymmetrically stressed cranial structures. This explains the



craniosacral as well as the postural dysfunction. Through orthodontic treatment the compression of the upper jaw was cured, which was sufficient to improve the cranio-sacral mobility of the whole system and thereby cured the Cat. I (SOT) relapse-free by orthodontic means alone. Through the subsequent AK-supported improvements of centric occlusion due to the Bionator functional therapy and the reshaping measures on the deciduous teeth it was possible to arrange the origins and insertions of the masseters and other masticatory muscles more symmetrically in all 3 dimensions. This resulted in an equal proprioceptive input into the central nervous system from both sides. Through the described extended Lovett-Brother relationship, proper functioning of the Cranio-Mandibular System has the potential for a self-healing process of the pre-existing Cat. II (SOT).

The patient tried to achieve exactly the same thing through his sucking habit, a task in which he succeeded in the short-term since the condition of sucking of both Cat. II and Cat. I (SOT) as well as the leg length difference was not detectable through AK tests during and shortly after the execution of the habit.

In our view the sucking reflex may be considered physiological and congenital only during the first two or three years of life. After this period of time, the prolonged sucking need may indicate the existence of a craniosacral dysfunction. If diagnosed during infantile age, it may be treated as early as possible by fully qualified osteopaths or

physiotherapists with continued education in manual cranio-sacral therapy. Infantile screaming, but also thumb and pacifier sucking, enables those children to temporarily achieve unstable functional improvements in their cranio-sacral function. This is particularly noticeable in pelvic posture. This improvement in function so that comfortable that this need is prolonged. However, every patient with the sucking habit has the potential for development of a functional frontal open bite, a cross bite or an Angle Cl: II/1 malocclusion.

Therefore, pacifiers should not be used after three years of age. Children who can only be calmed over a long period of time through a pacifiers or other sucking habits should be referred to a paediatrician or to an osteopath who is familiar with manual cranial treatment of infants. From the fourth year of age, early orthodontic treatment offers a unique possibility to correct centric occlusion and fix the mobility of the upper jaw in order to establish the necessary normal primary respiration. Since children are often cooperative enough in this period of age, the cranio-sacral malfunction can be treated by orthodontic devices successfully (e.g.: with a Functional Regulator – Fränkel [9] or with a Bionator - Balters). These intra-oral functional devices are in any case superior in comparison to any conventional pacifier. According to the stress concept of Hans Selye [12], the displayed craniosacral dysfunction usually has multiple origins (heredity, psychic or somatic

injury, toxic or microbiological noxa, acquired craniomandibular dysfunctions) in the status of insufficient compensation.

Breaking of habits by social pressure alone may result in severe psychosomatic discomfort and should therefore always be supported by a postural interdisciplinary therapy. The treatment of speech disorders (e.g.: sigmatism) by a speech therapists alone is not effective enough for most patients due to the discussed interactions, but rather requires a synchronistic and comprehensive orthodontic treatment in most cases. Speech therapy or myofunctional therapy should be applied only when the incorrect articulation no longer poses a physiological advantage for the patient (short-term functional improvement of the Cranio-Sacral System). This is usually achieved after several months of our comprehensive orthodontic treatment.

Even small lateral shifts of the mandible (skeletal laterognathia in relation to the upper jaw), as well as small vertical differences in left and right jaw height associated with torsion or sidebend cranial disorders, minor crowding of teeth in the maxilla, incorrect occlusal contacts in centric occlusion and non-symptomatic dysfunction of the temporomandibular joints can all lead to myofunctional compensations via reactions of the central nervous system. These can particularly result in peripheral muscle pains in the neck, back, pelvis and extremities. In our view these compensatory muscle tonus changes throughout the body

exist to maintain and constantly optimize chewing capacity and ingestion of food (e.g.: extremely important in case of famine), even under compromised masticatory conditions in the sense of an autoregulation of the central nervous system. Even in young children, this autoregulation can lead to peripheral symptoms (Fig. 3 + 4).

Our comprehensive orthodontic treatment based on to the Balance Treatment Concept usually addresses the Craniomandibular dysfunctions more completely, which either leads to the spontaneous absence of the habit, tic, bruxism, speech-disorder and orofacial dyskinesia, or with the aid of myofunctional therapy, these dysfunctions can be treated more effectively and relapse-free.

In regard to useful autoregulation and the goal of a short-term unstable improvement in function of the Cranio-Mandibular System (CMS), Cranio-Sacral System (CSS) and the postural systems, these tics, bruxism, habits, speech disorders and orofacial dyskinesia are not useless or senseless. They are rather purposeful adaptations of the autonomic nervous system, which aid the craniosacral and postural self-treatment (according to the need satisfaction principle of W. Correll [6]). During the execution of the dysfunction, or shortly after it, AK-tests (therapy localizations or challenge) with regards to Cat. I and Cat. II (SOT) are falsely negative. This status is only active until up the next swallow or bite in centric occlusion. Latter vital functions contributes to a reduction of this

contemporarily established neurological program. The advantage for the organism lies in the temporary interruption of all dysfunctional adaptations of the CSS as well as of the postural systems to the malocclusion established through the neurological input from swallowing or bite into centric in occlusion. These are reactivated when occlusal proprioceptive afferents are reapplied. This immediately reinstalls all adaptations in the sense of a postural distortion of the vertebra (Cat: II SOT) which probably enables the optimum effectiveness of the masticatory system during chewing and food ingestion. This may be interpreted as a selective advantage in the framework of the Darwin's theory of evolution.

#### Conclusion:

We have proposed a new hypothesis concerning the physiological auto-regulative meaning of habits, tics, bruxism, speech disorders, and orofacial dyskinesia. Thus, these habits etc. may not be considered as chaotic or pathological processes, but rather more strategic life sustaining procedures of the autonomic nervous system with the goal of temporarily improving the function of the Cranio-Sacral System. Further studies to confirm this hypothesis are necessary. These should be longitudinal single patient studies as every case is naturally different based on its individual facts and as posture is altered by many factors.

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